

## Practicing IWRM at local level implementation of Water Use Master Plan



Photo: Rabin Raj Niraula

Building effective water governance in Asian highlands is a research project which considers the potential impact of hydro-climatic change on local people, communities and water managers across the study region, and assesses policy barriers and options for more cooperative local and regional governance. The goal is to build awareness of and preparedness for effective water resource management in the Asian Highlands by encouraging local adaptive livelihood options and improved regional and sub-regional water governance. The project started on 12 September 2012 and will last on February 2016. The project consists four modules- module 1 consists of down scaling of bio-physical information, module 2 consists of community vulnerability and resilience assessment, module-3 consists of local Water Use Master Plan (WUMP) based on the information from module-1, module-2 and participatory information generated in the local WUMP process and module -4 consists of the communication of water governance message emerged from the research project. The local WUMP of four Village development committees of Melamchi watershed was accomplished in May 2014.

### Introduction

Since the coining of Integrated Water Resources Management ( IWRM), almost all definitions of IWRM stress three “E” s (Efficiency, Equity and Ecological integrity) principles aiming to improve efficiency in water use (economic efficiency), promote equity in access to water (creating just situation , social or developmental rationale) and to achieve ecology integrity (sustainability and the environmental rationale). There is emerging consensus that Integrated Water resources management requires an integrated and participatory approach. In terms of water allocation, basic human needs should receive priority; other uses should be prioritized according to societal needs and socioeconomic criteria.

However, there has been lots of debates about its true application at the local level. The three E’s principle has been contested at different scales. Some of the concerns that are raised in different literature are listed below;

- UN Convention 1997 creates some obligations on member states, however negotiations are often complicated by the sovereign sentiments that tend to emerge
- Claimant of uniqueness - IWRM claims a special institutional space - the problem of institutional fit
- IWRM lacks institutional fit and lack of fit with the context ({Butterworth, 2010 #42})
- Focus too much on management, at the detriment of development
- In South Asia, IWRM is a “concept in search of a constituency” {Mollinga, 2008 #109}- clearly not locally rooted.

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- The concept is vague what is needed to successfully implement IWRM is unclear (Watson et al., 2007)
- IWRM is “Nirvana concept” {Molle, 2008 #108}
- Little agreement on fundamental issues (aspects to be integrated, how, by whom)
- Participation in IWRM at catchment management is rhetoric, most are limited to activities about informing or consulting people, while there is always a risk of co-optation and power play {Cleaver, 1999 #151}. It is not people-centered enough, catchment management often lacks the capacity to fulfil even basic functions.

The IWRM concept is now deemed too heavy for its true application at a local scale and there are emerging scientific papers which call for light IWRM.

The Water Use Master Plan, we applied in our research site is of light IWRM with adaptation measures in the water sector, at local level. The institution that was taken as the management unit of this plan was the village development committee.

### Practiced local water use master planning

Out of three research sites of the project Lijang basin, China, Chitral, Pakistan and Melamchi Nepal, local water use Master planning was carried in the four VDCs of Melamchi watershed. In Nepal there is absence of an institutional framework for integrated water resources management in its natural unit of management (the hydrological boundary) within the country (NWP, 2005). The annual planning process of Nepal is carried at

the Village development committee (VDC) and district development committee (DDC) level and endorsed by the respective councils whereas no such plans are carried at watershed level or river basin level. In deference to the country specific practices, in our research project we practiced local Water use Master Plan (WUMP), the planning unit of this local water use master plan was the Village Development Committee, the lowest administrative unit in Nepal considered responsible unit for the management of the water resources identified and planned for different uses.

Information on climate scenario and hydrological scenario is well heralded among the scientific community where as this information is not available to local communities downscaled to their local context. Local Institutions follow planning process, however the process lack to integrate information on availability of local water resources, adverse effect of climate change on water and livelihood of locals. Climate change and hydrological information from scientific community and local resource information from locals are deemed essential for dialogue on adaptation and water resources management. The concept of prioritizing water needs and adaptation to adverse impact of climate change builds on enough information required for participatory decision making.

### Strengths of Local Water Use Master Plan in a Village Development Committee

Local information on water resources (spring sources), existing infrastructure, and service level, local needs from local individuals, households and communities are equally important as scientific information in building institutions, resource management with adaptation and participation, equity, accountability aspects of water governance. Information from participatory process combined with scientific information brings change in perception and knowledge supporting informed decision making. Inclusive and informed decision making creates a sense of horizontal accountability strengthens local institutional capacity for management and adaptation based on the local priorities, augments change in governance system.

WUMP at the VDC level takes into account the stock of water from the springs identified and allocates the water for different uses. Institutions are necessary for governance and systematic development. In the absence of institution at the hydrological boundary, VDC is the institution which can take care of the local water use master plan.

### Limitations of WUMP in a VDC

- Overall assessment of existing sources provides information as the major strength which remains to be institutionalized to continue management as well as monitoring.

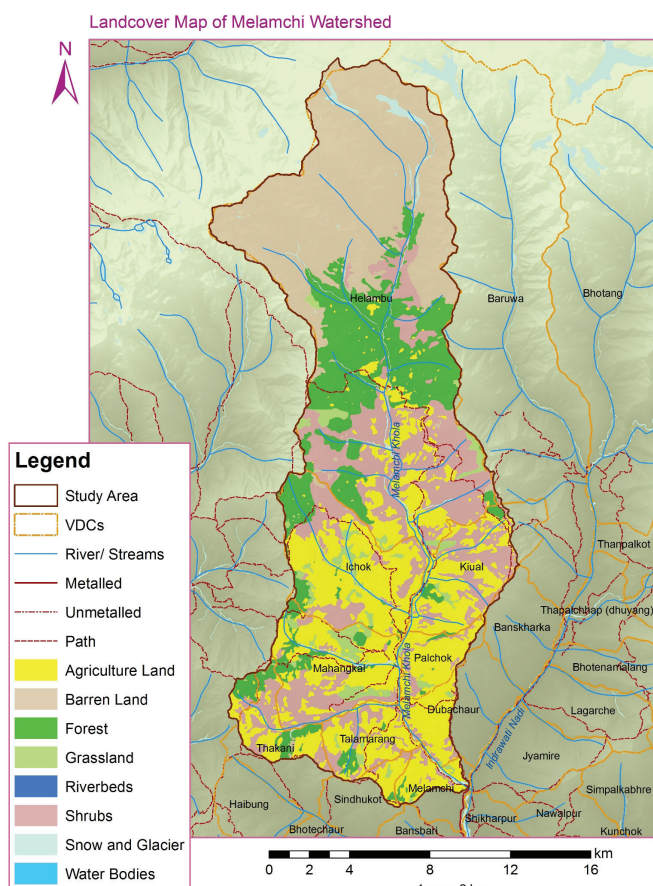


Figure 1 Map of the study area: Melamchi watershed



- Springs mapped in the water use master plan brings local information on availability of water however the mapping of recharge of springs mapped are not taken into account gives a kind of uncertainty to the recharge of the springs.
- Water Use Master Plan is yet to strengthen watershed management against extractive schemes, which is essential to strengthen IWRM at local level
- The Water Use master Plan (WUMP) was unable to consider the dimensions of IWRM. The first dimension takes into account all the water resources, which includes the entire hydrological cycle with stocks and flows distinguishing, for example, rainfall, soil moisture, water in rivers, lakes, and aquifers etc. The second important dimension of IWRM is spatial dimension, which considers the spatial distribution of water resources and uses (e.g. upstream and downstream). The third dimension of IWRM is the temporal dimension; taking into account the temporal variation in availability and demand for water resources.

The approach misses to take into account the precipitation and thus the water cycle the natural process which makes water renewable. When precipitation in the Water use master plan is absent there is absence of water accounting that is the water budget/ water balance which entails the inflow, outflow and change in the (storage) availability of water over a specified time. Integrated water resources management, seeks to manage the water resources in a comprehensive and holistic way which considers different dimensions or perspectives. The first dimension takes into account all the water resources, which includes the entire hydrological cycle with stocks and flows distinguishing, for example, rainfall, soil moisture, water in rivers, lakes, and aquifers etc. The second important dimension of IWRM is spatial dimension, which considers the spatial distribution of water resources and uses (e.g. upstream and downstream). The third dimension of IWRM is the temporal dimension; taking into account the temporal variation in availability and demand for water resources.

The boundary issues compels to miss the water balance or water accounting, the upstream and downstream use and management aspects. The process of local water use master plan we practiced misses the temporal dimensions, which undermines the difference between Water Resources management and Integrated Water Resources management, this brings us to critical positioning the water use master plan (WUMP) we practiced at the administrative boundary missing different dimensions of IWRM.

## Way Forward

To bind the institutions and dimensions of IWRM we have taken cluster of VDCs (institutions in place) within a watershed. The research project supported to develop local water use master plans of four VDCs clustered in the Melamchi watershed and brought the information of the water use master plans for dialogue

among the VDCs. The dialogue among the four VDCs identified the projects crossing the boundaries of VDCs needed consultation among each other for the better management of such schemes by reducing conflicts, this showed the cluster of VDC plans could be elevated to the watershed plan. This will allow to consider the different dimensions of IWRM.

This approach has been taken forward by ICIMOD and HELVETAS collaboration in Koshi basin programme. The HELVETAS and ICIMOD collaboration will support to develop water use master plans of the VDCs clustered in the Melamchi watershed and will support to elevate these plans to a watershed level plan.

Further, the Information of Local water Use Master plan from the VDCs of Melamchi watershed were also useful for the humanitarian support to earthquake affected people which HELVETAS and SOLIDAR conducted under the funding of Swiss Solidarity. Rehabilitation of Facilities of Earthquake Affected people (REAP) is extended in the VDCs of Melamch watershed.

In the Water Use Master Plan we practiced we realize institutions are important however they also miss dimensions of IWRM. To bind the institutions and dimensions of IWRM, we propose the existing Water Use Master Plan can be taken up at different scales ( VDC, watershed) . This will allow to materialize and expand the IWRM concept at the local level for the agencies intending to replicate the Integrated Water Resources Management practices at local level.

## Water Use Master Plan as Local Integrated Water Resources Management Plan

The local Water Use Master Plan (WUMP) is a process through which local government and communities interact, exchange knowledge, acquire and obtain ownership over the water management plan and commit about agreed roles responsibilities for its planning, implementation, monitoring and reflection. The process applies an Integrated Water Resources Management (IWRM) approach. Under the leadership of the local government the process empowers local communities and marginalized groups to take inventory of water sources, pursue for equitable sharing of water within and between communities. The purpose of a WUMP at

**Considering the existing institutions and planning practice the Local Integrated Water Use Master Plan can be conducted at VDC level (administrative boundary) and secondly into a watershed comprising clusters of VDCs. The combined approach of Local Integrated Water Use Master Plan the local institutions elevated to watershed level brings in the normative institutions for taking actions of the IWRM respecting the different dimensions of IWRM.**

different scale is to achieve an effective, equitable and efficient use of water at the local level by delegating water resources planning and management in the local community and elevate the local community plans at watershed level incorporating the dimensions of IWRM. The process ensures the rational use and equitable sharing of water resources among and within communities in a sustainable way considering all different needs and requirements.

The specific objectives of Local Water Use Master Plan with administrative boundary as the unit of management entails;

- To identify water resources and related infrastructures/ facilities,
- Establish priorities of potential activities in the water sector,
- Achieve sound and long-term investment in the water sector,
- Promote conservation of water resources and environmental sanitation,

The specific objectives of Local Integrated Water Use Master Plan with cluster of administrative boundary (VDC) within a watershed, the watershed as the unit of management additionally entails;

- Water accounting of the watershed,
- Management and use of water at upstream and downstream.
- Transboundary management across administrative units in a watershed.

## WUMP to Local IWRM Concept

The Local IWRM concept for effective water governance and climate change adaptation is based on information, Local Institutions and resource management (Figure 1).



**Figure 1 Effective water governance builds on the information**

## Procedures to materialize the Concept of Local IWRM

### Information collection

Information is crucial to know the situation of local site selected for the Local Integrated Water Resources Management Plan preparation. Information is to be collected in two stages

- Desk studies for collecting existing data, maps, downscale bio-physical information, and opportunity map preparation by use of GIS tools etc.
- Participatory process to collect primary data consists of Social Assessment and Technical Assessment (refer to HELVETAS et. al, 2015).

### Institution

Institutions and unit of IWRM in the envisioned Local Integrated Water Use Master Plan process consist selection of institutions and arrangements to comply with IWRM principles. Stakeholders involved in the selected unit (institution) of management are crucial for the institution building and resource management. Select an institution that exists like VDC and to comply with a watershed management select cluster of adjoining VDCs that roughly falls into a sub watershed.

### Resource management

It is the Local Integrated Water Resources Management Plan with the priorities of the locals right from Households clubbed into settlements, settlements or villages clubbed into the ward, wards clubbed into VDC and VDCs clubbed into sub-watershed, watershed and watershed clubbed into River basin. Currently practised WUMP can be improved if we consider following points:

- Collect information integrating different dimensions of IWRM - the Water balance, spatial dimension the upstream/ downstream uses availability and relationships and temporal availability of water.
- Use Bio-physical information for planning Climate Change adaptation (CCA) and Disaster risk reduction (DRR) options.
- The existing WUMP brings in irrigation plans, these plans could be used for developing agriculture plan which are linked to Climate Change adaptation (CCA).

## Effective Water Governance

Effective Water Governance looks into the process and yardsticks followed, ensuring all the stakeholders participate in the process. Sufficient information is used in the dialogue and negotiation for setting the priority of water resources restraining power relations, augmenting equity principles and linking the priorities to sustainable development.

- Due to the relative weakness/absence of central state authority in Nepal, the local level action provides many potential solutions to water governance issues at local level. Respecting customary water tenure, traditional ecological knowledge, and cultural values are key of the participatory local Integrated Water Resources Management Plan process.
- It is assumed that effective participatory planning can ensure effective water governance practice in the VDC, and watershed comprising cluster of VDCs addresses many of the challenges related to water governance as summarized in the following section.



## Open Information

Due to the low level of awareness among illiterate people, information about water tenure rights, legal provisions, government program, plans and fund allocation to various water schemes is lacking. However, at user group committee level information exchange is somehow frequent. Local Government Officials mainly Secretaries know how much government budget is available, but there is no mechanism in place even for these secretaries to know about the development agencies working in the locality, their program and budget on water resources. The availability of scientific information downscale to local context usually lacks and even local information on water availability also lacked which are crucial for decision making for future planning.

## Transparency

The majority of local people are not well notified about legal and contractual provisions, decisions, plans, contracts and process related to any water schemes of the areas. The tradition of overlooking the concerns of local people still prevails. Program documents, procedures, contracts and work progress are not made public. There are no mechanisms of sharing of decisions in public in writing or verbally.

## Accountability

Officials seem accountable only towards their superiors and donors, not to the general public. This culture hesitates listening to the voices and opinions of the general public. It lacks the culture of learning from local knowledge and concerns. The attitude of officials is such that they do not listen rather show superiority. Public image is such that there is an alliance between officials and contractors who are corrupt and they disregard local peoples' voices. Among locals, people are divided based on certain political parties, caste, ethnic groups and areas. The indigenous practice of local institutions which existed before in the management of irrigation channel, water springs and small streams are eroding. Unlike other local institutions, Community Forest User Groups are relatively active and forests are in better conditions than before. However, other local institutions are not functional.

## Participation

Participation in the decision making process involves mainly Kathmandu and district headquarter based officials, some local political elites and representatives of contractors. There is a lack of interaction and coordination among government, non-government and private sector stakeholders of the locality. Instead of using cooperation and for the rights of local people and stakeholders, government and the Melamchi Drinking Water authority, for example, have offered a lump sum amount of 2.5 to 4.0 million Rupees per year to each of 14 VDCs in the name of Social Upliftment Program (popularly known as SUP). The governing mechanism of this fund is poorly crafted and most of the fund is spent on infrastructure such as bulldozed road, school building, monasteries etc., and very little is spent on environmental protection and climate adaptation measures. Under the SUP, infrastructure relates targets are set as the only measures of achievements, ignoring



the opinion of local ordinary people. Direct interactions with the local people in order to measure the quality of the work is hardly done. Progress is measured in number of buildings and kilometer of road constructed. Also participation of disadvantaged groups was found to be encouraged in such forum at local government only to display representation rather than active participation. In all VDCs, disadvantaged and underrepresented groups were observed to be less capable of influencing the decisions on how SUP fund should be mobilized.

## Equitability

Women, Dalits, indigenous people, poor and people from remote areas have less representation and access to the decision making forums and processes. There is no balance in distribution of roles and authorities. There are certain provisions in local government to support poor and disadvantaged group which is mainly in terms of economic incentives. However, for water allocation and use, no such special provisions were observed. Poorer households were most disadvantaged in terms of water access and use.



## Rule of Law

There are many ministries, policies, laws, rules, regulations, orders and circulars which often contrast with one another. Frequent and sudden changes in policies at the central level without much consultations and discussions have made the working environment for local authorities confusing. There is a short term vision while solving problems. There is lack of clarity in

job descriptions, roles, responsibilities and authorities of various agencies and staff. This makes the water sector as no one's responsibility. Local communities still claim that some water resources are their private property which they will not allow to share among communities. Government officials perceive that water is a national, state property. This lack of clarity regarding property rights complicates water resource governance.

### Conflict Management

There are many types of conflicts at various levels. Ownership and use of water sources are the main areas of conflicts. Controversial issues such as allocation of water, diversion of water to urban centers are rarely solved through a people's poll. The decision making process is very much influenced by a handful of officials and leaders. There is too much of centralization of power in the water sector. In theory, all water sources belong to the state, but the state has neither capacity nor the resources to manage it. Local communities and private individuals do not own water as natural resources. They are simply the users with limited rights. The decision making process is dominated by the higher level authorities. Democratic approaches such as public hearing, mass meetings and public poll are rarely adopted in decision making. At the local level, existing administrative boundaries are not community friendly. Conflict exists among the communities where facilitation for equitable sharing is lacking and they prefer competing with each other. This has developed an unhealthy governance among communities. Local government is not equally able to manage resources at their administrative level.

### Climate Change adaptation (CCA) and Disaster risk reduction (DRR) in Local Integrated Water Use Master Plan

Vulnerability reduction is a core common element for both Climate Change adaptation (CCA) and Disaster risk management (DRM). One of the observed patterns is erratic rainfall, which induces shock of too much & too little rain and weather induced disasters. In our intervention, we acknowledge small scale community efforts that contribute to CCA & DRM in local context; which focuses towards reduction of vulnerability caused due to erratic rainfall pattern; and acute uncertainty induced by it. Resilience is augmented through the creation of the following assets;

#### Physical assets

- Gravity Drinking water systems (DWS)
- Rainwater harvesting systems (RWH),
- Multi Use Water Systems (MuS)
- Irrigation system
- Retention and recharge ponds
- Gully plugging and retaining structures

#### Natural Assets

- Water Accounting
- Plan for Water Conservation and Soil Conservation

- (Relationship between Water, Forest and Land - Source conservation, biomass & Soil conservation)
- Water Buffering ( Method of Storage: Ground Water storage, Soil Moisture Storage, subsurface storage and Closed tank storage)
- Water Losses ( Beneficial Evapotranspiration, Non Beneficial Evaporation)
- Plantation



### Social Assets

- Negotiation and dialogue with Participatory decision making on issues that affect the concerned people.
- Participatory Planning: Prioritization of water resources for different potential uses and Climate change adaptation measures at local level.

### Human Assets

- Resource planning training
- Resource Management training
- Asset Maintenance Training
- Accounting, bookkeeping
- Training for school teachers & students (Environment friendly, school- Blue school)
- Training in the formulation of local norms & rules
- Training for promotion of sanitation and hygiene

### Financial assets

- Income generation Activities
- Indirect Assurance of income and food through Multi Use water systems and Agriculture plan from the Irrigation plans
- Water Productivity studies

### The rationale for having Local Integrated Water Use Master Plan

The rationale of Local Integrated Water Use Master Plan with clusters of VDC plans elevated to watershed plan are relevant to materialize the dimensions and principles of IWRM in the existing Nepali scenario for the following reasons;

- The Local Self Governance Act and its Rules 1999 stipulate the need of active participation of local communities and VDC-level decision-making through settlement and ward level meetings and these



needs are to be prioritized and reflected VDC level development plans.

- The Local Self Governance Act further states that VDC and DDC need to conduct participatory planning to properly manage water and environmental resources and development activities, but this provision is not translated into practice
- According to the Act, VDC can have plans of various kinds. Village development periodic plan, Local Adaptation Plan of Action, Local Integrated Resources Management Plan, Disaster Risk Reduction Plan and so on. These plans often cost a lot of resources to prepare, overlaps in processes and requirements and hardly implemented. So there is a need to harmonize these plans through a consultative process.
- A group people in the surrounding area can identify their feasible water source and register a user group in the VDC to manage the water resource. VDC itself can authorize such user groups and allocate available budgets for water resource management where required. However, without effective water governance, these groups neither get formed nor survive.
- Inadequate capacity of water users committee to communicate to its members.
- Grabbing of power by a handful of strong community leaders and lack of transparency and accountability of them to their fellow neighbors. This has in the past created distrust of the community members towards their leaders and the eroded sense of collective ownership of the water management plans.
- The absence of external facilitators and higher local and central government agencies to safeguard the broader community interest.
- Declined public interest in the projects related to water management.
- Infrastructure centric development attempts of the past and lack of collective action for construction and maintenance of the water schemes in the post project period.
- Locally made operational rules are lacking and there were no engagement and ownership of the local government in water planning process and working rules of the central government were not properly enforced.
- Local user groups become passive and ineffective and their human, financial and technical capacities have been found weak.
- Equity and effective service provisions of the local government do not exist.
- Local rules crafted by user groups do not have legal status, these user groups were formed on an ad hoc basis for the construction of the scheme.
- Economically poor and socially marginalized group of people (commonly called disadvantaged groups) does not have adequate voice to demand for sustainable access to water and its management.
- Inequalities exist among the disadvantaged and general people in power sharing which influences decision makings and actions concerning the poor and disadvantaged section.
- “People are pursuing many strategies to adapt to change, but most of these fall under short-term coping vs. long-term adaptation.” (Grumbine, R.E.; Nizami, A.;

- Rana Tharu, B.; Niraula, R.; Su, Y.; Xu, J.C.; 2015)
- The government needs to work with villagers to implement the long-term adaptation plans with a focus on collective and/or institutional actions. (Grumbine et al., 2015)
- “Whatever the means, it is essential for communities to work together so that people can build trust and boost their conflict resolution capacity.”(Grumbine et al., 2015)
- Local Integrated Resources Management Planning has served well as a dialogue and negotiation platform engaging local people with their knowledge of water sources and embedding them into the VDC political and funding processes. However, the very low technical skills and resources for such planning create inefficiencies for VDCs; herein lie the main opportunities to improve water governance.(Grumbine et al., 2015).

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