Community Participation in Watershed Management

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Executive Summary:

Overuse of aquifers, contaminated rivers, deforestation and many other environmental problems are increasingly common and are linked to social and economic problems. Growing populations and development bring increasing and conflicting needs and uses on water resources. This calls for management of these resources. New systems that involve the community in sustainable management of this limited resource, such as Citizens Monitoring Networks, must be created The success of these program relies on 100% participation, legal authority to enforce decisions, and national laws that back up local decision making bodies. This involves education. On the community level, this means outreach to and inclusion of previously marginalized members of the community. On the government level, workers who are accustomed to top-down decision making, must be re-oriented in the skills of networking, organizing and outreach There must be a collaborative relationship on local, regional and national levels. The national government's role should include setting standards and regulatory practices, oversight management and consultative services with a clear legal transfer of authority to the community level. Community participation could be facilitated by training community outreach workers/mobilizers, ag. extension agents, health care promoters...etc., who would in turn train their constituencies in practical methods such as: conducting physical surveys of land uses, biological monitoring of indicator organisms, coliform testing in surface water, and conducting wellhead protection planning. Communities must have primary responsibility and input into regional and national organizations for all phases from planning, policy making, decision making, project implementation and evaluation Community participation works because people know their community and are in the best position to identify their problems, the causes of those problems and determine how with limited economic and human resources to resolve those problems. Conflict is inherent in resource management, competing interests should be acknowledged at the beginning. Mediation, binding arbitration or other conflict resolution methods should be built into the process. Community, regional and national organizations must be linked, be non-partisan, and have the legal authority to enforce their decisions. Economic development and wise resource use go hand in hand. Short sighted policies must be replaced with long-term planning to protect the resource base and promote sustainable development.

Introduction

Water is life. There is nothing we can do that does not affect water A few minute's thought, or a day without water, can show us how true that statement is. But the threats to our limited surface and groundwater resources are enormous: overuse, contamination, mining of aquifers, deforestation, and salinization of freshwater aquifers are common problems globally. The importance of water in our lives, combined with the threats, make water resource use a global problem, but one that must be solved on the local level.

Many top-down development projects have been unsustainable socially, economically and environmentally. Because of this community participation has become a requirement of lending institutions. To implement programs that truly involve the community, governments must develop *a new orientation* from a top-down decision making approach to become facilitators and networks and collaborators with communities.

Community participation in watershed management calls for the creation of a system to enable each community to:

-identify the problems of immediate concern within their community
-the causes of those problems,
-acknowledge conflicting interests and create mechanisms for resolution, and
-prioritize the solutions given limited economic and human resources

Each community calls for a different approach. There are no magic formulas as every country and community is different The first step is promoting a sense of identity, pride, accomplishment and ownership to help people to get involved in managing natural resources. Education and practical activities such as biological monitoring and surveys of a communities land use, water resource, agricultural, industrial and economic base are vital.

Each program must be built to fit the needs and capabilities of each community. The success of the program requires that everyone participate. This takes active outreach to ensure that previously marginalized people's are given a voice and a role in planning, policy making, problem solving and implementing solutions. Everyone must understand why conservation of resources and protection of the earth and its resources brings a stable economy.

Everything is interrelated, a cursory analysis of any environmental problem shows the myriad other problems that it is connected to . The solution must be approached step by step. Good planning, constant reevaluation, flexibility, good listening, and a willingness to change course as often as rivers do in a flood plain can bring about sustainable resource use and sustainable economic development.

Community participation is not acting in a vacuum, there are strong business and social forces that emphasize short term economic gain vs. long term sustainability. These short-sighted actions leave communities with eroded soils, dried up or salinized aquifers, deforested and with a degraded resource base. Natural resources are the true wealth of any country and are irreplaceable.

There are some basic requirements for citizens organizations to be effective. They must be non-partisan, they must have legal jurisdiction and be connected with regional and national groups that give them the legal authority to ensure their decisions are enforced. Strong national environmental laws must be in

place. Citizens Monitoring Networks are one approach that transcend many of the problems encountered in the past.

These problems must be tackled or it may be too late. The rapid desertification of the planet is warning us. Since every community is different, we will never figure out the perfect method. It is important to start, as Myles Horton said "the only way to start, is to start".

One way to start is to carefully select an area where there is an identified problem, and the community is already organized and interested in resolving the problem. It helps if the results can be easily measured. It is okay to start small and learn from experience. A community that is successful, and with visible results can help foster other communities aspirations. Some communities are reluctant to try new things unless they know it will work. Helping communities to identify problems and their causes, and decide on a solution helps to make use of limited economic and human resources and build capacity within the community. This is sustainable resource use and sustainable economic development.

1) What is Watershed Management?

> *"The sage's transformation of the world arises from solving the problem of water. If water is united, the human heart will be corrected If water is pure and clean, the heart of the people will readily be unified and desirous of cleanliness The pivot is water " -Lao Tzu*

A river basin is a living system. Rivers are the veins and arteries of the earth. They serve as the connecting link to help understand the interrelationship between environmental, human health, and socioeconomic problems. For years economic growth and environmental quality have been perceived as being mutually exclusive. On the contrary, they are completely dependent on each other. History gives us many examples of civilizations that collapsed as they overused their resource base. Watershed management allows for sustainable resource use. This is not only good for the water, but for society and economic growth as well

Potential conflicts in watershed management arise not only from different uses of water, but different needs in the upper, mid and lower parts of the basin, as well as in urban and rural areas. For example, flood control and water quality is a priority in lower parts of the basin, while water supply is more important in upper parts of the basin. Conflicts between rural use, municipal supply and maintaining minimum flows in rivers are inherent. Conflict resolution methods (mediation, arbitration...) need to be built into the management process. Multiple uses, as well as different interests and needs, require multi-level basin wide management on local, regional, national and international levels.

A river basin is a place not just with economic uses, but a place with deep connections for the communities that live there. Pride in maintaining the integrity of system that supports us must be fostered Watersheds reflect the complexities of where and how we live and our many interacting and conflicting needs. One of the main conflicts is between instream and out of stream uses. Water is withdrawn from streams to be used for municipal and industrial supply, irrigation and cooling electric generation, and used instream for navigation, conservation, fish and wildlife, flood control and hydropower.

2 Why watershed management?

Over the last decades we have seen the degradation of entire watersheds. Massive deforestation, bursting oil pipes in the upper Amazon, increasing colonization of traditional homelands of indigenous peoples, and rapid urbanization are some of the tough issues facing Latin America and the Caribbean. Watershed management is critical because many problems are not only local or watershed wide, but global. Since these problems are interconnected, the solutions, and management of the solutions must also be interconnected. When water, or any resource is limited it requires management to balance environmental, social and economic values.

The bottom line is that it is cleaner and cheaper to manage a watershed for protection then to remediate problems. Resource degradation involves high social costs including lost work days, lost lives and increasing hospital costs. Additional economic benefits are derived from wise resource use and protection. Householders have more energy to put into productive work when they are not walking miles for water or wood. Relatively simple efforts such as reforestation yield many benefits such as recharged aquifer, fodder, fuel and increased soil fertility. Sustainable resource use is also sustainable economics.

Global Water Related Disease Latin America and the Caribbean (Population 444 million) 1990

Ref World Bank, World Development Report 1993
given in hundreds of thousands of disability adjusted life years lost (DALY)

Waterborne diseases		**Non-water related causes for comparison**	
Diarrheal	58.9	HIV	44.3
Polio	2.3	Cancer	53.1
Hepatitis	1.6	Heart disease	27.3
Trachoma	1.1	Accidents	110.5
Ascariasis	13.5	War	6 0
Trichuriasis	9.0		
Hookworm	1.4		
Water-based diseases		**Insect-vector diseases**	
		Malaria	4.4
Schistomiasis	1.8	Chagas	27.4

There are important social reasons for watershed management as well. We are all interconnected. We have the right to dignity, which clean water, healthy communities and a living wage afford us. As populations grow they bring increased demands on water supply. High population density is already leading to overuse and mismanagement of ground and surface water. We can expect water supply problems to increase as people and activities shift to water-short areas. Practical plans to make water resource use sustainable include water conservation, water allocation, increasing water use efficiency, and pricing mechanisms to reflect value.

3 Related environmental aspects

Any sound watershed management plan incorporates an understanding of the complex interconnections of social, economic and environmental problems. Watershed management plans may tend to focus on critical land/water interfaces such as shorelands, wetlands, estuaries and floodplains. But since water doesn't observe boundaries a more comprehensive approach to watershed management is required.

An understanding of this complexity makes it impossible to single out an environmental or social problem and deal with it in an isolated manner. A fairly simple analysis of any problem reveals many other related ones. For example examine deforestation. An exercise in environmental mathematics reveals that:

> Deforestation=more erosion=loss of topsoil= aquifers drying up= less rain=change in the climate=less productive agriculture=increased sedimentation of rivers= water contamination=increased health problems=social unrest

The first step in developing a watershed management plan is to conduct an inventory of the existing conditions. This inventory should include a thorough description of all water resources: i.e. gradients, flows, geomorphology, watershed size, water body size, groundwater/surface water interactions. This inventory requires technical expertise and can be facilitated and directed by the national government and regional planning commissions. This information should be as detailed, accurate and clearly presented as possible in order to help communities direct management practices to address defined problems.

The following tables list some of the important environmental aspects to consider in gathering an inventory of existing conditions, problems and potential problems.

Common Sources of Water Pollution	
Point Source Pollution	petroleum animal, human waste, organic wastes inorganic compounds heated or cooled water salinization toxic contamination
Non-Point Source Pollution	Sediment fertilizer pesticides, herbicides, fungicides urbanization unsound agricultural practices air pollution fallout, mercury, acid rain,

Land Use Impacts on Water Quality	
agriculture	erosion/sedimentation pesticides: adverse human health impacts/bioaccumulation deforestation irrigation fertilizers: eutrophication, blue baby syndrome from nitrates animal and organic waste: eutrophication/low dissolved oxygen introduction of pathogens reduced soil fertility soil conservation: no-till, contour farming
Forestry	increased groundwater recharge decreased surface runoff reduced erosion/sedimentation logging: increased erosion along roads
Mining/Resource extraction	sedimentation heavy metals contamination toxics released (cyanide, mercury)

Urbanization

Urban areas present special problems. The communities change rapidly They are densely populated and have large marginalized communities. Contamination from debris, animal and human waste, industry, tire and brake residue, heavy metals, hazardous materials spills, air pollution fallout and erosion from construction activity are concentrated in a small area. In the 1960s people believed that "dilution was the solution to pollution". A look at the social trends toward urbanization makes that statement totally inappropriate and out of touch with reality.

Innovative planning can help deal with many environmental problems stemming from urbanization. Curitiba Brazil is an excellent example of a city where good planning has paid off. For example, solid waste, both organic and inorganic is exchanged in the favelas through a program called "garbage that is not garbage". In this program favela residents exchange their organic waste for food (thus supporting local farmers), and their inorganic recyclables for bus tokens. This program was cheaper to implement than providing infrastructure. Participation is high due to the immediate economic benefit gained by the participants, but there are additional social benefits of environmental education and pride in their community.

4 What is Community Participation?

> *"In most developing regions, and certainly in Latin America, governments have traditionally viewed independent organizations as a threat to be subdued. Cultural biases and prejudices against the poor and ethnic minorities feed this belief. Conversely, grassroots and other independent organizations have long viewed government as an anti-democratic authority to be challenged and opposed. Against this backdrop, bridges must be extended between governments and their new constituencies so that opposition can be turned into propositions and confrontation into negotiation. At the same time, all parties must begin to accept each other as indispensable partners in sustainable development " (Zazueta)*

Community watershed management involves a completely different approach towards resource management. Instead of private interests controlling resources, a holistic participatory approach where communities control resources must be implemented. This change won't be easy. It involves actively unlearning many old ways of doing things, and learning new ways.

Government staff need to learn to work as communicators, facilitator, networkers and negotiators instead of top-down decision makers. The most crucial skill to be learned is networking. Networking involves connecting non-governmetnal organizations (NGOs), existing agencies, non-partisan people, postmasters, religious, village leaders, health promoters, agricultural extension agents, social workers, teachers, good students, individuals and groups, neighborhood commissions, local, regional and national governments and their constituencies.

Community participation is the crucial link allowing both environmentally sound development and equitable economic development to occur The existing conditions and problems are known best by the people living in the community who have a stake in the outcome. The key reasons for making the change towards community watershed management is that it is mutually beneficial, sustainable, successful and easier in the long run than top-down management.

Industry, agriculture and communities all contribute to resource degradation and are therefore in the most powerful position to make a lasting change. Local community groups have an intimate knowledge of their area. Therefore the management plan they develop will based on better data, be more accurate and generate more political support than a top-down organizing plan generated out of the capital. Community participation requires planning and education to set up. Eventually things speed up as capacity is built by more individuals and organizations. Officials accustomed to top down decision making need to learn patience. Community participation works because it:

* Builds upon a perceived problem
* Brings a wider range of experiences into decision making, helps make policies and projects more realistic
* Fosters a sense of ownership
* Gathers political support for and reduces opposition to policy proposals, projects and other decisions by incorporating stakeholders concerns
* Empowers people, builds local capacities and makes implementation easier
* Builds communities technical and organizational capacities as well as ability to negotiate
* Reduces costs,

* Taps local resources,
* Is flexible, allows for modification,
* Incorporates local organizations as support mechanisms.
* Helps form new leaders
* Keeps the populace informed
* Decentralizes decision making
* Provides good data and information that is accurate, widespread reliable
* People who are organized and organize information are better equipped to make sustainable decisions about land and resource use
* Programs stand the most chance of success if power and control in decision making by people most affected by problems.

In contrast, analysis of non-participatory development projects show that they are often discontinued after financial assistance ends. Top-down development projects are often rejected by the people they are designed to serve. Even well-intentioned development projects aimed at improving health and sanitation are often failures due to the lack of participatory planning. For example, how many people know a story about a latrine-building project that resulted in 5,000 new chicken coops or corn storage sheds being built. It takes more than providing a resource to make sure it gets used as intended.

The problems associated with participatory planning have more to do with raised expectations and dashed hopes People appreciate being listened to. They become motivated. Their expectations get raised, but, the necessary support to implement plans is not necessarily immediately forthcoming. In a case like this, it is better to get people involved, either with a small grant, or a self-help program to implement some part of their action plan, while waiting for larger funding to come through. This helps keep peoples interest and not lose their support.

Other "side effects" of participatory projects is that they may go in unintended directions. For example, land tenureship may become a more important issue than resolving a non-point pollution problem through best management practices. The other advantage/pitfall of participatory processes is they generate conflict. Conflict is healthy, positive and an integral part of development. Mechanisms to resolve conflict such as a commitment to listening to all sides, mediation and binding arbitration should be built into the process from the beginning.

5 Who is the public?

The first question when working in participatory programs is basic, "Who is the public?" The public is not monolithic, the public are not homogenous. It is important that participatory processes are truly democratic and are not dominated by special interest groups or existing leadership within a community. People of different socio-economic status, culture and gender must be included in the decision making process. All key stakeholders should be invited to participate, the water supply owners, users, businesses, industry, recreation, hydroelectric, and conservation interests.

Groups previously excluded from decision and policy making need to be brought into the process. Outreach through existing networks such as teachers, religious groups, social workers, agricultural extension agents, health promoters, women's groups can help to reach people who are not ordinarily part of a community's leadership. Outreach workers/community mobilizers can meet people where they live and work Informal meetings build a social relationship, increase people's comfort level and help to ensure that all members of the community are included.

6 Strategies to foster community participation

The first thing required to make the shift to participatory management is political will. Policy makers need to change their role from top-down decision makers and increase their skills in facilitation and networking. Three important aspects of the decision making process are that it:

* be completely open,
* include the interests of all stakeholders, and
* be detached from political parties, as partisan politics undermine public participation.

Governments and NGOs also provide technical support, resources for implementation and operation and maintenance.

This change will require a restructuring of existing institutions to build more and better mechanisms for listening to and consulting with various stakeholders before policies are adopted or reformed. These stakeholders must be included in all phases through:

* planning,
* policy making,
* project design and
* implementation.

Government, business and the public must act as partners formulating policy together, while citizens groups define the problems, formulate solutions and action plans and help implement activities. The overall goal is that citizens groups develop the capacity to deliver services with the aid of the government. Resources should be channeled directly through participatory organizations.

One of the pitfalls of any organization is bureaucratization. Government agencies, consultants, NGOs and grassroots organizations should be spending their resources on their work, not on high salaries, cars, fancy offices etc. Agencies must be accountable on all levels, local, regional and national. NGOs and the government must not promote factualism and inequity, but increase the capacity and democratization of communities.

There are a variety of structures that can be implemented to make a process participatory. The most important is to make the process flexible enough to allow the councils to balance the different interests and needs that come from multiple use of a limited resource and to resolve conflicts. In participatory management the government needs to make the role of the public clear in order to foster trust. Since public participation can range from voicing an opinion to making decisions the people need to know:

* Why is the government body soliciting input and
* How will they use it?
* Is the body advisory only? or
* Does it have decision-making capability?

Several structures that have been used to foster community input include the:

River Basin Council:
A river basin council conducts comprehensive, basin-wide planning and management. The basin council must have legal standing and policies to address cost sharing, water transfers, water quality and quantity issues, and interjurisdictional conflicts. In addition to planning, councils can provide technical assistance,

operation and maintenance for smaller projects and rehabilitation of existing projects. A good committee structure facilitates accurate information flow and ensures that all stakeholders are involved. Examples of committees from the United States/Canadian Lake Champlain Basin Committee are: Managing nonpoint source pollution, Preventing pollution from toxic substances, Reducing nutrient loading, Protecting human health, Managing fish and wildlife, Protecting wetlands, Managing non-native nuisance aquatic plants and animals; Managing recreation, and developing an action plan for educating the public.

Citizen's Advisory Board:
Non-partisan citizens advisory boards are appointed by governor (or equivalent) but serve a longer term than the political party Citizens boards included academics, NGOs, business and labor. Citizens advisory boards report to legislature and make recommendations that can be turned into policy. Citizens advisory boards deal with conflicts between industry/water quality/recreation/hydroelectric interests.

Water Resources Board (WRB)
Independent citizen boards make public policy decisions. They are not partisan, Their decisions are legally binding, and if challenged, the challenger has the burden of proof. Water resources boards must conduct all deliberations in public. In addition, the board must do active outreach to provoke public comment (mailing lists, newspapers, radio...). The challenges associated with citizen boards are that they require complicated legal understanding and demand extra effort from the volunteer board. It is often helpful to ensure effective functioning that the board have at least one legal, and one technical person on staff. This is not necessarily to make legal or technical decisions, but to help clarify confusing issues.

Other structures to involve the public include governing and advisory boards, steering committees, consultation forums and public audiences

No matter what the structure it is imperative that any decision-making body has regulatory and legal authority. A citizens board must have legal existence and legal jurisdiction to be effective. They must build public trust by actively investigating citizens environment complaints and prosecute as needed. The board acts as a regulatory body to back up citizens and enforce decisions. This is another important reason for a board to remain as an independent body and not be influenced by politics or money powers.

Federal Laws

Participatory structures must operate under progressive federal laws designed to protect the environment. Federal governments must institute and enforce regulatory requirements, retain oversight, and provide consultative services in technical areas such as conducting Environmental Impact Assessments and Comparative Risk Assessments. However, the federal governments role should involve a clear transfer of legal authority to communities. Examples of national laws to facilitate community watershed management include:

* Make multi nationals responsible to conform to laws of parent country's Environmental Protection Agencies

* Regulations on Point source pollution:
  required control of point pollution sources from industry with enforced fines
  cost sharing to implement wastewater treatment for domestic waste

* Regulations on Non-point pollution:
  vegetative buffer zones, set-back zones
  no-spray zones

best management practices for farms, woodlots, chemical and petroleum storage, hazardous waste storage, developed areas, sanitation practices, construction sites, mining, sand and gravel, resource extraction

* Required Wellhead protection planning in recharge areas for public water supplies

* Ban importation or international transport of hazardous materials and implement a public education campaign on hazardous waste

* Setting Drinking and recreational water quality standards.

These national laws can be linked to participatory programs such as a pipe-watchers program that teaches citizens to identify point pollution sources. Education, communication and pride help national laws to be enforced. Regional organizations can help provide needed support to local groups so that there is a clear chain of communication and enforcement between local, regional and national organizations. The presence of the national laws gives the community groups the necessary legal authority to deal with major water quality problems.

7 Nuts and Bolts: How to Implement Participatory Programs

Community participation is a buzzword. Everyone talks about it, but how is it actually done? Each community calls for a different approach. There are no magic formulas as every country and community is different. Some things are universal though. It is important to promote a:

* Sense of ownership/empowerment
* Sense of community (or family, region, nation)
* Sense of identity and pride
* Sense of accomplishment

It is important to get people involved in specific activities that help to identify problems, potential problems, prioritize the problems and take action to resolve them. The primary responsibilities of participatory organizations is to gather information that is factual and sound, incorporate views of all involved parties and identify opportunities to make participation work. This work requires training of community mobilizers/outreach workers in practical methods to conduct a resource inventory, make a plan of action and implement changes.

Biological and Physical Surveys

Two programs that provide accurate and widespread information and don't require any specific expertise are biological and physical monitoring. The United States Environmental Protection Agency uses rapid bioassessment protocols to identify water quality problems NGOs such as Step by Step have been training people from Latin America and the Caribbean in using biological and physical indicators as a preliminary assessment of water quality and eco-system health.

Biological monitoring uses bottom-dwelling insects in rivers as indicators of the health of the ecosystem. Studies in population and diversity on the order level are easily carried out with minimal training.

Physical surveys of land use and environmental conditions in a water body provide valuable data to help assess changes to an ecosystem. Physical surveys can be combined with community interviews to determine how the ecosystem has changed over people's memory. *Are there more or less fish? larger or*

smaller? is the lake greener or more polluted, smelly?.... etc Physical surveys done by community members are much more accurate than those done by outside "experts". The people who live in the community know detail such as, *what was planted where, what pesticides are used, how a farm is managed, what crops are grown, what changes have occurred in the fertility of the soil? slope, soil, distance to surface water, has the well dried up seasonally? less or more often than in the past?* etc. The information provided in these physical surveys relies on tapping into peoples existing knowledge and intimacy with their watershed. The biggest advantage is that as the information becomes organized, it helps people to prioritize and resolve problems. Community participation has the incredible advantages of being able to provide reliable data from a vast area.

Both biological and physical surveys use technology that is easy to disseminate, therefore extension costs are low. This is in sharp contrast to chemical analysis which are expensive, require trained technicians, good lab equipment and analysis of the right parameter at the right time. For example, analysis for pesticide requires knowledge of the pesticide and grabbing a water sample at exactly the right time after application and after a rain. Biological surveys on the other hand provide a picture of what are the contaminants actual effect on life. If there was a pesticide wash down the river the effects would be visible in reduced diversity and reduced populations of aquatic life.

As much as possible the results obtained should be quantifiable, for monitoring status and trends. Creating indexes for summarizing multiple parameters is one approach. It is desirable to maximize data comparability, measure the same parameters, and conduct quality control analysis. Community monitoring efforts can be linked with trained technicians at universities nationally and internationally. Central groups can help to summarize the data and provide feedback to the communities in the form of data summaries, newsletters, technique updates etc. (Rathbun)

A thorough inventory of the watershed using biological and physical surveys help communities to rank potential risks and decide which areas are critical and how to prioritize expenditures of money and time.

Participatory Rural Appraisal and Comparative Risk Assessment

One of the most commonly used participatory methods is Participatory Rural Appraisal (PRA). PRA and other community planning methodologies can be used to build local capacity. PRAs can be either broadly focused or issue focused. It is better to start with a broad appraisal of the concerns and problems in the community. This is important because it is important to know where water resource problems lie in the bigger picture. Participatory methodologies can be focused to concentrate on watershed issues. Participatory Rural Appraisal :

* Is Community driven
* Is affordable
* Provides technical support to address important needs
* Enables communities to get information while retaining control over resources and activities
* Improves peoples capacities to analyze information,
* Builds support for decisions on project planning and implementation,
* Relies on local organizations, knowledge and capabilities and therefore result in proposals and actions that the communities can carry out given external resources.

Comparative Risk Analysis (CRA) is a methodology that is just being adopted to a more rapid participatory framework. In the past CRA has relied on experts gathering data to help assess risks. Instead biological and physical surveys completed by the community can provide the information previously provided by experts. Using a participatory process means that people will have a stake in the

outcome and that the risks identified will be the risks the people in the community have identified and are more likely to put time and energy into changing. As an extreme example, an expert might find that ozone is a major problem facing a community, but the community indicates that limited water supply and degraded water quality are more important to it. The community might be more willing to put energy into reforestation of the watershed, implementing conservation programs, conducting a leak detection program etc, rather than battling the production of chloroflourocarbons.

Urban Areas

Urban areas face a different and more difficult challenge than rural areas. In urban areas, and areas with changing populations people tend to be disconnected from their watershed. Populations are diverse, there are many conflicting interests and it may be hard to mobilize the population. Water supply, waste water, flood zones and degraded water quality are daily issues for people living in peri-urban areas. Good planning, like in Curitiba Brazil, combined with education and programs like "garbage that is not garbage" can provide a rapid change in how urban people relate to their watershed. Environmental and economic problems are inseparable and participatory management can help solve some of them, or at least give people the chance to try.

The challenge is to develop and foster the understanding that "urban watershed" and "healthy ecosystem" are not mutually exclusive. Education is critical to help people understand there is a stream nearby Programs can help to involve people in their watershed. Examples are: naming streams, celebrating water, addressing local issues, monitoring trash dumps, storm flows, industrial sites, construction areas for erosion, point pollution sources, illegal dumping, conducting biological indicator monitoring, promote community green space, flood control zoning, community gardening, re-vegetation along rivers, coliform testing, and school education "paired watershed projects" .

A New System, Citizens Monitoring Networks

So how does PRA, CRA, biological and physical monitoring and community involvement in planning, problem identification and implementation get turned into something that is reproducible and enforceable on the local, regional and national levels. The most reproducible techniques use basic low cost appropriate technology and provide training for trainers who are involved on the community level.

Regulatory bodies in the United States while well-developed, are often unable to address the huge number of environmental. problems. They have to prioritize which one of several bad problems should be dealt with first. In the United States there is high interest in volunteer monitoring. The problem with volunteer monitoring is that the bodies have no legal or decision making power to help implement changes. Community participation and monitoring which is part of a larger policy-making, legally constituted decision making body can help to avoid some of these problems. Management bodies that operate in a participatory manner yet have legal jurisdiction and work on local, regional and national levels might be termed Citizens Monitoring Networks

Citizens Monitoring Networks (CMN) are part of an integrated approach to watershed management. CMN are part of a circle of communication/information/action between the bottom-up approach and the top-down approach. CMNs do not have to rely on the creation of a new structure. They can build on existing structures and culturally appropriate management methods. Briefly, CMN have several advantages:

*CMN rely on trainers/mobilizers in each community; teachers, religious leaders, health promoters, agricultural extension agents, social workers, students etc. to teach simple low-cost techniques to do environmental monitoring on the community level

* CMN are local, people are intimately aware of what is happening in their neighborhood They are great resources for regulators and policy makers. (if they exist), and communities to assess current and potential problems.

* CMN enable the completion of a link between any policy or regulation that is in place and allow citizens to provide information that help the policy makers/regulators to enforce protection and sustainable management of natural resources.

* CMN incorporate community participation/education around the environment, as well as providing a community with skills to do something about their knowledge of existing problems and potential risks.

* CMN provide a forum for communities to communicate.

* CMN are a grassroots, "bottom-up" organizing approach to dealing with complex environmental problems.

* The focus of CMN is watershed management. Watershed management transcends partisan politics and requires cooperation among many different users.

CMNs incorporate many aspects of participatory planning. They are non-partisan, promote responsible communication between local regional and national levels. They provide communities with the legal authority to implement needed changes. They are cheaper to establish in the long run than centralized regulatory bodies. They reduce the burden on legislatures and regulators and provide widespread, accurate and reliable data to legislators.

8 Implementation

So, with all these good ideas for monitoring, networking, citizens boards, how do identified issues and selected solutions get implemented? Participatory processes includes not only assesssing and identifying problemsand their causes , but taking action to resolve those problems. Organizing help is needed to help citizens to prioritize problems and develop an action plan. There are three main approaches to developing an action plan, they are.

> **single purpose**, few actions, involves specific interests, resources and issues, addresses specific need.
>
> **multi-purpose** several actions, multiple focus, river corridor management, involves various interests, resources and issues works simultaneously to meet several needs;
>
> **comprehensive** approach, many actions, broad focus, watershed management, involves all interests, resources and issues, satisfy numerous needs while utilizing a long-range planning philosophy.

These approaches can be used at different times. For example, the single purpose approach can help a group to establish a track record of success and raise their confidence. This will enable the group to tackle multi-purpose and comprehensive approaches to existing problems.

Problems can be assessed from different perspectives. For example, there might be an

* an **immediate** need to implement household water disinfection to prevent spread of disease,

* a **moderate** need to implement sanitization education in the community and
* a **long-term** need to restore the health of the watershed.

All these approaches are useful at different times. For example, a community might choose an approach based on involving the community in a short-term educational program to break the household contamination cycle and then educate to organize for long-term improvement in human and environmental health. The media, TV, newspapers and radio are critical tools for organizing a community and spreading the word. Other methods to educate the community are special events such as watershed festivals, river clean-up days, as well as speakers, meetings and hearings,

Community meetings, brainstorming sessions and surveys can help take the pulse of a community. Questions such as the following can help groups to focus their decision making process.

* How easy is it to resolve the problem?
* How much time is needed?
* What does it cost to fix?
* Is it possible for the community to pay?
* Does anyone have legal jurisdiction over the problem? Who?
* Is the action aimed at personal, or larger scale changes?
* Who will oppose you?
* Who won't listen?
* Who will support you?
* How do we talk to people?

Planning needs to be grounded in the realities of the community. Focus questions such as the following can help a community determine if the plan is "do-able".

* Is the solution more expensive than we can afford?
* Are economic, social, ecological or health related affects of failing to invest acceptable?
* Do we have the technical skills?
* Is this too complicated for community to administer?
* What resources are available?
* How do we build group decision-making skills?

Financing

Funding should be available for community groups to:

-Apply for technical assistance for watershed management
-Establish a watershed management structure
-Carry out the watershed management process
-Conduct education and outreach activities to all stakeholders, using media, public meetings ....etc.
-Conduct inventory of existing resources, problems and causes of problems
-Skills development, including facilitation, strategic planning to implement Action plan

A national funding strategy can be coupled with matching funds and in-kind support from businesses, municipalities, citizens committees, corporate and nonprofit foundations and schools

What might go wrong? What might go wrong? What might go wong?

Every solution creates a problem. If you can anticipate the problems caused by the proposed solution, than this can be dealt with in advance. Provision to reevaluate should be made early on in the process. For example, a coastal community might decide that it needs a new water supply because the old water supply is insufficient. A new well might be developed, but the community may continue to use so much water that the source is depleted and the water quality deteriorates as salt water begins to penetrate into the freshwater aquifer. Planning for the future might involve 1) developing a new well and roof collection systems for water, 2) implementing household and community water conservation practices, 3) re-using grey water and assessing who uses the most water, and making changes made to develop, for example, a different irrigation system for agriculture, industrial re-use, household grey water re-use, 4) artificial recharge of the aquifer using greywater after primary and secondary treatment, and 5) reforestation for long-term. protection of the aquifer

Evaluation needs to be built into every action plan. Planning in a living environment like a river basin means that attention needs to be paid to what is really happening, and not what we expect to happen. Reality has a way of surprising us. The best laid plans often don't turn out as we expect.

9 Conclusion:

Participatory management sounds like something a used car salesperson might want to sell you Participatory actions are sustainable economically and environmentally. They are more cost-effective in the long run, more effective, provide reliable data, and are more sustainable than top-down centralized decision making. There are initial costs up-front in training, outreach and education, but compared to the long-term consequences of a degraded resource base, setting up a participatory framework is affordable. Community participation involves a collaborative approach. Communities organizations have legal authority and gain enforcement capabilities from working together with national governments that maintain oversight, regulatory and consultative roles. It helps to start a participatory process with carefully selecting an excited, motivated community/watershed with clear interest in resolving a problem Successful implementation of a participatory project can make a government look good. Legally empowered community organizations collaborating with regional and national governments creates a win-win situation. Existing political and moneyed power structures need a new paradigm to shift their emphasis and training from top-down decision making to truly sustainable development.

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