



'Water for Life'
UN-Water
Best Practices Award

**Five years of UN-Water
"Water for Life"
Awards 2011-2015**



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The UN-Water “Water for Life” Best Practices Award was established by UN-Water in 2011 marking the midterm of the decade.

The Award aims to acknowledge and promote efforts to fulfill international commitments made on water and sanitation related issues by 2015, by recognizing outstanding best practices that can ensure sustainable long-term management of water resources and help achieve the water and sanitation targets of the Millennium Development Goals (MDG), Agenda 21 and the Johannesburg Plan of Implementation.

The “Water for Life” Best Practices Award is awarded to projects, initiatives or programmes, rather than individuals or organizations. Candidatures are submitted through an independent nominating organisation.

The award Secretariat is managed by the United Nations Office to Support the International Decade for Action “Water for Life” 2005-2015/UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC) with the UN World Water Assessment Programme (WWAP),

The Award Technical Advisory committee comprises high level experts from all over the world, selected and proposed by the WWAP (UNESCO).

The Juries have been composed by international experts in the water and communication sector from international organizations, initiatives, universities and think tanks.

2011 **Alberto Tejada-Guibert** Director a.i. Division of Water Sciences, UNESCO; **Bert Diphhoorn** Director of the Human Settlements Financing Division and Chief of the Water, Sanitation and Infrastructure Branch, UN-HABITAT; **Letitia A. Obeng** Chair, Global Water Partnership (GWP); **Nikhil Chandavarkar** Chief of the Communications and Outreach Branch of the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs (UNDESA); **Per-Arne Malmqvist** Scientific Director, Stockholm International Water Institute; **Reza Ardakanian** Director of the UN-Water Decade Program on Capacity Development (UNW-DPC).

2012 **Pasquale Steduto** Head of the Water Unit of the Food and Agriculture Organization of the United Nations (FAO) and deputy director of the Land and Water Division; **Avinash C. Tyagi** Secretary General of the International Commission on Irrigation and Drainage (ICID); **Blanca Carazo Pérez** Project officer for development cooperation projects, UNICEF Spain; **Caridad Canales** Economic Affairs Officer, Economic Commission for Latin America and the Caribbean; **Per-Arne Malmqvist** Scientific Director, Stockholm International Water Institute

2013 **His Excellency Sirodjidin M. Aslov** Ambassador, Permanent Representative of the Republic of Tajikistan to the United Nations; **Avinash C. Tyagi** Secretary General of the International Commission on Irrigation and Drainage (ICID); **Caridad Canales Davila** Economic Affairs Officer, Economic Commission for Latin America and the Caribbean (ECLAC); **Jens Berggren** Director, Stockholm Water Prize and Stockholm Industry Water Prize, Stockholm International Water Institute (SIWI); **Léna Salamé** Programme Specialist - Coordinator From Potential Conflict to Co-operation Potential (PCCP), Division of Water Sciences, UNESCO; **Shaoyi Li** Head, Integrated Resource Management Unit, United Nations Environment Programme (UNEP)

2014 **Zafar Adeel** Director of the United Nations University Institute for Water, Environment and Health (UNU-INWEH); **Igor Volodin** Unit Chief, Environmental Management Branch, Program Development and Technical Cooperation Division, United Nations Industrial Development Organization (UNIDO); **Jens Berggren** Director, Stockholm Water Prize and Stockholm Industry Water Prize, Stockholm International Water Institute (SIWI); **Caridad Canales Davila** Economic Affairs Officer, Economic Commission for Latin America and the Caribbean (ECLAC); **Shaoyi Li** Head, Integrated Resource Management Unit, United Nations Environment Programme (UNEP); **Richard M. Taylor** Executive Director, International Hydropower Association (IHA)

2015 **Blanca Jimenez Cisneros** Director of the Division of Water Sciences and Secretary of the International Hydrological Programme, UNESCO; **Olcay Ünver** Deputy Director, Land & Water division, FAO; **Thomas Chiramba** Chief, Freshwater Ecosystems Unit in the Division of Environmental Policy Implementation (DEPI), UNEP; **David Coates** Environmental Affairs Officer, Inland Waters UNCBD – United Nations Convention on Biological Diversity

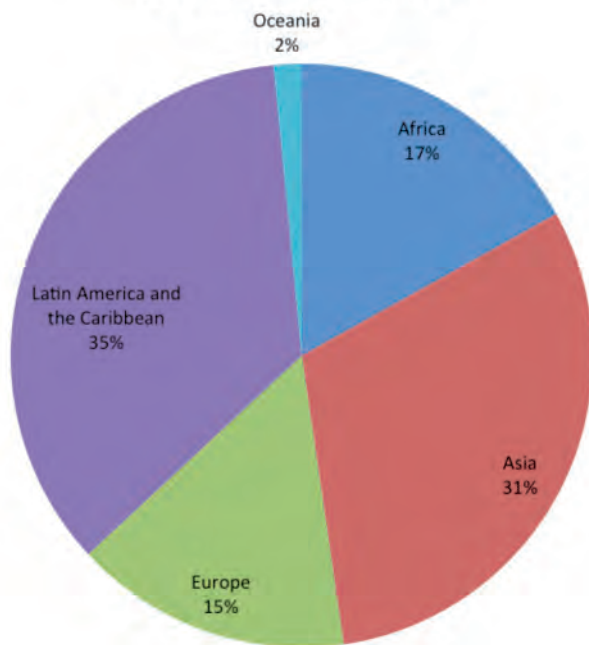
From 2011-2015 is the Award has been awarded annually in two **categories**: “best water management practices” and “best participatory, communication, awareness-raising and education practices”.

Category 1: The best practice must have substantially contributed to the **sustainable improvement of the living environment**, especially to the living conditions of the poorest and most disadvantaged groups of society, and demonstrate a positive impact.

Category 2: The best practice must have made an outstanding and tangible contribution to improving participation and **developing awareness** of water and sanitation issues. It must show ability **to improve participatory practices and communicate clearly and effectively**; Leadership in **inspiring action and change**;

- The best practice responds to one or more of the following **requirements**:
 - Respect for social and cultural diversity;
 - Transferability, adaptability and ability to be up-scaled;
 - Appropriateness to local conditions and levels of development.
- The best practice **contributes** to, but is not limited to:
 - The promotion of social equality and equity;
 - The eradication of poverty;
 - The preservation of traditional knowledge.
- **Clarity**: The clarity with which the best practice is presented and the approach described.

Applications received



The winners

Water for Life: Water for our Future

The 2015 Winners – Category 1



Cultivando Agua Boa/Cultivando Agua Buena

When Itaipu Binacional, the world's largest hydropower plant, was built in the 1980s, environment was seen as a limiting factor for economic development. Thus the creation of the dam, and growth and activity in the area led to a reduction of biodiversity, the disappearance of riverheads and a degradation of water quality in surface and groundwater sources. A new approach to land and water management was required. This need gave birth to the "Cultivando Agua Boa" program. The program aims to protect natural resources and fight poverty in the region. It works on social and environmental problems, promoting a new vision of water resources use through the participation of all stakeholders involved.



“Cultivando Agua Boa” is a systemic program based on civil society participation, where water is the backbone for a series of actions, with the objective to fight poverty and climate change. It represents a new way to substitute old habits with sustainable and participative practices focused on those territories where natural resources are threatened. It works with an awareness plan composed of 60 actions, which to date has enabled the following main achievements: recuperation of 200 micro-basins in the region, upgraded water quantity and quality, reduced soil erosion, improved life quality and social insertion of local people, reforestation of riversides, increased nature conservation and a participative water management promoting water stewardship and sustainable land management.

Category 2 (Co-winners)



Social arts for community mobilization and safe water access – ONE DROP Project India

ONE DROP uses water to drive change with a unique approach that empowers people to improve their living conditions. Called the “ABCs of Sustainability”, it is based on 3 complementary components designed to establish a solid foundation on which communities can build and flourish: Access to Water and Sanitation (“A”); Behavior Change through Social Arts (“B”); Capital/ microloans (“C”) for economic development. Project India is rooted in the “A” and “B” components. It is implemented in Odisha, which is among the seven poorest Indian states. Carried out over four years (2011-2014), it implements sustainable solutions to the problem of poverty through a WASH program designed/implemented by Gram Vikas whereby a 100% coverage/inclusion method ensures access to a toilet, a bathing room and water available 24/7.

Project India’s strategic approaches and objectives are twofold:

1. Access to Water, Sanitation and Hygiene: improve access to safe drinking water, sanitation and hygiene by building dignity and social inclusion.

2. Behavior Change through Social Arts activities: raises awareness of the intervention zone population to change their hygienic and sanitation practices and become mobilized to manage water sustainably.

The purpose of the project is to facilitate and accelerate participation and thus the implementation of Gram Vikas' program in 100 villages by developing artistic activities firmly rooted in local culture to raise collective awareness, educate and mobilize the populations around WASH issues. ONE DROP draws inspiration from circus creativity to develop professional artistic activities in order to inspire people and enable the process of social change. Using a community approach, the project directly benefits more than 58,000 people of both genders, all ages and castes.

Behaviour change activities helped to raise communities' awareness and understanding of the impacts of poor hygiene. The activities generate a sense of empowerment for villagers who feel they are no longer beneficiaries but real participants in the project. The artistic workshops successfully contribute to "transform" villages from reluctant to engage in the WASH program to understanding its value and potential, helping to reach the 100% consensus for Gram Vikas WASH program. Indeed, 74% of the target population have reached consensus and are now engaged in the program, with 16% of villages already fully covered. Following the workshops, an improvement of the sanitation and hygiene behaviors could be witnessed in several villages where, for instance, women were no longer using the local stream to bathe and toilet use had increased. As reported by the villagers themselves, the practice of open defecation has reduced and children have demonstrated better hygiene practices.

The entertaining nature of the artistic activities ensures the participation of all categories of people, effectively breaking the caste, class and gender divide. Finally, conflicts over water have decreased in some villages, demonstrating how social arts can generate engagement and alleviate social disparities.

Jacques Rajotte

Chief Operating and Innovation Officer, ONE DROP

"ONE DROP works towards sustainable change through its unique ABC approach—by focusing on A - access to safe water for consumption and agriculture, B- behaviour change through locally-inspired social arts initiatives to address the cultural challenges of water, sanitation and hygiene and C-capital and skills training to improve the economic well-being of communities.

ONE DROP Project Odisha, India, was a collaboration with Gram Vikas¹. The purpose was to put more emphasis on the "Behaviour" component to facilitate the process of mobilisation, so ONE DROP's role was a little bit more focused than usual in terms of addressing this specific issue of access to water and sanitation. What Gram Vikas does in the communities they work with is water and sanitation and also some livelihood development. But our ABCs are very much linked to the process of mobilisation, to accelerate and facilitate that process of implementation.

In India generally speaking, the communities have access to some government incentives or government subsidies, so when we're working with the communities we make sure they will actually access that money. In addition there is a contribution that is required from the community to participate in the action for water and sanitation but this is mostly "in kind". What I mean is providing some raw materials or by providing their own time, for instance digging or helping to facilitate the installation. The actual contribution is in cash to a fund called the Water Fund. We create water committees at the community level. It's a fund that will serve for the maintenance of the installation once they have been completed. The Gram Vikas approach is called MANTRA (Movement and Network for the Transformation of Rural Areas). A requirement is that each community creates a committee, sets up the fund and get 100% commitment from the community to make a contribution to the fund. So if there are some community members who are poorer than others, then some families might be able to compensate for others, but in the end when we start doing the installation or providing the access to water and sanitation each family will have contributed. Perhaps each family will need to contribute 2,000 rupees (USD 32). At the end there needs to be, say, 100,000 rupees in that fund from all the families before we start the work². It's more about the maintenance and sustainability of the installation. The B in the social arts program is what mobilizes the communities to make that contribution.

Gram Vikas had identified 100 villages in which they had previously been trying to set up a Water Fund but had failed. So they had a pre-diagnosis of each of those communities. We knew why they thought their initial effort failed and what the barriers were that needed specifically to be addressed – in some cases it might be a leadership issue. In others, it might be more like a caste divide issue. In others it might be a general awareness issue, especially with regard to also addressing the issue of sanitation along with water. Because the way Gram Vikas works is they do not intervene only with access to water, they make it a condition that it's also an

1. An award-winning Indian NGO based in Orissa. "Gram Vikas" literally means "village development".
2. Each community and intervention will require a unique amount of funding, figures as an example..

intervention with sanitation. And they start by giving access to sanitation first. Then water is second. Because sometimes communities do not see the need for access to sanitation. So all of these are barriers to mobilisation.

In each of these villages we would identify a group of artists, as well as various social art tools, so depending on the various issues we would go to those communities knowing or having a general idea about the issues. We would also run workshops, longer interventions where we felt that the challenges were greater. In these cases, project team members would go to those communities for four or five days, with a toolbox of potential social art projects they can use. And they start interacting with the community and based on those conversations, and using these specifically designed art interventions they start the community dialoguing among themselves and becoming more aware of the sanitation issue, realising that if you have a divide when it comes to water it's about survival and your own community and your children and so forth. The intervention will really vary on the basis of the diagnosis that we have received and the actual interaction that will take place. It's an interactive and iterative process within the community.

There are several levels to the ONE DROP social and education approach. One is working with the leaders of the communities. In these environments you cannot enter a community unless you have the support of the leaders, because that's how they are structured. So the first is about dialoguing with the leaders, having a common understanding with them about what we want to do and what we want to achieve, making sure that there's a buy-in on their part.

But certain topics are easier to address through the children. In the collaboration with Gram Vikas – even through our social art partner, the issue of sanitation was very difficult to approach. So we developed a tool in order to try and go around that taboo, that reluctance to talk about sanitation. We designed a concept where the message was written by children and performed by children. So they went into various schools and asked children to start writing a play to their liking, talking about open defecation and sanitation issues. A bit of a workshop, but a very playful type of approach. And from all these elements that were put together by the children they created a play and then the children were trained and performed. This had amazing success in communities. The simple fact of parents seeing their own kids performing the play, they were proud but also ashamed because their kids had to tell them that their villages were not safe and there were hygiene issues and so forth. So I think this was a very interesting outcome and learning from that. This product is easily replicable and that's probably the one that Gram Vikas is using the most at this point in time, because it's very efficient and it's very low cost for them.

There is a process that was developed to lead to the actual play. Because it is something we want to be able to replicate in other parts of the world. There's no set recipe, but there are definitely best practices and learnings from experience that have been consolidated.

The intervention with Gram Vikas is complete but we're continuing to monitor and evaluate to measure the outcomes. The standard rate of success for Gram Vikas in mobilising communities was about 5% (before ONE DROP's involvement). At this point last time we measured, December 31st 2014, it was about 35% but with another 40% in process. We'll keep monitoring in June and December this year, just to see how successful we have been. That's an activity that is ongoing. After that we'll stop monitoring as the correlation between our work and ongoing success is a bit more difficult to establish after two years.

We've also produced a Bollywood film, so we're in discussion with distributors, we hope the movie will be released between now and September 2015. In that process we are also establishing collaboration with the Indian government and the World Bank for the promotion of the movie, and for doing an impact evaluation of the movie in a controlled context. We hope that this movie will again prove that this is a very powerful tool in terms of raising awareness and mobilising communities. The third new project we have initiated in September 2014, a new initiative in the state of Bihar, and there our intention is to reproduce the same ABC for sustainability and reach out to and provide access to safe water for these people over a period of five years. That project is working in partnership with Water for People, a leading organisation in the field. Rather than be perfectly integrated we try to work with the best in the field for the implementation of access to water and sanitation."



South African DWS / WESSA Eco-Schools Water Project

The DWS/ WESSA Eco-Schools Water Project was born from discussions during the 2013 UN International Year for Water Cooperation which raised awareness regarding the importance of multiple actors working together for better water management. The key partners are South African Department of Water and Sanitation (DWS) and WESSA (Wildlife and Environment Society of South Africa) Eco-Schools; although many other stakeholders and partners are involved at both a macro (National/ Provincial) and micro level (school level). The project aligns Government priorities with NGO/ civil society objectives so the pooling of best practices can result in better water education, management and outreach.

This project's main objective is to strengthen water education through the Eco-School's 7 step framework for ESD learning and change. These steps guide schools through a learning process which promotes water conservation and sanitation education as well as engaging learners in enquiry-based learning methods which empower them to better understand their local water context and to take action to improve this. The project has a strong inclusiv-

ity focus, emphasizing public participation, participatory learning processes and action taking for better water management and to ensure water security for the more disadvantaged communities that do not have access to potable water especially in areas where water is increasingly becoming scarce due to climate change and poor catchment management practices.

Improvements to actual conditions in schools in terms of access to clean water, water conservation and sanitation are already evident. Other results reported on by project coordinators and the schools themselves include:

Improved school management (with a focus on environment and sustainability), participatory action for change, increased environmental awareness and knowledge, improved local community involvement, Development of local relationships with partners involved in water management and education, teacher capacity development on environmental content knowledge and teaching methods, improved quality education (teaching and learning), improved data collection upon which water-wise decisions can be made.

Mahlatsi Mminele

Deputy Permanent Representative of the Republic of South Africa to the United Nations.

"South Africa really welcomes this prestigious accolade - water is life. The DWS/WESSA Eco-Schools project is aimed at ensuring the long term sustainability of water resources, and this award will go a long way to supporting the participation programmes for communications and awareness raising. It also supports our youth and community inclusive programmes geared towards social and economic transformation. We are deeply humbled as a country by this award bestowed on us by UN water and partners.

We receive this honour also on behalf of Africa, and would like to thank the African ministers council on water, which has championed water and sanitation youth strategy. This vital project was first implemented in 2013- 2014 within 50 schools. The objective of the eco schools project is and was to encourage water conservation, sanitation education and the smart usage of water resources in schools. South Africa is one of the world's water scarce countries. We participate in projects such as eco-schools to encourage youth and communities to take ownership of water resources and encourage 20/20 vision for water and sanitation education programmes.

Our recognition here shows that communities are aware of this prestigious award to encourage future generations. It is our vision as a country that there is a need to build a water wise community that begins with a youth who are our future leaders. It is our firm belief and conviction that water is life and sanitation is dignity. As a country we need to build a critical mass towards a positive mind with regards to water and sanitation. Rest assured that this award will contribute and take a long way towards advancing our progress.”

Water for life: Water for empowerment



A communication strategy for social and behavior change through the promotion of three key practices and the adequate use of services in four municipalities of the Department of Cochabamba, Bolivia

Bolivia is among the poorest countries in Latin America. Four out of 10 Bolivians live in extreme poverty. This means there is often no access to basic drinking water supply and basic sanitation facilities. This and the existing hygiene practices means a high risk of water borne diseases and high mortality rates. Respiratory illnesses, mainly pneumonia, diarrhea and malnutrition or a combination of these cause 7 out of 10 deaths of Bolivian children.

In Cochabamba, in some municipalities such as Arque, Tacopaya, Bolivar and Sacabamba the under-five mortality rate is higher than the national average. Women are hit especially hard with water-related problems such as scarcity, pollution and the increasing needs of households and the community. The poverty and marginalization of women is linked with their lack of training and empowerment. This is a barrier to expressing their problems and expectations in water, sanitation and hygiene services.

The objective of the Project was to increase access to safe water, improve hygiene and sanitation in the municipalities of Arque, Tacopaya, Bolivar and Sacabamba, in Cochabamba, through the participation and empowerment of the community. This with a gender and rights approach to ensure a change in three key hygiene practices hand-washing with water and soap, consumption





of safe water (treatment, management, and house storage), and adequate disposal of excreta and use of existing services in the four municipalities.

This was achieved by encouraging the participation of women, including empowering them to make decisions in all the project's interventions. This is a flexible process that adapts to the different situations of women and allows gradual appropriation of management tools for implementing and evaluating community education projects in hygiene and sanitation.

It also involved changing hygiene behavior in school children and through them the community at large.

Across the four municipalities, eight women's groups implemented community self-assessment processes with community organizations to identify and prioritize their needs related to the availability of safe water, sanitation and hygiene. Seventy communities with 194 community leaders were trained in gender issues, rights, self-esteem, leadership, management, and other key areas.

By 2011 89.5% of water was treated for drinking through Solar Water Disinfection (SODIS), where the baseline was 33.6%. Adults were washing hands for hygiene where necessary 89.5% of the time, again from a baseline of 33.6%.



Toilets were correctly used 65% of the time, compared to a baseline of 21%, and open defecation had been eliminated from at least 16 of the communities involved.

What's more, as a result of the programme, Women Community Organizations identified and strengthened their capacities to plan community projects and they were a driving force in implementation.

Elsa Sanchez**SODIS "**

I remember very well students in Tiquipaya; how they worked with their parents in promoting handwashing practices and safe water consumption. Children taught their own families to practice. The father of a boy said: "Thank you, my son, no one has taught me to wash my hands as you have taught me." It was a source of pride for father and son.

Arriving to the Sursubi community of the municipality Concepcion for a monitoring visit and to support the implementation of the Strategy for Health, Safe Water and Sanitation (HASS), I went immediately to the school at the precise moment that children were playing in the green field. I believe we arrived late, I thought silently. Just then I noticed a small, thin boy about six years old with a small bottle in one hand and a ball of cloth worn in the other and said, "Professor, professor, worms that were in my water do not move anymore because I killed them yesterday with the sun. Can I drink it now?" At that time my heart made a "chuño" [swelled] and the tears wouldn't wait.

Rather than thinking of changing minds, what we try to achieve is the active participation of various actors in the process of reflection on their problems and decision-making, to achieve involvement and ownership of initiatives to help improve their hygiene practices and overall health. We place special emphasis on the participation of community organizations led by women, mainstreaming approaches to gender equity and rights.

Of the adult population in one of the projects of SODIS (Participation and Community Empowerment in Water Sanitation and Hygiene), implemented in the municipalities of Tacopaya, Arque, Bolívar, and Sacabamba Department of Cochabamba during the negotiations 2010 and 2012, we saw a significant increase in the practice of handwashing. With regard to water treatment in the same population group, before SODIS 44% had knowledge about the importance of water treatment, and after, this percentage increased to 98.7%.

Of the student population in the same project, we also saw great results in the final evaluation. Changes for students in schools, managed through the work done by teachers include training on various topics of water, hygiene and sanitation, organization of spaces and practices of monitoring them. In addition, the training strengthened the structure, training and operation of Safe Water Committees and motivation for children's creative expressions of these topics.

Initially, the project's methodology did not consider the construction of bathrooms nor the improvement or construction of water systems. There was also no component with menstrual hygiene management and strengthening the social structure by the Water and Sanitation Committees (CAPyS), which were included in more recent initiatives of the SODIS. In the future, the project will continue to evolve with the need to contribute more effectively to national political forces in our country, in relation to the right to water. The future demands strengthening of the capabilities of the SODIS Foundation to incorporate into their projects the issue of participatory municipal management in order to achieve more sustainable impacts.

The most important lesson is that the sustainability of projects necessarily requires strengthening community participation and empowerment, linked to municipal management processes, while considering the issues of water, hygiene, sanitation, and health education as skills of the Gobiernos Autónomos Municipales. The improvement of water and sanitation situations involves various actors from the national, departmental, municipal, and community levels; considering it is the role of the state to generate policies that allow the development of programs and projects to promote participation and empowerment of local actors in the context of strategic alliances with agencies, NGOs, private companies, church, and others.

Everyone does what they can. SODIS supports; facilitating processes of reflection on the problem, strengthening local capacity, providing technical assistance and promoting social development and capacity building, among others.

It's so important that people make decisions in processes and project implementation because any initiative that wants to develop to respond to the people's needs and problems, must fit the context in which they live. To be legitimate and can count on the people's support and active participation. To achieve the participation of women, the SODIS Foundation developed a Strategy for Community Participation and Empowerment, which is based on a methodological process. The multiple aspects ensure that women are empowered in their ability to identify needs, prioritize, and participate in decision-making in these solutions and the administration of funds.

The most visible change of the last 10 years is the application of different methods of water treatment (boiled, chlorinated, SODIS, and filtered). In turn, the articulation of a project to promote the consumption of safe water. Hygiene and sanitation with community participation and empowerment.

There are several ways in which you can see the contribution of the SODIS Foundation in improving the skills of those involved in the processes that drive them.

In addition to contributing to healthy consumption practices of safe water, hygiene and sanitation, SODIS helps strengthen the leadership and management capacity of various local stakeholders, and emphasizes grassroots women's organizations. Also, SODIS strengthens the capacities of women and high school students (15-18 years of age) to become promoters/educators and managers in the family and community environment.

Another way to improve skills is to strengthen the participation of children in the community self-assessment through the methodology Talking Pictures (Imágenes que Hablan), which uses photographs that children take to express what they think, feel and live in relation to issues of water, sanitation and hygiene. That way we are strengthening their capacity to reflect on their environment and use an important tool (photography), when they usually do not have access to this tool.

We believe that the current work on development projects must be designed in the context of adaptation to climate change and sustainable development. On that line, in Bolivia we have the Bicentennial Patriotic Agenda 2025, which defines guidelines for future initiatives that we will pursue, without losing sight that at the global level everything points to targets beyond 2015."

The initiative "A communication strategy for social and behavior change through the promotion of three key practices and the adequate use of services in four municipalities of the Department of Cochabamba, Bolivia" was awarded with the Category 2 "Best participatory, communication, awareness-raising and education practices" Water for Life" UN-Water Best Practices Award in 2012.

Water for Life: Water for Progress

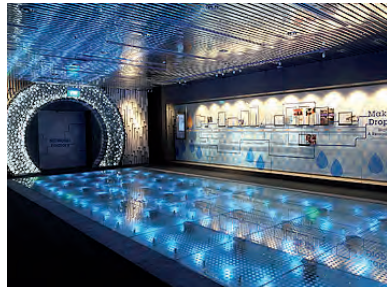


NEWater Project, Singapore

In 1965 Singapore's riverways and canals resembled open sewers. The city-state was almost entirely reliant on outside water sources. Apart from a downtown core, most of the population lacked a clean water source and sanitation.

To ensure a sustainable water supply to support Singapore's economic growth, the PUB (Singapore's National Water Agency) initiated the Four Taps programme. These Four taps comprise an expansion of water catchment areas, importing water from Johor in Malaysia, the SingSpring desalination plant and NEWater.

In 2002 NEWater was launched. NEWater is a highly advanced water recycling programme which involves putting treated used water through dual-membrane (microfiltration and reverse osmosis) and ultraviolet technologies. The resultant water exceed WHO drinking water standards.



NEWater already meets 30% of Singapore's daily water needs for industry. This is important, as non-domestic sources currently account for 55% of Singapore's daily water demand. By 2060, NEWater may be able to provide 55% of non-domestic demand for water, ensuring a sustainable future for the city state.

Singapore's citizens are proud of their NEWater development. The government has bottled the purified water for sale for human consumption.

George Madhavan

Director (3PN), PUB (Singapore's National Water Agency) on NEWater

"Singapore is the second densest country in the world. We have 5.4 million people in 716 km². There is not enough land for us to rely on groundwater sources. We have always had to collect rainwater and import water from Malaysia, but this left us vulnerable to the weather and events beyond our borders.

Our masterplan was the 4 Taps program. In the last decade we have introduced the last two of these "taps" – NEWater and desalination facilities. These are not dependent on weather conditions. We are classified as a water stressed country by the United Nations, and this allows both industry and people not to worry about water, to focus on their lives.

Singapore may be water scarce, but our water programmes have made us attractive to business, because we can guarantee a high quality, very reliable water supply. We can't afford any interruption to this supply; the jobs of Singaporeans depend on it. So now when you see companies like Rolls Royce in Singapore, our water supply has played a major role in this and all Singaporeans are benefiting.

In the 60s people were very poor. People farmed and defecated right alongside the Singapore River. In 1977 the ministries were challenged to clean the river in 10 years. It was a very big job; we had to re-house those living on the river side while also cleaning up. We dammed the river. By 1987 there were fish in the river again.

We now have two separate systems for collection, because different types of water require different levels of processing: one system for used water [black water] and one for rainwater. We then recycle all this water and use it again.

In the dry season we put NEWater back into the reservoirs to ensure levels are consistent. We use membrane technology, forcing water through a membrane that will only allow

the water molecules through, so there's no chemicals involved. We are researching bio-mimicry to copy the human kidney. It's the most efficient filtering machine in nature, and we are beginning to understand how it works. We hope that in the next few years we can introduce this.

We built our first desalination plant in 2005, the second in 2013. We do impact studies on the local environment. The Ministry for the environment has guidelines we must adhere to. According to our monitoring the process is sustainable, we are not adding contaminants.

We have public outreach programmes on water from pre-school to university. Water here is scarce. It has a value and we must pay for it. We manage demand. We don't subsidize water, and everyone pays the same. But no one goes without. We have a water efficient building programme that provides guidelines for construction. We ensure taps and even washing machines are efficient.

We constantly want to learn and develop. Every two years we have Singapore Water Week, and we invite world leaders in Water from around the globe to come to a conference. We have a Water Expo for industry, to show off our water management capabilities and hopefully attract more business. We have a Water Convention which is a platform for water professionals and related businesses, currently in its sixth edition.

NEWater will be the pillar of our water supply for the next 50 years. We have replaced the use of potable water for industry with NEWater. In Singapore we have lots of high impact industry. NEWater already provides 30% of the water they use. By 2060 it will provide 55%. This is significant because our growth will be founded on water from our own catchment. We could not import more water from Malaysia if we wanted to, so NEWater and desalination will only become more important to the people of Singapore. While we are constantly engaged in R & D to bring down the energy required for desalination, NEWater uses only a quarter of the energy of desalination, so that will be most important to us.

We have a NEWater visitor centre³ now, we're proud of our work here, you should come and visit."

NEWater was awarded with the Category 2 "Best participatory, communication, awareness-raising and education practices" Water for Life" UN-Water Best Practices Award in 2014.

3. The NEWater Visitor Centre was set up to educate the public on the Singapore water story and the science behind NEWater..

Water for Life: Water for Ecosystems

Protection of Bangalore Lakes for Posterity – Setting a legal precedent for conservation of lakes as commons

Bangalore, the capital of Karnataka state, is the third most populous city in India and home to 10 million people. But rapid urbanization has put its traditional water sources at risk. Bangalore draws about 1400 million liters per day (MLD) from River Cauvery which meets half the city's needs. The rest is drawn from groundwater sources, the quality and quantity of which is fast degrading.



Yet Bangalore can't draw more from the river. The Cauvery flows through many states with ever increasing demands from industrial, agricultural and urban users, and there is a cap on withdrawals. With a history of violent clashes over water in the area, there were serious concerns that these stresses could lead to violence.

It wasn't always this way. Historically, communities across the region developed a network of lakes to form a larger watershed. This provided security in this semi-arid region otherwise dependent on seasonal rivers. The network also helped recharge groundwater, and surface water for a second crop in the dry season, improved the local climate and supported biodiversity in rich wetland ecosystems.

Until 20 years ago, Bangalore had over 600 such lakes. Today, these lakes are seriously contaminated, and less than 450 survive in various stages of deterioration. This has had a debilitating impact on groundwater levels. Corrupt forces have also allowed real estate developers to encroach on what was common space.

When the Environment Support Group (ESG) began addressing this situation a decade ago, many saw this as a futile and dangerous struggle against well-organized corrupt forces. ESG began to organize local communities and ran campaigns to promote conservation of lake systems. But moves to privatize the lakes were gaining ground, with middle class Bangalore accepting this as progress. By 2007 and 2008 ESG were able to mobilize their growing network of supporters into large protests against lake privatization. Local communities stepped up to protect their polluted lakes.

ESG then initiated a public interest litigation, which ordered a status quo on privatization of lakes and created a committee involving nine government agencies and officiated by a sitting judge of the Karnataka High Court. The committee was tasked with developing a plan to protect and conserve Bangalore's lakes.



As key petitioner, ESG was asked to assist the committee. The results of the plan became binding on the government in early 2011. The plan anticipates that when the 450 lakes are completely rehabilitated along with interlinking canal networks, a massive absorption of rain water into groundwater aquifers can take place. Well levels will rise, water quantities and quality will improve, and there will be a decrease in energy demands for drawing water. For communities based on subsistence farming,

which supply vegetables and other produce to the city, this means safer water, and better crop growth. Cattle grazing communities can anticipate access to safer water and thus better milk yields.

The plan is also designed to ensure the ongoing rehabilitation of lakes will provide wetland habitats, increasing biodiversity.

Leo Saldanha

ESG, Bangalore, India

"We had a wonderful system of lakes for centuries. For the last 50 or 60 years we forgot to maintain them. It reached a stage where the lakes might be privatized; they would have put floating hotels on them.

If we could have urbanization with an organic spin the environment could take care of itself. But the elite-promoted urbanization was negative. The higher up in society people were, the less they saw what was happening on the ground, they were removed from it.

What we needed was to develop without compromising life and health. It was easy to talk with the poor about protecting the lakes – they rely on the commons for the livelihoods and they value them like something sacred. But the middle class lives in gated communities and is used to switching on a tap and finding water, to fixing problems by spending money. They lived in a bubble removed from the reality of what would be lost if the lakes were privatized. They needed to learn what they would be losing.

Despite everything that has happened [with the new legislation] groundwater degradation is far from halted because of the pace of city growth. Growth is preposterous, the sky is the limit. The government needed a leap of imagination to see the value in not just protecting the water sources, but keeping the land as commons.

Protecting the lakes by planting trees not barbed wire, so they're not just freshwater reservoirs but wetlands, green havens. Now it is law that all lakes must be surveyed and protected with money allocated from the annual budget. Now the government can see how we can create communities invested in rehabilitating the lakes, which brings jobs as well as fresh water, and as a result better health. Now other states are watching us and learning, so these laws are influencing change not just here but Kolkata, Hyderabad.

People have access to the lakes again. They have a hope of some control. It's significant that the right to access water bodies has been upheld and protected. There is a role for the private sector but it is one of responsibility, not profits. The profits need to flow back in a healthy society. We wanted them to join our efforts, to stop polluting and help clean up.

The government now shuts down unsustainable wells. Rain is captured much better, which means less reliance on groundwater sources, which means we don't need to drill so deep to create wells. The deeper you drill the more contaminated the water becomes, so this has improved health because farmers can use fresh water to grow crops and water cattle. In addition to this, farmers have become more sensitive to groundwater issues and there is a conservation mindset among the people.

Five years ago people were very cynical, they thought protecting the lakes was a lost cause. Thanks to our protests, and the media, which has been hugely supportive, and our successful legal challenge, they can see the results. Now neighbourhoods are fighting to protect their own water sources.

The court ruling supports a District Lake Protection Committee, overseen by the judiciary. Anyone can approach this body with a plan to protect a lake or a complaint about pollution or encroachment. This regulation system has empowered people. It is a people centred protection body and we have to make it work. Today keeping our lakes clean has become a huge issue state-wide and the courts have been very supportive."

The initiative 'Protection of Bangalore Lakes for Posterity' was awarded with the Category 1 'Best water management practices' Water for Life UN-Water Best Practices Award in 2012.

Water for Life: Water for Health



Safe Water and Sanitation for all in the Republic of Moldova

The Republic of Moldova is one of the poorest countries in Europe and 70% of its poorest people live in rural areas in widely dispersed small communities. In 2005 and 2006 only 4% of rural people had a sewerage connection and just 15% were connected to a drinkable water source, compared to nearly 80% of the urban population. Only 55% had access to even basic sanitation (pit latrine with a lid).

Untreated sewage inevitably infected the waterways, and diseases associated with poor quality water, such as gastrointestinal diseases, were common. The Moldovan National Environmental Action Plan (NEAP) calculated that polluted drinking water led to between 950 and 1,850 premature deaths and between 2 and 4 million "illness days" per year. They assessed the cost of this to the economy as between 5 and 10% of GDP.

Inadequately stored and treated animal waste had also contaminated water bodies, which had degraded flora and fauna in the river basins of the Cubolta, Cainari and Raut Rivers. A survey conducted between 2008 and 2010 by the NGO Ormax found nearly all large invertebrates had disappeared due to water pollution. There were few local strategies for improving water security.



The Safe Water and Sanitation for all in the Republic of Moldova initiative was initiated by Ormax. This involved maintaining clean water sources to improve human health, help maintain environmental integrity of aquatic ecosystems, and thus contribute to protecting biological diversity.

The objective was to raise rural citizens' awareness of their right to clean water and sustainable sanitation. Ormax also wanted to increase the capacity of rural communities in developing strategies for



water and sanitation management. And they planned to act as advocates at local, national and international levels to ensure decision makers fulfilled their obligation to provide citizens with the safe water and sanitation that is their human right.

Ten villages comprising 25,000 citizens in the north of the country were selected. They were chosen because they were close to river basins, and thus were living with the worst pollution conditions.

Ormax provided educational workshops and training to educate citizens about good water management. They also began testing and mapping wells, identifying sources of pollution and cleaning the most polluted areas. Ormax installed waterless toilet facilities.

In each community, a committee was established. Each committee included the mayor, the school director, one or two teachers and one or two parents. These committees created Water Safety Plans (WSP), which involved implementing activities and communicating with citizens and the local NGO partner. During larger scale activities public institutions and regional councils sent representatives to liaise with committees.

The project ultimately served 30,000 people (5,000 more than planned) by educating and empowering citizens, especially children, in interactions with policy makers.



Ormax also highlighted water quality on maps, so citizens could avoid the most polluted areas. And people's behavior changed: they stopped dumping solid waste near wells. Spring cleaning the wells was an old tradition that was revived during the project.

Ormax later organized a national conference which brought together the bodies responsible for water, sanitation and public health. The results of field studies and the demonstrable changes in the communities were shared with the national ministries for environment and health. Some of Ormax's proposals were integrated into the national strategy for water.

Natalia Dejean

ORMAX Safe Water and Sanitation for All, Republic of Moldova

"I was born in Moldova. For me it is very important to see the people. Like anyone, these people don't like to be told what they should do, what is good for them. If you don't speak the language you don't see the sincerity. Something has changed in people's lives here [since ORMAX began the project in Moldova]. We are not building roads or houses. But we empowered people to change their own lives by educating them. They have become the drivers of the work and that is very positive.

We ask people if their perceptions of waste management and water have changed but they give us what they think are the correct answers. Not necessarily their own opinions. But what they say is unimportant. What they do is important.

Every day they call to tell us they have constructed a new well [using the techniques ORMAX has taught] and they want us to test it. They have cleaned a well site, they want us to test it. Their maps are marked so everyone can see the nearest location of a clean well and they use these wells for drinking and cooking. It's a good change. And their continued behaviour is improving water quality.

Water quality was very bad mainly because of human activities. The nitrate levels were very high, around 250 to 500 mg per litre. This is important because the nitrate level indicates the presence of other pollutants. People's homes were just 10 metres from the water source, so their pit latrines were too. There was a strong concentration of urine in the water, as well as animal waste.

In 2011 we constructed our first waterless toilet for a school. By 2013 we had installed 10 waterless toilets in households. Waterless toilets are not appropriate for small children [because disrupting the balance by incorrect use would render the toilet useless] so we created a small wetland for processing the water at a kindergarten toilet. Today people contact us telling us they are interested in building waterless toilets themselves. They want the parts and ask us to help with the expertise.

The teachers at the schools are amazed by the reduction in absences due to sickness. They have been halved since the new toilet was installed. The children say it is better. It's not just hygiene, the old toilet was about 300 metres outside the school gates. The winter in Moldova is very long, frosty, cold, and rainy. It's better for them to have a toilet on site for many reasons.

In rural Moldova people didn't have sanitation but they had mobile phones and good bus links. We sometimes visited five villages in three hours by car. ORMAX headquarters is only 25 km from the furthest village that was part of our project. You could do it by bicycle. It was easy to communicate with the villages, people called us every day with questions.

Moldova is famous for its fruit and vegetables. We educated the farmers about the composting properties of human and animal waste, but they already knew. Their parents used these same sustainable techniques, then people forgot. In the Soviet Union there was ready access to cheap chemical solutions, so people used those.

When the education began, people remembered their parents using the same techniques. They remembered their parents' generation was healthier. The education helped illustrate that it was the unsustainable fertilizer practices that was to blame.

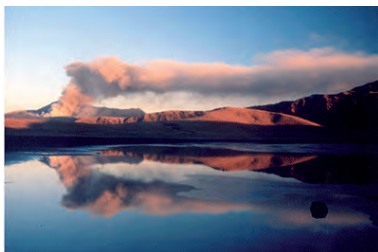
The chambers for the sewage waste in the waterless toilets are large and only two years old in many cases. The waste may not yet be mature enough to use for compost. But the farmers already collect the urine from the school and use it to help the fruit trees grow. Apples and apricots. These are old ways, now remembered.

Three years ago we began to focus more on educating children in the schools. The next generation of Moldovans will be much more concerned about the environment. They are more sensitive towards these issues than their parents and they become great messengers in their own communities. It's much harder to touch the parents and grandparents.

But for the children, it's not about how they will be in the future, the change is already evident! They don't just copy their parents, they do it their way. Younger people are now beginning to see business opportunities in developing things that are good for people's health. This is all positive."

ORMAX Safe Water and Sanitation for All initiative was awarded with the Category 2 'Best participatory, communication, awareness-raising and education practices' Water for Life' UN-Water Best Practices Award in 2013.

Water for Life: Water for Participation



Basin wide groundwater management using the system of nature: Kumamoto City, Japan

Kumamoto City is blessed with rich greenery and abundant groundwater. The city, in central Kyushu, the largest southern island of Japan, supplies all of its 730,000 citizens with drinking water from ground sources. Kumamoto's precious water is the result of collaboration between natural systems and local human activity.

Over thousands of years, pyroclastic flows from Mount Aso have accumulated and become a natural groundwater aquifer. Around 400 years ago, feudal lord Kato Kiyomasa developed paddy fields along the Shira River lowlands. These were easy to permeate and recharge the local groundwater.

Today rapid urbanization, increased population, changing agricultural practices and even consumer lifestyle choices have threatened Kumamoto's precious resource. The city has made efforts to preserve its 'mineral water from the tap' for future generations.

Once known as 'City of Forest', since the 1970s Kumamoto's aquifers have been decreasing. Deforestation has reduced the amount of groundwater percolating, as has increased indus-



trial usage. Paddy fields have been converted to dry fields as citizens eat less rice and more of other crops, thus reducing water recharge. Modern fertilizers, pesticides and livestock waste have increased the necessity for modern purification techniques.

What's more, Kumamoto's water depends on a groundwater flow system which extends far beyond the city limits. The healthy water system flows through farmland and forests in the upper and middle basins of the Shirakawa River and the Midorikawa River, which run through the towns of Ozu, Kikyuo and Mifune, municipalities located east of Kumamoto City.

Thus major cooperative initiatives began in 2004, including a project to flood converted paddy fields in the mid-basin of the Shirakawa River and to maintain the watershed protection forests in the upper basin. The project granted farmers subsidies to flood their converted paddy fields with water from the Shirakawa River after harvesting and before planting their crops.

This flooding recharges groundwater levels, but it also limits weeds, insects, diseases, and the problems of continuous agriculture. Flooding also helps reduce the use of chemicals, prevents groundwater pollution and reduces financial costs.

At one time conifers were planted around the City of Forest to provide timber. As the forest industry has receded, today broad-leaved trees are planted which improve the recharge capacity of the forests. These species also provide a habitat for a greater range of species, improving biodiversity.

Rice is vital to Kumamoto's water. Because rice paddies require a long period of continuous flooding, one kilogram of rice produced results in a groundwater recharge of 20 to 30 m³. To encourage continued rice



production despite changing tastes, rice and vegetables produced in the area are now marketed under the special brand name 'Gift of Water'.

Kumamoto has also established citizen's awareness initiatives so everyone knows how precious the groundwater is. These range from establishing July to September as 'Water Saving Months' to the formation of the Kumamoto Groundwater Foundation, which aims to harmonize water use practices across all sectors.

Seio Utsunomiya

International Affairs Office, Tourism, Culture and Exchange Bureau, Kumamoto City, Japan

"Kumamoto is Japan's number-one pure groundwater city: the biggest city where all the water is supplied by groundwater. This is a very unique and precious thing. We use water for agriculture, industry and for daily use. The economy depends on it. Preserving it is our top priority. It will continue to be the most important issue.

People didn't appreciate how lucky they were to have this pure source of groundwater, or the seriousness of water issues. The most difficult aspect was the first step. Citizens took water for granted and didn't think about it. Our education campaign told them why they should care, how they were lucky to have this resource but that the groundwater quality and quantity was decreasing. How things seemed fine now, but that in 10 or 20 years, without action, the situation could be very difficult.

Our biggest challenge at first was talking with the farmers. They were concerned that their agricultural production might suffer with the changes they were suggested to make. They were unsure – would the proposed changes have any impact on groundwater? They also feared that any increase to their already substantial workload would affect profits. Now they believe in the cause and know that their efforts are vital to the region's future.

Another challenge was to maintain a healthy economy alongside our efforts. City planning for Kumamoto is very complicated. We can't expand easily. Our resources are precious and those who come here must abide by the rules. We have put in place measures to survey rivers and see if proposed projects are environmentally sound. There must be agreement not just from those in charge of maintaining the city economy but also those charged with water conservation and the environment. For example, businesses which will impact natural resources are obligated

to compensate. They must plant trees to safeguard the watershed, or take some equivalent action.

Because of our efforts, we use less chemical pesticides in agriculture which will hopefully improve people's health. And we have been planting broad-leaved trees to encourage biodiversity. In the future, we hope to collect data to support this. Already people know how important it is to buy local produce, both to sustain the local economy and to reduce the carbon footprint of our foods. We arrange questionnaires each year asking people: 'do you feel groundwater has been preserved as shared property?' In 2008 48% said 'yes'. In 2013, after we received our UN Water for life best practice award, 59% said 'yes'. Our target is 70%. We continue to run awareness campaigns. More people are aware of the need for conservation and receiving the award has helped increase the feeling of shared property.

Now people are very conscious of water issues. They are growing accustomed to our campaigns and why they are important; for example, saving water in the summer, children's essay writing competitions on the theme of water conservation, etc. Things have improved and we continue to try to do better. It could have been a real problem without action, we feel lucky we were able to do something.

We plan decade by decade. We will complete the first decade of our project this year. The subsidies for the farmers to flood their land will continue; the whole project will continue for now, which shows how successful we have been. But each decade we will review, and see where we can improve. In the future, we will expand our efforts to neighbouring cities, more companies will come here. This will not be a burden, they can help. Our UN Best Practice Award has become a symbol and it has encouraged people to take these efforts seriously."

The initiative 'Basin wide groundwater management using the system of nature' was awarded with the Category 1 'Best water management practices' Water for Life UN-Water Best Practices Award in 2013.

Water for Life: Water for Cities



A Participatory and Learning-based Approach to Raising Water and Sanitation Awareness in Durban, eThekweni Municipality, South Africa

The eThekweni Water and Sanitation Unit (EWS) is responsible for managing water and sanitation services within the eThekweni Municipality. After 1994 and the end of the apartheid era, the expansion of the municipal zone and a substantial influx of poor people from rural areas meant an increase in the number of households with no access to water or sanitation. This migration is expected to continue for decades, so EWS had to create a sustainable solution from scratch while maintaining the city centre's first world infrastructure and supply.

Innovative technical methods of service delivery had to be introduced so that the environment wasn't compromised in a water scarce region; and this within a limited budget. New consumers had to be educated in using the system.

EWS installed different levels of service comprising full pressure, semipressure (rooftanks) and groundtanks for the provision of water to the new and disparate areas of the municipality. The Municipality also built water borne sewerage systems, ventilated pit latrines, ablution blocks and urine diversion toilets for sanitation. A free basic water supply of 9kl per month per household was introduced so that even the poorest residents had access to safe water and sanitation.

Despite difficulties accessing remote areas and the presence of water borne diseases, such as cholera, a key challenge was educating people to avoid water wastage and vandalism. As a result, EWS embarked on an extensive awareness and education programme. People were encouraged to participate and were given a voice to raise concerns – many long-term residents feared the rapid expansion of the municipality would mean rising water bills.

By incorporating a participatory approach to ensure a two-way communication system, the programme raised awareness of the Millennium Development goal to provide water and sanitation for all, as well as the need for all South Africans to conserve and protect their water resources. It also allowed newcomers to the community to give feedback on how well the new systems were working.

Teddy Gounden

eThekweni Water and Sanitation, Durban, South Africa

"We couldn't look to the past even if we had wanted to. The processes were different, as were the challenges. Several hundred informal settlements had sprung up, essentially communities in transition. One million people living in shacks. As an interim solution we had to put in shipping containers with showers and toilets. This was a unique solution for a unique situation.

Durban has hills and valleys with a sparse population. Neighbours lived some 500 metres from one another. There were no roads. Part of our challenge was to build roads to bring the vehicles in. There were no water or sewer networks. We had to dig reservoirs in rough terrain and maintain water pressure far from the city.

Fortunately the entire team were hugely motivated by the challenge. Our leadership has been fantastic. We're given a lot of creative space to try new solutions and fail without fear of censure. Today, when we work with others from elsewhere in Africa and overseas, we give them this space to empower them. And we are always learning from them, we certainly don't have all the answers.

Prior to 1994 the city was under the apartheid system. The central areas had first world infrastructure while those in peri-urban and rural areas had no access to water and sanitation at all. It was a mammoth task. We knew we would learn and adapt as we went. We had to ask ourselves just what could be achieved with the community resources. It was very exciting! It was a totally different way of working, suddenly we were allowed to engage and make decisions. We had the opportunity to explore new technologies to meet challenges we'd never faced before. We weren't just putting in pipes. We had to think outside of the box, engage communities, educate people. Our solutions had to be innovative and sustainable.

Our objectives were to provide safe water and sanitation and minimize risks from contamination. The rural communities had been getting their water from rivers and streams. They were very poor, so we had to provide a limited service for free. EThekweni was the first municipality to have free water. After we introduced this, it has become national government policy. Initially we offered people 6 kl of water per month but people tended to live in large families and because there were people suffering with AIDS we quickly realized this wasn't enough; so we provided 9 kl. The water was piped to an external ground tank and we had to educate people to store the 300 litres that was piped in each day. The fact that we provided water and sanitation as a package helped people see how things would work.

We have a research agreement with a university to supply focused and applied research, both technological and social. So our work has always been supported by research. The communities have always guided our policy, they have this channel to tell us how things are going, how we can improve, what is useful.

Our project has created a new economy for them. Now they have roads and people are building bigger houses. When they contact us now it is to ask to have water piped directly into their homes, because today they can afford this. Their quality of life has improved enormously. If you see aerial photos of these communities from 2003 to now a significant densification has taken place.

Through interviews, we've found people are very happy with the changes to their lifestyle. Some have found new employment as a direct result of our project. For example, the toilets are built on blocks, so we established block yards to build them within the communities. So people have established small businesses which make blocks.

There is no more open defecation, so family health is better. In South Africa, we had a culture of looking after the first world people. We had to change our mindset to focus on poor communities, and to engage and talk with them. We took responsible risks to create what people really needed – through a formal process of dialogue we did things that had not been done before. Once we identified what was needed we created innovative technology to bring services to the poor."

The initiative 'A Participatory and Learning Based Approach to Raising Awareness on Water and Sanitation' in Durban, eThekweni Municipality, South Africa, was awarded with the Category 2 'Best participatory, communication, awareness-raising and education practices' Water for Life UN-Water Best Practices Award in 2011.

Water for Life: Water for Food Security



Tushaar Shah

IWMI-Tata Water Policy Programme, Gujarat, India

“Industry and urban centres are increasingly competing with agriculture for water sources. We must grapple with energy⁴, which is water intensive, especially with continued urbanization. Freshwater will be a vital resource as long as the population is growing and we need agriculture to feed it! Freshwater is vital for food security. I would say water management will be a key issue for the next two to three decades, and then hopefully we will see new solutions and technologies being implemented.

We have had to be flexible⁵. We offer practical solutions rather than optimal ones⁶. These solutions are correct within the constraints we face.

We cast a wide net when it comes to solutions. We are interested in practical implementability. We have had greater success where we can show policy makers something they can imagine implementing.

4. IWMI-Tata Water Policy Program (ITP) was initiated in 2001 as a co-equal partnership between the International Water Management Institute (IWMI), Colombo, and Sir Ratan Tata Trust (SRTT), Mumbai. ITP is an international scientific institute which has focused on developing ideas for co-management of energy and groundwater (Energy-Irrigation Nexus), a key facet of agriculture in India.
5. Here ITP recommended that a plan to create a US\$120 million pipeline to water scarce areas was scrapped. Instead, in 2005-2006, the Government of Gujarat launched the Jyotigram Yojana (JGY) programme and spent US\$250 million to completely re-wire the state. Today the new set up provides a daily separate source of eight hours of uninterrupted power just for agriculture.
6. ITP put expert observers on the ground. They found that Indian agriculture didn't need optimal solutions – merely practical ones. For example, they found that where groundwater was excellent but electrical power was unavailable, expensive diesel was pushing up the cost of production. Meanwhile in water scarce areas with extensive power, wasteful electrical practices and the cost of transporting water also increased costs.

Today there is a greater appetite for science-based solutions⁷. Science was divorced from decision making and we have been bridging the gap. There is increased acceptance of ideas and collaboration in water systems management.

More recently we've conducted research into improving partnership and cooperation. Ten years ago, when we began this project, we didn't understand the craft of addressing policy messages to decision makers. We are better now.

Due to this project, 40 to 50 million people have better access to consistent electricity and groundwater availability⁸. But they don't relate it to IWMI or our work. The farmers are not our target market, we speak with policy makers. So they don't acknowledge our work but they do benefit.

We are not pure researchers. We are problem solvers. It's vital for a young team of researchers to see the impact they have on people's lives. It provides great satisfaction. And now the project has become a flagship for India's 12th five-year plan for power supply⁹. It is already being replicated in several states. For example, in Punjab already 100% of villages have separated power lines for use in agriculture, for irrigation. There is progress elsewhere, several rewiring projects are ongoing.

Climate change and increased demands on irrigation due to competition for water will make the challenges we face today more severe in the future.

Increased climate variability will only enhance dependence on irrigation to secure crops. Without reform the process will become very complicated. Power subsidy is very important and will form part of the solution.

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- 7. This is just one instance of how ITP showed that despite a lot of potentially useful scientific research being conducted in India, it often does not reach the policy makers – who are willing and keen to learn from science – because neither the research objectives nor the research design are formulated with them in mind.*
 - 8. By providing regular and reliable power, JGY made it possible for farmers to keep to their irrigation schedules, conserve water, save on pump maintenance costs, use labour more efficiently and expand their irrigated agriculture rapidly. While GDP from agriculture grew at just under 3 percent per annum for India as a whole, Gujarat has recorded nearly 10 percent growth since the project's inception in 2003, the highest in India. The scheme has been so successful the government of India has made it a flagship scheme in its 12th five-year plan for the power sector.*
 - 9. ITP has shown how an international scientific institute working as equal partner with an Indian donor can set the agenda for discussion, debate and policy action around India's future of water and agriculture.*

For example, solar irrigation is emerging and growing. At the moment it is very expensive, especially start up costs, for farmers. At the moment, there are subsidies which cover 87% of initial costs. We are researching better ways to utilize and promote the subsidies.”

IWMI-Tata Water Policy Program, India, was awarded with the Category 1 ‘Best water management practices’ Water for Life UN-Water Best Practices Award in 2014.

Water for Life: Water for Sustainable Development



Las Pinas-Zapote River System Rehabilitation Programme, Philippines

The *Sagip Ilog* (River Rehabilitation) program was launched on December 13, 2002. The Las Pinas-Zapote River System stretches 56 kilometres. The programme designated 30 km for regularly cleaning. This involves daily collection of floating garbage, and installation of steel garbage traps/wire mesh strainers in the Las Pinas and Zapote rivers to filter the waste/debris.

From 2002 to 2005, 9,070 residents from communities along the river system in Las Pinas City, Paranaque City and Bacoor, Cavite were trained in ecological solid waste and river management. Some of them were designated River Watch Volunteers.

Local government officials and local communities participated in an information drive and capacity building activities. As of 2011 there were 3,120 trained and active volunteers were organized into different river watch teams in areas bordering rivers.

In 2001, the Coastal Environment Program of the Department of Environment and Natural Resources-National Capital Region (DENR-NCR) began replanting bamboo species, locally known *askawayang tinik*, to rehabilitate the Marikina and Las Pinas Rivers. These rivers, both situated in metropolitan Manila, were so polluted they were major contributors to the rapid environmental degradation of Manila Bay.

Five kilometers of the river system were targeted for re-greening using bamboos, man-groves and other related species to control soil erosion. To highlight this effort, two separate portions of the riverbanks were developed into '*bambusetums*' – planted with various species of indigenous or exotic bamboos. As of August 2010, 10,000 bamboo culms had been planted across an area of 20 kilometers.

The project has also become a source of jobs. The propagation of culms from the 37 species of bamboo available in the area has become a source of income through the sale of harvested mature poles to handicraft and furniture makers. Another 62 jobs were created in river dredging, clean-up, and re-greening activities.

Several social enterprises have now sprung from the initiative. Locals compost and produce organic fertilizer from wet garbage. Each of the 20 *barangays* in Las Pinas City now has at least one composting facility. One rotary composter can process the wet garbage of around 500 families or households. Since July 2007, vermi-composting is now being done in two *barangays*. Producing 400 kilograms a week, each sells their produce to farmers in a nearby province as alternative fishmeal and organic fertilizer. It helps reduce the amount of biodegradable waste and contributes to the promotion of organic farming.

On August 12, 2010 a recycling day was launched in five *barangays*, where residents could sell recyclables to junkshop owners. There is now a monthly recycling day in all 20 city *barangays*.

Since the supply of bamboo is assured by the thriving bamboo plantation along the river banks and some vacant lots in the city through the *Bambusetum* project and the *Pagtatanim para sa Kinabukasan* ('Planting for the Future') program, locals have begun making and selling Christmas lanterns and other decorative items from bamboo, *capiz* shells and other materials that are indigenous to the city.

And water lily stalks, which once inhibited biodiversity and caused blockages which led to flooding are now used as the primary raw materials in the Las Pinas Basket Weaving Center. Since starting-up in October 2005, hundreds of families have benefited from the program from villages all over the country.

Once, coconut husks were just thrown into the river. Today a decorticating machine shreds the coconut husks leaving two distinct forms: a fiber used for manufacture of coco coir for slope protection nets and a granular form called coco peat, a potting medium to enrich soil.

Drops of hope: Water for Life Award Finalists through the years

The following projects and programmes were highly commended by the juries over the years. Their excellence, and the lives they have transformed, are a testimony to the global commitment to sustainable development that is happening in every corner of our planet.

2011

Category 1

Siruthuli. Artificial Groundwater Recharge through Roadside and Open space Rain Water Harvesting Structures in Coimbatore city, India

Coimbatore was declared drought-prone by UNDP in the 1980s. The years 2002 and 2003 saw the water situation at its worst, with the groundwater tables as low as 300 metres and highly polluted. Even drinking water supply was affected. Siruthuli, an NGO based in Coimbatore, implemented various water harvesting methods such as desiltation/standardization of tanks and anicuts, creation of new water bodies, construction of rainwater harvesting structures and river restoration that facilitates water percolation in order to enrich the water table. All these activities were recognised when the water table level improved by 9 metres.

Rapid industrialization had resulted in constant decrease in green belt. To address this, "Pasumai Payanam" was launched by the then President of India Dr APJ Abdul Kalam. The project aimed to plant and nurture 1.5 million saplings in Coimbatore, thus ensuring 1 tree for each of its 1.5 million citizens. A Tree Park was established which stocks at least 50,000 saplings at any given point of time for distribution to the public. As of 2011, 0.3 million saplings had been planted in and around Coimbatore.

Coimbatore city generates 600 tons of garbage everyday, which is being dumped at the Vellalore garbage yard without segregation and treatment. Flies, mosquitoes and other insects thrive excessively on this accumulated waste causing menace and health risks to the public. Siruthuli began spraying Effective Micro-Organisms Solution (EM Solution) over the accumulated and fresh waste and over the sewage water lagoon too. Over time, the quantity of the waste decreased tremendously, due to the catalyzing effect of the microbes in decomposing. Siruthuli also plants and maintains saplings in the garbage yard to reduce air pollution and odours.

In order to ensure sustainability, participation of the community was ensured through Beneficiary Forums, Farmers' Cell and School Forums. Awareness Programmes and Fund Raising Programmes were conducted at least once a year, involving eminent personalities in order to pass the message of environmental well-being to the general public. Siruthuli has now almost 2,000 active volunteers who help to spread a culture of environmental responsibility among the students.

Isla Urbana. Mexico City, Mexico

Isla Urbana, a project of the International Renewable Resources Institute (IRRI) Mexico, is dedicated to ensuring water security in urban areas through the adoption of rainwater harvesting (RWH) as an integral part of water management systems. Their multi-disciplinary team has designed an environmentally, socially, and economically sustainable rainwater harvesting system and implementation strategy.

Mexico City, a mega-city combating a major water crisis, is where a replicable model of the project has been developed. Isla Urbana's rainwater harvesting systems promote sustainable water management practices, mitigating the city's flooding problems, relieving poverty, reducing carbon emissions, and providing a reliable source of water for the citizens of Mexico City.

Rainwater harvesting has been used by civilizations in Mexico for centuries; unfortunately, this ancient technology has been lost with the rise of modern water management systems. While the city suffers major floods, these systems are unable to supply water to the 22 million people living in Mexico City. RWH offers a simple and effective solution to this inefficient system.

Local personnel trained and paid to install the systems using local materials. In Mexico City, as in many cities around the world, most of the components necessary for collecting rainwater currently exist as part of the infrastructure of individual buildings - cisterns, pumps, and header tanks. Isla Urbana has designed a rainwater harvesting system that uses these existing components and installs gutters, downspouts, and three steps of purification to collect and clean rainwater for household use. These systems are low-cost, easy to install and maintain, and provide individual residences with about 50% of their water supply. They have developed a sustainable implementation process in a low-income water stressed region, called Ajusco Medio, which will be used as a model for replication throughout the city.

Category 2

Safe Water and AIDS Project – SWAP

SWAP's mission is to facilitate access to safe water, improve hygiene, reduce disease burden, and improve economic well-being among vulnerable populations in western Kenya.

In 2001, Nyanza Province had an HIV prevalence of 15%, the highest in Kenya. Nyanza Province also had the highest infant mortality rate – 125 per 1000 live births – and under five

mortality rate – 227 per 1,000 live births – in the country. In 2004, life expectancy at birth was 38 years. Diarrhea and pneumonia alone count for over one third of all deaths in children under five years old and malaria accounts for an additional 14%. Only 63% of households in Nyanza Provinces had access to improved water supplies and 34% had adequate sanitation. The area is subject to floods and experiences recurrent cholera outbreaks.

SWAP introduced several products for water treatment that have been proven to improve water quality and prevent diarrhea. In addition, SWAP produces and sells improved water containers (ceramic and plastic) for safe storage that are fitted with lids and spigots. SWAP also sells two types of hand soap and metal stands upon which the improved storage containers can be placed to create a hand washing station. SWAP trainers have introduced safe water, hygiene, and a number of other health products to HIV support groups and other community self help groups. In 2007 SWAP established a partnership with Population Services International, a social marketing non-governmental organizations, that markets these products and provides them to SWAP at wholesale prices, which self-help groups then sell to community members at the retail price, keeping the difference as an incentive. SWAP collaborates closely with a number of partners, including the Ministry of Public Health and Sanitation, community leaders, local and international NGOs, UNICEF, WHO, the Rotary Club, and a number of private sector partners.

SWAP targets HIV support groups, including people living with HIV, Home Based Care Groups, Orphan Support Groups, Widow Groups, Youth Groups, and other community self help groups. Each of these groups serve their communities, which are typically impoverished peri-urban slums or rural villages.

The main objectives of SWAP were to prevent water related illnesses and other major causes of illness and death such as malaria and malnutrition, and to improve the economic well-being of the members of HIV support groups. SWAP's strategies are to use already existing community structures and enhance their capabilities through training, access to inexpensive, proven health products, consultation, and collaboration. The self-help groups receive training in health topics, running a small business, and receiving and managing microcredit. In addition, to improve their ability to motivate their friends and neighbors to improve their health, self-help group members are provided training in the Education through Listening (ETL) behavior change methodology based on motivational interviewing, stages of change theory, and social learning theory. ETL is a community engagement technique that is a person centered way of communicating and giving feedback to promote behavioral change.

National Urban Water Awards Programme: Catalyzing Change for Continuous and Equitable Water Supply and Universal Sanitation in Urban India

This programme was established in 2008 for the first time and aimed to encourage and promote provision of continuous and equitable water supply and universal sanitation in urban India. The Awards recognize urban local governments for good performance in water

and sanitation in seven themes, ie. (i) Technical innovation, (ii) Financial reforms, (iii) Services to the poor, (iv) Citizen services and governance, (v) Public private partnerships, (vi) Urban sanitation and (vii) Communication and awareness generation.

The Awards Programme is unprecedented in scale and scope, open to around 4,500 urban local governments/service delivery agencies across the country. The Awards Programme is now in its third year. The Awards Programme which is conducted jointly by the Administrative Staff College of India and the Ministry of Urban Development, Government of India.

The winners of the Awards are determined through a competitive and independent evaluation process including field validation and face to face presentations by the applicants. The Awards Programme was conceptualized based on the appreciation of the potential of learning from peers and knowledge exchange of context specific practice. Following the initial success of the programme, the nominee advocated successfully that the Programme be owned and driven by the Government after the initial success. It has been possible to reach out to over 4,500 local governments, 28 state and seven union territories' governments with knowledge of good practices emerging from the Programme.

Participants in award ceremony The Awards have enhanced the profile of water and sanitation agenda nationally and evoked increasing response proving to be a real-time and dynamic show case of achievements in the sector and inspiring other local governments to emulate the good practices learnt thus. The Awards Programme has also resulted in the measurement of quantitative and qualitative progress made by water and sanitation service delivery agencies, making them both accountable and competitive to deliver better services due to a non monetary motivation. The success of the Programme has led the Government of India to integrate the Programme in the National Five Year Plan.

2012

Category 1

Lake Naivasha Payment for Ecosystem Services Project

Lake Naivasha basin suffers heavy soil sedimentation within the Malewa River which is a major cause of massive eutrophication in Lake Naivasha downstream. So grave was the situation that that there were fears that if no urgent remedial action was taken, the lake ecosystem would totally collapse in the next 10 years. This would have an unprecedented negative impact on the tourism, horticulture, power generation and fishing industries that rely on the lake waters for their success.

World Wide Fund for Nature (WWF-Kenya Country office) in partnership with CARE-Kenya piloted a Payment for Ecosystem Services (PES) scheme where downstream communities who benefit from upstream conservation initiatives, reward land owners upstream for voluntarily undertaking conservation measures that reduce silt load in rivers and consequently ensuring availability of clean water downstream. Conservation efforts upstream include rehabilitation and maintenance of riparian zones, establishment of grass strips and terracing along steep slopes, reduction of agro-chemical use and indigenous trees and high yielding fruit trees and cover crops for improved farm productivity expected to result in improved quality and quantity of river water and improve livelihoods. The upstream land managers/owners, who are small scale farmers, are therefore the sellers of the Environmental Service (ES) while the downstream water users are service buyers and consist of economic entities such as flower farms, tourist establishments and government related institutions. The scheme is administered in a mutual agreement in form of legal contract between Water Resource Users (WRUAs) representing both buyers and sellers.

Improved Management Practices: The project has offered technical and management training to farmers, giving them new knowledge and skills while improving others. The farmers have applied the knowledge and skills acquired from the training in improving the way they operate and manage their farm activities. Some of the "most useful" knowledge and skills acquired include river bank protection, planting and management of nappier grass along the contours for soil conservation purposes; fodder preservation and storage among others. Application of the knowledge and skills in the farms has reduced wastage, improved productivity and increased incomes.

Improved farm sales: Most of the benefiting farmers have seen an increase in their sales. The improved sales are attributable to the uptake of new/improved crop varieties as well as the adoption of improved farm management practices. While the magnitude of improvement varies across individual farms, they all attribute their improved fortunes to the project. During one farmer group discussion, farmers reported sales increases of between 20-40%.

Reducing time spent by women in search of fodder: This is one of the greatest effects produced on women and children by the project. During a gender session, women reported that by making nappier grass and other fodder crops available on-farm; as well as training farmers to make hay and silage, the project has greatly reduced the amount of time they spend in search of animal feeds, a traditional female role in the community. Women said that prior to this; they spent an average of 8 to 10 hours every week in search of fodder alone. They noted that the freed time is now used in other more productive activities like farm work, business and childcare; while children now have more time to study and play.

Improved water quality: Indeed this project pilot phase was not designed to make actual impact at this level, but instead to demonstrate the possibility of doing so through PES initiatives. Nonetheless, many of the downstream users believe that it is possible to improve the quality and quantity of water flowing downstream through project activities. In the opinions

of many of them, all that is required is a scale up through increasing the number of participating buyers and sellers.

Baghirath Krishhak Abhiyan, Water Conservation for Food Security

Though India has only 40% cultivable area under irrigation but because of dependency on groundwater for irrigation (80% irrigation was by groundwater) a substantial geographical area has become either grey or dark. Over exploitation of the earth has led to loss in productivity and production and in certain cases the complete crop failure. This has resulted into many thousands of farmer suicides in India. Similarly Dewas District of Malwa plateau of Madhya Pradesh province also is facing acute water scarcity problems. It has an annual average precipitation of between 900 mm (40 rainy days) which is less than national average. Cropping intensity is only 120% with limited livelihood options and distress migration in the region whose main sufferers are poorest of the poor specially the women. The production and productivity has going down in the region.

The district administration led by Umakant Umrao, District Administrator of Dewas, stressed harvesting rainwater as possibly the only solution to overcome water woes in the district. The administration emphasized construction of cost-effective and locally managed rainwater harvesting structures.

The proposed approach emphasized construction of decentralized rain water harvesting structures on the lands of individual farmers with an idea to promote conjunctive use of available water for sustainable and zero risk growth. It was argued that such an approach while helping avoid the problems associated with community water harvesting structures would give the owner farmers complete control over the available water and lead to a more efficient use of the available water. This approach to water harvesting was given the title of "Rewa Sagar".

In India the land holding per family is very small and so is surplus money to invest. In this situation translating the concept in to realistic applications posed a great challenge. One, the farmers have always strongly resisted giving away even a small part of their cultivable land for non-cultivation purposes. Two, the administration did not want to use the instrument of giving subsidy to the farmers to either encourage them to invest in water harvesting or to partly meet the upfront cost of construction or as a compensation for the loss in production that the farmers would suffer on account of a part of cultivable land going out of production.

Carefully treading the process of implementation, rather than launching the approach in a big-bang way, the program started in 2006, initially approaching relatively big farms (with more than 4 hectares of agricultural land) and in persuading them to change the usage of 1/10th to 1/15th part of their land for water conservation cum harvesting structure which could store runoff water during the monsoons (rainy season) and thereby assure the availability of required water for irrigating during the dry Rabi (Second crop) season. The farm-

ers could also use part of the stored/conserved water for providing life saving irrigation to even Kharif (Rainy season) crops during the occasional long gaps that may come across between two rainy days during monsoon season as well.

There are now more than six thousand ponds in Dewas District alone, and the number is increasing. The effort has won 5 National Awards for augmenting ground and surface water. The Water level has come up significantly. The decentralised surface storage structures support the other systems like wells and bore wells and completely mitigate drought in cases monsoon failure. Open wells, the digging of which had been forbidden due to low groundwater levels, are now back and 733 wells have been constructed under the government scheme since 2007. Agricultural intensity and productivity has increased many times. Entire mandi (Market of Agriculture produce) system has been relocated to facilitate the marketing of produce. Agriculture has diversified and farming systems have improved and farmers have shifted from Soybeans based mono crop to kharif (First crop), rabi (Second crop), and zaid (Third crop), to multi cropping. The economy has transformed with a huge increase in agricultural productivity, multiple livelihood options, and increase in agricultural productivity and number of employment days. For example village Dhaturia in Tonk Khurd has 120 households and 154 ponds.

The women who earlier suffered from the drudgery of fetching water could now actually contribute to the family's growth. The enrolment ratio in schools has been much better. The biggest gain, however, was of the enormous wealth added to the Biodiversity with flocks of deer, blackbuck, and several species of birds, insects, reptiles and flora showing presence. The microclimate has changed arresting the extremities of climate.

Category 2

Water Project for the populations of the dry tropic in Honduras

The Dry Tropics region of Honduras is an arid zone where water resources are under pressure. In agriculture, a decrease in the amount of available water is observable, the level of the water table falling by several meters during the dry season, causing shallow wells to dry up. The quality of water is also problematic due to sedimentation and release of organic and solid waste streams.

In the target region, rainfall is unevenly distributed, abundant between July and September, nonexistent between January and April and very rare during the rest of the year. This situation, to which is added the phenomenon of evapotranspiration, is the main cause of water stress experienced by the population.

The aforementioned factors are the cause of chronic food insecurity in the region. Food crises are cyclical, seasonal or caused by sudden shocks. The low productivity of the land, deforestation, use of inadequate culture systems, poor water management and inadequate

technical support help to increase the frequency and intensity of these crises. Thus, even though the majority of the population of the area is devoted to traditional agriculture and livestock, the income of participating families are particularly low compared to other regions.

The project involved a three-pronged approach: (1) raise awareness, mobilize and educate people through arts and culture, (2) improve accessibility, responsible water management and sanitation, and (3) the allocation of micro-credits.

In Honduras, given the political instability, it proved impossible to develop the micro-credit component. The water management component includes several measures. First, improved access to water through the protection of and / or access to a source and capture of rainwater (gutters, tanks). Second, the development of home gardens (irrigation drip systems) to cultivate an area of 20 m². Families are encouraged to plant fruit and forest trees resistant to drought and providing a stable source of income. The project also includes the rehabilitation of latrines to reduce runoff and the occurrence of waterborne diseases, the distribution of drinking water filters and / or grey to ensure the quality and construction of energy efficient oven cooking. This reduces wood consumption, helping to reduce deforestation and indoor smoke, a cause of health problems. Schools located within the project area also benefit from this material.

The educational / artistic component, comprises three fields of activity. First, presenting to the communities and young people from surrounding schools a multidisciplinary show about water, mobile and with interactive components. Artistic creation allows people to get involved and raise their awareness of water issues and the importance of preserving the resource. The educational / artistic component thus strengthens the water management component, anchoring the importance of water for development in the minds of communities.

The project also includes the construction of educational workshops for young people on the theme of water through theatre, mural painting, dance, music, radio, circus and puppetry. The young community leaders thus become ambassadors for the cause of the water by passing on their knowledge to those around them.

Finally, the third educational / artistic component of the project is the publication of guides and other learning tools on water. The project was directed at 1,350 families for a total number of 9,450 beneficiaries. As for public education activities, these targeted just over 15,000 people.

The choice of target populations by Honduras project promotes non-discrimination. Thus, the project targets rural, remote and difficult to access. These are generally poor, with an annual family income well below the established agricultural minimum wage. In addition, a significant proportion of the communities is of Aboriginal lenka descent. These communities are often marginalized and excluded from services to semi-urban and urban populations.

The project also promotes the empowerment and strengthening of capacities of women, often vulnerable and subject to discrimination. Since they are traditionally responsible for the

maintenance of the family space and therefore the garden, women are actively involved in the implementation of activities. Young people are also involved as actors of change specifically targeted by the artistic component.

The project improved food security and the economic situation of families by allowing them to increase agricultural production. Also, growing vegetables was made possible through home gardening and has allowed the diversification of supply and increased nutrient supply, resulting in improving the health of beneficiaries. These families also now have a tank, significantly improving their access to water.

In addition, water filters were distributed to families who also have an energy-efficient cooking oven. These beneficiaries can therefore feel the positive impacts, including their health, improved water quality and air inside homes. In addition, energy efficient ovens reduce the time spent collecting wood by women and girls and / or reduce the purchase cost of the wood. The time and money thus released can therefore be used for other purposes.

2013

Category 1

Living Lakes

The Global Nature Fund (GNF) was founded in 1998 at Lake Constance, Germany as an NGO, with the objective to further and promote sustainable development at global level – special focus on nature and biodiversity. Its most significant project is the creation of the global network of natural lakes all across the globe “Living Lakes”.

Living Lakes project focuses on exchange of experience and knowledge regarding sustainable management of lakes and wetlands. The project originated from the recognition that pressing global problems can only be solved through mutual learning and mutually shared responsibility of the people from North and South.

At the moment, Living Lakes comprises 102 members, new applications are received regularly. Concrete objectives of the project are:

Conserving biodiversity and preservation of freshwater resources, lakes and wetland ecosystems; Improving the quality of life for the local communities attached to these areas; Promoting the use of applied sciences and cutting-edge technologies for enhancing conservation efforts of these ecosystems; Supporting educational programs and cooperation with local communities towards conservation of the biodiversity of the lakes, wetlands and freshwater resources; Disseminating information and lessons learned relevant to aquatic ecosystems.

Main achievements include:

Creation of national Living Lakes Networks in Italy, China, Germany, Spain and continental networks in Eastern Europe, Latin America and East Africa; Restoration of 60 hectares of wetlands at Lake Biwa, Japan; Reforestation of fragile mangrove forests in Sri Lanka and India; Protection measure for the endangered Siberian Crane at Lake Poyang, China; Restoration of various lagoons within the original La Nava watershed: La Nava, Boada and Pedraza lagoons; Realisation of land-use planning and socio-economic research for the Jempang Lake in the Mahakam Wetlands, Indonesia; Construction of a nature information centres at lakes Võrtsjärv, Estonia; Baikal, Russia and Bolgoda and Maduganga Wetland, Sri Lanka; Kids for Dolphins - an interactive programme between German and Indonesian school children for the protection of the Irrawaddy Dolphin; 20 national and international Nature Summer Camps carried out – a volunteering programme for employees of companies supporting the Living Lakes network worldwide.

Farmer Participatory Capacity-Building Programme for Drip Irrigation Management (TNDRIIP)

In Tamil Nadu State, India, only about 8% of the drip irrigation farmers used the drip irrigation system effectively. To enhance the full potential of drip irrigation, a drip irrigation capacity building initiative titled TNDRIIP was undertaken in Tamil Nadu, India, during the period 2009-2012. A consortium involving different stakeholders (scientists, officials, drip suppliers, NGOs and leading farmers) was formed in project implementation. A cluster approach was used in selecting the villages and farmers for the capacity building program. Hands-on training in the farmers' fields was provided to all the farmers, including women, by the team of trainers. Regular feedback was obtained from the farmers about the program.

The main objective of the program is to impart knowledge through capacity building to ensure the sustainability of drip irrigation practices amongst farmers. More specifically, to: Impart training to farmers at the village level on drip layout, water budgeting, drip fertigation and drip maintenance; Develop capacities in component technologies like vermi-composting and mulching; Establish a network between drip farmers, research institutes, government departments, private firms and marketing agencies for upscaling adoption of drip irrigation; and upscale drip irrigation to other regions.

The program covered 1,000 farmers from across 100 villages during the period 2009-2012. The program has also created better awareness and adoption among the drip farmers in other areas. Thus, coverage of the program in creating awareness involved about 10,000 farmers in a three-year period.

An Impact Assessment Study of the TNDRIIP program was carried out in February, 2012, to understand the impact of adoption of all the core drip maintenance practices in 11 crops cultivated by the adopters. The yield increases and water savings were significant, ranging

from 17 to 36%. Also, it created awareness of drip irrigation amongst the community, and this created the demand for its extension in other regions of the state. Also, farmers who were not adopting drip started investing in drip irrigation after seeing the success of the training program. The study reveals that a majority of the farmers (78%) shared the information about drip maintenance practices to their family members and to other fellow farmers. Farmers find the information useful and are ready to share the same with others.

Category 2

Democratisation of Water Management: Promoting community collaborative water management between government officers and villagers in Tamil Nadu

In 2004, the state of Tamil Nadu in India faced a serious water crisis: The state of 60 million people had historically relied on its system of surface reservoirs and groundwater resources to meet its water needs. However water management and farming practices that evolved during the India's "Green Revolution" had severely taxed the state's freshwater supply. The problem was not simply an issue of water demand exceeding water supply, but also of poor water management practices at every level: senior policy-makers, government field officers, and communities.

Institutional inertia, rigid hierarchies, and apathy among officers at the utility had prevented an effective response: engineers focused narrowly on maintaining designated pump schedules, without regard to whether farmers actually received water. The traditional local water body maintenance and sharing system in villages was abandoned as the government delivered water through pipe and pump conveyance systems. Further, traditional notions of social hierarchies and caste barriers prevented collaborative management of water resources.

In response, a group of officials in the state's water utility launched the Democratisation of Water Management Initiative to improve water service delivery and achieve sustainable and equitable water supply. They did this by changing the perspectives and behaviors of government officers in the water sector and facilitating a collaborative relationship between these officers and the communities they served.

This entirely new approach to water delivery in Tamil Nadu addressed the behavioral causes of the water crisis at the most personal level of the individual. The initiative focused on shifting the values and resultant behaviors of individuals toward sound water management practices and more collaborative social relationships among all stakeholders in the water sector: water engineers, agricultural engineers, policy-makers, and villagers. The relationships between water utility officers and villagers were traditionally marked by alienation, animosity and narrow definitions of siloed roles and responsibilities, all of which contributed to poor water service in the villages.

By breaking these entrenched norms and creating a social platform to facilitate communication and innovative problem-solving by government officers and villagers, the Initiative resulted in:

Improved interactions between water utility officers and villagers; Greater involvement by community members, especially women and Dalits (Untouchables), in the planning and implementation of water projects; Greater interdepartmental collaboration between officers in the water and food sectors; Water service solutions which were tailored to community needs, more cost-effective, and more ecologically sound.

The clear impacts of the Initiative led the World Bank to adopt it as a key element of its US\$566 million integrated water and food project in Tamil Nadu. Additionally, public works departments in six other states in India are implementing approaches based on the Initiative.

Health Village: WASH Monitoring Perspective

Bangladesh is one of most populated countries in the world. The main problem for water supply in Bangladesh lies in its quality, especially in the widespread contamination with arsenic. A specific problem of the coastal region is the intrusion of saline ground water. A third source of contamination is human excreta, due to unsanitary latrines (eg. so-called hanging latrines). The JMP report 2012 revealed that the safe water coverage in Bangladesh is 81% and improved sanitation coverage is 56%. Water supply and sanitation sector is vulnerable to potential threat of climate change. Surface water sources in coastal region are contaminated due to the frequent natural disasters destroying and flooding tube wells, ponds and latrines.

The project's area of focus was Water, Sanitation and Hygiene (WASH) for the most impoverished section of people living in some selected remote localities of rural Bangladesh. The project's area of focus was Water, Sanitation and Hygiene (WASH) for the most impoverished section of people living in some selected remote localities of rural Bangladesh.

Development Organization of the Rural Poor (DORP) has been trying to improve marginalized poor peoples' water, sanitation and hygiene situation by undertaking this project in six sub-districts of Bangladesh since 2011, which is the continuation of "Health Village" (2005-2010) program. This initiative is trying to ensure the Right to Water and Sanitation through a bottom-up approach involving community at local level to create demand and also influencing the national policy makers to fulfill this demand.

The initiative monitors implementation of WASH budget to encourage the community, particularly the marginalized women, to participate in the budget related sessions of the Union Parishad to express their needs with a view to achieve WASH objectives in the sub-district areas.

Service providers are participating in open budget sessions, advocacy and consultation meetings, which is an initiative of down level accountability mechanism. The WASH budget



monitoring model approach (which is a bottom up approach with the involvement of local community) is gradually changing the mind set of persons and institutions. In the changing circumstance, they are now sharing the budget issues and information about the availability of funds with the poorest of the poor at village level. There was no effective and easy channel for the poor to reach to the policy makers at various levels (village to union, union to upazila, and upazila to district and national level) where they could submit their demands. This initiative has served to establish an effective channel which would be used by broad section of rural people for their voices to be heard at all levels.

Through this initiative, approximately 0.10 million people of six unions have been oriented about best practices and especially vulnerable peoples like women, children, and poor are benefited. They are now raising voices for safe water, hygiene toilet and best utilization of allocated budget in the union and upazila level. 6 upazila chairman, 6 union chairman and 72 union members have been oriented also with the initiative and support the best practice as well. They also demanded for an increased budget prepared with community participation to upper level on water and sanitation which has been accepted by the government. The overall achievement of this best practice is involving community of their right to water and sanitation need and tracking of committed WASH funds.

2014

Category 1

Participatory Groundwater Management (PGM) in Andhra Pradesh Community Based Tank Management Project, India

The Participatory Groundwater Management (PGM) component of Andhra Pradesh Community Based Tank Management Project was designed in response to the urgent need to upscale experiences and lessons learnt from projects that had demonstrated farmers can be successfully involved in groundwater management. In an effort to mainstream PGM the project also intended to redefine the role of the State Ground Water Department from being a monitoring agency into a groundwater management agency promoting stakeholder participation.

PGM was built upon a recognized benefit of stakeholder participation, realized over decades of pilot projects in participatory groundwater development and management. Its main objectives have been:

Social benefits through promoting equity among users; Empowering groundwater users in the tank influence zone to wisely manage their dynamic groundwater resources; Empowering a gender balanced workforce through training.

The project main achievements included the following:

Data demonstrated that groundwater users are moving away from high water requiring crops such as rice (paddy) towards less water demanding irrigated dry crops while maintaining productivity and income; More groundwater users sharing water with those without access to irrigation; An impact assessment study confirmed trends with higher productivity figures; The technical capability of the State Ground Water Department has been augmented through upgrading of data centers in 13 districts and the state headquarters plus the construction of 273 piezometers. The department staff members have also gained valuable experience in participatory groundwater management due to regular monitoring of the PGM capacity building and other activities.

Sustainable Southeast, the water-energy nexus in the Southeast region of the Canary Islands, Spain

The Southeast Region of Gran Canaria (Mancomunidad del Sureste de Gran Canaria), in the island of Gran Canaria, Canary Islands, is composed of three municipalities: Agüimes, Ingenio and Santa Lucia, and currently has a population of 127,251. Its economy depends on agriculture for export and to a lesser extent industry, trade and tourism. It is a barren area, with few natural resources such as water, strong winds and high sun exposure.

In the 70's water supply to the population and agriculture entered a crisis, threatening both the quality of life of the population and the survival of their main economic resource: agricultural export.

The heads of the three municipalities decided to join forces to address this problem and created the Association of Municipalities of Southeast Gran Canaria (Mancomunidad del sureste de Gran Canaria).

The Mancomunidad has applied a number of innovative approaches in a very water-scarce environment, combining renewable energy sources with wastewater management systems. The heads of the three municipalities, supported by organizations and citizens established primary and secondary objectives as follows:

Obtain full self-sufficiency of drinking water in the county, for domestic purposes and in agriculture, irrespective of irregular rainfall patterns and availability of fossil fuels, also avoiding the overexploitation of aquifers. This could be achieved from seawater desalination on a large scale, which is of a high energy cost; Obtain a high quality of water supplied to the entire population; Achieve water saving without affecting the quality of life; Improve the water cycle; purifying and reusing wastewater to maximum possible.

A high level of campaigning was needed to involve the public in what has essentially been a transformative experience for the island and its inhabitants. The challenge of providing a water supply to a growing population of both quality and quantity without impoverishment or salt-



ing inland aquifers, required innovative solutions and the support of the island, regional and national authorities.

The steps taken were truly innovative in nature and the Island has transformed from being in a position of uncertain water dependency to self sufficiency through investment in new technology and renewable energy sources, as well as transparency and advocacy that was inclusive of the islands people. In 1993 the project started use of a reverse Osmosis process, which at the time was the most advanced technology available. The following year a sewage treatment plant was constructed, capable of purifying half the water in the region. By 1999 the patent reverse Osmosis plant had achieved water quality equivalent to drinking-water and was used for irrigation and greenhouses in the area. Innovation continued and the Island saw the introduction of both a wind farm to supply the treatment plant and a solar park to supply the desalination plant. In this respect, the treatment of water is being powered by renewable energy initiatives and the Island has become a World leader in the comprehensive pairing of water and energy.

The combination of renewable energy, desalination of sea water, purification of sources, reuse in agriculture and urban green spaces produce a circle of sustainability that affects and includes all people, in all its activities and the environment.

Category 2

Safe Water and AIDS Project (SWAP), Kenya

Created in June 2006 SWAP aims to improve the health and socio-economic status of Kenyan people through disease prevention and socio-economic empowerment of the target population. It aims at improving the quality of life of the vulnerable in the community by building their capacities and supporting them to develop profitable health oriented micro-enterprises.

The goal of this project is to scale up an effective, financially sustainable system of health oriented micro enterprises that increases adoption and use of water treatment, storage, hand-washing soaps as well as other health and hygiene products in low-income, rural communities, while simultaneously creating local income-generating opportunities, in Nyanza and Western provinces of Kenya. This is achieved through the following:

Increasing access to health and hygiene products; Increasing access to information about health and safe water; Training the community members on how to develop healthy habits; Building the physical facilities and providing initial equipment; Providing the initial stock of health and hygiene products; Conducting of training of Community Health Promoters.

SWAP has evidence of the positive health and economic impact from various effectiveness studies done by the research department. A 2-year study demonstrated that the use and visible presence in the home of water treatment products sold by SWAP more than doubled,

from 23% to over 50%. Use of water treatment products also increased significantly among women with children enrolled in a program to provide hygiene kits as an incentive to attend immunization clinics. Water treatment and hygiene knowledge and practices of schoolchildren and their parents also improved in a 2-year study of a school-based program. SWAP has seen a decrease in reported biweekly diarrheal prevalence in children less than 3 years old from 10% at baseline to 1% two years later. In addition, the population in the area of intervention no longer experiences cholera outbreaks.

SWAP has also sold more than 2,500 locally-produced improved cook stoves that use less wood, cook faster, produce less visible household smoke, and modestly lower emissions of 2.5 micron particles.

SWAP by the end of 2012 was paying off 65% of its operations and salaries from revenue from sales. Community Health Promoters are recognized by the local leaders and have become useful members of society.

Pan in the Van – an onsite capacity building & awareness generation approach for inclusive WASH, India

With the objectives of addressing the poor status of Water, Sanitation and Hygiene (WASH), the Energy, Environment and Development Society (EEDS) developed this approach with the support of UNICEF.

The status of WASH in India is very poor, with only 31% of the population having access to improved sanitation and 665 million people practicing open defecation. Despite huge investments there has been little improvement, which has been attributed to ineffective approaches that are monotonous and lack focus. To address the issues relating to the poor status of WASH, EEDS introduced an onsite and inclusive approach that could be easily monitored and tested, known as “Pan in the Van.”

The PAN denotes hardware and VAN is onsite software. It is a comprehensive collection of tools especially designed to invoke community participation and cater to the needs of the different actors in a village scenario, particularly for demand generation, capacity development, team building, governance improvement, demonstration of technological options, and strengthening of supply chain. It not only facilitates action planning and community review but also provides support.

The aim of the Pan in the Van approach is to accelerate the Total Sanitation Campaign addressing the gaps prevailing in capacity building and behaviour changing communication efforts. It offers a complete package for achieving and maintaining total sanitation, cost effectively. The project used the following four step approach:

Step 1 – Health Communication – involving rapport building and preparation for the camps, including health surveys and a health check up with a qualified Doctor;



Step 2 – Three Day Panchayat Level Camp – awareness generation, motivation and involvement of local authorities. The 12 tools relating to sanitation would be introduced and demonstrated along with a community monitoring system.

Step 3 – Strengthening local delivery system.

Step 4 – Hygiene day and Community Review – introduce the 3 tools to study water balance and encourage a transparent system that can be monitored.

The project promoted transparency and information in the public domain. For many women, it was the first opportunity for them to explore their roles in governance outside of the confinement of their households. It earned visibility and invoked public debate on the issue, especially Open Defecation, the “dirty issues” of toilets, excreta and garbage. Households started storing drinking water in a safer and more hygienic manner. Service providers were also provided new ways of reaching the community. It promoted the inclusion of women and marginalised groups through tailored and intentional opportunities.

The camps improved the sanitation coverage in 120 villages, 100 Anganwadis (pre-school children development centers), 240 schools and around 20,000 households. These camps provided opportunities for about 12,000 women and girls to actively learn and participate in the improvement of the sanitary status of their community, and also capacitate 100 Anganwadi workers, 700 school teachers and 40,000 school children.

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Five years of UN-Water “Water for Life” Awards 2011–2015

2015

Category 1

Renewable Energy in Water Sanitation and Hygiene in Urban Slums (Projects WASH-US & NEWS-UP), India

Despite longstanding efforts, water and sanitation services are patchy in India and urban poor are worst hit. They complement a deficient public water service at prohibitive “coping” costs of average USD 0.67/day, or 35% of their income. Reportedly the problems of water and sanitation, responsive for 67% disease events, are vastly interlinked and also energy intensive in urban areas. Slums are located in low-lying and water-logged areas amid poor sanitary conditions and unhygienic surroundings. In this context, SAFE designed a program wherein renewable energy is the key to water and sanitation solution for the urban poor. Under the aegis of this program SAFE has launched two projects for providing safe drinking water and hygienic sanitation to marginal poor in urban slums named WASH-US (Water Sanitation and Hygiene for Urban Slums) in Kolkata and NEWS-UP (Nonconventional Energy in Water and Sanitation for Urban Poor) in north eastern India.

Both the WASH-US (Water Sanitation and Hygiene for Urban Slums) and NEWS-UP (Nonconventional Energy in Water and Sanitation for Urban Poor) projects provide solar powered water treatment plants which deliver 10,000 litres of drinking water complying with WHO standards on a 24X7 basis to the community through automated dispensing units. The integrated model has bio-sanitation components for providing a state-of-art sanitation facility based on microbial bio-digesters. These units are fed with wastewater enabling “zero” discharge and near-zero water footprint intervention. Both projects cater to the needs of 15,000 urban poor people, improving their lifestyle and livelihoods by providing essential services, new economic opportunities and inclusive growth. The program has been supported by the World Bank and CSR funding from the HSBC Water Program.

The main objective of the program was to inculcate wise-use of water resources through community governance, and recovery through water harvesting, reuse and minimization of water wastage. The program institutionalizes state-of-art community sanitation with a clean and hygienic ambience to downsize the recurrence of diseases, especially for women and children, by empowering women water users in the community. It also ensures equitable access to facilities such as Bio-sanitation and water ATMs for automated dispensing of WHO standard water round the clock for the slum dwellers through a solar run water plant. Further, it ensures social entrepreneurship through revenue linked micro-utility services in the WASH sector as an alternative economic opportunity for the poor, while displaying low carbon initiatives to downscale climate impacts and create place-based adaptive mitigation through the coupling of renewable energy to the WASH sector.

The impact of the projects has been measured through strategic impact assessment based quantifiable studies on sociometry, economic evaluation (Cost Benefit analysis) and ecological audit. The impact assessment was designed for Water Quality, Accessibility, Space & Time, Participation and Equity. The perception of Change and Development in the community has also been explored. The resulting outcomes are the following:

Socio-economic benefits: Only 17% of the total revenue earned per month is compensating the operational cost of the project; Better drinking water quality in terms of suspended matter, clarity, sediments offensive smell and taste; Easy and equitable access to water and sanitation; however 15% of the women beneficiaries apprehended problems of social dominance; Improved conditions and empowering for women: up to 4 hours time saving to dedicate to other activities, better sanitation and a community kitchen, which foster both privilege and pride; Conflict resolution on water resource allocation and access. It has empowered people with contentment over their right on the allocated volume of water from the facility; An effective participatory program of community governance: the Joint Liability Group members endorsed the participatory process as gender unbiased and equitable for sustainability; Raised motivation and demand for more technical training programs and skill development workshops.

Environmental benefits:

Use and generation of renewable energy by the WASH-US facility; The 10KV Solar Water Treatment Plant and the lights in community sanitation have a carbon offset equivalence of 280 Metric Tons per year. The 4.5 Cu Mt biogas plant generates gas from human waste and municipal solid wastes and favors carbon balance by reducing landfill and fossil fuel emissions; Nearly 60% reduction of the water footprint thanks to the application of a conservative method based on the reuse of wastewater in the sanitation units and the capturing of 13,420 thousand gallons/year of rainwater in a 3.8 hectare water harvesting system per slum; Use of beneficial microbes in bio-digesters for sanitation units achieving "Near Zero-effluent & Near Zero emission" status as a commendable climate connection.

Water resource management for adaptation to climate change through community action in the Thar Desert, India

The Marwar region of the Thar Desert in Western Rajasthan, India, is the most densely populated arid zone in the world. The region has the lowest water endowment in Rajasthan, while the State itself falls in a zone of extreme water scarcity in the world (World Economic Forum report 2009). Rainfall is sparse with an annual average of 200 mm, ground water is saline and unsuitable for drinking or agriculture. Over-reliance on centralized water supply undermined wisdom developed over centuries that helped desert communities adapt to climate variability. Centralized planning pushed this traditional knowledge to the margins of development processes, with the region now facing water shortages. About 51% of the total rural habitations in the region are not covered by the government's water supply system, 16% partially covered whereas only 33% habitations are fully covered with optimum water supply (National Habitation Survey 2003). In this context, the project addressed the challenges of reviving traditional rainwater harvesting structures that had fallen into disuse, reducing open defecation, as well as removing and regenerating encroachments on common lands, which is essential to maintain the hydrological cycle.

The project is supported by JBF's HSBC and demonstrates the benefits of a cost-effective integrated model to catalyze community action on multiple components of IWRM and achieve visible, sustainable and replicable impacts on drinking water availability, sanitation, health and environmental regeneration at village level. For this purpose, four model villages were developed to showcase the positive impacts brought by the activities of the project.

The main project objectives and activities were the following: Development of traditional water harvesting structures like talabs (village ponds), nadis (grassland ponds) and tankas (underground water harvesting tanks) to improve access to drinking water and promote water use efficiency, as well as protection and augmentation of catchment areas of water structures like agors (catchments), orans (sacred forests) and gauchars (grasslands); Design and implementation of a drainage system in one pilot village to showcase the

benefits of improved drainage at village scale; Facilitation and capacitation of Jal Sabhas (water user associations) in the project villages to implement a water, land and sanitation program integrating concerns of women and disadvantaged communities. These include the implementation and maintenance of four water harvesting and conservation system for improved water capacity, household level support for tankas (underground water harvesting tanks) and toilets; Establishment of Norms for adaptive water and pasture management and participation of women and disadvantaged communities in the community institution.

The project applies a three-pronged approach to sanitation by using the village-level fund into which groups of 10 individual households make a 50% contribution upfront to gain financial support of the remaining 50% from JBF. Such an approach embeds individual efforts within a group that offers mutual support and motivation, while using the community level forum to provide additional motivation, support and ensure transparency and accountability in the use of funds.

The project demonstrates a replicable catalytic social engagement and challenge based financing approach that results in cost-effective local solutions to water scarcity, inclusive community institutions, ownership and sustainability through a 30% local contributions for IWRM infrastructure; The project has developed the full matrix of traditional water harvesting structures like talabs (village ponds), nadis (grassland ponds) and tankas (underground water harvesting tanks) to create a “community led climate resilient water management system” through participatory approaches, traditional knowledge and financial contributions from Potaliya’s community. The protection and augmentation of catchment areas of water structures like agors (catchments), orans (sacred forests) and gauchars (grasslands), that are the repositories of biodiversity, have improved the efficiency of water harvesting structures even during scant rainfall, thereby adapting to climate change; As a result of the project’s three-pronged approach, village-level sanitation coverage has increased from baselines between 6-25 % to almost 50-70%; The increase of water availability, reduction of dependence on expensive and unsafe water from tankers and the removal of individual encroachments on village land to augment them through indigenous fodder grass and mixed plantations has disproportionately benefited the poorest sections of the community that are most dependent on common property resources; The successful cooperation with local government ensures time-bound convergence and cooperation within the project supported overall IWRM planning. The project’s model approach is being formalized through a MoU going beyond existing formats for cooperation with local government and inspired by JBF’s experiment with a “Development Pact”. The community-local government-JBF cooperation “Pact” has the potential for replication within the existing Government water policy and budget; The project has pioneered the adaptation of a new water recharge technology from Africa, replicating it at lower cost and by combining it with traditional check-dam know-how. The village of Potaliya is also the first village to pioneer a village co- financed drainage system in Rajasthan addressing challenges of rain variability and vector-borne diseases.

Category 2

Resource-Oriented Sanitation concepts for peri-urban areas in Africa (ROSA)

The project has promoted resource-oriented or ecological sanitation concepts as a route to sustainable sanitation in Africa. To achieve this objective it developed and introduced integrated low cost technologies for sustainable sanitation, as well as community-based management concepts. These concepts were applied in four cities in East-Africa, namely Arba Minch (Ethiopia), Nakuru (Kenya), Arusha (Tanzania) and Kitgum (Uganda). Several types of toilets that allow reuse have been constructed in private houses, institutions and schools. Also, the project developed Strategic Sanitation and Waste Plans (SSWPs) for the four pilot cities in order to initiate a process of integration of such aspects in the towns' agendas. These provided examples for a generally applicable and adaptable framework for the development of participatory strategic sanitation.

The overall objectives of the ROSA project were: To promote resource-oriented sanitation concepts as a route to sustainable sanitation and to fulfill the UN MDGs; To implement resource-oriented sanitation concepts in four model cities in East Africa; To research the gaps for the implementation of resource-oriented sanitation concepts in peri-urban areas, and; To develop a generally applicable adaptable framework for the development of strategic sanitation & waste plans (SSWPs).

The project started in October 2006 and ended in March 2010. The consortium comprised 13 partners from Europe and Africa. Main features included the following:

The participation of municipalities in the project consortium as an important step towards sustainable implementation of sanitation concepts. ROSA was the first project in this field where the municipalities work with their local universities. The municipality and the university formed the core of a wider local network in which ROSA invited authorities, NGOs, CBOs, etc. working in the field sanitation to participate. Research in ROSA was demand driven and defined by the local African partners.

In general the research activities within ROSA contributed to improving the competitiveness of resource-oriented sanitation concepts in peri-urban areas. Institutional-organizational innovations resulted from operation and management strategy development. Technical innovation was associated to the solutions implemented in the project, as well as from the integration of the resource-oriented sanitation concepts into local settlement structures. Finally financial-economic matters were tackled analyzing in details costs associated to the construction and installation of the identified solutions, as well as operation and maintenance costs.

At the end of the projects the pilots were in operation in all cities. Most implemented solutions have been successfully adopted by the local communities. Beneficiaries spread information of the new options to other areas. As a result private persons as well as organizations got interested and built sanitation systems with their own resources (ROSA provided technical support only). Awareness regarding the need of operation and maintenance was created in all pilot cities. Large-scale implementation of on-site sanitation was launched in Arba Minch and Nakuru.

International Decade for Action 'Water for Life' 2005-2015

A Decade for Water, a Decade for Life

Towards the primary goal of the Water for Life Decade, Spain has agreed to provide resources to the United Nations to establish an Office to support the International Decade for Action. Located in Zaragoza, Spain, and led by the United Nations Department of Economic and Social Affairs (UNDESA), the Office implements the UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC) aiming at sustaining the global attention and political momentum in favour of the water and sanitation agenda at all levels during the Decade.

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