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**Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovation**

**Cross Comparative Analysis**

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**Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovation**

**Cross Comparative Analysis**

**“Cross Comparative Analysis of Country Practices within the Latin American context”.  
Article 2 (pp. 89-141)**

**Keywords**

Water and sanitation, socio-technical innovations, inequality, vulnerability, democratization, rural sanitation, community participation, citizenship, water politics

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## **Presentation of the SPIDES Series and the Working Paper**

SPIDES stands for Research Projects Series (SPI), DESAFIO Project, for its acronym in Portuguese and Spanish. WATERLAT-GOBACIT is a network dedicated to research, teaching and practical interventions connected with the politics and management of water and water-related activities. The DESAFIO Project ([www.desafioglobal.org](http://www.desafioglobal.org)) was developed by researchers of WATERLAT-GOBACIT's Thematic Area 3, dedicated to the Urban Water Cycle and Essential Public Services, jointly with invited partners.

DESAFIO had a lifetime of 30 months, from 1 February 2013 to 31 July 2015. It was funded by the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement N° 320303. The information contained in the documents published in the SPIDES Series reflects only the views of the researchers, and the European Union is not liable for any use that may be made of the information contained therein.

DESAFIO is the acronym for “Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovations”, the project's full title. DESAFIO literally means “challenge” in both Portuguese and Spanish, the two main working languages of the project owing to its focus on Argentina, Brazil, and Colombia. This was a fitting acronym for the project, as it concerned what still now after the end of the Millennium Development Goals in 2015, constitutes one of the most difficult challenges facing developing regions: eradicating structural social inequality in the access to essential water and sanitation services. In other words, as the full title states, the project was about the democratization of the politics, management, and access to essential public services, with an empirical focus on water and sanitation services.

The project focused on the study of eight experiences identified in Brazil, Argentina and Colombia, which targeted the deficit of essential services in vulnerable communities through the design and implementation of socio-technical innovations. These experiences had in common an approach that articulated technological development with a clear concern for some aspects of the democratization process, for instance involving community members in one or more stages of the design, implementation, and long-term maintenance of the systems. Bolder initiatives extended the involvement of common citizens to the design of public policy and introducing mechanisms of radical democracy to empower citizens-users to monitor the performance of the government, the service providers, and other relevant power holders. Latin America has been an experimental field for this kind of developments, and the project chose a range of experiences in order to cover a variety of socio-political, cultural, and policy-institutional contexts, in addition to a wide selection of settings including urban and rural communities in the three countries. DESAFIO placed these experiences of socio-technical innovation at the heart of the study: “the main tenet of [the project] is that achieving the development goals set by the international community [...] crucially depends on harnessing existing and developing new appropriate and innovative socio-technical solutions for the provision of safe water and sanitation services” (Castro, 2013: 3).

This way of framing the research problem led to the formulation of specific questions that guided the study:

How can we harness existing and develop new socio-technical innovations in order to change policies, to develop strategies and practical interventions, and to enhance policy learning for tackling unacceptable inequalities and injustice in the access to essential water and sanitation? What conditions, factors and processes facilitate the emergence of socio-technical innovations in this sector? What are the critical requirements to make successful socio-technical innovations sustainable and replicable? What are the obstacles to their sustainability and replication? (Castro, 2013: 3).

In order to respond to these research questions, DESAFIO adopted a comparative, interdisciplinary approach grounded in the social sciences and involving the participation of technical disciplines, particularly sanitary engineering, epidemiology, health, and ecology. It was also transdisciplinary, as the research team included practitioners from public sector and civil society institutions, and was developed in close co-operation with community organizations and other relevant actors. We present a more detailed discussion of the methodological approach employed by the project in another Working Paper of the SPIDES Series (Castro, 2015).

This Working Paper presents an edited version of two research reports corresponding to the cross comparative analysis of the 10 case-study reports that composed the core of the project work. Article 1 presents a systematic comparative analysis of the case-study results elaborated by our researcher partner at Coimbra University in Portugal. The team was coordinated by Prof. Maria da Conceição Cunha, and the comparative work was led by Dr. Rute Pinto. Article 2 was developed by DESAFIO's Coordinator, Prof. Jose Esteban Castro. The nature of the articles is very different. Article 1 systematizes the analysis looking for common patterns, findings, and weaknesses across all 10 case study reports. Article 2 has the objective of identifying the key lessons learned from the studies that may contribute to the development and implementation of public policies that promote the democratization of water politics and management in Argentina, Brazil, and Colombia, the three countries covered in the research.

In addition to the reports presented in this Working Paper, the reader may benefit from complementary information that we have made available online, including video records of public presentations made by the researchers in a number of events organized by DESAFIO. These include the First Project Conference, which took place in Recife on 25 February 2013 (<http://desafioglobal.org/meetings/open-meetings/conference/>), the Final Project Conference that took place in Rio de Janeiro on 27-28 July 2015 (<http://desafioglobal.org/meetings/open-meetings/second-international-conference/>), and a special dissemination seminar that took place in the city of Brasilia on 9 September 2015 (<http://desafioglobal.org/meetings/open-meetings/post-project-meetings/seminar->

in-brasil-9-10-september-2015/day-1-a-seminar-for-research-and-debate-desafio-project-9-september-2015/). The presentations of the First Conference were published in the SPIDES Series of Working Papers (CASTRO et. al, 2013, available at: <http://waterlat.org/WPapers/WATERLAT%20Working%20Paper%20SPIDES%201.pdf>).

The Working Paper constitutes work in progress that may be revised, and may be further developed and later published in journals or as book chapters. We are pleased to present this work to the interested public.

Jose Esteban Castro  
Project Co-ordinator

Newcastle upon Tyne, December 2015

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Castro, J. E. (2013). Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovation (DESAFIO), Research Proposal (Annex I - Description of Work), ([www.desafioglobal.org](http://www.desafioglobal.org)), EU 7<sup>th</sup> Framework Programme. Newcastle upon Tyne: Newcastle University.

**List of Acronyms**

ALBA	Bolivarian Alliance for the Peoples of our America
APLA	Planning Agency (Argentina)
ASSEMAE	National Association of Municipal Water and Sanitation Services
AySA	Argentinian Water and Sanitation (Argentina)
BAMA	Buenos Aires Metropolitan Area
BRL	Brazilian Real
CAF	Andean Decelopment Corporation
COP	Colombian Peso
CRA	Regulatory Commission for Drinking Water and Basic Sanitation (Colombia)
CoFAPyS	National Council for Potable Water and Sanitation (Argentina)
DESAFIO	Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovation
ECLAC	UN-Economic Commission for Latin America and the Caribbean
ENOHSA	National Entity of Sanitation Water Works (Argentina)
ERAS	Water and Sanitation Regulatory Entity (Argentina)
ETOSS	Tripartite Entity of Sanitary Works and Services
IBGE	Brazilian Institute of Geography and Statistics
IDB	Inter-American Development Bank
IFIs	International Financial Institutions
INAP	National Institute of Public Administration (Argentina)
INDEC	National Institute of Statistics and Censuses
ISGSD	International Society of Groundwater for Sustainable Development
KAF	Konrad Adenauer Foundation (Germany)
KfW	Reconstruction Credit Institute (Germany)
LA&C	Latin America and Caribbean
MDGs	Millennium Development Goals
MINPLAN	Ministry of Federal Planning, Public Investment, and Services (Argentina)
MPG	Participatory Management Model
NGA	Great North Region (Argentina)
NGOs	Non Governmental Organizations
OSN	National Sanitary Works (Argentina)
PAHO	Pan American Health Organization
PDA	Department Water Plan (Colombia)
PDS	Water Supply and Sanitation Master Plan 2006-2020 (Argentina)
PIA	Immediate Action Plan (Argentina)
PMSS	Project for the Modernization of the Water and Sanitation Sector (Brazil)
PBQ	Quilombola Brazil Programme
PRONAPAC	National Programme of Potable Water and Sewerage (Argentina)
RJMR	Rio de Janeiro Metropolitan Region



SDGs	Sustainable Development Goals
SDGIs	Sustainable Development Goal Indicators
SEPPIR	Secretariat of Policies to Promote Racial Equality (Brazil)
SISAR	Integrated Rural Sanitation System
SNAP	National Service of Rural Potable Water and Sanitation (Argentina)
SSPD	Superintendence Domestic Public Services (Colombia)
SSRH	Under-Secretariat of Water Resources (Argentina)
UFMG	Federal University of Minas Gerais, Brazil
UFRJ	Federal University of Rio de Janeiro, Brazil
UFPE	Federal University of Pernambuco, Brazil
UN	United Nations
UNDP	United Nations Development Programme
UNR	National University of Rosario, Argentina
UNIVALLE	University of the Valley, Colombia
WHO	World Health Organization
WSS	Water and sanitation services

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**Cross Comparative Analysis of  
Country Practices within the Latin  
American context**

**Work Package 5 Report  
(Deliverable 5.2)**

**Author**

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Newcastle upon Tyne, 31 July 2015

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## **Article 2**

### **Cross Comparative Analysis of Country Practices within the Latin American context**

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#### **Introduction**

DESAFIO's ten case studies cover a range of experiences with socio-technical innovations designed to democratize politics, management, and access in the field of essential water and sanitation services (WSS) that have been implemented in Brazil, Colombia, and Argentina over a time span extending over several decades. The Cross Comparative Analysis of Case Studies Report (Pinto et. al., 2015) has addressed in detail the main characteristics of the ten case studies, covering the project's six analytical dimensions, and systematizing key findings and results in relation to the original research questions that guided the project.

The main objective of this particular report is to present an updated overview of the situation of WSS in Latin America and the Caribbean (LA&C), with emphasis on the situation affecting the three countries participating in the study, and to discuss key project findings that are particularly relevant in the light of this situation.

It is worth highlighting here that Brazil has been the main focus of DESAFIO, as the original call for proposals asked for research on "social innovation for vulnerable populations [...] in the context of the Brazilian experience" (European Commission, 2011: 23). As a result, seven out of our ten case studies focused on Brazil, and were conducted by four Brazilian partners. However, to enhance our learning about experiences of democratization in the field of WSS we also included two cases from Colombia and one from Argentina. This proved to be an excellent approach, and as this report argues, the resulting project findings are relevant for LA&C as a whole. These findings may also contribute to policy design and implementation in the WSS sector in other regions facing similar challenges.

To help focusing on the topic, it is also useful to revisit here DESAFIO's key research questions, which guided the case studies and our analysis:

How can we harness existing and develop new socio-technical innovations in order to change policies, to develop strategies and practical interventions, and to enhance policy learning for tackling unacceptable

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inequalities and injustice in the access to essential [water and sanitation services] WSS? What conditions, factors and processes facilitate the emergence of socio-technical innovations in this sector? What are the critical requirements to make successful socio-technical innovations sustainable and replicable? What are the obstacles to their sustainability and replication? (DESAFIO, 2013: 3)

As stated in our original project proposal, our approach was based on several assumptions, which also provide the framework for the analysis presented in this report:

We argue that the main challenges facing the international community in this area are not merely technical or environmental, but are rather grounded on and conditioned by economic, socio-political, cultural and policy-institutional processes. Therefore, what is required is the development of appropriate and innovative socio-technical interventions, grounded on the principles of substantive democracy and citizenship, to facilitate the involvement of users in the identification of their problems and in the design, implementation and monitoring of socio-technical solutions. This is needed to enable the relevant actors, and most particularly local communities and governments, to achieve efficacy and effectiveness, as well as efficiency, in the organization of universally available and safe essential WSS. [...] We argue that [the] deficiencies [in the provision of adequate WSS to vulnerable communities] are neither caused by unfortunate environmental constraints nor by a shortage of scientific and technical knowledge or by the unavailability of technological solutions, even in the poorest countries. Rather, the main causes for these and other unacceptable conditions -that the current development targets aim to reduce and eventually eradicate- are mainly of a socio-political, cultural, and policy-institutional nature. What we confront are protracted structural social inequalities historically developed and reproduced along the lines of age, class, ethnicity, gender, and other power-based social divisions (DESAFIO (2013: 3).

In this connection, owing to the nature of the problem studied DESAFIO had a strong interdisciplinary focus that involved technical dimensions, particularly with contributions from sanitary engineering, public health, and environmental sciences. However, DESAFIO was a project within FP7's Cooperation Theme 8 "Socio-economic Sciences and Humanities", and therefore the theoretical framework was informed by contributions from critical social science, most particularly urban political ecology, critical geography, and sociology. Departing from one of the key principles of political ecology, we argue that the causes of the extreme inequalities suffered by vulnerable populations, and the potential solutions that may help us eradicate these inequalities, are not primarily technical, but are rather fundamentally political in nature (e.g. Swyngedouw et. al., 2002; Castro, 2006). A very rewarding outcome of our research has been that many

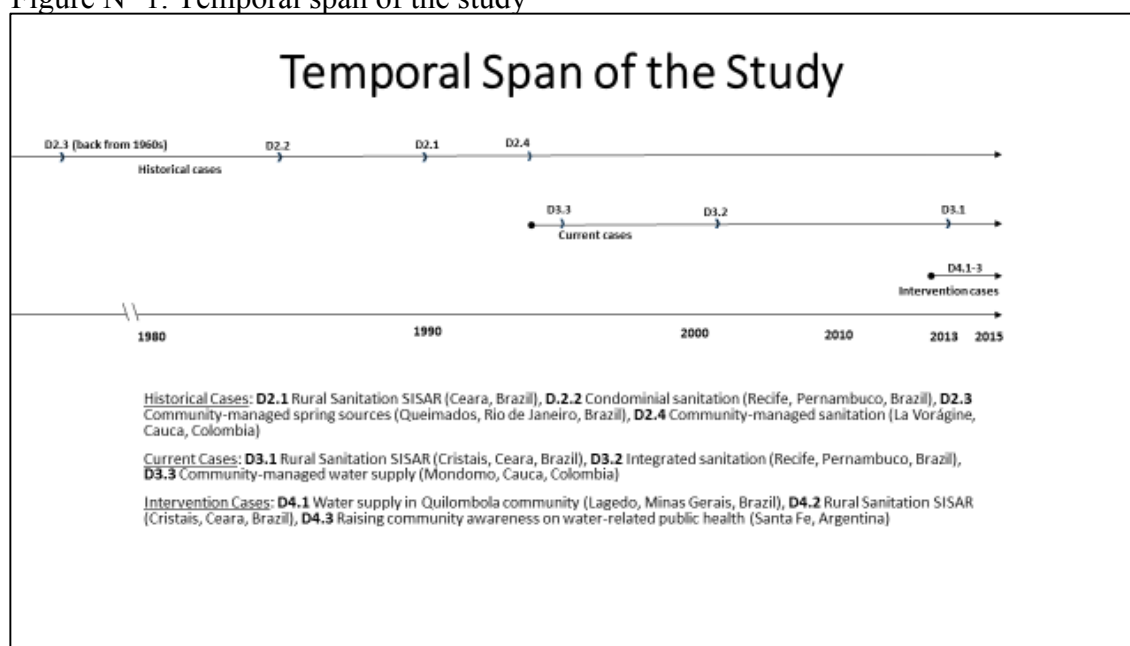
of the technical specialists consulted and interviewed during the research, particularly engineers and other experts that have been at the forefront of managing WSS in the challenging circumstances affecting vulnerable communities, have reinforced this message: the main problems, and their potential solutions, are fundamentally political (e.g. Melo [JC], 2014, 2015; Miranda Neto, 2013, 2014, 2015; Montenegro, 2013, 2015a 2015b).

The First Section of the report examines the recent experiences that took place in LA&C in relation to political processes and the corresponding policy and institutional reforms introduced in the WSS sector that have been key conditioning factors for the emergence and implementation of the socio-technical innovations under study. We look first at the overall context in LA&C as a region, and then address the situation in Argentina, Brazil, and Colombia. The Second Section discusses the key project findings, along the lines of the project's research questions, and their relevance for the region and the individual countries. The Conclusions provide a brief summary of the key points.

### **Achievements and challenges facing the democratization of essential WSS in LA&C: politics, institutional reforms, and actual results**

As mentioned before, DESAFIO's case studies addressed a range of socio-technical innovations designed to democratize the politics and management of WSS implemented in Argentina, Brazil and Colombia over several decades. These cases include from community-organized and managed spring water sources in the Rio de Janeiro Metropolitan Area (RJMA) dating back at least to the 1960s, to interventions implemented during the period of the research (2013-2015). Figure N° 1 illustrates the temporal distribution of our ten case studies.

Figure N° 1. Temporal span of the study



In practice, our focus was centred on the period beginning in the 1980s, when the bulk of our cases are concentrated. This is a significant period, as the 1980s witnessed a radical departure from the past in several aspects concerned with the provision of essential public services at the international level. In this period, there were introduced far-reaching transformations in the role of the State in relation to the organization, provision and regulation of essential services, with high impacts on vulnerable populations, a matter that has been the object of an extensive literature. We have discussed these transformations in more detail elsewhere in this project (Castro, 2015), and therefore will only revisit here some key issues that are relevant for this report.

Among the most influential processes that need to be mentioned, the 1980s saw the introduction of radical reforms, broadly termed “neoliberal” or “neoprivatist”, which prompted the subordination of democratic political processes to the interests of globalized, powerful financial markets (Stiglitz, 2002). One of the main manifestations of these reforms in the sector of WSS was the de- and re-regulation of services, and the transfer of these services, most of which were in public hands, to a wide range of “private” actors, from Non-Governmental Organizations (NGOs) and religious charities, to community organizations, or to private businesses in cases that were deemed to be commercially attractive. This neoliberal project was reinforced by a strong strand of neoconservative politics that became extremely influential in the United States and Great Britain during the 1980s, which attacked the notion that access to essential services was a social right of citizenship or that these services constituted public goods that should be outside the market. Neoconservative thinking postulates that the State should no longer take responsibility for these services and that citizens themselves should take responsibility to provide for themselves and be either able to obtain the goods and services they need, including WSS, in the market place or, in the case of poor communities, fund the construction and long-term maintenance of the systems themselves by providing financial resources, raw materials and labour. It is important to differentiate here between long-standing traditions based on principles of solidarity, reciprocity, self-help, autonomy, that in Latin America can be traced back to the indigenous cultures that pre-existed colonization and the neoliberal/neoconservative project. These long-standing traditions are very much alive in Latin American popular culture, and have been reinforced by the role played by progressive religious groups, NGOs, and other organizations at least since the 1960s.<sup>2</sup> Although the neoliberal and neoconservative project is based on principles and objectives that are odds with these traditions of solidarity and reciprocity, it has often benefitted from the predisposition of poor communities to find solutions by themselves, especially in the absence of State intervention to tackle existing inequalities. As a result, often the old traditions of solidarity and reciprocity became entangled with the policies promoted by the

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<sup>2</sup> See a synthetic reference to these traditions, including relevant literature, in, “Social participation from below” (in Spanish), Castro (2012b), pp. 144-149.

neoliberal/neoconservative project that sought to free the State from responsibility to provide essential services and transfer this responsibility to the communities themselves.

In the 1980s, these transfers of the responsibility for essential WSS to any actor outside the State, including poor communities, was called “privatization”, a term that in the 1990s would be reserved more precisely to the transfer of WSS to private, mostly multinational, water monopolies (Castro, 2006). However, reflecting on this all-encompassing definition of “privatization” of the 1980s it is very relevant to understand the context of the socio-technical innovations under study, as several of them were designed and implemented during this period. In fact, this neoliberal agenda remains highly influential, and, to different degrees and in a diversity of ways, continues to be the dominant framework for public policy in the sector of essential services. For example, Colombia one of the countries included in the study now forms part of the Pacific Alliance of LA&C countries that has formally adopted the neoliberal approach for the provision of essential services (see more details in Section 1.4 of the report). Moreover, the neoliberal agenda has retained considerable influence even in countries like Argentina and Brazil, also addressed in the study, where since 2003 the governments introduced radical reforms to counter some of the worst impacts of neoliberal policies on the most vulnerable sectors of the population. This is because the neoliberal reforms of the 1990s have been extremely successful in erasing the notions that essential services like WSS constitute a public good or a social right that must be universally available independently of the capacity of payment of the users. Thus, many public-sector service providers now operate as commercial companies whose primary objective is to make “profit” rather than delivering a universal public service. This has become a major obstacle for achieving the universalization of essential services like WSS, as a large share of the unserved population is also unable to afford the cost of these services (Castro, 2012a).

Another important reform attempt introduced in this period was the “decentralization” of the State. “Decentralization” in fact was in the agenda of different social actors, from left-wing sectors seeking the democratization of the State to the international financial institutions (IFIs), notoriously the World Bank, the International Monetary Fund and the aid agencies of the United States and Europe that pursued the neoliberal agenda (Coraggio, 1991). An important objective of decentralization from the perspective of those seeking to advance the process of democratization was to bring governments and providers of essential public services closer to the users and make them more accountable to the democratic control of the citizenry. In Europe, the principles of decentralization as a democratizing force were laid out in the European Charter of Local Self-Government (Council of Europe, 1985). However, with hindsight, despite the advanced democratic principles of the European Charter the progress of the democratization process in Europe has been less satisfactory than expected (Mokre and Riekman 2007). In developing countries, including the LA&C region, the situation has been even more difficult. Effective, truly democratic decentralization, involves not only the transfer of responsibility from central to local and regional governments, but more importantly requires the allocation of sufficient financial and human resources to make decentralized decision making and implementation viable and democratically accountable, most particularly in relation to the provision of essential public services in areas previously unserved or poorly served (FAO, 2004: 8-9). The evidence shows that



this kind of decentralization has seldom taken place, and rather decentralization has often served as a complementary measure of neoliberal programmes to dismantle the State and transfer responsibility for essential services to other actors, particularly private businesses. The neoliberal objectives were clearly laid out by the IFIs during the 1990s, as in the following example:

Private participation offers enormous potential to improve the efficiency of infrastructure services, extend their delivery to the poor, and relieve pressure on public budgets that have long been the only source of infrastructure finance. Encouraging more private involvement requires that governments change their role –no longer directly providing infrastructure services but mastering the new business of fostering competition among private providers, regulating where competition is weak, and supporting the private sector more generally. [...] The Bank Group needs to maximize its leverage, concentrating on activities that produce systemic reform, catalyze private involvement, and expand private investment. [...] Special attention needs to be given to IRDB and IDA lending to ensure that it facilitates private involvement in infrastructure by focusing on: public sector actions to strengthen the enabling environment for the private sector and promote systemic reform, activities to prepare enterprises for privatization or concessioning, and financing mechanisms to leverage private funding [...] (World Bank, 1998: 1-2).<sup>3</sup>

Decentralization, together with de-regulation, were part of the systemic reforms promoted by the World Bank and other IFIs in the 1990s to “prepare enterprises for privatization or concessioning” to private companies. In relation to WSS, decentralization in LA&C took the form of a breakup of the monopoly structures created by the State during the 20<sup>th</sup> Century for the provision of these essential services, and the transfer of responsibility for these and other basic services to regional or local governments (Castro, 2004: 7-10). However, too often the decentralization of responsibilities was not accompanied by a transfer of the resources needed for local governments to fulfil the new role, which provoked a crisis in the provision of WSS, often leading to the dismantling of physical infrastructure and the loss of the specialized workforce (see for instance, Azpiazu et al., 2014 for Argentina, a flagship country for these policies during the period under study; Costa, 1994, 2003, and Rezende and Heller, 2008, for Brazil). This neoliberal decentralization agenda became dominant, though the social sectors that sought decentralization as a vehicle to democratize the State continued their struggle and succeeded to protect public services in certain areas (see for example the reference to the experience of ASSEMAE in Brazil in Castro, 2004: 10) or even managed to use,

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<sup>3</sup> As mentioned earlier, although it has been argued that this neoliberal agenda would have been abandoned, it continues to inform mainstream public policy internationally. For an example directly relevant to this report, see the almost identical approach currently adopted by the countries of the Pacific Alliance, as discussed in Section 1.4 in this report, especially the reference to CAF (2015).

consciously or not, some aspects of the neoliberal reforms to foster democratic objectives. There is evidence of these complex interrelations between formal neoliberal policies and actual practices in the ground in some of the experiences studied in DESAFIO.

Finally, another important element that played a central role in the transformations introduced in this period was the debate about the need for “appropriate technologies”, originated in the critique of conventional development programmes and mainstream economic thinking. Among the most influential of these critics was Ernst Friedrich Schumacher, who in his work *Small is Beautiful* postulated the need for “small-scale technology”, “non-violent technology”, “technology with a human face”, “intermediate technology”, technology that is “simpler, cheaper, and freer than the technology of the rich”, “self-help technology”, “democratic or people’s technology to which everybody can gain admittance”, etc. (Schumacher, 1973). Therefore, the notion of appropriate technology came to refer to technologies that are small in scale and appropriate to local contexts as they seek to tap local sources of raw materials, energy, and labour, and that are simple enough and affordable to make them widely available, involving local communities directly in their management and maintenance, and giving the poor access to benefits that were before reserved to the rich and powerful. Several of DESAFIO’s case studies focus on socio-technical innovations clearly influenced to some extent by this approach, most particularly the Condominial Sanitation system (Castro and Ferreira, 2015a), the Integrated Rural Sanitation System (SISAR) (Freitas et al., 2015; Brown, 2015; Passos et. al., 2015; Cortez, 2015; Alves, 2015; Melo [CVS], 2015; Sobreira, 2015), both in Brazil, and the community-managed WSS in Colombia (Peña et. al., 2015,b). However, within the prevailing neoliberal and neoconservative framework of the 1980s and 1990s, these arguments for small, context-sensitive, and locally appropriate technologies became often entangled with, if not incorporated as part of, the agenda to free the State from the responsibility to provide essential services to the population. In the extreme, governments that, whether out of conviction, under obligation, or because it seemed to be the only alternative available, found themselves implementing neoliberal reforms in the WSS sector since the 1980s, often became attracted by the “low cost” aspect of these technologies, most particularly in relation to the provision of essential services to the poor and very poor sectors of the population. This particular understanding of the “appropriate technology” approach often led to the design and implementation of policies that contributed to reproduce rather than eradicate structural inequalities and injustice in relation to WSS, consolidating a division between technologies for the established social sectors and “technologies for the poor”, who tend to be located in irregular, vulnerable urban and rural areas. This is not, however, a black and white picture and, as discussed later, in practice we find that these processes evolved over time in diverse forms and with often diverging results. Several of the experiences studied in DESAFIO provided excellent findings that contribute to improve our understanding of the actual impacts of those reforms and, more importantly, of the obstacles and opportunities that we still face in the process of democratization of the politics and managements of WSS. We come back to some of these aspects later in the document, but let us now move to the present and examine the context of DESAFIO’s case studies in the light of the debate about the Millennium Development Goals (MDGs).

### **The situation of WSS in Latin America and the Caribbean**

According to the latest official reports on the world's progress towards meeting the MDGs, the LA&C region is well ahead of the game in comparison with most other developing regions. The target for drinking water, according to these reports, was met ahead of time and surpassed, with 95% of the population having now access to an "improved drinking water source", an increase of 10 percentage points since 1990 when only 85% of the population had access (UN, 2015a: 58; see also WHO-UNICEF, 2014). Although the sanitation target was missed (it was missed worldwide), considerable progress was made and 83% of the region's population has now access to "an improved sanitation facility", up from 67% in 1990 (UN, 2015a: 59; see also WHO-UNICEF, 2014).

However, it is widely accepted that the recognition of the progress made must not obscure the fact that these official figures must be taken with much caution. To start, in relation to drinking water, 11 countries of the region did not meet the targets, and in Haiti the situation continues to be extreme with only 58% of the population having access to "safe drinking water" (ECLAC, 2015a: 65). In addition, as already anticipated by previous reports, looking beyond the quantitative aspects of coverage, the evidence suggests that there exist many difficult problems with the quality of the services provided. For instance, the evidence shows that not all "improved" water sources actually provide drinking water that is safe for human consumption (WHO, 2010: 9), because "water from improved sources is not necessarily free from contamination" (WHO, 2014: 42). As a result, in the ongoing discussions about the post-2015 Sustainable Development Goal Indicators (SDGIs) a new definition has been put forward: "safely managed drinking water", which means that "services reliably deliver water that is sufficient to meet domestic needs and does not represent a significant risk to health" (WHO-UNICEF, 2014: 41). The report adds that "[a]n improved water source (piped water, public tap/standpost, tubewell/borehole, protected dug well, protected spring, rainwater) can be safely managed" (op. cit.), which reinstates previous warnings about the fact that "improved drinking-water sources" are often not safe for human consumption. In fact, a recent study cited by the report suggests that "10% of improved sources may be 'high' risk" owing to faecal contamination (WHO-UNICEF, 2014: 42).

Actually, there is scant reliable information to ascertain what percentage of the population has access to safe drinking water in developing countries, and the LA&C region is not an exception. In a previous report it was indicated that around 52 million people in LA&C (or around 9% of the total population) get their drinking water through systems defined as "easy access" (i.e. open dug well, water trucks, superficial streams) which generally imply higher health risks (WHO, 2010). This situation is unlikely to have improved significantly by now, and there are reasons to believe that in certain areas it may well have worsened, as discussed later. The safety of drinking water received by the large part of the population that has formal access to the system deemed safest, piped water, must also be questioned. In LA&C there is a pattern of low quality of the water services offered, which is often characterised by intermittent service, low pressure and high water losses, problems that compromise the quality of the water that arrives at the

individual households. An earlier study estimated that around 220 million people in LA&C (60% of the population being served) do not have continuous access to safe drinking water (Rojas et. al., 2007), again a situation that is unlikely to have improved since that study and that as discussed later in certain areas has been worsening.

An indicator of the prevailing situation with the access to safe drinking water is the dramatic increase in bottled water consumption, led in LA&C by Mexico (the world's leading country in per capita bottled water consumption, according to a number of industry reports; e.g.: Aguilar, 2014) followed by the three countries involved in this study, Argentina, Brazil, and Colombia. Although the reasons for consuming bottled water are wide ranging, international studies show that a key trigger is the perception that tap water is unsafe (e.g. Jaffe and Newman, 2012). This has been demonstrated to be a myth in developed countries, where bottled water consumption is unjustified on safety grounds (e.g. Opel, 1999; Wilk, 2006). However, in LA&C, and developing countries at large, the safety of piped water is often compromised, which leads to the consumption of bottled water and other well-known alternatives (from industrialized soft drinks to the thriving business of poorly or seldom regulated street water vending), which also has a significant negative economic impact specially on the poorer sectors. It also reinforces the public perception that bottled water is safer although this is often not the case (see for instance Queiroz, 2011, for the case of Brazil; Pacheco-Vega, 2015, for the case of Mexico). This is a highly problematic area seldom considered in the official reports about the progress made towards the MDGs or even about the new Sustainable Development Goals (SDGs) approved by the UN on 25 September 2015 (UN, 2015b). However, the very high consumption of bottled water in LA&C is certainly an indicator of several worrying processes, particularly the fact that even the "improved drinking-water sources" are too often unsafe for human consumption and that there is a widespread distrust in the public provision of water services. This is also alarming, because the public perception that bottled water is safer has been also demonstrated to be problematic, not least because of the lack of proper regulation and safety control over much of the bottled water sold in LA&C. We need to add here that the prevailing distrust in publicly delivered water is a significant problem that has been worsened by the politics and public policies prevailing in the water and sanitation sector (WSS) since the late 1980s, which we address in more detail in other documents. Regrettably, the politics of water continues to be a no-go area in the official discussions about the MDGs and the forthcoming SDGs, given that these discussions reduce their considerations mostly to technical aspects.

On this connection, the situation of inequality between urban and rural areas remains significant. In 2010, the reports showed that while 97% of the urban population in LA&C had access to drinking water from improved sources, in rural areas the figure was only 80% (WHO, 2010). This has not changed much since, as the 2015 figures are 97% and 81% (Ducci, 2015). In Bolivia, Colombia, Ecuador, Haiti, Nicaragua, Peru, and Venezuela, 80% of the rural population "lack sustainable access to drinking water" (ECLAC, 2015a: 65). In addition, it is well-known that a large proportion of rural water systems are abandoned or poorly maintained, and according to assessments made by the Inter-American Development Bank (IDB), between 30% and 40% of rural water systems in the region are out of working order, while others suffer chronic problems of water quality, intermittence, and quantity of water delivered (Ducci, 2015). The same IDB

specialist points out that among the crucial problems affecting rural water systems in the region are the lack of institutional leadership from governments, reflected in the “lack of planning, policies, funding, information systems, and monitoring”. The prevailing model of service in rural areas is community management, but the pattern is that these community-led systems lack support for the post-construction stages (op. cit.), that is, these systems are left without support for the crucial, long-term tasks of management, operation, and maintenance, that are required for their sustainability.

The situation is direr in relation to basic sanitation. The 2010 reports on MDG progress showed that there were 117 million people in LA&C, about 20% of the total population, without access to “improved sanitation facilities” (WHO, 2010). The figure was reduced to 17% in 2015, which was not enough to meet the MDG target for the region, as 19 countries failed to meet their own targets (ECLAC, 2015a: 65). Moreover, the 2010 report pointed that a significant proportion of the population still relied on in situ sanitation systems (around 41% of rural dwellers and 27% of urban residents) and 11% lacked access to any facility and practiced open defecation (WHO, 2010). Similar to the case of drinking water, there are very large inequalities in the access to sanitation facilities between urban and rural areas. The 2010 report stated that the gap in basic sanitation coverage between urban and rural areas in Latin America was then among the highest in the world: while 86% of the population in urban areas used improved sanitation facilities, only 55% did in rural areas (WHO, 2010). Although the situation has improved, still only 64% of the population in rural areas has access to “improved sanitation facilities” in 2015. And this figure is below between 60% and 80% in El Salvador, Guatemala, Nicaragua, Panama, Peru, Saint Vincent and the Grenadines, and Suriname, and less than 50% in Bolivia, Guatemala, and Haiti (ECLAC, 2015a: 65). Although the WHO-UNICEF report states that open defecation in the region would have been reduced from 17% in 1990 to 3% by 2015 (WHO-UNICEF, 2014: 21), the situation in rural areas continues to be very concerning: according to an IDB report the proportion of the region’s rural population practicing open defecation in 2015 is 12% (Ducci, 2015). The report indicates that several countries are notorious owing to the large proportion of the population still practicing open defecation: ranging from 11% in Honduras and Ecuador, 13% in Brazil, 14% in Colombia and Nicaragua, to 35% in Haiti and 46 in Bolivia (op. cit., 2015).

On this connection, another important consideration correctly highlighted in one of the latest reports about the MDGs are the significant inequalities registered in the access to safe drinking water and basic sanitation, a topic that covered a whole section in the 2014 WHO-UNICEF report on MDG progress (WHO-UNICEF, 2014: 24-38). The report examines existing inequalities between and within urban and rural areas, across different social groups, and also indicates the lack of sufficient information in available data to gauge intra-household inequalities, a well-known significant yet overlooked dimension of inequality. The conclusions of this section of the report contain a very important consideration for our analysis:

[I]t is usually the poor and otherwise excluded and marginalized populations who tend to have least access to improved drinking water supplies and sanitation. **Interventions that do not have an equity focus**

**may exacerbate inequality by failing to reach the most disadvantaged subgroups.** Closing these gaps requires explicit consideration of those who are being left behind. [...] there are multiple dimensions of inequality, which can overlap, combine or reinforce one another. Without specific attention to marginalized or vulnerable groups, **it is possible to see national averages improve while within-country inequality increases** (WHO-UNICEF, 2014: 38; our emphasis).

A very important point in this statement relates to evidence presented earlier by the authors in the same report showing that in some countries that managed to expand their coverage of improved drinking water or sanitation facilities intra-national inequalities increased because the wealthier tend to benefit first. This is consistent with substantial evidence emerging from research carried out in the last two decades, showing that the public policy approach to WSS prevailing worldwide has abandoned the principle of equality that informed the massive public interventions that allowed developed countries to achieve universal access to these services during the twentieth century (Castro, 2006). Reforms introduced in the WSS sector since the late 1980s have been placing the emphasis on “profit”, requiring even public companies to behave according to market rules rather than adopting what the WHO-UNICEF 2014 reports terms “an equity focus”. We address this and related issues elsewhere in this and other final project reports, but will next focus on the specific contexts of the three countries involved in our study.

### The recent experience of Argentina

The provision of WSS in Argentina was centralized at the national level until 1980 under the National Sanitary Works (OSN), an institution originally created in 1912. The work of OSN was complemented by the National Service of Rural Potable Water and Sanitation (SNAP) created in 1964, and by provincial subsidiaries of this organism also focused on rural WSS. The decentralization process in the country started in the final stages of the civic-military dictatorship (1976-1983), which was strongly influenced by the neoliberal agenda (Azpiazu et. al., 1986). In the WSS sector, the decentralization started with the transfer of the responsibility for these services from OSN to the provincial governments in 1980, while OSN retained responsibility for WSS in the Buenos Aires Metropolitan Area, which hosted around 34% of the country’s population at the time. In historical perspective, it has been suggested that the 1980s decentralization, which at the time took mainly the form of a transfer of responsibilities to the provinces, may have been an obstacle to the achievement of a nationwide policy-institutional and regulatory framework for the provision of WSS (Lentini, 2011: 15). On the one hand, according to the country’s federal Constitution the provinces retain significant control over the management of natural, including water resources, and there is high fragmentation and overlapping of often poorly interrelated institutional arrangements (Mathus Escorihuela, 2009). The decentralization of the responsibility for essential services started in 1980 contributed to create further institutional atomization by breaking up the existing national

organisms that had been in charge of WSS for the best part of the 20<sup>th</sup> Century, which were not replaced by better institutional arrangements. On the other hand, the federal political structure of the country is overshadowed by the enormous weight of the province of Buenos Aires, and most particularly the Buenos Aires Metropolitan Area (BAMA), which includes the Federal Capital, restructured in 1996 as Autonomous City of Buenos Aires. The imbalance in development between the BAMA and the rest of the country has been historically the subject of much acrimony, and the decentralization started in 1980 contributed to further accentuate existing and create new structural inter-regional inequalities.<sup>4</sup>

After the return to democratic rule in 1983, the government of President Raul Alfonsín (1983-1989) attempted to transform the unequal institutional structure of the country, including a project to relocate the Federal Capital from Buenos Aires as a way to democratize the processes of decision-making and allocation of resources.<sup>5</sup> The government also tried to introduce reforms in the public sector, including the privatization of large public companies. In the WSS sector, the SNAP was transformed into the National Council for Potable Water and Sanitation (CoFAPyS), and gained new attributions beyond its original rural remit (ENOHSA, 2015). However, most reforms proposed by the government were rejected by the political opposition in Congress and eventually failed (Torre and Gerchunoff, 1999: 8). This was a very difficult and unstable period for the country, which ended with a political and financial crisis that led President Alfonsín to call for early elections. In July 1989 President Carlos Saúl Menem was elected, and he would remain a whole decade in power (1989-1999). During this long decade the country was radically transformed through the introduction of far-reaching reforms that made Argentina both a handbook and a laboratory of neoliberal policies. Just one month after becoming President in July 1989 the National Congress passed Law 23,696 on Reform of the State (Argentina, 1989), which provided the framework for the speedy implementation of neoliberal reforms. Law 23,696 declared “the provision of public services and all public companies in state of emergency” (Art. 1), while Articles 9-20 sanctioned the mechanisms to privatize all public companies and entities that the Executive might declare “subject to privatization” (Argentina, 1989).

The reforms soon focused on the WSS sector, and the CoFAPyS was called to play an important role in this new stage:

Law 23,696/89 of Reform of the State provided the legal framework for the new institutional restructurations of the sector by declaring the

<sup>4</sup> From another perspective, after the brief interregnum represented by the first democratic government (1983-1989) that followed the end of the dictatorship, the tension between decentralization of responsibilities to regional and local governments and centralization of political power and resources in the BAMA entered a new stage. A new Constitution was passed in 1994 (Argentina, 1994), which furthered the process of political decentralization introducing the concept of “municipal autonomy”. The determination of the actual implications and extension of this autonomy recognized to local governments was left to the provincial congresses.

<sup>5</sup> The law to transfer the Federal Capital was passed by the Congress in 1987 (Argentina, 1987), and although the project was never implemented the law is still in place. In fact, there are ongoing discussions in Argentina to reopen the debate.

emergency of the provision of public services and establishing the procedures for their privatization and concession. CoFAPyS was part of this process of transformation with the implementation of a programme co-funded by the IDB and the World Bank, the PRONAPAC [National Programme of Potable Water and Sewerage] (ENOHSA, 2015).

The process of privatization of WSS in Argentina became a flagship of neoliberal policies, not least because of the speed and the scale of the process. Apart from the cases of England and Chile, where WSS are fully privatized across the country, during the 1990s Argentina became the model to follow according to the IFIs. In just a few years between 1991 and 1999, Argentina passed from 0% of the population served by private operators to 70%, and the concession given in the BAMA to the consortium Aguas Argentinas became the largest private concession of WSS in the world (Azpiazu et. al., 2014). For the best part of a decade privatisation policies went on virtually uncontested in Argentina, despite early signs of trouble and increasing evidence of failure. This is not the place to revisit in detail the failed experience of WSS privatization in Argentina, which has been the object of an extensive literature (e.g. Azpiazu and Castro, 2012; Azpiazu et. al., 2014). However, the reference here is justified because the reforms of the 1990s created structural constraints that are still acting as significant conditioning mechanisms for the design and implementation of public policies, including the WSS sector, and not just in Argentina (Castro, 2012a). Moreover, despite the failures of the 1990s, neoliberal reforms are back in the agenda with renewed strength internationally, and as discussed later, notoriously in Colombia and more recently also in Brazil, the other two countries covered in our study.

The well-known financial and political collapse of the neoliberal experiment in Argentina in 2001 provides many lessons that should be learnt. For instance, in the case of the privatization of WSS in the BAMA, according to the Tripartite Entity of Sanitary Works and Services (ETOSS), the regulator for WSS, between the start of the private concession in 1993 and 2002, the concessionaire Aguas Argentinas had only met 60.9% of its contractual commitments in relation to investment in infrastructure renewal and expansion of coverage. In relation to coverage of water supply, the target had been to extend it from 70% to 88% of the population within the concession's territory by 2002, but it only reached 79% in this period. In relation to sewerage, the target was to increase coverage from 58% to 74%, but in 2002 the figure was 63%. Only 7% of the original contractual targets for the provision of primary wastewater treatment were met by 2002 (ETOSS, 2003, cited in Azpiazu and Castro, 2012: 61). As the former head of ETOSS summarized it:

The debilities of this scheme, the own errors and lack of compliance of the providers, the changes in government policy, the macroeconomic crisis, the discredit with the users and with civil society more generally, among other issues, led to the failure of this attempt (Lentini, 2011: 16).



In response to these and other failures, since the early 2000s virtually all WSS utilities that had been privatized during the 1990s were placed back in public hands in Argentina.<sup>6</sup> This reversion of neoliberal policies in WSS started during the government of President Nestor Kirchner (2003-2007) and was consolidated under President Cristina Fernandez de Kirchner (2007-2015). In the case of Aguas Argentinas in the BAMA, in 2006 the government cancelled the concession contract with the private operator on grounds of failure to comply with the contractual commitments. The same year the government also cancelled the contract with Aguas Provinciales de Santa Fe in the namesake province, where one of DESAFIO's case studies is located (D4.3). Another significant case was the province of Mendoza, where the private concession Sanitary Works of Mendoza was repossessed by the provincial government in 2010.<sup>7</sup> In their place, the national and provincial governments have created new public utilities and provided them with a clear mandate to reach the universalization of coverage.

In the case of the BAMA, the government created a new public company named Argentinian Water and Sanitation (AySA) that replaced the private concessionaire Aguas Argentinas in 2006. When AySA took over the WSS in the BAMA, "the deficit in service coverage was 16% (1.5 million people) for potable water and 36% (3.5 million people) for sewerage" (Azpiazu and Castro, 2012: 66). To comply with the government's mandate the company put forward an Immediate Action Plan (PIA) that involved public investments for about 32.3 million euros destined to recover the quality of WSS, expanding the network's capacity for treatment and distribution of potable water and expanding access to new users, and infrastructure rehabilitation and renewal. The PIA was soon replaced by a more comprehensive programme, the Water Supply and Sanitation Master Plan (PDS) 2006-2020, which gave AySA a roadmap that included the universalization of piped water supply in the BAMA by 2012 and the expansion of sewerage coverage to 80% of the population by the same year. The PDS also set the longer-term targets of expanding sewerage coverage to 95% of the BAMA population in 2020 and to improve the quality of drinking water and enhance environmental health in the region. The total public investment allocated to the PDS for the period 2006-2020 was around 4.6 billion euros, and the national government adopted the policy that the funds required could never be raised from charging the users, that is, it rejected the policy of full-cost recovery tariffs. Rather, the government established a system of shared responsibility between AySA and national, provincial and local authorities: AySA is expected to fund 52% of the total investment, the national government 38%, the Autonomous City of Buenos Aires 5%, and the Province of Buenos Aires jointly with the municipal governments of the BAMA the remaining 5% (Azpiazu and Castro, 2012: 66).

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<sup>6</sup> However, the return of privatized WSS utilities to the public sector started earlier, as some of the privatization contracts collapsed and the State had to intervene to take over the provision of services, as it happened in 1997 in the province of Tucuman (Crenzel, 2014) and in the province of Buenos Aires with the collapse of the private company Azurix Buenos Aires in 2002 (Azpiazu and Bonofiglio, 2006).

<sup>7</sup> These cases are significant because of the size of the population involved, as the provinces of Buenos Aires, Santa Fe, and Mendoza account for 58.5% of the country's population according to the 2010 National Census (Argentina, 2010).

Another relevant aspect of this process is related to issues of social justice concerning the the affordability of the tariff of WSS. In the BAMA, at the end of the period of fixed-exchange rate between the US dollar and the Argentinian peso in 2002, the cost of the tariff for privatized WSS for the poorest 10% of the population represented about 9% of the family income (Azpiazu and Forcinito, 2014: 38-39). The government of the time decided a freeze of tariffs in January 2002, while at the same a Social Tariff was introduced for the first time to cover the needs of the poorest consumers. This Social Tariff benefitted a yearly average of 100,000-120,000 households between 2002 and 2008. The number of households that received this Social Tariff fell sharply from 2009, which may be explained by the combined effect of the tariff freeze (that was extended well into the 2010s) and the rapidly improving socio-economic situation of the poorest families as a result of government policies implemented to tackle the crisis such as direct transfers. The government also implemented other policies targeted at the most vulnerable families. Some of these policies had already been implemented before the cancellation of the privatization contract with the objective to protect these families from the worst effects of the privatization. Examples of these policies were the Participatory Management Model (MPG), popularly known as Plan for Poor Neighbourhoods, started in 2003, and the WATER+Work Plan introduced in 2004. These and similar initiatives directed at counter the negative effects of privatization on vulnerable sectors were all to be either fully publicly funded or partly funded by the communities themselves through the provision of materials and labour, and after the cancellation of the privatization in 2006 the public company AySA took responsibility for the programmes. The radical reconstruction of the WSS since 2003 that de-privatized most WSS systems in the country was also accompanied by a new institutional framework. In 2003, the government created the Ministry of Federal Planning, Public Investment, and Services (MINPLAN), which was given overarching powers over key areas of infrastructure and services including WSS. Also, in 2007 the government passed Law 26221 that set the new regulatory framework for WSS. The Law replaced the regulator ETOSS with the Water and Sanitation Regulatory Entity (ERAS), and created a new Planning Agency (APLA), both within the MINPLAN. The new arrangements, supported with heavy State investment, are contributing to reduce the deficit accumulated in previous periods, although there is much room for improvement, also in relation to the institutional framework (Azpiazu and Castro, 2012: 64ff).

The country has achieved excellent results since the reforms started in 2003. In relation to the MDGs, Argentina reported that 99% of the population has access to an “improved water source”, with the same percentage applying to urban areas and 100% in rural areas. In relation to sanitation, 96% of the population has access to an “improved sanitation facility”, with the same percentage applying to urban areas and 98% in rural areas (ECLAC, 2015b). However, as mentioned in the previous section, these official figures must be read with caution, as the statistics do not provide adequate information about the quality of the services being provided. For instance, despite the enormous efforts made, in the BAMA that houses almost a third of the country’s population according to the 2010 Census (Argentina, 2010), the official coverage of piped potable

water is currently 86.3% and for sewerage is 66.9% (AySA, 2015).<sup>8</sup> These figures indicate that the ambitious targets set by the government in the PDS 2006-2020 were not met, and there is much challenging work ahead, given that AySA has now the target to universalize access to piped potable water and sewerage by 2018-2020 (AySA, 2015). However, problems are more acute in the interior of the country, particularly in the Northern provinces that have been historically neglected, in particular Catamarca, Chaco, Corrientes, Formosa, Jujuy, Misiones, Santiago del Estero, Salta and Tucuman, grouped as the Great North Region (NGA). The NGA corresponds to about one third of the country's territory and 20% of the total population, and has been historically characterized by "high poverty levels, exclusion, marginality, and backward development" (Argentina, 2012: 2). The coverage of water supply has been improved in the region with an average rate of access of 83%, however the quality of the services is compromised by poor water quality and intermittence. The coverage for sanitation in the NGA is around 41% on average, but in Misiones, Santiago del Estero, Chaco and Formosa it is about 24% (Argentina, 2012: 2). The NGA is home to a significant share of the remaining indigenous population of Argentina, who are among the most marginalized groups in the country. A recent government study about access to WSS in a sample of indigenous communities across the country showed that 50% had serious problems in accessing these services, with only 28.1% reporting continuous access to water (Argentina 2011: 13). Since 2003, the government has made significant efforts to reverse the historical neglect of the indigenous communities, and is carrying detailed studies to ascertain the actual size of these communities and their spatial distribution in the country. Recent reports show the lack of attention paid to this population in the past, and suggest estimated figures for the indigenous population ranging from 400 thousand to 1.5 million people (Argentina, 2011: 11). The government has recently launched a development programme to tackle the situation affecting the NGA, which has a strong focus on WSS (Argentina, 2012).

There are also significant challenges in other areas too, such as widespread and worsening problems with the pollution of water sources, including naturally occurring arsenic pollution affecting a large area of the country. Arsenicosis is extended across the country, including the marginalized areas of the NGA but also much wealthier regions in the provinces of Buenos Aires, Córdoba, Mendoza, and Santa Fe. The matter has received renewed attention in recent years in the country, and the Congress of the Province of Buenos Aires passed a new Law in 2014 setting new standards to tackle the problem. There is also an ongoing debate in the national Congress. DESAFIO addressed this issue in case study D4.3 developed in the Province of Santa Fe (Portapila et. al., 2015; see also Litter, 2014; ISGSD, 2014).

The situation in Argentina is now entering a new stage. The period started in 2003 with the government of President Nestor Kirchner and the two subsequent periods in government by President Cristina Fernandez de Kirchner ends in 2015. The decisive reforms in the WSS sector introduced during this period have focused on reversing some of the negative processes that had affected the country during several decades. In this recent period, the State has played a crucial role in setting the policy-institutional

<sup>8</sup> AySA's concession does not cover the whole of the BAMA

framework for WSS and taking a strong lead in providing the necessary investments to achieve the universalisation of safe WSS. However, the policies implemented during this period have been strongly resisted by sectors of the political opposition, which have succeeded in stopping the changes in some regions, and aim to reverse the changes including a return to the neoliberal model that collapsed in 2002. Taking into account the patterns of the recent past, one of the main challenges facing the country will be to maintain the progress in the process of democratization of the politics, management and access to WSS with independence of the vagaries of electoral politics.

### The recent experience of Brazil

In recent years, Brazil has made significant progress in establishing legal frameworks and strengthening the institutional set up to tackle the deficit in water and sanitation coverage, with a special focus on the problems affecting vulnerable communities. A new Federal Constitution passed in 1988 (Brazil, 1988) shortly after the end of the dictatorship that ruled the country (1964-1985), set the framework for the establishment of more decentralized mechanisms in the water and sanitation sector, providing municipal governments a more active role in decision-making and implementation by sanctioning that public services of “local interest” were a municipal competence (Art. 30). The Constitution also promoted the introduction of more meaningful forms of citizen participation in debates about policies and in monitoring service providers. However, largely the institutional setting of WSS in the country continues to be determined by the structures created during the civil military dictatorship that ruled the country between 1964 and 1985. The government of the period established a National Sanitation Plan in 1970, which despite being phased out has left a strong imprint in the country’s WSS sector (Heller, 2012). In addition, the financial and political crises of the 1990s posed a significant obstacle to the implementation of the progressive aspects of the 1988 Constitution, and in many respects provoked a regression. In particular, in the 1990s there was a severe withdrawal of the State from its responsibilities in relation to the provision of essential public services, with a significant reduction of the funding available to municipalities and public companies (Rezende and Marinho, 1995; Vasconcelos, 1995; Costa, 2003; Rezende and Heller, 2008). Brazil became a target for the neoliberal policies implemented in the period, with the creation in 1991 of the Project for the Modernization of the Water and Sanitation Sector (PMSS), a specific instrument funded by the World Bank, the Inter-American Development Bank, and national financial institutions that.<sup>9</sup> In this period the PMSS became a sort of public-policy think tank for the Brazilian WSS sector, and was highly influential in the public policies adopted by the Federal Government since 1995, which gave priority to the privatization of public WSS utilities that were considered to be commercially attractive (Costa, 2003: 72; for an analysis of the privatization of WSS in Brazil during the period 1995-2003, see, among other,

<sup>9</sup> After the arrival of the Workers’ Party to the Presidency in 2003 the PMSS adopted a broader approach, in line with the institutional changes introduced in this period focused on strong State intervention and investment.

Vargas, 2014). In the case of the most vulnerable sectors of the population, in general also the poorest, the main approach during this period was the promotion of “focalized policies” directed at the poor, such as emergency funds, the mobilization of voluntary organizations and NGOs, and the transference of responsibility for the provision of WSS to the vulnerable communities themselves. This included responsibility for the partial funding of the infrastructure and the management of the systems, whether in cash or in kind (mostly the provision of materials and labour). Some of these projects received funding from international funding agencies, as was the case of the Integrated Rural Sanitation System (SISAR) started in 1991 that was the object of DESAFIO’s case studies D2.1 (Freitas et. al., 2015), D3.1 (Brown, 2015), and D4.2 (Passos et. al., 2015), that initially was partly funded by the German public development bank KfW. Another significant example was the Condominial Sanitation system, whose origins go back to the early 1980s, and was covered by Case Study D2.2 (Castro and Ferreira, 2015a). Some analysts of the period have argued that this transfer of responsibility from the State to voluntary organizations or the users themselves contributed to erode the universalist agenda set by the 1988 Constitution, and had the effect of depoliticizing social relations and removing the “social question” from the public sphere (Costa, 2003). At the same time, it is important to highlight the fact that although socio-technical innovations such as the Condominial System and SISAR emerged in a period that was highly influenced by the neoliberal-neoconservative international agenda that had a significant impact in the Brazilian context, their actual implementation in the ground and their subsequent evolution did not necessarily lead to neoliberal outcomes. Our four case studies dedicated to these innovations cast much light on the complexities and nuances of the processes involving these interventions, which we address in more detail in the Case Study Reports and refer briefly later in this document.

The arrival of the Workers Party (PT) to the national government in 2003 constituted a radical departure from the past, in particular in relation to the legal and institutional framework governing WSS, the level of funding allocated to the sector, and in the practical implementation of a much more progressive approach geared at the universalization of access to these services along the lines of the 1988 Constitution. In this connection, the government of President Lula da Silva introduced far-reaching changes, starting with the creation of a National Secretariat of Environmental Sanitation within the Ministry of the Cities, launched in 2003. A key marker of the changes introduced was the approval of the first Federal Water and Sanitation Law in 2007 (Brazil, 2007), which was the result of a highly participative process of debate that took place over a number of years and involved from local community organizations to national authorities. The Law introduced a more comprehensive approach to sanitation, which in Brazil now encompasses not just water supply and sewerage but also other essential services such as urban drainage, solid waste collection and disposal, and vector control. The Law also prompted the elaboration of a National Plan of Basic Sanitation (PLANSAB), which was finally approved in 2013. The PLANSAB introduces a fundamental institutional change as it involves long-term planning (2014-2033) in a sector of activity historically characterized by short-term decision-making and frequent change of direction owing to partisan politics. PLANSAB also includes a balance between hard and soft investment in infrastructure, introducing the notion that over time

the heavier investments will have to switch from physical infrastructure to maintenance and management, which are required for the long-term sustainability of the systems (see Heller et. al., 2011). These institutional changes were supported with heavy public investment in infrastructure implemented through the Growth Acceleration Program (PAC) launched in 2007 (2007-2010). The PAC was entrusted to former Minister Dilma Rousseff, who became President of the country in 2011. The implementation of the PAC doubled public investment in infrastructure from 1.62% of GDP in 2006 to 3.27% in 2010, with a total planned investment of BRL 657.4 billion, about 295 billion Euros<sup>10</sup> (Brazil, 2010: 3). The PAC was then extended for two consecutive periods, 2011-2014 and 2015-2018 (Brazil, 2015a). In the water and sanitation sector, the impact was very important, and by late 2014, it was reported that the programme had completed 1601 projects around the country, with a total investment of BRL 11.5 billion, about 3.52 billion euros (Brazil, 2014a).<sup>11</sup> During the second period of the PAC (2011-2014), it was reported that sewerage connections in urban areas were increased by 11%, bringing the percentage of households connected to the sewerage networks up to 67% (Brazil, 2015b: 57). These advances represent a significant departure from the past, and helped to place water and sanitation policy higher in the policy agenda.

On the downside, although Brazil is one of the countries reporting good progress in meeting the MDG targets, as anticipated in the original text of DESAFIO there are still many difficult problems with the quality of the services provided, which is not adequately reflected in the official statistics (see the six chapters in the section “The Brazilian experience” in: Heller and Castro, 2013). According to the latest MDG reports, 98% of the Brazilian population has access to an “improved water source”. The figure would be 100% for urban areas and 87% for rural areas (ECLAC, 2015b). According to this information, the deficit in relation to drinking water would be entirely in rural areas, which would suggest that much of the progress made in the country in recent years has been concentrated in urban areas. This deficit is more acute in North-eastern Brazil, where in 2008 around 7.7 million people (14.4% of the population) did not have access to a safe water supply, a situation that does not seem to have changed significantly according to the latest reports. In relation to sanitation, the same report indicates that 83% of the total population has access to an “improved sanitation facility”, rising to 88% for urban areas and dropping to 52% in rural areas (ECLAC, 2015b). These figures reflect the significant contrast between urban and rural areas characterizing the country.

It is worth highlighting here that according to the latest Brazilian census, the rural population is around 30 million people, 16% of the total population (IBGE, 2010). Among the most marginalized rural communities are the Quilombola settlements, originally constituted by slaves who escaped from their owners, though today these communities often include a racial and cultural mix. In 2003 the government created a special Secretariat of Policies to Promote Racial Equality (SEPPIR) (Brazil, 2014b) with a special programme focused on Quilombola Communities, which constitutes another important step taken by the national government to make visible and tackle the situation of extreme inequality affecting these and other vulnerable rural communities. Their

<sup>10</sup> At the exchange rate of 2.2280 BRL per Euro at 31 December 2010.

<sup>11</sup> At the exchange rate of 3.2626 BRL per Euro at 26 December 2014.

marginalization can be illustrated by the fact that still today it is difficult to ascertain the actual size of the population in these communities, and until recently the estimates ranged from 1.1 million people to half that figure. Although there are not precise figures yet, the most recent estimates suggest that the population would be under 600 thousand, distributed in some 2300 communities across the country but with a strong concentration in the states of Maranhão, Bahia, Para, Minas Gerais, and Pernambuco (Silva, 2013: 98; Brazil, 2014). The level of marginalization of these rural communities can be illustrated by data from one of DESAFIO's case studies, which reported that a study of 173 Quilombola communities in the state of Minas Gerais showed that only 6.4% had access to "treated drinking water", and only 4 out of 174 communities had access to some form of "basic sanitation facilities" (CEDEFES, cited in de Pádua et. al., 2015, pp. 39-40).

The situation of Quilombola communities illustrates that, as already discussed the official MDG figures must be taken with caution and scrutinized. In this regard, during one of the seminars with high-profile specialists organized by DESAFIO shortly after the end of the research, one of the presenters pointed at the fact that in Brazil there is scant information available, even to the authorities, about the quality of the drinking water that is distributed to the population (Montenegro, 2015b). This is a significant problem that raises serious questions about the data used by the MDG reports cited earlier to state that 100% of the urban population and 87% of the rural population would have now access to an "improved water source". Undoubtedly, more research is needed to ascertain the situation, not least in view of the worsening situation affecting the provision of drinking water in Brazil's most populated metropolises, notably Sao Paulo (e.g. do Carmo et. al, 2014), but also Recife, Rio de Janeiro, Belo Horizonte, and other important cities. This urgent matter has prompted the creation in 2015 of a special Commission in the Lower Chamber of the Brazilian Congress (Brazil, 2015a). In relation to sanitation, there is a broad agreement both about the slow progress made overall in tackling the deficit of provision of basic sanitation facilities, but also about the unacceptable situation affecting rural areas, given the enormous gap in coverage. In addition, even where there are sewerage systems in place, only a relatively small fraction of the sewage collected receives some form of treatment and often much of the sewage never reaches the treatment plants. In this regard, one of our project's strategic advisers made the point that in addition to the conventional concerns for water losses in the networks there should be also a concern with "sewage losses", which is a very significant problem that remains largely overlooked (Montenegro, 2015a,b).

To conclude this brief section on the current Brazilian context, we cannot fail to mention that the far-reaching institutional reforms in WSS sector described before from the start met strong resistance from the political opposition and from diverse interest groups, notably many of the powerful provincial water and sanitation utilities. In fact, the initial impetus showed by the government of President Lula da Silva since 2003 was soon tamed by the realpolitik of political alliances that included actors with agendas often at odds with the original project incarnated in the creation of the Ministry of the Cities and its National Secretariat of Environmental Sanitation. Probably the first public symptom of the changes ahead was the stepping down in 2005, just after two years in government, of the first Minister of the Cities, Olivio Dutra, a friend of President Lula and co-founder of the Workers' Party. Although this change did not immediately affect the course of the

institutional reforms, with hindsight it becomes clear that many of the initial political commitments that led to the creation of the Ministry of the Cities suffered important setbacks. Moreover, the severe political and financial crisis affecting the country while we write this report is threatening to derail the ambitious investment programmes underway in the WSS sector. DESAFIO organized several seminars with Brazilian specialists, politicians, and representatives of workers' unions, NGOs, and local communities to debate these issues (see in particular the proceedings of the Seminar held in Recife on 19 August 2015, DESAFIO, 2015a,b).

### The recent experience of Colombia

During the last three decades, Colombia has also made important progress in the institutional field of water and sanitation services, partly associated with a process of decentralization started in the late 1980s (Blanquer and Fajardo, 1991; KAF, 2010). A new Constitution passed in 1991 lifted the State's monopoly over the provision of WSS and opened new possibilities ranging from privatization to the transfer of responsibility to community organizations, particularly in rural areas (Colombia, 1991: Art. 366). This opening to multiple forms of service provision was consolidated in 1994 with the passing of Law 142 on the Regime of Domestic Public Services (Colombia, 1994b) that set the regulations for public services, including WSS. Law 142 sanctioned the creation of specific regulatory institutions such as the Superintendence of Domestic Public Services (SSPD) and the Regulatory Commission for Drinking Water and Basic Sanitation (CRA). In addition, Law 142 introduced changes to the financing of essential public services through the allocation of 5.5% of the national budget to local governments.

Another influential change was fostered by Art. 270 of the 1991 Constitution, which makes provision for the democratic control of public management through citizen participation. This principle was enacted by the Law of Citizen Participation (Law 134), passed in 1994 (Colombia, 1994a). This opening of mechanisms for citizen participation has been used by civil society organizations, notably during the campaign started in 2008 that eventually led to the organization of a national Referendum over the Human Right to Water (Colmenares, 2014). However, Law 134 has been recently replaced by a new Statutory Law of Citizen Participation (Law 1757), passed in 2015 (Colombia, 2015). According to some analysts Law 1757 responds to widespread criticism about the limitations of Law 134 and to calls from citizen organizations to lift or made more flexible a large number of restrictions in that Law that made effective citizen participation very difficult (e.g. ICP, 2012).

Although in some respects the institutional landscape of decentralization and promotion of citizen participation has important commonalities with similar processes that took place in LA&C as a whole during the last three decades, the Colombian situation has important particularities. The Colombian governments of the last two decades have adopted a different political framework to that prevailing in Argentina or Brazil in relation to the provision of essential public services. As a recent report from the Andean Development Corporation (CAF) explains:



There are [...] two well-differentiated visions of the role of the State in the definition of public policies and services management [in LA&C]. On one side, the countries of the Pacific Alliance, constituted by Colombia, Chile and Peru (in addition to Mexico in North America), which seek to achieve the liberalization of the economy, the free movement of people, goods, services, and capital. [...] The second block is integrated in the Bolivarian Alliance (ALBA) grouping 15 countries [including] Venezuela, Ecuador, Bolivia, and Argentina [note: Argentina is not formally an ALBA country but is included because it has similar policies according to the CAF report]. This group centres the attention on the struggle against poverty and social exclusion. It opposes reforms of the State that seek the deregulation and privatization of public services. Rather, these countries seek to strengthen the State and promote citizen participation in public affairs. They also propose State intervention to reduce social disparities. [...] In contrast], the countries of the Pacific Alliance propose a subsidiary role for the State, having market regulation as the mechanism. The State at all levels tends to stop being a direct service provider to become an articulator, a mediator between the actors providing public services. In this context, the regulatory capacities of the State are focused on improving the quality of the services and the efficacy and efficiency of the operators. It tends to promote private activity, which requires establishing clear rules and specific regulations (CAF, 2015: 13).

Interestingly, despite that the CAF report attempts to contrast the distinctive policy options of two groups of countries, it excluded Brazil from the analysis, which as discussed before has been a champion of heavy State intervention and investment in WSS since 2003. Nevertheless, the CAF report helps to cast very neatly the fact that there is a significant gap between institutional frameworks and political realities in relation to the provision of essential services. According to the CAF report, despite all the institutional mechanisms implemented in Colombia to enact democratic citizen control as an effective mechanism, the government seeks to implement the neoliberal agenda that prioritizes the radical reduction of the State's role in the provision of essential services, and the privatization of public utilities. The CAF report also seems to suggest that promoting "citizen participation in public affairs" and "State intervention to reduce social disparities", which would be characteristics of the ALBA countries, would not be part of the agenda for the Pacific Alliance, of which Colombia is a key partner. Although we cannot take the CAF report as an authority to describe the Colombian government's political approach to the matter under discussion, it provides important insights to better understand the complex political scenario facing LA&C, including Colombia, in relation to the design and implementation of public policies in the WSS sector.

In this connection, according to a report from the Colombian regulator CRA, the country has made significant progress in the last decade: between 2005 and 2010 coverage for drinking water was extended from 81.9% to 91% and basic sanitation was extended to 85.5 of the population in 2012, an increase of 40% comparing with 1993 (CRA, 2013: 23). To keep the moment, since 2010 the government of President Juan

Manuel Santos Calderón has committed to make heavy public investments in the sector, as suggested by the CRA report: between 2010 and 2014 the country would have completed 603 water and sanitation projects with a total investment of 775,000 billion Colombian pesos, over 300 million euros (CRA, 2013: 10).<sup>12</sup> The report adds that there were 990 additional water and sanitation projects being implemented across the country, with a total investment of 4.2 trillion Colombian pesos, about 1.8 billion Euros<sup>13</sup> (CRA, 2013: 10). Reflecting on this progress, the Colombian Minister of Housing, City, and Territory, Luis Felipe Henao Cardona stated:

Reviewing these figures, we see that much has been done; more than in previous governments. This is clearly reflected in an improvement of the living conditions of the Colombian people, in their sanitary conditions. Thanks to the investments made through the Ministry of Housing, City, and Territory we have advanced in different regions of the country. [...] Since 2010 when the current government started there has been clarity about the impacts that can be generated by investing in plans to improve the provision of drinking water and basic sanitation. [...] We want to keep investing in projects that continue to improve the quality of life of the Colombian people, which in turn may contribute to sustain the process of poverty reduction of the last four years. With these investments we do not only improve the conditions of sanitation but also the collateral impacts of these policies allow to reduce unemployment rates, enhance the inclusion of children in the education system, and reduce water-related diseases. [...] When we see the results of these investments in the population a question emerges: Why it was not achieved before, given that these are essential services? The answer may seem simple, but it is not: the key to achieve success is the articulation between public policy, adequate management of the resources, and overall, will and commitment from everyone (CRA, 2013: 9-10).

The official discourse of the Colombian government as reflected in the CRA report suggests that the government, at least rhetorically, does not follow to the letter the Pacific Alliance's neoliberal agenda, as suggested by the analysis put forward by the CAF cited earlier. Rather, it seems to openly recognize the crucial role of the State in taking the lead in relation to the much needed improvements in the WSS.

In this regard, let us now consider the progress made in Colombia in relation to the MDG targets. Like in the rest of LA&C the data must be read with caution, particularly because of the lack of reliable information about the quality of the services provided. According to the latest MDG reports, 91% of the Colombian population has access to an "improved water source", with the figure rising to 97% in urban areas and falling to 74% in rural areas (ECLAC, 2015b). In relation to sanitation, 81% of the total

<sup>12</sup> At the exchange rate of 2.332,00 COP per Euro at 31 December 2012.

<sup>13</sup> At the exchange rate of 2.332,00 COP per Euro at 31 December 2012.

population has now access to an “improved sanitation facility”, with the figure being 85% in urban areas and 68% in rural areas (ECLAC, 2015b). However, the situation is more complex than what these figures from the MDG report suggests. For instance, regarding the quality of the water that is delivered to the households, a “Diagnostic of the quality of water for human consumption 2010” by the Country’s Ombudsman (Defensoría del Pueblo) showed that 57.3% of the country’s municipalities (575) were providing non-potable water for human consumption, that is, the quality of the water posed “high risk” to the users as it did not meet the minimum legal standards (CRA, 2013: 43). In relation to basic sanitation, we need to remember here that the MDG figures include almost any “improved sanitation facility”. However, data from the regular Quality of Life National Survey shows that in 2013 the coverage of networked sewage collection systems was 81.6% for the total population, and 92% for the urban population, which represented a drop of 6% percentages points in coverage for urban areas since 1997. For rural populations the coverage was 16%, just 1% point of advance from the figure of 1997 (CRA, 2013: 42). An IDB report suggests that 14% of the country’s population still practice open defecation (Ducci, 2015). In addition, it is estimated that in 40% of the country’s municipalities the sanitation systems are not in “proper working order” while only 35% of the residual waters produced in the country receive some form of treatment (UNDP, 2014: 41-42). Moreover, the overall figures comparing “urban” and “rural” areas obscure the enormous complexity of the situation in the ground given the high degree of diversity characterizing the country, while as a government report reminds us, overall figures “refer to nominal coverage, in relation to the availability of networks, but leave side the fact that many households lack an effective connection to these services” (Colombia, 2009: 1). Thus, for both water supply and sanitation services, while the Central Region, that includes the capital Bogota, is the best served, the regions with greatest deficits are the Pacific Region, that includes the Cauca Valley where DESAFIO’s two case studies are located, and the Amazon Region (Colombia, 2009: 1). Other reports based on data from the Quality of Life National Survey also indicate that 55% of the population lacking in-house sanitation facilities are located in the Caribe Region (UNDP, 2014: 43).

Nevertheless, these acute regional disparities coexist with the massive marginalization suffered by the rural areas of the country in relation to WSS coverage. According to the reports from DESAFIO’s case studies in Colombia (D2.4 and D3.3), almost three decades after the launch of decentralization processes in the country, municipal governments still tend to concentrate their interventions in the urban municipal centres and have not been able to establish mechanisms to support the rural areas within their jurisdictions. Still, Colombia has 1,123 municipalities and around 12,000 officially registered service providers, of which about 11,500 are community organizations and the remaining 500 are a mix of public, mixed, and private utilities. That is, an average of 10.6 service providers per municipality. It is estimated that over 90% of these services providers are located in rural areas, and in small municipalities the services are run by community organizations such as Water Supply Management Boards, Community Action Boards, Users Associations, or cooperatives (Rojas et. al., 2010). A government report highlighted “the high degree of dispersion of service providers resulting from the decentralization process of the 1980s”, and argued that this dispersion has a negative

impact making it difficult to take advantage of economies of scale and atomizing efforts and resources (Colombia, 2009: 1). It has been also argued that the regulatory institutions created in the 1990s by Law 142, such as the CRA and the SSPD, created a highly bureaucratic one-fits-all framework for the provision of WSS in the country that must be uniformly applied everywhere, in large cities, in small municipalities and in rural areas. This affected especially rural areas, as many community organizations reacted to the norms rejecting their regularization to avoid being penalized for non-compliance with the bureaucratic framework. In fact, according to some interviewees in our research, the actual number of small water supply community providers operating in rural areas may be at least double the official figure of 11,500 legally registered. Although in late 2010 the government simplified the bureaucratic regulatory mechanisms, there is still much resistance to regularization from service providers, particularly small community organizations.

In response to the perceived difficulties in this area, in 2008 the national government launched a new national strategy for the WSS sector that partly reversed some aspects of the decentralization process. A key component of the new strategy have been the Department Water Plans (PDAs), that vested the responsibility for planning, infrastructure works, and the creation of regional WSS utilities in the departments, which are supra-municipal entities. This measure effectively changes the attributions of the municipalities and curtails the autonomy originally granted to them by the decentralization process. Although municipalities continue to be responsible for guaranteeing the provision of WSS to the population and keep receiving government resources to fund infrastructure works and subsidize the provision of services to the poor, now they have to transfer part of these resources to the departments. It is also expected that municipalities that still run their own WSS will create independent operators, as it was originally foreseen by Law 142. These operators are in charge of the activities of administration, operation, and maintenance of WSS. More recently, the government launched new policy guidelines to tackle the deficiencies in WSS in rural areas, with the objective of providing an integrated framework for the provision of water supply, sanitation, and cleaning services, articulated with national strategies to solve the problems of rural housing, and funded by the national and regional governments (Colombia, 2014).

### **Discussion of DESAFIO's research findings relevant for Argentina, Brazil and Colombia**

In the light of the regional and country backgrounds discussed in Section 1, we will now summarize some of the key findings emerging from the research, focusing on relevant aspects that may contribute to the ongoing process of democratization in the sector of WSS, particularly in relation to tackling the problems affecting vulnerable communities. The section is organized around the main research questions of the project:

*How can we harness existing and develop new socio-technical innovations in order to change policies, to develop strategies and practical interventions, and to*

*enhance policy learning for tackling unacceptable inequalities and injustice in the access to essential WSS?*

*What conditions, factors and processes facilitate the emergence of socio-technical innovations in this sector?*

*What are the critical requirements to make successful socio-technical innovations sustainable and replicable?*

*What are the obstacles to their sustainability and replication?*

#### Socio-technical innovations to foster democratization in the WSS sector

Our more general question set the framework for our research, as it demarcated the main objective of the innovations under study: these should be innovations “to change policies, to develop strategies and practical interventions, and to enhance policy learning for tackling unacceptable inequalities and injustice in the access to essential WSS” (DESAFIO, 2013: 3). However, it is important to emphasise that the use of the term “innovation” can be misleading for some readers who may tend to associate it with entirely new technological developments and inventions. In addition, in general, the innovations under study were not primarily technological. Although there were important technological elements involved, most technological aspects already pre-existed the innovations studied. Thus, the innovative element in the technological dimension consisted mainly in new assemblages of existing technologies, the re-ordering of technological elements and the re-structuring of their interrelations. In practice, the main innovations in the cases studied took place in the social dimension, broadly speaking as it incorporates socio-cultural, economic-financial, policy institutional, and political aspects, and in the articulations between social and technological aspects.

With hindsight, this could have been expected, because our study focused on innovations directed at the situation of vulnerable, poor communities. Top-notch technological development and innovation rarely takes place with the vulnerable and poor as their main subjects (some would say customers). Moreover, in the field of WSS technological innovation tends to be rather limited, and even in developing countries many of the materials and technologies in use have been available for decades and in some cases for centuries. Perhaps the notorious exception is the development of advanced wastewater treatment technologies or technological developments applied to the commercial-financial management of WSS. Nevertheless, the innovations covered in the study constitute important contributions because, despite significant differences and diversity between them, they have in common the fact that they were developed with the objective of democratizing key aspects of the provision of essential WSS directed at vulnerable, unserved or poorly served populations. In all cases, a major objective of the innovations was expanding the access to WSS to the unserved. In some cases, the transformations also placed emphasis on making the activities of management, operation and management of WSS more participative and closer to the users, involving them

actively in some of these activities. In other cases, the main interventions were aimed at revamping policy-institutional frameworks to make WSS more accountable and subject to the effective democratic control of users and citizens (see Article 1 in this Working Paper).

### The emergence of socio-technical innovations in WSS

One the most important issues that we wanted to understand in our study is the process of emergence of these innovations, which was addressed by one of our main research questions:

*What conditions, factors and processes facilitate the emergence of socio-technical innovations that seek to democratize the access, the politics and, the managerial-operational activities in relation to essential WSS?*

To answer this question we paid central attention to the context, trying to ascertain the main factors and processes that could be identified as having crucial influence in the emergence of these innovations.

Most innovations studied in DESAFIO emerged in the 1980s and early 1990s (Figure N° 1).<sup>14</sup> As discussed in Section 1, this period was marked by a conjunction of transformations that had far-reaching implications for the provision of essential WSS in the three countries under study. The return to democratic rule after the long years of the civic-military dictatorships in Argentina (1983) and Brazil (1985) opened a new stage in the process of democratization, which strengthened initiatives to decentralize the State and empower local authorities. The results were particularly noticeable in Brazil, where a new Constitution passed in 1988 granted significant autonomy to municipalities in relation to essential public services. Although the circumstances in Colombia were very different, and the country continued to be severely affected by the protracted civil war dating back to the 1950s, similar movements to decentralize and democratize the State gained momentum in the 1980s leading to the introduction of decentralization reforms in 1987 and a new Constitution in 1991. However, counteracting these forces of democratization, mainstream neoliberal and neoconservative policies introduced since the late 1980s contributed to the weakening and dismantling of the State's capacity to regulate and directly provide essential public services, including WSS. These policies found a fertile ground because in the three countries there was much appetite for decentralization of powerful State monopolies, which for decades had been perceived as a source of inequality and injustice. The evidence showed that the lack of State action was largely responsible for the high degree of inequality in the access to essential WSS affecting vulnerable communities both in urban and rural areas. However, neoliberal decentralization, in a context of extreme financial crises during the 1990s, contributed to

<sup>14</sup> The main exceptions are the community-managed spring sources dating back to the 1950s studied in D2.3 (Britto et. al., 2015), and the interventions implemented during the project's life addressed in D4.1 (de Pádua et. al., 2015) and D4.3 (Portapila et. al., 2015).

further curtail citizenship rights by reducing the State's capacity to provide for the most vulnerable sectors of the population. In fact, a major objective of these policies was to free the State from such responsibilities, and make the poor take responsibility for their own needs.

Nevertheless, the contextual conditions of the 1980s and 1990s also nurtured alternative innovations predicated on principles and objectives completely different from those of the neoliberal project. These innovations actually contributed to challenge the prevailing socio-political and economic-financial mindset, and became expressions of the resistance to the neoliberal policy framework that was promoted in the WSS sector. These innovations were fostered by the social and political forces that sought to democratize and decentralize the State but rejected the neoliberal model that promoted the withdrawal of the State and the transfer of responsibility for essential services to private actors or the users themselves. These forces included citizen organizations, social movements, community organizations, progressive sectors of the Catholic Church, among other actors. Although the long-standing traditions of solidarity and reciprocity characterizing Latin American and Caribbean cultures became often entangled with the neoliberal programmes owing to the instrumental approach to these traditions adopted by governments, IFIs, and aid agencies, these traditions provided powerful elements for the development of alternatives to the neoliberal project and inspired the work of the social actors opposing it. The alternative innovations that emerged as a result were informed by political objectives and principles grounded on the understanding that the democratization of WSS required establishing democratic social control of the State institutions by the citizenry. Therefore, rather than freeing the State from responsibility for the provision of essential WSS, these forces sought to radically transform the role of the State to put an end to the protracted conditions of inequality characterizing the provision of public services. Eradicating these conditions of inequality required not only the universalization of access but also the creation of the relevant institutional mechanisms to make the State and the public institutions in charge of essential public services accountable and subject to democratic social control by citizens and users. It also required a strong role of the State in the direct provision of services, including heavy public investment to reverse the situation of chronic deficit affecting vulnerable communities.

Although our project results **do not allow us to ascertain with precision the influence of the contextual conditions**, innovations like the Condominial Sanitation system (Castro and Ferreira, 2015a), the Integrated Rural Sanitation System (SISAR) (Freitas et. al., 2015; Brown, 2015; Passos et. al., 2015; Cortez, 2015; Alves, 2015; Melo [CVS], 2015; Sobreira, 2015), the community-managed rural water and sanitation systems in Colombia (Peña et. al., 2015a,b), and the Integrated Sanitation system (Castro and Ferreira, 2015b), in different degrees, **all borne characteristics inherited from the prevailing conditions of the period**. This is a summary of the key characteristics of these innovations:

- All the innovations studied were designed to tackle the deficit in coverage of WSS affecting vulnerable populations.

- Most of the innovations involved **decentralized management and operation** with **user participation** at the local level, in the understanding that it would promote
  - **autonomy from centralized bureaucratic structures** and **empowerment** of the users
  - a **simplification and reduction of the scale** of the systems in urban areas, facilitating the operations and **reducing the impact of system failures**
- Most of these innovations promoted the adoption of **small-scale technologies, and local management** taking inspiration from the appropriate technology approach.
- The innovations implemented in Colombia's rural areas, in addition to the above, focused on the **use of local sources of energy, raw materials, and labour**, taking a step further in following the principles of the appropriate technology approach.

**Key principles and objectives** derived from the neoliberal and neoconservative framework that predominated in the period were apparent in most of the innovations studied. In particular, some of the innovations were grounded on, or at least strongly marked by the assumptions that

- the **State cannot afford** the investments needed to provide these services to the poor
- **users should take responsibility** for the provision and long-term management and maintenance of their WSS
  - i. In different forms and degrees, these innovations **involved vulnerable communities in the funding, construction, and long-term management** of the systems
    - This allowed a **significant reduction of costs** for the State, whether in the construction and maintenance or in the overall management of the systems (up to 70% in the case of the Condominial System; Castro and Ferreira, 2015a)

However, some characteristics of the innovations diverged substantially in relation to the neoliberal/neoconservative framework prevailing at the time. The alternative innovations that emerged from the resistance to the neoliberal approach, such as the Integrated Sanitation system in Brazil (Castro and Ferreira, 2015b), shared some characteristics, such as the role of decentralization in the democratization of WSS, but had radically different assumptions. These alternative innovations assumed that:

- The State was the **only actor with the financial and technical capacity, and the political legitimacy** to achieve the universalization of WSS
- The approach to solve the deficit of service coverage in vulnerable communities should not be based on **piecemeal, partial, sector-bound interventions**, but must be based on **sound long-term planning** that takes into account the **complex character of the vulnerability** affecting these communities



- Interventions **should not focus on a single aspect or dimension** of the vulnerability affecting the communities (e.g. water supply or sewerage), disconnected from the rest. Therefore, the interventions **must tackle simultaneously as many dimensions as possible**: in addition to providing water or sanitation, attention must be paid to the quality of housing (including adequate in-house sanitary installations), the safety of the environment, and related aspects
- The State **should not transfer responsibility** for these interventions to the users, especially the most vulnerable, and needs to **take full responsibility** for the provision of these services
  - In particular, the State should abstain from passing the cost for the interventions to the poor and should **make provision for the funding of the interventions and the long-term maintenance of the systems**
- Rather than weakening and dismantling the State capacity for direct provision of WSS, it is required to strengthen the State and at the same time creating the institutional mechanisms to allow common citizens to exercise **democratic social control over the whole process**, from political decision making to implementation, management, and maintenance of WSS

Although it is possible to establish clear differences between the innovations studied along the lines of these characteristics, **the evidence does not allow us to pigeonhole these experiences mechanically**. Clearly though, the Integrated Sanitation system (Castro and Ferreira, 2015b) is an example of an alternative approach that **fully rejected the neoliberal principles**, as it actually emerged to contest the implementation of neoliberal WSS policies. However, despite the stated policy objectives of neoliberal policies, **the reality in the ground was much more complex** and our case studies show that innovations that emerged under the influence of the neoliberal context **did not necessarily deliver neoliberal outcomes**. Once implemented, these innovations sometimes evolved into **complex configurations** because of the widespread social resistance to these policies, owing to the influence of the local context and the interplay between local actors in the ground, or because their success prompted the upscaling and diversification of their original objectives. As discussed later, the evolution over time of the Condominial Sanitation system and the SISAR system in Brazil, or the community-managed WSS studied in Colombia, adopted very complex configurations that **cannot be interpreted as being the result of the neoliberal prescriptions for WSS policy**.

In this regard, among the key project findings that have relevance to tackle the situation affecting vulnerable communities it is worth highlighting the **interplay between structural determinations and social actions** that underpin democratization processes. We identified some specific **factors and processes** operating within or resulting from the contextual conditions that acted as **triggers for the emergence of the innovations**.

- a) Ground-breaking **institutional changes** resulting from the political process that provided new avenues for meaningful citizen participation, fostered the

democratisation process, and promoted decentralization transferring greater responsibilities to local governments

- i. The **1988 National Constitution in Brazil**, passed shortly after the country's return to democratic rule in 1985 after two decades of dictatorship. The Constitution **strengthened the role of local authorities** in the provision of basic services. This was a period of high social mobilization and the **improvement of living conditions** was a core demand of the population.
  - ii. The **1987 decentralization policies and the 1991 National Constitution in Colombia**, which fostered citizen participation in monitoring public management.
- b) Popular mobilization owing to the very high **inequality in the access to essential WSS**, both between and within urban and rural areas., and to the **prevalence of water-related diseases** in vulnerable communities affected by unsafe or inexistent WSS (Recife, Brazil)
  - c) **Environmental pollution** caused by lack of sanitation and wastewater treatment leading to the **collapse of local tourism and the consequent loss of family income** in a small community (Peña et. al., 2015a)
  - d) Widespread **popular resistance to neoliberal policies** in the WSS sector, seeking the democratization of WSS and rejecting the privatization of public utilities (all countries studied, but more effectively in Argentina and Brazil)
  - e) **Structural financial crises** reducing the investment capacity of the State to extend WSS to the unserved population (all countries studied)
  - f) **Specific policy reforms** induced and funded by the IFIs and other international actors (i.e. donors, development agencies, etc.) promoting the withdrawal of the State from direct provision of essential services (all countries studied)
  - g) **Practical interventions** induced and funded by the same actors to foster decentralized WSS designed to become fully self-sufficient over time, funded and run by users, especially in rural areas (Ceará, Brazil; Recife, Brazil; Cali, Colombia)
  - h) **Initiatives from a range of social actors** to develop innovative solutions for the provision of WSS in vulnerable communities that **break with the status quo based on the construction of large-scale infrastructures** that are focused on service provision in standard urban areas
    - i. alternative technological designs developed by universities (Cali, Colombia; Belo Horizonte, Brazil), public utilities (State of Ceará and Recife, Brazil), or independent consultants (Recife, Brazil)
  - i) **Strong leadership by individuals or groups**, with long-term commitment to the achieve success in the implementation of the innovations (the clearest examples are the SISAR system and the Condominial Sanitation system in Brazil; and the community-managed WSS in Colombia)
  - j) Long-standing **traditions of solidarity and reciprocity** characteristic of LA&C, that during the period covered by the study often took the form of **popular mobilization and organization to get access to and regularize land ownership, and secure access to essential public services** (all three countries)

- k) **Changes in the political context** resulting from the electoral process that
  - i. **brought to power non-traditional actors** (e.g. President Lula da Silva in Brazil) with policy agendas focused on **tackling extreme poverty and giving the State a leading role** in the process (Argentina and Brazil since 2003)
  - ii. gave an unique opportunity to designers of socio-technical innovations who came to occupy **positions in government** (elected city mayor; provincial secretary of public works; municipal secretary of water and sanitation) and were able to introduce **official policies** to implement the interventions (Recife, Brazil)
- l) **Disasters** like the 1994 earthquake that triggered the innovation implemented in Mondomo, Colombia (Peña et. al., 2015b). The earthquake destroyed the water supply infrastructure in the town, which helped the community to attract the attention of a **broad alliance of public, private and social actors**. Despite the prevailing framework of the time that supported a retreat of the State from the provision of WSS, there was **strong government support** that provided 85% of the funding needed to build a new water system and treatment plant.

It is important to remark here that, although the socio-political and economic-financial structural conditions that provided the context and some of the triggers mentioned above contributed to the emergence of the innovations, this always happened in a **dynamic process of interplay between these structural forces and conditions and social actions informed by a wide range of perspectives and objectives**, often in contradiction with each other. In a similar way, the experiences of success or failure and the replicability of the innovations under the study also must be examined as the result of this complex interplay between structural forces and conditions and the manifestations of individual and collective agency initiatives and projects.

### Critical success factors for socio-technical innovations in WSS

Another key objective of our project was to understand the reasons that explain the **long-term success** of these innovations. Our main research question related to this objective was:

*What are the **critical requirements** to make successful socio-technical innovations sustainable and replicable?*

As already discussed, the innovations studied were focused on the **democratization** of WSS to tackle the situations affecting vulnerable communities. Many of the factors and processes discussed above in relation to the emergence of the innovations also had a significant role in their success and replicability.

**Local community involvement.** In all cases, although in different ways and to different degrees, a fundamental requirement for the emergence and long-term success of the innovations was the **involvement of the communities**. In some cases, this was possible owing to a strong record of **pre-existing community organization and leadership**, while in others community involvement was mostly **induced by external interventions**. However, community involvement was addressed differently in the various innovations studied, which has an impact on their long-term success and replicability. For instance, in the community-managed WSS implemented in Mondomo, Colombia, there was a **long track record of community organization, with strong, legitimate leaders** (Peña et. al., 2015b). This was also the case in the implementation of the Condominial and Integrated Sanitation systems in Brazil (Castro and Ferreira, 2015a,b). In the latter, there was a strong tradition of **social and political engagement** of the community with a range of political parties and progressive sectors of the Catholic Church that helped to develop a broad alliance that became fundamental in the process. Also, in the Brazilian state of Ceará there is a **long standing tradition of community associations** that facilitated the implementation of the SISAR system of rural sanitation, which requires an important degree of community participation (Cortez, 2015; Alves, 2015).

Nevertheless, in all cases the **induction from outside** of particular forms of involvement was required to achieve success, firstly during the implementation phase and later for the long-term maintenance and management of the systems. For example,

- a) In the two Colombian cases, the university played a crucial role in **training** community members and **developing participatory activities** to raise awareness and facilitate the **appropriation of the innovation** by the users, keeping a permanent relationship to support the community **in the long-term running of the systems**.
- b) In the case of the SISAR system implemented in rural communities of Ceará, Brazil, the approach adopted includes the **training of the local community to take charge of the system** after its construction; there is also a **formal agreement** signed by the local community association and SISAR.
- c) In the case of the Condominial Sanitation system as implemented in Recife, Brazil, the involvement of the community was formally circumscribed to
  - i. **Accepting the implementation of the system** in their neighbourhood by signing a “Condominial Agreement” with the municipality or public provider; this agreement involved a **commitment by the community** to contribute with funds, labour, or materials for the **construction and maintenance** of the system over time
- d) The Integrated Sanitation system also implemented in Recife, Brazil, addressed community involvement with a more radical approach: community members were given a strong say in the design of **a municipal public policy framework to tackle the situation of vulnerable communities for the whole city**.

Community members were also **trained to monitor the implementation of the system** by the municipality and were provided with specific **institutional arrangements to facilitate the monitoring of the maintenance and running of the system** over time.

- e) In the intervention implemented in the Quilombola community of Lagedo (de Pádua et. al., 2015), although the local community is actively mobilized around crucial issues such as the regularization of land ownership, the involvement in relation to the development of a water filtration system as envisaged in DESAFIOs case study (de Pádua et. al., 2015) **was fully induced by the university through training and participatory activities** to raise awareness among community members about the **quality of local water** sources and to help them to **take charge of the management of the system** after its implementation.
- f) Similarly, in the intervention implemented in Santa Fe, Argentina (Portapila et. al, 2015), community involvement is **fully induced by the university working with local secondary school teachers and students** with the objective of raising awareness about the quality of local water sources and fostering the empowerment of the community to monitor public policies in the sector of WSS.

There are several cases where the success of the innovation is clearly related to the **high degree of community involvement** that goes beyond the construction and management of the systems and includes the **social and political appropriation of the innovations**. This is particularly the case in the Integrated Sanitation system implemented in Recife Brazil, and in the two Colombian cases of community-managed WSS.

Nevertheless, although community involvement is clearly a crucial factor, **sustained and meaningful external support**, particularly from the State, has been identified as a deciding factor in the sustainability of all the innovations studied over time. This is the case even in situations where the implementation of innovations inspired by the appropriate technology approach provided for systems that are relatively inexpensive and simple to run by the users, as in the two Colombian cases of community-managed WSS.

- a) As already stated, in the two Colombian cases **the university has provided continued support** to the community to facilitate the running of the systems over time. This has been necessary owing to the **lack of State support for rural WSS** in the country. In addition, there is a clear tendency to a **decline in community participation over time**, which the university has identified. One initiative to counter these negative trends has been to support the **creation of regional organizations to bring together community-managed rural WSS** in order to support each other. These organizations are meant not only to strengthen existing community-managed rural WSS but also **help replicating the model based on the innovation** implemented in the two cases studied by DESAFIO (Peña et. al., 2015a,b). The success of these two cases suggests that the model has **significant potential for replication**.
- b) In the case of the SISAR system of rural sanitation in Brazil, although the original goal has been that the local systems achieve self-sufficiency, over time it came to

be accepted that they **could not succeed without the strong support from the provincial public authority CAGECE** (a consortium partner in DESAFIO). CAGECE has created a special management unit to support all SISAR systems (see Cortez, 2015; Alves, 2015; Melo [CVS], 2015; Sobreira, 2015). As a result, the model has been successfully replicated across the state of Ceara and is now **promoted by the IFIs and some donors as a system that can be replicated in other countries**. SISAR's managers have been already invited to provide advice on the implementation of similar systems across Latin America and in some African countries (Cortez, 2015). Also, the Brazilian government is considering the possibility of adopting SISAR as one of the **policy options for rural sanitation** in the country (DESAFIO, 2015b).

- c) Although as explained below the experience of the Condominial Sanitation system implemented in Recife, the focus of one of the case studies (Castro and Ferreira, 2015a) was a failure, the model has been highly successful elsewhere. As already discussed, the system was originally designed as a low-cost option to tackle the deficit of sanitation coverage in poor neighbourhoods where it was unfeasible to introduce conventional sewerage networks owing to the irregular characteristics of the terrain or the informal patterns of urbanization characteristic of poor areas. However, it was adopted in the 1990s by the public WSS utility of Brasilia, the country's capital, where it became the **preferred option for the whole city, serving rich and poor alike** very successfully. A major reason for this success is that **the public utility has created a special management unit dedicated to this system, and provides full support to the users** (Montenegro, 2015b; Rissoli, 2013, 2015). There is little community involvement here, and the system operates like a conventional sanitation system. Another mark of success is that the Condominial system has been also adopted by the current Brazilian government, which in the field of WSS has taken a very different policy approach to that promoted by the neoliberal governments of the 1990s (Castro and Ferreira, 2015a; Brazil, 2015c; Melo [JC], 2014, 2015; Rissoli, 2013, 2015). The system has been also replicated worldwide and has been promoted by the World Bank, the Inter-American Development Bank, and other international agencies.
- d) The Integrated Sanitation system implemented in Recife, Brazil, has been very successful in achieving the goal of **transforming the living conditions of poor communities by adopting a holistic approach** that tackles simultaneously different dimensions of their vulnerability: lack of safe drinking water, sanitation, in-house facilities (toilets, showers), drainage, urbanization including housing and pavement, solid waste collection and disposal, disease vector control, and other related aspects. Although community involvement has been a major factor in this success, this involvement has been mainly in relation to participation in the design and monitoring of public policy, implementation, and long-term management of the system. In this model, **it is not expected that poor communities should take charge of the systems themselves**, whether by investing financially or in kind for the construction of the infrastructure or in the long-term activities of maintenance and operation. Owing to its holistic approach, **this is an expensive system, and it is grounded on the assumption of a strong**

**State leadership and commitment to make the necessary investments and maintain the infrastructure and operation over time** (Castro and Ferreira, 2015b; Miranda Neto, 2014, 2015). As discussed below, changes in government policies can be a major setback for this system.

Summing up, the research findings show that the main factors to explain the success of the innovations over time and their replicability are fundamentally **socio-cultural, policy-institutional, and political**, something that has been largely confirmed by the technical experts interviewed, many of whom were designers or implementers of the innovations (e.g. Melo [JC], 2014, 2015; Miranda Neto, 2013, 2014; 2015; Montenegro, 2013, 2014a,b). In particular, we can highlight here three main factors: firstly, the **fundamental role of State support in the funding** of the infrastructure and in guaranteeing the long-term sustainability of the systems. Secondly, **meaningful social participation** that is not restricted to the tokenistic or instrumental involvement of the user communities is a crucial factor when the running of the system relies heavily on the users (as in the SISAR system, in the community-managed WSS in Colombia, or in the Condominial Sanitation system). Thirdly, the significance of **other forms of external support, for instance technical advice and training** provided by universities and State agencies, to empower and facilitate the appropriation of the innovations by the user communities.

### Critical obstacles to the success of socio-technical innovations

The other aspect of the innovations studied that we sought to understand concerned those factors and processes that help to explain failure. Our core question here was:

*What are the key obstacles to the sustainability and replication of the innovations?*

Although understandably there are questions related to improvements needed in techno-infrastructure and operational dimension, the research results suggest that, similarly to the question examined in the previous section related to success and replication, **the factors and processes that help to explain failure are overwhelmingly socio-cultural, policy-institutional, and political**. Even the failures identified in the technological aspects, for instance the inadequate infrastructural performance of the Condominial Sanitation system in Recife (Castro and Ferreira, 2015a) or the partial failure to fully comply with drinking water parameters in some of the SISAR systems (Passos et. al., 2015) can be mainly explained as **failures in the public policy and institutional domain**. In addition, **socio-cultural and political aspects** also play a fundamental role in the explanation.

The implementation of the Condominial Sanitation system contains important lessons in this regard. According to the critics, important factors of failure would be in-built in the model:

- a. The **exclusive focus on sewerage, unconnected from other fundamental infrastructure services**, in particular drainage and paving, but also drinking water and in-house sanitary facilities, proved to be a major reason of the failure of the system in Recife.
- b. The **reliance on users** for much of the construction, maintenance, and operation activities, **in the absence of sustained support from the State** (e.g. in environmental and hygiene education), led to critical problems. This problem was compounded by increasing conflicts between members of the “condominiums”, the neighbours, arising from system blockages caused by **misuse and other issues leading to the break of the “condominial pact”** that eventually provoked the abandonment of the systems by the community.

However, the **lack of continued State support for the system** was a major factor of failure, particularly the **non-compliance with investment commitments** to complete the construction of the infrastructure and the **lack of support for maintenance and operational activities**.

In turn, the experience of the Integrated Sanitation system, also implemented in Recife, Brazil, further confirms the key role of policy-institutional aspects and casts light on the political factors that are at the root of the causes of failure. Although this was a successful experience given that it achieved the specific objectives of the intervention in relation to the techno-infrastructure dimension, **the long-term sustainability and replicability of the system became seriously compromised owing to changes in political priorities that led to the abandonment of the original strategy**. The most important reforms foreseen by the original project in the policy-institutional and political dimensions **were never implemented and effectively abandoned**, in particular those involving the meaningful participation of the citizenry in the design of public policies for the city as a whole, and in the monitoring of the implementation of the infrastructure works. Also, the provisions made in the original project for long-term institutional arrangements to ensure the accountability of the municipal and provincial authorities and the public utility **were progressively scrapped**. This case demonstrated that merely electoral, tokenistic democracy is not enough to ensure the democratization of the politics and management of WSS. Although there was an effective material democratization with the universalization of coverage and radical infrastructural intervention that turned an insalubrious shantytown into a liveable neighbourhood, the **abandonment of the commitment to introduce substantive political and institutional reforms led to the failure of the original project** that envisaged the empowerment of the local community vis a vis the authorities and the service providers.

The SISAR system of rural sanitation implemented in Brazil also elicited important lessons about factors that pose important obstacles for the democratization process in relation to WSS. This is also a system that has enjoyed much success in relation to the achievement of material democratization, as it has managed to provide access to drinking water to almost one million people in the state of Ceara’s rural areas. However, despite its success, **SISAR has not yet achieved institutional stability and has been under threat of political decisions that could seriously affect its continuity, at least in its present form**. The lack of a national policy for rural WSS in Brazil may be a



**constraint** for SISAR's potential development, although a new national framework for rural WSS could also become a **threat** to SISAR were it to favour other alternative systems. In any case, **the lack of a national policy framework is a source of uncertainty for the future of rural sanitation**, and this has potential consequences for the SISAR system. There are also other obstacles that affect the performance of SISAR as a vehicle for the democratization of WSS. Among other issues, the implementation of SISAR units is often marred by a **political context characterized by a strong culture of clientelism within which the system has to operate**, while the low-density populations characterizing Ceara's rural areas often result in a **fewer number of connections that the minimum required to make the systems economically self-sufficient** (Alves, 2015).

The community-managed WSS systems studied in Colombia face obstacles in relation to the democratization process, obstacles that are mainly **concentrated in the policy-institutional and political dimensions** similarly to the other cases. Like in the case of Brazil, Colombia still lacks a national framework for rural sanitation, which is a source of **uncertainty for the long-term sustainability and replicability** of the innovations studied. Also, there is a pattern of lack of technical and financial support for the tens of thousands of rural WSS existing in the country, which is major **impediment to the expansion and consolidation of community-managed WSS** in a context where there are few if any alternatives for the rural population. This is compounded by the fact that, at least officially as a result of joining the Pacific Alliance jointly with Chile, Mexico, and Peru, Colombia has adopted the neoliberal framework for WSS that **promotes privatization and mercantilization of these services and the retreat of the State from the activities of provision and funding of these services**. This approach to the provision of WSS is a **major threat to the process of democratization** of the politics and management of these essential services. Also, like in the other cases, **the decline over time in community participation and commitment** to self-management poses significant challenges to the sustainability of the systems in the mid and long-term.

Summing up, in all cases studied, there is a **pattern of common factors that constitute significant obstacles** for the innovations studied in their character of **vehicles of the process of democratization of politics and management in the WSS**. Discontinuity in the public-policy and institutional dimensions, slow pace or routine cancellation of political reforms oriented at tackling structural social inequality and injustice that are the root of the vulnerabilities affecting poor communities, decline and stagnation of community participation over time, lack of long-term commitment by the authorities to invest and develop adequate planning and policy-institutional frameworks for rural sanitation, policy fragmentation and the corresponding lack of integrated approaches to the provision of essential services including WSS, among other issues. In addition, the replicability of the implementation of the innovations often faces the obstacles presented by the transplantation of models developed in a particular setting to other regions and countries. Although we did not study this aspect, there is evidence of **failures in the replication of innovations in other settings caused by cultural, institutional, and political differences** (e.g. causes of failure in the implementation of the Condominial Sanitation system developed in Brazil when introduced in Bolivia and Peru). However, there is also evidence that the innovations can be **successfully adapted**

**to different conditions**, even introducing radical modifications of the original model, as has been the case of the implementation of the Condominial Sanitation system in Brasilia or Salvador in Brazil.

## **Conclusions**

This document has presented a synthetic analysis of main project findings that are relevant for the context of the countries participating in the project, Argentina, Brazil, and Colombia. As discussed in the first section, the three countries have made good progress in several areas related to the expansion of access to WSS to vulnerable communities. However, the claims made in relation to the MDGs have been taken with much caution, as the evidence suggests that the progress achieved is less significant than what the official figures present. This is particularly true in relation to the lack of progress in the provision of basic sanitation, but also in relation to safe drinking water. The situation of vulnerable communities, particularly in rural areas but also in urban regions, continues to be a major obstacle for the process of democratization of the politics and management of essential public services, and in consequence, a fundamental obstacle to the democratic process more generally. Providing safe, sustainable basic WSS to vulnerable communities continues to be largely overdue in most developing countries. To deliver these basic services within a democratic framework that prioritizes social efficacy and equality, accountability, and meaningful citizen involvement and participation in monitoring policy decision-making and implementation is more daunting and remains a largely elusive target.

At the time of writing this report, these three countries, and LA&C as whole, are experiencing a new cycle of the recurring economic-political crises that have historically characterized the region. There is a clear historical pattern showing that these crises tend to have a huge impact on the poor and vulnerable sectors of the population, producing the discontinuity of policies directed at tackling the conditions of structural inequality and injustice affecting these sectors and very often reversing the advances achieved during periods of progressive political and economic reform, as those experienced by Argentina and Brazil since 2003. The return of neoliberal policy frameworks predicated on the retreat of the State and the transfer of responsibility for essential services to the poor, complemented with the privatization of commercially attractive public services presents a major threat to the democratization of essential WSS in Brazil and Colombia, and potentially also in Argentina depending on the results of the national elections that take place in late 2015.

In this difficult context, the cases studied by DESAFIO contain very important lessons and provide clear evidence of the enormous potential that socio-technical innovations may have in contributing towards fostering the democratization process. Substantive democratisation in the access, government and management of essential public services such as WSS requires social participation and control over the decision-making process by common citizens and users. This includes the scrutiny and democratic control of decisions about how water and essential services such as WSS are governed, managed, and distributed, by whom, for whose benefit, etc. This is seldom available to

local communities and common citizens, but even the short-lived experience of some innovations like the Integrated Sanitation system implemented in Recife suggest that it is feasible and achievable. Also, a crucial lesson extracted from the study is that the extension of safe essential WSS to the unserved vulnerable population must rely on heavy, long-term State involvement, and particularly on substantial public funding. The State must provide strong and continued support to make these innovations possible, and more importantly, sustainable and replicable. It is unfeasible and undemocratic to require poor, vulnerable communities to become self-sufficient in taking responsibility for the provision of safe WSS. There must be a balance between the promotion of autonomy and substantive citizenship in the communities and the exercise of State responsibility for guaranteeing the provision of essential services.

These and other lessons that the research team will elaborate in more detail in forthcoming publications can make significant contributions to the design and implementation of public policies for the WSS in the three countries addressed in the study.

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