



# Sangam

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## Schools in Development: Children Participate in Improving Health and Sanitation in Maharashtra



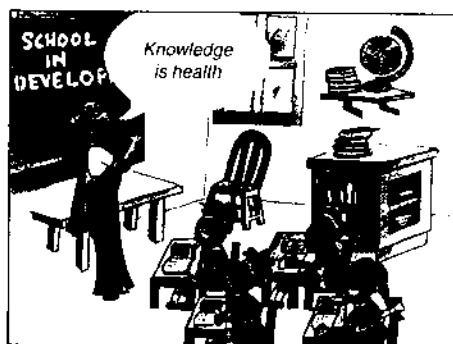
Children participating in the Schools in Development (SID) workshop

The Maharashtra state Health Department has a system of monitoring the status and progress of *talukas* in the state. It gives red cards to those *talukas* in which the living conditions are unsatisfactory, and green cards to those in which living conditions are satisfactory. The *talukas* that have been issued red cards are given a period of six months to improve. *Aurangabad* and *Gangapur* were issued the maximum number of red cards last year. Most of the problems in these *talukas* were due to poor hygiene, both at the individual as well as at the community level. Recognising the need to initiate the people in these

*talukas* into following hygienic practices, the Maharashtra Field Office devised a programme that is based on the participation of children and schools. They call this programme Schools in Development (SID).

SID is implemented with the help of the state administration and village-level functionaries.

The district administration, i.e., the *Zila Parishad*, serves as the nodal agency, and the HFWTC (Health and Family Welfare Training Centre) and the DTT (District Training Team) forms the implementing team. The Medical Officer of the District Training Team is made the Co-ordinator of the SID programme.



In addition, two prominent NGOs in the area-*Dilasa Janvikas Pratisthan* and *Sacred*, participate actively in the programme.

Together these NGOs target school-going children from the fourth to the seventh grade. To this end, 40 students (development scouts) are selected from each school, and one

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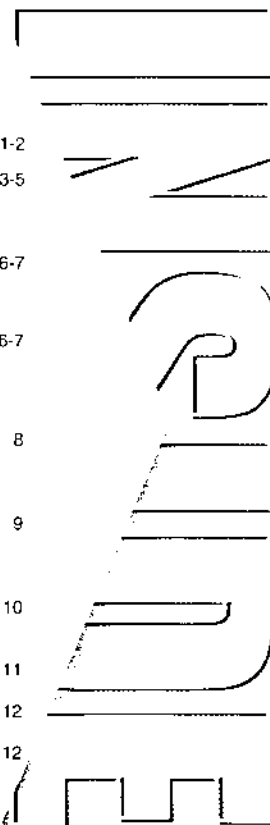
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Children collect statistics on the sanitation status of their village

representative is selected from the teaching staff. These children, along with their representatives, participate in a workshop for generating awareness. The five-day workshop focuses on environmental cleanliness and personal hygiene. Children are made aware of the benefits of personal hygiene and a clean environment. This knowledge is reinforced by an emphasis on specific practices that they could follow to maintain cleanliness. In addition, they were encouraged to persuade adults to participate in cleanliness initiatives. Further, they were taught how to prepare simple reports that would help them monitor the status of cleanliness in their localities.

As mentioned earlier, the Zila Parishad serve as the nodal agency for the implementation of SID, while the HFWTC and the DTT played the roles of implementing teams. The development of the training module used in the workshop was primarily undertaken by the HFWTC. The workshop was preceded by the training of people who conducted the workshop, as also an orientation programme for headmasters and headmistresses of schools. The orientation programme improved the comfort level of headmasters and headmistresses with regard to the participation of children and teachers from their schools. It also made them permit the use of school premises for the workshop.

In addition to the implementing team, a service team was also formed.

The members of this team included all village-level functionaries, i.e. health workers, health supervisors, primary school teachers, *anganwadi* workers (*sevikas*), watermen, *gram sevaks* and trained *dais*. All these functionaries were involved in the implementation process at every stage. A six-day training of the Service Team was conducted prior to the workshop. The School in Development initiative hopes to build a team spirit in



Children observing the earthworms which are useful for vermicomposting

village-level functionaries with the objective of improving their effectiveness on a day-to-day basis and in crisis situations.

The training module for children and teachers, though common, was spread over a five-day period for children and over

a three-day period for their teachers. The additional two days for the children included a day for visits to the PHC / Sub Centre, Anganwadi Centre, Panchayat Bhavan, Post Office, PDS unit, Bank and other important centres in their respective villages. The second day was spent on interaction with their parents and other members of the village community. To achieve the overall objective of SID- "to facilitate a better understanding of their living environment and acquiring basic life skills through helping children (and the school) to play an important role in the development of their community", its module was developed with an emphasis on the essential components of CDD - WATSAN. These are:

- Personal Hygiene
- Home Sanitation and Food Hygiene
- Disposal of Waste Water
- Disposal of Other Wastes
- Disposal of Human Excreta.

Already, because of the SID initiative, over five thousand children have attended the workshop. In addition, nearly three hundred school principals have undergone the orientation programme and nearly five hundred teachers have participated in the training programme for trainers. In addition, over seven hundred village functionaries have participated in the workshop specially designed for them.

School premises in the *talukas* of *Aurangabad* and *Gangapur* are now visibly cleaner. Lanes and by-lanes in villages are devoid of their characteristic stench. There are a greater number of soak pits in villages and still more are being constructed. Moreover, village level functionaries are beginning to realize the importance of collaborating with one another.

Source & further information from Renu Gera, Project Officer-WES, Unicef Mumbai Office

## STOP PRESS

### Earthquake in Gujarat



A massive earthquake rocked India and its neighbouring areas on January 26 at 3:16 AM (IST). The worst hit area in India was the state of Gujarat where the death toll is expected to reach over 25,000. The most affected places in Gujarat are Bhuj, Bachau and the city of Ahmedabad.

A joint UN response for rescue and rehabilitation is being coordinated at the time of SANGAM going to press.

The next issue shall cover the Gujarat earthquake in detail.

# DROUGHT

The Indian sub-continent is vulnerable to droughts, which occur with periodic regularity in the country. After a decade of good monsoons and a corresponding increase in agricultural produce, the country has entered a lean monsoon cycle, characterised by below-normal rains during the last three years. This year, India experienced moderate to severe drought conditions in 11 of its states, which affected an estimated 130 million people. This constitutes nearly 15 per cent of the Indian population. The most severely affected states are those of Gujarat, Rajasthan and Andhra Pradesh.

In Gujarat, rainfall has been scarce for two years now. In nearly three-quarters of the state's districts, all sources of surface water have dried up. In addition, the arid region of Saurashtra is severely affected. Consequently, 20 million people in 6,500 villages, 79 towns and 4 metros are affected. In Rajasthan, the situation is similar. The state has had inadequate rainfall for nearly three years now. Out of 32 districts in the state, 26 are affected. Further, 9 of these are experiencing severe drought. Consequently, 26.17 million people living in 23,406 villages in Rajasthan are affected. Andhra Pradesh



suffered more than 30 percent reduction in rainfall compared to the state average in 1999. Ground water levels in the state are falling from 3 to 25 metres in 18 out of its 23 districts, leaving 41.59 million people of the state affected.

The periodic nature of drought, the increasing cost of the relief measures, and an associated retardation of the socio-economic development in prone areas, compels us to consider proactive measures for drought-proofing. This is an essential part of a long-term drought mitigation strategy. Advocacy for policy changes and decentralisation of water resources management at the community level are required on a priority basis at the highest level. The response of the government to drought-related water

Impact	AP	Guj	MP	Orissa	Raj	Total
No. of districts affected	18	17	7	11	28	79
No. of villages affected	17431	9421	3240	12000	23406	65498
Population at risk (Million)	41.6	25.0	2.7	12.8	26.2	107.3
Children (05) at risk (million)	5.41	3.25	0.35	1.56	3.41	13.98
Pregnant women at risk (million)	1.25	0.75	0.08	0.36	0.79	3.23

scarcity has been to create new sources or to transport water to the affected areas by means of a piped system or water tankers or trains or even boats. This response, however, does not provide a lasting solution. Yet, this has been the only response to drought for several decades. While some of these measures are essential to provide immediate relief to the affected millions, these measures are neither sustainable nor affordable. Drought, therefore, seems to have become a continuous and harrowing experience for its victims. Afflicted areas are in need of permanent solutions that can be implemented in the shortest possible time.

While state governments, with help from the central government, are working towards an effective solution, different agencies of the UN are providing support in drought-ridden areas. These efforts are aimed at addressing problems resulting from drought such as drinking water, sanitation, food scarcity, fodder scarcity, health care for people, medical care for livestock, need for alternative employment, epidemics, and dehydration.

About drinking water in particular, there is an increasing realization within the government and the agencies of UN that natural water sources are renewable but not infinite. Therefore, long term solutions to water scarcity in drought-prone areas should be based on efficient water conservation and usage. Water conservation can decrease dependence on annual rainfall. At the community level, structures that enable the recharge of ground water can ensure that wells used for drawing drinking water do not dry up. And, at the household level, rooftop rainwater harvesting can ensure a year-long supply of water for household needs. Agencies of the UN are working towards the adoption of these measures in drought-afflicted states.

In Rajasthan, a Drought Co-ordinating Unit has been formed with different members of UN, and is operating from the UNFPA office in Jaipur. The operational costs of the Unit are being met by UNDP. This unit, in conjunction with the state government of Rajasthan, is working towards formulating follow-up action to drought. This includes organizing the use of GIS data for modulating health-related programmes, surveillance of communicable diseases, heat wave mitigation measures, a hydrological survey of maps to identify ground water resources, and promotion of water harvesting and water management. It also includes the assessment of seed requirements for the next planning session.

UNDP is additionally involved in two sub-programmes in the drought-affected districts of *Jodhpur* and *Alwar* under the GOI – UNDP community-based pro-poor initiatives programme. These sub-programmes focus on the provision of support and technical assistance for the renovation of village ponds, the construction of underground rain water collection *tankas*, and the regeneration of traditional water harvesting structures.



Besides UNDP, the World Food Programme (WFP), which is already involved in several activities in Rajasthan, is also responding with its own initiatives. WFP will be providing additional food supplies worth Rs. 1.1 crore, and is also ready with 1500 metric tonnes of food grains for food-for-work schemes

in *Dungarpur*, *Sirohi*, *Rajsamand* and *Banswara* districts in response to the drought.

In addition to assistance from UNDP and WFP, the state of Rajasthan is also getting help from the Food and Agriculture Organisation (FAO). This organisation is helping the state government in evaluating the effect of drought on agriculture and livestock by facilitating a fact-finding mission. The mission will also determine measures that can alleviate the condition of crops and livestock, both on a short-term and on a long-term basis.

In addition to these agencies, Unicef is actively involved in providing relief in each of the drought-afflicted states. It has provided immediate relief through the provision of water tankers, rejuvenation



of hand pumps, and the installation of new hand pumps in accordance with specific requirements in the affected areas. It is also facilitating preventive and curative health care by supplying essential drug kits, ORS packets, IFA, and Vitamin A tablets. In addition, it is continually working towards disinfecting drinking water. In addition, it is involved in the construction of on-site sanitation facilities at the relief work sites, with the

dual purpose of providing sanitation facilities and alternative employment opportunities to control migration from drought-ridden areas. Further, it is promoting the construction of water-harvesting structures for storage, and checking dams for the augmentation of

## EMERGING DROUGHT CRISIS IN 2001

### More than 80 Million Under Stress

For the third successive year in 2001, the effect of water scarcity is being felt in both urban & rural areas in the states of Rajasthan, Gujarat, Madhya Pradesh, Orissa, and Chattisgarh. It is estimated that more than 80 million people, mostly from rural areas of the affected states, are in stress due to loss of agricultural produce and employment. The lack of livelihood opportunities, inadequate availability of fodder, and scarcity of drinking water has forced the poor to migrate in search of gainful employment. These migrants leave behind the old, the disabled, women and children in distress and uncertainty. During the next six months, it is this group of people including about 2.5 million pregnant women and 10-12 million children (below the age of five) who will be at risk due to lack of adequate nutrition and health care. It is anticipated that the situation will worsen in the coming six summer months. The earthquake in Gujarat has only added to the stress on the community.

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water sources. In a special effort, the Hyderabad Field Office, has conducted interviews in the districts of *Mahbubnagar*, *Medak* and *Nalgonda* in the state of Andhra Pradesh with the help of Kalpana Sharma, deputy editor of *The Hindu*. The purpose of these interviews is to bring the voice of drought-affected people to the fore. These interviews, in addition to describing the continually deteriorating living conditions

## Joint-UN Mission Recommends White Paper

that the people of Andhra Pradesh are surviving in, also point to the disturbing presence of a fatalistic attitude in people. Drought conditions are causing a drought of the human spirit. However, it is hoped that measures for rehabilitation that are based on a detailed study of drought conditions by experts will provide permanent relief to the people of drought-ridden areas.

### JALDISHA : Gujarat 2010

World attention has been focussed on recent efforts in Gujarat to articulate a future vision of hygiene awareness, sanitation, and safe water for all its citizens. The Global Vision 21 initiative of the Water Supply and Sanitation Collaborative Council (WSSCC) had its first application in Gujarat. It was here that NGO activists began in 1988 to envision a safe and equitable future and to formulate an action plan that could make this vision a reality. Gujarat 2010 was the result. The main objective of Gujarat 2010 is to get access to hygienic conditions, safe water and sanitation included in the fundamental rights of the citizens of Gujarat.

In response to a request received from the Chief Minister of Gujarat, Gourishankar Ghosh led a joint UNDP-UNICEF mission to the state to study the drought, and to propose mid-term and long-term drought-proofing measures. Both the headquarters and the country office of UNICEF played a crucial role in organizing the joint mission. The main recommendation of the mission was that the state government should formulate a well-defined State Water Policy to guide the development of the water sector on a sustainable basis.

In response to this recommendation, the state government of Gujarat is preparing a White Paper on Water in Gujarat. The White Paper is expected to be released on January 31, 2001. And, based on it a State Water Policy will be formulated. The necessary technical assistance for the preparation of the White Paper is being provided by UNICEF (Gujarat) through a number of expert institutions and individuals. These are led by the Institute of Rural Management Anand (IRMA) and the Remote Sensing and Communication Centre (RESECO) of the Government of Gujarat.

## Children Get Access to Sweet Water

The children of the primary school in Chuntisiara, located in the *Nagaur* district of the state of Rajasthan, were assisted by the PHED of their area and local NGO in finding a permanent solution to the problem of safe drinking water in their school premises. Due to an extremely high fluoride content in the ground water available in the school compound, the



students of the primary school had to carry water from their respective homes everyday. The solution, therefore, had to be a method for the collection, storage, and hygienic use of rainwater, i.e. sweet water. For this purpose, a rainwater harvesting tank was constructed with some contributions from villagers. The participation of villagers was achieved because a local NGO made them aware of the benefits of a *tanka*, and how they themselves could maintain it. The same local NGO also initiated the villagers into following hygienic health practices. The first good monsoon shower this year filled the *tanka*. The sweet water stored in it is

utilized for the purpose of drinking, and the village community exercises great caution in keeping it clean and avoiding its wastage. Therefore, it is hoped that the children of Chuntisiara will have safe drinking water throughout year.



## AN INTERVIEW WITH MS BIJAYA CHANDRA

**Q: What are the main functions of the Ministry of Water Resources?**

**A:** The Ministry of Water Resources is responsible for laying down policy guidelines and programmes for the development and regulation of the country's water resources. This includes overall planning, policy formulation, coordination and technical guidance in the water resources sector. The Ministry provides special financial assistance for specific projects and assistance in obtaining external finance. Through its various technical arms such as the Central Water Commission, the Central Ground Water Board and the National Water Development Agency, it helps in the formulation of a national water development perspective. It also helps in the determination of the water balance of different basins/sub-basins. Through the Central Water Commission, it operates a network for flood-forecasting and warning-system. Through active trans-border water diplomacy, the Ministry endeavours to promote regional development.

In 1985, the erstwhile Ministry of Irrigation was re-christened as the Ministry of Water Resources, with the aim of integrated water resources development. However, programmes like watershed development, hydropower development, drinking water etc. are still outside the purview of the Ministry. There is a need to bring all these subjects under one umbrella for a holistic approach in the Centre as well as in the states.

**Q: What is the present status of the National Water Policy?**

**A:** The National Water Policy was documented and adopted in 1987, and enunciates the intent of the Government. As you know under the Indian Constitution, water is in the State List. As such the State Governments were expected to formulate their own Water Policy, under the umbrella of a National Water Policy.

Since the adoption of the National Water Policy in 1987, a number of fresh challenges have emerged. The Hon'ble Prime Minister had, therefore, included the adoption of a National Water Policy for the effective and prompt settlement of disputes and their time bound implementation in the National Agenda for Governance. He had also desired the unveiling of a National Water Policy such that no waters go waste and we keep our water resources clear. The institutional mechanism through which the policy is intended to be put into execution needs to be strengthened. And, we have taken steps in that direction. There have been problems like allocation of water among the co-basin states. Another problem has been with respect to the setting up of River Basin Organisations. These issues have been discussed in various forums. However, some hurdles are yet to be cleared.

**Q: What is the role of National Water Resources Council?**

**A:** The National Water Resources Council (NWRC), under the chairmanship of the Hon'ble Prime Minister with all the Chief Ministers and Lt. Governors as its members, was set up by the Government of India in March, 1983. It was set up as a national apex body to lay down the National Water Policy and to review from time to time. It also advises on the modalities of resolving inter-state differences. The National Water Policy was considered and adopted unanimously by the NWRC during its second meeting in September, 1987.

The fourth meeting of the National Water Resources Council was held on August 7, 2000, to discuss the updated Draft National Water Policy (1998) and the Draft National Policy Guidelines for the Allocation of Water of Inter-State Rivers amongst States. The deliberations established a broad consensus among the state

## "Water for All" - Arunachal Pradesh

### Water for All : Welfare Society

## Women Draft the Agenda for Water and Sanitation

The Arunachal Pradesh Women's Welfare Society (APWWS) is a registered organisation that was formed in 1979 to improve the position of women, children and the underprivileged on the social map of the state of Arunachal Pradesh.

In March 2000, the APWWS undertook a year-long intensive awareness programme in the *Papumpare* District of Arunachal Pradesh (AP). This programme was a part of the Rajiv Gandhi National Drinking Water Mission (RGNDWM) IEC Project. *Papumpare* district has 265 villages and 7 circle headquarters including two capital townships, those of Itanagar and Naharlagun. Additionally, it has a literacy rate of only 43.06 per cent.

The *Papumpare* IEC campaign is in the spirit of the WES Sector Reform Initiative by RGNDWM as it is based on a survey of the existing living conditions of the local population vis-à-vis water and sanitation services. The main objective of the Sector Reform

Population Details (*Papumpare* District in Arunachal Pradesh)

Total	Male	Female	Rate			
			Male	Female	M	F
72811	39775	33036	22711	19186	17064	13850
Total Households	Density (Person/Sq. KM)		Growth Rate (%)		Literacy	
15768	25.0		97.90		30.13	
					17.23	

Census '91

on most of the issues contained in the proposed policy. However, states differed on some issues like legislation for developing standardised national information system, establishing appropriate River Basis Organization with statutory powers, water allocation among states, and the amendment of Inter-State Water Disputes Act, 1956.

**Q: What is the role of Gram Panchayats in the development of water resources?**

**A:** It has now been realised that unless farmers are progressively involved in the operation management of the irrigation system, the objective of increased utilisation and production per unit volume of water from irrigation commands cannot be realised. Even if it is realised, it cannot be sustained in the long run. Decreasing per capita net water availability also forces the need to make farmers appreciate the scarcity value of water. Due to the present financial crunch, it has become extremely difficult for the state governments to provide adequate funds for efficient operation and adequate maintenance of the distribution system of existing projects.

The formation of water users' associations (WUA) offers considerable scope for improvement in the present situation. It could help in moving towards Participatory Irrigation Management. Through WUAs, it would become possible for the department to deal with select number of WUAs for the supply of irrigation water in bulk quantities. Thereafter, the users would be responsible for distribution. Such an arrangement also includes autonomy to farmers to utilise the water purchased by them in any manner.

Within the area of operation of WUAs, the role of the government is limited to promotion and technical assistance. However, there is a need to provide legal backing and capacity building to such organisations. Legislations have been made by the State Governments of Andhra Pradesh and Madhya Pradesh for Participatory Irrigation Management, and are being framed by some other state governments. Further, empowerment of these

initiative is to facilitate water and sanitation facilities in rural areas through local participation and a changed role of the government agency from that of a 'provider' to that of a 'facilitator'. It is hoped that Sector Reform will trigger local participation to the degree where the local community sustains reform, making it self-reliant and freeing it from dependence on government machinery.

As is common in rural areas, in *Papumpare* too, the factors that play a fundamental role in determining the quality of living conditions are water and sanitation. Hence, the primary objectives of the APWWS project are to conduct a survey for assessing the prevalent situation of rural water supply and sanitation. As mentioned earlier, APWWS started conducting the survey in March 2000. While conducting the survey, APWWS is also spreading awareness about personal and environmental hygiene.

Based on interaction with several residents of Papumpare district, the immediate needs of the area have been ascertained. People

farmers' associations, both financially as well as technologically, is essential for their sustainability. Additionally, there is a need to involve non-governmental organisations in capacity building.

For small tanks and minor irrigation schemes, the irrigation command area falls within the *panchayats*. Similarly, in the watershed development projects as well as in rural drinking water schemes, the role of *panchayats* in development and sustaining the development is very crucial.

**Q: What are the basic elements of the proposed National Water Code?**

**A:** The rights claimed with respect to surface water and property-based ground water become unsuitable in conditions where water resources are scarce and fierce competition and luke-warm cooperation mark the scene. A typical situation may arise when the villagers through their own shared efforts bring life into a dead river, and claim the right to reap the benefits of the river water. (This happened in the case of a village in Alwar District in Rajasthan recently, over the rivulet Aravari. This case was revealed in a study conducted by the Tarun Bharat Sangh)

Access to water has to be recognised as a basic human and animal right. The right of the community over common resources, environmental water rights, and the water rights of the river (or aquifer) itself for the maintenance of its quality and integrity, also need to be considered. At the same time, water has to be regarded as an economic and social good. Principles to govern the relative priorities of different demands and the sharing of waters by different users need to be laid down. There is a growing body of opinion that water markets can help improve water allocation and use, and produce substantial gains for both the sellers and buyers. However, water cannot be allowed to become a tradable commodity. All these issues have to be debated properly. The Ministry of Water Resources is planning to consult legal experts, economists, and social scientists, and in consultations with the Law Ministry, develop a National Water Code to address all these and related issues.

feel the need for low cost sanitary toilets particularly in village schools and community centres. They also stress on the need for the proper maintenance of water tanks. In addition, the villagers also reveal that the doctors posted in local PHCs are not in their official stations owing to a lack of basic facilities. These include lack of housing, the absence of assistants, i.e., nurses and compounders, and a shortage of medicines, particularly life-saving drugs.

The water problems of Papumpare district are linked to a lack of adequate drinking water facilities. Therefore, people emphasise on the need for piped water. Most of the existing water supply pipes in the district have broken down due to corrosion and/or landslides. Hence, people also realize the need for training in the maintenance of water supply pipelines, and water tanks. The APWWS project in Papumpare has created a heightened sense of awareness in its populace with regard to their water and sanitation problems.

# Rural Sanitary Marts

## A Serious Business in Uttaranchal

It is a particularly complex task to provide cost-effective resources for sanitation in rural areas located in hilly regions. The problem of accessibility to such regions has an impact on all aspects of sanitation, such as availability of raw materials and accessories, construction and maintenance. Each of these, in turn, presents a formidable challenge in keeping costs low.

The Rural Sanitary Mart (RSM) initiative, operational in some of the hilly districts in the state of Uttaranchal, addresses these challenges, and yet survives as a viable business proposition.

The concept of RSMs was first promoted by UNICEF and the government of Uttar Pradesh in 1991. Currently, there are a total of 309 RSMs in the two states of Uttar Pradesh and Uttaranchal, of which nearly 80 percent have been in existence

since 1996. The more recent RSMs are located in the hilly districts of *Almora, Chamoli, Bageshwar and Rudrapur* in Uttaranchal. *Vadhu*, a local NGO, jointly with 13 other local NGOs, has implemented the RSM project from October 1996, to September 1998. More than half of the existing 309 RSMs are managed by the Panchayat Raj Department (PRD) of the state government. Of the remaining, most are managed by either private

Initially, the RSMs primarily served as outlets that sold raw material for the construction of toilet facilities, and articles relating to home sanitation and personal hygiene. A single RSM was equipped to cater to the sanitation needs of 25 villages. To promote the RSM concept, local NGOs worked on generating awareness about sanitation. Consequently, there was an increased

realization about the need for investment in sanitation facilities, and therefore, a demand for articles available in RSMs. In addition, 15 local masons were trained in the construction of low cost facilities. This enabled people to be self-sufficient in resources required for the construction of facilities within their region. All of these factors contributed to better sanitation,

simultaneously and symbiotically making RSMs a viable facet of development.

Interestingly, RSMs now also serve as outlets for spare parts of hand pumps and ORS packets. This points to the fact that they are increasingly being regarded as a significant part of the community. In fact, RSMs frequently receive health-related queries and requests for solutions, rather than simply demands for articles in stock. Equipped

as they are with information and training, RSMs are able to

provide a wide range of services to the community. The RSMs are a significant part of the community. In fact, RSMs frequently receive health-related queries and requests for solutions, rather than simply demands for articles in stock. Equipped as they are with information and training, RSMs are able to provide a wide range of services to the community. The RSMs are a significant part of the community. In fact, RSMs frequently receive health-related queries and requests for solutions, rather than simply demands for articles in stock. Equipped as they are with information and training, RSMs are able to provide a wide range of services to the community.







# VERMICOMPOSTING

## Earthworms Help in Solid Waste Management

One effective way in which solid organic residuals can be converted into a useful product is called vermicomposting.

This process involves the active participation of earthworms and results in the production of vermicompost, which can be used as a fertilizer. Vermicompost is rich in nitrogen, and has excellent porosity, aeration, drainage and moisture-holding capacity. These characteristics make it an easy-to-absorb plant nutrient.

The Centre for Rural Development and Technology recently introduced vermicomposting in a rural, slum and residential area in the Delhi region, as part of its project called 'Solid Waste Management by Vermicomposting'.

The project has proved beneficial, and one of the most important lessons learnt from it is the importance of segregation at the time of waste disposal. If biodegradable waste and non-bio-degradable waste are segregated at the time of disposal, the process of solid waste management is greatly simplified. Further, vermicomposting is a simple process that requires very few resources.

It is evident that earthworms can be used for the reduction and simultaneous conversion of solid wastes into a useful material in both rural and urban areas.



### THE PROCESS OF VERMICOMPOSTING

The process of vermicomposting involves creating a breeding ground for earthworms, along with space above it for adding organic waste that the earthworms are to fragment. This space, both for breeding and composting, can be organized in a pit, a concrete tank, a wooden crate, well rings or a plastic crate.

For the purpose of creating a habitat for the worms, or vermi-bed, several layers of different materials are required. The base layer (3-4cm) of the vermi-bed

is usually made up of broken bricks and pebbles. This is followed by a moist layer of loamy soil (15cm). Thereafter, about 100 locally available earthworms are added, half of which should be the surface variety and the other half, sub-surface. Subsequently, small lumps of cattle dung (fresh or dry) are scattered over the soil. All of this is then covered with hay (10 cm). Water is subsequently sprayed on all the layers until they are

moist but not wet. After spraying water, the layers are covered with broad leaves like those of coconut or palmyra. The unit, thus formed, is watered and monitored for about 30 days.

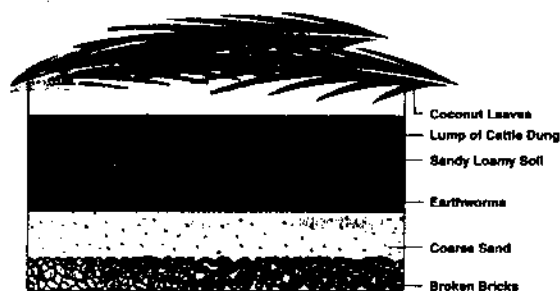
Organic refuse is added to the unit from the 31<sup>st</sup> day, as a spread, after



Earthworms used in vermicomposting

the fronds are removed (Farmers who are vermicomposting can spread agro waste such as cattle dung, a vegetable dealer can spread spoilt vegetables, and a housewife or a restaurant-owner can spread kitchen waste). The spread should never exceeds 5 cm in thickness.

#### LAYERS OF A VERMIBED



While this quantity of organic waste can be added everyday, initially it is better to spread layers only twice a week. Water is added carefully whenever required. And, after a few days, the refuse is turned over without disturbing the bed. Once the unit reaches its optimum capacity, after several more layers of waste have been added, it is left for about 45 days with only adequate additions of water.

At the end of that period, the organic refuse changes into soft, spongy, sweet-smelling, dark brown compost. This indicates that it is ready for use as a fertilizer. However, it is left without water for an additional three days before being taken out of the unit. This ensures that the earthworms return to the vermi-bed from the top layers as the top layer is dry. At the end of these three days, the vermicompost is removed from the unit, and placed in bright sunlight in mounds. This enables any earthworms remaining in the compost to move to lower layers. After this, the compost is spread on a flat surface for about 36 hours, and again worms are sieved from



People digging a pit for vermicomposting

it using a 2 or 2.5 mm sieve. The compost is then packed and sold or used by the individual who has done the composting.

# UNESCO

## Contributions in Water Conservation

Water conservation through the sustenance of ground water levels is an essential aspect of environmental conservation. Spreading awareness through all fora is a key to accomplishing it. To this end, UNESCO has been involved in diverse activities in the year 2000, and will be organizing some more specialized activities in the coming year.

Some Important activities organized by UNESCO this year were:

- A two-day workshop on July 27 and July 28 at Bhavnagar in the state of Gujarat
- A workshop titled Geo-environmental Hazards and Brainstorming Session on Control of Sulphide Mineralisation on Arsenic Levels in Groundwater from November 29 to December 1
- A seminar on Women and Water on December 9 and December 10
- An international conference on Integrated Water Resources Management for Sustainable Development (ICIWRM-2000) from December 19 to December 21.

One of the many important activities that UNESCO will be involved in next year is a Regional Training Programme on Applied Geologic Remote Sensing from March 7 to March 21, 2001.

In the workshop at Bhavnagar issues arising from the implementation of the first phase of the project on coastal management were discussed. The main areas of focus of the workshop were the recession of ground water and migration of agricultural labour. UNESCO will be taking measures to recharge ground water at Bhavnagar.

In addition to the recession in ground water levels, the increased level of harmful chemical substances in ground water is also a growing concern around the world. In this context, the School of Environmental Sciences (SES) at the Jawaharlal Nehru University (JNU) organized a two-day workshop on Geo-environmental Hazards and a day long brainstorming session on the Control of Sulphide Mineralisation on Arsenic Levels in Ground Water. The objective of this workshop was to identify and understand the reasons for a high content of arsenic in ground water. Another objective was to determine the relationship between the ground water of a region and its corresponding aquifers, as also the relationship between the geological history of a region and its ground water. To this end, scientists from sulphide-mineralised regions of the world participated in the workshop and brainstorming session. The session was organised as part of a regional project proposal submitted by JNU under the International Geological Correlation Programme (IGCP) of UNESCO and the International Union of Geological Sciences (IUGS).

In addition to supporting academic research, UNESCO has also involved in activities that contribute towards facilitating social changes that can enable water conservation. Thus, it co-organized the Seminar on Women and Water organized by the Central Ground Water Board, Ministry of Water Resources, Government of India which was held at New Delhi on 9-10 December, 2000. The office of the International Hydrological Programme, Special Project on Women and Water made a substantial contribution to the seminar during which significant measures pertaining to increases and effective participation of women in water conservation were recommended.

UNESCO is also involved in activities organized in collaboration with various national and international agencies. One of these was the International Conference on Integrated

Water Resources Management for Sustainable Development (ICIWRM-2000) at New Delhi, from December 19 to December 21, organised by the National Institute of Hydrology.

This conference focussed on:

- Stochastic and Systems Approach to Hydrological Problems: Research & Development for Management of Surface & Ground Water
- Water Pollution
- Artificial Recharge of Groundwater
- Assessment and Mitigation of Hydrological Hazards
- Hydrologic Measurements and Instrumentation: Problems & Experiences
- Integrated Water Resources Management in arid and semi arid areas, humid tropics, as also rural and urban areas
- Role of remote sensing & Geographical Information System (GIS) in water resources management
- Community participation in watershed management
- Climate change and its impact on water resources

Along with support to academic research, organising international conferences and facilitating social change, UNESCO recognises the need for technical education for development. Therefore, UNESCO's Delhi office, as part of its Earth Science Programme, conducts regional training programmes. As part of this initiative, a Regional Training Programme on Applied Geologic Remote Sensing will be held at the Centre for Geosciences and Engineering Technology, Anna University in Chennai, from March 7 to March 21, 2001. The objective of this training programme is to provide its participants with a basis for the effective application of remote sensing and GIS in water resources management.

During the programme, participants will be equipped with skills in digital image and satellite data interpretation and GIS analysis. They will have a comprehensive understanding of the role of remote sensing in water resources management. The programme will be held in English and will have a comprehensive understanding of the role of remote sensing in water resources management.

# DATELINE UN : PROJECT HIGHLIGHTS

## WSP-SA SURGES AHEAD IN PARTNERSHIP WITH RGNDWM TO SUPPORT WES SECTOR REFORM IN 63 DISTRICTS

Water and Sanitation Programme - South Asia (WSP SA) has taken the agenda of WES Sector Reform forward through four regional workshops (*Jai Manthans*) at Mangalore, Udaipur, Nainital and Guwahati between July and November 2000. At these *Jai Manthans*, district-level officers and political representatives shared their experiences with regard to the design and implementation of the WES Sector Reform initiated by the Rajiv Gandhi National Drinking Water Mission (RGNDWM). A total of Rs.1611 crores has been sanctioned for the water supply component of Sector Reform. This amount will be disbursed over the next two years. In the UN IAWG-WES Sector Co-ordination Meeting with ESAs held on January 9, 2001 at The World Bank, the WSP SA has been identified as the agency which will host the Donors Co-ordination Secretariat. The Secretariat with active support from DFID will further develop the framework within which ESAs will extend their support to WES Sector Reform.

## THE WORLD BANK FUNDED KERALA RURAL WATER SUPPLY AND ENVIRONMENTAL PROJECT

The Kerala Rural Water Supply and Environmental Sanitation Project will improve the quality of water supply and sanitation service delivery through cost recovery and institutional reforms. It will accomplish these objectives by implementing new decentralised service models, and by improving sector management capacity. The project is expected to directly benefit about 1.5 million people under 80 *Gram Panchayats* located in the districts of *Kozhikode, Malapuram, Palakkad* and *Thrissur*. It will be launched in February 2001 and is expected to realise its objectives by December 2006.

## WHO SPONSORED TRAINING PROGRAMME ON URBAN COMMUNITY WATER SUPPLY AND SANITATION CONDUCTED IN THRISSUR

A week long training course titled Urban Community Water Supply and Sanitation was conducted by the Human Settlement Management Institute (HSMI) in Thrissur from July 31 to August 6, 2000. The course was sponsored by WHO India Office. Earlier this year, HSMI conducted three similar courses at New Delhi, Guwahati and Jaipur. The course at Thrissur was conducted in the premises of the Kerala Institute of Local Administration (KILA). The subject areas covered in the course were Water Supply, Sanitation, Storm Drainage and Solid Waste Management. Associated areas such as waste recycling, operation and maintenance, community participation, NGO involvement in development projects and strategic planning approaches were also addressed. Elected representatives, engineers, planners, health officers and others who are involved in the implementation and upkeep of basic services in urban areas, participated in the course. The 27 participants of the course came from the states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu.

## UNDP SUPPORTS URBAN SERVICES ENVIRONMENTAL RATING SYSTEM FOR DELHI AND KANPUR

UNDP is supporting a project which aims to develop a rating system to evaluate the performance of municipal bodies in Delhi and Kanpur to determine their effectiveness in waste management and the provision of a regular supply of water. This project is significant as it is expected that the number of cities with a population of over a million people will increase from 23 (in 1992) to 49 (in 2001). The agency implementing this project is the Tata Energy Research Institute (TERI), and the project is being executed through the Ministry of Environment and Forest, Government of India.

## UNDP WORKS TOWARDS A COMMON EFFLUENT TREATMENT PLANT FOR LEATHER TANNERIES IN CALCUTTA

This UNDP project aims to assist the leather industry in Calcutta to relocate to a new leather tanning complex that is equipped with a common effluent treatment plant. The objective is to prevent pollution through the propagation of cleaner tanning processes. The assistance is routed through the Department of Industry and Commerce, Government of West Bengal, and seeks to evaluate the general pollution situation in the cluster of leather tanneries. It also aims to develop detailed plans outlining the technology, design and cost specifications for the common effluent treatment plant. The plant will have a proper disposal system for tannery sludge.

## UNDP AND THE DEPARTMENT OF URBAN DEVELOPMENT TAKE MEASURES TO UPGRADE THE ENVIRONMENT QUALITY OF DELHI

The population of Delhi is growing rapidly, causing a significant change in the quantity and quality of urban waste in the city. Therefore, UNDP has extended its assistance in the setting up of a participatory, decentralised, low cost and eco-friendly system of domestic solid waste management in residential colonies. In addition, it is involved in training waste retrievers and their families on health issues. Further, it is facilitating improvements in the green cover of Delhi through afforestation efforts. The Department of Urban Development, Government of Delhi, is executing the project.

## UNDP/ UNIDO SPPD PROJECT ON ARSENIC IN WEST BENGAL

The UNDP funded SPPD project in the state of West Bengal has been initiated to provide a solution to the problem of excess arsenic in drinking water in 68 blocks located in 8 districts of the state. Nearly 5.4 million people are at risk. The cost of the UNDP/ UNIDO SPPD project is \$120,000. UNDP is developing an analytical base to provide technical and policy advice to different stakeholders including the state government. UNIDO is reviewing existing policies, practices and ongoing interventions. It is engaged in the evaluation of process modules for 8 community-based and 5 household-based arsenic removal units under different pilot studies. These pilot studies emphasise making systems more community-friendly. UNIDO is also engaged in assessing training needs, institutional requirements and financial needs to cope with arsenic contamination in the state of West Bengal.



## EDITORIAL

When SANGAM was first conceived, the IAWG-WES ambitiously planned four editions a year. However, a quarterly news sheet seemed beyond us and we settled on one edition every six months. Two years on, and given the enthusiastic response to our request for articles, it may well be that we will need to revert to our original idea of producing SANGAM every quarter. This second edition for the year 2000 is twelve pages long, double the content of our first newsletter. This suggests that the IAWG-WES is a coordinated and cooperative body!

In this edition, the front page carries a story about the Schools In Development (SID) initiative in the state of Maharashtra. SID helps in organizing support from children for the promotion of personal and environmental hygiene. Children inject a new enthusiasm into their communities. Additionally, interaction between schools, teachers, children, local functionaries and other members of the local community increases. In due course, the long-term impact of SID will have to be evaluated and a process of monitoring is now in progress in the areas where this innovative initiative is being implemented.

The spectre of drought looms large over several states again this year. Gujarat, Rajasthan, Madhya Pradesh, Orissa and Maharashtra face the brunt of failed monsoons such that the first few months of the new year are likely to prove challenging for the state water supply agencies. Recognizing the need for the formulation of a strong and sustainable water policy in each of the drought-afflicted states, a joint United Nations (UN) Mission carried out field visits to some of the worst affected districts.

In the sanitation sector, Rural Sanitary Marts (RSMs) function as delivery points for raw material and technical know-how for the construction of low-cost sanitation facilities. In the hilly districts of the new State of Uttaranchal, people not only support the Marts, but also regard them as community centres that provide solutions to their problems. The active involvement of the local population is mainly responsible for the success of Rural Sanitary Marts in Uttaranchal.

Other than sanitation facilities for excreta disposal, there is also a need for waste disposal. Interestingly, earthworms can be used for the reduction of solid wastes. The simultaneous conversion of solid waste into fertilizer through the process of vermi-composting offers an ecological solution. Vermicomposting is a simple process that requires few resources.

Non-government Organizations often play a crucial role in spreading awareness in communities. One such NGO, the Arunachal Pradesh Women's Welfare Society (APWWS) has been involved in several activities to generate awareness, and has also been simultaneously conducting a survey to determine the water and sanitation needs of Papumpare district in Arunachal Pradesh. It also acts as the apex of various other organisations in the state.

Agencies of the UN also work in conjunction with local NGOs. This is important because the agencies pay attention to all aspects of development in the areas where their programmes are in progress. UNESCO is involved in programmes that will benefit many aspects of the water sector, such as ground water poisoning, technological requirements for tapping water and educating women in rural areas about the prudent use of water and the importance of waste water disposal.

Various programmes are in progress to address the problematic issues arising out of the water and sanitation conditions that are prevalent in India. However, the need for an exchange of ideas and more information remains. It is hoped that SANGAM will provide a platform for this to ensure better coordinated development in the areas of water and sanitation, as also in the over-all development of communities in both rural and urban areas.

As this second edition of SANGAM for 2000 goes (late!) to press, I have to report that our insightful and experienced IAWG-WES Coordinator Akhilesh Gautam is seeking greener pastures and will no longer be available to us from January 2001. I have greatly appreciated the support that Akhilesh has provided to our Group and especially to myself, as Chairperson. I have received many comments of appreciation from individuals in other member agencies as well. I am sure that we will all miss his cheerful and enthusiastic presence.

With every good wish for 2001

Rupert Talbot  
Chairperson, UN IAWG-WES &  
Chief WES Section  
UNICEF, India Country office  
New Delhi

## FEED BACK

Dear Mr. Talbot

I have gone through two issues of "Sangam" the Newsletter brought out by UN Inter Agency Working Group on Water and Environmental Sanitation in India. It was a pleasure to know that all UN agencies are working in close liaison for the betterment of universe around the child and also that there is a concern about natural calamities and mitigation.

I hope this excellent publication will consolidate the efforts of all stakeholders in the water and sanitation sector and will continue unification of efforts of UN, GOI and other governments.

I wish all success to your efforts.

Thank you & with regards,

Yours sincerely,

(RAM SINGH BISHNOI)

Minister, P.H.E.D.

Govt. of Rajasthan

In January 2001, Mr. Gauri Shankar Ghosh took over from Mr. Ranjith Wirasinha as Executive Secretary of the Water Supply and Sanitation Collaborative Council (WSSCC). He will be based at the WHO office in Geneva.

## UN IAWG-WES : UN INTER AGENCY WORKING GROUP- WES

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The World Bank



Water and  
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### Editorial Board UN IAWG-WES

Rupert Talbot (UNICEF), Pradeep Monga (UNDP)  
and Junaid Ahmed (WSP-SA)

### Coordinator

Akhilesh Gautam

Send contributions, comments and suggestions to:

### UN IAWG-WES

### UNICEF-WES SECTION

India Country Office, Unicef House, 73, Lodi Estate  
New Delhi-110 003, India.

Tel.: 91-11-4690401 • Fax: 91-11-4627521/4691410

e-mail: agautam@unicef.org