triple-s
WATER SERVICES THAT LAST

LESSONS FOR RURAL WATER SUPPLY

Assessing progress towards sustainable service delivery



India

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By: A.J. James

IRC International Water and Sanitation Centre,
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1 INTRODUCTION

1.1 OVERVIEW OF THE SECTOR

Over the past two to three decades, there has been relative success in providing new rural water infrastructure—building the physical systems—and driving increased coverage levels. However, despite this positive trend, there has to a large extent been a failure to find durable solutions to meet the needs of the rural poor for safe, reliable domestic water. Rural people face continuing and unacceptable problems with systems that fail prematurely, leading to wasted resources and false expectations. Although figures vary, studies from different countries indicate that somewhere between 30% and 40% of systems either do not function at all, or operate significantly below design expectations.

Constructing physical systems is an obvious requirement, but it is just one part of a more complex set of actions needed to provide truly sustainable services. Increased coverage does not equate to increased access.

A tipping point may now have been reached, however, with national governments and development partners beginning to recognise the scale of the problems associated with poor sustainability, as well as the real threat this in turn presents to achieving the WASH Millennium Development Goals. Discourse on sustainability is now shifting from a focus on one or two individual factors, to requirements for addressing the underlying causes in a more holistic, systemic way.

The rural water sector in most countries in the developing world has been undergoing a period of profound change over the last 10 to 15 years, often including major policy and institutional reforms, driven by broader processes of decentralisation. In some cases, decentralisation of service provision authority has been relatively well planned and supported, as in South Africa and Uganda for example, whilst in other countries, including Burkina Faso and Mozambique, the decentralisation process has been much more problematic. In almost all cases there are serious challenges to ensuring adequate water services in terms of lack of capacity and resources at decentralised levels.

Other significant factors affecting the sector include the drive for increased harmonisation, particularly in more aid-dependent countries, and the 'professionalisation' of community-management approaches. The latter involves supporting technical capacity and making management more efficient, but not necessarily promoting privatised approaches. More importantly, many of these change drivers—decentralisation in particular—are not unique to the water sector. Rather, they are part of broader changes in governance and public sector administration trends to which the rural water sector (as well as other sectors) must respond.

1.2 THE TRIPLE-S INITIATIVE AND COUNTRY STUDIES

Sustainable Services at Scale (Triple-S) is a six-year learning initiative, started in early 2009, with the overall goals of improving the sustainability of rural water services and bringing about greater harmonisation through increased sector capacity. The initiative is managed by IRC International Water and Sanitation Centre in The Netherlands, and works in partnership with international, national and local partners. Further details can be found at: www.irc.nl/page/45530.

Triple-S aims to act as a catalyst for transforming current approaches from piecemeal projects that often involve one-off construction of a water system, to indefinitely sustainable rural water services delivered at scale. Working in two initial focus countries—Ghana and Uganda—the initiative will seek to encompass a further two countries by 2014. As part of the initiative's start-up, a broader research and scoping exercise was conducted between late 2009 and mid-2010.The main objectives of the research studies are to review and better understand the trends within rural water supply and to identify factors that appear to contribute to or constrain the delivery of sustainable services at scale. The study also seeks to

identify organisational incentives and barriers that shape the way in which sector institutions approach rural water services. The study was carried out in 13 countries alongside a parallel process of documentation and review of the literature into rural service provision and aid harmonisation.

1.2.1 Case study countries

The country studies were conducted in 13 countries: Ghana, Uganda, Honduras, Colombia, India (three states), Thailand, Sri Lanka, Burkina Faso, Benin, South Africa, Mozambique, Ethiopia, and the USA. Three broad groupings can be identified from this selection: a set of *least-developed* countries—Ethiopia, Mozambique, Burkina Faso and Benin—with highly aid-dependent WASH sectors (more than 50%); a middle group of countries—Honduras, Uganda, Ghana—with mixed aid dependency and income levels; and finally, a group of middle-to-higher-income, non-aid dependent water sectors that include the USA, Colombia, South Africa, Thailand, Sri Lanka and India.

The selection of a broad range of countries was intentional, firstly because it was known that individual country studies included interesting examples of elements of rural water service delivery; and, secondly, because these cases taken together represent a continuum of sector maturity across differing coverage levels, aid dependency and decentralisation experiences, where lessons could be shared. This document presents the findings of the country study for India.

Understanding the causes of poor sustainability includes an assessment of the political economy of the country in question, in terms of the broader socio-economic, governance, and political dynamics within which the water sector operates. It can also be related to the way in which groups with common economic or political interests influence the development of the sector—for example, the promotion of, or resistance to, sector reforms and decentralisation of service delivery. As such, these country studies look beyond a simple description of the situation and towards broader processes of decentralisation and political leadership, in an attempt to unpack what has gone right or, as in many cases, what has gone wrong, within the rural water sub-sector.

1.3 KEY CONCEPTS

The concept of **sustainability** is used liberally in the sector and there are numerous interpretations of what this may mean in a wide variety of literature. In the more specific context of the rural water sector, many organisations define sustainability as the maintenance of the perceived benefit of investment projects (including convenience, time-savings, livelihood or health improvements) after the end of the active period of implementation. Hence, this definition may be closer to one that simply describes sustainability as: "*whether or not something continues to work over time*" (Abrams, 1998); meaning in this case, whether or not water continues to flow over time.

Sustainability of the service is affected by a range of factors. These factors include not only the technical or physical attributes of the system, but also the financial, organisational (support functions) and managerial capacities of the service provider, which indicate the likelihood of the service continuing to be provided over time. Even though in practice different countries use (proxy) definitions and indicators for sustainability, for this study sustainability is understood to be the indefinite provision of a water service with certain agreed characteristics over time.

The country studies are based on a number of concepts regarding rural water service delivery. Firstly, the starting point for providing sustainable services at scale is the realisation that there is a need to move towards a **service delivery approach (SDA).** The SDA is a conceptual ideal of the way in which water services should be provided. It is rooted in the shift in focus from the means of service delivery (i.e. the water supply system or infrastructure), towards the actual service accessed by users. A water service is

BOX 1: WHAT IS THE DISTINCTION BETWEEN THE SERVICE DELIVERY *APPROACH* AND A SERVICE DELIVERY *MODEL?*

We define the underlying *concept* of the water delivery approach as sustainable water services, delivered in a harmonised and cost-effective way, at scale, within a district. We see this as a universal approach, or paradigm, with common principles and benefits that can help to overcome the problems of the past. However, when applied in practical terms in any given context, we argue that a *model* must be researched and developed, to reflect the realities of the country and service area concerned, as well as the type of rural population; levels of social and economic development; and the relative strength of the public and private sectors. In simple terms, the water service delivery approach represents the concept, while the water service delivery model represents the specific application.

described in terms of a user's ability to *reliably and affordably* access a given *quantity* of water, of an acceptable *quality,* at a given *distance* from the user's home. A water service consists, therefore, of both the hard (meaning physical system and technical aspects) *and* soft systems (meaning the institutional, policy and financial frameworks) required to make such access possible.

A key assumption of the approach is that, in a given context, the principles behind the SDA should be applied through one or more commonly agreed **service delivery models (SDMs).** SDMs provide a framework—or 'rules of the game'—for service delivery. Such a model should be guided by a country's policy and legal frameworks which define the norms and standards for rural water supply, institutional roles, rights and responsibilities; and financing mechanisms. One of the major challenges for the delivery of services is that in many countries such models are not clearly defined, are not supported by sufficiently clear policy and legislation, or are simply ignored by organisations which continue to implement according to their own approaches. Depending on the development of the sector a number of different SDMs may be applicable, relying on different management approaches (e.g. public sector, private or community management).

Decentralisation is a process that often takes many years or even decades to reach a level of maturity, in which lower tiers of government are not only given a mandate to deliver services, but are provided with adequate resources, capacities and indeed decision-making power. Decentralisation has many interpretations, but for the purposes of this study it can best be captured as '*the transfer of authority and responsibility for governance and public service delivery from a higher to a lower level of government.*' The following definitions of decentralisation are based on the World Bank's Independent Evaluation Group definitions (World Bank/IEG, 2008) (Table 1).

In reality there can be a number of pathways leading to decentralisation. These range from well planned and resourced processes that take place over many years, with progress indicators, to the so called "big bang" decentralisation wherein the central level of government announces decentralisation, swiftly passes laws and transfers responsibilities, authority, and/or staff to sub-national or local governments in rapid succession without adequate time to embed real capacity. The various aspects, or dimensions, of decentralisation are set out in the left-hand column in the following table; these are typically comprised of the transfer of administrative decision making, power over financial control and political or decision-making authority from central to lower levels of government.

In the study, reference is made to a number of different institutional levels within rural water service delivery. The definition of these levels is based on **functions** related to service delivery. Functions may or may not be linked to one or more specific institutional levels, depending on the degree of decentralisation and specific administrative hierarchy of the country. These levels can therefore vary from country to country in terms of the exact formulation used. This is particularly true in larger federal states such as India or the USA, where intermediate levels may exist, such as states, regions or provinces, which often house deconcentrated representation of central ministries. Broadly speaking three distinct groups of functions can be identified with the corresponding institutional levels:

TABLE 1: DIMENSIONS AND MODES OF DECENTRALISATION

Dimensions of decentralisation	Modes of decentralisation
Administrative decentralisation—how responsibilities and authorities for policies and decisions are shared between levels of government and how these are turned into allocative outcomes	**Deconcentration**—the shallowest form of decentralisation, in which responsibilities are transferred to an administrative unit of the central government, usually a field, regional, or municipal office
Fiscal decentralisation—the assignment of expenditures, revenues (transfers and/or revenue-raising authority), and borrowing among different levels of governments	**Delegation**—in which some authority and responsibilities are transferred, but with a principal-agent relationship between the central and lower levels of government, with the agent remaining accountable to the principal
Political decentralisation—how the voice of citizens is integrated into policy decisions and how civil society can hold authorities and officials accountable at different levels of government	**Devolution**—the deepest form of decentralisation, in which a government devolves responsibility, authority, and accountability to lower levels with some degree of political autonomy

Source: World Bank; Independent Evaluation Group, 2008

1. **Policy and normative functions—national (state) level.** This refers to the overall enabling environment where sector policy, norms and regulatory frameworks are set, service levels defined and macro-level financial planning and development partner coordination take place. It can also be the level at which learning, piloting and innovation can be funded and promoted. Overall sector guidance and capacity building is set by this level of authority. This nearly exclusively takes place at national level, although in federal countries, States may also execute some of these functions.

2. **Service authority functions—intermediate level.** This refers to the level where service authority functions, such as planning, coordination, regulation and oversight, and technical assistance take place. We use the term intermediate level (i.e. in between the national and community level) of local government, such as district, commune, governorate or municipality or whatever the exact administrative name given in a particular country, as generic term to describe this level. In some cases the ownership of the physical assets of rural water supply systems is held by local government entities, but this varies from country to country. These functions may be split between different administrative levels, for example between provincial and district authorities, depending on the degree of decentralisation or mix between decentralisation and deconcentration of functions.

3. **Service provider functions—local level.** This refers to the level at which the service provider fulfils its functions of day-to-day management of a water service. This may also involve asset ownership (but this is rare) and investment functions under certain arrangements. Typically, the service provider functions are found at the level of a community or grouping of communities, depending on the size and scale of the water supply systems in question. The service provider function may be done directly by a committee acting on behalf of the community, or in cases where there is professionalisation of community management, these tasks are increasingly delegated or sub-contracted to an individual (plumber or technician) or to a local company acting under contract to the local government. This is the level at which day-to-day operation of the physical system takes place, and includes preventative and corrective maintenance, bookkeeping, tariff collection, etc.

2 METHODOLOGIES AND ANALYTICAL FRAMEWORK

The methodologies for data collection followed a similar format in all study countries, employing a combination of secondary data collection, such as document and literature reviews, with primary data collection gathered through interviews. The report was written with substantial input from interviews and questionnaires from key sector players.

Because the picture 'on paper' can differ wildly from the reality of the rural water sector, the studies focused primarily on *theory versus practice* to highlight the gaps between 'how it should be' and 'how it actually is'. Each study was coordinated by an IRC staff member, conducted by a national expert, or team of experts, and involved a range of sector stakeholders, from national government ministries or agencies, to UN organisations, NGOs and civil society groups in most of the country study processes.

In order to validate the studies and gain sector buy-in, the majority of studies incorporated a *check-in* process in which preliminary findings were shared and discussed with a group of sector experts at validation workshops during the course of the study. This often involved a two-step process with those key issues identified at national level meetings being put to a group of experts and practitioners from district and regional levels who participated in similar workshops.

This type of validation exercise served to enrich the conclusions in the studies as well as jump-start a process of dissemination and dialogue around the key issues facing sustainability in the country in question.

2.1 COMMON ANALYTICAL FRAMEWORK

In order to provide a common point of reference for the various countries involved in this study, an analytical framework was developed for the individual country teams. This framework includes a range of elements or principles at three different levels of intervention designed to provide prompting questions or descriptions of issues known to be important to understanding sustainable service delivery. In total there are 18 elements, each with a short description, that address issues such as: sector decentralisation and reform; institutional roles and responsibilities; financing, service delivery models; learning and coordination; monitoring and regulation.

The three main levels of analysis in the framework correspond to levels one to three on p. 4 and include an assessment of the national level enabling environment, the intermediate level (most commonly corresponding to the local or district government level or commune or municipality, depending on country context) and the service provision level with functions typically delegated to the water committee or operator.

The application of this common analytical framework has allowed Triple-S to compare key issues and elements across the full range of countries, thereby identifying common trends or factors which seem to be important either as positive drivers of improved sustainability or constraints to service delivery approaches.

2.2 STUDY OUTPUTS

For each country involved in the Triple-S study process, a stand-alone document, or **country working paper,** will be produced and circulated to interested stakeholders at national or regional level. Additionally, shorter **country summary case studies** of four to six pages—that are more accessible to policy-makers, and intended to catalyse debate—have been produced.

Finally, a **synthesis document**—the main output from the 13 country study analyses comparing key factors and principles across these different experiences—will be produced. This document captures trends and emerging lessons around decentralisation and sector reform processes, as well as the development of the community-based management approach, that have evolved over time. The synthesis document will also help to inform the ongoing Triple-S action research process both at country level and internationally.

3 CONTEXT

3.1 COUNTRY BACKGROUND

India has a land mass of nearly 3.3 million square kilometres, about a third of the geographical area of the USA, and about two-thirds that of Europe. It is well known for its one billion plus and still-growing population, about 70% of which live in villages. India's population has been growing at around 2% per annum from the latter part of the 20th century, although the rate has decreased in the last decade.

Apart from congested urban centres, there are vast sparsely populated expanses of varied landscape. In addition to the 7,000-kilometre coastline forming its southern peninsular boundary, the Thar dessert to the west and the Deccan plateau in its centre, there are the fertile Gangetic plains in the northern belt, the tea plantations of the north-east and the majestic Himalayas that span the entire northern boundary with Tibet and China (see Figure 1).

FIGURE 1: INDIA: PHYSIOGRAPHIC DETAILS

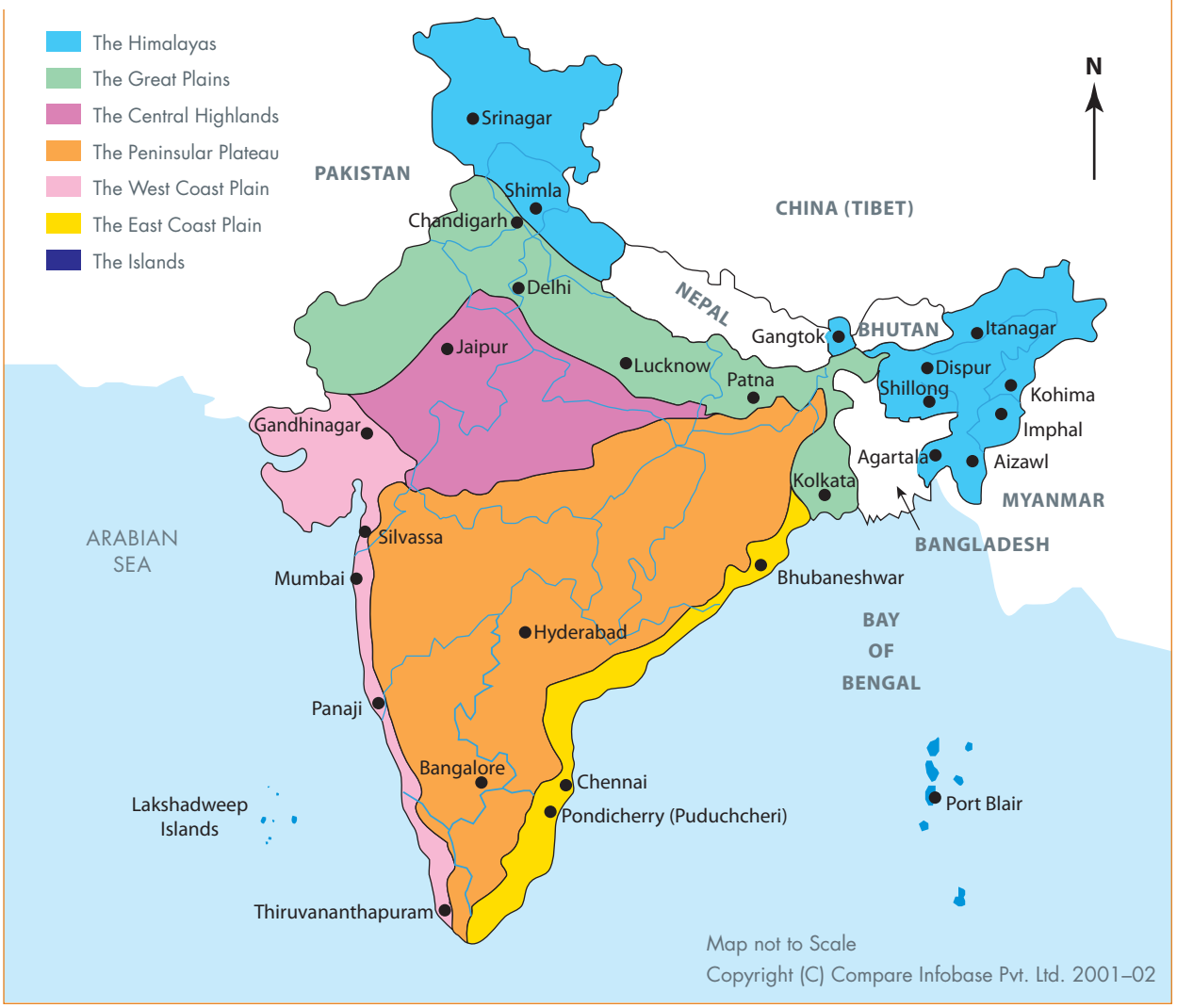
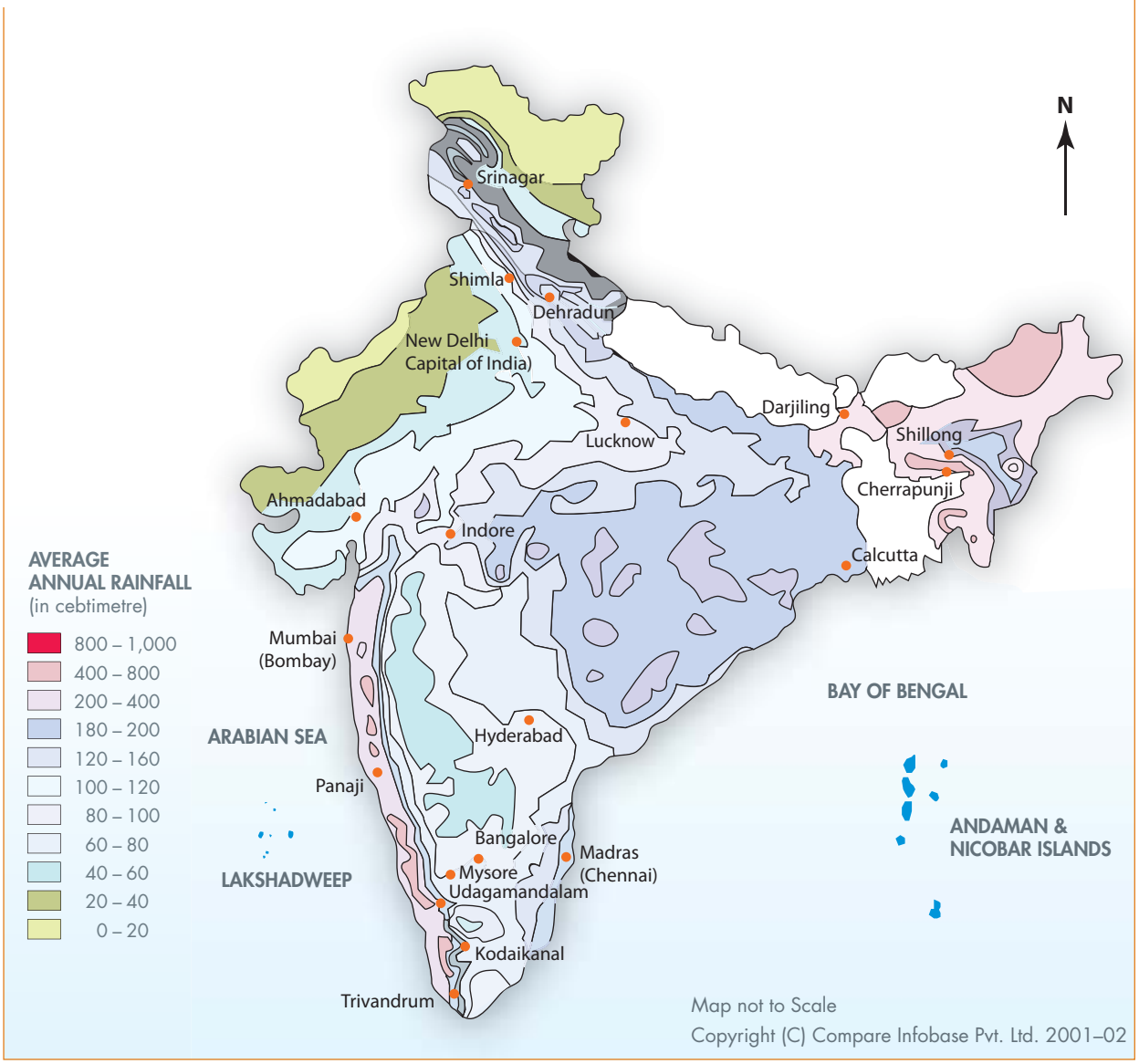


FIGURE 2: AVERAGE ANNUAL RAINFALL IN INDIA



More than 50% of the area is arable land, nearly 25% under forest and woodland, about 5% under meadows and pastures and 1% under permanent crops. India also has large mineral reserves, including the fourth largest reserves of coal in the world, and iron ore, natural gas, manganese, mica, bauxite, titanium, diamonds, petroleum and limestone.

India's climate varies from a warm and humid tropical climate in the southern peninsula and the hot desert of the west, to a temperate climate in the north, reaching up to the extreme cold of the Himalayan foothills (Figure 2).

Large tracts of southern, western and central India are semi-arid, despite the two monsoons that bring rain to the sub-continent: the main 'south-west' monsoon that starts sweeping up from the south-west (Kerala) from June and brings rain to the entire country through September, and the 'retreating' monsoon that sweeps down from the north-east and brings rain from October to November. Yet, when this seasonal replenishment of ground and surface water fails, India experiences drought. In central and western semi-arid India, two in every five years are usually low-rainfall years, with attendant drought. Most villagers are historically used to drought and it is very much a part of the climatic landscape of India.

The large and growing population is placing an increasing strain on India's large natural resource base, evidenced by widespread deforestation, soil erosion, overgrazing, desertification, and air, water and land pollution. The public only recently became aware of India's growing environmental problems as a result of increasing media attention.

3.1.1 Political system and politics

India gained its political independence from Britain in August 1947 and became the Republic of India on 26

January 1948. The country is a union of states and has a three-tiered federal democracy, with central, state and district governments. It has a parliamentary system of government where the President is the Chief Executive (Head of State), overseeing the bureaucracy, and the Prime Minister is the Head of Government, comprising elected representatives. The government is elected for a five-year term through a country-wide general election.

There are two houses of parliament, modelled on the Westminster system of government, with a lower house of elected representatives (the Lok Sabha), and an upper house of nominated members (the Rajya Sabha).

Although the Indian National Congress (later the Congress) was the major post-independence political party, there have been splits in this monolithic political party, and the major opposition party, the right-wing Bharatiya Janata Party (BJP), has gained in prominence. In the past few decades, however, regional political parties have come to wield considerable political power, resulting in coalition politics at the centre and a growing ability of regional parties to destabilise national coalitions.

The current United Progressive Alliance (UPA) of the Congress and regional parties was, however, successfully re-elected for a second five-year term in 2009 and Dr. Manmohan Singh will continue as Prime Minister until 2014, unless mid-term elections are announced.

3.1.2 Social background

India has widely varying ethnic groups within its borders, although the majority are Aryans said to have come from central Asia (Figure 3). Other groups include the Southeast Asian-looking north-eastern communities (on the border with China and Burma), the Dravidians in the south (largely in Tamil Nadu and Kerala), the tribal groups in the central Indian plateau (parts of Andhra Pradesh, Gujarat, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand and Uttar Pradesh) who are said to be anthropologically close to the Aborigines of Australia, and the Sindhis, Punjabis and Kashmiris of the north and north-western parts of the country, who are ethnically similar to their counterparts in the neighbouring states of Pakistan.

Although Hindi is the official language and spoken by around 30% of the people, mostly in northern India, several languages are spoken in other parts of the country, including Tamil, Telugu, Malayalam and Kannada in south India, Bengali, Bhojpuri and Oriyya in eastern India, Gujarati in western India, and Marathi in central India. The Indian Constitution officially recognises 18 languages and around 500 dialects (languages without a script). Hindi and English, however, are understood in almost all states and in all major cities.

Social conflicts have been on the rise in the last couple of decades, primarily in the tribal-dominated and communist-influenced belt from north Andhra Pradesh (on the eastern coast) through coastal Orissa, central Madhya Pradesh, Chattisgarh and Jharkhand and up to Bihar (bordering on Nepal). Insurgency also affects Kashmir (with cross-border terrorism from Pakistan) and the seven north-eastern tribal-dominated states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland and Tripura. This has affected social development in these areas, although ironically, the root of a lot of the disturbances is historic neglect by successive development administrations and exploitation by local politicians and business interests.

3.1.3 Economic background

India shifted away from its state-centred socialist economic policies and import substitution in 1991, with increasing deregulation, privatisation and opening up of the economy to international competition. Over the past few decades, the primarily agrarian economy has undergone structural transformation, with the service sector contributing almost half the country's GDP while the share of agriculture has been consistently declining (Ghosh, 2010). Although it is one of the fastest-growing economies in the world today and one of the few that successfully weathered the recent economic recession, India also accounts for the largest number of poor people in the world. The Planning Commission of the Government of India estimates that around 40% of the 1.16 billion population are poor (Planning Commission, 2009). Most of these are small and marginal farmers, belonging to socially backward communities, concentrated in traditionally poor areas like the states of Orissa, Madhya Pradesh and Bihar. More worryingly, the rate of decline in poverty has been slower in the post-liberalisation period (after 1991) than in the pre-liberalisation period (Ghosh, 2010).

The Eleventh Five Year Plan (2007-2012) is now in operation with the theme of inclusive growth. With the Right to Information (RTI) Act passed in 2005, citizens now have the right to information on various aspects of government performance, including expenditure. The Government of India currently spends around Rs. 1,000 billion every year on rural development programmes (GOI, 2010) and India has some of the best public works programmes in the world, including the recent Mahatma Gandhi National Rural Employment Programme (MNREGS) that guarantees 100 days of employment at the minimum wage to all rural persons who demand work. In 2005, India committed itself to achieving the Millennium Development Goals (MDGs).

FIGURE 3: INDIA: STATES AND UNION TERRITORIES

India is not dependent on concessional finance from multilateral and bilateral external support agencies (ESAs) like the World Bank, the Asian Development Bank, the European Union, GTZ, JICA, JBIC and DFID, all of which together contribute less than 10% to the union budget. The GOI terminated the activities of several bilateral aid agencies in 2004, leaving only five (from the UK, Germany, Japan, Canada and the USA) functioning in the country, in addition to the multilateral agencies and international NGOs working in the development sector. India is thus economically self-sufficient and has a robust economy to support its ambitions of becoming an economic superpower and a member of the United Nations' Security Council.

3.1.4 Administrative units and administration

Central government

The Prime Minister heads the national government in India, along with a cabinet of ministers. Each union or central government minister is in charge of a central ministry, assisted by a senior career bureaucrat from the Indian Administrative Service (IAS), called a Secretary (to the Government of India). Each Secretary is assisted by other junior secretaries in running the several departments that comprise each ministry. The Ministry of Rural Development (MORD), for instance, comprises the Departments of Rural Development, Land Resources and Drinking Water and Sanitation. While these are all senior civil service posts, there are several Directors, Joint Directors and Deputy Directors in each department, who take care of day-to-day administrative issues. Senior IAS officers are usually in charge of drafting policies, deciding budgets, preparing answers to queries raised in Parliament, formulating new government schemes, projects and programmes, and collaborating in donor-assisted programmes.

TABLE 2: AREA, POPULATION AND POPULATION DENSITY OF STATES OF INDIA

Rank	Name	Population	%	Rural population	Urban population	Area (km²)	Density (per km²)
1	Uttar Pradesh	166,197,921	16%	131,658,339	34,539,582	240,928	690
2	Maharashtra	96,878,627	9%	55,777,647	41,100,980	307,713	315
3	Bihar	82,998,509	8%	74,316,709	8,681,800	94,163	881
4	West Bengal	80,176,197	8%	57,748,946	22,427,251	88,752	903
5	Andhra Pradesh	76,210,007	7%	55,401,067	20,808,940	275,045	277
6	Tamil Nadu	62,405,679	6%	34,921,681	27,483,998	130,058	480
7	Madhya Pradesh	60,348,023	6%	44,380,878	15,967,145	308,245	196
8	Rajasthan	56,507,188	5%	43,292,813	13,214,375	342,239	165
9	Karnataka	52,850,562	5%	34,889,033	17,961,529	191,791	276
10	Gujarat	50,671,017	5%	31,740,767	18,930,250	196,024	258
11	Orissa	36,804,660	4%	31,287,422	5,517,238	155,707	236
12	Kerala	31,841,374	3%	23,574,449	8,266,925	38,863	819
13	Jharkhand	26,945,829	3%	20,952,088	5,993,741	79,714	338
14	Assam	26,655,528	3%	23,216,288	3,439,240	78,438	340
15	Punjab	24,358,999	2%	16,096,488	8,262,511	50,362	484
16	Haryana	21,144,564	2%	15,029,260	6,115,304	44,212	478
17	Chhattisgarh	20,833,803	2%	16,648,056	4,185,747	135,191	154
UT1	Delhi	13,850,507	1%	944,727	12,905,780	1,483	9,340
18	Jammu and Kashmir	10,143,700	1%	7,627,062	2,516,638	222,236	46
19	Uttarakhand	8,489,349	1%	6,310,275	2,179,074	53,483	159
20	Himachal Pradesh	6,077,900	1%	5,482,319	595,581	55,673	109
21	Tripura	3,199,203	0.3%	2,653,453	545,750	10,486	305
22	Meghalaya	2,318,822	0.2%	1,864,711	454,111	22,429	103
23	Manipur	2,166,788	0.2%	1,590,820	575,968	22,327	97
24	Nagaland	1,990,036	0.2%	1,647,249	342,787	16,579	120
25	Goa	1,347,668	0.1%	677,091	670,577	3,702	364
26	Arunachal Pradesh	1,097,968	0.1%	870,087	227,881	83,743	13
UT2	Puducherry	974,345	0.1%	325,726	648,619	479	2,034
UT3	Chandigarh	900,635	0.1%	92,120	808,515	114	7,900
27	Mizoram	888,573	0.1%	447,567	441,006	21,081	42
28	Sikkim	540,851	0.1%	480,981	59,870	7,096	76
UT4	Andaman & Nicobar Is.	356,152	0.03%	239,954	116,198	8,249	43
UT5	Dadra & Nagar Haveli	220,490	0.02%	170,027	50,463	491	449
UT6	Daman and Diu	158,204	0.02%	100,856	57,348	112	1,413
UT7	Lakshadweep	60,650	0.01%	33,683	26,967	32	1,895
	India	1,028,610,328	100.00%	742,490,639	286,119,689	3,287,240	313

States and state governments

The country is divided administratively into 29 states and seven union territories (UTs), smaller administrative areas under a Lieutenant Governor. Some states are as large as small countries (Figure 3 and Table 2).

Each of India's state governments is headed by a Chief Minister, with a Cabinet of Ministers, who are answerable to the elected Members of the Legislative Assembly (MLAs).

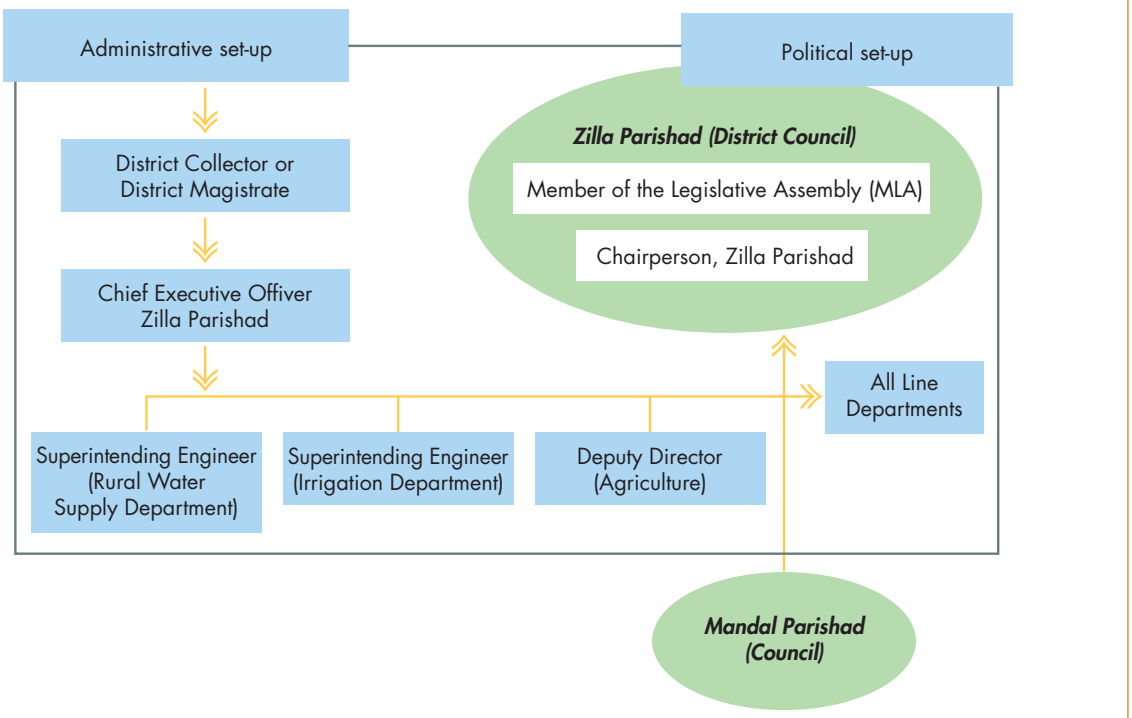
State government ministers head departments (instead of ministries), which may comprise several smaller departments depending on the size of the state and administrative convenience, and can therefore vary across different states. Thus, the state of Andhra Pradesh has a combined Minister for Panchayati Raj and Rural Development (PR&RD), while the state of Karnataka has separate Ministers for Panchayati Raj and for Rural Development. Each state government minister is responsible for a state government department (sometimes called a line department) and is assisted by a career bureaucrat from the IAS, called a Secretary—or, depending on seniority, a Principal Secretary or Principal Chief Secretary. Each Secretary is usually assisted by Commissioners, Joint Commissioners, Additional Commissioners, and Assistant Commissioners, assisted in turn by a range of Section Officers, heading different sections within the department.

Districts and district government

Each state is broken up into several administrative districts. A district can be the size of a small-sized country. One of Andhra Pradesh's 33 districts, Anantapur, for instance, covers an area of 19,130 square kilometres,[1] and has a population of around 3.6 million.[2]

The bureaucratic head of a district is called the District Collector,[3] while the political head is the President of the Zilla Parishad (or District Council),[4] which is a body of elected representatives, including the local MLA. A relatively new post created in some states is that of the Chief Executive Officer (CEO) of the Zilla Parishad (ZP), filled by a career bureaucrat (Figure 4).

FIGURE 4: DISTRICT-LEVEL ADMINISTRATION



[1] http://envfor.nic.in/naeb/sch/wsl/wsl_ap.html

[2] http://www.censusindia.net/cendata1/show_data52.php3?j=120&j2=1&j1=28&j3=Andhra+Pradesh

[3] This is an old colonial term, which actually referred to District Revenue Collector, from the days when this official was responsible for collecting and delivering land revenue to the British Government in India. Sometimes abbreviated to 'DC', the District Collector is also referred to in some states as the Divisional Commissioner, which also conveniently abbreviates to DC.

[4] In Andhra Pradesh, these are called Zilla Praja Parishads or District People's Council.

Sub-district units

A district is divided into several Community Development Blocks, each of which is headed by a Block Development Officer (BDO). Each block, in turn, is usually divided into several smaller administrative units, variously called *tehsils* (headed by a Tehsildar) or *talukas* (headed by a Talukadar). Only the state of Andhra Pradesh has an administrative unit called a *mandal,* which is larger than a block, headed by a Mandal Development Officer (MDO), to whom the BDO reports.

The political and administrative set ups are closely interlinked at district and sub-district levels. For example, the CEO of the Zilla Parishad is a bureaucrat, although the Zilla Parishad itself is made up of elected representatives, including representatives from the different Mandal (Praja) Parishads in the district. The Mandal Parishad or Council comprises the heads of the Panchayat Samitis, and a number of co-opted resource persons. Each Panchayat Samiti, in turn, has representatives from various Gram Panchayats (Village Councils), which are the basic tier of local government (see Figure 5).

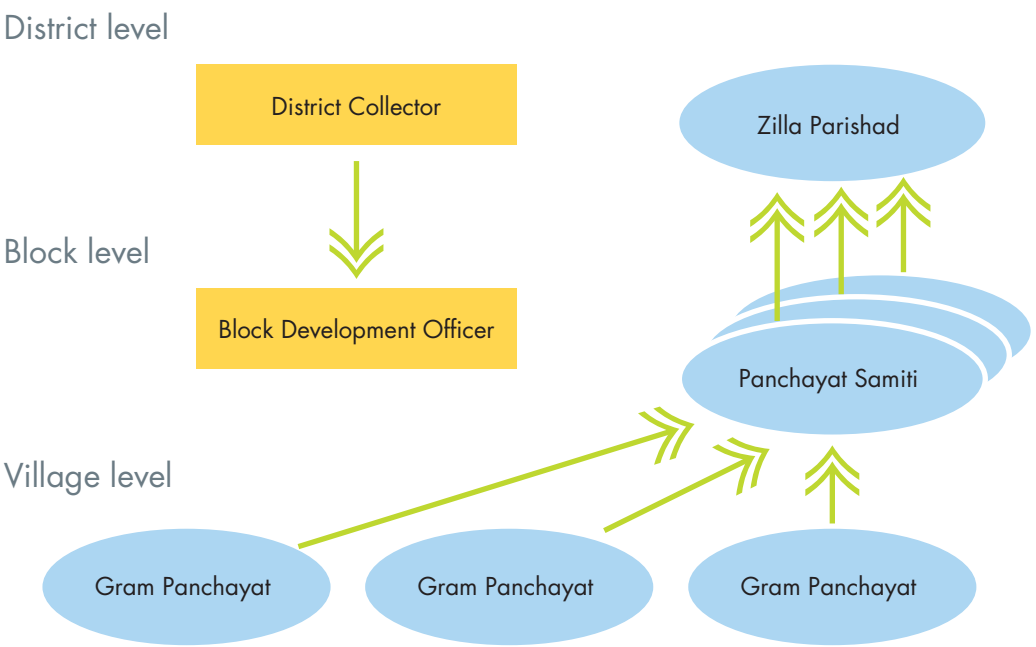
The upward arrows in Figure 5 denote representatives being sent up from lower levels of the political set up while the downward arrow shows that the Mandal Development Officer has several BDOs under his or her charge.

Village government

Gram Panchayats are headed by a Sarpanch, and assisted by a Village Administrative Officer (VAO) or thalati.[5] A Gram Panchayat (GP) usually corresponds to a revenue village, which is a colonial term referring to a cluster of one or more habitations. Gram Panchayats can vary in size from 50 to 2,500 households. Each GP has members from the cluster of villages or habitations that make up the revenue village. In fact, the Gram Panchayat is usually housed in the largest habitation of the revenue village. Further, each habitation may have several small hamlets (which are variously called *palli, phalia, dhaani,* etc. in different parts of India). The general body comprising all adult members of the villages in the Panchayat is called a Gram Sabha, and discusses and decides on issues of relevance to the GP.

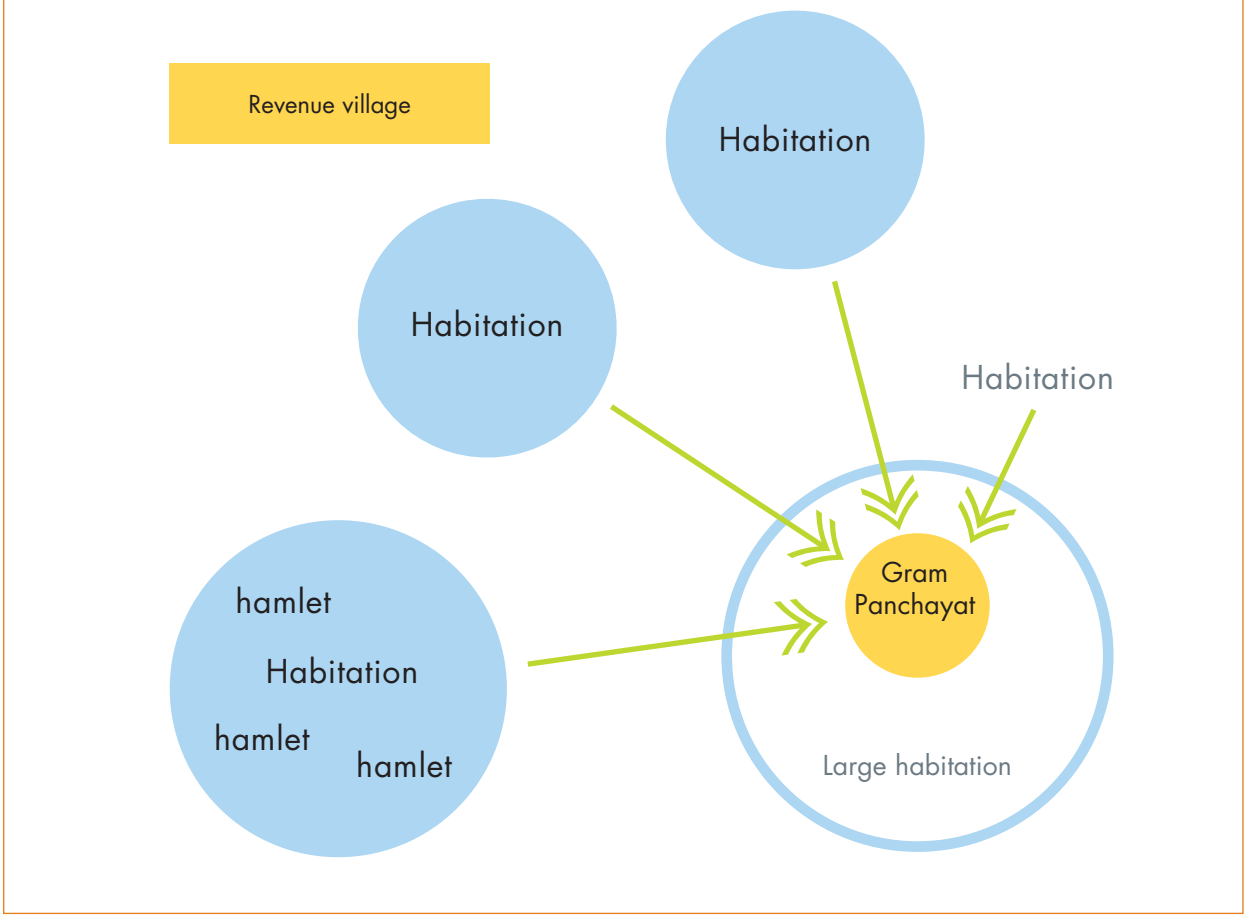
This is the structure of the Panchayati Raj—or the governance by panchayat (an old Sanskrit term referring to the council of 'five' *(paanch)* elders, which was supposed to look after the interests of traditional 'village India' (see Figure 6).

FIGURE 5: DISTRICT TO VILLAGE-LEVEL ADMINISTRATION



[5] Thalatiis another local term for the Village Administrative Officer.

FIGURE 6: VILLAGE-LEVEL GOVERNANCE STRUCTURE



3.2 DEVELOPMENT INDICATORS

3.2.1 Gross domestic product

After economic liberalisation in 1991, India's long-term economic growth rose from 3.6% per annum during the 1950s to the 1970s and 5.2% per annum during the 1980s to 6.1% in the 1990s, and more than 9% during 2005–7 (Asian Development Bank, 2010). The global recession did not hit India too badly and economic growth only slowed down to 6.7% in 2007–8, picking up to 7.35% in 2008–9 as a result of the GOI's prompt economic action and stimulus package. However, 2009 was a bad year and economic growth fell to 5.36% by the third quarter of 2009–10, although there has been a recovery in 2010.[6]

3.2.2 Inequality

The Gini coefficient value for the 15-year period 1992–2007, calculated by the World Bank, is 0.368, lower than Botswana (0.610), South Africa (0.578) and China (0.415).[7] Inequality in India rose over the period from1995–6 to 2004–5 by 13% in rural areas and 15% in urban areas, and stood at 0.45 overall in 2004–5 (Shukla, 2008).

3.2.3 Human Development Index

India's ranking on the Human Development Index (HDI) was 134 in 2007, which is higher than many Sub-Saharan African countries but lower than Sri Lanka (102), Philippines (105), Indonesia (111) and South Africa (129). However, India's score on the HDI has grown at 1.33% per annum from 0.42 in 1980 to 0.61 in 2007 (United Nations Development Program, 2009).

3.2.4 Corruption Perception Index

India has a score of 3.4 on the Corruption Perception Index (CPI) which is better than Sri Lanka (3.1), Maldives (2.5), Bangladesh (2.4), Pakistan (2.4) and Nepal (2.3), all of which continue to be below 3.0,

[6] http://en.wikipedia.org/wiki/Economy_of_India [Accessed 31 August 2010].

[7] United Nations Development Program (2009) using data from World Bank (2009a)

TABLE 3: ECONOMIC INDICATORS, INDIA, 2005–2009

Economic indicator	Unit	2005	2006	2007	2008	2009
Per capita Gross National Income (Atlas Method)	US $	740	820	950	1,070	
Economic growth (Annual Growth of Gross Domestic Product)	%	9.5	9.7	9.2	6.7	7.2
Inflation (Annual Growth of Consumer Price Index)	%	4.4	5.4	4.8	8.3	3.6
Annual Growth of Exports	%	23.4	22.6	28.9	13.7	-15.0
Annual Growth of Imports	%	32.1	21.4	35.1	19.4	-17.0
External Debt as a Proportion of Gross National Income	%	16.7	15.3	14.7	18.5	

Source: Asian Development Bank (2010, p. 1)

but worse than 80 other countries that score better.[8] This is, however, better than its rank of 90 and an index value of 2.8 in 2004–05.[9]

3.2.5 Other macroeconomic indicators

Macroeconomic and social indicators for the Indian economy reflect the major macroeconomic events that have affected it in the last five years, including the tsunami of December 2004 and the economic recession since 2008. The period 2005–2009 thus shows a slowdown in the rate of economic growth from the highs in 2005–07, the bad year in 2008 and a recovery in 2009–10, paralleled by the performance in inflation. Imports and exports, however, have fallen, although external debt has remained fairly stable and low (Table 3).

India's social development indicators have improved but need to be improved further and considerably (Table 4).

In 2007, India's life expectancy at birth of 63.4 years is lower than Turkmenistan and Laos, while its adult literacy rate of 66% is lower than Egypt and Congo, and its combined gross enrolment ratio of 61% is lower than Madagascar and Trinidad & Tobago (UNDP, 2009). Food insecurity continues to haunt close to 50% of India's rural areas, and 44% of India's children are malnourished (MSSRF, 2009).

TABLE 4: LATEST AVAILABLE SOCIAL INDICATORS, INDIA

Social Indicator	Indicator value	Unit	Year or period of estimate
Population	1,166.23	Million	2009
Annual population growth rate	1.4	Per cent	2007–2009
Adult literacy rate	66.0	Per cent	2007
Population in urban areas	29.5	Per cent	2008
Population living on less than $1.25 per day	41.6	Per cent	2005
Population living below the national poverty line	27.5	Per cent	2004
Under-5 mortality rate per 1000 live births	69	Number	2008

Source: Asian Development Bank (2010, p. 2)

[8] The CPI measures each country's level of corruption on a scale from 0 to 10, where 0 is highly corrupt and 10 signifies low levels of corruption. It ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians (Transparency International, 2009).

[9] Transparency International (2005).

3.3 STATE OF WATER SERVICES DELIVERY

3.3.1 Overview of rural water supply provision in India

India's record of rural water supply provision can be divided into five phases: (I) initial phase; (II) expansion phase; (III) mission phase; (IV) reforms phase and (V) sustainability phase (Table 5).

Initial phase (1950–1967): India's Constitution made water officially a state government responsibility, and gave all ownership rights over water to national and state governments. The Constitution also gave citizens the right to adequate potable water. From 1950, in recognition of the fact that basic drinking water needs were not being met all over the country and that the provision of safe drinking water was the responsibility

TABLE 5: PHASES OF WATER SUPPLY PROVISION IN INDIA

Phases	Initiatives
I 1950–1967	**1950:** Constitution confers government ownership over all water resources, specifies water to be a state subject and gives citizens the right to potable water. **1954:** The first national drinking water supply programme is initiated as part of the National Health Programme. **1962:** Problem villages defined and measured for the first time by the Ministry of Health. **1967:** Bihar famine following successive droughts in 1966 and 1967.
II 1968–1981	**1969:** National rural drinking water supply programme with technical support from UNICEF to drill for drinking water in problem villages. **1972:** Accelerated Rural Water Supply Programme (ARWSP) with 100% grants from the central government to state governments to target problem villages. **1974:** Minimum Needs Programme (MNP) substituted ARWSP; aimed at providing safe drinking water to problem villages. **1977:** Progress under MNP not found to be satisfactory. Therefore, ARWSP revived to tackle unreached areas without access to safe drinking water, sustainability of water supply systems and sources and preservation of quality of water by institutionalising water quality monitoring and surveillance, through a catchment area approach. **1981:** Start of the International Water Supply and Sanitation Decade (1981–1990).
III 1982–1990	**1986:** National Drinking Water Mission (NDWM) set up to cover residual problem villages. Comprehensive guidelines issued (for the first time) to implement the ARWSP. **1987:** First National Water Policy, stating that national, rather than state or regional, perspectives will govern water resources planning and development and that drinking water has first priority while planning multipurpose water supply schemes. A severe nationwide drought causing a state of emergency to be declared in several states, including Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Gujarat. Trains used to bring water to Gujarat and in towns like Rajkot in Saurashtra; water distributed to houses by tractors and rickshaw-pulled tankers.
IV 1991–2002	**1991:** NDWM of 1986 renamed the Rajiv Gandhi National Drinking Water Mission. **1992:** 73rd Constitutional Amendments transferring responsibility for 29 subjects, including water supply, to local bodies (Panchayati Raj Institutions or PRIs). **1996–99:** Review of India's water resources, jointly with the World Bank and other donor agencies. **1999:** Start of the Sector Reforms Pilot Projects, introducing community-based management of rural water supply in the government sector. **1999:** Creation of the Department of Drinking Water Supply (DDWS), replacing the Rajiv Gandhi National Drinking Water Mission. **2002:** Start of *Swajaldhara* (or 'clean water stream'), the national community-managed drinking water supply programme.
V 2003–2010	**2004:** Conditional MOUs proposed by the DDWS and subsequently rejected by the states. **2009:** National Rural Drinking Water Programme (NRDWP). **2010:** Implementation Framework for the NRDWP. **2010:** Results Framework (2010–2022). **2010:** Renaming of the Department of Drinking Water Supply as the Department for Drinking Water and Sanitation (DDWS).

Source: Adapted from Pragmatix Research & Advisory Services (2006a)

of the government, the GOI began to install rural water supply systems in villages. The good monsoons of the early 1950s sustained the traditional systems of rainwater harvesting and community-managed surface water systems, but the recurrent droughts and food crises in the late 1950s and the country-wide droughts in the mid 1960s began to seriously threaten this status quo.

Expansion phase (1968–1981): A major turning point in government policies towards rural drinking water provision came after the disastrous Bihar famine of 1967 (Black and Talbot, 2005). The subsequent years saw increasing policy efforts to address water scarcity in 'problem villages' all over the country. With the new technology of drilling rigs and new handpump models in the early 1970s, the objective of national and state governments was reduced to finding funds to implement the 'formula' of piped water supply schemes wherever possible. The Accelerated Rural Water Supply Programme (ARWSP) in 1972 and the short-lived Minimum Needs Programme of 1974 (replaced by the ARWSP in 1977) were efforts to target increased government outlays at villages with continued water shortages and water quality problems.

Mission phase (1981–1990): Spurred by the International Decade of Water Supply and Sanitation, the GOI set up a National Drinking Water Mission of 1986 (re-christened the Rajiv Gandhi National Drinking Water Mission in 1991). The nationwide drought in 1987 (see Table 5) caused soul-searching but ultimately put more money into the now conventional approach of centrally-driven supply augmentation with piped water schemes based largely on groundwater extraction.[10] India's first water policy was released in 1987 which, ironically, was the year of a severe nationwide drought. There was still no significant move to change the policy of hierarchical, top-down and supply-driven implementation by an engineering-heavy administrative system.

Reforms phase (1991–1999): Despite government allocations for rural drinking water supply and sanitation rising from Rs. 5 billion in 1969–74 to Rs. 420 billion in 1992–97 (Black and Talbot, 2005) and official statistics claiming that 95% of rural habitations had been provided with safe water supply by 1999, even the GOI found that its surveys of ground reality were at odds with its statistics. Successive surveys of 'problem villages' found the numbers did not seem to be going down: 153,000 problem villages during the first survey in 1962, 231,000 in 1980, 227,000 in 1986, and 140,975 in 1994 led NC Saxena, former Secretary at the Ministry of Rural Development and the Planning Commission, to quip: 'In our mathematics, 200,000 problem villages minus 200,000 problem villages is still 200,000 problem villages'.[11]

By the end of the 1990s, three major surveys—the National Commission on Water (NCW, 1999), the India Water Partnership report (IWP, 2000) and a six-volume review of India's water sector by the Government of India and the World Bank (GOI-World Bank, 1999)—concluded that there was an emerging water crisis in India's water sector. The World Bank study said: 'India faces an increasingly urgent situation: its finite and fragile water resources are stressed and depleting …Water is becoming an increasingly scarce resource in India, yet it continues to be used inefficiently on a daily basis in all sectors, while sectoral demands (such as in drinking water, industry, agriculture and others) are growing rapidly in line with urbanisation, population increases, rising incomes and industrial growth. At the same time the poor and disadvantaged remain underserved by the heavily subsidised public services, and must bear increased health risks plus additional costs (in terms of time and money) of obtaining potable water supplies. Women and children are disproportionately affected under these conditions due to their greater role in water collecting activities.[12]

For the first time, the sustainability of drinking water supply was raised as a major issue. Among the 170 recommendations of the joint Government of India and World Bank review (GOI-WB, 1999) was a major recommendation to introduce a demand-responsive, community-based approach to the provision of rural water supply.

From the 1970s, NGOs had been piloting such approaches in different parts of the country, including Gram Vikas in Orissa, Myrada in Karnataka and Utthan and SEWA in Gujarat. More recent work during the 1990s by partner agencies of WaterAid in Tamil Nadu, the DANIDA-supported Rural Water Supply Project in Tamil Nadu, the Socio-Economic Units Foundation (SEUF) in Kerala, and the World Bank-supported Swajal project in Uttar Pradesh, threw up at least five characteristics of successful rural interventions in drinking water supply that were at odds with the government's approach: (1) community cost-sharing, participation and ownership; (2) a focus on reviving and maintaining traditional water-harvesting structures; (3) demand-responsive

[10] Black and Talbot (2005) document UNICEF's role in supporting the government water supply efforts through this period with new high-speed drilling technology and new handpumps (India Mark II and Mark III).

[11] NC Saxena in a paper presented at a State Water Ministers' Workshop in Cochin, December 1999. Quoted in Black and Talbot (2005), p. 187.

[12] GOI and World Bank (1999), p. ix.

approaches attuned to community needs and priorities; (4) social equity to ensure equitable coverage within the entire community, particularly the inclusion of poor and other disadvantaged groups; and (5) placing women at the centre of water-management decisions. Yet, none of these were implemented as an integrated approach, and individual NGOs focused on one or more aspects based on trial and error.[13]

With the added stimulus of the 73rd and 74th Amendments to the Constitution, which decentralised governance, the GOI finally decided to make a paradigm shift towards community-managed rural water supply. In 1999, the Water and Sanitation Project and UNICEF supported the Rajiv Gandhi National Drinking Water Mission (RGNDWM) to formulate the Sector Reform Pilot Projects (SRPP) that ultimately covered 67 districts all over the country.[14] The SRPP aimed at (1) a demand-driven approach; (2) village-level capacity building for self-management through Village Water and Sanitation Committees; (3) an integrated service delivery mechanism that streamlined the functioning of the government agencies involved; (4) cost-sharing by users (100% of O&M cost and 10% of capital cost); and (5) water-conservation measures through rainwater harvesting and groundwater recharge measures (GOI, 2000). The SRPP also marked a fundamental change in the attitude of the government towards community management: by allowing government funds to flow directly to community organisations, for the first time in the history of rural water supply provision in post-independence India, the government was explicitly recognising the legitimacy and value of active community involvement. The RGNDWM also became a full-fledged department in the Ministry of Rural Development: the Department for Drinking Water Supply (DDWS).

The SRPP experience had its share of problems, which were being unearthed through research by agencies including the Water and Sanitation Program-South Asia (e.g. WSP, 2002). However, before these could be systematically analysed and used to revise policy, the GOI decided, no doubt in view of the alarming rural water scenario, to accelerate the reforms and scale up the SRPP approach to the entire country. On 25 December 2002, the birthday of the then Prime Minister, A. B. Vajpayee, the GOI announced a new national community-managed rural domestic water supply programme called Swajaldhara (James, 2004c).

Sustainability phase (2002–present): Despite the announcement of Swajaldhara, this initial focus on demand-driven and sustainable rural water supply provision remained secondary to the main programme, the ARWSP, which continued in the traditional supply-driven mode. In 2003–04, the DDWS initiated a scheme under which each state had to submit a baseline status report on the rural water supply conditions in its habitations, make a plan to address these problems, and report annual progress on the implementation of the plan. States that failed to achieve the targets set out in their plans would face a reduction in future allocations of ARWSP, while states that performed better than their targets would get the allocation forfeited by low-performing states. This was supposed to be laid down in a Memorandum of Understanding (MoU) that each state government had to sign with the DDWS. Supported by UNICEF and WSP-SA, the DDWS managed to get states to send in their status reports, but ran into a political roadblock while trying to implement the MoUs. State governments refused to sign them and after some discussions at the National Development Council (NDC)—the apex body comprising the Chief Ministers of all states and the Prime Minister—the initiative had to be called off.

Sustainability was put firmly on the agenda when 'slippage' statistics began to be reported—from 95% coverage in 2001 to 67% in 2009. If anything, the availability of Swajaldhara funds had created a perverse incentive for states to continue reporting 'problem habitations' so that they could get additional funds to 'address the problem'. In 2009, the GOI announced a new and far-reaching National Rural Drinking Water Programme (NRDWP), and followed it up with detailed Implementation Guidelines in April 2010, which also reversed the perverse incentive for states to over-report (or do nothing about) their problem villages. In addition, it set up a Working Group in June 2010 to create a Results-based Framework for the period 2010–2022. Since June 2010, the DDWS has been actively soliciting comments and suggestions from practitioners and stakeholders via the UN Solution Exchange e-platform on how best to improve the sustainability of service delivery.

3.3.2 National-level institutional structure

The Department for Drinking Water and Sanitation (DDWS) within the Ministry of Rural Development (MORD) is currently the nodal national-level government agency responsible for rural drinking water supply in the country. The DDWS is headed by a Secretary, who is a senior bureaucrat, and reports directly to the top bureaucrat in the MORD, the

[13] See, for instance, the efforts by Gram Vikas in Orissa at www.gramvikas.org.

[14] State governments had to propose projects adopting the Sector Reform approach in order to utilise the 20% of ARWSP funds earmarked for such projects in state budgets. A total of 26 states proposed 67 district-specific projects to be implemented using this new approach (Mohandas, 2003).

Secretary (Rural Development). The Secretary (DDWS) is assisted by a team of civil servants including a Joint Secretary (JS) and three Directors (of Water Supply, Water Quality and Sanitation). These senior IAS officers are in charge of drafting policies, deciding budgets, preparing answers to questions raised in parliament, formulating new government schemes, projects and programmes, and coordinating with donor-assisted programmes.

3.3.3 Position of the rural water sector in national development plans and strategies

Water is an important issue in Indian development plans and strategies, with water scarcities, droughts and floods being frequent events in different parts of the country. Indeed, it is not unusual to have droughts in some parts of the country and floods in another. While such natural calamities have led to an increased focus on water resources as a whole, rural drinking water is only a small part of the rural water sector, in terms of resource allocation and consequently, policy focus.

Investments in the rural drinking water sector increased with the Maharashtra famine of the early 1970s, which saw a shift in focus to groundwater exploitation, with UNICEF supporting large bore-well drilling (Black and Talbot, 2005). This improved technology for bore-well drilling for drinking water was, however, quickly adopted by farmers all across semi-arid India (e.g. Andhra Pradesh, Karnataka, Tamil Nadu, Madhya Pradesh, Maharashtra, Gujarat, Rajasthan), especially in places without surface irrigation options. Although this brought short-term gains from irrigated agriculture, unrelenting groundwater exploitation has now created a groundwater crisis in most parts of semi-arid India.

Drinking water was also highlighted in the building of the now infamous Sardar Sarovar and Narmada Sagar dams on the Narmada River in Madhya Pradesh, started in the 1980s and completed in the 1990s.[15] The biggest beneficiary is the state of Gujarat, with 57,000 kilometres of canals bringing Narmada water from the neighbouring state to the arid lands of Saurashtra and Kachch (bordering Pakistan). This is the last big dam to be built in India. It has served to bring canal water to supplement local sources, thus providing water security to villages that faced chronic drinking water shortages during the summer.

Droughts, famines and floods—all connected with water—were thus part of the heritage of policy-making that independent India inherited from its forerunners in government. Every one of India's Five Year Plans (FYPs), from the First FYP (1951–1956) to the current Eleventh FYP (2007–2012) has addressed the issue of water, but largely concerning irrigation and flood control, under the control of the Ministry of Water Resources. Yet, by the end of the 1990s, there were strong indications that all was not well with the water sector in India.

Since India signed up to the MDGs in 2005, there has been another factor influencing government policy: climate change. The recent and unseasonal flash floods in areas that are not traditionally flood-prone—Andhra Pradesh (2006, 2008, 2010), Rajasthan (2005), Maharashtra (2005 and 2006)—have also brought issues of climate change to centre stage, and the Prime Minister set up a High-Level Council on Climate Change to prepare a Climate Change Plan for India, which was unveiled on 30 June 2008 (Pew Centre on Climate Change, 2010). The National Water Mission set up under this Plan is one of eight missions envisaged.

This brief history of the place of the water sector in India's development plans and policies aims to make the simple point that, despite the record of attention to drinking water outlined in the previous section, rural drinking water is only a small part of the water focus: the main policy focus, and hence funding priority, remains as water resources, i.e. irrigation. Indeed the only major rural drinking water issue to catch the policy-makers' attention is the problem of slippage, and the Eleventh Five Year Plan (2007–2012) has made fixing slippage its core strategic objective.

3.3.4 Main focus in rural water services delivery

The traditional mode of water service delivery was supply-driven provision designed and implemented by the engineers of the Rural Water Supply (RWS) or Public Health Engineering Departments (PHED), depending on the institutional set-up in each state. This mode of water service delivery characterised the initial, expansion and mission phases outlined earlier, and the ARWSP—which constitutes the bulk of funding for rural water supply—continues to be implemented through this mode in most parts of the country. Typically, district-level engineers draw up plans for single or multi-village piped water supply schemes or handpumps, and use annual budgets to implement different plans according to need but also political priorities.

The focus shifted after the Sector Reforms of 1999 and community-based provision characterised new schemes during the sustainability phase, particularly the Swajaldhara schemes. For piped rural water supply schemes communities pay 10% of capital costs

[15] Although damming the Narmada had been planned since the late 1880s, it was revived by the GOI in 1965 and the Narmada Valley Development Plan is now in operation with the aim to build 30 big dams, 135 medium dams and 3,000 small dams on the Narmada and its tributaries (Friends of River Narmada, 2010).

and 100% of operation and maintenance (O&M) costs, as well as connection and monthly charges. Village Water and Sanitation Committees (VWSCs) are set up to collect payments and contributions and oversee O&M.

Despite this, there has been no move yet to take water resource constraints into consideration or create integrated WASH systems to provide water for sanitation and hygiene—or indeed for livelihood uses such as kitchen gardens, livestock or small-scale enterprises (e.g. brick-making, tea stalls, rope-making or pottery).[16] Sanitation and hygiene, in particular, continue to be major omissions from rural water supply provision, where water supply norms are taken as 40 litres per capita per day for a 'design population' (120% of current population estimates).

Water quality, however, has been a major focus area in the last decade with the setting up of the DDWS National Water Quality Surveillance and Monitoring Programme (NWQSMP) in 2004.[17]

Since the rather adverse report of the Technical Advisory Group in January 2008 on the performance of the RGNDWM, the DDWS has taken several steps to address the deficiencies with a strong focus on the sustainability of water service delivery. These steps include a new National Rural Drinking Water Programme (NRDWP) in April 2009, replacing the ARWSP and emphasising the sustainability of service delivery, an Implementation Framework in April 2010, a Results Framework in June 2010 covering the period 2010–2022 and an interministerial National Drinking Water Supply and Sanitation Council in July 2010.

The new NRDWP introduced three major changes in water-service delivery:

1. **Habitation-level coverage to household-level coverage:** This implies that if some households do not have access to 40 lpcd of drinking water in a habitation with plentiful water supply for other households, that habitation cannot be said to be 'covered'. This is a change with far-reaching consequences, as it brings in the long-neglected issues of equity and social exclusion that are widely practised in rural India. This, however, has obvious implications for the measurement of coverage, but this new definition has not yet been used to define rural water supply coverage in the country.
2. **Conjunctive use of water instead of a single source:** The focus on multiple sources of water brings back the focus on traditional water supply sources and supplementary methods such as roof rainwater harvesting systems, hitherto neglected in favour of 'improved' sources such as handpumps and piped water supplies.
3. **Decentralised implementation approach:** By explicitly endorsing the spirit of the 73rd Constitutional Amendment, the NRDWP moved the onus of water supply provision from government departments to local elected bodies (or Panchayati Raj Institutions)—such as the Gram Panchayats and their sub-committees, Village Water Supply Committees (VWSCs)—and rural communities.

3.3.5 Actual services provided

The latest figures from the WHO-UNICEF Joint Monitoring Programme (JMP) show that nearly 420 million people gained access to improved water supply sources over the period from 1990 to 2008 (or around 23 million per year on average), raising the

TABLE 6: RURAL WATER SUPPLY COVERAGE, INDIA, 1990–2008

Year	Population (millions)	Rural to total population (%)	Unimproved (% of rural population)	Improved (% of population)			Number of people who gained access 1990–2008 (thousand)
				Total	Piped on premises	Other improved	
1990	862,162	74%	34	66	8	58	418,886
2000	1042,590	72%	24	76	9	67	
2008	1181,412	71%	16	84	11	73	

Source: JMP (2010)

[16] James, A. J., (2004a).

[17] Following a National Workshop held from 7–9 August 1997 on 'Water Quality Monitoring and Surveillance', jointly organised by the Ministry of Rural Development and the Ministry of Health with support from WHO and UNICEF, that recommended the institutionalisation of drinking water quality monitoring and surveillance systems in the country, and a pilot in four districts, the DDWS circulated a manual to all state governments in January 2004 detailing the programme. In addition the All India Institute for Hygiene and Public Health, Kolkata, produced detailed guidelines for the RGNDWM in January 2006 (Department of Drinking Water and Sanitation, p. 1).

proportion of the population with access to improved sources of rural water supply from 58% in 1990 to 73% in 2008 (JMP, 2010, p. 43).

Two aspects of these statistics are noteworthy. First, they do not take into account the slippage recorded in 2009, when the rural population covered by water supply fell from a high of 86% recorded in 2001 to 67%.[18] Second, a large proportion of 'improved access' reported in the JMP statistics are on account of 'other sources' and not piped water supplies.

Functionality and slippage

The functionality of rural water supply that creates 'problem villages' has been identified in India since the 1970s (section 3.3). However, measuring coverage solely by the degree of infrastructure created, rural water supply coverage rose steadily to 94% of all habitations in 2001. In the last decade, however, the problem of slippage was officially acknowledged, and government statistics put coverage at 67% in 2009.[19]

The Approach Paper to the Eleventh Five Year Plan has treated coverage as a 'dynamic concept' and attributed slippage to: sources going dry or lowering of the groundwater table; sources becoming quality affected; sources outliving their lives; systems working below rated capacity due to poor operation and maintenance; increase in population resulting in lower per capita availability; emergence of new habitations; and slippage due to seasonal shortage of water (low rainfall, etc).[20]

In addition, the Eleventh Five Year Plan has made fixing slippage its core strategic objective and set monitorable targets for a range of indicators including complete coverage, tackling of arsenic, fluoride, salinity and nitrate water quality problems, source protection and coverage of uncovered Scheduled Castes (SC) habitations in 71,406 villages which have an SC population of 40% or more and 'uncovered' Scheduled Tribal (ST) habitations in 116,850 villages which have an ST population of 40% or more (Planning Commission, 2007).

Water resources

India's estimated total utilisable water is currently estimated at 1.12 billion cubic kilometres (MOWR, 1999), but 'drinking water is less than 1% of the total water demand' (Planning Commission, 2007b, p. 168). The situation is set to get worse as the scientific consensus is that the total water requirement will outstrip supply in the near future. An academic projection for 2050 estimates that the total water requirement will reach 1.45 billion cubic kilometres per year, for a population of around 1.64 billion—which brings down gross annual per capita availability from the 2001 level of 1,820 cubic metres to 1,140 cubic metres (Gupta and Deshpande, 2004). Earlier reviews of the water situation (WB-GOI, 1998; IWP, 2000; NWC, 1999) found similar findings and one concluded that current data are 'a stark and unequivocal portrayal of a country about to enter an era of severe water scarcity' (WB, 2005, p. 31). Such general projections naturally mask the huge geographical and social disparities that characterise the country and impact water availability (James and Deverill, 2005).

Although several ministries and departments formulate policies and programmes that affect water supply and sanitation, there is little coordination, unfortunately, at either policy or programme level. In most cases, it is left to ESA-funded interventions to improve functioning and demonstrate possible convergence in government functioning, as for instance in the World Bank-funded Water Resource Restructuring Projects implemented in several states to improve water resource management and the EC-funded State Partnership Programme in Rajasthan, seeking to implement a new state water policy based on the concept of Integrated Water Resource Management (IWRM).

However, political considerations reflected in inter-state river water sharing agreements also affect water resource management in the country as a whole and govern state investment patterns as demonstrated, for instance, in Maharashtra (Planning Commission, 2006).[21] Since the quantity and quality of water resources critically affect water supply, sanitation and hygiene, these factors assume significance in efforts to improve the delivery of WASH services (UNICEF, 2005; James and Deverill, 2005).

[18] This was the official estimate on 24 April 2001 (quoted in Water and Sanitation Program—South Asia, 2001).

[19] Coverage is based on norms laid down by the DDWS, which include 40 litres per capita per day of safe drinking water (based on criteria), within 150 metres of every house in a habitation (see Boxes 2 and 3).

[20] More recently, the WASHCost Project being implemented by the IRC International Water and Sanitation Centre (Netherlands) in India, Mozambique, Ghana and Burkina Faso organised a roundtable in 2009 in Hyderabad on slippage to identify its causes and make recommendations to address it (WASHCost, 2009).

[21] The pattern of irrigation investment in the state showed a systematic neglect of the Vidharba region, in an effort to increase irrigation capacity in western Maharashtra, so as to reap the maximum benefit from the Bachawat Committee Inter-State Water Sharing decision on the waters of the river Krishna (Pragmatix Research & Advisory Services, 2006b).

4 SERVICE DELIVERY MODELS

4.1 ENABLING ENVIRONMENT AT NATIONAL LEVEL

4.1.1 Service delivery in national policies and the legal framework

National Policies: Rural water supply has no special priority at national government level, but the GOI has spent more than Rs. 100,000 crores (approximately 22 billion USD) since 1951 on rural water supply and sanitation—equivalent to the total amount spent on *all* development programmes in 2009–2010. The National Water Policies of 1987 and 2002 accord primacy to drinking water over other uses of water. However, the implementation of the water policy is the responsibility of the state governments and not all states have water policies to replicate this national-level prioritisation. Most states that have water policies (e.g. Maharashtra, Rajasthan) give priority to drinking water over other needs, although practice on the ground does not always reflect this. However, there are no explicit mechanisms to enforce the policy, which in turn leads to violations in practice—exemplified by the competition between irrigation and drinking water supply and unchecked abstraction and pollution of drinking water sources by industry.[22]

Officially, the DDWS is a facilitator and not an implementer of rural water supply services. This shift became explicit with the 1999 Sector Reforms Pilots, was adopted by the Swajaldhara national programme, and has been endorsed by the National Rural Drinking Water Programme.

Legal framework: India does not have a Water Law or an explicit right to drinking water.[23] Hence poor service delivery cannot be enforced through a court of law and 'duty bearers' cannot be held to account by 'rights holders'. There has, however, been legislation on groundwater over-abstraction by individual states, including the Maharashtra Groundwater (Regulation for Drinking Water Purpose) Act of 1993, and the Andhra Pradesh Water, Land and Trees (APWALTA) Act of 2003.[24]

There is also national regulation of environmental pollution, including the Environment Protection Act of 1986, which set up the Central and State Pollution Control Boards and required industries to set up Effluent Treatment Plants (ETPs) and produce compliance certificates every year for water, air and other pollutants. There is, nevertheless, no comprehensive legislation on water requiring, for instance, water utilities to adhere to service delivery standards for water supply. This makes it difficult to proceed even against poor quality water supply, although the Bureau of Indian Standards (BIS) has laid down water quality standards for potable water.

Water quality surveillance: Noting that available infrastructural facilities for water quality testing was poor, the NWQSMP of the DDWS adopted a community-based approach in 2006, with available educational, technical and private-sector institutions supplementing existing sub-district infrastructure. The GOI provides state governments with 100% of the costs of 'IEC activities, HRD activities, strengthening of district level laboratories, procurement of field test kits, travel and transport cost, data reporting cost, stationery cost, honorarium to district level surveillance coordinators, water testing, documentation and data

[22] The competitive deepening of irrigation and drinking water bore wells has been well documented in rural India, for instance, by a series of DFID-supported projects including the KAWAD Water Resources Audit (Batchelor et al., 2000), the APRLP Water Resources Audit (Raoet al., 2003), the Community Management of Groundwater (COMMAN) project, the Augmenting Groundwater Resources by Artificial Recharge (AGRAR) project and the Water, Households and Rural Livelihoods (WHiRL) project, while other publications have documented the lack of synergy between watershed development and rural water supplies (Kakade, Kulkarni and Butterworth, 2003). The pollution of groundwater has been identified as a particularly major problem in tanneries (e.g. Murty et al., 1997)

[23] Official pronouncements that India recognises the right of citizens to potable drinking water are based on the Fundamental Right to Life enshrined in the Constitution of India.

[24] Other states include Goa, Himachal Pradesh, Kerala, Tamil Nadu and West Bengal. For a comparative analysis, see Cullet (2010) and for a listing of all existing groundwater policies and laws that are available see India Water Portal (2010).

entry costs' (RGNDWM, 2006, p. 3). State governments provide technical and non-technical staff from several departments (e.g. PHED, Health, Rural Development and Panchayati Raj) while community contributions covered the costs of 'O&M of the field test kits including refilling costs for field test kits, cost of disinfectants, minor remedial expenses, annuity and mobility, honorarium to grass root workers, and honorarium to the local (Gram Panchayat level) coordinator' (*ibid.*).

Institutional framework: Government responsibility for rural water at national level is shared by three major ministries: the Ministry of Water Resources (irrigation and river waters), the Ministry of Environment and Forests (forest development and management and water pollution) and the Ministry of Rural Development, which oversees watershed development (through the Department of Land Resources) and rural drinking water supply and sanitation (through the Department of Drinking Water and Sanitation).

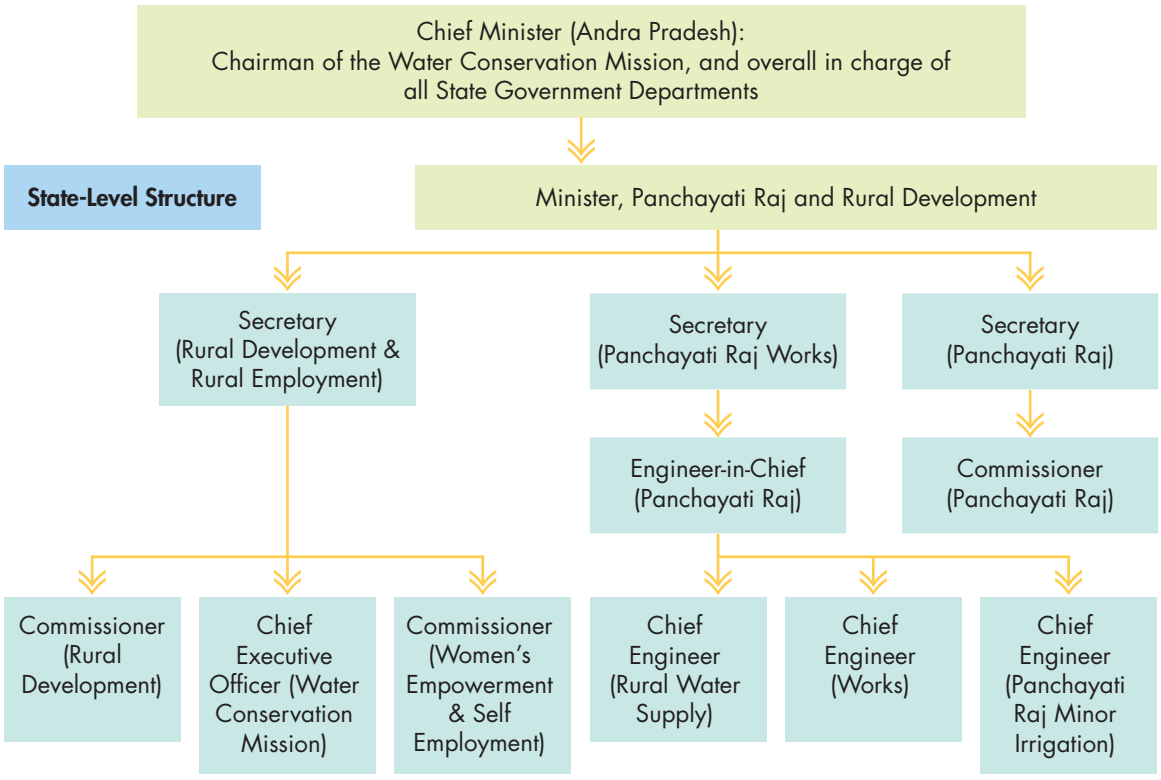
There is a similar division of responsibility at state level, with Irrigation or Water Resources Departments responsible for major, medium and minor irrigation schemes and groundwater development, Departments of Rural Development responsible for implementing watershed development programmes and Departments of Rural Water Supply or Public Health Engineering implementing rural water supply and sanitation programmes (Figure 7).

As Figure 7 shows, the operational head of rural water supply in the state government is the Chief Engineer (Rural Water Supply), who reports to the Engineer in Chief (Panchayati Raj), who is responsible in turn to the Secretary (Panchayati Raj Works). Finally, the Secretary reports to the Minister for Panchayati Raj and Rural Development.

Each line department has a district-level head, such as the Superintending Engineer for the Rural Water Supply Department, staff to implement work, such as Executive Engineers (EE), Deputy Executive Engineers (DEE), Assistant Engineers (AE), Junior Engineers (JE) and Pump Operators, and clerical staff. All district heads of line departments report to the CEO, ZP, who in turn reports to the District Collector.

Some states, however, have a different structure for rural water supply delivery, with dedicated Water Boards responsible for bulk water supply to rural habitations. Examples are the Kerala Water Authority (KWA), the Tamil Nadu Water Supply and Drainage (TWAD) Board, the Gujarat Water Supply and Sewerage Board (GWSSB) and the Maharashtra

FIGURE 7: STATE-LEVEL INSTITUTIONAL STRUCTURE, GOVERNMENT OF ANDHRA PRADESH



Water Supply and Sewerage Board (MWSSB). These organisations own the water supply infrastructure and are therefore responsible for investing in it (including drilling boreholes, building dams, weirs and anicuts, installing pumps and building pump houses and water treatment units and laying pipelines), but are not responsible for last-mile service delivery. While the TWAD Board initiated the Tamil Nadu Rural Water Supply Programme (TNWRSP) as a pilot programme in 2004 to work with Village Water Supply Committees (VWSCs) in 145 Village Panchayats (of a total of 12,620) to improve community awareness, water quality testing, leak detection and the operation and maintenance of installed systems, the Water Supply Management Organisation (WASMO) has an explicit and official mandate to work at village level. In Kerala too, a state government order was issued in 2000 handing over responsibility for single-village schemes to Beneficiary Groups under Gram Panchayats (RDC, 2008).

Asset ownership: All rural water supply assets created using government funds remain the property of the state. In the case of WASMO, Jalswarajya and Jalanidhi, there are explicit agreements with the Village Water and Sanitation Committee (or Pani Samiti) and the Gram Panchayat for the latter organisations to take responsibility for the O&M of created infrastructure. This is not the case for the regular water supply system under the ARWSP. In these cases, the ownership of the assets is transferred to the Gram Panchayat—as the lowest tier of the self-governance structure of the state—while the VWSCs are mandated by the Gram Panchayat to look after these assets on its behalf. As the next section shows, however, in the country as a whole, such decentralisation of responsibility has not always been effective in delivering better services.

4.1.2 Decentralisation policy for the water sector

Rural water supply in traditional India was decentralised until the state began investing in drinking water supply. The infrastructure created by these investments (e.g. in water-harvesting structures)—whether by local rulers, the Mughals, the British, or the governments of independent India—belonged to the state, although maintenance was supposed to be carried out by the local communities. This included desilting community tanks, repairing sluices and cleaning water channels. Several traditional institutions, such as the *kohlis* in north India or the *neerakattis* in southern India, developed to facilitate such community-level operation and maintenance (O&M) activities, usually by organising local farmers and labour during the pre-monsoon season.

Since political independence, however, there has been greater government control over rural water supply provision and asset creation, with the introduction of handpumps and piped water supply schemes. Unlike traditional systems, where community water-harvesting structures fed dug wells for drinking water, these new systems were deemed to be too complicated to be operated and maintained by the community. Pump operators and handpump mechanics were now required. The consequent neglect of traditional institutions like the *kohli* and the *neerakatti,* combined with the increasing use of private bore wells for agriculture (which led to falling groundwater tables), led to the drying up of community water-harvesting structures and communal drinking water sources—and to a *de facto* centralisation of rural water service delivery mechanisms.

NGO efforts from the 1960s onwards and the ESA-funded community-based rural water-supply schemes, culminating in the government-supported Sector Reform pilot in the 1990s and the Swajaldhara in 2002, are thus a return to decentralised rural water supply provision in the context of rural India.

Formally, the 73rd Constitutional Amendment of 1993 transferred responsibility for 29 policy areas, including water supply and sanitation, to the lowest tier of government, the Gram Panchayats. This process of decentralisation, however, has not been completed, and more needs to be done to effectively transfer financial, administrative and managerial responsibility to even district level, let alone to the Gram Panchayats. Decisions on annual budgetary allocations for rural water supply for each district, for example, are taken at state-government level. Districts receive funds for approved projects from the state government which, in turn, gets a large proportion of these funds from the central government. District-level staff prepare plans for new rural water infrastructure, but implementation depends on the quantity of funds made available in the annual budget, while the selection of schemes for implementation is often guided by the political priorities of district and state-government politicians. Furthermore, in states where district-level governance is strong, elected representatives have a say in the allocation of funds and therefore infrastructure for rural water supply, but this is not the case in all districts. Several states have Village Water Supply Committees (VWSCs) that are responsible for village-level management of drinking water supplies, but their performance varies.

The situation regarding decentralisation in the rural water supply sector in India is perhaps best summed up by the Eleventh Five Year Plan (2007–2012), which notes that '[w]henever the community has been involved from planning stage, the programme has always become sustainable' but goes on to outline the problems in effective decentralisation (Planning Commission, 2007b, pp. 170–171):

'While our programmes have elaborate guidelines for community involvement, it is obvious that field level adoption is far from satisfactory. The 73rd and 74th Constitutional amendments have devolved the water supply responsibility to Panchayati Raj Institutions/local bodies. Due to their inherent weaknesses, like funding constraints, low technical ability, etc. the devolution of power is yet to make a desirable impact on the ground. While sporadic success stories are trickling in, this aspect has yet to go a long way.'

Decentralisation is thus not fully effective, either financially, politically, functionally or administratively.

4.1.3 Oversight (regulation) and accountability

There is no Ministry of Urban Development and, although the Water and Sanitation Program—South Asia is working towards setting up a regulatory framework for urban water supply, there is as yet no national-level regulatory authority for rural water supply.[25] There are, however, a range of oversight and accountability mechanisms, including a Water Regulatory Authority in one state, Maharashtra.

National level: The National Rural Drinking Water Policy does mention the need for government regulation, but to date there is no government regulator in the sector. The central government does have oversight, in terms of service delivery norms laid down by the ARWSP in 1972 (Box 2) but the NRDWP has now allowed habitations to set their own norms for water quality, although these cannot be less stringent than the ARWSP norms (Department of Water Supply and Sanitation, 2010).

The GOI also carries out financial and physical monitoring and document review. Thus, each tranche of state government funds is released only after the receipt of a Utilisation Certificate (UC) for the previous tranche. In addition, all states have to provide monthly

BOX 2: ARWSP NORMS FOR RURAL DRINKING WATER SUPPLY

Norms for providing potable drinking water in rural areas

Under the ARWSP guideline the norms that have been adopted since the inception of the programme (1972) for providing potable drinking water to the rural population based on basic minimum need are as follows:

- 40 litres per capita per day (lpcd) for humans to meet the following requirements based on basic minimum need as defined under the ARWSP guideline.
- The above norms may to be assessed by the respective State Governments and they may fix their own higher norms based on water availability, demand, capital cost involved, affordability etc.
- However it is suggested that in areas having acute water quality problems and the cost of alternate safe drinking water will entail huge capital cost, 10 lpcd of potable water may be supplied and the balance domestic requirement can be met from other nearby source(s).
- For purposes of comparability coverage means provision within a distance of 500 metres from the household or 30 minutes of time taken for fetching water.

Norms for coverage

While planning for schemes in any year, priority is to be given to habitations where none (0%) or part of the population has access to adequate and safe drinking water. The habitations can be categorised in terms of population covered as 0%, 0-25%, 25-50%, 50-75%, 75-100% and 100%.

- Coverage of population is to be calculated on the following criterion:
  - Percentage of people within habitation getting basic minimum quantity of potable water within a distance of 500 metres from the household from either a public or a community source.

Source: Department of Drinking Water and Sanitation (2010, Appendix 1, p. 37)

[25] Mukhopadhyay and James (2008). *Towards a Regulatory Framework for Urban Water Supply and Sanitation,* report submitted to the Water and Sanitation Programme—South Asia, New Delhi.

BOX 3: EXAMPLES OF FINDINGS ON GOVERNMENT WATER SUPPLY PROJECTS BY THE C&AG'S OFFICE, 1998 AND 2002[26]

The key findings in 1998 included the following:[27]

- Deficiency in planning and unscientific identification of water sources have caused time overruns for water supply projects ranging from 2 to 16 years, and led to escalations in the costs up to Rs. 117 crores [21 million euros] in addition, forcing schemes to be abandoned.
- In 16 states materials worth Rs. 85 crores [15 million euros] were purchased in excess of requirement and were lying idle.
- Amounts such as advances, funds diverted to other schemes and those kept in personal/revenue deposits etc. (totalling about Rs. 385 crores [68.75 million euros] for the period 1992–97) were classified as programme expenditure, and thus inflated achievements.

The key findings in 2002 were similar:

- Even though there were habitations having no source of drinking water, Rs. 283.90 crores [51 million euros] were spent on coverage of partially covered habitations during 1997–2001, contrary to the priority norms of covering no source habitations first.
- Application of funds without adequate planning and scientific identification of water sources led to abandonment of 2,371 schemes midway in 19 states, costing Rs. 197.52 crores [35 million euros]. Scientific methods of source selection were not adopted in 10 states, causing failure of the schemes and rendering Rs. 64.71 crores [11.5 million euros] wasteful.
- Diversion of funds to activities not connected with the programme [of Rs. 86 crores or 15 million euros], unauthorised retention of funds in Civil/Revenue/Public Works Deposits [of Rs. 393.77 crores or around 70 million euros], inflated financial achievement [of Rs. 307.69 crores or 55 million euros], excess expenditure met from ARWSP funds instead of from State Plan funds [around Rs. 190 crores or 34 million euros], materials purchased in excess of requirements [around Rs. 70 crores or 12.5 million euros].

Source: James (2005); Text in square brackets [] added by author.

data on physical and financial progress of implementation, which is compiled and displayed on the website of the national Department of Drinking Water and Sanitation (DDWS). There is also an elaborate national water quality surveillance and monitoring programme which has been mentioned earlier. Annual audits of all government departments are conducted by the Comptroller and Auditor General's (C&AG) office, the results of which are published, and action is initiated against officials under whose jurisdiction misappropriation or incorrect expenditures have been detected (Box 3).

State level: District-level financial and physical data are compiled at state level, while district-level financial accounts are again verified and compiled at state level. There are also occasional visits by senior bureaucrats and engineers to field sites for inspections, but this is not systematic. The Maharashtra Water Resources Regulatory Authority (MWRRA) was set up by an Act of the State Legislature in 2005 (see www.mwrra.org for details). The new NRDWP, however, has tasked the State Water and Sanitation Missions (SWSMs) to 'look into the issue of pricing, terms of engagement between the bulk water utility and PRIs, protecting the catchments of local water supply through control of activities that could be performed in these catchments' (DDWS, 2010, p. 33). It also tasks the SWSM with deciding the tariff structure of rural water supply, 'taking into consideration the differential connection charges and tariff structure for house connection and supply through handpumps/street standpost and also lower/affordable tariff for SC, ST, OBC and BPL households',

[26] James, A. J., (2005), India's Sector Reform Projects and Swajaldhara Programme: a case of scaling up community managed water supply, case study prepared for the IRC International Water and Sanitation Centre, Delft, the Netherlands and available at http://www.irc.nl/page/23597

[27] These are from Upadhyaya (2004), which provides a good summary of the main report (for details see http://cag.nic.in, accessed in July 2005).

further stating that a 'recovery mechanism should be in place and Gram Panchayat/VWSC should be empowered/authorised to collect user charge for O&M as per the recommendation of 12th Finance Commission' (*id*).

There are, in addition, oversight and accountability mechanisms specific to externally funded projects, including internal project-level oversight by the Programme Management Units (PMUs) and external monitoring and evaluation by the funding agency, although, as mentioned earlier, this is not a significant proportion of the total funds invested in rural water supply.

4.1.4 Mechanisms for coordination, learning, support and technical assistance to intermediate level (sector learning)

The NRDWP Implementation Framework clearly sets out the mechanisms for coordination, capacity building, support and technical assistance to state and district governments. At the central level, the DDWS is responsible for carrying out four key tasks:

- Provide policy guidance as well as financial and technical support to states.
- Regularly monitor and assess the impact of rural water supply programmes in the states.
- Support the setting up of Water Supply Support Organisations (WSSOs) in the states.
- Assist states to restore damaged water supply systems in case of natural disasters.

Several national agencies have been identified by the Government of India to provide technical and research assistance to the DDWS at central level and the RWS departments at state level (Box 4).

The NRWDP has set aside 5% of its annual budget for 'software' support activities, to fund the three key activities of a Water and Sanitation Support Organisation (WSSO) that is to be set up in each state under the State Water and Sanitation Mission: (1) supporting the awareness and training activities to be done by Community and Capacity Development Units (CCDUs); (2) setting up and supporting water quality testing laboratories, supplying water quality test kits and training field-level workers to carry out simple water quality tests (all drinking water sources are to be tested at least twice a year and results put on the DDWS website; and (3) providing hardware and software support for Management Information Systems (MIS) at district and sub-district levels for 'more accountability, effective monitoring and transparency in delivery of services' (RGNDWM, 2010, p. 14)—which includes village-level GIS maps and GPS units to locate water sources more accurately.

The National Informatics Centre (NIC) has been mandated as the technical consultant for DDWS at the centre and the state NIC is to be the Technical Advisor to the state government, for all e-governance-related support including maintaining central databases and the National Rural Habitation Directory.

In addition, the DDWS has set up a national Research and Development Advisory Council (RDAC), chaired by the Secretary (DDWS), to work on a range of

BOX 4: NATIONAL TECHNICAL SUPPORT AGENCIES

- All Central Council of Scientific and Industrial Research (CSIR) Laboratories and Organisations
- Central Ground Water Board (CGWB)
- Geological Survey of India (GSI)
- Department of Science and Technology, Government of India
- Department of Space Technology, Government of India
- Central Water Commission (CWC)
- National Remote Sensing Centre (NRSC)
- National Institute of Communicable Diseases (NICD)
- National Institute of Rural Development (NIRD)
- National Arid Zone Research Institute (Jodhpur)
- Centre for Science and Environment (CSE)
- Centre for Environment and Education (CEE)
- Indian Institutes of Technology (IIT)
- Indian Institute of Science (IISc)
- Regional Engineering Colleges (REC)
- India Institute of Hygiene and Public Health (IIH&PH)
- Any other Central Agency dealing with RWS&S sector development

Source: Department of Drinking Water and Sanitation (2010, p. 19)

issues—including identifying field-level problems, priority areas and key issues, generating innovative ideas through multidisciplinary and intersectoral research, identifying institutions and individuals to contribute such research and invite them to submit research proposals—which will be scrutinised by the RDAC and approved by a newly set-up Project Sanctioning Committee.

Other support activities include supporting state governments in procuring drilling rigs and hydro-fracturing equipment, setting up monitoring and investigating (M&I) units at state level to collect and submit monitoring information on water quality, service adequacy, and qualitative aspects of service delivery, and liaising with ESAs for new projects.

There are, in addition, five major civil society-supported national learning platforms: the Water and Environmental Sanitation Network of India (WES-Net India), the India WASH Coalition, the Freshwater Action Network of South Asia (FANSA), UN Solution Exchange and the South Asia Consortium for Integrated Water Resources Studies (SaciWATERS).

- **WES-Net India:** This learning alliance of stakeholders in the Water and Environmental Sanitation sector in India was set up in 2004 by a group of like-minded professionals and currently has around 1,700 members. It aims to advocate for the achievement of the MDGs, strengthen and utilise the capacity of sector organisations by improving coordination, improving knowledge sharing and fostering more effective partnerships, and to enhance the exchange of knowledge and information between and within different stakeholders, working at different levels and different geographic locations across India (www.wesnetindia.org).
- **India WASH Coalition:** Set up as a coalition of individuals and institutions in India, under the banner of the Water Supply and Sanitation Collaborative Council (WSSCC), the India WASH Coalition focuses on the four key issues of sanitation and hygiene promotion at community level, advocacy and general awareness-raising, influencing policies and policy development and monitoring progress and impacts (http://www.wsscc.org/en/what-we-do/networking-knowledge-management/national-level-activities/india/index.htm).
- **FANSA:** The South Asia chapter of the global Freshwater Action Network (FAN), FANSA aims to strengthen the engagement of CSOs in policy-making and development initiatives to achieve the international targets on water and sanitation, improve regional cooperation between CSOs with differing perspectives, priorities and skills, and increase the number of NGOs to advocate and communicate clearly on water policy issues and the broader agenda (http://www.freshwateraction.net/content/south-asia).
- **UN Solution Exchange:** An initiative of the United Nations Country Team in India begun in 2005, the Solution Exchange offers communities of development practitioners a UN-sponsored space where they can provide and benefit from each other's solutions to the day-to-day challenges they face. Communities are organised around selected development targets of both India's Five Year Plan and the globally mandated Millennium Development Goals, contributing to their successful achievement. Members come from all organisations—government, NGOs, development partners, the private sector, academia—'interacting on an ongoing basis, building trust and strengthening their identity as a group' (http://www.solutionexchange-un.net.in).
- **SaciWATERS:** This is a research consortium set up in 2001 comprising senior scholars based in academic institutions and NGOs in five different South Asian countries (Bangladesh, Bhutan, India, Nepal and Sri Lanka) and formed to work on institutionalising interdisciplinary teaching, training, research and advocacy in the South Asian region using an Integrated Water Resources Management (IWRM) approach (www.saciwaters.org).

4.1.5 Sector financing

Total allocation: The main source of funding for rural water supply infrastructure in India is the central government. In the 55 years between 1951 and 2006, the state and national governments in India spent a total of Rs. 726 billion (USD 16.31 billion)[28] on rural water supply (Planning Commission, 2007b, p. 169), which amounts to nearly USD 300 million per year on average. This spending is from four main central government sources: the Accelerated Rural Water Supply Programme (ARWSP) and Swajaldhara from the DDWS, the GOI's Bharat Nirman Programme and the Twelfth Finance Commission.

- **The ARWSP:** This is the main programme for RWS infrastructure creation and the GOI spent Rs. 132.45 billion (USD 2.98 billion) during the Tenth Five Year Plan (2002–2007) and has allocated Rs. 394.90 billion (USD 8.87 billion) for the Eleventh Five Year Plan (2007–2012).

[28] The exchange rate used is Rs. 44.5 = USD 1 as found in Coinmill (2010). Also, all figures are at current prices.

The actual allocations are double this figure, since state governments are supposed to contribute the same proportion, although in reality these payments are often delayed and deferred, due to funding shortages at state-government level.

- **Swajaldhara:** Following the relative success of the Sector Reform Pilots Project in 1999, a new community-based rural water supply scheme called Swajaldhara was created in 2002. Around Rs. 10.69 billion (USD 0.24 billion) was allocated for this programme during the Tenth Five Year Plan period (2002-2007). During the Eleventh Five Year Plan period (2007–2012), however, the money for Swajaldhara schemes is to be routed through the ARWSP. Nevertheless, the average outlay under this scheme for the period 2002–2007 was around Rs. 2.13 billion (USD 0.05 billion) per year.

- **Bharat Nirman:** In 2005–06 a new rural infrastructure development programme was formulated, called the Bharat Nirman, where rural water supply is one of the six rural infrastructure sectors supported. This scheme allocated Rs. 253 billion (around USD 5.7 billion) for the first four-year phase from 2005–06 to 2009–10, primarily to provide RWS infrastructure for around 55 million 'slipped back' and 'quality affected' habitations (Department of Drinking Water and Sanitation, 2009). This is an average of around USD 1.6 billion per year for the period 2006–2010.

- **Twelfth Finance Commission:** The President appoints a Finance Commission under a provision in the Indian Constitution to examine the issue of fiscal federalism and make recommendations on the distribution of tax collections between the union and the states across different sectors of the economy. The Twelfth Finance Commission appointed in 2002 recommended in its 2004 report that Rs. 200 billion (around USD 4.5 billion) be distributed to village Panchayats as a grant-in-aid for the O&M of rural water supply handed over to them as part of the decentralisation process, 'to augment the consolidated fund of the states for the period 2005–10' (Twelfth Finance Commission, 2004, p. 160). This translates to roughly USD 0.9 billion per year for the five years of 2005–2010.

From these sources alone, the rural water supply sector was allocated around USD 25 billion for 2002–10 by national and state governments, around USD 22 billion of which was allocated after 2005 (Table 7).

In addition to these sources specifically earmarked for rural water supply, there are several other government funds that can be used for various aspects of rural water supply, as the Eleventh Plan observes: 'The resources required could be easily mobilised if the various programmes can be converged to work in complementary ways. The National Rural Employment Guarantee Programme has seven identified work components related to water. The Rural Development Ministry is implementing major watershed schemes through the Department of Land Resources. There are other programmes such as the Backward Region Grant Fund, artificial recharge of groundwater schemes and rainwater harvesting, the restoration of water bodies scheme (both pilot and externally assisted) by the Ministry of Water Resources, the

USD Billion

TABLE 7: FUNDS PROVIDED TO THE RURAL WATER SUPPLY SECTOR IN INDIA, 2002–2010

Sources of funds	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	Totals 2002–05	Totals 2005–10	Totals 2002–10
ARWSP central share	0.60	0.60	0.60	0.60	0.60	1.77	1.77	1.77	1.79	6.52	8.30
ARWSP state share	0.60	0.60	0.60	0.60	0.60	1.77	1.77	1.77	1.79	6.52	8.30
Swajaldhara	0.05	0.05	0.05	0.05	0.05				0.14	0.10	0.24
Bharat Nirman					1.14	1.14	1.14	1.14	0.00	4.55	4.55
Finance Commission				0.90	0.90	0.90	0.90	0.90	0.00	4.49	4.49
Total	**1.24**	**1.24**	**1.24**	**2.14**	**3.27**	**5.59**	**5.59**	**5.59**	**3.72**	**22.17**	**25.88**

TABLE 8: WORLD BANK-SUPPORTED RURAL WATER SUPPLY PROGRAMMES IN INDIA, 2001–2013

	Project	USD million		Years	USD million/ year
1	Kerala RWSS (*Jalanidhi*)	65.50	2001–08	8	8.19
2	Maharashtra RWSS (*Jalswarajya*)	181.00	2003–09	6	30.17
3	Uttaranchal RWSS	120.00	2007–12	5	24.00
4	Punjab RWSS	154.00	2007–12	5	30.80
5	Andhra Pradesh RWSS	150.00	2010–15	5	30.00
6	Karnataka RWSS	151.60	2001–13	13	11.66
7	Karnataka RWSS II	150.00	2010–15	5	30.00
	Total	725.60			126.46

National Project for Renovation of Water Bodies and schemes such as the National Afforestation Programme, River Valley Project, Flood Prone River Programme, Integrated Wasteland Development Programme, Grants under TFC, Hariyali, and the states' own schemes. Convergence of these programmes should help to augment funds and bring institutions together for sustainable water supply…' (Planning Commission, 2007b, p. 173). There is also the Rural Infrastructure Development Fund (RIDF) managed by the National Bank for Agriculture and Rural Development (NABARD) that can be used for rural drinking water infrastructure (NABARD, 2010). The coordinated use of these funds, however, is left to district administrations and therefore varies according to the interest and capacity of different districts to utilise funds available from different government programmes.

However, to this sum must be added the contributions by the communities, set at 10% of total infrastructural costs and 100% of operation and maintenance costs. If even 20% of the total government outlay in the sector is assumed to be for infrastructure, this represents around USD 2 billion over the period 2002–2010.

External support agencies also provide funds to the sector by implementing rural water supply projects jointly with state and national governments. Among the various ESAs investing in India, the World Bank has by far the largest share, totalling around USD 725 million over the period 2001–2013, representing a maximum of USD 126.5 million per year if all were operational simultaneously (Table 8).

This is, however, less than 10% of the amount being spent even by government agencies that provide direct funding (e.g. in Table 7). However, it is true that these could constitute more significant proportions of state government budgets where these projects are being implemented.

There are also some international NGOs (INGOs), like Plan International and WaterAid India, but their contributions to funding in the sector are almost negligible in comparison to both the World Bank and the Indian governments.

4.2 GOVERNANCE OVER SERVICE DELIVERY AT INTERMEDIATE LEVEL

4.2.1 Definition of service delivery models and modalities in policy and laws

Service delivery models

The national model of service delivery is of government designed and planned provision, although communities are being involved in schemes under Swajaldhara, the national community-based rural water supply programme started in 2002.[29] Apart from the government's Swajaldhara model, several other service delivery models have been created over the years at state level. Three of these are discussed below: the WASMO model (Gujarat), the Jalswarajya model (Maharashtra) and the Jalanidhi model (Kerala). While these started as externally funded projects, implemented with the support of NGOs, they have since been scaled up to state level and are thus

[29] The section on service delivery at intermediate level, thus, addresses both the state-level and district-level functioning of the SDMs.

official SDMs of their respective state governments. They are described briefly below:

Swajaldhara SDM (example Tamil Nadu): The Swajaldhara SDM began as part of the Sector Reform Pilot Projects in 1999 implemented by the Government of India in 67 selected districts throughout the country (Mohandas, 2003). Swajaldhara aimed to make rural water supply provision demand-driven and community-based, although in reality community participation is limited to making contributions to capital and O&M costs, while VWSCs are responsible for collecting payments and rudimentary repairs (James, 2004b). Community participation, thus, does not extend to the planning or monitoring of water supply systems or major repairs, all of which are carried out by government department staff at district level. Although it is a national-level SDM, Swajaldhara is analysed in this study in the context of the state of Tamil Nadu.[30]

From its formation in 1971, the Tamil Nadu Water Supply and Drainage (TWAD) Board has been responsible for designing, planning and implementing water and drainage works in the urban and rural areas of the state of Tamil Nadu (except the Chennai Metropolitan area). Post construction, the schemes are handed over to the local governments (e.g. Village Panchayats or Urban Local Bodies) for operation and maintenance. Since 2002, the TWAD has been implementing the Swajaldhara scheme. In 2004, an ambitious but small-scale pilot project called the Tamil Nadu Rural Water Supply Project (TNRWSP) was implemented in 145 villages (of a total of 12,618 in the state). Under this programme, the TWAD rural water supply engineers underwent a Change Management Process, which helped to improve their interaction with villagers and the O&M of drinking water infrastructure. The TWAD has a total staff of about 8,800, 2,500 of which are technical. A small Change Management Group comprising around 500 engineers is operational at state and district level.

WASMO SDM (Gujarat): Until 2002, rural water supply in Gujarat state was the sole responsibility of the Gujarat Water Supply and Sewerage Board (GWSSB), and the predominant source was groundwater. In a typically top-down approach, water supply projects were designed, planned, implemented, operated and managed by the GWSSB, which is primarily an engineering agency oriented towards design and construction rather than the operation and maintenance of past investments. In a major step towards reforms in the sector, WASMO was created in 2002 with Dutch assistance to promote decentralised, demand-driven, community-owned water supply and sanitation systems.

WASMO has created community-based organisations called Pani Samitis (Water Committees) to provide safe drinking water in their villages. Pani Samitis currently operate in all the 15,000-plus villages that WASMO currently works in (of the 18,000-plus villages in Gujarat state). They enjoy full financial autonomy and freedom to select contractors and vendors, participate in designing structures and implementing the schemes which, after completion, are handed over to the Pani Samitis for operation and maintenance. Intensive and regular training of Pani Samiti members and other villagers in project management, and financial and auditing processes ensures transparency in operations and water supply that meets the national quality norms.[31]

Jalswarajya SDM (Maharashtra): In Maharashtra state, the Water Supply and Sanitation Department (WSSD) is responsible for water supply, supported by two technical wings: Maharashtra Jeevan Pradhikaran (MJP) and the Groundwater and Survey Development Agency (GSDA). The MJP is the new name of the Maharashtra Water Supply and Sewerage Board (MWSSB) constituted in 1997. It is responsible for constructing and handing over rural water supply infrastructure to Village Panchayats in rural areas and Urban Local Bodies (ULBs) in urban areas. ULBs and Panchayats are then responsible for the operation and maintenance of these newly-created assets, as well as major repairs and the renovation of schemes over time, using a variety of different funds. In reality, however, they do not always give priority to renovation and major repairs, causing service delivery to fall over time. The typical response is to create a new scheme, a phenomenon that the World Bank (2005) termed the 'build-neglect-rebuild' model of water infrastructure.

The innovative World Bank-supported rural water supply and sanitation SDM (Jalswarajya) was implemented from 2003-2009 through a Reforms Support and Project Management Unit (RSMU) in 3,000 Gram Panchayats (of 27,000 in the state) in 26 of the 33 districts of the state. A KfW-supported water supply project (Aaple Pani) is being implemented in three districts, and the Sector Reform Project and Swajaldhara in the remaining four districts. All are founded on community-based management, but do not presently cover all villages in each district.

Jalswarajya (or 'water self-management') has a 100-member state-level RSMU and 25-member district-level units, each with a mixed group of technical, administrative, social and financial skills. Each district has a strong support structure comprising a District Facilitation Team (to oversee infrastructure

[30] Although the state of Orissa was also covered in the study, the Swajaldhara SDM operates in almost exactly the same way. Since it is a national SDM, it has been omitted from this report for the sake of brevity and simplicity of exposition.

[31] For more details on this SDM, see Water and Sanitation Management Organisation (2009).

provision), a District Appraisal and Monitoring team (to oversee the quality of processes) and a District Finance Monitoring Team (to oversee finances). At village level there is a Village Water and Sanitation Committee (to contract out the construction of infrastructure and then to operate and manage it), a Women's Empowerment Team (to provide income-generating opportunities for women working in water and sanitation activities), and a Social Audit Committee (to check and approve contracts and payments made). NGOs and para-professionals support villages.[32]

Jalanidhi SDM (Kerala): The Kerala Water Authority (KWA) was solely responsible for the design, construction and maintenance of all rural water supply schemes in the state until 1998 when, as part of the unique People's Planning Campaign (since 1996), the Government of Kerala barred the KWA from initiating any more single-village schemes and asked it to hand over all existing schemes to Gram Panchayats. It gave the Gram Panchayats power to implement and maintain the schemes and to levy and collect water charges for their operation and maintenance (RDC, 2008, p. 11).[33] The Government of Kerala also approached the World Bank for funding support to implement a new demand-driven community-based rural water supply and sanitation project, which was accordingly formulated as the Kerala Water Supply and Environmental Sanitation Project (or Jalanidhi), and implemented from 2000 to 2008 (World Bank, 2009b). The Government of Kerala then created the Kerala Rural Water Supply and Sanitation Authority (KRWSA) as an autonomous institution under the Department of Water Resources, which acts as the Project Management Unit (PMU). The project was operational in four of the 13 districts in the state, each of which had a district-level PMU (DPMUs), although the project did not cover all villages in each district. The PMU itself has multidisciplinary specialists from both government and the private sector.

The project engaged NGOs to be Support Organisations, and provided extensive capacity-building and trouble-shooting services, but the real strength of the SDM is the creation and empowerment of Beneficiary Groups, and their federations, as well as the responsibility and leadership shown by the Gram Panchayats in the project areas.[34]

4.2.2 Institutional responsibilities for the different stages in the life cycle of service provision

The division of responsibilities in the three SDMs, including the government-led Swajaldhara, is summarised below (All India—Tamil Nadu given as an example) and then discussed in greater detail.

Planning: In the Swajaldhara SDM, water supply schemes are planned by RWS engineers at sub-district level and approved by the RWS Superintending Engineer (SE) of the district. In the WASMO and

TABLE 9: SWAJALDHARA SDM: INSTITUTIONAL REPONSIBILITIES

Agency	Major responsibility
Tamil Nadu Water Supply and Drainage (TWAD) Board	Main operators, support providers, implementer and lead agency: Responsible for design and construction of all water supply infrastructure in rural and urban Tamil Nadu (except Chennai Municipal Corporation), including bulk water and village-level distribution, and the O&M of infrastructure except that handed over to Urban Local Bodies (ULBs) or Village Panchayats (only single-village schemes) for maintenance. TWAD does the O&M of all combined water supply schemes (CWSS).
State Water & Sanitation Mission (SWSM)	Policy formulation and sector overview, but little connection with TWAD Board operations.
District Water & Sanitation Mission (DWSM)	Coordination across district-level departments, but little influence on TWAD Board operations in the districts.
Village Panchayats (VP)	Responsible for O&M of village-level drinking water distribution network. Can request assistance from TWAD engineers to tackle problems.
Village Water & Sanitation Committees (VWSC)	Formed as part of the national Swajaldhara programme, but not operational in all village Panchayats (only in 3,244 of the total of 12,620 in the state).

[32] For more details on this SDM, see RSPMU (n.d.).

[33] Within India, Gram Panchayats in Kerala are unusually and uniquely large, with an average population of around 30,000 (World Bank 2009b, p. 15).

[34] For more details on this SDM, see World Bank (2009b) and RDC (2008).

TABLE 10: WASMO SDM (GUJARAT): INSTITUTIONAL RESPONSIBILITIES

Agency	Major responsibility
Sardar Sarovar Narmada Nigam Limited (SSNNL)	The 'bulk supplier' of Narmada water for domestic and industrial use. Supplies water to Mahi Right Bank Canal (MRBC) authority, GWIL and directly to industries and municipal authorities.
Gujarat Water Infrastructure Limited (GWIL)	GWIL is the 'bulk carrier' of drinking water and is responsible for O&M of bulk transmission lines.
GWSSB	Distributor of rural water—responsible for implementing connectivity to the bulk water pipeline projects for supplying water to the village-level distribution system. Looks after the O&M of distribution lines with pumping stations including filtration plants also simultaneously with the execution of bulk water pipelines. GWIL and GWSSB purchase bulk water from SSNNL.
WASMO	Supports Pani Samitis in designing, implementing, operating and maintaining village-level drinking water distribution network. Ensures that reform principles are followed, facilitates design and implementation of people-based policies and frameworks.
Implementation Support Agencies (ISAs)	Facilitate community-based processes like formation of Pani Samitis, training and community capacity building.
Pani Samitis	Implement WS schemes, collect O&M charges from communities, identify and pay contractors, operate and maintain the in-village WS system. The state, however, pays for and owns the assets created.

TABLE 11: JALSWARAJYA SDM (MAHARASHTRA): INSTITUTIONAL RESPONSIBILITIES

Agency	Major responsibility
Maharashtra Jal Pradeekaran (MJP)	Design, construction and handing over of rural water supply schemes to local bodies—except in Jalswarajya project areas. Major system repairs are carried out by MJP engineers at district and lower levels.
Groundwater Survey and Development Agency (GSDA)	Groundwater surveys and mapping, including aquifer mapping under the new Jalswarajya Project, in rural areas of Maharashtra.
RSPMU	Support Jalswarajya project district teams and villages on a range of issues including hydro-geology, women's empowerment, IT, etc.
District teams	Oversee technical and financial issues in Jalswarajya districts and villages.
Village Panchayats (VPs)	Support the VWSCs oversight of operation & maintenance of schemes constructed and handed over by MJP.
Village Water and Sanitation Committees (VWSCs)	In Jalswarajya and Swajaldhara villages, VWSCs are sub-committees of the Gram (Village) Panchayat and are responsible for making Village Action Plans (VAPs) for RWSS, community contracting for construction of water infrastructure and NGOs as support organisations, and O&M of created infrastructure (including collecting charges and contributions: 10% construction costs, collected prior to construction + 100% O&M costs after construction).
Social Audit Committee	Supervises and monitors all financial transactions entered into by the VWSC.
Women's Development Committee	Prepares a women's empowerment plan and facilitates women's active participation in project activities.
Procurement Sub-Committee	Assists the VWSC in carrying out all procurement activities.
Finance Sub-Committee	Assists the VWSC in all finance-related activities.
Works Supervision Sub-Committee	Assists the VWSC in supervising all construction-related activities.
Support Organisations (SOs)	Support VWSCs and VPs and facilitate community-based processes like technical and non-technical capacity building.

TABLE 12: JALANIDHI SDM (KERALA): INSTITUTIONAL RESPONSIBILITIES

Agency	Major responsibility
Kerala Water Authority (KWA)	Design, construction and maintenance of multi-village rural water supply schemes.
Project Coordination Committee	Comprises top bureaucrats and chaired by the Minister. Formulates and passes facilitative government orders and liaises between state-level departments.
Kerala Rural Water Supply and Sanitation Agency (KRWSA)	The Project Management Unit (PMU) of the Jalanidhi project. Supports project district teams and villages on a range of issues including capacity building, women's empowerment, appropriate technology, etc.
District PMU	Examines and approves Community Empowerment Plans (CEPs) submitted by each Grama and sanctions funds accordingly; provides a financial channel for state government funds to flow directly to the new bank account opened by the Grama Panchayat for Jalanidhi schemes.
Gram Panchayats (GPs)	Oversee all phases of the scheme, from pre-planning to post-construction, and provide political, institutional and social back-up for Beneficiary Groups (BGs) in all their activities, especially when BGs or their federations are unable to tackle issues.
Beneficiary Groups (BGs)	Registered societies responsible for making Community Empowerment Plans (CEPs) for RWSS, construction of water infrastructure (through community contracting), O&M of created infrastructure and collection of user charges and contributions (15% construction costs, collected prior to construction + 100% O&M costs after construction).
Beneficiary Group Federations (BGF)	Body comprising representatives from all Beneficiary Federations (BFs) in a Grama-Panchayat, chaired by the Panchayat President and including Panchayat members, responsible for all technical, institutional, social and political support to BGs.
Panchayat Project Assistants	Local community members who help transfer data and information between the Grama-Panchayat and the DPMU and maintain accounts at GP level.
Support Organisations (SOs)	NGOs appointed by the GP from a pre-approved list of the KRWSA, for the social mobilisation of various CBOs (schools, Yuvak Mandals, etc.), planning, designing and implementation of water supply and sanitation facilities, planning and implementation of environmental mitigation measures and source protection, hygiene education, training of various sub-group members and liaison with Gram Panchyats.
Construction Quality Monitors	Independent consultants appointed to ensure quality as well as timely and proper construction during the implementation phase.

Jalswarajya SDMs a consultative process is followed with the members of the CBO (e.g. Pani Samiti, Village Water and Sanitation Committee or Beneficiary Group) and the engineers of the supporting PMU, i.e. WASMO and the RSPMU in Jalswarajya and the KRWSA in Jalanidhi. In addition, in the Jalanidhi and Jalswarajya SDMs, the SOs and TSPs respectively provide technical services for planning the rural water along with the community. The KRWSA and RSPMU mainly look at finding technological solutions to issues like water quality, metering, regulating piped water flows and source sustainability.

Construction: In the Swajaldhara SDM, construction is carried out by contractors selected by RWS engineers, although community members contribute 10% of the total cost in cash or kind. In the others, however, contractors are hired by the CBOs (the Pani Samiti in the WASMO SDM, the VWSC in the Jalswarajya SDM, or the Beneficiary Group in the Jalanidhi SDM). The CBOs are also involved in 'community contracting', a process first begun in the World Bank-supported Swajal Rural Water Supply Programme in Uttar Pradesh in the mid 1990s and in the DANIDA-supported Tamil Nadu Rural Water Supply Project around the same time. In this process, CBO members list the material required, approach vendors (approved by the technical staff of the central Project Support Unit), place orders, check the consignment that arrives before paying the vendors by a cheque from the CBO. In the case of the Jalswarajya SDM, this process goes further in two areas: (1) the Gram Panchayat is empowered by state government policy to undertake construction work that is less than

Rs. 100,000 in value—and does not have to tender or contract such work even to RWS engineers;[35] and (2) the village Social Audit Committee, another CBO, scrutinises and approves all contracts issued and payments made by the VWSC, and takes action if discrepancies or corruption is discovered. In the Jalanidhi SDM, the Government of Kerala instructed the Kerala Water Authority to hand over all existing single-village rural water supply schemes to the Gram Panchayats and to let Beneficiary Groups and the Grama Panchayats construct all such schemes in future. In all new schemes constructed, the Beneficiary Groups carried out their own construction, bringing down costs by up to 20% of the estimates provided by the Kerala Water Authority (RDC, 2008).

Thus, in the WASMO, Jalswarajya and Jalanidhi SDMs, the Gram Panchayat plays a critical role in overseeing construction, though SOs, BGs and BGFs have a more direct supporting role at village level.

Operation and maintenance: All SDMs including Swajaldhara specify that 100% of O&M costs are to be borne by the community. This provision was integral to the Sector Reforms Pilot Projects begun in 1999, but caused some degree of confusion among both CBOs and engineers when it came to how the community could be made responsible for undertaking 'major repairs', such as a pump motor burning out or a pipeline burst, which entail relatively high costs, as compared to 'minor repairs'.[36] However, in the WASMO SDM, even major repairs are carried out using village funds. In the Swajaldhara SDM, although the VWSC should carry out all repairs, the *de facto* situation is that the CBOs carry out all minor repairs and when the repair is major, government engineers are called in. Neither the Jalswarajya nor Jalanidhi SDMs have faced major repairs yet, since the infrastructure is fairly new.

Day-to-day operations—such as operating the pumps, collecting user charges and maintaining accounts—are the responsibility of CBOs in all SDMs, i.e. VWSCs (Swajaldhara and Jalswarajya SDMs), Pani Samitis (WASMO SDM) and Beneficiary Groups (Jalanidhi SDM). Minor repairs, such as replacing washers or taps and preventive maintenance (e.g. tightening screws on handpumps) are also the responsibilities of CBOs. However, actual performance depends on the strength and commitment of the CBOs. In Tamil Nadu village Panchayats implementing Swajaldhara schemes, for instance, VWSCs were either inactive or completely non-functional (i.e. have not met since the VWSC was formed, with meetings happening only on paper).[37] By contrast, the Jalswarajya SDM has also set up a Women's Development Committee (WDC) to provide livelihoods for village women and, in many cases, women's Self Help Groups (SHGs) have been awarded contracts for the O&M of the village water supply system. This is a unique feature that allows women, the main stakeholders in sustainable water supply, to earn from work that simultaneously maintains their water supply service. In the Jalanidhi SDM, although there is no formal institution like the WDC, there has been a strong focus on providing livelihood opportunities to women and several new enterprises have been set up, although not necessarily connected with rural water supply (RDC, 2008).

Monitoring: This is supposed to be done by community organisations, but tends to be the weak link in the project implementation cycle, as in most other cases worldwide. Village-level data is largely restricted to financial accounts. However, active CBOs in the WASMO, Jalswarajya and Jalanidhi SDMs do a better job at monitoring, largely because improved services have increased community responsibility and interest in monitoring the system. This was also apparent in the pilot Tamil Nadu Rural Water Supply Project (TNRWSP) where RWS engineers motivated by the change management process focused on enhancing community awareness of the value of water and the need to monitor leakages and overall system performance (Pragmatix Research & Advisory Services, 2007). The financial monitoring system of the Jalanidhi Project was judged to be one of the best among all World Bank RWSS projects and was set up by a dedicated team led by a chartered accountant (RDC, 2008).

Post-construction support: As mentioned earlier, maintenance (including post-construction repairs) is formally the responsibility of the community in all SDMs, but support for major repairs is provided by government RWS engineers, except in the WASMO SDM, where the Pani Samiti uses its own funds to hire even private contractors for repairs. Training and exposure visits are part of the capacity building provided to CBOs under the WASMO, Jalanidhi and

[35] The RWS engineers are in the Maharashtra Jeevan Pradhikaran (MJP), formerly the Maharashtra Rural Water Supply and Sewerage Board (MWSSB), constituted in January 1997. The MWSSB was renamed the MJP in March 1997 (Maharashtra Jeevan Pradhikaran, 2010). Although they were like any other Water and Sewerage Board in the country, creating water supply infrastructure using government funds, they have now been re-organised to earn revenue through contracted work. However, in the Jalswarajya MJP, according to the Project Manager, Mr.Dhiraj Kumar, IAS, they have to submit bids to undertake construction work just like any private contractor, but cannot undertake work of less than Rs. 100,000 in GPs because of the state government's policy (Kumar, 2010).

[36] For an assessment of similar problems with the predecessor of Swajaldhara, the Sector Reform Pilots Project, see James (2004b), especially section 6.1, pp. 66–68.

[37] Based on an independent assessment for the Tamil Nadu Rural Water Supply Project (Pragmatix Research & Advisory Services, 2007) and discussions with RWS Engineers of the Tamil Nadu Water Supply and Drainage Board (Anbazhagan, 2010).

Jalswarajya SDMs, but it is largely missing in the Swajaldhara SDMs. The Jalswarajya SDM also had two interesting features, the Sustainability Evaluation Exercises (SEE) and Community Monitoring, that were conducted periodically to assess the status of service delivery after construction (World Bank, 2010; see Annex 5 for details). These would be good practices to replicate in the larger government programmes, such as Swajaldhara and the ARWSP, but it is too early for such changes.

In all cases, again, the Gram Panchayat has a critical role in addressing social and political issues connected with opposition to payments, unequal supply, repairs and liaison with government departments whose activities affect rural water supply provision.

4.2.3 Coordination mechanisms and platforms at intermediate level

All the major donor-funded rural water supply projects are implemented at state level and therefore coordinated through a Project Management Unit at that level. This is the case with all the World Bank-funded projects, such as the successful and path-breaking Swajal project in Uttar Pradesh in the 1990s.

The Jalanidhi SDM in Kerala has the KRWSA based in Trivandrum, the state capital, while the Jalswarajya SDM has a Reforms Support and Project Management Unit (RSPMU) in Mumbai, the state capital of Maharashtra, and the WASMO SDM has the PMU in Gandhinagar, the Gujarat state capital. All three are responsible for overseeing and coordinating the project across various districts in the state. These state-level units provide a range of support services for the district units, including capacity building, special studies, publications, liaison with NGOs and government departments, hiring and training new staff, data management and troubleshooting, and holding regular coordination meetings and workshops to ensure that district and sub-district activities are running well.

The Jalswarajya SDM has three district teams (the District Facilitation Team (DFT), District Appraisal and Monitoring Team (DAMT) and District Financial Management Team (DFMT)) to support the implementation process at village level. Team members are drawn from government departments (on deputation) and the private sector, and the teams report to the Chief Executive Officer of the district administration. The SDM also has Service Providers (SOs), largely NGOs, to support community mobilisation and strengthening of CBOs, Technical Service Providers (TSPs), who were contracted (after a bidding process) from government engineering departments (here, the Maharashtra Jeevan Pradhikaran) and the private sector, and Resource Centres built around well-performing VWSCs to support other nearby villages. An interesting feature of this SDM is that both SOs and TSPs are selected after a bidding process, so that NGOs are not guaranteed a contract on the sole basis that they work in the same region, and government engineering agencies are not selected to be a TSP just because they have the capability. They have to qualify in a regular bidding process, competing with other bidders, including private companies. This SDM also has a unique mechanism called the Initial Capacity Building Fund, to carry out exposure visits, orientation workshops for CBOs, IEC activities and village-level discussion forums (RSPMU, n.d.).

WASMO has Implementation Support Agencies (ISAs) that include NGOs to provide community mobilisation and facilitation services. In addition it has a Community Mobilisation Unit, Engineering Support Cells, Coordination Monitoring and Support Units and a Documentation and Communication Unit. The Community Mobilisation Unit is responsible for training programme staff and for interacting with ISAs and Pani Samitis to develop and implement participatory plans, and to coordinate between all the different groups (i.e. Coordination Monitoring and Support Units, Engineering Support Cells, Implementation Support Agencies and Pani Samitis) to ensure smooth programme implementation. The Documentation and Communication Unit focuses on awareness generation through information, education and communication (IEC) activities (i.e. meetings, campaigns, radio programmes, manuals, brochures, leaflets and posters) targeted at local community members and leaders (e.g. village leaders, Pani Samiti members, school teachers, doctors and Public Health Engineering Department engineers).[38]

The Jalanidhi SDM has Support Organisations (SOs), NGOs that provide a range of services including community mobilisation of the village community and various sub-groups (e.g. schools and youth groups), facilitating the planning, designing and implementation of water supply and sanitation infrastructure (including conducting PRA and questionnaire-based baseline surveys), planning and implementation of environmental mitigation measures and source protection, hygiene education, capacity building of community members, as well as liaising with Gram Panchayats. A state-level capacity building unit called CapCell coordinates training courses across all project districts and villages (RDC, 2008).

In stark contrast, the Swajaldhara SDM has neither state nor district-level support units.

[38] Water and Sanitation Management Organisation (2010a).

4.2.4 Monitoring and information systems for full service delivery

The Department of Drinking Water and Sanitation has an online physical and financial monitoring system to track habitation-level progress in all 601 districts of the country across 28 states and six union territories (www.ddws.nic.in). The website is regularly updated with information sent by every district in the country. This, however, does not cover the achievement of service delivery norms, i.e. the quality of water supply delivery. Until 2004, the department used to conduct an all-India survey of coverage at habitation level, to determine whether habitations were 'fully covered', 'partially covered' or 'not covered', using the ARWSP norms (Box 5).

These norms have been endorsed in the new National Rural Drinking Water Programme, with only one change—coverage is no longer measured on the basis of habitations (i.e. 'fully covered', 'partially covered', etc.) but according to the percentage of the population covered (e.g. 0–25%, 25–50%, etc.; see Box 2).

In addition to this national-level monitoring, each state has monitoring and information systems for rural water supply. These are not published in Annual Reports but are available for internal decision making. These are usually with the office of the Engineer-in-Chief of the RWS or PHE Departments, and data and information are made available in Internal Notes at the request of senior officials like the Secretary of the department. Unlike the national online monitoring system, it is not available to the general public. However, the state of Andhra Pradesh has pioneered an asset management and financial tracking software called 'WaterSoft', created and maintained by the government software agency, the National Informatics Centre, for the state Rural Water Supply Department. Commissioned by the RWS Department, WaterSoft is based on information provided by the department and currently contains technical and cost information on all RWS infrastructure created in the 72,000 habitations (villages) in the state. It contains more information than the national database and there are plans to place this information on a GIS platform in the near future.[39] However, even this monitoring system does not currently track full service delivery.

The WASMO, Jalanidhi and Jalswarajya SDMs have online web-based monitoring and information systems

BOX 5: RGNDWM NORMS FOR RURAL DRINKING WATER SUPPLY

- Human Consumption: 40 litres per capita per day (lpcd) to meet the following requirements: Drinking (3 lpcd), cooking (5 lpcd); bathing (15 lpcd), washing utensils & the house (7 lpcd) and ablutions (10 lpcd). For a family of five this works out to 200 litres per household per day.
- Animal consumption: 30 lpcd in hot and cold desert ecosystems (in 36 districts identified in the states of Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka and Rajasthan.
- Water source availability: With normal output of 12 litres per minute, one hand pump or stand post is estimated for every 250 persons (unless there is no potable water source, in which case one hand pump can be provided for a habitation of less than 250 persons).
- Coverage:
  - 'Not covered' or 'No safe source' habitation (NC/NSS): A habitation with no private or public drinking water source that is safe (i.e. without quality problems such as excess salinity, iron, fluoride, arsenic or other toxic elements or biological contamination), adequate (i.e. 40 lpcd for 250 persons or less), accessible to all, and within 1.6 km of the habitation (or 100 metre elevation in hilly areas).
  - Partially covered (PC): Habitations with a private or public drinking water source that is safe, accessible to all and within 1.6 km. in plains (and 100 meters in hilly areas) but with a capacity of only 10 to 40 lpcd.
  - Fully covered (FC): Habitations with a private or public drinking water source that is safe, adequate and accessible to all, within 1.6 km of the habitation (or 100 meter elevation in hilly areas).

Source: Ministry of Rural Development (2002, p. 144) cited in James (2004b).

[39] Based on discussions with the Principal Secretary, RWS, Government of Andhra Pradesh (Ramachandran, 2010) and the Technical Director of the state unit of the NIC, Mr. HanumanthaRao (Rao, 2010) as part of the WASHCost Project in the state supported by the Bill & Melinda Gates Foundation.

of their own, websites and hard-copy newsletters and reports on progress at district and even village levels.[40] The MIS of the Jalanidhi SDM was judged one of the best in the RWS sector in the country by the World Bank (World Bank, 2009). The Financial MIS, which is part of the MIS, was set in place by a team headed by a chartered accountant and has been widely appreciated.

4.2.5 Strategic planning for full life-cycle service delivery at intermediate level

In the case of the Swajaldhara SDMs, the planning of roles and responsibilities for other phases, including capital investment, operation and maintenance and monitoring, was worked out at national level at the time the scheme was implemented. District-level operations, however, require a thorough understanding of the provisions of the national Swajaldhara guidelines and local decision making to exploit the leeway provided in the national guidelines to adjust to local situations. Unfortunately, in most states, including Tamil Nadu and Orissa, Swajaldhara has become just another rural water supply scheme, albeit with some 'inconveniences' for RWS engineers, such as forming VWSCs and sharing responsibility for operation and maintenance. There is, therefore, little strategic planning for the full life cycle of service delivery at intermediate level. Priorities are set by RWS engineers and often the guidelines of demand-responsive self selection are followed only in letter and not in spirit, with local politicians and engineers deciding which villages are to be selected and asking the village to put in an application (in the prescribed format) to be selected for the Swajaldhara scheme. In many other cases, contractors fill in the forms and even put up the initial 10% capital cost contribution—which is supposed to come from the community—in return for 'getting the scheme sanctioned' and a construction contract (James, 2004b).

In the case of the Jalswarajya, Jalanidhi and WASMO SDMs, there are also guidelines for strategic planning at state level but because of dedicated state-level coordination units, these are less rigid and can be modified relatively more quickly on the basis of field experience. In addition, the strong training and information-sharing systems in these SDMs ensure that all staff are aware of the guidelines and how to implement them. They are also aware that local situations may require modifications and are encouraged to find local solutions and discuss these experiences at workshops and meetings in the state unit. Priorities are set by CBOs in all three SDMs, based on local conditions and demand.

In all three SDMs, thus, planning for rural water supply infrastructural investments is done at the local level while capital investment is from state government funds. In none of the SDMs, however, is there long-term strategic planning in terms of phased investment for future demand or adaptation to threats from climate change to source sustainability (Batchelor, et al., 2010).

4.2.6 Project implementation approaches

All three SDMs follow a demand-driven, participatory and community-based approach to rural water supply provision. However, this is applied much better in the Jalswarajya, Jalanidhi and WASMO SDMs than in the government's Swajaldhara SDM, largely because staff are better informed about the concept and interpretation of the approach on the ground and also more experienced in participatory approaches to development in general. In the WASMO approach, for instance, there were intensive discussions and consultations on the approach, using academics and NGOs, before it was finalised. Similarly, in Jalswarajya and Jalanidhi, the World Bank provided inputs on the approach at the start of the project, although the staff of the PMUs, in discussion with district unit and resource persons, did a large part of the strategic thinking on project implementation approaches in all of these SDMs. The implementation approaches were further fine-tuned on the basis of field experience in the three SDMs.

In the Swajaldhara SDM, by contrast, although there was considerable discussion with external support agencies like the World Bank and DANIDA at the beginning before officials at the Rajiv Gandhi National Drinking Water Mission finalised the approach, state and district-level officials who had to implement the approach on the ground understood it inadequately. A study in 2004 on the implementation of Swajaldhara in the southern state of Andhra Pradesh concluded: 'It is clear that national and state governments were unprepared for the SRPPs, and it took a long time to put in place even the minimal support structure required for implementation, including conceptual clarity, capacity building inputs and a monitoring system' (James, 2004b, p. 64).

The Swajaldhara approach is, in fact, a telling commentary on the importance of consultation and process in formulating the basic approach—and a glaring lapse in a programme based on participation, demand-responsiveness and transparency. What the experience clearly brings out is that 'an approach that is well-understood by senior bureaucrats in New Delhi and Hyderabad need not be clearly perceived by

[40] For a brief description of these systems in Jalswarajya, see World Bank (2010, p.7), while for WASMO see Water and Sanitation Management Organisation (2009).

even senior level state and district staff' and conversely, 'if those with the knowledge of current field reality had been consulted through seminars and workshops *prior* to formulation of the project or programme, many potential loopholes and flaws could have been spotted and attended to earlier' (James, 2004b, p. 67).

Fortunately, the WASMO, Jalanidhi and Jalswarajya SDMs had improved processes to fine-tune their basic approaches, and the better results in practice demonstrate the importance of these processes (Box 6, Box 7, and Box 8).

4.2.7 Capacity to fulfil functions for service provision and governance

All state RWS and PHE departments have a competent cadre of civil engineers, trained in Indian institutions and capable of designing all manner of RWS schemes, including innovative multi-village schemes. Most states, however, have a shortage of staff, with actual staff much lower than sanctioned strengths. Furthermore, there is a more serious lack of capacity to provide governance over rural water supply provision. The low capacity to fulfil functions for governance under the demand-responsive and community-based approach of the Swajaldhara SDM has been pointed out by several studies (e.g. James, 2004b; Joshi, 2004). The problem was making technically-trained engineers work on socioeconomic and institutional issues that are the basis of community-management. This is not to say that the central and state governments did not make attempts. There are designated training institutions in the country where RWS engineers are sent for training, but the selection of engineers to be sent for training and the quality of training programmes tend to be uneven.[41]

Despite these attempts, James (2004, p. 66) found that 'While there were facilitating government orders, training manuals, clarity on institutional structures, establishment of a project support unit, and IEC guidelines, the operational details of the sector reform approach were just not understood well enough by senior and junior level government staff in state and district offices. Thus implementation of these pilot projects continued in the same supply-driven top-down community-insensitive mode of traditional rural water supply infrastructure delivery—except that the same government engineers were not doing community mobilisation as well.' A key problem was that the same engineers were being used for the new approach, but without adequate training or capacity building to undertake these new roles and responsibilities. However, the root of the problem probably lies in the historically low priority given to training and

BOX 6: WASMO'S CONCEPTUAL INNOVATION

'The community participation approach needed an altogether different kind of governance which would provide an enabling environment for engaging the users in planning, the development of infrastructure and owning up of Operation and Maintenance of service delivery. The traditional approach was not able to engage the citizens in the programme.

The RNE-assisted project had been struggling for more than four years since 1998 and still no village water and sanitation committee could be formed. The feeling of trust needed for community engagement could not be developed and the partnerships with NGOs were not working due to rigid engineering bureaucratic dominance.

Due to the above scenario, it was decided at the level of the Government of Gujarat to innovate a new form of governance that would provide an enabling environment to the community in which social process would be of paramount importance. The policy-making and implementation at grassroots level would be interactive and strive for engaged governance. People would be involved at every level of planning and implementation, and in decision-making, and be given full control over finances. In line with the principle of subsidiarity—that anything that can be done at a lower level should be done at that level—functions, funds and functionaries had to be devolved to the lowest level of governance. At policy level, these'3 Fs' may have sufficed but proactive facilitation was envisaged as a conceptual innovation for the decentralised community managed water supply programme. It was also decided to develop horizontal networks with non-governmental organisations, funding agencies and other sector players.'

Source: Water and Sanitation Management Organization (2009, p.8).

[41] For example, the Centre for Good Governance at the Administrative Training Institute (ATI) in Nainital in Uttarakhand state was a Key Resource Centre for the Department for Drinking Water and Sanitation for several years. The new National Rural Drinking Water Programme, however, has designated many more national institutions for capacity building (see Box 4 for a list).

BOX 7: THE JALANIDHI APPROACH

- **Demand-driven approach:** Unlike the supply-driven approach hitherto followed, this project is being implemented on the basis of the needs of the people, expressed through their willingness to pay and to participate in project planning and implementation. This inculcates them with a sense of ownership.
- **Cost-sharing:** To ensure ownership of the project, 15% of the capital cost is borne by the beneficiary community. The Grama Panchayath bears 10% and the remaining 75% is borne by the Government of Kerala.
- **Ownership and financial viability:** The users themselves meet 100% of the recurring costs of operations and maintenance. This lightens the burden on the State Exchequer, thereby helping the government to utilise this money for other priority needs.
- **Community contracting:** The users themselves are fully involved in all activities, from identifying their sources, deciding on the technology to be utilised, community contracting and implementation. All contracting of goods, works and services is done at the user level itself for which adequate training is provided and guidelines made available to the User/Beneficiary Groups.
- **Pro-poor approach:** Special efforts have been made in the project design to include the poor and the vulnerable when selecting the user groups … [and] to incorporate the beneficiary contribution either in cash, kind, or labour. There is … a special component for the tribals in the project area… [and] special provisions for beneficiary groups based on Scheduled Castes, Scheduled Tribes and fisher folk communities.
- **Community empowerment:** Capacity building and equipping the community to operate the project is a major thrust area of this project as this is planned, designed, implemented, owned and operated by the users themselves. This will not only ensure the involvement of the people but will also chart a new path to community-based responses for meeting local needs.
- **Integrated approach:** In order to ensure the sustainability of safe drinking water, components like groundwater recharge and rainwater harvesting, environmental sanitation, health, hygiene and sanitation education, and women's empowerment have been integrated into the project design.
- **Utilisation of available resources:** The Water Supply Schemes, already operational in these project areas either under the KWA or the local Grama Panchayath, are also rehabilitated and handed over to the user groups … [to ensure] efficient utilisation of investments made and [improved services for]existing beneficiaries.
- **Dovetailing with Decentralised Planning:** This project is being operationalised through Grama Panchayaths and beneficiary groups, thereby acknowledging and strengthening … decentralised planning in Kerala.

Source: RDC (2008, pp. 7–8)

capacity building, where training is seen as a necessary evil by trainees as the quality of courses and trainers tended to be poor. This was true all over the country but was captured in the case of the Andhra Pradesh as follows:

'[D]istrict-level demand for good training and trainers—prior to even community mobilisation—had to come from awareness of the importance of good training. And the only way district administration and RWS officials would know about the importance of training is if they were to go through training themselves. Thus, capacity building has to be planned in an iterative fashion, so that personal experience of trainees can turn them into trainers and crusaders for training. Interestingly, this principle is well understood by district RWS in the context of selecting first round habitations so that "success can inspire people in other habitations and can be shown as a model for other villagers".' (James, 2004b, p. 67).

The WASMO, Jalanidhi and Jalswarajya SDMs, however, have much better capacities to fulfil their functions of service provision and governance. A major part of the reason behind these improved staff capacities is the fact that a large proportion of the PMU and DPMU staff were hired from the open market. In WASMO, for instance, around 85% of the

BOX 8: THE JALSWARAJYA APPROACH

- 'The community must make a partial contribution (of at least 10%) toward the cost of water supply and sanitation facilities.
- The community must finance 100% of the cost of operation and maintenance (O&M) of water supply and sanitation facilities.
- The government is to shift its role from direct service delivery to that of policy formulation and providing capacity support to local governments, villages and communities.
- Prior to planning, designing, and implementing water supply and sanitation facilities, Information, Education and Communication (IEC) campaigns are to be conducted to inform beneficiaries of key elements including the participatory approaches of the new RWS&S program.
- Women's involvement in water and sanitation-related decisions are to be incorporated through representation in Village Water and Sanitation Committees (VWSCs) at the VP level, specifying the role of 'Mahila Mandals' (women's committees) in certifying scheme completion and choices in the training and selection of women caretakers.
- A three-pronged strategy of water conservation, preservation and utilisation through managing demand, and regulating over-extraction of ground water is to be applied.
- Independent monitoring and evaluation of RWSS works by reputed institutions ... [for] unbiased feedback.
- Human resource development activities to be conducted for village-level workers involved in RWSS' (p. 5).

Strengthening Gram Panchayats as executing agencies

'The project is a major shift from the earlier supply-driven to demand-driven mode and hence would need investment in community participation, mobilisation and strengthening Village Panchayats. In order to achieve the set objectives, the Community Development component is the major aspect. It aims at mobilisation and empowerment of the primary stakeholders of the project (the rural community) and to build their capacity for planning, implementing and monitoring the new scheme and to build the institutional capacity of the GP' (p. 5). '[The Gram Panchayat] is the executive arm for project activities. The GPs will contribute a minimum of 10% of the project costs (5% in the case of Tribal GPs)' (p. 7). 'Keeping in line with the demand-driven approach the GPs are to be included by a self-selection process' (p. 6).

Community mobilisation

'The mobilisation of women power has played a major role in the project. The necessity of a water supply facility was initially discussed at the meeting of women residents of the village and it is only on their approval a general gram sabha decided to sign overall financial agreement.' (p. 8) 'Various workshops for existing CBOs, exposure visits of GP members and women to create awareness in them about the project principles were carried out. These activities were helpful in mobilising the community for participatory approach with all the peoples from all habitations and need of the project is understood by all. The IEC campaign was useful in the project themes making known to the community.' (p. 8)

'The Participatory Rural Appraisal carried out with involvement of the community proved to be extremely useful in mobilising the community in selecting the most appropriate option ... PRA is carried out in the project GP with the help of SOs and by involvement of the community. It is done after giving ICBF to the selected VPs.' (pp. 11–12)

Support organisations

'A simultaneous activity of contracting services of Support Organisations (NGOs) was undertaken by the GP to conduct PRA, the collection of baseline data, and capacity building activities. (p. 8)

(Continues) ▶

◀(Continued)

BOX 8: THE JALSWARAJYA APPROACH

Sustainability

'The main focus of the project is on the sustainability of investments. An effort is made to create mechanisms to involve all sections of the communities in the selection of technical options that are affordable, and environmentally and operationally sustainable. For this purpose, the source sustainability analysis would be made part of the participatory appraisal at the community level. The focus would be on developing low-cost technical choices, with emphasis on recharge measures and conservation of ground and surface water.'

Capacity building

'The major challenge in managing the transformation of the sector from a supply-driven to a demand-driven approach and also scaling up the reforms in a state-wide manner is to build the capacity of the project stakeholders at different levels. The community capacity building activities at the village are undertaken under the Community Capacity Building component, a part of Community Development... [to] facilitate the formation of an inclusive responsive and skilled VWSCs and to build their capacities and empower them to plan, implement, operate and maintain water supply and sanitation facilities through a participatory process.' (p. 12)

Source: RSPMU, n.d.

staff were hired in, while 15% were government staff on deputation. The situation is similar in the Jalswarajya and Jalanidhi SDMs.

While the Jalanidhi, Jalswarajya and WASMO SDMs depended on resources from outside the government system, a unique change management experiment was carried out as part of the Tamil Nadu Rural Water Supply Pilot Project (TNRWSP). This 2004 pilot initiative focused on motivating and challenging rural water supply engineers to 'do things differently'. The unorthodox appeal to engineers' self respect and sense of duty, through a series of intensive workshops facilitated by UNICEF-supported consultants, had a dramatic effect on their attitudes and behaviour, including improved community interactions, which in turn impacted on the performance of rural water supply service delivery on the ground. Although it has led to a widespread interest in the issue, there has been little spread of change management, although the states of Rajasthan and Andhra Pradesh are planning to implement the approach in their new action plans to improve service delivery in the rural water supply sector.[42]

The success of WASMO, however, underlies the provision in the new national guidelines (Department of Drinking Water and Sanitation, 2010) to set up Water Supply and Sanitation Organisations (WSSOs) in each state, subsuming the Capacity and Community Development Units (CCDUs) already set up in the wake of Swajaldhara, in order to strengthen capacities at all levels of RWS engineers and other stakeholders. The Project Monitoring Units of WASMO Jalswarajya and Jalanidhi are now set to transform into state-level WSSOs.

The Jalswarajya SDM also took several measures to support capacity building. They had district Capacity Building Consortiums comprising engineering colleges and polytechnics (hired to provide technical support to communities) and capacity-building organisations ('to build capacity and mentor and coach both district teams and support organisations' (RSPMU, n.d., pp. 14–15)). They also 'facilitated the interaction between private sector service providers and communities to expose the former to various opportunities and develop partnerships' and built 'the capacity of public service providers to deliver services in a demand-driven manner' (*ibid.*).

The Jalanidhi SDM undertook several measures to build the capacities of local communities to 'plan, implement and manage local water supply schemes in a sustainable manner' and also to develop local entrepreneurship (RDC, 2008, p. 45). These comprise skill-building, women's empowerment, and greater involvement of women in local self-governance (i.e. in Panchayati Raj institutions including Gram Panchayats, Block Panchayats and District Panchayats).

[42] On the Tamil Nadu Change Management Initiative, see Nayar and James (2010) and Pragmatix Research & Advisory Services (2007) and others.

Skill-building initiatives were again of two types, general and specific. General measures aimed to build 'self-confidence, develop the right attitude and knowledge in managing the affairs of [Beneficiary Groups] and their water supply schemes' (*id.*), while specific measures aimed at 'enhancing or imparting new skills so that these can be used to improve livelihood security of households' (*id.*).

Special needs-based capacity building programmes were developed. These were carried out by SOs, which were trained by KRWSA staff to carry out Training of Trainers (TOT) programmes and, in turn, trained trainers in community groups. For entrepreneurship training, aspiring entrepreneurs were given general training, facilitated to choose from a list of viable enterprises and offered capital grants from the project and the possibility of taking loans from financial institutions.

Selected members of Beneficiary Groups, who were mostly women, were given intensive 3–15 day training courses on 'entrepreneurship, project management, technical skills, trade skills, accounting and book-keeping, dynamics of interpersonal relationships, personality development, communication skills, problem-solving and materials management' (*ibid,* p. 46–47). Among the enterprises formed was a 'Plumbing Sena' (plumbing army) whose members received certificates from a local polytechnic after their training, were apprenticed to a master plumber (in groups of two) and worked to lay pipelines, fit taps and carry out maintenance work on the new schemes.

As far as facilities are concerned, KRWSA, RSPMU and WASMO offices have all modern equipment including computers, printers, internet connectivity, LCD projectors, conference rooms, well-furnished and air-conditioned offices, adequate stationery and vehicles, and office and transport infrastructure which do not constrain their functioning. In the Swajaldhara SDM, however, RWS engineers experience constraints in many of these issues, yet—although conditions vary widely across states—there has been constant improvement. Major remaining constraints in the Swajaldhara SDM, however, include funding and red tape for making exposure visits, conducting special studies and inviting guest lecturers, although a supportive bureaucrat or engineer can find innovative solutions.[43]

Repair and replacement facilities, including the availability of spare parts, have also improved but there do tend to be problems in the field (especially district and sub-district offices of RWS engineers) that hamper operations. Furthermore, in the majority of cases, the newer SDMs have not yet faced major repairs.

4.2.8 Embedding water services delivery in a framework for IWRM

Although neither India's 1987 National Water Policy nor its 2002 revision explicitly mention integrated water resource management (IWRM), their contents reflect IWRM principles and the priority of drinking water (Box 9).[44]

The new National Rural Drinking Water Programme has made provisions for creating hydro-geological maps for the entire country. It states as a specific objective: 'Assisting the states in using technologies like GIS/Remote Sensing for preparing good quality hydro-geo-morphological maps and identification of appropriate sites for drilling for groundwater sources and for recharge structures.'[45] However, water is a state concern and only one state, Rajasthan, has come up with a water policy that explicitly acknowledges and centres its entire policy on the concept of integrated water resource management (Government of Rajasthan, 2010). As a result, none of the SDMs analyse the water resources context explicitly or in depth, including factors like climate change and competing uses (e.g. irrigation), although the Jalswarajya SDM had a pilot study on aquifer management, implemented with the assistance of the Groundwater Survey and Development Agency (GSDA) of the Government of Maharashtra, focusing on source sustainability and management. They also carried out geophysical resistivity studies in the Deccan basalt hydro-geological areas to judge groundwater potential—which not only reduced the failure rates of boring but the use of 'sophisticated instruments' also 'increased the community's confidence in the source identification process' (RSPMU, n.d., p.47). There were also village-level groundwater budgeting exercises to improve community awareness of the approximate rainfall, recharge and withdrawal and hence the need for greater efforts to conserve water (*ibid*).

While the Jalanidhi and WASMO SDMs did not have such a component, they have also given attention to

[43] In the case of Tamil Nadu, for instance, the Project Director of the TNRWSP asked UNICEF India to fund the change management process as well as the independent impact assessment study.

[44] The relevant phrases quoted in Box 9 are almost identical across the National Water Policies of 1987 and 2002 (see Ministry of Water Resources, 1987 and 2002).

[45] Department for Drinking Water and Sanitation (2010, pp. 63–64).

BOX 9: RELEVANT SECTIONS ON WATER RESOURCE MANAGEMENT IN THE INDIAN NATIONAL WATER POLICY OF 2002

Need for a National Water Policy

1.4 Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socioeconomic aspects and needs of the states. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century, efforts to develop, conserve, utilise and manage this important resource in a sustainable manner, have to be guided by the national perspective.

Water Resources Planning

3.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and groundwater for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements / awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained.

Water Allocation Priorities

5. **In the planning and operation of systems, water allocation priorities should be broadly as follows:**
   - Drinking water
   - Irrigation
   - Hydro-power
   - Ecology
   - Agro-industries and non-agricultural industries
   - Navigation and other uses.

   However, the priorities could be modified or added if warranted by the area / region specific considerations.

Project Planning

6.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects. **Provision for drinking water should be a primary consideration.**

6.4 There should be an integrated and multidisciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. The planning of projects in hilly areas should take into account the need to provide assured drinking water, the possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints of the basin such as steep slopes, rapid run-off and the incidence of soil erosion. The economic evaluation of projects in such areas should also take these factors into account.

Drinking Water

8. Adequate safe drinking water facilities should be provided to the entire population both in urban and in rural areas. Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. **Drinking water needs of human beings and animals should be the first charge on any available water.**

Source: Ministry of Water Resources (2002). Emphasis added.

issues of source sustainability by selecting perennial sources: in the case of the Jalanidhi SDM, these were largely perennial river beds while WASMO sourced piped water supplies from the 57,000 kilometre Narmada Canal system in Gujarat.

4.2.9 Appropriate technology options

While historically rural India depended on dug wells, community tanks, streams and rivers for drinking water supply, there was a major shift to bore wells in the 1970s following UNICEF's interventions in the context of droughts in the early 1970s (Black and Talbot, 2004). Piped water schemes based on either gravity or pumping were provided later, first to public standposts and then to households. The new National Rural Drinking Water Programme, however, has raised the bar and aims at household-level coverage by piped water supplies: 'The goal should be to move up the water ladder of service delivery so that ultimately all rural households are provided with adequate piped safe drinking water supply within the household premises' (Department of Drinking Water and Sanitation, 2010, p. 5).

At the moment, however, this is not feasible for all parts of the country. Provision on the ground varies from handpumps on bore wells to multi-village piped water pumping schemes, although it is widely accepted that handpump provision is the minimum acceptable level of service. WASMO in Gujarat has the special convenience of having a sustainable source in the 57,000-kilometre canal network bringing water from the Narmada river in the neighbouring state of Madhya Pradesh. However, WASMO has also been promoting the revival of traditional water bodies as a supplementary source of drinking water supply (Water and Sanitation Management Organisation, 2010b). However, all three SDMs aim for 100% household tap connections with regular supply (even 24x7) as the objective and have gone a long way towards providing these in their project areas.

There is also a focus on reviving traditional water bodies in rural areas to provide drinking water. India has a rich heritage of water harvesting using a variety of site-specific structures and the new National Drinking Water Programme explicitly recognises the need for multiple sources of drinking water.[46] Among the 'steps to ensure source security', the programme includes the following:[47]

- 'Adopting integrated approach by revival of traditional systems, conjunctive use of surface and groundwater, storage of rainwater harvesting both at the community level and at the household level will ensure risk and vulnerability reduction'.
- 'Harvesting and storage of rainwater for drinking both at the community level and at the household level will ensure drinking water security even in adverse conditions for a few months. With sufficient storage capacity this may even be sufficient for the whole year'.

Although all three SDMs focus on rainwater harvesting, KRWSA has established a 'Rain Cell' to act as the nodal agency for rainwater harvesting and sector development management for the whole of the state for 'effective implementation of the scheme' (World Bank, 2009b, p. 46).

Metered connections are the next step and although a start has been made in the KfW-supported Aapni Yojana rural drinking water scheme in Rajasthan, where bulk meters were provided at public stand posts (www.aapniyojna.org), provision of metered household connections is still a relative novelty. Both WASMO and Jalswarajya are planning to introduce metered household connections in the near future as official policy, although several Gram Panchayats have voluntarily fixed meters in their villages. Jalanidhi has actually gone ahead and implemented household metering in its project areas, based on demands from Gram Panchayats. Initial results include reduction in per capita consumption, more equitable supply—especially to elevated areas—and reduction in pumping costs (RDC, 2008).

Jalanidhi has also introduced special appropriate technology options for water treatment, including silver ionisation units to tackle biological contamination (World Bank, 2009b, p. 8).

4.3 SERVICE DELIVERY MODELS AT SYSTEM LEVEL

4.3.1 Institutional arrangements for service provision

Community-based organisations (CBOs) are the main institutions responsible for community-level service provision under all three SDMs. Under the Swajaldhara SDM, Village Water and Sanitation Committees (VWSCs) are formed to organise community contributions in cash and kind for construction (10% of total cost), look after the operation and maintenance (O&M) of the constructed infrastructure and collect user charges to cover all (100%) of O&M expenditure. NGOs were involved in some cases but not in all, and

[46] For detailed descriptions of these traditional structures across the country, see Centre for Science and Environment (1997 and 2001) and for those specific to Maharashtra state, see Maharashtra Irrigation and Water Commission (1997).

[47] Department of Drinking Water and Sanitation (2010, p. 3).

even here, there was a lack of clarity about roles and responsibilities between the NGOs, VWSCs and government engineers. Furthermore, due to the poor capacity building of the VWSC members and of the government (RWS or PHE Department) engineers and their consequent lack of awareness of how exactly to mobilise the community, performance has been poor on the ground. A further problem in many cases was the lack of integration of the VWSCs with the local government tier at village level, the Gram (or Village) Panchayat. Despite the early examples of the World Bank-supported Swajal project in Uttar Pradesh, where VWSCs were made a sub-committee of the Gram Panchayat (and thus made a part of a statutory body, and permitted to receive and use government funds), many states did not enact the legislation required for this step. Complications were also created for these VWSCs by politically powerful lobbies that were 'left out' by the design of the Swajaldhara scheme—the contractors, the government engineers and the local politicians (e.g. James, 2004b).

The WASMO SDM learnt from this and other experiences, including that of the Ghogha Regional Rural Water Supply Scheme supported by the Royal Netherlands Embassy, and developed an innovative approach towards institutionalising community management. Pani Samitis (VWSCs) were formed by WASMO to carry out the same functions as in the case of the Swajaldhara SDM, but were trained and supported by NGOs as Implementation Support Agencies, while a Technical Support Agency provided technical advice to choose the appropriate design for the infrastructure to be constructed. They were also given the freedom to plan conjunctive use of available water sources, including traditional sources, and to set their own tariffs for the water supply provided at household level through taps. Also, while they insisted on a demand-driven approach, i.e. interested villages had to apply to have a WASMO scheme (as with the Swajaldhara SDM), they focused on intensive awareness-generation campaigns in villages prior to such self-selection. This ensured that all villagers—including members of the Gram Panchayat—were aware of the benefits and responsibilities before they became part of the programme. After that, a tripartite agreement was signed between the newly-formed Pani Samiti, the Gram Panchayat and WASMO, which ensured clarity of roles and responsibilities, and commitment and motivation to work on the scheme. The institutional arrangement that all major decisions would be taken or ratified by the Gram Panchayat was a critical one, since it made oversight (through Social Audits) and responsibility for the entire scheme a key function of the elected representatives at village-level and hence of the entire village community. In addition, Pani Samiti accounts are audited by independent auditors every year and they also carry out 'participatory audits' jointly with villagers.

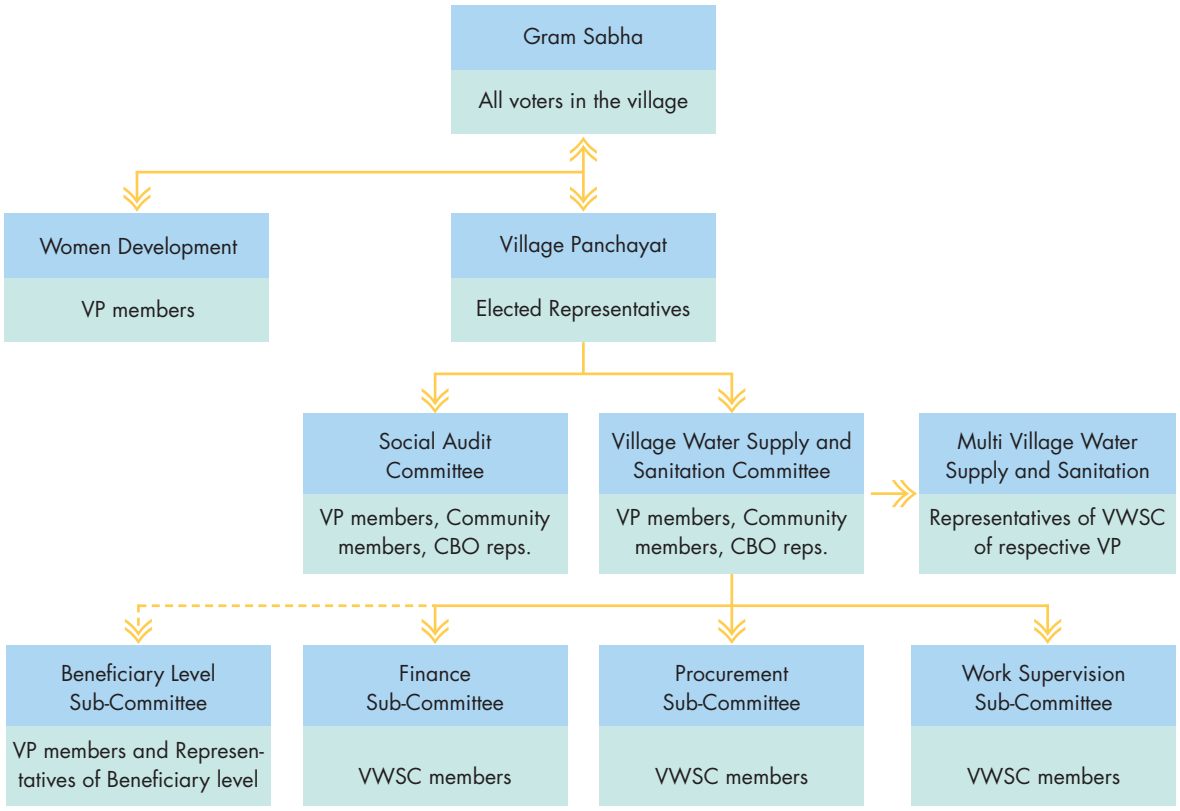
In addition, senior WASMO officials also worked quietly and behind the scenes to ensure the support and personal approval of the Chief Minister of the state, which in turn ensured that local politicians and government staff did not interfere with ground-level operations. This was an important 'institutional' facilitation that circumvented the problems encountered with the Swajaldhara in many other states.

The Jalswarajya SDM also worked through VWSCs and Gram Panchayats, but buttressed these with two more committees at village level, the Social Audit Committee (SAC) and the Women's Development Committee (WDC), supported by sub-committees (Figure 8).

The former committee was tasked with auditing all expenditure-related activities of the VWSCs, especially contracting and procurement, while the latter ensured livelihood from village-level water and sanitation service delivery for the key stakeholders, the women. There were also Mahila Gram Sabhas (Women-only Gram Sabhas) and, in tribal areas with scattered hamlets, they had hamlet-level committees (Pada committees) to look after water supply and sanitation issues in each hamlet. As in the case of the WASMO SDM, NGOs were appointed as Social Organisers to help with community mobilisation and capacity building, while a Technical Support Agency provided technical advice for scheme design. VWSCs were responsible for construction, which was contracted out to either government or private sector agencies, under the oversight of first the VWSC and after that, the SAC. Also like WASMO, the VWSCs were free to set their own tariffs so that they covered the O&M costs of the service.

The Jalswarajya SDM also had a village-level cadre of para-professionals called Gram Doot (literally 'village messengers') intended to 'internalise capacities within the community for sustained and effective management of project activities' (RSPMU, n.d., p. 15). Their responsibilities included supporting village-level activities such as community mobilisation, identifying appropriate technology, supporting record-keeping and accountancy, facilitating health and sanitation activities and fostering women's empowerment *(ibid.)*. The Gram Doots are trained by the district Capacity Building Consortium, Support Organisations, District Facilitation Teams and resource persons. The SDM also provided a Village Panchayat Strengthening Fund 'to build the institutional capacity of the VPs so as to enable them to perform the responsibilities more effectively following activities are undertaken' (RSPMU, n.d., p. 15). This fund was used for several activities to strengthen the linkage between existing CBOs and Village Panchayats, e.g. providing technical assistance to improve the effectiveness and

FIGURE 8: INSTITUTIONAL ARRANGEMENTS AT VILLAGE LEVEL, JALSWARAJYA SDM



Source: RSPMU, n.d., p. 13.

viability of both old and new water supply schemes, purchasing office and other equipment (e.g. chairs, tables, cupboards, loudspeaker sets, cameras, TVs, computers, video players, books, stationery and generator sets), totalling around Rs. 50,000 (around USD 1,100) for each Village Panchayat, printing, paying for an accountant and his staff, para-professionals, support organisations, and for other capacity building activities of Village Panchayat members, CBOs, etc. *(ibid,* p. 16).

The Jalanidhi SDM also had an Institution Building component and a Community Development and Infrastructure Building component, with similar provisions to the Jalswarajya SDM. The Gram Panchayat and Beneficiary Groups were key institutions responsible for scheme design, planning, implementation and monitoring. There are up to 25 Beneficiary Groups in each Panchayat. While Beneficiary Groups are unregistered CBOs, the project Gram Panchayat have set up Beneficiary Group Federations as registered societies with their own Memoranda of Association and by-laws, to provide O&M and other support to Beneficiary Groups. Each Federation is chaired by the Panchayat president, while Panchayat members are also members of the Federation, along with two representatives from each Beneficiary Group in the Panchayat (World Bank, 2009, p. 9). Each Federation has pre-registered group plumbers and electricians with approved daily rates, while each GP has shops providing repair materials, tools and supplies for rural water supply infrastructure. These Federations are funded by initial contributions and regular collections, and are now being given statutory powers to provide financial support to Beneficiary Groups. Thus, the Federation, backed by the Panchayat, is seen as the vehicle to 'ensure the necessary technical, financial, and institutional support to the BGs' (World Bank, 2009b, p. 9).

In addition, three specific institutional provisions include Gram Panchayat Action Teams, in which GPs recruit individual support staff rather than recruiting a Support Organisation, Scheme Level Committees for large water supply schemes within a Gram Panchayat area, and Panchayat Project Assistants, to liaison between the Grama Panchayat, Beneficiary Groups and the DPMU (*ibid*).

The Jalswarajya and Jalanidhi SDMs addressed household and community sanitation issues along with water supply in their target villages—including school sanitation, solid waste management and provision of sanitary napkins—while the WASMO SDM only

initially concentrated on water supply, preferring to deal with sanitation separately and subsequently, and unlike the Swajaldhara SDM which did not consider sanitation at all. Sanitation issues of toilet construction were also handled by the VWSCs. Further, the VWSCs of the Jalswarajya SDM have been informed and facilitated to use all available government funding to expand service delivery. Thus they have been able to leverage funding from various sources (mentioned earlier under 'Sector Finances') including the National Rural Drinking Water Programme and the Twelfth Finance Commission and the National Rural Employment Guarantee Scheme, as well as apply for the prize-based Sant Gadge Baba Swachchata Abhiyan of the Government of Maharashtra.[48] In both Jalswarajya and WASMO SDMs, the VWSCs address even major repairs through money saved in their bank accounts funded from user charges collected from the village community and other funds from government sources. The Jalanidhi SDM has not yet faced major repairs, as was pointed out in the World Bank's Implementation Completion and Results (ICR) Report.[49]

4.3.2 Mechanisms and approaches for customer participation in the full life cycle of the service

In the Swajaldhara SDM, customer participation was assumed to happen through the formation of VWSCs and the facilitation by NGOs or government engineers. This, however, was limited to community contributions towards construction cost and collection of user charges to defray all expenses for operation and maintenance. Planning of rural water supply infrastructure was supposed to be done exclusively by government engineers, with no role envisaged for the village community or CBOs.

In the WASMO SDM, however, community participation was central to their efforts to set up sustainable rural water supply systems. These efforts began during the awareness-generation phase, even before the Pani Samiti was formed, with WASMO staff of the Community Mobilisation Unit using all manner of media (personalised letters to village leaders, posters, brochures, information booklets, radio, television, street theatre, etc.) as well as interpersonal communication (one-on-one meetings, group meetings, habitation and social group-level meetings, separate meetings with women and women's groups, meetings with school teachers and school children) to inform the village community about different aspects of the WASMO approach. During Gram Sabha meetings, WASMO staff explain the approach and seek out people with what they call the 'x' factor—'the people who have a desire to give their time, energy and resources to make their community a great place to live'.[50] If the community is ready to participate, they form a Pani Samiti in the Gram Sabha and subsequently sign the tripartite agreement with WASMO along with the Gram Panchayat. After that, intense awareness-generation continues and training courses begin for the Pani Samiti, as WASMO starts working with the village, helping them prepare a Village Action Plan (VAP) and beginning the contracting and construction. Once the scheme is constructed, ownership is formally handed over to the Gram Panchayat in a ceremony called Atmarpan. Post-construction activities include the setting and collection of tariffs, and carrying out routine operation and maintenance (Table 13).

The Jalswarajya SDM has a similar set of detailed steps to foster awareness and participation by target communities in the design, construction, operation and maintenance of rural water supply infrastructure. An interesting innovation in this SDM is the use of peer-to-peer learning through Gram Doots and by setting up progressive Gram Panchayats Resource Centres for other Gram Panchayats in the area.

Like the WASMO and Jalswarajya SDMs, the Jalanidhi SDM also had four phases—pre-planning, planning, implementation and post-implementation—but the activities are slightly different.[51]

- **Pre-planning phase:** During this phase, the Gram Panchayat applies to KRWSA and persuades them to select it to implement the project.
- **Planning phase:** This year-long phase begins with the introduction and discussion of the project in the Gram Sabha—which can be stormy since it usually faces opposition and apprehension from the general public (especially those who benefit from the present unequal water supply and those who do not want to pay for water)—and also the Support Organisation (i.e. the NGO), and goes on to

[48] The Sant Gadge Baba Swachchata Abhiyan, also known as the Clean Village Scheme, was started in 2000 by the Government of Maharashtra to foster a sense of collective responsibility for village sanitation. Villages can apply to enter the competition, which evaluates village performance on a range of issues including solid waste, wastewater and toilet waste management besides water supply (including quality issues). A village that wins at block, district, division and state level stands to win total prize money of around Rs. 4 million (around USD 90,000 at an exchange rate of Rs. 44.5 = $1). For details see Pragmatix Research & Advisory Services and Swayam Shikshan Prayog (2005), Government of Maharashtra (2010) and others.

[49] '... more time would be needed to assess with certainty the long-term capacity of the communities to deal with major repairs (World Bank, 2009b, p.15).

[50] Water and Sanitation Management Organisation (2010, p. 49).

[51] The description of the four phases is from RDC (2008, pp. 10, 55-57).

TABLE 13: STEPS IN PARTICIPATORY PROGRAMME IMPLEMENTATION BY WASMO

	Steps	Points to consider
1	Meeting to introduce the programme in the Gram Sabha	Passing a resolution in the Gram Sabha to initiate the programme
2	Pani Samiti formation in the Gram Sabha	Passing a resolution in the Gram Sabha endorsing the Pani Samiti
3	Implementation of awareness-raising programme and training courses for empowerment of Pani Samiti*:* • Workshop to provide basic information about the programme • Training in construction and management • Awareness programme for health and hygiene in schools • Training in operation and maintenance • Training on water quality surveillance • Exposure trips to other villages • Meetings with women's groups/self-help groups	Training specific target groups of women, children, etc.
4	Providing support to the Pani Samiti to identify drinking water needs	Various PRA exercises
5	Preparation of a Village Action Plan (VAP)	Presentation in Gram Sabha and its approval
6	Opening a bank account for the Pani Samiti	Depositing community contributions into the account
7	Technical approval of the VAP	Approval by WASMO
8	Initiating construction work in line with the VAP	Under supervision of WASMO engineers and ISAs
9	Supervision and monitoring of construction work	Appointment of a monitoring committee
10	Periodic meetings of the Pani Samiti	Checking and verifying accounts
11	On completion of work, planning to sustain water supply	Forming rules and regulations for O&M
12	Atmarpan—handing over ceremony	In presence of WASMO and ISA representatives and the village community

Source: Water and Sanitation Management Organisation (2010, p. 41)

create an enabling environment for project implementation, with hand-holding support from the Support Organisation or the Grama Panchayat Action Team, and overall supervision of the Grama Panchayat. In fact the Gram Panchayat plays a critical role, overseeing the creation of Community Empowerment Plans through a transparent and participatory process, and negotiating and mediating in order to identify and take over land adjacent to potential sources, organise the construction of infrastructure and collect the financial contribution to the project (15% of total costs).

- **Implementation phase:** All the engineering aspects are completed during this phase, which can take up to two years. The community is fully involved and responsible for procurement, construction, and the contracting of skilled workers, all of which increases community ownership and responsibility over the scheme. This is not just a period of construction, inauguration and operation of a water supply scheme, but also a period of intense negotiation over sensitive social and political issues, which are often sparked off by disgruntled stakeholders or vested interests and can swiftly snowball out of control. This is where the Gram Panchayat steps in: 'The astute political sense of the GP leadership has to get a premonition of such likely "socio-political time bombs" and defuse them so that the project is salvaged' (RDC, 2008, p. 56). There are also several external stakeholders, including various government departments that operate independently of the Grama Panchayat, including departments of forests, electricity, public works, telephones, health, education and revenue, apart from the Water

Authority, whose support the Grama Panchayat will need at some point during project implementation. Issues that the SO cannot negotiate on its own, the Grama Panchayat negotiates and mediates, to ensure that the project moves along to completion.

- **Post implementation:** After two to three years the water supply schemes are commissioned and supply begins but the Grama Panchayat can expect to face a new set of issues and needs, including the drying up of wells during summer, non-payment of user charges, and trouble-shooting and hand-holding of beneficiary groups. The Grama Panchayat has to analyse each issue in detail, identify root causes and work out an appropriate solution—including applying for and negotiating additional support from KRWSA. For instance, problems of unequal supply and use led Grama Panchayats to lobby KRWSA to sanction funds and provide technical support to install household meters. Intervening with households reluctant to pay for water (which say 'it is the duty of the Panchayat to provide water free of charge') is another instance of the kind of Gram Panchayat intervention needed post construction. Another activity required, post construction, is the search of means to augment supply (e.g. through groundwater recharge as a result of watershed development activities) to ensure source sustainability—although this is not a priority concern at present. Of course, GPs are also willing to use any public platform to broadcast success stories, thus being natural ambassadors of the project in the region.

4.3.3 Financial arrangements for water service provision

There are two basic payments during the life cycle of the water supply scheme: (1) contributions towards the cost of construction; and (2) monthly payments for operation and maintenance. In all SDMs, a minimum contribution of 10% of the total capital cost and 100% of operation and maintenance costs are collected from the community. Thus, the government contributes a maximum of 90% of capital costs of created rural water supply infrastructure. Furthermore, contributions are paid into bank accounts of the responsible CBOs (VWSC or Pani Samiti) or Gram Panchayats and accounts are kept for all payments towards capital costs and monthly O&M expenses. In reality, however, this has not worked according to plan, especially in the Swajaldhara SDM.

Contributions to construction costs: These are collected in cash or kind by the CBO and handed over to the support agency, which is the government engineering department in the case of the Swajaldhara SDM, and CBOs in the case of the other SDMs. In the case of Swajaldhara, however, partly owing to the novelty of the idea of paying for water, and partly due to the political interference discussed earlier, several villages paid the money but this was not collected from the villagers. Instead either contractors or village heads paid the money on behalf of the community. This was for their own interests, as the contractor would then be assured of a construction contract and the village head would use this in the elections, claiming that he had brought the scheme to the village. This was possible because of the low level of awareness among the village community due to the poor awareness-generation efforts by the support agencies (James, 2004b).

In the WASMO, Jalswarajya and Jalanidhi SDMs, the community made voluntary contributions because they were convinced of the benefits of the programme after the intensive awareness-generation activities carried out by these agencies. However, these CBOs and Gram Panchayats have the flexibility to decide who must contribute how much and to cross-subsidise the poorer households in the village. This decision is, however, taken solely at village level and the PMUs of the WASMO, Jalswarajya and JalanidhiSDMs do not interfere in this decision.

Monthly payments: The water tariffs in the Swajaldhara SDM in Tamil Nadu followed Government of Tamil Nadu norms for household connections, i.e. Rs. 30–50 per household per month, but this was not sufficient to cover the O&M costs of running the scheme (Pragmatix Research & Advisory Services, 2007). This was not only because of the poor support VWSCs received in taking such decisions, but also because of the novelty of the idea of paying regularly for water and the lack of appreciable improvement in service delivery. In the three other SDMs, however, tariffs are decided by the village community—based on discussions and analysis by the CBOs and ratification by the Gram Panchayat—and are designed to cover 100% of operation and maintenance costs of their own scheme. In these SDMs, therefore, connection charges and monthly payments vary between VWSCs, largely because of the difference in the type of infrastructure designed and constructed according to local conditions. But perhaps more importantly, these SDMs were able to show improved service delivery, which helped collect user charges effectively and thus more than offset the costs of operation and maintenance. Furthermore, since the CBOs in these SDMs have been capacitated to leverage other funds from other government programmes, they have fairly large balances in their bank accounts and are thus able to pay for even major repairs to their water supply systems.

5 ORGANISATIONAL CHANGE TOWARDS HARMONISATION AND COORDINATION

5.1 HISTORY OF THE SERVICE DELIVERY MODELS (SDMs)

The Swajaldhara SDM has its origins in the Sector Reform Pilots Project undertaken by the Rajiv Gandhi National Drinking Water Mission in 1999.[52] The Sector Reform was spurred, in turn, by the World Bank-supported Swajal project in Uttar Pradesh, the DANIDA-supported Tamil Nadu Rural Water Supply Project in the 1990s and several reviews of the water sector in India in the late 1990s, including the joint review by the Government of India and the World Bank in 1999. The impetus for the momentous policy change, however, came from several senior bureaucrats who successfully 'sold' the idea of reforms to their respective ministers and other elected representatives at state and national levels. The Swajal project, for instance, was headed by a senior bureaucrat who went on to join the World Bank's Water and Sanitation Program and strongly supported the reform agenda from both within and outside the government. Three senior and committed bureaucrats in the Rajiv Gandhi National Drinking Water Mission were responsible for framing the actual Sector Reform policy as well as the Swajaldhara scheme, and subsequently guiding them through the national government to get the scheme approved as national policy in December 2002. This was a considerable achievement since there was no history of community-based rural water supply provision at national level, but the context of severe water supply problems all over the country and fund shortages undoubtedly helped their cause (James, 2004c).

The WASMO SDM was formed under rather different circumstances, almost independent of developments at the national level. The relative failure of the Ghogha Regional Rural Water Supply Project supported by the Dutch Embassy to deliver results even after four years of implementation, from 1996 to 2000, caused the review mission in 2000 to castigate the poor government support.[53] As a direct result a Coordination, Monitoring and Support Unit (CMSU) was formed, but progress was still slow. A catalyst to the whole process came in the form of the major earthquake in Kuchch on 26 January 2001, which severely disrupted water supplies in five districts in the state and spurred the Government of Gujarat to look at the whole issue more seriously.[54] Three senior bureaucrats in the state saw this as an opportunity to usher in wide-ranging reforms. After formulating the strategy they presented the new approach to the Chief Minister, who listened, understood and agreed to the proposed changes. The SDM made a slow and cautious start in 2002, built up its components steadily and constantly innovated and improved the model over the next six years. This time was indispensable to think through the various problems that cropped up and to formulate innovative approaches to tackle issues such as corruption, political interference and NGO dissent. This careful consideration has enabled the SDM to reach 15,000 of the 18,000 villages in the state (75% of the total), an unparalleled and astonishing achievement in the country today.

The Jalswarajya SDM also has its roots in a worsening water supply situation in the drought-prone state of Maharashtra, which ironically helped raise the political profile of the issue, and the finances to address the problem (Box 10). The Government of Maharashtra approached the World Bank with a request for funding, which was agreed upon but was made conditional on good performance.

[52] The Rajiv Gandhi National Drinking Water Mission was renamed the Department for Drinking Water Supply in 1999 and subsequently the Department for Drinking Water and Sanitation.

[53] Water and Sanitation Management Organisation, 2010, p. 3

[54] *ibid*

BOX 10: CONTEXT OF THE JALSWARAJYA PROJECT FUNDING IN MAHARASHTRA

The State of Maharashtra faces a severe problem with regard to ensuring supply of safe and adequate drinking water to its rural population, 57 million, living in 11 million households in 86,681 villages and habitations. The state's groundwater sources are constrained due to natural factors such as geology and spatially variable rainfall with extremes of high monsoon precipitation in some areas and drought situation in others. These factors have a dramatic impact on the sustainability of sources for water supply, especially during February–May. The situation is exacerbated by unregulated groundwater abstraction for purposes of irrigation and industrial uses. The holistic management of ground and surface water resources is typically absent.

According to a recent assessment, of 86,681 villages and habitations, only about 62,000 have established facilities capable of providing adequate and safe water. Of the remaining 24,681 villages and habitations, as many as 7,000 have either no water supply and access to safe water or a very limited supply of 10 lpcd and below. The remaining 17,681 villages and habitations have facilities that are designed to supply water only to the level of 10–30 lpcd with much reduced quantities available during summer. Moreover, many of the existing water supply facilities are reportedly not functioning up to their designed potential or have stalled due to lack of necessary repairs and replacements, exacerbated by lack of access to power due to non-payment of dues to the state electricity board.

Maharashtra's resource requirements for the rural water supply and sanitation sector, based on the 40-lpcd norm, could range from $3.7 to 4 billion over the next 10 years. According to recent Government of Maharashtra (GOM) estimate, the resource requirements of the 10th Five Year Plan (2002–07) and the last two years of the project (2008–09) would be about $2.5 billion. Using on-going funding programmes as the base, during this period, GOM expects to mobilise about $1 billion (excluding community contributions). These resources would be derived from the Minimum Needs Program ($185 million); market borrowing ($305 million) and special Government of India (GO1)-GOM supported programmes (including ARWSP, SRP, TSC, Scarcity, and Swajaldhara) ($467 million), and external assistance from KfW ($31million). Given the resource constraints, both at the national and state levels, GOM's on-going 10th Five Year Plan (2002–7) estimates an outlay of only about $850 million. While on a broader fiscal front, GOM has launched a medium-term fiscal reform program with a focus on improving tax collection, containing growth in government spending, and enhancing efficiency of government expenditures, its ability to raise additional resources from the general budget till the existing gap remains significantly constrained. The proposed project which partially fills the resource gap, would likely be the first of a series of dovetailed RWSS projects, which could be potentially supported by the Bank Group and other donors if the GOM could demonstrate that it has utilised IDA assistance available under the first project effectively, in a timely manner, and consistent with the reform program introduced.'

Source: World Bank (2003, p. 1)

Kerala faced a similar scenario of increasing water scarcity, rising costs of infrastructure creation and O&M, and a fund shortage in the 1990s (Box 11). However, a unique factor in Kerala was the campaign for decentralisation and devolution of power in the state, starting in 1996, with around 40% of government funds being devolved down to districts by 2001 for development activities according to a unique 'People's Planning Campaign' which transferred development planning responsibility from the state to the District Panchayats (RDC, 2008, p. 55). In the backdrop of this process, the Government of Kerala approached the World Bank for financial assistance to implement a new type of rural water supply project.

5.2 ACCOMPANYING PROCESSES OF ORGANISATIONAL BEHAVIOUR CHANGE

The 1999 Sector Reform Pilots Project marks a watershed in government provision of rural water supply services in India. Although donor-supported projects had been planning and implementing community-based water supply projects through NGOs and sympathetic government officials since the 1960s, this was the first time that the Government of India was supporting this approach through a nationwide pilot (James, 2004b). The creation of Swajaldhara as a national programme further catalysed this trend. It became acceptable to talk of community-based service delivery in rural water

BOX 11: PRE-JALANIDHI RURAL WATER SUPPLY SITUATION IN KERALA

'**The rural water supply sector in Kerala was facing many challenges.** New capital investments and provision of the drinking water services all over the state were under the sole responsibility of the Kerala Water Authority (KWA). As a result of the government-dominated and target-driven service, the rural water supply sector was characterised by inadequate coverage, poor quality of service and inability to recover operation and maintenance costs. In addition, lack of perennial water resources and water wells drying up during the summer season accentuated the hardship, inconvenience and time lost for fetching water, in particular for women. The problems were even more serious in the case of the vulnerable groups as they normally live on hilly and difficult terrain with not many water sources in the nearby vicinity and hence compelled to traverse more.

In 1997, the GOK initiated a major decentralisation process, including rural water supply and sanitation services delivery. Under a programme called the 'People's Plan Campaign', the GOK decentralised many relevant functions to local institutions, including increasing financial transfers as well as staff from the line departments. Under this, the GOK entrusted the local authorities with the responsibility of water and sanitation service delivery and took the decision to transfer all small rural water supply schemes to GPs with concomitant power to levy and collect user charges for providing water services. Further, in May 2000, the GOK decided to empower Beneficiary Groups to make investment decisions, manage development funds, plan, construct and operate water supply schemes.'

Source: World Bank (2009b), p. 1. **Emphasis** in the original

supply, just as the first participatory watershed development guidelines by the Ministry of Rural Development in 1995 sparked off a trend in community-based watershed development in the country.[55] This is even more remarkable considering the strong opinions, especially among politicians and even senior bureaucrats, at the time against the very concept of charging for the 'divine' free gift of water.

Once there was political approval for the paradigm shift, bureaucrats were able to channel their energies into finding innovative and locally-relevant means of operationalising the new model. A notable lead in this regard was taken by the visionary bureaucrats in the Rajiv Gandhi National Drinking Water Mission at the Centre and by like-minded senior bureaucrats in different states, some of whom had already started work on such models (e.g. in Uttar Pradesh, Tamil Nadu and even Karnataka). The ESAs also played a major role in seeking out and convincing these senior state government officials to try out the new approach.

A remarkable fact is that the Department of Drinking Water and Sanitation is today fully convinced of the need for participatory and community-based rural water supply provision and has gone beyond the concept by identifying the various mechanisms needed to support such decentralised provision—and has provided the financial means to achieve them. Organisational behavioural change has indeed been completed at the national level.

The state governments are in a process of change with some—including Gujarat, Maharashtra and Kerala—fully convinced of the value of the model and adopting it as the state-wide model for future rural water supply implementation. In other states, officials are convinced but are looking for opportunity, direction and funding to take it forward. Hopefully, the provisions of the new 2009 National Rural Drinking Water Programme for setting up Water and Sanitation Support Organisations will provide the opportunity and funding to do so. For direction, however, the states still look towards ESAs to provide inputs. A case in point is Andhra Pradesh, where both the World Bank's new rural water supply project and the WASHCost project supported by the Bill & Melinda Gates Foundation are providing inputs to the state Department for Rural Water Supply to implement the new national programme. In Rajasthan, the European Community is helping the state government implement its new water policy based on the concept of Integrated Water Resources Management and community management of rural water supply. However, other states—including Orissa and Bihar—are far from effectively implementing concepts that they agree with and even

[55] See Farrington, Turton and James (1999). Interestingly, similar national-level policies and programmes have not been formulated to support two older participatory approaches, the joint forest management (JFM) movement, which began in the 1970s, is still run on the basis of executive orders of the Forest Department and the Participatory Irrigation Management (PIM) approach, which began in the late 1980s but has seen very little uptake on a wide scale.

endorse, suggesting a lack of internalisation of the envisaged change.

At state level, therefore, organisational change is still not complete but it looks like the path to full transformation is easier given the support from the centre and the ESAs.

5.3 CURRENT STATE OF HARMONISATION AND COORDINATION

There is renewed harmony and coordination at all levels to implement successful community-based rural water supply programmes, not only among ESAs and central governments, but also between state and national governments. Strangely enough, it is today the NGOs, both national and international, who find their traditional role of being a pro-people watchdog of government activity reduced significantly in the wake of the government espousal of the cause of the community. It is almost as if they have been overtaken by a well-organised, well-funded and well-reasoned government strategy to achieve the same goals.

5.4 UNDERLYING TRIGGERS, INCENTIVES, DRIVERS AND CHALLENGES

Three key factors appear to have triggered all the SDMs: (1) rapidly deteriorating rural water supply services, despite decades of heavy funding; (2) financial constraints to continue providing for—and rebuilding—infrastructure that was not 'owned' by the communities it was supposed to serve; and (3) rising political pressure to address the problem.

The background of the successful implementation of pilot community-based rural water supply schemes by the state governments of Uttar Pradesh and Tamil Nadu with the support of ESAs, the consistent support provided by the ESAs for a paradigm change, and the visionary bureaucrats and officials who supported the move 'from within' and were able to convince their ministers of the need and viability of this change, resulted in the government being able to grasp the opportunity to change its approach. Specific individuals played their parts in the transformation, but the time was also opportune for change (there were supportive bureaucrats in the past who were not able to sway the tide of centrally-provided supply-driven service provision).

There is broad similarity between the contexts and drivers behind the WASMO Jalswarajya and Jalanidhi SDMs but these undoubtedly benefited from the earlier initiatives, not only of the Swajal and Tamil Nadu projects but also by those taken by the Rajiv Gandhi National Drinking Water Mission in the sense that there were examples and case studies to quote in support of the proposed change that these SDMs were planning to bring in.

6 ANALYSIS OF SERVICE DELIVERY MODELS

6.1 IMPACTS ON THE SUSTAINABILITY OF SERVICE

The Swajaldhara SDM has had roughly the same impact on the sustainability of service as the regular service provision through the Accelerated Rural Water Supply Programme (ARWSP), the conventional top-down, supply-driven model followed in the country since 1972–3. This is largely because of the inadequate preparation and capacity building—especially among the engineers as well as the community and NGOs—that preceded the implementation of the SDM since 2002. There is little community involvement and the usual model of 'build-neglect-rebuild' characterises this SDM in most parts of the country.[56]

The WASMO SDM is the closest to a large-scale sustainable rural water supply scheme, in the absence of a full-fledged assessment of sustainability in the project area. It has an innovative, effective and locally-relevant institutional mechanism to inform and involve the community throughout the life cycle of the system, a robust support structure and an effective system to set and collect user charges, which has resulted in substantial savings in the accounts of the Pani Samitis that can easily cover operation and maintenance expenses. It has so far proved effective in around 15,000 rural villages in Gujarat state and is aiming to cover all 18,000-plus villages in the state shortly.

The Jalswarajya SDM is also an excellent model of sustainable rural water supply service delivery and has proved itself in the project area of around 2,500 Village Panchayats. Its significant improvement in sustained service delivery has led to the approach being adopted for the entire state of Maharashtra.[57] Like the WASMO model, it has effectively informed and involved the local communities in these villages across all stages of service delivery, provided a strong support structure and a high level of collection of user charges and other funds for operation and maintenance. A second phase of the Jalswarajya is currently under preparation and could be the vehicle to spread the approach more effectively throughout the state.

The Jalanidhi SDM is also an excellent model and has demonstrated its potential to the 2,500 village communities in 112 Gram Panchchayats across 13 districts of the state. Improvements in service delivery are clearly visible, and user satisfaction levels are reflected both in the willingness of the community to take responsibility and to contribute towards its maintenance and upkeep. For instance, in 90% of schemes, 'operation and maintenance was fully financed and managed by user groups after one year of commissioning' (World Bank, 2009b, p. viii). Furthermore, 'water tariffs have been fixed appropriately corresponding to the O&M expenditures and are being levied and collected in all the schemes' *(ibid,* p. 9) and 'in the GPs covered by the project, water supply coverage increased from 55 to 81% and sanitation coverage from 76 to 86% *(ibid,* p. 11). User charge collections have exceeded targets and the entire process has become rooted in the local government processes in the project area.[58] A second phase of Jalanidhi is currently under preparation, to be implemented with funding from the World Bank, and it has also been scaled up as an approach throughout the state.

[56] This is a phrase used in a World Bank assessment in 2005 to describe the state of irrigation infrastructure in the country (World Bank, 2005), but it can be used to describe the situation in rural water supply as well. In Tamil Nadu, for instance, poor quality service of built infrastructure is addressed by putting in a new supplementary scheme (Anbazhagan, 2010).

[57] Details of lessons learnt from the Maharashtra SDM are given in Annex 1, and achievements in Annex 3.

[58] Details of lessons learnt from the Kerala SDM are given in Annex 2, and achievements in Annex 4.

6.2 POTENTIAL FOR SCALING UP

Although the Swajaldhara SDM has already been scaled up, in that it has been implemented as a national programme since 2002, it has not been as effective as originally envisaged by the sector reform. However, its objective is much broader than the other two SDMs, as its coverage area is the entire country—with all its geographical and socio-cultural variations—and not a single state, like the WASMO, Jalanidhi and Jalswarajya SDMs.

The WASMO model has already demonstrated its potential for scaling up within the state of Gujarat, having reached 15,000 of the 18,000 villages in the state. However, it is likely to have problems in reaching 100% since the last few villages are likely to be the ones with the greatest problems of effective service delivery, either due to technical or other reasons (e.g. settlements of nomadic communities).

While WASMO is already a state-level organisation, both the Jalswarajya and Jalanidhi SDMs are being scaled up to cover the rest of the states of Maharashtra and Kerala respectively (Box 12), but as in the case of the WASMO SDM, it may become more difficult to implement the closer it gets to the goal of 100% coverage.

6.3 COSTS AND BENEFITS

There is no formal assessment of costs and benefits of service provision or of 'value for money' of the funds spent so far in the Swajaldhara and WASMO SDMs. Given that the Swajaldhara SDM is similar to the normal water supply provision paradigm, with high and rising costs of provision, it may be fair to conclude that it is not good value for money. In fact, the effectiveness of the other SDMs shows that there are better alternatives—and possibly cheaper ways of providing similar or better benefits.

BOX 12: INSTITUTIONAL SCALING UP OF DECENTRALISED RURAL WATER SUPPLY SERVICE PROVISION

Maharashtra

'The GOM has decided to institutionalise Jalswarajya's demand response and decentralised service-delivery approach across the RWSS sector in Maharashtra, with immediate effect. The government resolution—dated August 1 and August 25, 2009—provides detailed guidelines for new policies, procedures, institutional structures, and implementation arrangements for the planning, implementation, and O&M of the state's RWSS schemes. One of the important features of the new institutional structure is that its staff will be multidisciplinary, like that of the Jalswarajya project, whose experienced staff will be absorbed into the new institutions. The GOM is planning to request continued Bank support of this new initiative.' (World Bank, 2010, p. 10).

'The creation of a Water and Sanitation Mission (WASM) at the state level, with representation from various senior administrative officials as a policy-making body; the GOM's plans to upgrade the RSPMU as a water supply and sanitation support organisation (WASSO), with expertise derived from the market and other government agencies as an executive body supporting the WASM; and the GOM's plans for creation of similar units at the district level are critical indicators of the project's contribution to the long-term strengthening of state institutions. The GOM's plan to integrate the RSPMU's project management systems across all its programs has considerably increased the capacity of the GOM to manage projects and monitor performance on a regular basis.' (World Bank, 2010, pp. 13–14)

Kerala

'KRWSA will continue to exist both at state and at district levels. **KRWSA** will continue to be in charge of RWSS sector development and will ensure apex level support to Beneficiary Groups and Beneficiary Group Federations and all large water supply schemes. GOK has taken a policy decision and implemented it by allocating 20 % of GOI's ARWSP funds to KRWSA to continue doing Single Village Schemes in a manner the project did (without dilution of any of the reforms implemented under the project) and is expected to implement future GOK RWS programs. **Based on what they consider a successful operation,** GOK has now prepared and submitted a follow-on project to the Bank for continued support. This essentially is aimed at scaling up the reforms tested during this pilot project'

Source: World Bank (2009b, p. 10, emphasis in original).

In the case of both the Jalswarajya and Jalanidhi SDMs, the World Bank has calculated internal rates of return that are well above the standard interest rate of 12%, and show considerable 'value for money' in terms of the sums invested—which are a fraction of the total rural water supply budget of the country.[59] However, apart from these numbers, there are also several clear benefits from the perspective of the communities in the case of the WASMO, Jalanidhi and Jalswarajya SDMs. In addition to more sustainable, predictable and reliable water supply (WASMO aims for 24/7 supply in each household), communities have more control over their water supply and better awareness of the value of water, apart from adequate funds to operate and maintain their scheme into the future. These benefits are difficult to quantify, but real nonetheless.

6.4 UNDERLYING SUCCESS FACTORS AND CHALLENGES

6.4.1 Success factors

The key factors underlying the success of the three SDMs have been discussed in detail earlier (section 5). Briefly, however, these factors are: the motivation levels of senior bureaucrats and politicians in showing each project to be a success; the support provided by external funding agencies (including INGOs); the willingness of the technocracy to extend its operations into community-based service delivery; and the willingness of communities and their representatives, the CBOs, to take on responsibility for the full O&M of their water supply systems.

6.4.2 Challenges

Despite the success of these three state-level SDMs, and the encouraging political and policy support at national level, there is a long way to go before any of them cover the entire country effectively. However, several lessons can be learnt from the experience of these SDMs that may be useful for other states intending to use the opportunity given by the new National Rural Drinking Water Programme to initiate similar reform. These are briefly described below.

- **Political support is vital,** especially to insulate reform processes from vested political interests (e.g. Gujarat, Kerala, Maharashtra). For instance, in Gujarat, the support for the initiative from the Chief Minister of the state ensured that local politicians did not try to manipulate the scheme for personal political gains. Similar results ensued from the support from ministers and senior bureaucrats in both Kerala and Maharashtra.

- **Support institutions for community management are vital** given the huge task of building capacities and facilitating them to take over their rural water supply schemes effectively. The fact that there were large PMUs and district-level units in all three innovative SDMs (i.e. except Swajaldhara) was instrumental in providing the necessary support for the effective functioning of CBOs such as the VWSCs and Pani Samitis. The enabling legislation making these CBOs official sub-committees of the statutory Gram Panchayats was particularly helpful.

- **Institutional role clarity is essential** between government agencies (e.g. for bulk supplies and village-level distribution), community institutions (traditional bodies like Caste Panchayats, statutory Village Panchayats, and special bodies like Pani Samitis or VWSCs), and private players. In Maharashtra, for instance, the government policy of making Gram Panchayats responsible for all civil works below the value of Rs. 1 million helped clarify the role of the Gram Panchayat vis-a-vis the rural water supply engineers. The government order in Kerala to transfer all single village schemes from the Kerala Water Authority to Gram Panchayats played a similar role.

- **Community management requires giving them the space, the time and the support.** After that, however, the process will be irreversible (e.g. Kerala, Maharashtra). All three SDMs took at least 6-8 years to achieve successful transfer of management to CBOs, during which local capacities were built, financial resources were accumulated at local level and CBOs gained experience and therefore confidence in managing their own drinking water resources. Since then it has become virtually impossible for vested political interests to try and 'reclaim' authority over drinking water provision, at least in the geographical areas where these SDMs are functional.

- **Shifting the balance of power towards PRIs and communities requires time and sustained effort,** e.g. in Maharashtra, Kerala and Tamil Nadu. Across the country there are vested political interests that seek to manipulate water supply provision for electoral leverage: sanctioning schemes for 'favoured' villages, seeking to include new villages in piped water schemes, or demanding money from departmental budgets as political 'donations' to the ruling party. Changing this mindset by convincing local politicians that empowering local communities is the best way to

[59] For Kerala, the ex-post economic rate of return was 18.7% (ex-ante 25%) and a net present value of over USD 8.9 million over an investment of around USD 65.5 million (World Bank, 2009b, p. 13). For the Maharashtra Project, the ex-post value was 23.22% (ex-ante 19.85%) while the net present value was USD 165.1 million over an investment of USD 286 million (World Bank, 2010, p. 40).

improve their drinking water situation—and could even be a way of gaining their electoral support—however, requires time and sustained efforts.

- **Change management for increased democratisation of decision-making can be a powerful motivational tool** and stronger than financial incentives or institutional restructuring, e.g. in Tamil Nadu. While the other SDMs opted to create independent structures (e.g. PMUs) outside the regular institutional structure of government provision, only the Change Management Initiative in Tamil Nadu sought to engage directly with government engineers. This is a useful and essential element to bringing on board a powerful—and potentially useful—ally in the entire process of decentralisation and democratisation of decision making in rural water supply provision. The Tamil Nadu experiment showed clearly what committed and motivated government engineers could do to support community management.

- **Even communities feel a cash contribution is necessary for enhanced ownership but this will be more forthcoming if service quality improves.** However, some flexibility in payment norms (e.g. reduced percentage of initial capital contributions, subsequent collection and payments by instalments) may elicit a better response. While this was indirectly shown in the high collections of community contributions in the WASMO, Jalswarajya and Jalanidhi SDMs, the Tamil Nadu example of Change Management demonstrated the role of improved service levels in eliciting community contributions (Nayar and James, 2010). This turns conventional wisdom on its head: community collections per se do not improve service delivery, but collections improve when service delivery improves.

- **Information and experience sharing is necessary and not done enough,** especially through 'horizontal sharing' among villagers and PRIs. A key strength of the WASMO SDM was to build a service 'brand' which other villages aspired to. The news of success spread far more by word-of-mouth among villagers and PRIs, to inspire other villages to come forward to take up the initiative. Although only WASMO has the numbers to show for this effort (15,000 villages), even the Jalswarajya and Jalanidhi SDMs succeeded in creating a demand from other villages for a similar initiative—and are now poised for a second phase, in both instances.

- **Focused and sustained capacity building of PRIs and CBOs is vital,** not only to enable communities to implement other government schemes more easily, but also to strengthen them to counter local political interests. The WASMO, Jalswarajya and Jalanidhi SDMs—and to some extent the Change Management Initiative in Tamil Nadu—have shown the importance of building the awareness and capacities of local politicians to support and take forward the process of community management. This engagement, however, had to counter several arguments and counter-moves by stakeholders with vested interests, which called for an agile response from the PMUs—which could happen only if the engagement was sustained: one-off or intermittent support would not have been successful in countering such moves on the ground. Such quick responses also helped the fledgling CBOs build their arguments and capacities to counter such threats on their own subsequently (RDC, 2008).

- **Scaling up from limited-area projects faces new challenges** and requires different thinking from working within a relatively autonomous project mode. This is an important lesson for scaling up, and one that is not easily appreciated in the usual policy thrust for rapid implementation for quick results through a pre-designed programme. Expansion requires engagement with the larger body politic of water supply, including the regular development administration, water supply engineers and local politicians. So far only WASMO appears to have overcome these challenges, although there has been some build-up of opposition to its continued expansion. Both Jalswarajya and Jalanidhi are going into a second phase, but have a relatively long way to go before they can reach the scale of WASMO's implementation. These challenges are likely to become more serious as they reach scales that threaten a range of vested political and other interests in the rural water supply sector. There are, however, no quick and easy solutions, and creative planning will be needed to overcome these challenges.

7 CONCLUSIONS

7.1 SERVICE DELIVERY MODELS

Of the four service delivery models, the WASMO, Jalanidhi and Jalswarajya SDMs have the potential for scaling up beyond their project areas to almost the whole of the state with the same approach, and this has indeed been done. As mentioned earlier, however, achieving 100% coverage with sustainable community-based rural water supply services may pose difficulties.

The Swajaldhara SDM: The oldest of the SDMs and with the largest mandate—the entire country—is also the one designed 'outside' the states and almost exclusively by the central government, for use in the states. Inadequate capacity building and acceptance within the implementing agency, the state rural water supply engineering department, is a major reason for the poor performance in the field. There are also poor support mechanisms at state and district levels to help rural communities take over and manage their water supply systems. However, a lot of useful lessons can be learnt from other successful state-level SDMs in the country that other states can use to improve their SDMs through their new Water and Sanitation Support Organisations (WSSOs).

The WASMO SDM: This is a strong SDM that has proved itself by spreading to over 15,000 villages in a period of eight years, with much of the expansion coming in the last few years. It has all the essential elements for a sustainable and locally-relevant SDM for rural water supply by being based on a clear understanding of local strengths and sentiments. The fact that the CBOs work closely with and through the Gram Panchayats embeds it strongly within the democratic institutions of local self-government. There are possible improvements, including technical support for addressing weather variability due to climate change (although this is likely to be a bigger problem for villages situated further away from the canals carrying Narmada water through the state), ecological sanitation to conserve water further, and stronger hygiene promotion, especially among adults. However, given the strong base that has already been laid, these additions are much easier now than earlier.

The Jalswarajya SDM: This is also a strong SDM that has successfully implemented an integrated water supply, sanitation and hygiene programme in a relatively large project area, with strong and innovative support structures at district and village levels for community awareness, participation and management. As in the case of the WASMO SDM, the approach has been well thought out to be locally relevant and effective. It also draws on the strength of the Gram Panchayats to sustain community participation. Possible improvements are also along the same lines as WASMO, addressing weather variability induced by climate change, ecological sanitation and hygiene. Perhaps the next phase will be the opportunity to address these issues besides expanding the approach to the entire state.

The Jalanidhi SDM: Like the Jalswarajya SDM, this is also an excellent SDM that has implemented an integrated water supply, sanitation and hygiene programme in a relatively large project area. The approach of strengthening Gram Panchayats' incentives and capacities to design, implement and manage rural water supply—as with WASMO and Jalswarajya—is sustainable, since it is rooted in statutory self-government institutions and is translating into action the 73rd Amendment to the Indian Constitution. Its focus on motivating and capacitating Beneficiary Groups and their Federations, is similar to that of WASMO, and is also a somewhat less complicated structure than the several committees of Jalswarajya. The most important point is that all the SDMs, including the Jalanidhi, are responses to the local context, and as long as they are working effectively, owned and operated by the community and their representatives, they will be sustained.

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ANNEX 1: LESSONS LEARNT FROM THE MAHARASHTRA SDM

I. MAHARASHTRA RURAL WATER SUPPLY AND SANITATION PROJECT 'JALSWARAJYA'

Source: Reproduced from World Bank (2010, pp. 18–20)

´6. Lessons learned

The design and implementation of the project offers the following considerations that might be useful in shaping future projects of this nature:

1. **Demand-driven approach and participation are critical to the sustainable delivery of RWSS.** While the VWSCs were created in 2001, it was only through the implementation of the project that the approach to the delivery of the RWSS in Maharashtra witnessed a real shift from being supply driven to demand driven. The project clearly demonstrated that investing in participatory processes to identify, articulate, and satisfy the demand for WSS services at the level of the GPs might start slow, as it requires time to develop local capacity and decentralize delivery, but that the process pays off over time. In fact, the project registered a slow disbursement curve during the first two years of implementation and a very fast acceleration over the last three years, once capacities and local systems for service delivery were in place. The strategic use of community-empowering tools—for example, peer-to-peer learning, start-up grants for capacity building and women's empowerment, and incentives for good behavior—greatly contributed toward activating the VWSCs, building trust in the program, and fostering innovative approaches for sustainable service delivery and O&M.

2. **Initial capacity building is an important activity to prioritize before the formation of local committees.** The project introduced an initial capacity building fund (ICBF) through which a sum of INR 40,000 (around $1,000) was released immediately once the villages were selected. This money was used for organizing observational visits for a substantial number of villagers to model villages. Interestingly, this had several impacts: (i) the immediate release of money, however small, improved project credibility, and people realized that this was not a routine government project; (ii) exposure to other villages motivated communities to initiate implementation (seeing is believing) even before any investments were made; (iii) the selection process for village committees improved after the visits were organized (a busload of men and women went on each visit), and this created a threshold level of willingness and motivation.

3. **Sustainable operation and maintenance (O&M).** Despite the fact that fully sustainable O&M of the assets delivered by the project has not yet been achieved across all the target GPs, the project created a basis for future sustainability by introducing the culture of paying for a service. This was a new concept for villages, which for decades had been accustomed to expecting free service delivery from the government, and the shift was possible only thanks to community participation and a high level of transparency. End users are now aware of the costs of delivering services and are more than willing to pay them. In addition, the project supported outsourcing the collection of water-use fees to women's SHGs, leading to very successful

outcomes in terms of cost recovery and O&M. As a result, the use of SHGs as small-scale water providers was institutionalized in the GR of August 2009, to be extended to the whole of Maharashtra.

4. **Special needs of quasiurban and periurban areas.** A key lesson emerging from project implementation is that communities can be more effectively mobilized in smaller villages with more cohesive social backgrounds. When the population is in the range of 10,000, implementation becomes increasingly complex and requires different approaches. In fact, larger villages behave like small municipalities, where the end users are less willing to become directly involved in implementation and O&M, and politics play a stronger role. Different processes for delivery and O&M are then required. The situation becomes even more complex in the case of periurban areas, where the additional dimension of having to coordinate with a large urban area further complicates sustainable WSS delivery.

5. **Integrated village development and the need for coordination among different sectors at different levels.** Through the delivery of WSS services, the project has provided a new model at the village level that could be extended to and/or bundled with other services (for example, health, education, street lighting, solid waste management), depending on specific village needs, in order to achieve the multiplier effects of integrated development. But coordinating sectors and programs is a challenge; in some of the most successful villages, the GPs took the lead in promoting such integration. A similar level of integration would ideally be achieved at the block and district levels, and the GoM is committed to launching a state-wide policy to promote such integration.

6. **Aquifer management and multivillage collaborations.** Even if on a limited scale, the Component D2 (groundwater aquifer management pilot) has demonstrated that villages sharing common aquifers can successfully work together to recharge groundwater tables. This is an important lesson that should be scaled up to the national level to ensure the future sustainability of critical water sources that are otherwise quickly depleted.

7. **Integrated M&E system and monitoring cycle.** While the project successfully implemented an MIS system to manage all project data, the system was never fully integrated to measure indicators across project components and to produce comparable data. For example, each subcomponent had its own data set and M&E system; data collected using different methodologies could not be integrated across components. In addition to weak horizontal integration, the data collection systems did not always allow the easy transfer of data between the local and central levels due to lack of vertical integration. Based on this lesson, the GoM is currently assessing the M&E system to identify weaknesses and gaps and to develop an integrated MIS to support the next phase of the project.

8. **Adaptation of fiduciary requirements to the demand-driven approach and large-scale intervention approach.** Several lessons can be drawn from the experience of the project both in terms of procurement and FM.

   - First, a hands-on approach was needed to adapt fiduciary guidelines and procedures to the reality on the ground. In this regard, the Bank team should have regularly visited sample villages to gauge the evolving situation and identify innovative solutions. A simpler version of direct contracting up to a realistic contract value threshold could have better facilitated village-level procurement. Similarly, a simpler version of the procurement plan suitable to CDD projects could have been provided. Post procurement reviews should have been conducted regularly from early on, by visiting the sample villages rather than asking that procurement documents be brought to the state level. The reviews should have also assessed institutional weaknesses and clarified staff roles. This could have revealed systemic problems early on in the project.

     Similarly, a simpler accounting method suitable to village accounting (such as cash books, stock records, and so on) and more aligned to the systems adopted by the GoM under its own acts would have been helpful. The handling of community contributions, a critical issue, should have been clarified with clear guidelines to be reviewed by the implementing units. In addition, a greater amount of knowledge exchange across similar projects would have increased overall efficiency.

   - The project utilized an iterative approach that required a good monitoring and learning system to ensure compliance. To this end an MIS system was developed, but it needs to be further strengthened and built upon to support the future scale-up of interventions (particularly in light of the RSPMU's likely transformation into a WSS organisation for the GoM).

- Also, given the vast scale of the project's coverage and the future scale-up of its approach to the entire state, it is very important to build as much as possible on existing local human resources and capacities. This is a better approach than simply increasing the number of staff or creating new functions at the local level. For example, gram sevaks who are already familiar with the GoM's procurement and FM procedures could more easily learn about additional project requirements and provide the necessary support to GPs. The staff at the block level (subdistrict) could better monitor fiduciary aspects as well as issues related to project implementation. Also, experienced villages in exit status could transfer their experience to other villages. Overall, the simplified guidelines and procedures developed under the project should be formalized and used as a reference for the future scale-up of interventions.'

ANNEX 2: LESSONS LEARNT FROM THE KERALA SDM

KERALA RURAL WATER SUPPLY AND ENVIRONMENTAL SANITATION PROJECT '*JALANIDHI*'

Source: Reproduced from World Bank (2009b, pp. 18-19)

'6. Lessons Learned

1. **Decentralized service delivery approach for RWSS has the potential for scaling-up access.** The project's ability to exceed most of the targets in the Development Objective coupled with the strengthening of the sector institutions and local governments to ensure sustained delivery capacity demonstrates the potential of this approach to go statewide. However, as demonstrated with this project, the step by step approach taken to scaling up is a sound way to build capacity and prepares the ground for moving toward a sector wide approach and scaling up. Capacity building for implementation at local level and the existence of clear and enforceable "rules-of-the-game" contributes greatly to the success of decentralized implementation. "Learning-by-doing" approach to capacity-building is time-consuming but has proven to be effective. Developing implementation capacity is initially slow but when fully achieved results in accelerated delivery of services.

2. **Need for Enabling Environment:** Ownership of the project design and continuous support during its implementation at the political, bureaucratic and operational levels is a prerequisite for project success. Conducive policy environment and willingness to learn by doing are equally vital for success.

3. **Community Demand Driven is certainly the most appropriate approach for providing sustainable and high quality WSS services in rural areas, especially in the context of India.** Responsibility drives capacity. Informed choice by the communities leads to innovative, appropriate, cost-efficient and sustainable solutions, as shown in the project through the various technology options implemented, the spontaneous implementation of meters and the unexpected and impressive number of latrines conversion, ground water point recharges, environmental management facilities and rain water harvesting structures constructed. All these communities participated in the planning, design, procurement, implementation and management of their facilities, including the most vulnerable groups, therefore ownership is strong. If demand for reliable, equitable and sustainable water service remains high, experience and freedom to act as autonomous body would definitely help the communities to address the next challenges, including expansion of the schemes, major breakdowns or sources sustainability issues. Nowhere in India, has such achievement been reached using a different approach.

4. **Active participation of local governments is also critical to ensure greater accountability and long term sustainability.** If most of the responsibility would be in the hands of the BGs, the Panchayat Raj Institutions should be well integrated into the project's institutional design. In addition, organic and sustained links between state, districts, GPs and BGs are essential to guarantee the institutional sustainability and to ensure the appropriate operation and maintenance and long term management of the facilities. It is quite unrealistic to assume that the water and sanitation committees would become sustainable at the end of the project. Continued support and regular monitoring will be immensely useful in consolidating the institutions. This is particularly relevant in the case of the larger water supply schemes, for which sustainability challenges are obviously bigger.

5. **Bank needs to have effective remedies during supervision:** While piloting new approaches and implementing paradigm shifts—the borrowers must consistently provide sound and continuous leadership and staff in the project management units—throughout the project period. The Bank too should have adequate remedies (such as suspension of disbursements) to address the issue of frequent and arbitrary turnover of key project staff which can affect pace and quality of implementation.

6. **Improved assessment of cost estimates.** Projects implemented directly by communities can earn higher cost savings than when done through contractors. In this project, for example, actual costs were approximately 15% less than those estimated at appraisal. Greater accuracy can be introduced in cost estimation at appraisal by factoring-in the procurement selection method and implementation procedures.

7. **Avoid inclusion of a national component in State projects:** The small national TA component of the project which aimed at supporting nationwide advocacy of the sector reform policy did not take off due mainly to diminishing of GOI's interest during implementation. It may be best for the Bank to continue concentrating its support on state- level projects only.'

ANNEX 3: ACHIEVEMENTS OF THE MAHARASHTRA SDM

MAHARASHTRA RURAL WATER SUPPLY AND SANITATION PROJECT *'JALSWARAJYA'*

Source: Reproduced from World Bank (2010, pp. 23-12), excluding Tables.

'Annex 2. Outputs by component

Component A: Community development and capacity building

(i) Community capacity building

Objectives. The objective of this component is to facilitate the formation of an inclusive, responsible, and skilled VWSC and to build its capacity so as to empower it to plan, implement, operate, and maintain the WSS facilities through a participatory process of informed decision making and collective action within the sphere of the gram sabha and GP.

(ii) Women Empowerment Fund

Objective. This component aims to empower women to play an effective role in villages in the planning, implementation, and management of WSS facilities.

(iii) Village Panchayat Strengthening Fund (VPSF)

Objective. To build the institutional capacity of the VPs to enable them to perform a guiding, coordinating, and monitoring role of project implementation at the village level.

A2 Community infrastructure

(i) Groundwater recharge and source strengthening

Objective. To ensure that rural water-supply schemes are constructed around a groundwater resource that is dependable.

Sources. Under the groundwater management component, the GPs have sourced their water supply from different kinds of sources—both groundwater and surface water. A majority of sources are groundwater based (almost 98 percent), with a limited number of surface water sources such as rivers, canals, and irrigation tanks tapped through trench galleries/jackwells.

Wherever possible the existing dug wells have been deepened/repaired.

Achievements. The key strength of the project was to involve the community in identifying potential source locations and then using the district geologists' technical expertise to confirm the sources. Due to this practice, the community was very satisfied and the sustainability of the sources was 97 percent. An unintended benefit is that by credit closing, of the 1,114 project villages/hamlets that were being supplied water through tankers earlier, 981 villages now have sustainable water sources and thus no need of tankers.

... about 98 percent of the groundwater sources have been completed, with a limited number yet to be started while others are ongoing. Of the sources selected, a small number have failed due to (i) unfavorable hydrogeological conditions, that is, hard-rock strata, a limited aquifer, or high run-off rates; (ii) inadequate rainfall; or (iii) a collapsing of sources (particularly in the Nandurbar district). Due to this failure, 76 wadis had to be supplied with tankers, particularly in drought-prone districts with rocky strata, when the water availability reduced/sources failed.

Best practices. Various existing practices of the GSDA for source strengthening—including innovations developed by the GSDA such as bore-blast techniques, fracture sealing by cementation, and hydrofracturing—have been adopted vigorously under the project. The village sources have been located nearer to habitations as far as possible, integrating the traditional wisdom of villagers with the technical skills of district geologists. This has reduced the overall cost of source development and increased sustainability.

(ii) Water-supply schemes

The objective of this subcomponent is to develop cost-effective and sustainable water-supply facilities either by improving existing facilities or by setting up new facilities through a process of community consultation, collective action, and technical facilitation.

Achievements. Apart from creating highly sustainable water-supply facilities, the project has many notable achievements to its credit. These include: (i) design and successful implementation of water-supply schemes, with per capita supply of 40 lpcd, and provision of HSCs for about 77 percent of households with 100 percent HSCs in several schemes resulting in the removal of public standposts; (ii) planning of almost all water supply schemes as single-village schemes with local sources and ensuring sustainability of the sources; (iii) a per capita cost for implementing water-supply schemes of $23 (INR 46=$1), which includes the cost of physical infrastructure and is less than the prevailing norms in the state (ranging from $46 in the non-Konkan region to $51 in the Konkan region); (iv) provision of disinfection facilities and prompt use of the same to ensure supply of safe drinking water; (v) community operating schemes controlling pumping hours to suit their water requirements despite erratic power supply (beyond the control of communities and the water-supply department), and also installation of multiple programmable pump controllers (ROBOTs) to ensure control of pumping hours for power and water conservation; (vi) ensuring full-cost recovery including provision for depreciation with minimum average levels of six months of tariffs in O&M accounts (with tariffs ranging from $7.8 to $26 per year); and (vii) installation of water-recycling facilities for agriculture reuse at some places.

Best practices. Best practices were adopted by several community in the project. Notable practices are: (i) in Kharsundi village (Atpadi Taluk), where the women persuaded the community to opt for the rejuvenation of the existing water-supply scheme over a new scheme, thus saving about INR 100 lakhs ($217,400) in construction and O&M costs; and (ii) the artificial recharge for development of sustainable sources, through a participatory approach in Ussara village (Bhandara district).

Status of house connections. As a policy, the GoM aims to achieve 100 percent coverage either with individual HSCs or group connections,[60] thus eliminating standposts. The RSPMU had also targeted a minimum 80 percent coverage with HSCs before exiting from the GP and is making efforts toward this. By credit closure, 78 percent of project households (57% - direct, rest - group) had been provided with HSCs.

A3 Tribal development program

The objective of this subcomponent is to build the institutional capacity of tribal groups and to improve their access to sustainable WSS services with specific focus on tribal settlements. The Tribal Development Plan (TDP) includes financing of the following activities: (i) community development, including technical assistance in building the community-level capacity of tribal populations to self-manage their activities; (ii) support of infrastructure for drinking water supply including source strengthening, water conservation and recharge measures, community sanitation, and environmental and hygiene promotion; (iii) development of paraprofessionals especially for supporting health initiatives; and (iv) empowerment of tribal women and youth by implementing the WEF.

Tribal Development Plan (TDP). Consistent with Bank policy (OP 4.10, formerly OD 4.20), a TDP has been prepared as an integral part of this project. Recognizing local needs, the plan provided for nearly 12 percent of project costs, the largest single allocation dedicated to tribal communities. The component objective is to build institutional capacity of tribal groups and to improve their access to sustainable WSS services.

[60] Wherever households cannot afford individual connections, they come together and establish a group connection.

Of the 26 Jalswarajya districts, this subcomponent was implemented in 626 tribal GPs of 17 districts of Maharashtra.

To create awareness of WSS issues in tribal communities, a program of developing sanitation and hygiene promotion centers (SHPCs) in ashram schools run by the GoM in tribal areas has been taken as an entry point activity. Of 26 project districts, this program was implemented in 414 tribal ashram schools in 21 districts.

Key achievements

The project has served a crucial role in tribal communities, which are mainly outside the range of normal developmental benefits. Some key achievements are: (i) over 1.6 million tribal people have benefited from Jalswarajya, perhaps the largest tribal population to be benefitted by any Bank-supported project; (ii) tribal groups have mobilized community contributions (cash and kind) to the tune of INR 88.2 million ($1.92 million); and (iii) for the first time ever, many of the tribal GPs have enjoyed piped-water supply. Despite their location in difficult-to-access areas and dispersed settlements, the per capita cost of water-supply infrastructure has been below INR 1,215 ($26.4). Initial studies indicate that tribal habitations are recovering 100 percent of their O&M costs through user fees. Over 420 tribal GPs have collected advance O&M tariffs of up to 6 months, 162,529 tribal households and 346 tribal GPs have become ODF, and sanitation coverage has risen to 71 percent.

Component B: Institutional strengthening

B1 Capacity building

The objective of this component is to develop a shared vision and build competencies among key stakeholders at the state and district levels to enable them to perform their respective roles.

Status. The project has contributed significantly to the capacity building of officials, contracted professionals, support organisations, TSPs and nonofficials, and village communities. These in turn have contributed toward community capacity building. The project strategy of using capacity-building consortiums (CBCs) to carry out this process has been constrained by the lack of availability of a sufficient number of capable agencies and uneven performance by those selected to undertake the job. The project had to step in and, with the help of district teams and other institutions, take the responsibility of organizing a large number of programs. The project has also used the training of trainers (TOT) approach by the community to multiply capacity building efforts across a wide range of GPs/villages, districts, and stakeholders. Capacity building programs have evolved continuously over the project period, adjusting to needs on the ground and the project context. The project has also piloted a SEE in six GPs in each project district, using in-house resources.

B2 Information, education, and communication (IEC) including Sanitation, and Hygiene Promotion

The **objective** of this subcomponent is to develop and implement a development communication strategy in the state that will focus on promoting behavioral changes among all stakeholders in improved sanitation and hygiene practices and on empowering the rural poor in their interactions with partnering institutions.

IEC Status. IEC has played a key role in supporting all project components and has adopted a diverse range of innovative approaches. The IEC programs have continuously evolved over the project period, responding to the project context and needs. The campaign has progressively travelled from initial awareness creation, mobilization, and planning implementation to O&M phases. The focus of the IEC at credit closure was on: (i) water quality, (ii) O&M systems, (iii) collection and dissemination of success stories, and (iv) sharing lessons learned.

The operations and monitoring team (OMT) at the state level was provided with the services of an IEC specialist and a health and sanitation specialist, and the DFTs at the district level with funds for communication and dissemination equipment, access to the media, and production and distribution of display posters, folders, and pamphlets to households, wall writings and paintings, street plays, and other media events. IEC primarily focused on a core set of the most crucial health protection messages relating to the importance of: (i) water disinfections and safe home storage; (ii) hand washing after defecation and before

preparing food; and (iii) using latrines and toilets versus open-field defecation. Innovative demonstration methods were used to enhance learning effectiveness.

Status of Sanitation and Hygiene promotion: The Sanitation and hygiene promotion included supporting the GoM's sanitation strategy of stopping open defecation and hygiene behaviour change of village community....

B3 Monitoring and learning

The objective of this component is to generate information on the performance and progress of the project and to disseminate it among all the stakeholders for monitoring project implementation, learning lessons, and empowering them to work in partnership with one another for the attainment of project objectives.

Status Monitoring system: The online web-based MIS system—with a facility for tracking project progress and outcomes—has evolved over time through improvements made to it in terms of format, indicators, and so on. The best news is that this system was developed internally within the RSPMU. The team working on the MIS at the RSPMU can customize it as required based on the advice received from the project management and RSPMU specialists. Seeing the benefits of such a system, the GoM now wants to scale it up and apply it across all its programs, as part of its plan for streamlining institutions. The district teams also have accepted this system and are providing regular feedback and updates.

B4 Project management

The objective of this subcomponent is to: (i) strengthen the capacity of the ZP to perform its new facilitating roles successfully and (ii) set up and strengthen state-level institutional arrangements for policy development and coordination and monitoring so that the reform programs in the WSS sector are scaled up throughout the state. This subcomponent will finance project management costs at the district and state levels. At the district levels, the expenditures would include setting up the district water management and sanitation committees (DWMSCs) including costs of contracted professional services, office furniture and equipment, transportation, and incremental operating costs such as government staff incentives, travel, and subsistence. At the state level, the subcomponent will finance setting up of OMT, RSU, and six small units at the division level (including professional costs, transportation, and associated incremental operating costs).

The GoM mobilized a new project manager on August 1, 2009, who stayed with the project until credit closure and is continuing beyond. Of 245 staff positions in the districts, about 48 were vacant (20 percent) as of September 2009, 30 of which were leadership positions. The GoM recognizes this critical issue and has promised the mobilization of its staff.

Component C: Sector development and strengthening

C1 Knowledge management

The objective of this component is to establish an optimally linked learning network, involving state-, district-, and community-level stakeholders aimed at exchanging and using information and knowledge relating to various aspects of the sector and supporting policy development. Under this component, the following work was done:

1. Maintenance of a sector website, and various sector data (habitation data, census data, water-quality data, TSC data, Jalswarajya project data, comprehensive action plan data)
2. Maintenance of an online help desk providing online help on queries from districts
3. Regular capturing and dissemination of best practices from the field on a quarterly basis
4. Organizing of exposure visits and workshops as needed

As part of the scaling up of the RWSS programs in the state, the GoM would like to establish a permanent setup at the state level to manage knowledge and learning across the state.

C2 Water-quality monitoring

The **objective of this subcomponent** is to institute an effective water-quality-monitoring system so as to provide safe water to all communities. This subcomponent will finance: (i) state-wide one-time testing of all drinking water sources and subsequent follow-up measures; (ii) water quality monitoring and surveillance activities of state agencies; and (iii) the introduction of a system to empower village communities to monitor the performance of state agencies. Expenditure will include testing, analysis, and mapping of water quality on a statewide basis; incentives to water-quality-testing staff at the district level; and costs of village-level sample testing for bacteriological contamination. At the village level, a simple water-quality-monitoring system will be developed, taking into consideration the lessons learned from the Kerala and Karnataka II RWSS projects. Mahilamandals will be trained to monitor the water quality using simple kits and communities will be empowered to demand independent testing of water if a doubt arises as to its quality.

Status. Chemical water-quality testing of all public drinking water sources had been completed in the project districts as well as in the nonproject districts of the state in 2005—06. Based on the results, both within and outside the project, measures were taken to address the issues of villages affected by poor-quality water. In the initial phase of the project, community awareness was created through IEC about the importance of water quality and monitoring. Field-test kits for chemical and bacteriological contamination were distributed to all GPs. Training was also given to communities at the GP level for use of these kits under the National Rural Drinking Water Quality Surveillance Program (NRDWQSP). In the project, many leading SHGs have come forward for O&M of the water supply scheme, under which they would also be responsible for water-quality monitoring. Much attention is paid to water-quality-monitoring issues in the O&M training given to selected personnel at the GP level. At present, related activities are being monitored under the NRDWQSP.

Component D: Pilot components

D1 Local government incentive fund

ZP/GP incentive fund pilot

The objective of this subcomponent is to support selected GPs and ZPs to develop beyond the needs of the RWSS sector; to establish a more effective, accountable, and responsive approach to institutional building; and to contribute toward improving the quality of local governance in Maharashtra and furthering its decentralization.

ZP incentive fund. The idea was to generate a baseline for ZP governance and service delivery through an assessment of three selected ZPs. But this subcomponent did not take off due to a lack of response and hence was dropped at the MTR.

GP incentive fund. The GP incentive fund pilot is being implemented in nine districts; namely, Thane, Nashik, Satara, Sangli, Osmanabad, Yavatmal, Chandrapur, Nagpur, and Buldhana. The pilot, titled "Amchaya Gavat Amhi Sarkar" (meaning "we are the government in our village"), was formally launched on April 30, 2005. In an awareness campaign, various IEC activities such as distribution of posters, street plays, and so on were carried out to encourage GPs to participate in the competition. A workshop was organized for sarpanchs and gram sevaks to create awareness of the pilot and to motivate the GPs to participate in large numbers after project launch. All the GPs in these nine districts were entitled to participate in the pilot. Sensitization workshops were conducted from August to September 2005 for the sarpanchs and gram sevaks of the GPs participating in the campaign. As a result of the extensive IEC campaign for community mobilization, as many as 1,200 GPs participated. Through a careful selection process, one GP in each block was selected in the project districts. GPs were given a capacity building fund of INR 50,000 to cover the costs of exposure visits, baseline surveys, GP-level capacity building, IEC, and the formation of a village committee.

Orientation workshops in the selected GPs were undertaken from April to July 2006 in all districts. Development officers of the blocks from which GPs were selected for this project were trained at Yashada, Pune, for capacity building during May to June 2006. One hundred and five GPs were selected for this pilot project from these nine districts in a competition, of which seven GPs proved unable to implement the pilot project. This phase provided an incentive of no more than INR 10 lakhs for preparing and implementing the Village Development Plan (VDP) and Panchayat Development Plan. GPs could undertake any

innovative activities based on the resources available to them, to promote self-sufficiency in the VPs. GPs were free to decide village development plans as per their needs. CBOs like self-help groups, mahilamandals, and youth mandals could be actively involved in preparing the VDPs. The community managed the economic activities under the VDP. But while this approach was carefully administered, the very selection process made it into a reward program (rather than an incentive program). VDPs were to be approved by the district committee headed by the additional CEO of the concerned ZPs.

D2 Aquifer water management pilot (AWMP)

To **objective of this sub-component** is to develop and test approaches for the holistic and sustainable management of water resources with the involvement of key stakeholders.

Over years it has been seen that isolated village- or watershed-based groundwater management approaches have not resulted in sustainable groundwater management. It is observed that as groundwater aquifers do not confine themselves to village, block, or district boundaries, there must be concerted efforts to act at the aquifer level beyond such artificial boundaries. The existence of such an aquifer must be clearly defined and managed by the local community.

The project has successfully implemented a novel concept of aquifer-level water management (previously untried in India), extending the concept of community participation to groundwater management in three districts of Maharashtra—Aurangabad, Pune, and Buldana. For this purpose federations of the aquifer water management associations (AWMAs) were formed out of village-level committees. At the district level, technical and monitoring teams have been formed to oversee implementation of this pilot component.

The committees, with technical facilitation from district geologists, have planned and implemented low-cost structural measures to arrest the additional available run-off, which otherwise would have been wasted. At the aquifer level, nonstructural measures such as changing cropping patterns, and controlling and monitoring the groundwater withdrawals have been conceived and implemented by all the villages identified as part of the aquifer. As in the main project, each community has to contribute 10 percent against the capital cost of these measures. Support organisations have been hired to undertake capacity building.

The pilot proved to be useful and has emerged as a rational tool in ensuring the sustainability of groundwater to meet various needs such as drinking, domestic needs, and agricultural and even industrial needs. What is interesting and encouraging is that this model is found to be replicable elsewhere.

D3 O&M Pilot Fund

The **objective** is to develop (i) an O&M capacity-building model for ongoing drinking-water supply schemes that are outside the purview of the proposed project's community infrastructure component and (ii) an action plan for scaling up the model to eventually cover the entire state.

This sub-component was dropped from the project.'

ANNEX 4: ACHIEVEMENTS OF THE KERALA SDM

KERALA RURAL WATER SUPPLY AND ENVIRONMENTAL SANITATION PROJECT 'JALANIDHI'

Source: Reproduced from World Bank (2009b, pp. 10-12)

'3.2 Achievement of Project Development Objectives

Specific Development Objectives #1: Demonstrate the viability of cost recovery and institutional reforms by developing, testing, and implementing the new decentralized service delivery model on a pilot basis.

This objective was fully achieved and the key outcome targets were exceeded. The project has successfully demonstrated that GPs and communities, including the poorest and the vulnerable groups, can demand, plan, design, implement and manage water supply and sanitation schemes, and contribute to partial capital investment and fully recover operation and maintenance cost. This is an outstanding achievement in the Indian context for the following reasons:

First, the decentralized service delivery model has been fully accepted by GPs and rural communities. The project worked successfully in all 3712 participating communities (112 GPs) i.e. 148 percent of the PAD target. At the end of the project, more than 3.000 demands for new schemes are still pending, which demonstrates the large acceptance of the project principles. The project helped provide access to improved water services to about 995.000 people and an additional 132.000 people will be served, once the on-going works of the 7 large water supply schemes are completed in 2009. In the GPs covered by the project, water supply coverage increased from 55 to 81 percent and sanitation coverage from 76 to 86 percent. In addition, the project directly helped about 753.000 people to have access to improved sanitation services. As a result of the project efforts to build up the community's awareness on sanitation and hygiene and its relation to water, 85/112 GPs have received the Nirmal Gram Puraskar (GOI award under Clean Village Program) for achieving 100 percent housed latrine coverage.

Second, GPs and communities, including the most vulnerable groups contributed substantially towards the capital cost and helped in reducing State subsidy. GPs contributed US$ 6 million i.e. 8 percent and communities US$ 11.80 million i.e. 16 percent to the project infrastructure component. The average household contribution towards capital cost for rural water supply scheme is US$ 46. This is comparable to one month salary for an unskilled laborer or 100 kg of rice. Similarly, the Scheduled Caste and Scheduled Tribes (6,755 households) who hitherto had received free services contributed a significant amount estimated at US$ 187.000 in cash and labor, i.e. US$ 27 per household. As a result of the project, state subsidies towards capital cost for these new or rehabilitated rural water supply schemes were effectively reduced under the project from 100 to about 74 percent. In addition, the level of service provided was higher than anticipated as 100 percent of the households have opted for private connection. Three percent of the schemes have financed and installed on their own consumer meters, a rare phenomenon in the water sector in India.

Third, 90 percent of the communities fully recover recurring operation and maintenance cost, without any subsidies from the local or state Government. This represents an outstanding achievement, as compared to the average situation in rural India, where estimates of cost recovery rate for O&M in piped water schemes are usually very low.[61]

The water charges cover the operating costs including power charges, wages to pump operator, minor repairs etc. Average cost of supplying water is working out to US$ 0.06 per m^3, which attests the efficiency of the scheme. O&M cost per household per month is US$ 0.69, while average tariff is about 1 US$. This average O&M cost compares favorably with the cost per household for this size of schemes serving between 50 and 100 households. Finally, 95 percent of the households do pay their bills regularly, even the BPL families. These tariffs are actually higher than those levied by Kerala Water Authority

[61] 'Cost recovery is estimated about 27 percent according to the Review of Effectiveness of Rural Water supply Schemes in 10 States in India (World Bank, 2008): 1 percent in West Bengal, 6 percent in Tamil Nadu, 19 percent in Orissa, 21 percent in Andhra Pradesh, 30 percent in Uttarakhand, 36 percent in Uttar Pradesh, 47 percent in Karnataka, 60 percent in Kerala, 61 percent in Maharashtra and 86 percent in Punjab.'

(US$ 0.45 for families that consume up to 5 m^3 per month with exception for BPL families who get free access), and this is not seen as a problem.

Finally, the project was also very successful in being inclusive of the poor and marginalized groups. First, while the Below Poverty Line (BPL) population in Kerala is 36 percent, 53 percent of the project beneficiary households belong to the BPL category. Second, the project has reached and served the most vulnerable groups generally living in remote and hilly areas. About 16 percent of the project beneficiaries are from Scheduled Caste and Scheduled Tribes whereas these categories account for less than 2 percent in the state of Kerala. Finally, the project equally succeeded in empowering women, throughout the project cycle. Most of the water committee treasurers are women.

Specific Development Objective #2: Build the State's capacity in improved sector management in order to scale up the new decentralized service delivery model statewide.

This was fully achieved.

First, the project helped in building capacity for further scaling up at all levels: state, districts, GPs and communities as well as the support organisations and private sector.

Increased pace of implementation of the latest batches compared to the first ones attested the increased capacity of all stakeholders. In addition, after MTR, looking to the success of project implementation and huge demand for the project from the GPs, GOK decided to expand the scope of the project from 4 districts to all 14 districts in Kerala and 112 GPs. This limited scaling up was successfully implemented.

Second, GOK, KRWSA and KWA conducted innovative experiments whose lessons learned would be critical for further scaling up. These include: (a) GP Action Teams (GPAT) model, wherein GPs recruit individual support staff rather than recruiting a SO; (b) Scheme level committee model for large water supply schemes within a GP area; (c) Transfer of ownership and management of existing single GP water supply schemes from KWA to GPs and BGs, (d) Kerala Water Authority/GP partnership model in implementing and managing large multi GP water supply scheme, (e) Implementing statewide rain water harvesting campaign and capacity building, and (f) The Sector information management system developed as a pilot, though no statewide implementation has taken place.

Third, GOK has developed, based on project achievements, a sound policy framework to move at scale. GOK has approved in 2008 a new State Water Policy aiming at: (i) laying down guidelines and policy parameters for the optimal utilization and proper conservation of the water resource; (ii) ensuring people's participation in the water sector within the framework of decentralized democratic institutions; and (iii) promoting suitable frameworks and strategies for continual up-gradation of water environment. This policy is largely inspired by the experience and lessons learnt from the project. GOK has completed a detailed sector RWS assessment study and prepared a draft RWS policy.

Finally and equally important, the prospect for scaling up the decentralized service delivery approach is good. GOK has already taken a policy decision to scale up the project approach and is seeking continued Bank assistance to do so. Further GOI's new policy guidelines for the Eleventh Plan also supports the project approach and would encourage the states to move to statewide scaling up of the sector reforms.'

ANNEX 5: SUSTAINABILITY EVALUATION EXERCISE AND COMMUNITY MONITORING[62]

As part of the beneficiary assessments at credit closure, the RSPMU conducted beneficiary surveys to gauge the level of the project's benefits and impacts. Overall, the assessments concluded that the project's benefits were reaching the community and that the community has accepted the project model positively. These assessments have also raised issues to be considered by the GoM in its future programs/policies, in terms of increased support of GPs in O&M capacity building and in ensuring sustainability of institutional arrangements (that is, VWSCs' increased monitoring role and backup support from districts). This annex presents the results of these surveys. The assessments conducted by the RSPMU are:

1. Sustainability evaluation through community participation (August 2009)
2. Intervillage community monitoring (August—December 2009)

1. Sustainability evaluation

The SEE was conducted in August 2009 to assess the likelihood of the sustainability of schemes built under the project. The parameters covered for this evaluation were (i) source sustainability, (ii) functioning of water-supply schemes (technical), (iii) financial sustainability, and (iv) institutional sustainability. A total of 156 GPs—6 in each district—that are in the O&M phase for more than 6 months were selected.

A team comprising one person each from the social, technical, and accounting skills teams was selected from among the district team members. The team was selected by the respective heads of the RSPMU, based on their knowledge of the field and their proven ability to carry out such assessments. Initial orientation programs were carried out for the district teams. About 11 parameters (see attachment-1) were to be judged on a scale from 1 to 5 by each group as they visited the GPs. Various sub parameters and formats were developed by the RSPMU to guide the evaluation teams.

Process used. The assessment was conducted using the following process:

1. Assessment was done during the regular water-supply cycles in the GPs, without altering or modifying them.
2. Assessment was done following the participatory approach by involving the committee members and the community. The regional facilitators (RFs) and district team leaders attended the process at the GP level and monitored the process.
3. Initially a transect walk was conducted on day one to know the scheme and its components, plan for observations under the supply cycle, and collect basic information on the GP regarding technical, financial, and record-related issues.
4. A second transect walk was conducted with the community during the actual supply cycle to observe the distribution pattern, disinfection arrangements, quantity of water supply, equity in distribution, supply pressure, and so on.
5. Finally, in a village gathering, votes by raising hands were given on a scale of 1–5 for various parameters selected and the actual situation observed.
6. The results were shared in a wrap-up meeting with the community to highlight the required corrections to be carried out.

[62] This is Annex 6 of the Implementation Completion Report (ICR) of the Maharashtra RWSS, Jalswarajya (World Bank, 2010).

Summary of results

- The results are summarized as follows:

Sustainability category	No. of GPs	%
Highly likely (>90% score)	26	16.7
Likely (70–90% score)	115	73.7
Uncertain (50–70% score)	13	8.3
Unlikely (<50% score)	2	1.2

- In terms of specific parameters: source sustainability is 92 percent, functioning of water supply schemes 87 percent, financial sustainability 60 percent, and institutional sustainability 69 percent. As can be seen, financial and institutional sustainability has to be focused by ensuring adequate support at the VWSC level and by regular and ongoing capacity building, which has to be taken care of by the GoM as part of its sustainability improvement measures.

Key lessons

The assessment reconfirmed that the following issues must be addressed by the GoM in order to better support GPs and thus improve sustainability after project closure.

a. For sustainability, water tax charges should be according to O&M expenditure, which needs to be revised from time to time. Special efforts are required for inculcating the habit of the rational water tariff setting by the committees in general and the GPs in particular. Proper documentation of water tax collection and expenditure is required.

b. To make the scheme more sustainable, facilitation and training on the O&M aspect is required and regular reminders will be required post project for at least 6 months.

c. Specific intervention is required on the aspects of judicious use of water. Adequate water supply promotes sustainable use of individual toilets by villagers.

d. In terms of institutional sustainability, regular community monitoring is a must for sustainability. The VWSC should have adequate capacity for such monitoring. A greater involvement of women in such monitoring and O&M would also enhance sustainability. The SHG movement under the project has promoted good habits in coordination, cooperation, and participation, which is leading to the development of professional views among female members.

2. Community monitoring

The project undertook an intervillage community-monitoring exercise between August and December 2009, covering 60 GPs in all 26 districts. This was a first-of-its-kind exercise in any of the Bank-supported RWSS projects in India, wherein the community from one village visited another village to observe its services, systems, and institutions.

The objective was to develop a forum for sharing lessons across villages.

Process used

The exercise was done in GPs in which the systems were functioning for more than one year.

Of 60 GPs selected, about 43 had exited from the project. The visiting community group included the chairman/secretary of the VWSC, head/secretary of the GP, chairman of the WDC, the water operator, and SHG members. The exercise was facilitated by the district teams. The format of monitoring included focused group discussions, interviews of villagers, site visits, and desk reviews (attachment-2 presents the format used).

Results

The exercise concluded that: (i) almost all GPs (99 percent) were satisfied with the improved service levels; (ii) 90 percent of the sources were sustainable during the summer season; (iii) schemes in 96 percent of the GPs were functioning on the day of the visit; (iv) in 61 percent of GPs, women were involved in O&M activities; (v) in all GPs tariffs were being collected, and separate O&M accounts were being maintained in 93 percent of the GPs; (vi) 81 percent of the GPs collected O&M funds more than the required expenditure; and (vii) in all GPs chlorination was satisfactorily functioning, but in 15 percent of the cases, record maintenance had to improve.

Regarding sanitation, in 54 percent of GPs, 100 percent of households had access to toilets. In terms of impacts: (i) in about 76 percent of cases, GPs reported a reduction in waterborne diseases; (ii) on average there was a time saving of 1–5 hours in the collection of water; and (iii) people could now avoid travelling to far-off sources (0.5–5 km) due to improved sources available nearer to their habitations.

Specific results of this exercise are the following:

	Parameter measured	Yes % GPs	No % GPs	Remarks
1	Has any source-strengthening measure been implemented?	57	43	
2	Did the source go dry during the last summer?	10	90	
3	Whether the scheme is functioning satisfactorily on the day of visit?	97	3	Proxy indicator of sustainability
4	Whether water supplied from the scheme is sufficient?	98	2	
5	Whether the community is involved in monitoring of disinfection/ chlorination?	88	12	Need to improve
6	Whether women are involved in O&M activities (for example, any one—disinfection, proper use of handpumps, timely collection of O&M charges, and so on)	60	40	Can improve further for sustainability
7	Whether a tariff collection system exists?	100	0	
8	Does the VWSC maintain O&M account books?	93	7	Handholding shall be done for the remaining 3%
9	Whether a regular person is appointed for O&M?	95	5	
10	Whether water tax collection is more than O&M expenditure including power charges?	82	18	
11	What is the situation of waterborne diseases before and after Jalswarajya project? Whether it has improved?	77	23	Need to focus IEC and hygiene improvement

Other measures

	Parameters	
1	What is the percentage of collection of O&M charges in the last six months?	Up to 100% collection—38% GPs; 50–80% collection—35% GPs; <50% collection—27% GPs
2	What is the percentage of household connections? Less than 50%, up to 80%, 100%	Up to 50% households connected—20% GPs; 50–80% connected—60% GPs; 100% connected—20% GPs
3	Is there any system for chlorination and are records being maintained?	Yes—85% Exists, but records not maintained—15%
4	How many households are having toilet facilities in village?	55% GPs have 100% household coverage with toilets; others catching up
5	How much distance is travelled by women for drinking water before the Jalswarajya Project (which is now saved)?	15% GPs saved up to 0.5 km 47% GPs saved 0.5–1.5 km 38% GPs saved > 1.5 km
6	How much time women can save due to Jalswarajya (because of water availability)?	Regions Amrawati—2 to 3 hours Kokan—1 to 4 hours Aurangabad—1 to 5 hours Nashik—1 to 5 hours Nagpur—1 to 4 hours

ATTACHMENT 1

Sustainability assessment format

Name of scheme/habitation/village:.....

Name of GP: .....

Name of taluka/district: .....

Date commissioning of water:.....

Supply scheme: .....

Date of visit: .....

Name of district team leader: .....

Name of VWSC president:.....

Scoring criteria:

Always = 5; > 90 percent of the days = 4; between 70–90 percent days = 3; between 50–70 percent days = 2; less than 50 percent of the days = 1
Parameter score on a scale 1–5 (poor to best).

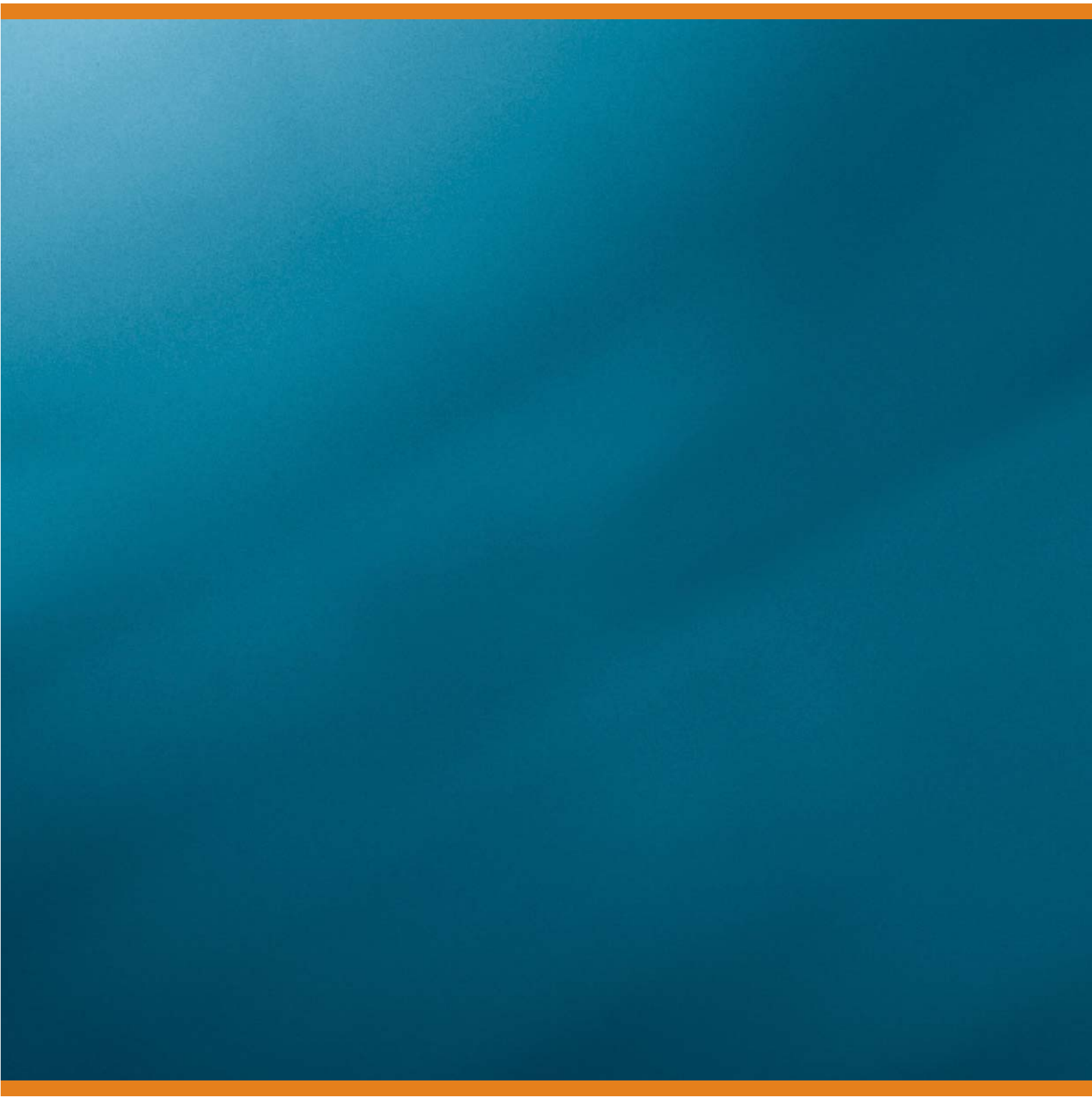
	Parameter Score	Score
	Source sustainability	
1	Is water source delivering as per design capacity since commissioning of the WSS scheme?	
2	Are all system components working satisfactorily—pumping station, overhead tank, distribution system, and so on?	
3	Is water supply provided every day for at least 2 hrs?	
4	Do all group/house connections covered by the scheme receive water every day?	
	Water-supply system functioning	
5	Do schedule caste households receive water supply every day through group or house connections?	
6	Are distribution pressures adequate—especially at the tail end?	
7	Is the disinfection system functioning?	
8	Has the quantity of water supply per household increased after Jalswarajya?	
	Financial sustainability	
9	O&M expenses fully met from user charges only? (excluding 6-month advance deposit). Are project funds never used for meeting O&M expenditure?	
10	Are people regularly paying water bills?	
	Institutional sustainability	
11	VWSC is functional and effective?	

Sustainability assessment: Highly likely = > 90 percent; likely = 70–90 percent; uncertain = 50–70 percent; and unlikely = < 50 percent.

ATTACHMENT 2

Community monitoring format

	Indicators	Methodology	Remark
1	Has any source strengthening measure been implemented?	Transit walk	
2	Did the source go dry during the last summer?	Discussion with the VWSC	
3	Whether the scheme is functioning satisfactorily on the day of visit?	Transit walk	
4	Whether water supplied from the scheme is sufficient?	Discussion with the VWSC and Beneficiaries	Individual household taps should be observed
5	Whether the community is involved in monitoring of disinfection/chlorination?	Discussion with the VWSC	
6	Whether women are involved in O&M activities (for example, any one of disinfection, proper use of handpumps, timely collection of O&M charges, and so on)?	Discussion with the VWSC and WDC	
7	Whether a tariff-collection system exists?	Registers	Check the registers and O&M receipts
8	Does the VWSC maintain O&M account books?	Registers	
9	Whether a regular person is appointed for O&M?	Registers	
10	What is the percentage of collection of O&M charges in the last six months?	Registers	50%, 75%, or more?
11	Whether water tax collection is more than O&M expenditure including power charges?	Registers	
12	What is the percentage of household connections? Less than 50%, up to 80%, 100%.	Registers	Verify household connections
13	Is there any system for chlorination and whether records are maintained?	Registers	
14	How many households are having toilet facilities in the village?		
15	How much is the fund balance in the O&M bank account?	Registers	
16	How much distance is travelled by women for collecting drinking water before the Jalswarajya Project (which is now saved)?	Registers and interview	Direct discussion with women
17	How much time women can save due to Jalswarajya (because of water availability)?	Interview	Direct discussion with women
18	What is the situation of waterborne diseases before and after Jalswarajya project?	Registers and group Discussions	Review records of aanganwadis and public health centres



About Triple-S

Triple-S (Sustainable Services at Scale) is an initiative to promote 'water services that last' by encouraging a shift in approach to rural water supply—from one that focuses on implementing infrastructure projects to one that aims at delivering a reliable and indefinite service. The initiative is managed by IRC International Water and Sanitation Centre in the Netherlands in collaboration with agencies in different countries and with funding from the Bill & Melinda Gates Foundation.

About *India: Lessons for Rural Water Supply—Assessing progress towards sustainable service delivery*

This study, commissioned by Triple-S, seeks to shed light on the progress in achieving scaled-up sustainable rural service delivery. It examines a number of service delivery models currently being implemented in India, by identifying their strengths, challenges and limitations. The study also identifies key conclusions for achieving more sustainable service delivery in India. It is one of 13 country studies done as part of a broader international study.

For more information and access to the other country reports, literature reviews, and the synthesis document please visit http://www.waterservicesthatlast.org.

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