Water for Life

EXTENDED BACKGROUND PAPER:

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Introduction

Water – a vital resource at risk

At first glance there appears to be a surfeit of water on earth. And in fact, the greater part of the earth's surface is comprised of water. But 97.5 % of the total of 1.4 billion km3 of water is sea or brackish water. The remainder, freshwater, is bound-up in ice and glaciers or stored in ground water, of which only a very small proportion (0.014 %) can be utilised as drinking water or for irrigation. In situations where water is in short supply, conflicting interests seem inevitable. These conflicts may occur between individuals or user groups who require water either for drinking, or for agricultural or industrial purposes. On one side population growth and urbanisation are *increasing the demand*, on the other contamination through pollution by industrial and domestic effluents is *reducing the supply*. At present only around 5% of waste waters world-wide are treated.

In many countries, legislation and water policy are designed, as if water were available in abundance and there is no legal institutional framework for integrated water management which takes adequate account of ecological sustainability. Another problem is that the water users are often involved in the planning process either too late or not at all. The social, ecological and economic dimensions of sustainable development are all crucial for the future. These dimensions are integral components of the United Nations Development Programme (UNDP) concept of "global human security". Water plays a key role in this context.

Water between Rio and Johannesburg

The "Earth Summit" 1992 in Rio is known as the world largest gathering on environmental issues. It reflected the growing recognition that co-operative global action on a number of key issues is essential. In December 2000 the United Nations General Assembly decided to host a new "World Summit on Sustainable Development" in 2002 in Johannesburg. 10 years after Rio heads of state and government officials from all over the world will meet to identify the accomplishments and areas where further efforts are needed to implement Agenda 21, the most important document produced in Rio. One of these areas, laid down in Chapter 18 of the Agenda, deals with the "protection of the quality and supply of fresh water resources" (United Nations 1992).[1]

The implementation of Chapter 18 is not directly governed by an international convention, but left to the Subcommittee on Water of the Agency Co-ordination Committee of the UN in which as much as 23 UN Agencies are represented. This fragmentation on water management parallels the sectoral approach to water in many countries and can be seen as the main cause for the lack of an integrated water resource management in national policies. Looking from today the impact of Chapter 18 appears to have been minimal and the implementation of its objectives less than satisfactory (Rijsberman 2001). The UN Commission on Sustainable Development in 1998 therefore called for increased efforts towards a better implementation of the Agenda (UN-CSD 1998).

Part of these efforts was the Second World Water Forum in The Hague in March 2000, one of the most diverse and potentially influential water–related meetings of recent times, hosting more than

[1] The first UN conference entirely dedicated to water was in Mar Del Plata in 1977. It already stressed the importance of integrated water management and a river basin approach. Water was not a prominent issue for the Brundtland report "Our common future". The UN-Conference on Water and Environment in 1992 in Dublin established four principles: (1) fresh water is a finite and vulnerable resource, (2) water development and management should be participatory; (3) women should play a central role in all water related development issues; and (4) water should be recognized as an economic good.

5000 people from across the globe. The forum introduced the concept of 'water security' as the central goal for future action and this term captures the complex concept of holistic water management and the balance between protection and resource use. It ended with a Ministerial Declaration which addressed seven key challenges in achieving water security.[2]

Another step is the "International Conference on Freshwater" with the theme "Water – A Key to Sustainable Development", hosted by the German Government[3] in co-operation with the United Nations in December 2001 in Bonn and serving as a preparatory step for the 2002 World Summit on Sustainable Development in Johannesburg. The aims of the conference are to review the progress achieved in the implementation of freshwater related objectives set out in the Agenda 21 and to identify remaining obstacles, and define necessary actions that contribute to fulfilling of the United Nations Millenium Declaration.[4] The intention is to concentrate on good practices and implementation. Therefore governmental and non-governmental stake holders from North and South will be involved.

Valuing NGO experience and participation – The Goals of the "Water for Life" Conference

Immense knowledge and field experience on providing water for the poor in a rural context is held by South Asian NGOs. The Karl Kübel Stiftung für Kind und Familie (KKS) and the German Federal Ministry of Economic Co-operation and Development (BMZ) therefore wish to provide a platform for those NGOs to share these experiences and formulate policy recommendations that may contribute to the international conference on freshwater in Bonn. Looking at the ongoing discussion on better freshwater management two observations can be made that also will lead the conference:

- The focus is shifting from developing new water sources to using existing water sources more efficiently
- There is sufficient water for all everywhere - if we only manage it properly

The first insight demands for better protection of water sources from household to state level, the second for better strategies in "good governance", integrated water management and stakeholder participation.

To confine the range of possible targets, the focus of the conference will be on local, rural and NGO-centred examples. We will therefore exclude other more aggregated topics, namely the urban context, big dams, transnational conflicts, environmental disasters and global warming. With our conference we would like to offer concrete practical hands-on experiences, give examples of good practice in South Asia, discuss controversial water topics within a regional context and look for solutions that work at one place but at the same time can serve as a model which inspires solutions at other places. In order to transfer and integrate the ideas and recommendations into the Rio + 10 context some representatives of the Coimbatore conference will take part in the deliberations of the freshwater conference in Bonn.

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[2] Namely 'meeting basic needs', 'securing the food supply', 'protecting ecosystems', 'sharing water resources', 'managing risks', 'valuing water', and 'governing water wisely'.

[3] Germany, besides Japan is the second largest donor of Official Development Assistance (ODA) in the water sector (443 Mio. US $ in 1997, cf. BMZ spezial, Nr. 9: 20).

[4] In its Millennium Declaration, the United Nations General Assembly pledged that by 2015 the number of people unable to reach or afford safe drinking water would be halved. It went on to declare that unsustainable exploitation of water resources would be stopped by developing water management strategies at regional, national and local levels. These strategies would promote both equitable access and adequate supplies . http://www.un.org/millennium/declaration/ares552e.htm.

The regional Context: Water in India

In the summer of 2000 several states in Western India witnessed a severe drought. Most of the dams and reservoirs in the region dried up. In some districts half of the population got water only once in a week. The government was trying to deal with the problem by providing water through tankers and by deepening existing borewells. Was this a 'natural disaster' or was it human-made? India is one of the most well-endowed nations in the world in terms of average annual rainfall. But the rainfall varies from 100 mm in the desert of Western India to 15,000 mm in the hills of the Northeast. Nearly 12 per cent of the country receives an average rainfall of less than 610 mm per annum while 8 per cent receives more than 2,500 mm. More than 50 per cent of this rain falls in about 15 days and less than 100 hours out of a total of 8,760 hours in a year.

150 years ago no government anywhere in India provided water. But since colonial times communities and households have steadily given over their water management responsibility to the state and given up the simple technology of using rainwater in favour of exploitation of rivers and groundwater through dams and tubewells. The government till the mid 1990's has invested heavily on large-scale irrigation and drinking water supply programmes. With 17 million tubewells and borewells energised by diesel and electricity, groundwater is now used to irrigate more than half of the country's irrigated area. As a result groundwater tables are falling all over the country. Considering the fact that over 90 per cent of rural Indians depend on groundwater for drinking purposes, this poses serious problems.

As an official programme watershed development in India is over three decades old. It has undergone periodic reviews. Under the new guidelines since 1994 as many as 10,000 watershed projects under Drought Prone Areas Programme (DPAP) have been launched in the country. Although there is no systematic evaluation, the programme in its whole seems to yield positive results. But the number of problem villages keeps growing. Agarwal, director of the renowned Centre for Science and Environment (CSE) in Delhi resumed in 1997: "Obviously, the money pumped in and the methods used were unsustainable. Corruption, lack of people's interest in maintaining government schemes, land degradation leading to heavy runoff, heavy groundwater exploitation leading to lowering of groundwater tables, neglect of traditional water harvesting systems and growing pollution, are all adding to the problem". The government has reacted meanwhile. It hopes to steadily replace a government-oriented programme by a people-oriented, decentralised and demand-driven rural water supply programme, and a fifth of the budget of Rs 1960 crore will be given for community-based programmes, so that villagers have a decisive role (Agarwal 1997a:xxii).

Central topics at the conference

Participation of Stakeholders

Hosting governmental and non-governmental organisations from the North (Germany) and from the South (South Asia) this conference sees at least four major stakeholders with common as different roles and interests. To be able to communicate successfully with each other it seems appropriate that stakeholders also share the differing interests and roles and negotiate these before and during projects and programmes. The Southern countries for example are not satisfied with the refusal or inability of the Northern governments to commit themselves to a reform of international economic relations or to changes in lifestyles as part of the move towards sustainable consumption patterns. NGO's from the North and NGO'S from the South have common interests as shown in the KKS-Coimbatore confer-

ence in March this year, but they also may differ in others. We want to sensitise participants for this fact during our conference.
But stakeholder participation in water management also has a national dimension, where the role of government, civil society, NGO's and private business have to be negotiated and balanced. In water management there is a need for a redefinition of roles for stakeholders: It means the empowerment of the communities to manage their own affairs with the state, with NGO's playing a supportive role and civil society playing a critical role in encouraging equity and sustainability in the use of water.
The government should protect common pool resources from destruction or pollution against particular interests; it should overcome fragmentation between branches of government which manage water issues and decentralise the programme administration. It should make sure that water and sanitation utilities are run by institutions (whether public, mixed, private or non-profit) that best serve the public - and particular the poor – and at the same time conserve ecosystems.
It is also recommended that Civil Society and NGO's should raise awareness on the complexities of water management and give a voice to those not fully represented in formal participation arrangements. The building of water user associations and water parliaments are only two viable instruments here. In so called "water clubs" a public debate on urgently needed water reforms can be fostered within the civil society.
Where private business comes in, it is suggested that they should recognise a co-responsibility for the common good "water". It should accept that the ownership of assets carries social obligations resulting in long term investment and commitment and the transfer of innovative water management practices to local needs. Whenever possible local companies down to small scale providers should be preferred to international companies like Vivendi and Suez Lyonnaise des Eaux, who are already busy in more than 100 countries of the earth.
→ *competing water uses*

Poverty alleviation through integrated approaches

As the expression suggests, integrated water management is understood to mean the survey, planning, development, distribution, quality monitoring and protection of water resources in a comprehensive sense. Water is not a matter of separate individuals any more. Each separate water use may by itself not have a noticeable impact, but as the number of such water use intensifies, the overall impact on water resources and other water users is significant. Therefore all water uses in the various sectors – agriculture, households, industry, nature – that influence the water cycle need to be taken into account. This means, that an integrated view of land and water use is needed. Water matters can also cut across administrative and even national boundaries, which should not be a hindrance to stop treating water problems.
For taking into account different sectors a deeper knowledge and understanding of a region's needs is necessary. But also the local people have to develop knowledge about the importance of water in different sectors. It is imperative, that people understand the time dimension of water projects. Increasing water availability, e.g. by rainwater harvesting methods, it will soon lead to an improved agricultural production. During the following years the production will be stabilised and new areas will be used as farm land. Because of the increased grass productions there will be more animals. Within the years more high value crops and more dairy products will be available. A market will develop, and as the forest will grow faster as well, it will provide material for crafts etc.. But it takes maybe 10 to 15 years to reach the aim of ecological regeneration and poverty alleviation. Waiting so long can be hard: Vil-

lage people might soon be disappointed waiting for rapid changes to come. Without the support of local people a project is doomed to failure, especially, because few organisations can sustain their efforts over such a long time. Information, communication and motivation by the organisation's people are needed. Often it is useful to organise local water committees, so that the village people really feel involved and consider the project as their own business.

→ *all special topics*

Competing Water Uses and Pollution

Growing cities, burgeoning industries, and rising use of chemicals in agriculture all have undermined the quality of rivers, lakes, and aquifers. Groundwater the preferred source of drinking water for most people in the world is steadily going to be polluted through industrial activities, and, over longer periods of time through the use of fertilisers, pesticides, and herbicides in agriculture. One of the most urgent water issues in the last years was the lack of access to safe drinking water at affordable rates. Millions per year die of water born diseases like diarrhea, because they cannot afford to pay for clean water. Water pollution has a negative impact on ecosystems, fisheries, food production, health, social development and economic growth. Some of the world's largest rivers do not reach the sea due to increasing water consumption that depletes the rivers of their reserves. The most well known example of this kind may be the Aral Sea, but also rivers like the Indus suffer from periodical parching.

Stakeholders in the agricultural sector often see a competition for water between agriculture and the domestic and industrial water supply of the growing urban areas. But the volumes of water required for urban areas in developing countries still is relatively small compared to those required for agriculture. On average, over 85 percent of the total water supply in the developing countries is diverted to the agriculture sector. In the South Asian region this figure increases to 96 percent.

Having the hunger and population growth in mind, agriculturalists see the only way to reduce hunger in increasing the allocation of water to irrigated agriculture. Environmentalists, concentrated on sustainable management of natural resources and maintenance of ecosystem biodiversity hold, that the only way to balance people's and environment's needs is to reduce the allocation to agriculture. The competition is only one of time scale: Investing more in available water for agriculture feeds people but may pollute their environment in the long run. Investing in ecosystems secures the environment but is no strategy to feed the growing population here and now, which according to the UN medium projection will increase at about 38 % in the next 25 years. So there is an urgent need that agriculturalists and environmentalists sit together to develop a co-management for agriculture and nature..

The challenge is to shift from managing water to meeting one need to managing water resources meeting several needs. To take a basin (watershed) perspective allows to look at the importance of upstream-downstream issues. Both suppliers and users of water need to be involved for effective planning, implementation, regulation, and other water management functions.

→ *pay for water;* → *capacity building*

Paying for Water?: Water as a gift of Nature versus an economic good

Money is needed to keep and extend systems, that provide people with clean water. This money could be taken from a water tax every consumer has to pay. If water is a good that has to be paid for, the awareness of using and wasting water might change and people will be encouraged to be careful with water. On the other hand, people who do not have enough money or who do not want to spend it on water, will try to use gratis water from ponds or rivers, that are often seriously polluted. In the admini-

stration of the local taxes it can easily get to problems, if it is not transparent enough, or if there arise dependencies.
The easiest way would be, that everyone in the village has to pay the same amount for his or her water use. But this does not take into consideration different financial situations and different water uses. There is no incentive to spend less water; the same would hold if the tax depends on the person's financial situation. If the tax depends on the amount of spent water, more techniques, e.g. water meters, are needed, anyway this is only possible if every family has its own water tap. People might try to save water where it is really needed, e.g. in hygiene, where it can prevent diseases, or on the fields, where plants need water. Water taxes can also have deep impact on social structures: In some rural areas women meet at a village well or at a river to wash their cloth and to chat. This would not be possible anymore. Probably there would also be a vivid discussion about human rights: Is water just like air a fundamental right nobody should have to pay for? Or is it like food a fundamental, but not gratis need for life? This discussion can even lead to religious questions: Is water a gift of god? Can people put taxes on such a gift? Who owns nature?
Other ideas about water taxes leave poor people out: Only money-making and pollution causing factories would have to pay. If the amount of taxes depends on the caused pollution, this system will encourage factories to have modern filters. Some people think, that the demand for new technology will also increase research in this sector. For ordinary village people this would have significance, if rivers and ponds get cleaner and if a bit of the money taken in is to be spent for water programmes in villages.
In many countries the water sector, a former governmental domain, is getting liberalised. There are different forms of public-private-partnerships: In a "service contract" a private concern will take over only a part of the water management, while in a "divestiture" the whole water business is sold to a private concern, the so called "English model", where the government only kept the basic control over the new water firms. In France, the plants are still owned by communities, but private concerns can rent them. Both the English and the French models are criticised: The government should not leave too much control over such an important good as water in the hands of private, money-making concerns. In Germany there are water trusts with autonomous constitution, but with an intensive contact to local decision-makers, so that the advantages of private economy and the communal responsibility are combined. This model now is being discussed about its use in other countries.
→ *competing water uses;* → *disseminating*

Technologies: Old versus new

Technology transfer is certainly an important field in helping other countries with environmental problems. But old, traditional techniques, developed over hundreds of years, nicely adopted to the environmental and social surroundings, get easily forgotten and lost. And what is the use of good technology, if none of the local persons can handle and repair it? In this case technology creates new dependencies, development co-operation would miss the aim of being help for self-help.
Instead of this, many traditional techniques would be worth to be strengthened or reanimated: Indian examples of ancient techniques that were successfully revived are the treadle pump and the method of rainwater harvesting. Rainwater harvesting has an age-old tradition in some regions of India. Kundis (water tanks) are probably the most logical traditional water harvesting systems designed for harvesting drinking water. A kundi consists of a circular catchment area sloping towards the centrally located storage structure. "The quality of water from a kundi is good and if maintained properly, no serious

water contamination occurs. Maintenance is easy: the kundis are desilted and cleaned periodically before the onset of monsoon. The drawing of water is easy and time-saving" (Bisht in CSE, S.69). Sometimes it is necessary to alter old techniques, so that they can adopt to new circumstances, or just to optimise them: To construct the catchment area of a kundi, local materials such as silt, clay, lime, ash and gravel are traditionally used. But they do not create a completely impermeable layer. "As a result, a substantial part of rainwater is lost due to uncontrolled seepage." Today, water-based non-toxid polymer solutions permeate the highly porous sandy soils to increase runoff into kundis. Using also water-repelling chemicals results in even better runoff. From the financial point of view the combination of old method and new optimisation is also profitable: "The cost of polymer treatment is about one quarter of the traditional catchment construction cost" (Bisht in CSE, S.69). Such "wise techniques" can help to close the ideological gap between supporters of scientific and local knowledge.

People in project areas often have very different opinions about old and new techniques: Some might feel proud, that development organisations take their old knowledge seriously, others might think that it is unfair to exclude development regions from new western technology, in which they have more confidence. Sharing knowledge about experiences from the past makes it easier to devise strategies for the future. It also helps stakeholders to play their roles more effectively and to create the collective commitment to face the challenges of the coming decades.

→ *local water wisdom*

Special topics for working groups

Capacity building and conflict resolution

Just providing money is an easy task, but building an effective structure which starts off a process of self-management in village communities is much more difficult. Therefore support for people must run through different levels: Organisation and technical implementation require hard skills; management and human resource development mainly need soft skills. Water matters can unite a community as easily as they can divide it. Therefore a strong social process has to precede the project implementation to build what economists call the "social capital". This starts with creating awareness of water problems and confidence to the project's workers. Once this is achieved, people should together decide on creating local water institutions, conducted by which they will decided where, when and how new water systems should be built, how much the villagers will contribute to the project and how its benefits, that is, water, will be shared amongst the villagers. Every part of the community should be involved in this process – from the landed to the landless and women's groups.

Sometimes it might be necessary to set one's sight even on a smaller unit than the whole community: The household centred approach starts with single households. Project workers try to create problem sensitivity and to help solving problems on this level before moving to the community level.

A village community is often not as homogenous as the metaphor of the holy cow suggests. There may be conflicting interests: Farmers want easy access to enough water, other families want a well to be-close to their houses rather than close to the fields. Farmers may want to use chemicals, that on the other hand negatively influence the quality of the groundwater. Men may not like to see women having central positions in local committees etc. There are solutions that work on the level of single families, e.g. the use of rainwater. Bigger projects like building big rainwater harvesting plants need to be

discussed on community level. With the organisation of local committees other problems like new dependencies and corruption might arise. To prevent this, there should be a transparent organisation with democratic control. Discussion training and basic political education for everybody in the village can be useful.

→ *environment education;* → *gender and water;* → *technologies*

Local water wisdom and beliefs

Generating water wisdom was seen as an important challenge during World water forum in the Hague. Unlike the official definition which emphasised the importance of scientific knowledge, representatives from NGO's stressed the importance of building on local capacity, encouraging and enabling the people to carry out their own research and analysis. To avoid reinventing the wheel one idea is to establish a knowledge bank where water wisdom can be stored so it is easily accessible to everybody.

Before any intended change it is important to ask what people already know, believe and do in terms of water use and hygiene. A survey of 7,900 people in eight states commissioned by the Indian government in 1989 showed that there where huge gaps between what those implementing the programme believed, and what those using water actually did. It also showed alarming gaps in people's knowledge about the link between polluted water and disease. People for example judged purity by how the water looked, smelled and tasted, and whether they thought "it cooked well". Implementors had never heard of this concept.

Participatory methods will be a good way to get into contact with the people and to get to know something about their sorrows and wishes concerning water, as well as something about their traditional methods to collect and distribute it. A nomadic society for example, where all life is determined by cattle will not work to provide as very first priority water for people but for cattle through which human life is seen to be determined. For the sustainability of a project it is important that its ideas do not harm beliefs of the local people. Religious beliefs may not allow to use certain local water resources, medical beliefs or ideas about hygiene may forbid certain water use. In Bangladesh for example to every shrine there belongs a water pond. These ponds build niches for plants and animals who may not be touched. Only in few aspects most stakeholders agree that local traditions should be changed, e.g. in gender or basic human rights aspects.

→ *environment education;* → *gender and water;* → *technologies;* → *capacity building*

Gender and Water

Women around the world have responsibility for fetching water and managing its use. They also have great influence on household hygiene, family health and sanitation. If women are not involved in a project, many things can go wrong: Wells or latrines may be located too far away, or in areas difficult or dangerous for women to access. Pumps may be too hard for women to operate. Women, that have problems with each other, might be expected to share one pump etc..

Participation of women in water supply projects enhances the success and efficiency of such projects. Their involvement lightens their burden through improved design and siting of water collection facilities. In addition to this, their status within the family and community improves when they receive technical training or become members of community committees. Women should be fully involved in the decision making process, they should not be found in poorly paid, low level jobs only.

But also men should be addressed. Having women in the decision making process might be strange for them. Workshops that include discussion training and role changing can help men to understand women's perspective and to appreciate women's daily work.
Development programmes should start with an analysis of the situation in the project area: Who is having responsibility respecting water, men, women or both? Who has knowledge about traditional or new techniques? Who is dealing in which way with water? After this, the design of the programme will be checked: Who is going to benefit from the project? How can women and men be encouraged to take part in the programme and to work together? Having answers for these questions, a special programme concerning the social and environmental situation can be developed to integrate men and women in the project. Sometimes it is useful to start with separate groups, one group for men and one for women. Especially women often have to be trained at first, so that they get to the information level, which men already have reached, and that they are able to plead their cause in front of men.
→ *stakeholders; micro finance; capacity building*

Environment Education

Children are a country's future. They are going to be the mothers and fathers, the workers, the directors and politicians of tomorrow. To make the best out of the future it is important, that children get knowledge about important areas. The first step is an education in environmental aspects at school. Children should not only be taught in understanding the importance of clean water but also in protecting water by themselves. To take better care of their and their families' health they should know the disease risks of dirty water. In dry regions they should learn how to collect water. Also gender aspects will be of importance: Unlike often found traditions children of both sexes should feel responsible for clean, fresh water and an easy access to it. There can be many practical elements in lessons about water: Teachers and children could plant a school garden and learn, which useful plants need how much water. They could visit households and see, in how many ways water is used and wasted.
But education is not only an aspect concerning children. Communication and information should not be forgotten, when dealing with grown-ups. This is not necessarily a top-down-process, although first it has to be checked, if everybody has got some basic information about environmental problems and the need for action. After information is given, people can search together for solutions of the problems. Development helpers might find out, that traditional methods offer realistic chances to get rid of water problems. Modern teaching materials like computer based simulations, games etc. can make the process effective for both sides.
→ *tools*

Micro finance

The wish of all project workers is that a project develops its own dynamic, that local people are willing to continue and to contribute to it. Often there is a lack of money. Giving small loans to local people can stimulate their willingness to become committed to environment dedicated work. Giving people a small loan also has some other important implications: It means that the development workers trust in the local people, that they appreciate their work and that they are open for new strategies local people might want to try out with the money. A loan is not a money gift, so that local people do not feel like receiving alms, but like being respected people working for their money. Going one step further, loans can be administrated by water associations formed by local people, that have the responsibility for the money and that control the paying back.

Loans can be given on family as well as on community level. Before deciding on a loan, many questions have to be discussed: How much money should be given for what plan? How much time do the local people have for paying back the money? Are there going to be interests? Depending on the answers to these questions the scope will vary. Usually it will be important that before receiving the money the people already have a feel for the problems and ideas for their solution. „Once hope springs and confidence grows as a result of the newly regenerated productive environments, people actively seek means and assistance to capitalise on their resources, so as to add value and enhance incomes" (WOTR: Internet). The purpose of micro finance is to support these people, mostly self-help groups, in addition to the provided information also on a financial level, so that they have a good start in continuing the project by themselves.

→ *local knowledge*

Tools

Modern tools include participatory methods but also electronic tools. Computer simulations can arouse the interest of the local population. They can facilitate the process of decision-making by making users aware of the range of technologies available and of the criteria that should be considered during the selection process. Rather than determining a single 'correct' solution, the purpose of computer simulations would be to help users compare alternatives. Computer tools can help to illustrate the discussion process and to show local people how the situation will change to the positive over the years. Tools can cause interest and can be used within the local community as well as to show sponsors what kind of work will be done. On community level people will gain new knowledge about computers that might be useful for other activities as well. Such technical tools should be attracting. If they are too difficult to understand they do not achieve its purpose.

Other tools are designed for project workers only. The internet offers possibilities for workers of different projects within one organisation to easily exchange their experiences. Some experts intend to start a 'water knowledge bank' in the internet, where knowledge about traditional and new techniques should be stored in a way accessible for everybody.

The more village people get skilled to work with computers and the internet, the more they can inform themselves about risks and chances concerning water and about suitable strategies of problem solution, although there will be still a need for having development workers to arrange everything.

But there are also critical aspects concerning computer and internet tools: Having electronics is always a question of money. In many developing countries there is still a great lack of phone connections, to say nothing of internet connections. And if one computer is provided for one village, who will have when access to it and for which purpose? Another problem is that computer simulation programmes as well as the internet offer plenty of distraction and quite some people show the tendency to end up using the computer mainly for games.

→ *poverty alleviation*

Disseminating and Scaling up

How to disseminate good practice beyond pilot projects, and how to implement programs on a larger scale ("scaling up") is one of the major challenges for Rural Water and Sanitation programmes, may these operate on a local, regional or national level. As water users seldom live alone along a stream it is again advisable to take a basin (watershed) perspective and look which other possible users could be

involved upstream and downstream. A recommended step also is, to support communities building linkages with multiplier institutions like local development networks, or Government departments. When performing the maintenance works in a self-help oriented water supply project in Brazil for example, some of the user groups were not able to maintain a non-profit form of organisation over a longer period. So the programme established two special-purpose associations to support the user groups in operation and maintenance of the water supply system. The user groups for this purpose transferred a part of their sovereignty to the associations. The salaries of the staff were financed solely from water charges, so there was a strong incentive for them to ensure continuous water supply. Many neighbouring municipalities have since indicated their interest in joining the associations. These processes would have to be demand-let. Especially on a national level a demand-let rather than a need-for-service strategy, and a "willingness to pay" rather than a "affordability" strategy lead to more sustainable results. This requires that communities make choices about the services they want and for which they are willing to pay. Experiences with farmer-to-farmer extension models, systems simulation modelling and geographical informations systems (GIS) used in agricultural extension and rural development approaches like Regional Rural Development (LRE) and Sustainable Rural Livelihoods (SLA) could also be successfully transferred to watershed issues.

→ *tools*

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The Rain Decided to help us. Participatory Watershed Management in the State of Maharashtra, India. The World Bank, Washington, D.C., 1995

09.) Rao, Hanumantha C.H.
Watershed Development in India. Recent Experiences and Emerging Issues. Economic and Political Weekly. Nov. 2000, 4., 3943-3947.

10.) Rijsberman, Frank R.
Competition for Water between Agriculture and Environment. Incomplete Draft, March 5th, 2001.

11.) **PLA Notes**
PLA Notes 35/1999. London: IIED.

12.) United Nations
Agenda 21 – Chapter 18: Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources, 1992. http://www.un.org/esa/sustdev/agenda21chapter18.htm

Web-Links: Web-pages

WOTR: www.wotr.org

Technical aspects

- http://www.fbr.de
  Information about how to build rainwater plants etc.
  Information about grew water (dirty water without faeces or chemicals, that can be used as industrial water)

- http://www.cgiar.org/iwmi/Tools/default.htm
  Tools: Water Accounting; Irrigation Performance Indicators; Policy Dialogue Model; Low-cost remote sensing applications; World Water & Climate Atlas

- http://www.emcentre.com/iwwa/jiwwa/jiwwa_index.htm
  "the journal of IWWA publishes the papers on information gained on the latest techniques developed and experiences gained in the construction, installation, operation, maintenance and management of water and wastewater systems, including development of sources, bulk conveyance and treatment, distribution and disposal systems in India, in both urban and rural sectors and abroad."

- http://sunsite.sut.ac.jp/asia/india/jitnet/india/csir/neeri.html
  Homepage of the National Environmental Engineering Research Institute (India)
  achievements, new technologies ready for transfer, training courses etc.

- http://www.oneworld.org/cse/html/cmp/cmp43.htm
  a traditional technique: "Rainwater Harvesting - Catch water where it falls"

Capacity building on community level

- http://www.thewaterpage.com/capacity_building.htm
  „Capacity building is the process whereby a community equips itself to undertake the necessary functions of governance and service provision in a sustainable fashion. The process of capacity building must be aimed at both increasing access to resources and to changing the power relationships between the parties involved."

- http://www.wsscc.org/wg_community.html
  3 aims:
  - Adoption of a Code of Conduct on community management by the largest possible range of stakeholders;
  - Creation and strengthening of sustainable alternative financing mechanisms at community level
  - Development of indigenous WSS management systems fostering self-reliant and self-help approaches

- http://www.irc.nl/themes/management/index.html
  "Community management builds on long experience of community participation, but goes much further. It puts people in charge of their own water and sanitation systems in a flexible partnership with supporting agencies. It means fresh challenges and opportunities for both communities and agencies, and a new relationship between them."

Education

- http://www.asw.net

example of a project "Green School" in South India, where school buildings are made in a ecologically beneficial way, and where children learn how to use water resources

- http://www.thewaterpage.com
  „education in water“ under construction

- http://www.irc.nl/themes/communication/index.html
  "Changes are needed in the attitudes and behaviour, both of those who make decisions about priorities in expanding coverage, and of the people in the communities"
  → communication, good equipment for all participators, involvement of men and women, participation & advocacy

- http://www.wateraid.org.uk/education/index.html
  "WaterAid is committed to raising awareness of water-related issues among young people. This section provides information on such issues through three main areas: a game for primary school students', a list of resources for teachers and a collection of issue sheets."

- http://www.groundwater.org/KidsCorner/AAC.htm
  American example of children's involvement in groundwater activities
  „The Awesome Aquifer Club (AAC) is a program that encourages students in 4th and 5th grades to learn about groundwater in the classroom throughout the school year. The AAC provides students with the opportunity to become involved in groundwater protection activities within their hometown as well as share lessons learned with other students at the annual Children's Groundwater Festival"; Training for teachers

- http://www.kidthegreat.com/
  „only kids can save India“ - under construction

Gender

- http://www.wsscc.org/vision21/wwf/gender.html
  "Women around the world have prime responsibility for fetching water and managing its use. They also have the greatest influence on household hygiene, family health and attitudes towards sanitation. So it is essential that women be full and active participants in water and sanitation programmes at all stages."
  example: Workshop in Sri Lanka to support co-operation between men and women: "the best moment came when the oldest participant, a retired male school principal between 65-70 years of age, well respected in his town, spoke up: "When I was newly married and my wife was expecting our first child I realised that it was not fair to have her fetching water for household chores; but I dared not do it for her as the well was about 50 yards away from the house and passers-by, my students and their parents would see this and my wife would be blamed for getting her husband to do her job. I regret that I didn't have enough courage to do it. Then, the attitude of the people in his village would have changed." "As he finished," says Ms. Gamage, "he was applauded by all, irrespective of gender." "

- http://www.irc.nl/themes/gender/index.html
  practical proceeding in water projects

- http://www.thewaterpage.com
  Gender under construction

Religious and philosophical ideas about water

- http://www.freeindia.org/bharat_bhakti/page6.htm
  „The Earth with its quality of smell , Water with its quality of taste, Air with its quality of touch, Fire with its quality of teja (glow), Akasa (space) with its quality of sabda (sound) - may all these

elements along with the element of Buddhi (intellect) make my morning auspicious for me!“ Bharat Bhakti, Verse 6

- http://www.hds.harvard.edu/cswr/ecology/hindu.htm
  based on a conference about religions and ecology 1997 at Harvard: timetable, speakers, very short abstracts

- http://www.religionandnature.com/
  page dedicated to the study of the complex relationships between religion, nature, and human cultures

- http://www.oneworld.org/cse/html/extra/twhs.htm
  Dying Wisdom: The rise, fall and potential of India's traditional water harvesting systems
  „Dying Wisdom argues for a revival of local water harvesting systems. A revival that is not an archaic return to the past.“

- http://www.crosscurrents.org/islamecology.htm
  information about Islam and ecology

Global/ basic context

- http://www.hfph.mwn.de/archiv/online99/steinitz.shtml
  water resources, quality, sustainable use, water policy

- http://www.water-2001.de
  the Bonn conference

- http://www.johannesburgsummit.org/
  the Johannesburg summit in 2002, regional and national preparations, calendar of events

- http://www.gmh.uni-mannheim.de/forum/
  Information about the background of global water policy, Rio conference

- http://www.worldwaterday.org/thematic/hmnrights.html

Dimensions of the human right to water, ideas for environmental legislation

- http://www.worldwaterday.org/disease/index.html
  Overview of diseases caused by dirty water

Examples of water projects

- http://www.hu-berlin.de/presse/zeitung/00_01/num_3/9.html
  success story of water projects in Andhra Pradesh

- http://www.cgiar.org/iwmi/resprog/PGW/treadle.htm
  „The treadle pump, a manually-operated water pump used to irrigate small plots of land, has the potential to put $1 billion of new revenue directly into the hands of some of the poorest people in the world"; poverty alleviation through the use of the treadle pump

- http://www.asw.net (s. education)

Tools/ Visuals

- http://www.wsscc.org/gesi/sanex.html
  gratis computer program sanex to help the people working in an organisations as well as to explain the plans to the local people

- http://www.worldwaterday.org/photos/index.html
  posters and pictures for download (most of them by WHO or UNICEF)

- http://www.hu-berlin.de/presse/zeitung/00_01/num_3/9.html
  exhibition about two water projects in Andhra Pradesh

- http://www.oneworld.org/cse/html/cmp/cmp611.htm#video
  poster set, video about rainwater harvesting

Lists

- http://www.wsscc.org/interwater/asia.html
  list of InterWATER organisations arranged by region

- http://www.cgiar.org/iwmi/pubs/ IWMI - research outputs for download

United Nations.1992. Agenda 21 – Chapter 18: Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources. http://www.un.org/esa/sustdev/agenda21chapter18.htm

Video List: Water for Life – Selected Videos

The Seventh Video on Community Water Supply Management

http://www.irc.nl/products/publications/idxcom.html
15 minutes; target audience: decisions makers, many interesting issues for everyone concerned with rural water supply

Water Management with a Difference
http://www.irc.nl/products/publications/idxcom.html
25 minutes; target audience: staff working in the water sector, field staff, policy makers, developers of training material and trainers, English subtitles

Our Water, Our Management
target audience: staff working in the water sector, field staff, developers of training material and trainers

Pani-Water
28-minutes; target audience: Staff working in the water sector, field staff, developers of training material and trainers, Nepali with English subtitles

Search for Water-Water is a Basic Human Right
target audience: staff working in the water sector, field staff, developers of training material and trainers

Harvest of Rain
http://www.oneworld.org/cse/html/cmp/cmp611.htm#video 48 minutes
target audiences: staff in water management, English

Water, Land, People, Conflict
(http://www.cdi.org/adm/1143/index.html
29 minutes; target audience: any interested person, politicians

The Nepal Water Project
http://caes.mit.edu/mvp/html/nepal.html

video can be seen as net video (e.g. real player); 5:59 minutes

Village Voices - 40 Jahre ländliche Entwicklung in Südindien
The film focuses on the problem of rural development. It indicates the importance of culturally sensitive development strategies. Published by: IWF (Göttingen) Vertrieb: IWF (Göttingen) Technical Features: Video; F, 60 minutes