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*Managing Water Scarcity: Experiences and Prospects*

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and  
Tel: +31 70 30 689 80  
Fax: +31 70 35 899 64

## 'Scarcity For Whom? Gender and Water Management'

by

Loes Schenk-Sandbergen

LIBRARY IRC  
PO Box 93190, 2509 AD THE HAGUE  
Tel.: +31 70 30 689 80  
Fax: +31 70 35 899 64  
BARCODE: 17410  
LO:

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## SCARCITY FOR WHOM? GENDER AND WATER MANAGEMENT

Loes Schenk-Sandbergen

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In the Tungabhadra scheme women say: "we know the problems of water better than men. We have to transplant rice, to irrigate vegetables, to provide drinking water to our children and cattle. Let us manage the water."

### 1. INTRODUCTION AND RATIONALE

In Indian culture there is a special relation between women and water. That reflects for instance in the fact that prominent rivers in India have women names of female Goddesses as Yamuna, Sabarmati, Ganga. Clearly, water is associated with feminine symbols as the source of life, nurturing, caring, pureness. Water has a social and religious value. The perception of sacred pureness of Ganga water is unprecedented in other cultures. In the caste hierarchy ritual pollution is pivotal rooted in giving and taking of water. It is meaningful in view of the gender perspective of this paper, to observe that rivers, the biggest water sources by far, have nowadays become convenient dumps for rural, urban and industrial wastes.

Because of gender roles and the related sexual division of labour, women are traditionally the water carriers and water managers at the local level. They are responsible for fetching drinking water and to provide water for all types of domestic use. Besides, access to irrigation water is of vital importance for rural women of landless, marginal and small farmers households as they perform most of the agrarian labour, and are, as mothers, responsible for the daily food of their children.

Probably no other group is more affected by the destruction, depletion and total neglect of traditional tanks, wells, and other water resources than women of poor households (Shiva 1988, Venkateswaran 1995). Fetching of water becomes more time consuming and tiresome. However, poor women in India in villages and slums have developed since long inventive and creative strategies in order to survive. They have already a long experience of being deprived of water as a result of power inequalities in which the wealthy higher castes appropriates this precious natural resource.

Water carrying is an extremely strenuous activity and consumes an enormous amount of women's energy and time. The time spent to collect water varies in different parts of India, but can mount up to five hours a day. Lack of clean and sufficient drinking water most affects the health of children, but among adults, women are more exposed to hazards of polluted water than men. What is more serious is that there are indications that the reproductive health of women is endangered by water pollution (Schenk-Sandbergen).

Lowering of water tables means increasing work for women who then have to seek alternative sources. In particular for the women of the former untouchable castes

this often implies that their labour is indiscriminately exploited, as they have to depend on the goodwill of the upper castes and their employers to use their wells to get water. Ownership of water is an immense power basis in Indian conditions. Therefore, we should be cautious not to focus only on water scarcity and to ask 'how to solve it'. Firstly, we have to ask the question: 'water scarcity, for whom?'. Everybody knows that the middle-class wife in an urban middle class neighbourhood has a watertank on her roof, and her sister in the slum is queuing up for hours in the night to get a pot from the public standpost. Real scarcity of water is the grim reality for the marginal farmer and not the big landowner with his deep-tube well with which he sells water. The more drought the better for him, and his family.

'Why', gender issues and participation of women in managing water scarcity are important? The most obvious reason is of course, to prevent possible negative effects on women and the members of their households. The knowledge of the possible negative effects will hopefully contribute to a better gender aware planning and management which might reduce the changes that this negative effects will be perpetuated. But, also the possible positive effects should be strengthened in order to improve the living standard and to support the strengthening of women.

The few studies on the impact of water intervention on women in India show for instance that irrigation schemes can have a wide ranging effect on women's labour. Negative consequences, also reported in other countries, might be that:

- women are marginalised to subsistence production, and men produce commercial crops for the market (Boserup 1970);
- more inequality in gender relations as women become more dependent on the income of the men (Epstein 1962, Stanbury 1992);
- loss of productive resources as access to land, or land rights and agricultural skills, more work load as drinking water sources are spoiled and pasture land for grazing of cattle are diminishing (Groverman, et al 1994);
- less formal public decision-making power, more indebtedness and more pressure for women to earn cash.

Moreover, with the widening gap between poor and rich households due to unequal water distribution the negative condition increases that farm women of the tail end of irrigation canals, although being small- and marginal landowners themselves, become increasingly dependent on access to land (leasing in), wage labour and credit of the households of the head-enders (Schenk-Sandbergen 1997). Changes in the cropping pattern area might evoke a decrease in wage labour opportunities for landless women.

Prevailing gender ideological constraints and unequal gender relations reflecting patriarchal values and behaviour, are main causes with deny in particular poor women access to, and control over water. In a more modern context it prevents women to participate in planning, implementation, operation and maintenance of water -supply and irrigation agencies and projects. Women face many constraints with hampers their public representation, participation and empowerment. Patriarchy and male dominance are also underlying causes of the unequal gender decisionmaking power in water resources management. Additional constraints for tribal and scheduled-caste women relate to the hierarchial power structure of class and castes and poverty.

NGO's, women's organisations, so-called Project Support Units in Indo-Dutch bi-lateral projects and similar units run under other bi- and multi lateral projects, make efforts to enhance the decision making role of women in water management. They organise, mobilise and empower women in water resource management activities. In this context new water harvesting methods, training of female handpump caretakers and mechanics, creation of women pani-panchayats and ward water committees are just a few of the activities which have been implemented.

In view of the above, the idea was launched to explore whether gender and water management issues get attention in the papers presented for the water seminar.

## 2. GENDER CONTENT OF SEVEN PAPERS

It is with great curiosity that I have scrutinized the first seven papers<sup>1</sup> presented for the IDPAD Water Seminar on gender, or, even whether women are mentioned as a relevant category at all. To come to the point immediately, my finding is that without exaggeration the majority of the papers is totally 'gender blind': in one paper women are two times mentioned as fetchers of water (Balabh and Singh). In the paper of Janakarajan women, with the suffix 'folk', are mentioned as an important category in the protest urging to ban the sale of water from the agricultural wells to the towns (p.16).

This finding does not surprise me. It forcefully shows the necessity to focus on gender issues while dealing with the subject of the seminar.

As time to write this paper was very short, and some papers are very technical<sup>2</sup>, I will just comment on the main gist of some papers and the missed gender dimensions of it. The gender problems will be analysed, followed by cases and examples of innovative and alternative solutions that are already carried out by women in practice. From these cases lessons can be learned for the future, and suggestions drawn to enhance women's role in water management<sup>3</sup>. The composition of the remarks on the papers is as follows:

- S.Janakarajan's sympathetic paper on 'The survival of the fittest: conflicts over the use of groundwater (Tamil Nadu)' invites to bring up the basic gender problem of, patriarchy and lack of access to groundwater for women. As women hardly own land and land title's are not in their name, with the exception of

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<sup>1</sup> The seven papers are written by Prasad, Ballabh and Singh, Banerjee and Rohilla, Janakarajan, Thakkar, Das and Raju.

<sup>2</sup>The paper of Dr.B.P.Das on the Mahanadi Basin- Optimal utilization with particular reference to scarcity management, has a very technical nature and did not allow to raise gender points.

<sup>3</sup>As only some important gender aspects are raised in this paper I have included an annex with relevant literature on Women (gender) and Development, and gender and water resources. The references I use in my paper are included in this reference list.

female headed households, the access to groundwater issue does hardly exist for women.

- Ballabh and Singh's paper on 'Competing Demands for Water in the Sabarmati Basin pushed me to show examples of conflicts between male and female interests in water use as a result of different water needs and interests as a consequence of different gender roles and gender division of labour. Salient illustrations will show the subordination of women's water interests to the male ones. Male choice of water technology is also a relevant aspect for water scarcity faced by women.
- K.V. Raju's paper, on irrigation Rules and Laws for Water Distribution and Management transfer, shows the urgent point to make reservations for women in WAU's and women staff in government water management agencies (irrigation departments, CADA's etc). Women's NGO's as SEWA in Banaskantha have developed models by the formation of women's Pani-Panchayats. Many projects have developed modes and conditions to empower women as a precondition for their participation in water managing institutions.
- T. Prasads paper on the Kosi Waters and Himanshu Thakkar on 'Governance by informed communities is the key', urges me to bring forward the case of women's role in the CHIPKO movement and the debate on the, 'recovery of the feminine principle in water management consisting of the recovering of the role of women and poor peasants and tribals as water managers... The recovery of the feminine principle involves the recognition that sustainable availability of water resources is based on participation in the water cycle, not on manipulation or mastery over it (Shiva 1988, 215).'

In examples and illustrations I shall depend, besides literature, on my own experience as gender/soc-economic expert in various water resource/irrigation projects in India, Laos, Vietnam and Bangladesh<sup>4</sup>.

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<sup>4</sup> Based on my participation in the following water projects:

1. North Bengal Terai Development Project, West-Bengal: small scale irrigation
2. Banaskantha Women's Rural Development Project, Gujarat, SEWA project (desert area, drinking water)
3. Bangalore, Women and Water in the Slums
4. Kanpur/Mirzapur Ganga Action Plan
5. Tungabhadra Irrigation Pilot Project, Karnataka, canal irrigation
6. Strengthening and Restructuring Irrigation Development Project, Women and Irrigation in Laos, Vientiane
7. TA 2, Women and Irrigation in the Red River Delta, Hanoi, Vietnam
8. Early Implementation Project and CCP-Tangail project Bangla Desh

### 3. PATRIARCHY, AND NO GROUND WATER RIGHTS FOR WOMEN

S. Janakarajan's paper on 'The survival of the fittest: conflicts over the use of groundwater (Tamil Nadu)' invites to bring up the basic gender problem of, **patriarchy and lack of access to groundwater for women**. Janakarajan shows in his analysis an appreciated commitment with the poor and weakest 'farmers' as the victims of the water crisis. He indicates that in the fragmentation of wells that class and caste are important parameters determining the access to water. He states that groundwater is not for the landless and not for the poor farmer (p.11) but women are not mentioned. As women hardly own land and land title's are not in their name, with the exception of female headed households, the access to groundwater issue does hardly exist for women.

Water is one of the most crucial natural resources in the development process, and gender relations have an important influence on 'who has access to water', 'how water is used and managed', and hence on patterns of socio-economic and ecological change over time. The other way round it can be said, that legal, socio-economic and ecological changes influence gender aspects as access and control over natural resources, and indirectly might impact forms of subordination of women (Agarwal 1989, Shiva 1988).

The organisation of gender relations in India can be described as patrilinear and patrilocal. Kinship and descent, residence pattern and inheritance rights follow the male line. Men inherit land, and in case of acquiring land by buying they are automatically considered as the owners of the land and the land title is put in their name. Although women have legal rights to inherit, and own land, the practice is different (Sharma 1980). Not in the least because of residence patterns in which brides after the marriage move to the village (house) of the bridegrooms' parents. That means a decisive cut-off from house and land rights of her parents. The dowry is perceived as a compensation for the withholding of a legal share in means of production after the death of the parents.

The point I want to make here is that Janakarajan rightly points to the intolerable access to groundwater of the rich and wealthy landowners at the cost of the poor and marginal ones. However, he does not mention, that, in addition, women face the serious constraints of gender ideology and -relations which, 'de facto' exclude them from ground water rights. Ground water rights are legally controlled by the holder of the land overlying the ground water. Married women, and female agricultural labourers, can use and draw water from wells on their husbands'/employers' land, only to work, to irrigate the crop, not to manage or to decide.

For poor women the ownership of a tube well to lift groundwater is a dream they cannot imagine. Therefore, some projects have initiated gender components which allotted women access and control over groundwater. This will be illustrated by the experience in the North Bengal Terai project, a project I have been involved as researcher and gender specialist for many years.

In the North Bengal Terai project<sup>5</sup> the male government staff of the Agricultural and Irrigation Department accepted gladly my gender recommendation<sup>6</sup>, to give preference to female headed households (widows, single women, divorced and abandoned women) in the selection of handpumps beneficiaries (Schenk-Sandbergen 1991a). The reason of the willingness in the relatively mild patriarchal context of West-, North-Bengal is that the crucial pre-condition, that the land title is in the name of the female head of the household is fulfilled. A woman without a husband becomes a kind of 'honourable male': **only the registered person who is the owner of land is considered as a beneficiary: in 90% of the cases males.** For female headed households this criterium works out in a positive way. The situation became more difficult in a later stage in the project with the pushing that ownership of handpumps should also be given to a fixed quatum of married women and put in their name. The proposal to make women the owner of handpumps as they use them most, a thought similar as 'land to the tiller' which is a very accepted thought in the socialist political context of Terai, was not embraced immediately.

However, what could not be foreseen was, that the project regulation that women would get preference of a handpump if the land is in their name, has resulted in an unplanned, but very positive side effect in the sphere of 'empowerment'. Many marginal farmers

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<sup>5</sup> The objective of the North Bengal Terai Development Project is to improve the standard of living of small and marginal farmers in the project area by increasing agricultural production, as well as to contribute to a more egalitarian income distribution. Towards this end small scale irrigation facilities were provided under the second phase of the project (1988-1994), in particular river lift irrigation schemes (RLI) that had a planned command area of 80 hectares, deep tubewells (DTW) supposed to serve 40 hectares, shallow tubewells (STW) serving 4 hectares of land, pump dugwells (PDW) with a capability of 3 hectares and at the end of the scale hand pumps (HTW), expected to irrigate 0.14 hectares. During the second phase of the project 24 025 HTWs; 300 PDWs; 150 STWs; 12 DTWs and 27 RLIs were installed. Moreover, 436 lined channel units (the so-called 4 ha units) were constructed to convey the irrigation water. Demonstration plots for extension work form, also part of the project activities.

<sup>6</sup> The following overview shows the tangible results of the gender intervention after five years of implementation of phase 2:

- a) 24.030 handpumps have been sanctioned and are almost all installed (planned 13.500 in the preparatory documents: Master Plan Phase II).
- b) Female headed households which belong to the marginal farmers have been given preference to get a handpump, and 10% of handpumps have been given in name of the woman of the household. As an unplanned side-effect husbands transfer land in the name of their wives.
- c) The sample survey shows that in 95% of the cases the site of the handpump was selected in consultation with the women of the house.
- d) Construction works of the project (pumphouses, 4 hectare units, etc) has provided wage labour to local landless women (and men).
- e) Nine of the planned 27 women extension workers (two per block) are appointed in the Department of Agriculture.
- f) Farm women of marginal and small landholders are trained to improve agricultural management and operations.
- g) In some cases women are members of the water-users committees (BCs).
- i) Substantial research on the impact of the irrigation project on women have been conducted and report 12 on 'Women and Irrigation' have been published.



transferred the ownership of their land into the name of their wives, since this was the pre-condition of being selected as a handpump beneficiary (Schenk-Sandbergen, et.all 1994). This transfer might be perceived as just a formality, but it ultimately can work out very positive in case of early death of the husband or divorce and abandonment: any how the woman is under those conditions the owner of the land. The transfer of the '*patta*' (land right document) costs only 10 rupees (Schenk-Sandbergen & Choudhury 1994b).

Regarding the history of women and land and water rights, I want to point to the fact that for substantial groups of women these rights were self-evident in the past. The eminent study of Agarwal (1995a) shows that in the past in matrilineal and bilateral societies in India, in which women inherited land and residence patterns were matrilineal, has been undermined by patriarchy and the interventions of the colonial and post-colonial state. She illustrates the effects of these interventions with three examples of matri/bilineal societies. Firstly, the ethnic community of the Garo's in North-eastern India, secondly, the Nayars in Kerala, the Southwestern part of India, and thirdly the Sinhalese in Sri Lanka. In her conclusion Agarwal writes (p.192) that one of the striking features of the three case studies she has presented is, 'the vulnerability of women's customary rights in land, even in matrilineal and bilateral communities. With the erosion of customary land rights, major groups of women in India lost also their ground water rights. Gender relations and gender ideologies changed to the disadvantage of women: men became more powerful (Leacock 1981; Etienne 1980).

In view of the alarming fall in ground water tables, there is of course a need to provide legal limits, as Raju states very clearly, to the powers of male and female users and landholders to exploit ground water.

Although, it looks utopian, the lesson learned from the above is that fundamental changes in the patriarchal gender relations are a pre-conditions to pursue equal access to, and control over ground water resources for women and men. A crucial condition is to support and promote land rights for women of poor households.

#### 4. GENDER CONFLICTS IN WATER USE

In the interesting paper of Ballabh and Singh, several kinds of competing demands in the use of surface- and ground water (Sabarmati basin) are presented:

- conflict between upstream and downstream users
- conflict between agriculture and domestic uses
- conflicts in allocation of surface water
- industrial pollution and rural people:conflicts between unequals

Ballabh and Singh, present interesting outcomes from their fieldwork about the Lambadia panchayats and Bhil tribes, the Dashotar village, but do not mention the conflicts between man and women's interest in use of water, although the paragraph about pilferage of drinking water for irrigation predicts the dimensions of the gender conflict.

### - Competing gender demands: drinking and irrigation water

During my research in Gujarat some years ago, I was briefed that in a certain village an NGO had constructed bathing and washing places for women with water taps<sup>7</sup>. I visited the village and observed that they could not be used. It was decided by the males that as the water was scarce, it was diverted to the irrigation channels. The situation continued for months. In this case the subordination of women's water needs and interests, ignoring and overlooking them by male decision makers is evident.

### - Closing irrigation canals: gender effects

The other examples of competing gender demands which I present in the following, relate to the general phenomena of 'closing the irrigation canals'. Raju describes in his paper that in the Tambraparani system, the canals are closed in May/June which affects the banana and betel growing (p.9). The farmers have negotiated to get special releases and from his analyses I understand that a special 1987 government order allots in theory special release for the Thiruchendur temple and for 'domestic purposes', ie drinking water. He states that in all cases, the water is used for the standing crops, particularly betel and banana and not for the other purposes. It is likely that this case also relates to the subordination of temple's and women's needs of water. A similar situation exists in the Tungabhadra scheme.

From the beginning of May, after the Rabi harvest, till the middle of July the irrigation canals are closed as 'maintenance' work has to be carried out. It is well known that 70% of the women of the camps are dependent on the canal water for drinking and all other domestic uses (Schenk-Sandbergen and Mohan 1996b). The gender consequences are disastrous. Last year, a cholera epidemic broke out in Sindhanur with 190 reported death cases. This year (1997) the situation is again very critical, and women's workload has increased to unacceptable proportions to fetch water from the river (vakranis<sup>8</sup>) or from very far away places. In 40 years, no concerted effort has been made to provide adequate drinking water sources for the duration of the closing of the canals. The decision to close the canals is taken by the fully male-dominated Command Area Development Authority. The males in the area, more mobile, and possessing cycles and small transport lorries, see trade in water scarcity, and start to deplete scarce water resources to sell-it. Women in the tail-end have to buy water for 1 to 2 rupees per pot.

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<sup>7</sup>The importance for bathing and washing places for women is grossly overlooked in many projects. The pioneering article of Anil Agarwal (1985) is one of the scarce ones paying attention to the cultural taboos related to the subject.

<sup>8</sup> Vakranis are small pits (1 to 2 feet deep) dug along the canal bed in which water is collected over night using cups or coconut shells. These pits are either owned by one individual family or a few families depending on the quality and quantity of water that can be harvested in a pit.

### - Male choice of Technology

Another example of conflicting male and female interests in water use and access and control relates to the choice of technology. In the formulation of the proposal of the North Terai Bengal Project, Phase II, the number of planned handpumps was less, and the number of deep tube wells and river lift irrigation was more. A short gender analysis by interviewing various women in the villages learned that the women did not want the bigger small-scale technology, but handpumps near to the house compound for multi-purpose use: irrigating their vegetable garden and easy fetching of drinking and domestic water. However, the male farmers wanted deep-tube wells to grow commercial crops, and the staff of the irrigation department has also its reasons to push larger scale water devices. This conflict was finally wisely settled by increasing the number of handpumps in the project.

A solution of this conflicting male and female interest in water use, is to make concerted and co-ordinated efforts to combine irrigation and domestic water supply schemes: they are typically conceived as separate and independent projects and belonging to different domains. Irrigation is considered as the male-, and drinking water the female domain. This artificial dichotomy between water for productivity and for domestic use into two spheres of water usage is not realistic from the women's point of view. For rural women of poor households they are very much related and should not be divided by assumptions of different sectors (Centre for Women's Development Studies 1990).

## 5. WOMEN'S ALTERNATIVES TO COPE WITH WATER SCARCITY IN THE CITIES

Ashid Banerjee's and Suresh Rohilla's paper on 'Urban Water Supply and Management in Delhi', focuses on alternative way's of water harvesting to reduce water scarcity as:

- 1) Harvesting rainfall in assorted depressions (natural drainage channels in the urbanscape).
- 2) Manmade storages:abandoned quarries
- 3) Historical Water Bodies (stepwells and tanks)
- 4) Water harvesting in Aravallis (check dams) and village ponds (johads)
- 5) Floodplain reservoirs
- 6) Eco parks (treatment and recycling of sewage with the use of specific plants and fishes..)
- 7) Others, Roof Top Harvesting,

Their approach inspired me to present cases of women's alternatives in water harvesting as they are practised on a wide scale in slums of cities<sup>9</sup>.

Regarding the roof top harvesting I always wondered what makes Indian culture different from South-east Asian culture in this respect? This is not only a question of

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<sup>9</sup>See for an excellent overview of India's rise and fall of traditional water harvesting systems the publication of Anil Agarwal and Sunita Narain (1997).

obviously better housing (bricks and tiles on the roof) in South-east Asia in comparison with India, where it is difficult to catch rainwater from a mud hut with thatched roofs. The fact that parts in India do only get two months of monsoon does also not explain the differences in rain-pot customs. In Vietnam in rural villages in the Red River Delta I observed that almost all peasants houses have brick water containers in the compound, in which the women collect rainwater via bamboo (PVC) pipes from the rooftops. Even rice seedbeds are raised in the compound and on rooftops as the water containers are directly in the reach of the women. In Laos, I visited villages where women construct huge water jars in which they collect rainwater as storage for periods of droughts. The Lao Women's Union promotes this rainwater collecting method very much via UNICEF funds (Schenk-Sandbergen, et al 1995). In Thailand beautiful water pots in all shapes and colours can be seen around each and every house, clinic, shop, factory, temple, including slum areas where people have not always 'hard' roof tops. Southeast Asian women catch water where it falls. Efforts to launch waterpots programmes by women's NGO's, or women in NGO's, in India have, as far as I know, not been successful.

**- Women's solutions to cope with scarcity in the slums**

Banerjee and Rohilla have explored how to harvest more water to mitigate Delhi's water crisis. However, I think that it is revealing to put those efforts in a context with shows the strategies of women in slums to adapt and cope with water scarcity (Schenk-Sandbergen 1994a). Daily they manage already solutions for the scarcity of water in an invisible way.

They are:

- Increase of water resources by private initiative and common management of women;
- Prevention of water wastage and reuse of water;
- Informal, tacit restriction of water users and quantity of water to be taken to ensure equal distribution and depletion;
- Collective action by pressurising authorities and development of countervailing power.

*- Increase of water resources by initiative and common management*

In Bangalore I found that women initiated digging wells and collecting money to install water taps. Private wells are used by the community and they share in the costs for maintenance and cleaning. I also found that women made a hole in the water supply line of the Municipality to get water illegally but understandably. They dig the water with cups out of the sand and filter it with cotton cloth in pots. In other places women steal water at night.

*- Prevent water wastage and reuse of water*

From the roof of a house which gave a look into a slum in Bangalore, the public watertaps were observed: there is one tap for 25 families. The water is just flowing for four hours when the valve is opened. Taps are stolen, so when the water comes it just flows. We see an old lady, who puts a stick in a pipe to avoid that water is wasted. I

ask, who has told her to do this. The reply is, 'nobody, she knows that otherwise there will be no water in a short time.'

Women have also special skills and knowledge of reusing water. In clean water they will wash vegetables, the same water they use to soak dirty cloth. Again they will use that water to sprinkle the road around the house to settle the dust. In fact all kind of practices exist to reuse grey, and grey-er water.

*- Restriction of water users and quantity of water to be taken to ensure equal distribution*

In Somaswara slum in Bangalore, women follow the distribution system that the ten households who paid for the installation of the taps fetch water first, and afterwards other neighbours are allowed to take. At many places there are tacit rules which limit the water quantity to be fetched per trip: in general women are not allowed to fetch more than five waterpots (plastic pots contain 15 litres of water). There is an informal arrangement in the slum that when there is sufficient water in the well everybody is allowed to take, but as soon scarcity starts in summer, the families looking after the well are only entitled to take water. The same regulations we found in the number of buckets that could be fetched from handpumps. It is also custom that it is not allowed to fetch water from public handpumps of other neighbourhoods. There is no 'open' access to public water facilities.

*- Collective action by pressurising authorities and countervailing power.*

Action of people is very often associated with the mobilisation of NGO's but in slums we came across many spontaneous campaigns of local people, and initiatives of groups of local women's organisations as Mahila Mandals which organised women of the area to march to the house of the councillors to request better latrines, pavement, the repair of handpumps, etc.

**- Female handpump caretakers and - mechanics**

An other way of increasing water quantity in cities, I missed in Banerjee's and Rohilla's paper, is to train women to repair and maintain defunct available water devices themselves, in particular in slums. The duration of time that handpumps were not functioning varied from three weeks to three years. In most cases it took four to six months before the handpumps were repaired. Handpump repair is a political matter. The slum leader has to inform the councillor and he has to inform the maintenance department of the municipal corporation. The process of communication involves political support, bribes, and power.

In Bangalore I have initiated and implemented such a female handump care taker and mechanic training. A long scouting tour along many government officers and departments was finally rewarded by the discovery that in the Public Health Engineering department, Training and Monitoring Cell, of the Zilla Panchayat a full-fledged training centre existed with all the UNICEF manuals in the local language, audio-visual aids and a methodology to train handpump caretakers and mechanics in rural areas. A nice talk with the trainers showed that they were very interested to conduct the handpump caretaker and mechanic training also for a group of urban slum trainees.

Before I started the training I collected data on defunct water devices in some slums. The finding was alarming many handpumps, taps and wells were out of order. Moreover, the figures showed that the distribution of the 'out-of-order' devices is very unevenly distributed. In some slums even the only available water facility was out of order. Additional, there is hardly a correlation between the number of households in a slum and the number of water resources available depending on the 'encroachment' status of the slum. In a colony 2000 households have to share the water of only one handpump, which was, by the way, during the survey out of order. In another slum with a population of 4200 households there are 22 handpumps (7 out of order) and 35 watertaps. Bad smell and to high iron content restrict the drinking water use even more. In the majority of slums there is no water during two days of the week Water has to be often fetched in the night (at one, two o'clock). The result of these irregularities in water supply is that many women have to wait in long queues in the middle of the night to fetch water<sup>10</sup>.

The experiments with the training of female handpump caretakers and mechanics all over the country, but also in Bangalore, Kanpur, Mirzapur, try to mitigate the problem by making women independent of male dominated maintenance departments. With the support of several NGO's the handpump training was given in Bangalore. A toolkit for repair was deposited in the offices of the NGO's. The programme is successful to a certain extent. Main bottleneck was that handpump caretakers are considered as volunteers and are not rewarded with money. Poor women cannot afford to spend too much time to voluntary caretaker work as they have to earn income for the food for their children.

However, one of the most important outcomes of the programme is that women become aware that when they organize, and are trained, they have the skills and capacity to improve their own living environment. The importance of community participation in maintenance and repair of public amenities is also emphasized by the programme. Moreover, it is a first step to strengthen the involved women to take up leadership in organizing women to demand their basic habitat and human rights at several levels of government institutions.

A lesson learned from the female handpump caretaker training and implementation of the programme is, that the role of NGO's proved to be crucial to make the impact and effects of the training course maximal. They should encourage and stimulate the trained mechanics and caretakers to carry out their learned skills. Besides, they may plan and organise training courses themselves for training of handpump caretakers and mechanics to involve more women and women's groups in the maintenance and repair of handpumps. It is very encouraging that some NGO's have taken initiative to give the training an enduring impact.

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<sup>10</sup>In 15 slums it was stated that waiting time to collect water was as follows: half an hour three slums, one hour two slums, one-and-a-half hour two slums, two hours 6 slums, two-and-a-half hours two slums.

## 6. PARTICIPATION OF WOMEN IN WATER USERS ORGANISATIONS AND WATER MANAGING AGENCIES

K.V. Raju's very informative and interesting paper, on irrigation Rules and Laws for Water Distribution and Management transfer, shows the urgent point to make reservations for women in WAU's and women staff in government water management agencies (irrigation departments, CADA's etc).

In the previous it was revealed that patriarchy and male dominance exclude women from decision making regarding use of water. Internationally this gender gap gets much attention in the development of methodologies and approaches of gender components in water projects. Different approaches are followed: a process of gender awareness raising through training and participatory gender studies; the reservation of seats in organisations to ensure women's participation.

### - Laos, an example of gender awareness raising training for male staff

In Laos I was involved in a project where gender awareness raising for the male staff of the water government agencies and the male farmers in the villages was one of the focus points of the gender component. With my Lao counterpart we wrote training manuals and reference books for on-site training of male government staff to understand the importance of women's participation in planning, design, implementation, rehabilitation of water schemes (Schenk-Sandbergen and Outhaki Choulamany-Kamphoui 1995). Most important was that we designed a set of very interesting visuals for the village level applied to Lao village condition on the gender division of labour. The purpose is to enhance the understanding of the males of women's roles and status to facilitate the formation and participation of women in Water Users Associations. The objectives of the training / workshops are to raise Gender Awareness, and discuss the ways how to strengthen women's role in irrigation development.

The major point in the training is the question, 'why' women need, and should participate in irrigation development, and how to implement this in practice? The reasons why women should participate in the Lao context are evident : Women do most of the agricultural labour. In the matrilineal and matrilinear/bilinear Lao Loum groups, women, in particular, the youngest daughters are often the owners of the land and house. In all villages women and grown-up daughter have contributed with labour to the construction and maintenance of the schemes. **The irrigation investment, or water fees are mainly paid by productive labour of women and grown-up girls.** Moreover, women have social skill in influencing men in decision making and can motivate them to manage matters in a certain way, and they also can mobilize other women. Because of the daily domestic water use (bathing, washing clothes and irrigating small plot around the house or along the irrigation canal) it is self evident that women and girls are highly interested in scheme planning, design and maintenance. Women are good at financial management and accounting because of social and economic experience at household finance and local economy: they are the sellers, buyers, traders, middle women and entrepreneurs. All these facts have been highlighted in the training workshop through visual aids training materials, games, small groups discussions among men and women. The design of the workshops are to enhance the process of thinking of the participants

to come to a reasonable solution, based on the own acceptance of men and women as equal partners in Water Users Committees. Guided by these ideas and making use of the developed techniques all the Gender Awareness Workshops were satisfactory<sup>11</sup>.

#### - Water Users Associations and Reservation for Women

While it is well-known that women and men play very equal, complementary roles in traditional irrigation schemes, this is not longer the case when schemes are formalised and organised. It is a general phenomena that women are mostly excluded from membership in Water Users Associations, with the exception of some female headed household representative. To understand this we have to understand the meaning of the concept 'participation in water management'. Usually, the concept refers mainly to participation in official bodies, which are primarily meant for official decision making on operational activities of the daily irrigation routine of opening and closing sluices and outlets, planning of maintenance, etc. However, this forms only one aspect in which participation of water users can contribute to improved irrigation management. The making of bunds, field channels on own land, facilitating the water to spread over the plot, the drainage, the choice of crops and the investment in the inputs should also be defined as 'participation in water management' at the household level. Landless labourers and farm women play an important role at this level of water management, or have to bear the costs of these activities. There are certainly links between the two levels of water management. If the scheme level decides on night irrigation, it influences the household level as women and children are mobilised to receive the water in the field at night. Other examples are the distribution days and rotation schedules. It affects the daily routine of all family members. There are no rules requiring to inform users about the availability of water and its supply dates in different parts of the command area. In Vietnam the brigade chiefs in the communes takes this responsibility, and inform in particular the women as they are the main labourers in scooping the water from the canals in the fields.

Applying the narrow definition of 'participation in formal water management bodies' we have to admit that neither women in the offices of government agencies, as well as farm women, play a role. However, it can be stated that also farm-men play hardly a role in water management as the activities are mostly the hands of the professionals of the Irrigation Department, and Command Area Development Authority. Even small construction of field channels by CADA and maintenance of canals is subcontracted to contractors who hire outside labourers to do the work. The same counts for the maintenance of the canals. This urges the more for community participation in water management.

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<sup>11</sup>The irrigation projects e.g. the Sustainable Irrigated Agriculture (SIRAP), the Strengthening and Restructuring Irrigation Development Project (SRIDP), and Farmers in Irrigated Agriculture Training (FIAT) are those who have initiated and facilitated the realization of the theory to practice in the Irrigation domain. One can not ignore the fair contribution of the Women's Organization (Lao Women's Union), who continuously provides an effective cooperation to the process of implementation of the workshops, especially at the scheme level.



Representation of the poor in institutions regarding water management (WUA's), and in particular of poor women, is often hard to realise in the local cultural and socio-economic context of Indian realities. It is therefore that reservation of seats in decisionmaking bodies is a very warranted policy that will have an impact in the long run.

The reservation of women in WAU's have been proposed on a one-third of the seats basis. The above identified gender sub-components fit well in the general Karnataka Government Policies and interventions regarding the enhancement of the position of women. The Government of Karnataka is one of the few States in India which have seriously pursued to implement the Constitution (Seventy-third Amendment) Act, 1992. The Act implies that in the local Government bodies of the Panchayats not less than one-third of the seats should be reserved for women. The intention of this policy is to involve women at the local level in planning, decision making and implementation of development activities. Karnataka has the reputation of a Model-State regarding the election of a high number of women members in Panchayats and its effect of a successful involvement and participation of women in development activities.

The relationship of local panchayats' control over water resources and the powers of other management bodies, particularly WUA's, may need legal explication.

#### **- Women's NGO's and Pani Panchayats: an integrated Approach**

Often in community participation the interests of the women gets lost. Therefore, women's NGO's have taken initiatives to organise women to manage water sources. One of them is Self Employed Women's Association in Banaskantha. In Banaskantha district, in particular in the arid-zone talukas Radhanpur and Santhalpur, people struggle for survival because of the scarcity of fresh water and the depletion and degradation of the soil (Schenk-Sandbergen 1995b).

The landscape consists of sandy roads and tracks bordered by only one variety of bush (with the botanical name of *Proscopis Juliflora*). Herds of cows, sheep and goats graze in the saline, water-logged wastelands. Agricultural fields planted with castor (oilseed) and bajri (millet) are sparse, and form green patches in the barren land. A farmer with up to 8.75 acres of land is classified as a marginal farmer here, and one with between 8.75 acres and 17.5 acres a small one. There is a single crop of inferior cereals even in normal years when there is very little work for nearly seven to eight months of the year. Droughts and desertification have compelled the rural population to migrate seasonally to other regions in search of wage labour and to sustain their only asset: their livestock. Women, often with beautiful, bright-coloured dresses, carry earthen and brass water pots, immense loads of firewood and huge bags with grass for the cattle over long distances to their houses. Away from the road, the villages show ample signs of abject poverty by the mud-walls of the houses, the dusty lanes, and the tattered clothes of the children. Radhanpur and Santhalpur belong to the poorest talukas of Banaskantha district. In Santhalpur, 70 per cent of the population is unemployed; 49 of the 74 villages are even without a post office. Male literacy is 25 per cent, while female literacy is just around 7 per cent.

The increasing salinity of the surface and groundwater intruding from the Thar desert towards the North, and the Rann (Gujarati for 'desert') of Kutch on its Northern border, over a short period of time has depleted and spoiled the last sources of fresh water available in the area. The indiscriminate over-drawing of irrigation water by rich farmers using deep-tube wells in Mahesana seems to be the main reason for the changes in the upper- and under aquifers; and the lowering of the watertable at the frightening rate of three metres per year. Grain is a very profitable cash crop, and with irrigation the rich farmers of Mahesana can get three annual harvests but have changed the whole underground water balance and composition in the process.

Moreover, the Banaskantha area has suffered years of continuous droughts since 1985 (1985-86, 1986-87, 1987-88, and recently 1991-92). This has exacerbated the desertification of the area and minimalised the last resource of the population to survive: their cattle. Despite the relief measures taken such as cattle camps, the cattle perished because of lack of fodder and water. In 1990 another weather extreme hit the area: the monsoon rains were so heavy that a flood relief programme had to be launched by the government. The consequences for land degradation of the stagnant monsoon water were extremely visible.

In the Banaskantha area, the main element of SEWA's economic empowerment strategy is to link women, water, and work in an arid environment. In this way efforts are made to improve the socio-economic and ecological environment in order to reduce seasonal migration.

#### *Link Water management and sustainability*

The link between women, water and work is that women are encouraged to play a crucial role in the Pani Panchayats in order to ensure that the drinking water facilities will be sustainable in the long run. In the division of labour in the area, women, except probably Rajput women, whom are not allowed to come out of the house to fetch water, are the water carriers and water managers in the two talukas. They are therefore the most concerned about and involved in water management. It is imperative that they participate on the same footing with men in the management of drinking water in the Pani Panchayats (Bhatt. 1990a). However, the material conditions and the prevailing gender ideology have imposed many constraints on women to come forward and to participate in public organisations and institutions. The raising of self-confidence and empowerment of women supported by the training of management skills and leadership capacities is a precondition for active participation in Pani Panchayats which the project is actively encouraging.

#### *Link Eco-regeneration*

The link is that income generation should be related to the regeneration of the degraded environment by making optimal use of existing water resources. Eco-regenerative activities are experimental and require considerable effort which is hazardous and financially very risky in an arid region. This means that any failure because of climatic conditions can have a detrimental effect on the livelihood of the women involved. Aware of this enormous problem, SEWA nevertheless took up the challenge and selected a number of strategic activities such as raising nurseries, fodder and fuel plantations, as well as social forestry, water conservation and water harvesting projects (Banaskantha Women's rural development Project 1990).

The SEWA case show that the approach of linking, women, water and work is a successful one in the formation of Pani-Panchayats. The lesson learned is that participation of women in water managing institutions requires an integrated Women and Development Approach. Economic empowerment should go hand-in-hand with socio/cultural empowerment.

## 7. THE FEMININE PRINCIPLE, SUSTAINABILITY AND OTHER POINTS

T. Prasads paper on the Kosi Waters and Himanshu Thakkar on 'Governance by informed communities is the key', urges me to bring forward the case of women's role in the CHIPKO movement and the debate on the, 'recovery of the feminine principle in water management consisting of the recovering of the role of women and poor peasants and tribals as water managers... The recovery of the feminine principle involves the recognition that sustainable availability of water resources is based on participation in the water cycle, not on manipulation or mastery over it (Shiva 1988, 215).'

This thought occurred to me as Prasad states that the process of desired water resources development in the Kosi basin has to be retrieved from the sole domain of government negotiations. A new track of infusion of science and involvement of people should be followed. I just wondered why the situation in the Kosi area as a major, perennial Himalayan tributary to the river Ganga is so different from the Chamoli district. For the immense deforestation and water problems totally other ways have been followed. Women's knowledge and politics are the basis of the countervailing power of the Chipko movement in Doon Valley and other regions. They will certainly not agree with Dr. Prasads' view that the high dam should be constructed to solve the water problems.

I was surprised that Thakkar mentions all kinds of protest movements protesting against water pollution and degradation of natural resources but women remain invisible in his analysis. Is it not necessary to give extra attention on disseminating information to women in the process of community participation as a critical factor in effective water pollution control?

- **Women's role in the Chipko Movement: 'think like a river'.**

Segregation of the sexes and the division of labour between men and women are important factors to understand why women are often more sensitive in perceiving the link between the effects of deforestation, water management, and the increasing hardships they face in order to survive. This can be illustrated by the role of women in the CHIPKO movement. The movement started in 1973 at Mandal, Chamoli district where the organisers had been active for many years. They believe in the ideology of non-violence as propagated by Mahatma Gandhi and Vinoba Bhave and call themselves Sarvodaya workers.

I will not deal with the whole history of the movement here, but, what is particularly relevant in this context is that in 1979, on World Environment Day in 1979, hundreds of women of the Chipko movement collected in Tehri with empty water-pots (Shiva 1988, 210). They were protesting against the deepening water scarcity but also against the

failure of water supply schemes and of a model of science which saw metal pipes and concrete tanks as producers of water, and male engineers and technicians who fitted pipes and designed schemes, as providers of that water. They said, 'If you want to solve our water problems please plan for water, not for pipes.' (Shiva 1988, 211).

In the 'main' Chipko movement women clung to the trees to save them from being felled for commercial purposes and they succeeded in these attempts. Most families in this area have their own small plots of land for cultivation. Male migration from this hilly area to the armed services and other jobs in the plains is fairly common, leaving women to look after the land, livestock and families. These women depend on land as well as on forest for subsistence. With the disappearance of forest areas near the villages, women have to walk eight to ten kms. to meet their daily needs and due to lack of time they are unable to look after their children. They have to walk over the slopes with heavy loads of firewood and grass on their backs.

Women identified the link between their increasing hardship and the baring of the mountain slopes by commercial interests and the extreme flashfloods therefore they perceive the question of forest and water conservation as one of their survival. However, the interests of the men were quite different. The men of the village council considered schools, hospitals, roads and electricity which were promised in exchange for the felling of trees (e.g. oak forest), as far more important for the village than a few hundred trees.

Women now argue that since they are now entirely responsible for agriculture and animal rearing, and both are closely linked to the forest, and water they must be consulted regarding decisions on forestry and water management. Women's participation in the CHIPKO movement can have implications for possible changes in gender relations in the Garhwal area. Hopefully, men will also become more aware of the destructive forces leading to a serious loss of their natural resources.

This case learns that according to the principles of the Chipko approach no high dam can bring the solution for the reported water problems. On the contrary, the problems will increase. In water management, it is imperative to think and act ecologically: to 'think like a river' and to flow with the nature of water (Shiva 1988, 183).

#### **- The role of women in construction, maintenance and rehabilitation**

Raju (p.21) states rightly that the existing irrigation acts and rules of various states have not considered the importance of involved users in the planning, design, and construction of infrastructure. Involving the farmers may result in more effective infrastructure and greater willingness of the farmers to protect and maintain it. In particular, according to Raju, 'farmers' should be involved in the planning and design of any channels or structure that they will be expected to maintain, such as field channels. Farmer advice may help, particularly in rehabilitation projects. The point here is that the same counts for farm women. In particular in the design places for bathing and washing are very relevant. The distance from the village to the scheme is crucial for women as they have to walk up-and-down to look after children and old people. Many

more aspects can be mentioned to indicate the importance of participation of women in the planning, design and maintenance of water resources.

Raju also remarks that it may also be useful to have rules permitting construction contracts to local water users associations. In the Terai project it was stipulated in the by-laws that local landless women should be employed by the contractors in all the construction work of the project.

Regarding the role of women in maintenance many examples can be presented from Bangladesh, Vietnam and other countries which reveal that the involvement of women in maintenance activities is institutionalised in cooperations and societies (Schenk-Sandbergen 1996a). Since 1988 the concept of women's maintenance groups is accepted in Bangladesh by the Bangladesh Water Board. They have legal contract systems with so-called Women Landless Cooperative Societies and Women Embankment Maintenance Groups.

In Bangladesh Women's Embankment Maintenance Groups (EMGs) are small groups of female labourers recruited among the poorest of the poor rural households. EMGs are contracted by the BWDB but differ from regular contractors. EMGs represent a strategy towards preventive maintenance of water management infrastructure. The activities involved are suitable to female labourers and therefore the implementation of preventive maintenance provides an opportunity to intervene in the highly segregated labour market, by protecting this newly generated employment opportunity for women belonging to the poorest of the rural poor. Thus, while the main objective of EMGs is to ensure preventive maintenance, it also needs to be appreciated as a **strategy to support poor women's socio-economic development**. A two-days yearly training of women organised in the groups on various technical, social, and gender issues is part of the set-up. Women are likely to be concerned with getting maintenance done properly.

#### **- The role of women in financing water management (water fees)**

With the global trend in management transfer the debate on economic sustainability of water distribution and management organisations gets much attention. Evidence from elsewhere in the world suggests that making any service organization financially dependent upon fees from users is likely to improve the performance of that organisation (Raju 23). WUA's are generally dependent upon collection of fees or contributions from their members. State irrigation agencies are not.

The point here is that evidence reveals that a large share of the price to pay for privatisation of water resources will be on the shoulders of women and children. Unacceptable self-exploitation of women and increase in child labour is already documented in many places of the world (Schenk-Sandbergen 1996a). This is all the more reason to involve women urgently in water management.

## 8. SUGGESTIONS TO IMPROVE THE PARTICIPATION OF WOMEN IN MANAGEMENT OF WATER SCARCITY

In view of the above the following can be suggested:

- 1) Land rights for women are basic to get access to, and control over water resources. Although utopian, this can only be achieved with a fundamental change in the patriarchal ideology and patrilinear and patrilocal organisation of social relations as kinship, residence pattern and inheritance rights.
- 2) Concerted efforts should be made in water projects to combine irrigation with drinking and domestic water facilities. The separation of the two spheres as male and female domains should be abolished.
- 3) Promote the 'water-pot' and 'catch the rain where it falls' culture of Southeast Asia in India (even when it is for two months or less). || ? at
- 4) Learn from ways and means poor women cope already with scarcity of water in slums in cities in terms of reuse of water, prevention of water wastage, restriction of quantity per household according to the season, etc.
- 5) The female handpump caretaker and -mechanic training programme should be supported and promoted. || 500
- 6) Gender sensitising of male Government line departments (CADA and DOI) is a must by:
  - organising workshops on 'Women(gender), Water Management, and Development'.
  - incorporation of gender issues in training curriculum of colleges and universities related to water management, etc
  - Support in the conducting of gender-sensitive socio-economic/monitoring action studies in planning/ formulation/evaluation phase of water projects.
- 7) More gender aware female personnel should be appointed in line with Government regulations (one-third clause). Planning and designs of water projects should be scrutinized and approved by a 'gender-effect reporting' carried out by a 'woman (gender) and development' specialist to be appointed at State, District and Block level. Close cooperation with NGO's and Mahila Mandals to mobilise and organise women for case-studies, surveys, meetings, should be pursued.
- 8) Reservation policies to enhance the participation of women in water management and community development efforts (Water Users Committees) should be stipulated in regulations on WUAs. Supportive gender training and other gender activities are imperative.

*better gender analysis to promote gender & specific approaches*

- 9) An integrated approach is necessary for the enhancement of women's representation in water managing institutions. Socio/political empowerment has to go hand-in-hand with economic empowerment.
- 10) Lessons should be learned from the approach of the Chipko movement and the debate on the recovery of the 'feminine principle'. Traditional knowledge and practices of women in conservation and harvesting of water should be revived, strengthened and supported.
- 11) The role of women (and men) of poor households in Operation and Maintenance should be institutionalised in Cooperatives and Societies acknowledged by the government water agencies.
- 12) Women should be fully involved in the privatisation of public water resources as the financial aspects might have detrimental effects on them and their children (increase of child labour).

## ANNEX

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