

# ABSTRACT VOLUME

World Water Week  
in Stockholm

23-28 August, 2015

Water for Development

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Workshop 2:  
Water as a driver for sustainable  
development and poverty eradication

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## Workshop: Water as a driver for sustainable development and poverty eradication

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## Water-Food-Poverty and Gender in Drought affected regions in India



Author: Dr. Basanta Sahu, Indian Institute of Foreign Trade, India

Keywords: Water, Food Insecurity, Drought, Poverty, Gender, India

### Introduction and objectives

Water, livelihoods, food insecurity and poverty linkage has re-emerged as major development policy issue in less developed economies. In recent years, recurrence of drought and rising demand for water continue with unequal access to and use of water. Broad objective of the paper is to discuss nexus between water, food insecurity, poverty and gender in drought prone areas in India. Specific objectives are to highlight

- Impact of water scarcity on employment, food consumption, migration, resource use and poverty
- Household risk sharing during stress period with focus on gender (intra-household risk sharing)
- Policy suggestion to enhance water use efficiency to improve livelihood and food security and reduce poverty

### Methodology approach

A three-stage approach was followed to assess household and community participation in agriculture, water use, risk coping in different regions (Odisha and Gujarat) in India. While community level water related interventions are limited and not very effective, our focus has been on analysing inter-household and intra-household across regions and social groups to argue whether impact of access to and use of water by household has been gender neutral or not, particularly during drought or scarcity period. Some local adaptations and practices relating to food and water scarcity and its impact on poverty and gender are discussed. Selection of study areas for survey was mainly on the basis of area based resources approach and on the scale of regional development. Diversities in water resources and its management are given priority with other local features such as agriculture, livestock, forest, migration etc.

### Analysis, results, conclusions and recommendation

Recurrence of drought and increasing scarcity of water has affected the poor, low income groups and particularly women more in less developed agrarian economy than others. Our results substantiate it for two different regions in India with marked gender inequity in food consumption and risk sharing during the scarcity period. Inadequate access to and use of water with poor water management continue to pose formidable challenges for food insecurity and poverty. Women found share disproportionately high risks and work burden in addition to their household chore. About 50-80 percent increase in working hours and 30-67 percent decline in expenditure for the women reported in the study areas.

Consumption and expenditure reduction coping strategies found common at household level but they were not gender neutral. It has serious implication on intra-household gender relations and overall gender equity. In broader sense, low and unequal access to water and land is viewed as increasing adverse impact on women in terms of their participation and resource management and well-being. Our analysis support the argument that women in agriculture share higher work burden with little or no access to resources like land, water, credit and other inputs.

Increasing water scarcity and failure of community based water management, particularly in drought prone areas fail to improve living of the poor and women. Distress agriculture, out migration, informal borrowing, poor risk coping capability evident in the water scare regions continue to pose tough challenges for poverty reduction and gender equity.

Households as a decision making unit tend to use women members for ‘labour smoothing’ and ‘consumption smoothing’ but without adequate availability and access to resources, existing intra-household gender relations continue to be gender biased. Therefore, wider access to water, land, credit, market links by the poor women in agriculture need urgent policy attention. Strengthening local water institutions, conservation and management of local resources, ownership and effective participation of women in resource use decision making are reemphasized. Role and functioning of women in water user associations (WUAs), panchayat will be crucial where existing public water and irrigation system need to play the role of facilitator.

## Economic gains from good water and sanitation



Author: Ms. Lesley Pories, Water.org, United States

Keywords: education, empowerment, efficiency, water, sanitation

### Introduction and objectives

Water.org has been pushing the boundaries of microfinance with WaterCredit, a program that uses microfinance to empower the world's poor to access water and sanitation. The primary hurdle that this program encounters is the general assumption that loans for water and sanitation are too risky because they are perceived as consumptive rather than income generating. This presentation seeks to prove that assumption wrong by using quantitative data that measures time saved as a result of improved access to these important assets and calculates the economic gains to a household based on these time savings in India.

### Methodology approach

Data will be collected from interviews with current and past WaterCredit borrowers in southern India that measure time saved by construction of the WASH asset as well as data collected about how that time saved was utilized. Economic values will be extracted based on indicators such as: extra income generated from extra hours available to work per day, extra income generated from days not missed due to water-borne illness or the need to collect water, school and education-related impacts of not being sick or not missing school for water collection, and increased household income due to reduced medical bills.

### Analysis, results, conclusions and recommendation

The positive correlation between water, sanitation and economic development is understood in certain circles but remains to be proven and communicated globally. The data mentioned above is under collection, with nearly all borrowers interviewed to date able to point out the economic advantages the household water connection or toilet has had upon the lives of their families. A key recommendation will be that lending institutions review this data and, based on the findings, reassess their reluctance to lend for these “consumptive” assets. Another recommendation, specific to India, will be to use this information to encourage the Reserve Bank of India to include Water and Sanitation as part of nationally-promoted “Priority Sector Lending” sectors.

## Muddied waters; hidden agendas in sustainable development of transboundary rivers



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Keywords: South Asia, transboundary rivers, water governance, international donors, Ganges-Brahmaputra-Meghna basin

### Introduction and objectives

This paper is an analysis of prevalent international development narratives in the governance of transboundary rivers in the Ganges-Brahmaputra-Meghna basin (GBM). This paper examines how international donors – in particular the World Bank, United Kingdom and Australia – use development discourses to justify interventions in the governance of transboundary rivers in the GBM. The sustainable development rhetoric belies political agendas of these donors.

The objective of this analysis is to illustrate that poverty alleviation and economic development through water governance is a compelling and increasingly popular discourse – but also one that can be used to mask other strategic goals.

### Methodology approach

This paper was written on the basis of data gathered during six months of fieldwork conducted in India, Nepal and Bangladesh between April and November 2014. The fieldwork was based on a series of semi-structured interviews with around forty policy-makers, scholars, water governance practitioners, international donors, etc.

This paper also presents the results of a discourse analysis conducted on the strategic plans, annual reports, project evaluations, and other grey literature of the organisations involved in the governance of rivers in the GBM basin. The discourse analysis focused on the buzzwords of prevailing development and environmental management paradigms.

### Analysis, results, conclusions and recommendation

International development aid has always been closely intertwined with the geopolitical strategies of donor states. The trend of ‘sustainable development’, though laudable in many ways, can also be co-opted to further political agendas. This has been illustrated in the case of transboundary water governance in the GBM. There, international initiatives rely on the rhetoric of sustainable development and poverty eradication to affect the management of rivers between India, Nepal, Bhutan and Bangladesh. The implicit objective, however, lies in donor states increasing and improving their political influence in South Asia. This paper also evaluates the effectiveness of international donors in eradicating poverty through sustainable development of transboundary water resources in the GBM. It concludes that the effect of foreign donors on improving river governance, reducing poverty and encouraging the sustainable development of the region’s water resources is difficult, if not impossible, to measure. These challenges exist in complex, dynamic contexts and require complex, dynamic, context-specific solutions that are ultimately the confluence of many factors and actors, not any one donor program.

Nonetheless, the presence and influence of international donors in the governance of transboundary waters in the GBM is not undermining or otherwise harming the goal of sustainable development and

poverty eradication. Indeed, they are part of the dynamic and complex system of water governance. Any pursuit of sustainable development and poverty alleviation, even if it has a hidden agenda, should be encouraged as long as it does no harm.

In conclusion, sustainable development and poverty eradication are currently trendy buzzwords that can be used by international donors to mask the implicit goal of increasing geopolitical influence. As such, it cannot be said that water is a driver for sustainable development and/or poverty alleviation. These are, however, noble goals that must continue to be pursued across all sectors, including water management.

## Water Access and Livelihood Adaptation of Resettled Communities in Lao



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Keywords: Water access, resettlement, livelihood adaptation, hydropower development

### Introduction and objectives

A major driver of change in the Mekong River Basin relates to hydropower development, and the consequent changes in landscape and access to water resources that such development induces. Previous research typically compared livelihoods before and after resettlement, reporting a sharp deterioration of living conditions and reduced income of affected households. The nature of the adaptation strategies pursued by individual households post-resettlement is rarely subjected to analysis. In this presentation, we share key findings of a longitudinal study in Lao PDR, in which the trajectories of livelihood adaptation following resettlement, and the possible determinants of that process were examined.

### Methodology approach

The most common methodology used in hydropower resettlement studies is a recall method in which targeted households are asked to compare conditions before and after resettlement based on memory. This raises a number of difficulties well-noted in the literature. In this study, we conducted a series of household surveys before and 1, 2, and 3 years after resettlement, targeting the same set of households. This rich dataset allows us to examine how each and every household adapted to the change, to clearly identify trajectories of adaptation, and how these different trajectories are themselves determined by households' socio-economic characteristics.

### Analysis, results, conclusions and recommendation

A factor analysis was conducted using a set of composite variables. It yielded 5 types of household clusters: (1) Diversified/ Well-off households; (2) Diversified/Worse-off households; (3) Livestock Dependent households; (4) Non-Farm Wage Dependent households; and (5) Fishing Dependent households. Clusters 1 and 2 were predominant before the resettlement.

Four main adaptation trajectories were identified. Two of the trajectories show coping strategies of families who were in Cluster 1 before the resettlement, by concentrating their investment in reservoir fishery or livestock immediately after the resettlement to maximize income in the short term, and then some shifting into non-farm income while others becoming more specialized in fishing. The two other trajectories illustrate that of Cluster 3 households and some from Cluster 1, both suffering the blunt of lost farming income after the resettlement, continuing fairly diverse activities as before with low level of investment, and some later turning to wage labor and remittances from relatives while others remained farm and forest dependent.

The livelihood strategies of the households 3 years later are clustered into 3 types: relying primarily on non-farm wage income (Cluster 4); relatively diversified livelihood portfolio similar to that before the resettlement, but with lower returns (Cluster 3); and relying on fishing (Cluster 5).

The results also show that different livelihood assets, including water resource access, financial capital, and education, play a role at different stages of trajectories, and that the adaptive capacity of households to the shock of resettlement is not homogenous. Compensation programs need to take this into account, to facilitate more smooth adaptation of households in their new environment. The analysis suggests that a more detailed understanding of this dynamic process, and the determinants of the process, is key to improving interventions for rebuilding the livelihoods of those resettled by development projects in rural areas.

## Obligations Arising from the Right to Water



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Keywords: Right to water, legal obligations, comparative law, Finland, South Africa

### Introduction and objectives

In July 2010, the General Assembly of the United Nations recognized the right to safe and clean drinking water and sanitation as a human right. However, it remains unclear what legal obligations, precisely, arise from the right. In order to clarify the obligations of the right to water (excluding sanitation) in developed and developing countries, our presentation investigates and compares the constitutional frameworks of Finland and South Africa. Through transnational lessons it is possible to distil comparatively the various legal obligations that flow from the right to water as it is entrenched constitutionally and statutorily in the two countries.

### Methodology approach

The study follows the methods of a doctrinal study of law with a special emphasis on legal comparison, including an assessment of the legal implications of the sources of the right to water such as human rights treaties and national constitutions. In addition to the well-accepted State obligations to respect, protect and fulfil human rights, we apply a more specific framework to determine and compare the obligations of the right to water in Finland and South Africa.

### Analysis, results, conclusions and recommendation

While both Finland and South Africa follow the constitutional approach to the right to water, they provide different constitutional frameworks to regulate the issue. In Finland water is not mentioned in the Constitution but is related to many constitutional rights, whereas the South African Constitution provides everyone the right of access to sufficient water. In Finland everyone has access to water whereas South Africa still faces challenges in its provision.

Largely following the generic classification of Tuori and Kotkas (2008) of the legal implications arising from economic, social and cultural rights we distil several generic legal obligations that could arise in the context of the right to water and apply these to the legal frameworks of Finland and South Africa to determine to what extent the obligations appear in them. The right to water may obligate a State and public authorities:

1. to fulfil the actionable rights of an individual,
2. to implement the right,
3. not to lower the level achieved in the realisation of the right,
4. to take the right into account in the interpretation of law, and
5. not to apply a legal provision in contradiction with the right.

In addition, the right to water may obligate third parties such as private water companies, which means that all or some of these obligations could apply to non-state parties as well.

The examples of Finland and South Africa illustrate that the right to water first and foremost obligates

public authorities to realise the right in the highest possible degree and not to lower the level achieved, while it very seldom grants actionable rights or provides non-state parties obligations. As well, the obligations of the right to water are realised differently in the two jurisdictions as a result of legal design, socio-economic and environmental considerations and governance design.

## Right to water in West Africa requires secure land rights



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Keywords: Africa, Agriculture, Land, Human rights, IWRM

### Introduction and objectives

In West Africa there is an increasing trend from governments and donors to attract large scale agricultural investment to improve productivity and reduce the investment burden in agricultural development on the State. In negotiating these land deals, governments have allocated secure long term water rights to companies wishing to invest but are only slowly giving similar secure rights to small scale farmers.

Objectives:

a) analyse current trends in West Africa concerning land and water rights in large scale rice irrigation schemes and the pros and cons of different approaches; b) explore how evolving rights-based approaches may affect future resource management.

### Methodology approach

The authors have participated in the design of schemes to secure land rights in large-scale irrigation systems in partnership with the government departments responsible for these systems, irrigation scheme managers and farmer organisations.

### Analysis, results, conclusions and recommendation

The notion of secure rights on land for which the agronomic value depends on collective action for its management and maintenance, is complex. The process raises issues such as how to organise payment of collective water fees, whether secure private title will lead to land being “sold off” to speculators, and how “secure” rights can be given to families where land is traditionally held collectively.

Water consumption for irrigation remains relatively low in relation to available resources but in the longer term, as demands increase, allocation between users and application of “user pays” principles will require farmers to hold, and manage, secure rights to water.

This can only occur when farmers have secure rights to land and this is a slow ongoing process in the region. Linking rights to water to rights to land has implications for other water users (cities, pastoralists, fishermen etc). At the farmer level, secure rights to land will increase a sense of stewardship of scarce resources that is currently lacking. Some large-scale irrigation schemes consume three times more water than is agronomically needed, and this hampers irrigation expansion efforts.

Issues surrounding rights to water for other users will be discussed.

More thought is needed to address the pros and cons of specifically linking water (and water fees) to land for both large and small farmers; how such linkage can be used as a mechanism to increase water use efficiency; and what this means for other water users.

## Perspectives of small-scale water enterprises: Motivations, drivers and barriers



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Keywords: water, enterprise, private sector, social entrepreneurship

### Introduction and objectives

Poor functionality of water systems in rural areas observed globally has led to questions about the most appropriate management models to provide reliable services. Within many countries, more professionalised approaches to service delivery for the poor are being sought, including through involvement of private sector, or through formalising community-based organisations. This is the case in Vietnam and Indonesia, the relevant sites in this research. Critical questions concerning enterprise motivations must be asked, given that access to water is a human right. Equally, more must be learnt about the barriers such enterprises face, if they are to play useful, on-going roles.

### Methodology approach

The Institute for Sustainable Futures (University of Technology, Sydney) is leading this research in partnership with local civil society and university partners. Literature on small-scale enterprise development and social entrepreneurship in the context of Vietnam and Indonesia informed a mixed method - quantitative and qualitative - tool to examine enterprise perspectives concerning their motivations, drivers and common challenges. Structured interviews were undertaken with formalised water enterprises, including 20 private enterprises in Vietnam, and 21 private enterprises, cooperatives and village-owned enterprises in Indonesia. These covered a range of ages, sizes and operating locations, as well as successful and less successful enterprises.

### Analysis, results, conclusions and recommendation

Findings confirmed that profit was not always the only or main motivation underlying enterprises' involvement in water service provision. Other types of motivations such as social goals, reputation and respect, new knowledge and skills, and socialising and camaraderie were also apparent. For instance one interviewee noted how his business was formed with a social goal in mind: “this venture started from social-environment concern, [rather] than profit”. Recognising these multiple motivations and drivers opens up new pathways to consider how to attract potential entrepreneurs to develop services for the poor, and reduces concerns that enterprises are likely to always focus on maximising profit, to the detriment of equitable outcomes.

The complexity of balancing a social entrepreneurship role whilst ensuring business financial sustainability was also evident. Commonly reported barriers included limited access to capital and to capacity building opportunities, as well as limitations resulting from the regulatory environment.

In Indonesia, for instance, obstacles were faced due to unclear government legislation concerning asset ownership, high fixed operational expenses, high interest rates for loans and lack of business skills. In Vietnam small private enterprises demonstrated varied levels of success, and varied attention to serving the poor, with poor customers comprising from 15% up to 60% of the customer base and potential for

connection fees to be reduced or waived. Challenges were met in negotiating tariffs, gaining sufficient management skills, and variable implementation of national policy by different provincial governments. These challenges in each country limit the ability of enterprises to expand their services, in particular, to the poorest.

Attention from the public sector is needed to assist in addressing these challenges, however this may only come with increased policy and institutional recognition of the important role formalised enterprises can play in contributing to improving access to this basic human right.

## Pump-priming payments for sustainable water services in rural Africa



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Keywords: sustainable development, handpumps, drinking water security, payment behaviour, Kenya

### Introduction and objectives

Sustainable development depends on reliable water services for households and economic actors. However, 273 million rural Africans still lack improved water access, and one in three handpumps are non-functional at any time. Using unique data gained through innovative mobile monitoring and focus groups, we evaluate how dramatic improvements in maintenance services in rural Kenya influence payment preferences across institutional, operational and geographic factors. By understanding the payment preferences of rural water users we see how an equitable rights-based approach can be reconciled with economic incentives for small entrepreneurs engaged in rural water service delivery.

### Methodology approach

Applying public goods theory, this study examines how user preferences are reflected in demand (as expressed by willingness-to-pay) for a reliable supra-communal handpump maintenance service with implications for a devolving water sector. We explore how water users' preferences are shaped by institutional, geographic and management factors (service delivery, institutional factors, handpump density, abstraction quantities). For this purpose focus group discussions were conducted with 639 rural water users at all 66 handpumps of Kyuso District, Kitui County, Kenya. Semi-structured interviews with the Water User Committees, the District Water Officer and County stakeholders were integrated into the analysis.

### Analysis, results, conclusions and recommendation

The institutional design of rural water governance, synchronising user demand with inclusive service delivery, is critical for more equitable and sustainable development outcomes. Kenya's decentralisation of the water sector offers institutional opportunities as water services are devolved to the 47 new county water ministries. Concurrently, new technologies have been introduced to remotely and transparently monitor community water supplies.

This has enabled a recentralised model of maintenance services at scale, a pilot of which has decreased handpump downtimes by a factor of ten. This improvement has significantly increased the value rural water users attribute to water services, which translates into an increased willingness-to-pay for these services. This has important social and financial implications, and contributes to the access, reliability and affordability criteria of the human right to water.

The research arrives at five conclusions: (1) water user payments are contingent on service delivery: three times more handpump users are willing to make regular monthly payments after experiencing the maintenance service; (2) with an improved service willingness-to-pay increases by a factor of five; (3) the institutional design of the user group and its level of exclusivity is an expression of collective

preferences regarding payments; (4) handpump density influences the management and performance of handpumps; and (5) mobile monitoring and mobile payments have the potential to significantly improve institutional oversight for a devolving water sector.

Drawing on these findings, the study suggests that handpump sustainability depends on rapid, reliable and inclusive services, which can strengthen the institutional stability of user groups through aligning demand and supply, and securing payment incentives for the users. Users recognise that improved water supply not only ensures their access to safe water but has wider implications for their overall welfare and local development, thus translating the rights-based approach into a practical, participatory and sustainable solution for poor rural communities.

## Operationalising rights to water and sanitation in Nepal

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Keywords: Nepal, rural, WASH, GESI, HRBA

### Introduction and objectives

This paper explains how the principles of human rights based approach (HRBA) and gender equality and social inclusion (GESI) are mainstreamed and operationalized through two bi-lateral rural water projects in Nepal. The Finland and Nepal-funded Rural Water Supply and Sanitation Project in Western Nepal and the Rural Village Water Resources Management Project are operated under the Ministry for Federal Affairs and Local Development in 24 districts out of a total of 75. Given that the projects operate through the local government systems and at scale, the good practices contribute to the water sector policy dialogue in Nepal at large.

### Methodology approach

The projects utilised participatory action research to develop the HRBA and GESI strategy and its operational tools. The projects took their existing GESI Strategy and Action Plan as the point of entry. A barrier analysis was done to explore legal, institutional, administrative, physical, geographic, economic, linguistic and cultural barriers. The approach was a multi-disciplinary, iterative, cyclic approach that aimed to translate the principles and ideas on how to address barriers, into tangible action and measurable indicators at the local government and community level. This was linked to developing simultaneously the contents of the capacity building programmes and planning practices.

### Analysis, results, conclusions and recommendation

The projects contribute to achieving universal access to water and sanitation for all, empowering rights-holders to claim their rights and enabling duty-bearers to meet their obligations. They build the capacities of local government level duty bearers and raise awareness at all levels regarding rights to water and sanitation. The projects use three main strategies:

- Mainstreaming HRBA and GESI principles by integrating these at all levels into policies, planning, implementation, monitoring and evaluation. For example GESI and HRBA aspects are taken into account when preparing local government level five year master plans, and when planning individual schemes; all training events have integrated HRBA and GESI aspects within the existing curricula; monitoring at all levels and related reporting have HRBA and GESI indicators, reminding all involved of these principles. Both normative and cross-cutting criteria are considered.
- Undertaking targeted actions to supplement the above where mainstreaming alone would not suffice. Gender-specific interventions will sometimes need to target women exclusively, men and women together or only men, to enable all groups to participate in and benefit equally. Disadvantaged groups will need specific attention. An example is adding a confidence building workshop prior to the main local government level planning workshop to encourage the disadvantaged groups and women to participate and to get their voice heard. Positive discrimination in terms of quotas for participation is also practiced.

- Policy dialogue, integrating the objectives into discussions at all levels, and communications. The HRBA & GESI Strategy document and its supporting materials take national GESI dialogue one step further.

Inclusive targeting is required if women, the poor and other disadvantaged groups (including people with disabilities) are to gain equitable access to resources and opportunities. This is necessary also to avoid elite capture, and ‘business as usual’. Hands-on technical assistance and monitoring support implementation for results.

## Commercial financing of utility investments for the urban poor



Author: Dr. Dennis Mwanza, SUWASA, Kenya

Keywords: Commercial financing, Commercial banks, urban water

### Introduction and objectives

USAID through its six year regional program the Sustainable Water and Sanitation in Africa (SUWASA) supported an initiative to shift from a purely donor-based investment strategy by water utilities to one that integrates commercially financed investments that adhere to the core business principles of market responsiveness, service delivery and return on investment. It assisted in institutionalizing this commercial approach among utilities, commercial banks, and the Kenyan government and building their capacity to continue the program after the end of SUWASA. The program aligns the financial incentives, bank and consumer to drive a financially sustainable model that increases access to water, reduces the cost of water to the end user, and increases profitability of the utilities and the banks.

### Methodology approach

Identify the key issues relating to why utility not getting needed investment, provided capacity building to banks on legal framework for lending to state owned utilities, Undertake a market assessment to determine ability and willingness to pay. Development of a business plan taking into account the commercial loan, Support the utility in developing an application letter for a loan to a bank submit the application for the bank.

### Analysis, results, conclusions and recommendation

The USAID/SUWASA program supports a shift from a purely donor-based investment strategy by water utilities to one that integrates commercially financed investments that adhere to the core business principles of market responsiveness, service delivery and return on investment. SUWASA Kenya is institutionalizing this commercial approach among utilities, commercial banks, and the Kenyan government, building their capacity to continue the program after the end of the SUWASA program. Ultimately, the program aligns the financial incentives of the utility, bank and consumer to drive a financially sustainable model that increases first time and improved access to water, reduces the cost of water to the end user, and increases profitability of the utilities and the banks.

The program does this by:

1. Supporting utilities in identifying commercially viable investments and developing bankable financing proposals.
2. Advising commercial banks in developing new water financing products and appropriate lending methodologies for utilities.
3. Assessing market demand and affordability for water and sanitation services among the poor, and supporting community outreach and education programs related to utility investments.

SUWASA Kenya has had a transformational impact on the country’s water sector by successfully unlocking commercial financing and allowing utilities to tap into a host of government, international, and multilateral funding resources. The program’s technical assistance to bank partners and utilities is an ideal complement to the successful USAID Development Credit Authority (DCA) guarantee

program, which has USD 9 million in water financing guarantees with three Kenyan banks, Kenya Commercial Bank (KCB), Housing Finance and K-Rep Bank. SUWASA Kenya is also partnering with the Government of Kenya (GoK) Water Services Trust Fund, complementing and supporting their management of Output Based Aid (OBA) and Aid on Delivery (AOD) subsidies to incentivize commercially financed projects. SUWASA helped nine WSPs develop investment proposals for projects valued at approximately \$4.6 million. SUWASA technical assistance to utilities and commercial banks resulted in bank loans of approximately \$3.5 million for projects, such as water supply network rehabilitation, pipeline extensions, household connections and the upgrade of a water treatment plant.

## SMART Centre's Tanzania and Malawi - Capacity building for marketbased WASH technologies



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Keywords: Rural WASH, Capacity building, Market-based technologies.  
Smart Water Solutions, Innovative water technologies

### Introduction and objectives

One option to increase access to water and sanitation is reducing cost of products and services. In the past 20 years a number of conventional technologies have been improved and new options were developed. A range of innovative options are so called Smart Water Solutions (SWS) including Sanitation. Examples are manual drilled boreholes of 100-1500 USD, EMAS and Rope pumps of 50-120USD, drip-irrigation, Household water filters of 20USD, zero cement latrines etc. These and 20 other options have in common that they are produced with local materials and by local private sector resulting in a "Profit based sustainability".

### Methodology approach

Innovative and affordable options are in place; a challenge now is scaling up the dissemination. An example of centres for dissemination of SWS are so called SMART Centres in Tanzania and Malawi\*. Activities of these Centre's include;

- Creating awareness. Demonstration of SWS, information on water fora, field visits, etc.
- Build up Supply chains; Train local private sector in production, maintenance, marketing, business skills.
- Other activities; WASH policy advice, quality control, certification of drilling and pump companies, making maps of manual "drillability" at regional or national level and linking producers and users with micro credits.

### Analysis, results, conclusions and recommendation

Smart Water Solutions are smart because they are effective, affordable, available and most options can be produced locally "profit-based sustainability".

SWS can reduce cost of Communal rural water supply, increase Self-supply and can help to reach the yet unserved where conventional technologies like machine drilled boreholes, are too expensive. Water quality can be improved by treatment at the household level as an intermediate step Water quantity can be increased and distances to water points be reduced with scaling up Self-supply

### Results:

Results of the training by SMART Centre's in Tanzanian and Malawi are:

- A supply chain of innovative and affordable WASH technologies
- 35 drilling and pump companies trained and functioning
- 10.000 Rope pumps installed, of which 35% purchased by families so Self-supply
- Cost reduction of rural water points from 40 to 15 USD per capita

Examples of SWS are 70.000 Rope pumps in Nicaragua and 40.000 in Africa, 30.000 EMAS pumps

in Bolivia, 1 million Treadle pumps in Bangladesh, Millions of hand drilled wells in Asia.

Conclusions:

- To scale up the use of SWS, large scale capacity building is needed
- An effective way for capacity building is the SMART Centre concept

Recommendations:

- In each country one or more WASH innovation centres like a SMART Centre, where both conventional and new relevant WASH knowledge for that country or region is concentrated.
- The products promoted by these centres should be proven, Market-based, and include options that are also affordable for the poor.
- Activities should focus on scaling up Self-supply since this results in economic development needed to sustain rural communal supply in the longer term.
- Bring knowledge of SWS in the national vocational education like in Tanzania

\* SMART Stands for; Sustainable, Market-based, Affordable, Reliable Technologies  
SMART Centres are member of the RWSN (Rural Water Supply Network) network..

## Social values embedded in an Australian water allocation plan



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Keywords: Water allocation, social sustainability, Australia, irrigation, forestry

### Introduction and objectives

Sustainable development and its Australian translation in natural resources management, Environmental Sustainable Development, are widely recognised as having three interlinked dimensions: economic, environmental and social sustainability. However, in the Australian context of water management where water markets and environmental flows have been introduced in the last decades, the social dimension has been less examined than its economic and environmental counterparts. This paper fills this gap in exploring which social considerations water planning process encompasses.

### Methodology approach

The Lower Limestone Coast water allocation plan under revision since June 2004 served as a longitudinal case study, on which the following data were collected: i) 180 local newspaper articles on the planning process for the length of its revision, ii) 65 submission forms filled in by the community during a public consultation on the draft water plan and iii) 20 face-to-face interviews of key stakeholders involved in the planning process conducted two years after the last community consultation on a draft groundwater plan.

### Analysis, results, conclusions and recommendation

A review of the evolution of the Australian water planning approaches indicates that best practices progressively include community engagement, adaptive management, fairness and social assessment, matching therefore some of the social sustainability principles. Water plans, in being the main implementing tool of the reform, are thus an appropriate tool to reconcile the currently overlooked social sustainability with its economic and environmental dimensions.

The key findings suggest that social values associated with water are multiple in the region: water as a common good, food security, basic human need, regional identity, drought-proof community, carbon stores, aesthetic value, aboriginal cultural water access, cultural & spiritual identity and recreational value. However, despite these multiple social values, the water allocation planning process does not define any social objectives. In contrast, clearly set environmental goals place unbalanced emphasis on environmental sustainability.

The study found nonetheless that the Lower Limestone Coast water allocation planning process achieved relatively good, although inconsistent, results in addressing social sustainability. However, it does so only through indirect, inconsistent and incomplete approaches to consideration of the social aspects of sustainability in protecting social values associated with consumptive uses. This calls for more coherent and dedicated attention to be paid to social sustainability in water planning through a shift from mitigation of social impacts to adaptation and integration of social objectives in water plans is needed to balance the reallocation impacts; as well as integration of social values requiring, in particular, some form of protection such as the licensing of cultural and non-consumptive uses of water.

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