Water Security and Governance in India: Key to Sustainable WASH Services at Scale Forever

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(Working Draft)

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Abbreviations and Acronyms

CBO	Community Based Organisation
CBWQSM	Community-based Water Quality Surveillance and Monitoring
DC	District Collector/ Magistrate
DHPCC	District High Power Coordination Committee
DPO	District Planning Officer
DRA	Demand-Responsive Approach
GoI	Government of India
GoK	Government of Kerala
H2S	Hydrogen Sulphide
HH	Household
HPCC	High Power Coordination Committee
IWRM	Integrated Water Resource Management
IWSP	Integrated Water Security Plan
KPI	Key Performance Indicator
KRWSA	Kerala Rural Water Supply & Sanitation Agency
KWA	Kerala Water Authority
LSGD	Local Self Government Department
MNREGP	Mahathma Gandhi National Employment Guarantee Programme
MTEF	Medium Term Expenditure Framework
NBA	Nirmal Bharat Abhyan
NBV	Nirma Bharat Vision
NGO	Non -Government Organization
NGP	Nirmal Gram Puraskar
NRDWP	National Rural Drinking Water Programme
NREGA	National Employment Guarantee Act
O&M	Operation and Maintenance
PAM	Participatory Aquifer Monitoring
PRI	Panchayath Raj Institutions
R&D	Research and Development
RKC	Rural Knowledge Centre
RRC	Regional Resource Centre
SCBA	Social Cost Benefit Analysis

SHG	Self-Help Groups
SHP	Sanitation and Hygiene Promotion
SPV	Special Purpose Vehicle
SWAp	Sector Wide Approach
SWSM	State Water and Sanitation Mission
TAU	Technical Assistance Unit
ToT	Training of Trainers
TSC	Total Sanitation Campaign
UNICEF	United Nations International Children's Emergency Fund
VTC	Voluntary Technical Corps
VWSC	Village Water and Sanitation Committee
VWSP	Village Water Security Plan
Ward	A Grama Panchayath (GP) is divided into many wards, which elect representatives to the GP council
WASH	Water Sanitation and Hygiene
WRD	Water Resources Department
WSF	Water Security Framework
WSP-SA	Water and Sanitation Programme – South Asia
ZP	Zilla Parishad

Executive Summary

Background

The focus of this discussion paper is on village water security and source sustainability issues in India, which are key to sustainable services at scale forever. It is the precursor to a more detailed paper.

Obtaining and retaining access to water is a fundamental element of sustainable development as it ensures ongoing availability of the resource, referred to as *water security*. While the global WASH sector increasingly addresses the issue of sustainability alongside attempts to increase coverage, 'slippage' remains a problem, whereby coverage increases are eroded and thus water security is reduced.

The objectives of the paper are twofold; firstly to highlight the importance of source sustainability and secondly to accentuate that unless there is convergence and integration to address source augmentation and regulating competing uses, sustainability, and concomitant water security, will not be attained.

Key Issues

India faces serious water challenges and the prospects are bleak under the current business-as-usual approach. While huge resources have been channelled into the WASH sector, little progress has been made because of unsustainable investments, perverse incentives and sub-optimal performance. This will be compounded by the impacts of climate change.

Strategic planning, investment, scientific management and conservation are all key elements in improving sector performance. While natural forces are problematic, India's water crisis is largely due to governance issues.

Under-planned development since the early 1950's responses to drinking water security was largely hardware driven, putting in place pumps and pipes. This had very little impact on the problem. During the past 15 years there has been a paradigm shift with an emphasis on service delivery, with the following elements being adopted in varying degrees and according to local circumstances:

i.   A demand-responsive approach where the engagement of end users is a critical element of service provision.
ii.   Establishing institutional change processes with a changed role for government from provider to policy maker, regulator and facilitator, and the decentralisation of responsibility to local agencies, including the private sector.
iii. Increased emphasis on technical and financial sustainability, such as appropriate hardware that is maintained and managed by community driven decentralised delivery models, to ensure improved cost recovery.

In any context a concentration on system and governance performance to the exclusion of source security would be a serious omission. In the current one, where climate change is already posing increasing risks to water sources, this becomes a fundamental issue that the sector must confront.

Government of India Guidelines

The Government of India (GoI) recognised that there is a water-source-related problem in addition to supply and governance, and issued detailed guidelines for planning and implementing drinking water supply schemes under the aegis of the National Rural Drinking Water Programme (NRDWP), in April 2010. This included an attempt to provide resources for source sustainability. This recognition arose from the fact that about 60% of drinking water schemes in India face serious source inadequacy, leading to capacity under-utilisation and poor service quality, especially during periods of low yields.

The funds allocated to source sustainability, however, are being used to seek engineering solutions to address water stress, the implicit view being that the problem is technical. To operationalise the guidelines, GoI issued a series of instructions and planning approaches regarding water security at village level and constituted a high-level committee to examine water-security issues.

GoI also identified selected districts in various states to pilot the concept of water security. However, the proposed programme was limited to drinking water security and did not consider that water sources are directed towards multiple, and sometimes competing, uses in a complex fashion. Any approach towards water security needs to be holistic, comprehensive and scientific. It must incorporate technical, social and governance issues, and will require departmental and budgetary convergence at the watershed/basin level, recognising the prevailing informal water governance structures.

Convergence is vital and relates to two spheres:

i.   The WASH sector is highly fragmented; covering drinking water, water for irrigation, ground water, industrial water, and multiple uses at the household level.

ii.   WASH institutions that work on the issues reflect this fragmentation and the governance framework are either not coordinated, or do not consider other concomitant problems.

For source sustainability to be addressed properly, this intra-sectoral fragmentation must be established as both a technical and a governance issue that require intra-sectoral convergence.

Proposal

In light of these shortcomings, this paper calls for a holistic and comprehensive analysis of source security issues in India, in a manner which addresses the issues detailed in the schematic below:
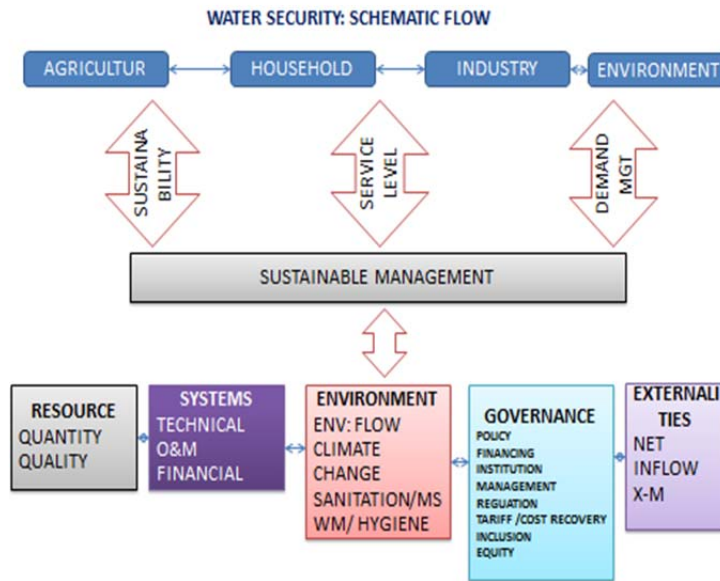
The research will provide a suitable framework for all departments and stakeholders to rally around recognising a need to impact on entrenched interests, in order to meet the integration requirements set out above.

The overall goal is to assist GoI to improve sustainability of the WASH development process towards ensuring water security at the village level following a bottom-up convergence framework to:

i.   Develop, test and demonstrate an adaptive, holistic model of water security at village level.
ii.   Develop and demonstrate appropriate intra-sector convergence models within an *Integrated Water Security Plan.*
iii. Build grassroots capacities to operationalise the water security framework.
iv.   Set the scene for sustainable scaling up of the model in selected districts in India and South Asia.

Abstract

Water security, as an integral component of sustainable development, has always been largely a governance challenge. Although India has emerged as a top-ranking nation in terms of water sector investments, outcomes have been poor as a result of significant slippages; one of the key factors being the unsustainability of water sources. Poor governance that has resulted in weak convergence at policy, programme and institutional levels, has consistently undermined efforts towards achieving water safety and security. The programmes have also shied away from addressing the deep-rooted, perverse incentives like subsidy-induced over extraction and underlying institutional factors resisting change. The watershed management programmes have also generated issues of riparian rights, inequity and competing water use in the context of archaic legislation and a weak regulatory framework.

The Government of India (GoI), as part of its initiatives in operationalising it's National Rural Drinking Water Programme (NRDWP) 2010 guidelines (GoI, 2010), have identified ten districts in different agro-climatic zones to pilot the concept of village water security. However, the programme is partially complete as the focus is confined only to 'drinking water security' and does not address the critical factors of sustainable convergence and governance.

The proposal is to pilot test and demonstrate a comprehensive and sustainable water security programme through a bottom-up and adaptive planning process by bringing together governance and capacity building. The programme plans to strengthen the water sector governance framework in operationalising the Draft National Water Policy, 2012 and the 2010 NRDWP guidelines, by providing local solutions to the global concerns of climate change adaptability.

1   Introduction

Improved water sector governance is the key to sustainable economic growth and welfare. India faces serious water challenges and prospects are bleak under the current business-as-usual scenario. The impact of climate change will further worsen the situation. However, strategic planning, investment, scientific management and conservation will improve sector sustainability. India's water crisis is, to a large extent, a governance crisis. Over the years vast resources have been channelled into the WASH sector. Slippages, unsustainable investments, corruption and sub-optimal performance are all still prevalent unfortunately.

South Asia is home to almost a quarter of the world's population, which is increasing at a rapid rate with secular trends in growth rates prevalent during the last decade and a half. While population growth and economic development vary from region to region, agriculture provides more than 60% of the population with a livelihood and uses by far most of the area's water resources. One third of the population lives on less than a US$ 1 a day, and has inadequate access to improved water supply and sanitation. Over 900 million people do not have access to basic sanitation. Water quality is degraded by high levels of agricultural, industrial and domestic pollution, which is exacerbated by unplanned urbanisation. Studies show that South Asia is a climate change hot spot where livelihoods are highly vulnerable. The region is constantly subjected to floods and droughts that are likely to worsen due to climate change.

Accordingly, for peace, poverty reduction and development sustainability, South Asia must tackle issues of food (livelihood security), agricultural productivity, water supply and sanitation, as well as encourage the adoption of integrated water resource management (IWRM) principles to address the anticipated impacts of climate change; especially floods and droughts, ground water management and trans-boundary waters. Water governance is a critical overarching issue which requires intensified efforts in the promotion of institutional frameworks and inter-sectoral convergence in development plans at the local, state and national levels.

During the last 15 years there has been a paradigm shift in approaches towards service delivery in terms of (i) moving towards demand-responsive approaches (DRA), (ii) an institutional change process focussed on decentralised governance, (iii) a changed role for government at all levels (from provider to facilitator) and (iv) an emphasis on financial and technical sustainability. The question of convergence, which is fundamental to achieving and sustaining water security and safety, has been relegated to the background. In fact, the WASH sector seems to be seriously lagging behind as far as convergence is concerned both in the NDRWP guidelines and in the approach to the Twelfth Five-Year Plan, 2012 (GoI, 2011a).

Most of the reform initiatives, however, have centred on schemes and hardware systems' performance improvements. It has to be recognised that such initiatives have supported genuine, yet environmentally questionable growth in water demand, neglected source sustainability, augmentation, conservation, conjunctive use, equity, quality assurance at source and regulation for making the investments sustainable.

Historically, investments in the water sector in India have been largely focussed on developing and protecting sources through household and community investments. However, during the period of planned development since the early 1950s and the expansion of Government in every sphere of service delivery, private (household) investments have been reduced. Sector investments have been highly skewed towards creating storage and distribution hardware, relegating the issues of sustainability to the background. Due to unreliable service delivery and slippage in past years, households and the private sector have started investing mainly by way of coping costs to compensate for the inefficiency of improved storage, booster pumping and captive systems. This, unfortunately, left the fundamental question of source sustainability unattended. It is now time to reverse this trend, particularly considering climate variability.

1.1   Key Sector Concerns

Some key sector concerns:

- Although sector investments are high, the outcomes are low. Normative access to water supply is high, but service quality is very poor.
- Exponential increase in unit cost of service delivery over time.
- Reduction of direct private household investment in WASH sustainability.
- Welfare distortions, inequity and exclusion of the poor and the vulnerable.
- Unsustainability of investments at all levels leading to high rate of slippage of habitations and households.
- Investments highly skewed towards fixed capital, leaving very little resources for asset maintenance and management during the project life cycle.
- Lack of convergence at policy and programme levels.
- Insufficient attention to water quality problems and the effects of groundwater overdraft on the occurrence of natural contaminants such as fluoride.
- A need to recognise that excess demand is a cause for insecure water services.
- A problem with household (HH) expenditure on boreholes and wells in built-up areas that may improve water security of the individual household, but with the negative trade-off of less secure services for the village as a whole.
- The wider issue of demand management in a sector that is largely informal and beyond the reach of regulations[1].
- The main policy for improving security is to build multi-village and bulk-transfer schemes that are in many cases also insecure.

Approaches towards sustainable WASH service delivery and most of the action research programmes hitherto have been largely focussed on improved system performance without adequately addressing the fundamental question of source sustainability; which is an integral part of water security at micro, meso and macro levels both in the medium and long run. Undoubtedly, research and experiments on improved hardware performance in developing context have generated global best practices, however, critical issues of sustainability of such

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[1] Read more about the discourse on groundwater anarchy in: Tushaar, S., 2009. *Taming the anarchy: groundwater governance in South Asia.* WA: RFI Press.

models at scale have remained elusive because of (a) institutional fragmentation and convergence challenges, (b) weak process of decentralisation and poor capacities of Panchayat Raj Institutions (PRIs), and (c) source unsustainability at macro-level where related trade-offs, legislation and regulatory frameworks are either weak or virtually un-implementable given the nature of India's huge informal water economy.

As the sector is characterised by a high-cost, low-outcome paradigm, analyses on costing have not adequately addressed the factors leading to high costs during planning, designing and implementation resulting in (a) over-design, sunk cost and wastage of resources and (b) welfare loss, benefit stream compression, declining marginal efficiency of capital and unsustainability as a result of sectorial fragmentation.

The approaches towards water security currently being piloted are fragmented, narrow and mainly focus on drinking water security. Unless this approach is modified to integrate holistic and scientific outcomes, it will yet again, be unsustainable. Although the government has constituted a high power committee to look into the convergence of its flagship rural employment guarantee programme under the *National Rural Employment Guarantee Act*, 2005 (NREGA) and key related sectors, much still has to happen in terms of a water security-NREGA convergence.

Fundamental to the question of scaling up sustainable and cost effective, improved service delivery, are the twin issues of water security and sectorial convergence for which feasible, comprehensive models that are capable of scaling up, should be planned.

1.2   Strategic Context

The GoI issued detailed guidelines for planning and implementing drinking water supply schemes under the NRDWP in April 2010. One of the key elements highlighted therein is the provision for source sustainability. About 60% of the drinking water schemes in India are facing serious source inadequacy leading to under-capacity utilisation and poor quality service, especially during dry periods in summer. The funds allotted for source sustainability, however, are often used for engineering solutions where water-stressed conditions are experienced. It is also seldom integrated into the planning process. Any approach towards water security should be holistic, comprehensive and should scientifically dovetail departmental and budgetary convergence at watershed (basin) level.

This paper calls for a feasible grassroots-level comprehensive and holistic water-sector governance framework, primarily based on watershed management principles. These principles include being participatory, decentralised, and using a bottom-up approach that works towards integrated water resource management (IWRM) and river-basin planning, as critical components in the water security chain, while addressing relevant cross-cutting and overarching issues.

GIS-based water resource mapping and water accounting are critical in making the experiment result-oriented. India has a wealth of spatial and remotely-sensed information that is currently not effectively used in water resource planning and management. Although successful efforts

have been made in some states, they are yet to be used on a larger scale. This can and should be used as a starting point for better planning that considers the pros, cons and potential trade-offs associated with different water security strategies. Methodologically, the study will follow the framework of adaptive planning and management, recognising the fact that security needs constant adaptation for maximum impact.

1.3   Water Security Framework

As stated, water security approaches should be holistic and comprehensive (see Fig. 1). Partial, one-time solutions are not sustainable.
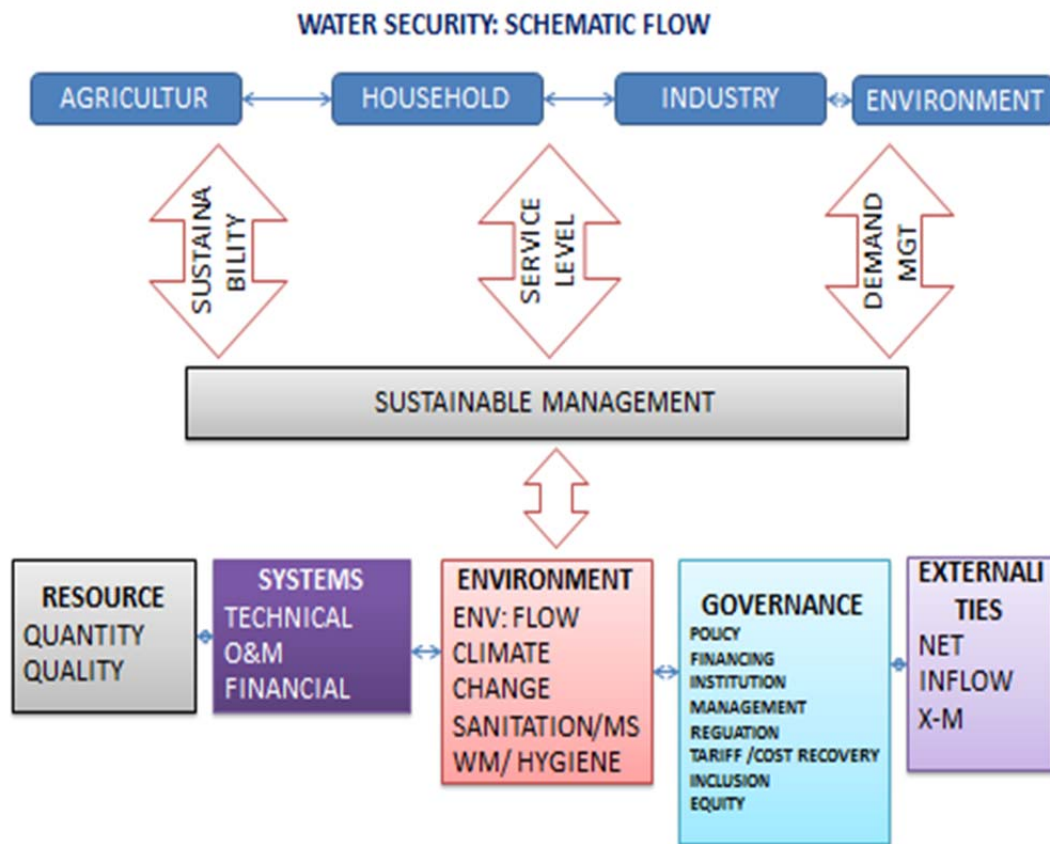
Figure 1   Village Water Security Schematic Flow
        Source: Adapted from FAO, 2000.

Broadly, the model will provide a framework where all departments and Stakeholders can participate without sacrificing their sectorial interests while at the same time working towards integration. Experiments in addressing the overarching goal of water security and a sector-wide approach (SWAp) have all faced serious hurdles in launching as a result of inadequate focus on the issues of change management. Accordingly, the programme will follow a bottom-up planning process comprising the following key elements: (i) delineating the watershed, (ii) developing participatory watershed development master plans involving all key stakeholders including development departments and agencies, (iii) consolidating and prioritising efforts and

activities at ward and block levels, (iv) technical and administrative sanction accorded, (v) budgetary allocations based on a watershed master plan, (vi) implementation of the different components of the programme by the responsible departments, and (vii) the coordination and monitoring mechanism at block (district) and state levels, building in systems of programme convergence, community contracting, quality assurance, accountability and transparency, social audits and community monitoring.

1.4   Programme Development Objectives

The overall project objective is to assist the Government in improving sustainability of the development process by adopting scientific and all-encompassing approaches towards ensuring water security at village level. The objective includes following a bottom-up convergence framework, in line with the institutional development process applied by sub-national state governments in alignment with the federal constitutional mandate and polices.

The programme will have the following specific key objectives:

i.   To develop, pilot test and demonstrate a comprehensive and scientific model for water security at village level.
ii.   To develop, pilot test and demonstrate appropriate convergence models based on integrated water security plans (IWSPs).
iii.   Build capacities at grassroots level to operationalise the water security framework (WSF).
iv.   Sustainable scaling-up of the model in selected districts in India and South Asia.

2   Institutional Assessment

As stated before, any approach towards water security and IWRM is impacted on by fragmented institutions and associated interests. It is thus important to address the rigidities and powerful centrifugal forces in order to understand the real barriers towards convergence. The chart on the next page depicts a typical institutional formal maze in water sector on state level in India. The situation is similar or more complex across the country.

2.1 Institutional Architecture: Water Sector – Kerala State, India
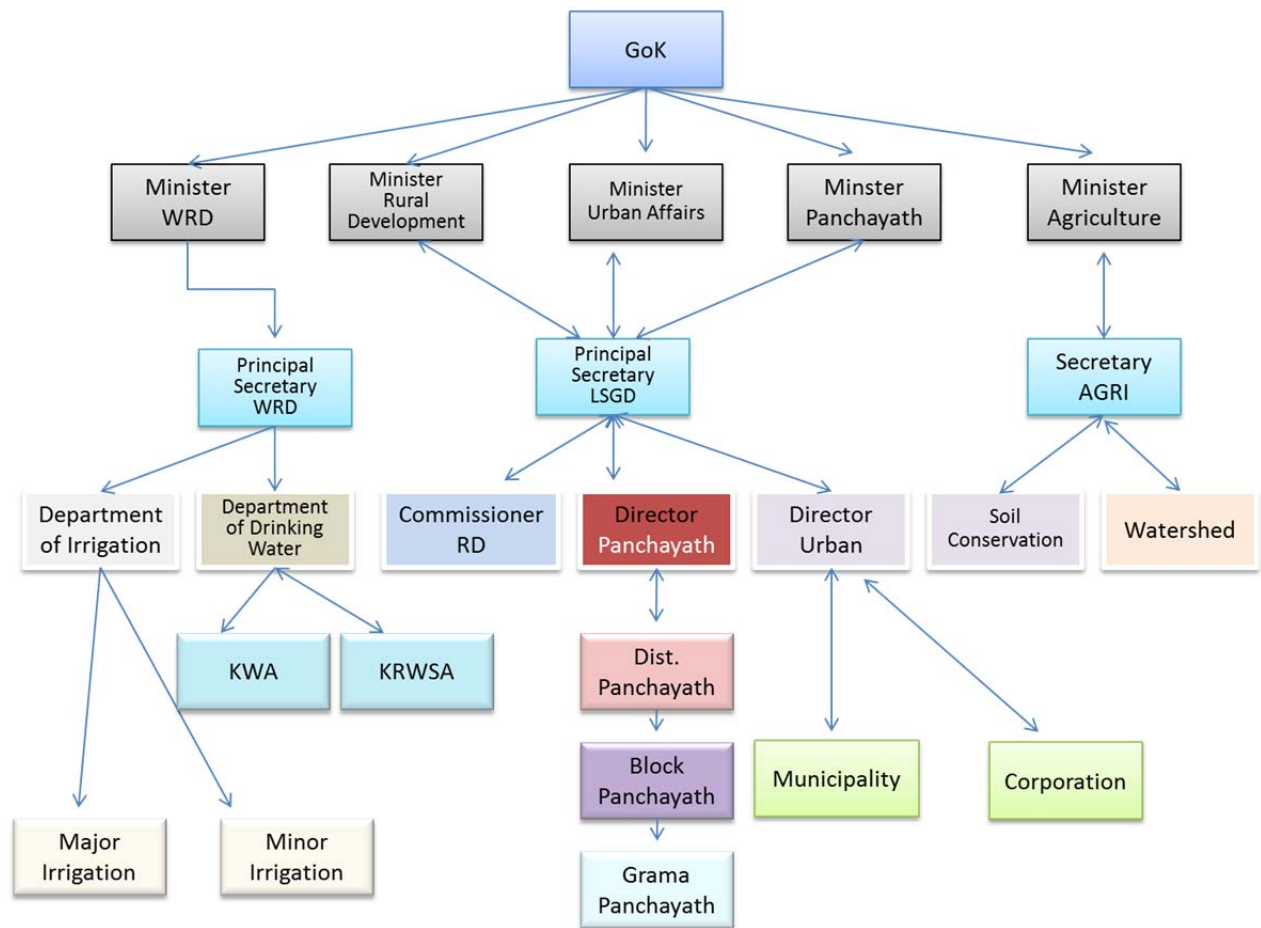
Figure 2   Institutional Architecture for the Water Sector in Kerala, India
Source: Baby, 2012.

Note: Plan funds to PRIs are allocated from the Government of Kerala (GoK) budget, of which an average 7% to 10% is allocated to the water sector. Plan funds which are allocated to departments directly and the programmes implemented by them, include multi-lateral loan projects. NGO donor programmes are quite insignificant.

India is currently undergoing a transition phase addressing a significant institutional development dilemma. In India, water is a state subject; water and sanitation service provision have become a constitutional mandate of the PRIs. However, the government and the states play a major role in the sector. The Government formulates guiding policies, sets standards and provides technical assistance as well as substantial financial assistance to the states. In almost all states the monolithic water departments (agencies) continue parallel with vertical accountability leaving mandated PRIs significantly incapacitated to perform their *de jure* functions.

2.2 Critical Barriers in Convergence

Table 1 Critical Barriers in Convergence

Barriers	Description	Key Actor/ Strategy
Policy incoherence	Weak policy coherence and harmonisation Lack of policy audit and vetting for convergence at macro level	GoI/ state policy harmonisation and audit
Un-implementable/ weak legislation	Water Acts/ legislations/ regulations are either unrealistic and archaic or lack of enforcement capacities	New legislation/ amendments and enforcement mechanism
Socio-political factors	Coalition politics necessitate berth and fiefdom for all leading to fragmentation of ministries Castism/ exclusion and systemic persistence	Awareness plus socio-political processes
Institutional/ departmental fragmentation	Fragmentation into vertical line departments like irrigation, drinking water, watershed, soil conservation etc. Weak coordination mechanism at administrative level Lack of institutional and staff capacities/ training for convergence	Effective high-level convergence plans and monitoring system Institutional re-engineering and capacity building
Budgetary fragmentation	Budget allocations in line with departmental fragmentation	Fiscal consolidation and re-engineering of budgeting process
Financial accounting/ auditing	Accounting and auditing practices are in line with departmental fragmentation Limited scope for convergence and convergence viewed as financial irregularity leading to punishment	Re-engineering of budgeting/ accounting and audit process
Supply/ top-driven delivery models	Weak participatory/ consultative approached Hardware driven engineering top-down solutions	Community/ PRI-centric demand driven models on participatory mode
Governance • Accountability • Decentralisation	 Vertical accountability mechanisms with weak horizontal / grassroots level flows Poor decentralisation – even reversals leading to top-down supply-driven approaches	 PRI-centric horizontal accountability Deepen decentralisation on subsidiarity principle
Perverse incentives	Fragmentation has perverse incentives including corruption Vertical division ensure promotion possibilities/ apprehension on career prospects	Build grassroots-level pressure – top-down model Design appropriate incentives/ dis-incentives

Barriers	Description	Key Actor/ Strategy
Technical barriers	Drinking water quality protocol and provider accountability under law – most areas have quality problems that necessitate treatment	Treatment at source/ protection
	Distorted approach toward quality assurance/ treatment	Community-based quality surveillance and monitoring
	Technology and specifications as per technical manual deviations will be penalised	Demystified technologies
	Acute scarcity in areas necessitate prioritisation	Menu of technical options
	Perceived high cost of integrated service delivery	
		Source sustainability and augmentation
		Awareness and advocacy

2.3 Institutional Convergence: Feasible Options

A. Sector-Wide Approach (SWAp)

The most feasible and ideal option is to follow a sector-wide, integrated approach in the WASH sector service delivery. Within a SWAp, government and donor funding is directed towards the achievement of a holistic, sectorial policy and strategy matched to available resources and implementation capacity. The SWAp is contrasted by a project-based approach. The existence of a robust national framework for the sector is one of the main prerequisites for the introduction of a SWAp. In order to make it happen, there should be broad agreement on the principle of IWRM and collaboration in governance supported by a feasible medium-term expenditure framework (MTEF). SWAps have remained rare in the water sector, partly because the sector is not easy to categorise as either 'social' or 'productive' and there is less consensus around models of service delivery, as it deals with a vital and contested resource, and includes multiple stakeholders at all levels, all with different interests.

B. Inter-Departmental / Programmatic Convergence: Decentralised Governance

Another option is institutional convergence and coordination on the basis of a master plan at national and sub-national levels. Considerable efforts have been made over the years at all levels and there have been increasing realisation of the gains. However, a solution remains elusive on account of obdurate incentives prevailing, and procedural and legal rigidities.

Although departments are vertically divided and funds are invested in a top-down manner, all investments are converging at village and community levels. Additionally, as a result of the Constitution (Seventy-third Amendment) Act, 1992, about 29 key functions, based on activity mapping, have been transferred to the PRIs – both urban and rural including water and sanitation. Although various states in India are in different stages in the process, Kerala conducted a unique decentralisation experiment by transferring powers, functions and

responsibilities to the PRIs. In terms of institutional convergence, however, the state is reeling under the institutional development dilemma of coexistence of the vertical departments with technical expertise but PRIs without adequate manpower. Over the years, PRIs have emerged as the real local governments with a significant mandate over the water sector in terms of planning, implementation and maintenance. The line departments facilitate and provide technical support.

2.4   Convergence Framework: Alternate Scenarios

As the decentralisation process in India is in differing degrees of maturity across different states, different PRI-centric convergence approaches may have to be adopted at planning, budgeting, institutional and programme levels to a process of inter-departmental alignment facilitated by grassroots-level participatory processes.

Table 2   Decentralisation Process

High Decentralisation	Medium Decentralisation	Weak Decentralisation
(Sub-national)	**(PRI centric)**	Department lead
PRI lead	NGO/ Special Purpose Vehicle (SPV) facilitated	PRI focused
Stakeholder partnership		NGO/ SPV technical support
Departments as technical support units	Departments as technical support units	
Watershed master plans	Watershed master plans	Policy/ planning alignment
Plan/ budget convergence	Plan/ budget convergence	Budget alignment
Institutional convergence	Institutional convergence	Institutional alignment
Participatory bottom up	Participatory bottom up	Participatory/ adaptive
(National/ State)	**(National/ State)**	**(National/ State)**
Policies – alignment	Policies – alignment	Policies – alignment
Frameworks	Frameworks	Frameworks
Incentives and grants	Incentives and grants	Incentives and grants
Monitoring	Monitoring	Monitoring

2.5   Village Water Security Plan: Activity Map

The concept of water security at village level has been discussed extensively. Historically, there have been excellent models in many Indian states, although the context and scenarios have undergone tremendous change over the years. Efforts have been renewed in the wake of the NRDWP guidelines in 2010 and the serious slippages on account of source unsustainability. A series of documents and guidelines have been produced mainly by WSP-SA and UNICEF. The Indian government has also identified ten districts for piloting the plan. However, as mentioned before, the plans are partial as the focus is limited to drinking water security and the key issues of convergence and institutional alignment have not been addressed in a workable framework.

Table 3   Activity Map

Activity	Description	Key Actors
Policy	Enabling legislation/ policy on water security/ decentralised governance/ regulation/ conflict management/ budgeting and auditing	National/ state government
Administrative guidelines	Issue detailed administrative guidelines on planning, coordination, institutional arrangements, convergence, financing and monitoring etc. Make Village Water Security Plan (VWSP) a basis for local planning	State government / District administration/ Zilla Parishad (ZP)
Training and capacity building	Institutional strengthening and change management: Training of trainers (ToTs) cascading model Convergence, planning, designing and operationalise water security plans	Training and research agencies
Social mobilisation	Awareness creation/ village water security campaign, networking, strengthening VWSCs	PRIs/ NGOs/ CBOs Departments
Inventory of database	Draw up inventories all data – documents – resource maps – perspective plans Validation and Identification of gaps	Technical Advisory Unit (TAU) / departments
Watershed delineation	Watershed delineation and mapping, identification of feasible boundaries Bring respective Grama Panchayath (GPs) into the plan	TAU/ departments/ VWSC/ communities
Community water resource mapping	Inventorise all water bodies/ sources; surface; ground; rainfall; prepare water atlas Socio-economic survey and prepare GIS-based thematic resource maps	VWSC/ GP/ CBOs /NGOs / Voluntary Technical Corps (VTCs)
Village water budgets	Demand/ supply analysis and water counting to prepare ward, village, GP level water budgets	TAUs/ VWSC / GP/ CBOs/ NGOs/ VTCs
Five-year water security plan***	Prepare a five-year water security action plan comprising the following sub-plans: • Water resource management plan – sustainability, conservation • Water safety plan – community-based water quality surveillance and monitoring (CBWQSM) • Service-delivery improvement plan • Environment management plan • Training and capacity building plan • Cost and financing plan • Convergence and coordination plan	TAU/ GP/ VWSC/ NGOs/ Departments

Activity	Description	Key Actors
	• Asset Management / operation and maintenance (O&M) plan • Regulation – Risk and Sensitivity plan • Monitoring and evaluation plan	
Water security modelling	Modelling on alternate scenarios and risks including climate change/ droughts/ floods etc.	TAU/ research and development (R&D) institutes
Programme Implementation Plan (PIP)	Programme implementation plan	TAU/ PRI
Plan approval	Technical sanction Administrative sanction	State High Power Coordination Committee (HPCC) District High Power Coordination Committee (DHPCC)
Oversight and monitoring	PRI oversight and monitoring plan	CBOs/third-party evaluations

Note: *** The above model has the obvious advantage of decentralised community-centric action ideal for a formal / informal governance mix. The key question of who owns and works for it is important. In states which are far ahead in decentralisation and very active PRI structures (like in the state of Kerala) a model of PRI-led departments is ideal. Other states may opt for a path between PRI-centric department / CBO- / NGO-led institutional models.

3   Key Components and Interventions

Strategically, water security is to a great extent a governance challenge with the added challenge of attitudinal changes and creation of appropriate environment and capable institutions. Accordingly, the key focus should be on creating awareness, training and capacity building, institutional development, regulation, conflict management and appropriate policies and programmes.

In addition to the soft elements (including a sustainable water campaign) appropriate intervention programmes will also be adopted, based on location-specific requirement and studies.

Table 4   Key Components and Interventions

Indicative Components	Indicative interventions
Making water bodies / sources perennial through recharge programmes including rainwater harvesting#	Recharge all non-perennial sources after categorising them into critical, semi-critical and perennial Adopting a menu of options dovetailing and integrating NREGA and other ongoing programmes

	Minimum flows in rivers and streams – rejuvenation
	Sanitisation of drinking water sources both private and public (chlorination, avoid point source pollution- conversion of leach pit latrines under sanitation programmes)
Ground water prospecting and aquifer management*	Mix of interventions for watershed treatment, focussed recharge and storage augmentation and management
Source audit and protection of all drinking water schemes in the state	Recharge of all unsustainable sources of public schemes (de-silting, diversion, ring bunds, rain harvest, catchment treatment, point recharge etc. linking NREGA ongoing programmes of government)
Rejuvenation of water bodies like ponds, canals, tanks, tanks, public wells etc.	De-silting, protection, recharge, backwash, planting trees, rain, runoff harvests etc.; appropriate homestead and catchment approach
Conveyance efficiency (reduce UAF), uninterrupted power, regulated supply	De-silting, canal cleaning and plugging of breaches reduction of leakage, monitoring vulnerable pockets theft control, participatory monitoring
Community-based/ PRI-centric water quality monitoring	Biological contamination checking H2S strips by community, chemical through accredited/ water board laboratories/ monitoring by PRIs/ Nirmal Bharat Abhyan (NBA) for environmental sanitation – community water clinics as business models involving self-help groups (SHGs)
Sustainable state-wide water campaign for three to five years	Mass media campaign plus direct contact programmes, professionally-designed, key messages on water security – food security, conservation, rain water harvesting, water quality, sanitised drinking sources, solid and liquid waste management, protection/ conservation of sources etc.

Note: (#) Where basin closure is a workable option (*) option in some areas and even in those increased recharge can prompt an intensification of water use unless backed by suitable measures.

3.1   Convergence Framework

The convergence framework envisaged is given in the chart below. The proposal is to (a) do inventories of all ongoing programmes in the water sector, (b) identify all corresponding key departments and actors including potential players, (c) design an integrated water security framework based on a watershed master plan prepared by stakeholder collectives following a bottom-up, participatory approach, (d) consolidated, prioritised and costed by departments and actors concerned and budgeted, (e) approved at state level to ensure budget allocations, (f) implementation support by voluntary technical groups and professionals for technical support and training and capacity building including an application of modern technologies, (g) regulated locally supported by enabling legal framework and monitored under a participatory aquifer and resource management system, and (h) monitored by oversight committees and third party quality assurance system.
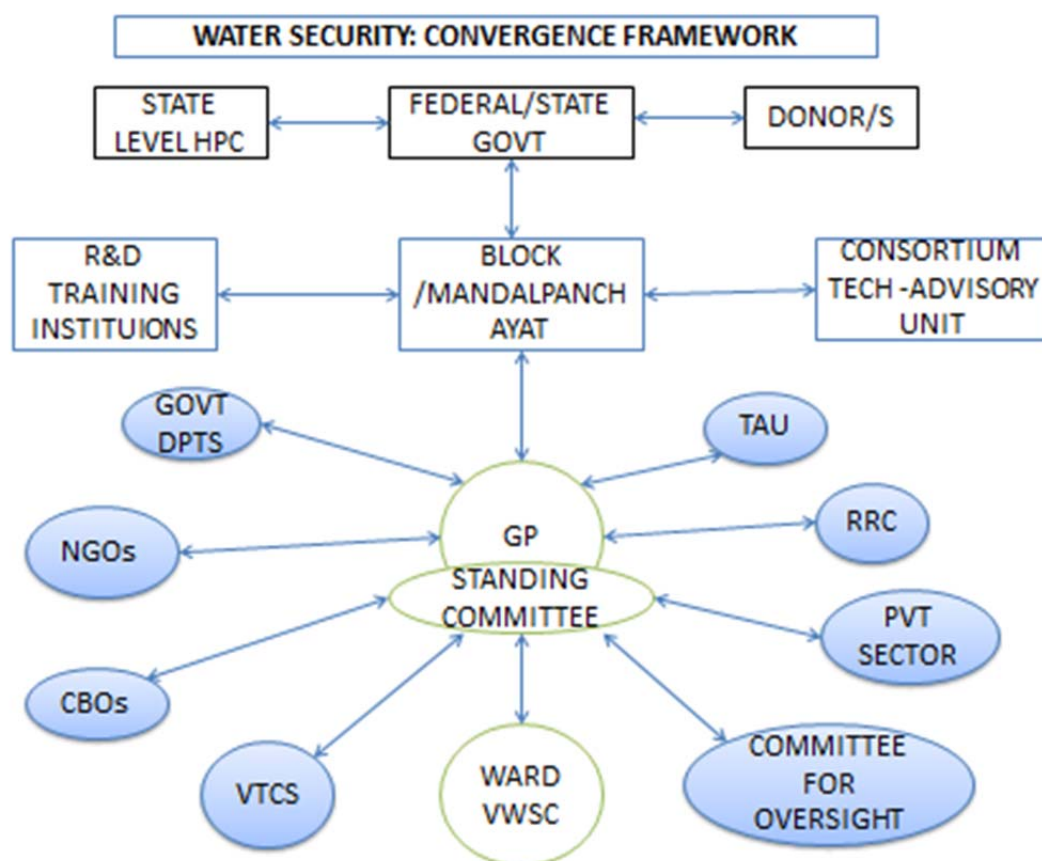
Figure 3   Water Security Convergence Framework
        Source: Baby, 2012.

Note: (i) Framework will be appropriately modified in the case of urban water security framework – urban local boss (ULB) will be at the centre, (ii) Technical Advisory Unit (TAU), (iii) Voluntary Technical Corps (VTCs); Regional Resource Centre (RRC).

3.2   Implementation Arrangements

The programme will be implemented in a mission and campaign mode as indicated below:

Table 5   Implementation Arrangements

Institutional Level	Activity Plan
State level State water and sanitation mission (SWSM) SHP coordination committee (chaired by CS)	Chief Minister / political head in cabinet with the leader of opposition will officially launch the programme.
	Water campaign and road shows launched by diverse eminent personalities as goodwill ambassadors.
	Release of technical manual/implementation guidelines / Training of trainers (ToT).
	Special gram / ward sabha in all local bodies in the watershed adopting and announcing the sustainable water security.

Institutional Level	Activity Plan
LSG level special Gramasabha (Jalasabha) Ward@ level Jalasuraksha (water safety) Samithis	Reconnaissance survey in all wards with the support of local technical teams using PRA tools for preparation of water atlas / resource map and identified micro-action plan action. The ward sabha will approve the ward and village level water security action plan. Consolidated and approved at GP-level integrated with MGNREGP. GP-Level programme monitoring committee for oversight.
Block Jalasuraksha Samithis	Block-level committee consolidates block level watershed – water security master plan – oversee implementation, coordinate and direct action, pooling and leveraging resources, integration of ongoing programmes.
District Jalasurakha Samithis	District advisory committee will be chaired by the ZP president and District Collector (DC) vice chairman with block president and presidents of the GP association and selected experts as members and District Planning Officer (DPO) as convener. The executive committee will be chaired by the DC and selected experts, NGOs and key departments as members.

(@) A Grama Panchayath (GP) is divided into many wards, which elect representatives to the GP council

Critical to the success of water security is how best agriculture is aligned and oriented to achieve the results and how to address the issues of competing uses and address equity and water rights. Although adaptive and iterative processes are well documented, the programme will explore workable options adopting a mix of socio-economic and participatory solutions.
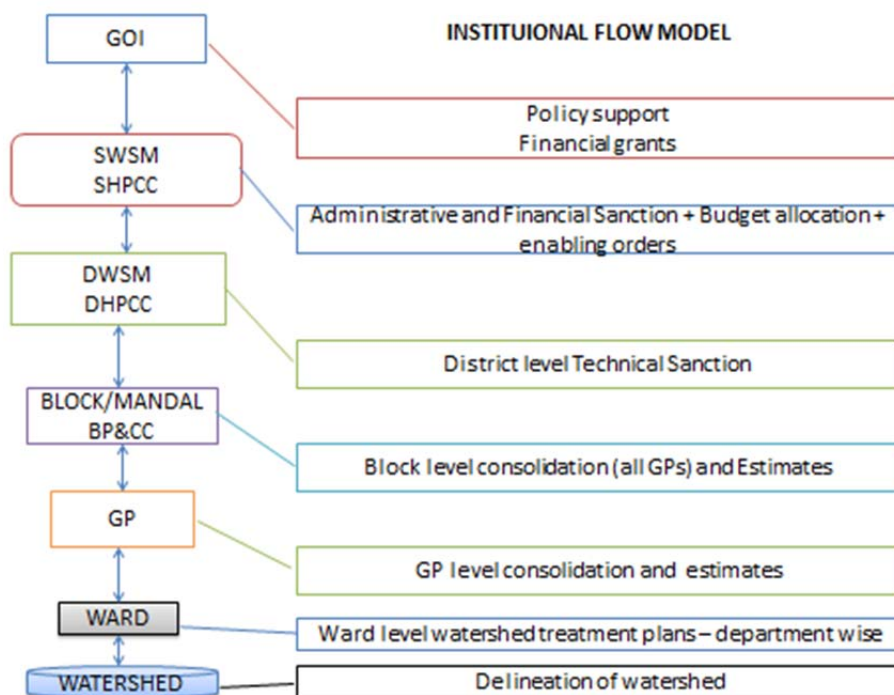

Figure 4   Institutional Flow Model
Source: Baby, 2012.

3.3   Sustainability and Risk Analysis

Evidence shows that attempts to attain water security have produced mixed results and are often counter-productive by way of widening inequity, over extraction and skewed allocation. Secondly, as stated before, augmentation has scientific limitations according to the location of specific characteristics. In the long run, sustainable security will evolve around a combination of factors both at macro, meso and micro levels. All such risks are to be identified and addressed.

Table 6   Sustainability and Risk Analysis

Sustainability Concerns / Potential Risks	Description	Mitigation Strategies
Technical Source Investment / systems Technology	Source unsustainable – competing use Systems languishing Complex technologies	Water budgets – regulation- scientific recharge – compensatory recharge – disincentive –conservation Maintenance budgets Training, technology forecast, appropriate choice
Financial Financing Fund flow O&M Cost recovery	Inadequate budgets Rigidity in fund flow Lack of maintenance Weak recovery of costs	Administrative sanction by state Ring-fencing by MTEF plus revolving funds NREGA open ended constitutional PRI/ community ownership Included in asset register Ownership and community management – tariff policies
Institutional Decentralisation Convergence	Weak PRIs Weak coordination	Pilot in states with strong decentralisation Build empower PRIs Facilitator support professionally State/ higher level ownership/ monitoring Departments to follow their own budget / procurement / implementation lines
Governance Managerial Conflict Inclusion Transparency Accountability Competing use	Weak coordination Competing use Exclusion of weak Asymmetric information Circuitous – deviate from plans	District and state-level high power committee to command adherence Supporting Government orders PRI-centric regulation – legal empowerment Social regulation – assessment-targeted inclusion strategies Voluntary disclosure – Rural Knowledge Centres (RKCs), right to information, wall writing Technical / administration sanction and audit procedures compel adherence accountability Any deviation only following due process HPCCs

Sustainability Concerns / Potential Risks	Description	Mitigation Strategies
Environmental Solid/ liquid / waste management Disaster Climate change	Overdraft Pollution Droughts/ floods Variability	Water counting/ budget/ regulation Integrated approach and mitigation Conservation and regulation Quality plus quantity sustainability built in
Scaling up	End up as stand- alone model	Institutionalised with decentralised governance Aligned with existing departmental framework Institutional strengthening and reforms

3.4 Key Performance Indicators (KPIs)

The overall project development objective is to assist the Government of India (GoI) to improve sustainability of the development process by adopting scientific and all-encompassing approaches towards ensuring water security at village level. Specific objectives with corresponding indicators and outcomes are given in the table below:

Table 7 Specific Objectives with Corresponding Indicators and Outcomes

Development Objectives	Indicators	Outcomes
Village level water security plan	Integrated village water security plan (IVWSP) prepared and operationalised Aligned with the watershed plan	Sustainability service delivery Improved health Development Convergence
Convergence for sustainable results	Policy coherence Functional institutional coordination Programme and financing convergence	Improved resource management Effectiveness of investments Improved welfare
Equity/ gender/ environment	Base line service to all Women-focussed design / role in decision making Pollution level	Social cohesion Inclusion Health and poverty reduction
Improved institutional capacity for IWRM at village level	PRIs / communities leading the process of IVWSP Updating and managing Technology infusion/ conflict management Improved stakeholder awareness and capacity in resource management	IWRM-based planning and programme implementation Water security plans made holistic and scientific

Development Objectives	Indicators	Outcomes
Sustainability	Sources made perennial Water quality improved System performance above benchmarks	Local economic development and income Reduction in out migration Improved health

3.5   Monitoring Framework

The programme will be designed and operationalised to include a comprehensive and decentralised monitoring framework to ensure sustainability and outcomes. The monitoring system will be in alignment with the institutional design as every stakeholder has a role in the programme monitoring. Comprehensive water security information and monitoring system will be developed using appropriate software applications (including a/the GIS-based watershed master plan). The system will have both horizontal and vertical information flows with provision for concurrent feedback; correction and technical support will be provided by the consortium. Critical to the monitoring system is the proposed rural knowledge centres (RKCs) at every Grama Panchayat as a WASH resource centre for community awareness, advocacy and dissemination and to provide access to information including the increased use of public media such as radio, television and mobile devices, etc. The system will be PRI-centric, and managed technically by the departments with the support of the consortium.

Concurrent monitoring: will be done by implementing agencies against targets and plans – physical, financial and other parameters.

Participatory aquifer monitoring (PAM): a participatory aquifer (ground water) monitoring system will be developed and management strategies will be based on ground water (aquifer) prospecting and forecasting using de-mystified computer-based models.

Community-based water quality surveillance and monitoring: water quality, ground, surface and, drinking water will be monitored by networking laboratories and departments with horizontal linkage to RKCs and GPs. Bacteriological tests and surveillance will be done by a community-centric model. The system will also capture inclusion, equity, transparency and gender dimensions of water security.

Process monitoring: this will be done by third party groups and PRI standing committees on water and communities to assess the degree of adherence to the processes (including training and capacity building).

Sustainability monitoring: the programme will monitor sustainability of assets, institutions and resources over the programme cycle to design measures to improve sustainability.

Evaluation: evaluation of the programme will be done mid-term and also post implementation using social cost benefit analysis (SCBA) to assess costs and benefits, environmental impact assessment to capture environmental parameters including climate change, drought mitigation and the standard evaluation framework of relevance, efficiency, effectiveness and impact.

Box 1 Notes

PRIs	Panchayat Raj Institutions (PRI) are sub-national institutions of a three-tier system of decentralised governance. Water and sanitation are the mandatory responsibilities of the PRIs. However, the decentralisation process is still in its infancy although certain states like Kerala and Karnataka have a lead. The lowest tier is the Garma Panchayath, the middle tier is the block or Mandal Panchayath and the top the district of Zilla Parishad, though the accountability route is always not vertical.
MNREGA	Mahatma Gandhi Rural Employment Guarantee Programme (MNREGA) is a flagship programme of the GoI to enhance livelihood security in rural areas, by providing a minimum of 100 days of guaranteed wage employment / year for anyone who seeks work. The cumulative budget allocation in 2011/12 comes to US$ 3440 billion, with a cumulative expenditure of US$ 3,000 billion covering 40.8 million households.
Nirmal Bharat Abhyam (NBA)	On the sanitation front, central guidelines were released in June 2010 (GoI, 2010). Total Sanitation Campaign (TSC) and the Nirmal Gram Puraskar (NGP) as an incentive programme with awards for 'open defecation free' villages, is an effective step by the GoI for promoting sanitation facilities as well as eradicating open defecation practices with information and awareness-raising campaigns. As per the new Nirmal Bharat Vision (NBV) (GoI, 2011), the strategy is to: i) create a totally sanitised environment by 2017 through achieving an open-defecation-free and clean environment where human faecal waste is safely disposed of, ii) adopt improved hygiene practices by 2020 through adoption of safe hygiene practices by all at all times, and iii) effective management of solid and liquid waste by 2022 such that the village environment is kept clean at all times.
Sustainable Services at Scale (Triple-S)	Launched in December 2008, Sustainable Services at Scale (Triple-S) is an IRC initiative that seeks to identify sustainable approaches to water delivery and access by departing from project-based, one-off and stand-alone implementation of water systems. It is a six-year multi-country learning initiative that aims to contribute to the realisation of indefinitely sustainable water services delivered at scale. One over-arching finding of the study is that sector development is best approached through systemic change, which implies a thorough understanding of and clarity about institutional roles and responsibilities and strong institutions at all levels including central and decentralised government structures.
WASHCost/ LCCA	The WASHCost Project, yet another IRC initiative, researched the life-cycle costs of water, sanitation and hygiene (WASH) services in rural and peri-urban areas in four countries. The rationale was that WASH governance would improve at all levels, as decision makers and stakeholders analysed the costs of sustainable, equitable and efficient services spread over the entire life cycle, which typically mean the full life of a water supply project, which is designed for. Life–cycle costs components include the entire costs associated with a water supply project from planning, design, construction, and post construction operation and for asset management and capital maintenance.
Multiple-Use water Services (MUS)	Multiple-use water services (MUS) is a participatory approach that takes the multiple domestic and productive needs of water users who take water from multiple sources as the starting point of planning, designing and delivering water services.

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