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Social technologies to guarantee access to water for the rural population living in poverty: the Brazilian experience

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Introduction

Water has increasingly played a central role in the discussion of sustainable development, in view of the increasing pressure of demand vis-à-vis an increasingly limited supply of water. In addition, recent studies have reported that climate change has affected the water cycle, with a high possibility of making extreme events increasingly frequent and water supply becoming less predictable and reliable (MARENGO, 2008). Not surprisingly, the document "Transforming Our World: The 2030 Agenda for Sustainable Development" was approved at the United Nations Conference on Sustainable Development, defining among the objectives the promotion of sustainable agriculture with a view to achieving security water availability and sustainable management.

The supply of quality drinking water is essential for life, but millions of people around the world still do not have access to this basic need. Actually, there are 750 million people without adequate access to sources of water for human consumption, with 616 million (approximately 83% of the total) residing in rural areas (WHO, UNICEF, 2014).

Brazil in particular has a very different scenario in relation to the theme. Despite the relative abundance, the geographic distribution of these resources - superficial or subterranean - is quite irregular. As an example, the North region, with 5% of the population, has 73% of the country's water, while the remaining 95% of the population share 27% of the country's water resources (ESTEVES, 2012, p.24).

The reasons are many and varied, but in general the lack of sufficient resources to implement and maintain conventional and technically more complex systems of water supply is the main barrier to the care of certain populations, especially those located more dispersed in the territory.

It is no coincidence that the implementation of decentralized water supply structures, managed by the family or the community, has been considered an important part of the strategy to guarantee access to quality water, as they involve substantially lower implementation and maintenance costs than works necessary for the interconnection of that population to a distribution network. Decentralized equipment and systems for the storage of water have ample potential for meeting the demand for water in regions with great water shortages, mainly for human consumption, and often the only viable alternative is social technologies that allow abstraction of rainwater (GNADLIGER, 2011).

In this context, the Brazilian initiative to implement social technologies as a technological alternative to guarantee access to water for human consumption started from the identification that the solution for the water supply of the rural population would not be feasible only through large works of Sanitation, water mains and more complex water distribution systems.

Given the urgency of ensuring access to adequate quality and quantity of water, given its vital importance to the routine of people, especially those in situations of social and climatic

vulnerability, support for simple, low-cost and of individual or community use has proved to be a fundamental alternative to enable this assistance in the short term. It was in this context that government support for social technologies began, focused mainly on the collection and storage of rainwater in order to guarantee access to water for human consumption and food production for low-income rural populations, especially in regions where there is a shortage of surface and underground water sources, like brazilian semi-arid region.

This is a very decentralized action, and involving broad partnership between the state and civil society, with results and significant impact on the welfare of the Brazilian rural population. Several studies have demonstrated the efficacy and effectiveness of this action, be it a substantial reduction in the incidence of waterborne diseases, reduction in time spent fetching water, a task assigned usually women and children, and reducing social vulnerability and, consequently, of political clientelism.

In this context, the objective of the paper is to present the context from which this governmental action has been developed, discussing the strategies, the legal framework and the political and administrative processes that have made possible the effective implantation of these technologies in such a wide and complex territory.

Access to water in rural areas in Brazil: conceptuals issues and institutionals arrangments to public policies

Access to water has an interface with diverse and complex themes. Traditionally the concept of access to water supply services has been related to the characteristics of the household infrastructure and its forms of water provision and, above all, to the existence or not of connections to water supply distribution networks.

In the national policy on basic sanitation, the conception of what is meant by access to water is closely related to linking the home to the public water supply. According to Law nº. 11,445 / 2007, regulated by Decree nº. 7,217 / 2010, water supply is considered one of the services to be offered, from the perspective of universalization, from the installation of a system composed of infrastructure, civil works, materials and equipment, intended for the production and distribution of drinking water to populations, under the responsibility of the government.

In the legal definitions of basic sanitation in Brazil, there is a strong emphasis on access to water in the urban environment, with few alternatives being suggested for what is considered as a rural area, which is where the greatest supply deficit in the country is found. Article 6 of the Decree does not establish the need to connect the households located in the rural area to the public supply network available in the locality, pointing out that only permanent urban buildings should follow this instruction.

This historical lack of interest has produced and amplified marked social inequalities, as a result of the poor access of the rural population in potable water, with sufficient quality for human consumption.

In the absence of a public water supply network, what is expected is the use of individual solutions (§ 1, Art. 6), considered as any and all alternative solutions of basic sanitation that serve only one unit of consumption. In this context, such solutions would be used primarily by dispersed populations, given the operational difficulties of linking this population to a general network, a connection that requires investments that are often considered economically unfeasible.

Access to water, as well as a component of basic sanitation, is an important element in guaranteeing the food and nutritional security of a family. In a legal sense, food and nutritional security consists of the realization of the right of all to regular and permanent access to quality food in sufficient quantity ..., encompassing "the expansion of the conditions of access to food through production, in specialization of traditional and family agriculture, processing, industrialization, marketing ..., food supply and distribution, including water, as well as the generation of employment and the redistribution of income "(art.3 And art.4 of Law 11,346 / 2006).

Despite the lack of clarity regarding the State's obligation to guarantee access to water as part of the human right to adequate and healthy food, the importance of access to water in this interface is explicit in the guidelines of the national food security policy Decree No. 7,272 / 2010, Art. 3, according to which the State must act in the promotion of universal access to quality water in sufficient quantity, with priority for families in situations of water insecurity and for food production in agriculture family and fisheries and aquaculture. This aspect becomes even more important with the recent inclusion of food as a social right in the Federal Constitution (Constitutional Amendment no. 64/2010).

Through the National Secretariat of Food and Nutrition Security of the Ministry of Social Development and Fight against Hunger, it was possible to foresee an entire chapter in said Decree that regulates the Basic Sanitation Policy in Brazil on the diffuse access to water for the low income population. Among the guidelines of this policy, established in item VII, article 54 of Decree 7.217 / 2010, is the guarantee of adequate means to serve the dispersed rural population, including through the use of solutions compatible with their peculiar economic and social characteristics.

Assessing the access to water supply based only on the forms of access to the infrastructure tends to simplify what is actually a complex reality, given the risks of intermittency of the supply and/or the distribution of water not up to the pre-established drinkability standards (GUARDIOLA et al., 2010; MAJURU et al., 2012). Such a perspective induces the identification of false progress towards the universalization of access and generates inaccurate evaluations of the situation of a given population group, or it may conceal inadequate or precarious service provision to the group. Furthermore, focusing merely on access to the physical infrastructure makes it impossible to check for the existence of inequalities.

A notable landmark in meeting the challenge of obtaining a better understanding of the conditions associated to water access was the UN's definition of access as a human right. It has been in force since 2010 and has broadened the concept of access to go beyond the question of connection to a system or the type of physical infrastructure involved. It is based on aspects that involve quality, quantity, physical and economic accessibility, and acceptability.

In short, the theme involves complex dimensions often not considered. As a policy of basic sanitation, there is a huge deficit of assistance to the population located in the rural area, a deficit that is practically unfeasible to be eliminated only with the conception used of water supply system, with the necessary infrastructure to do so. From the point of view of brazilian food security policy, at least basic access to quality water should be ensured as an element to guarantee the human right to adequate and healthy food.

From this multifaceted perspective, what is meant by access to water should be a less rigid concept and more adaptable to the type of demand to be met and the conditions of that population. The availability of water (mainly in the aspect of quality) to meet only essential demands for health and food safety and nutritional security is different from meeting the demand for other everyday uses, for food production in the yard or for animal husbandry.

Thus, access to water should be understood as reaching a water source, defined both in a spatial context and in a temporal context, which also considers the quality of the water collected. According to a study by Howard and Bartram (2003), depending on the distance traveled and the time spent, in addition to the level of water collected by the family, a level of access is defined that is determinant for the type of demand served (volume collected) and the degree of adverse health effects.

In addition to the space-time question, it is necessary to evaluate this access under the perspective of family autonomy. The family's reliance on patronage favors to access essential public goods can have perverse consequences from the point of view of guaranteeing citizenship and universal access to fundamental human rights. In places where water scarcity is critical, for example, the use of the car kite to supply rural households is often accompanied by electoral cooptation, perpetuating clientelism and eliminating the universal human rights aspect attributed to access to drinking water. Generally the water supply by means of kite-cars is linked to a network of personal political relations, not associated with an institutionalized service provision in the administrative structure of the local public power.

With this, the definition of what is understood by access to water becomes an important aspect for the characterization of the intervention of the public power.

In addition to the conceptual issues, the institutional and legal structure for the management of water resources and basic sanitation in Brazil becomes extremely complex also in view of the federative division of competences established by the Constitution and complementary legislation.

The design of the institutional-legal framework for guaranteeing access to water in Brazil demonstrates that there is considerable normative fragmentation. The divisions of competencies between the Union, the states, the federal district and the municipalities are not well defined by laws and regulations, both in terms of water resources management and in the management of basic sanitation. In addition, in each federative entity specific legal institutions arise to take care of some aspect of the waters, institutions that do not necessarily articulate in an appropriate way. With this, the Brazilian State, in order to account for its duty to care for water in Brazil, has created and developed important legal institutions that require a high degree of articulation in order to act effectively.

In this context, in addition to the formal normative recognition of a right and the creation of an institutional environment to guarantee this right, it is fundamental the design of a policy implementation arrangement so that this formal recognition becomes actions capable of guaranteeing the right recognized for all. As regards water, its recognition as a fundamental human right is a relatively recent phenomenon and still lacking well defined contours.

With the understanding that water is characterized as a fundamental human right, it is important to understand what are the effective legal guarantees created by the State for the protection of recognized right. That is, once the right is recognized, it is necessary to create legal, administrative and budgetary instruments that ensure the full enjoyment of the right recognized.

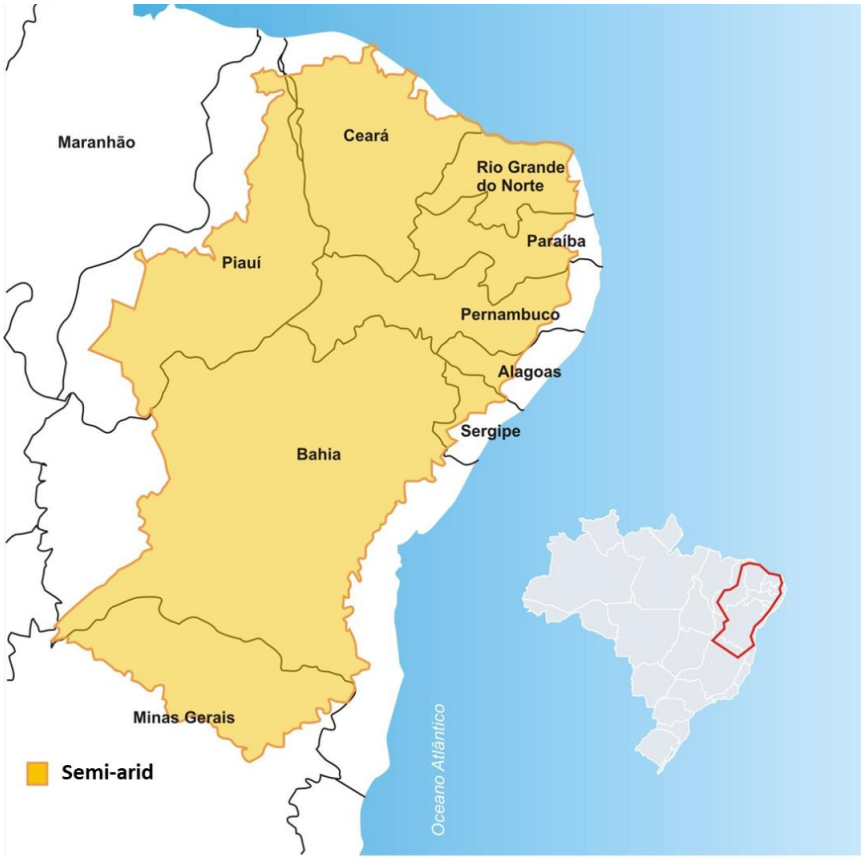
Although Brazil has advanced a lot in the regulation of basic sanitation, the data show that there is still much to be done with regard to the supply of drinking water.

From the point of view of the effective attendance of the population there is an obvious regional inequality. According to data from the PNAD/IBGE (2015), while in the South and Southeast regions coverage of the public network reaches 88,3% and 92,2% of its population, respectively, in the North and Northeast regions coverage reaches on average 60,3% and 79,7% of the population. There are also substantial disparities in access to safe drinking water between urban and rural areas. When comparing this coverage by location of the household, this disparity is highlighted, considering that in the urban environment 93,9% of the population access to water through the public network, while in rural areas 65,5% still does not have adequate means to access water from quality for consumption.

Access to water in the brazilian semi-arid

The sub-region legally known as semi-arid covers 1,134 municipalities in nine Brazilian states, in an area of approximately 969 thousand km² (Figure 1), representing around 20 % of municipalities and 11% of Brazilian territory.

Figure 1: Brazilian semi-arid



The delimitation of this territory by the federal government, in accordance with Administrative Rule no. 89 of March 16, 2005, was based on three technical criteria: a) annual rainfall of less than 800 millimeters; B) Index of aridity of up to 0.5 calculated by the water balance that relates the precipitations and the potential evapotranspiration, in the period between 1961 and 1990; And c) drought risk greater than 60%, based on the period between 1970 and 1990.

According to data from the Demographic Census of 2010, more than 22.5 million people are located in this region, with 8.5 million in rural areas alone, corresponding to about 40% of the population (the lowest rate of urbanization from the country). At the same time, this region concentrates one of the largest proportions of low-income families, in addition to the lowest levels of human development, according to a UN / UNDP indicator, resulting in a scenario with a high number of people in situations of social vulnerability, as shown in Table 1.

Nearly 75% of the families located in the semi-arid rural area are low-income families, considered as those with per capita income equal to or less than half the minimum wage (as defined in Decree No. 6,135, dated June 26, 2007, which The Single Register for Social Programs of the Federal Government).

The economy of the semi-arid region, though more industrialized today than it was years ago, is based on the primary sector, especially on extensive livestock and subsistence agriculture.

Extensive land use (with deforestation, excessive grazing, mining and irrigation with low levels of efficiency), which leads to many areas already in the process of desertification, coupled with prolonged drought periods that occur cyclically, has had perverse effects on The economy of the region and thus leading to high social costs and resulting in low levels of human development.

In addition, it is verified that this region has unique characteristics regarding the demands and the availability of water resources. The predominant use of water is for human and livestock supplies, mainly extensive livestock; Rivers are often intermittent; The subsoil is formed in 70% by shallow, crystalline rocks, which hinders the formation of perennial springs and damages the potability of groundwater, normally salinized; The levels of precipitation and runoff are small compared to the rest of the country; The hydrological efficiency of the reservoirs is extremely low, due to the high evaporation rates; And perforated wells in the sediment and crystalline presenting safety, maintenance and operation problems (VIEIRA, 1995).

The public policies for access to water in the Brazilian semi-arid region were, over a long period of time, and still are, to a lesser extent, conducted according to the occurrence of droughts. Whenever a drought occurred the politicians announced the intention of works programs, directed to the investment in large water infrastructures through the construction of large dams and dams, often destined to meet concentrated demands such as cities / industries and irrigated perimeters

Within this reality, there remain serious problems of distribution and management of this water, from which there is now a high water supply deficit in the semi-arid rural zone, which is particularly critical for low-income families, who often do not have income sufficient for the acquisition of water.

The supply by car-kite is also an alternative service for a large part of the region's population, mainly in the states of Paraíba, Rio Grande do Norte, Alagoas and Pernambuco. This situation clearly illustrates the enormous difficulty of this population to access quality water, resulting in the perpetuation of mechanisms of political dependency, which reduce the autonomy of families, who see a basic human right and the provision of an essential public service associated with a exchange of clientelistic favor.

Over the years this type of relationship of dependence has materialized mainly in this type of supply, whose service is often in the hands of individuals, individuals whose interest differs from the public interest. Finally, the establishment of the degree of access to water should consider several factors, whose understanding is essential in the evaluation of possible interventions to promote health and the quality of life of the population exposed to water shortages. In the short term, we can not see the universalization of the care of families located in the rural area, especially those in extreme poverty, with water supply systems that meet a demand similar to that observed in the urban environment for all daily uses.

Social technology as public policy: the experience of Cisterns Program

In a movement initiated on a large scale starting in 2003, the Brazilian federal government has been betting on social technologies as a solution for water supply and as part of the strategy to guarantee the food and nutritional security of low-income families residing in rural areas, especially in a growing context of water scarcity from surface and ground sources. These technologies are mostly focused on the collection and storage of rainwater, whether for human consumption or for food production, with the governmental action currently materialized in the National Support Program for Rainwater and Other Water Collection Social Technologies - Cisterns Program and managed by the Ministry of Social Development.

This initiative was based on a context in which the perception about the necessary identification of alternative solutions that account for the growing process of limitation of surface and groundwater sources compatible with socio-climatic diversity and involving a broad social participation in management was growing. It is no coincidence that the implementation of decentralized water supply structures, managed by the family or the community, has been considered an important part of the strategy to guarantee access to quality water for the rural population, as they involve substantially lower implementation and maintenance costs than the works necessary for the interconnection of this population to a distribution network.

Decentralized equipment and systems for water abstraction and storage have broad potential for meeting the demand for water in regions with high water scarcity, mainly for human consumption, and often the only viable alternative is social technologies that allow the capture of rainwater.

The importance of using these technologies has been reinforced in some editions of the World Water Forum. At the third edition of this Forum, held in Kyoto in 2003, the Director of the Environmental Technologies Center of the United Nations Environment Program (UNEP), Steve Hall, stated that "Capturing and storing rainwater as potable water or For use in agriculture are not a new idea but are being ignored by planners and private initiative. They are not as attractive as mega-projects of water supply; But even if rainwater harvesting, if introduced on a large scale, can increase the existing supply of water at a relatively low cost and give communities responsibility for managing their own water supply "(The Daily Yomiuri, 17 / 03/2003).

As Gnadliger (2011, p.332-333) puts it, "Rainwater harvesting involves many small projects at the local level, rather than a large and distant project; Thus involving a large number of actors and users reducing the liability of current public water suppliers. "

In parallel to the Third Conference of the Parties to the United Nations Convention to Combat Desertification (COP 3) held in 1999 in Recife, Brazil, civil society organizations met and founded Articulation in the Semi-Arid (ASA). Participation of grassroots organizations, including non-governmental organizations, trade unions, cooperatives, associations and

churches. The movement organized around this event was the starting point for the elaboration of the One Million Cisterns Program - P1MC, proposed to be executed by civil society, in a decentralized way, under the paradigm of living with the semi-arid, respecting the knowledge and Culture. This program was the first initiative to include in the public agenda structuring solutions to a problem present in the socioeconomic reality of the region, less focused on palliative solutions to combat drought, historically supported by the Brazilian State.

The focus has been on the Brazilian semi-arid region, which has unique characteristics regarding the demands and the availability of water resources, as explained above. The main supported technology consists of a system of gutters for collecting the rainwater from the roof of the domicile interconnected to a 16,000-liter reservoir built from masonry boards.

The Cisterns Program is present in 1,203 municipalities, with 1,096 members of the region delimited as semi-arid, covering 96.5% of this region. The importance for local socioeconomic development, as well as the effectiveness to improve the level of food and nutritional security and for the health promotion of the low income families benefited by this policy of access to water, attested by several evaluation studies, resulted In a gradual increase in resources allocated to the Program over the years, with a direct impact on the number of families served.

Throughout the period, more than 1 million social access technologies to water have been implemented, totaling investments of around 1 billion dollar, of which 861 thousand technologies are focused on capturing and storing water for human consumption, mainly cisterns Of plates of 16 thousand liters in the semiarid, about 140 thousand technologies that enable the production of food and small-scale animal husbandry and 4 thousand rural schools, also concentrated mainly in the semi-arid.

It is important to highlight that, starting in 2012, the Program also began to expand to the Amazon region, with the assessment that the water issue in this region involved a serious potability problem, with a large contingent of low-income rural families (in especially traditional peoples and communities) that did not access quality water for human consumption. In this case also the solution used from a social innovation, being supported social technologies adapted to the socioeconomic, environmental and climatic conditions, considered more effective and effective in facing the question.

The process for the implementation of these technologies involves, in addition to the construction of water capture and storage technology, social mobilization activities, training and general guidelines on water use and management.

Mobilization and training activities are defining elements of action, an integral part of the process that characterizes these technologies not as engineering work to be carried out by contractors, but as social technologies, which can be implemented through direct action of families or communities to be met.

As a result of a social process of learning about the means of living with drought, the technologies currently supported by the federal government, especially the 16,000-gallon plate tanks, are simple solutions, low cost and easily applied and appropriated by the community . In this process, the whole community is mobilized and families are encouraged to reflect on water management within the family and community. The manpower for implementation is usually local, and often the farmers themselves are trained to build the structure. These are the central guidelines, which characterize as social technology the water structure and the whole social process involved in its execution.

Table 1: Lines of action of the Cisterns Program

Objective	**Technology**
Access to water for human consumption or 1st water	Main technology is the cistern of 16 thousand liters, composed by a reservoir of masonry plates, interconnected to a system of gutters installed in roof to capture rainwater. The procedure for the installation is based on the assembly of pre-cast masonry boards made in a joint effort scheme close to the beneficiary's domicile. The full-volume tank meets the needs of a family to drink and cook food for up to 8 months of drought.
Access to water for food production or 2nd water	There are several supported technologies, the most common being the tank of 52 thousand liters, whose rainwater stored in the reservoir can be collected from a nearby concrete area or from the soil itself from a floodplain. The installation procedure is similar to that of the 1st water technology, and the reservoir mainly serves the family's quintal production, mainly vegetables and fruit trees, and the creation of small animals. Among other technologies supported are the underground dam, small dams, the barreiro trench and stone tanks.

Several studies have pointed out the direct benefits to the family after the implementation of these technologies. Evaluations conducted by TCU in 2006 by the Brazilian Agricultural Research Company - EMBRAPA, in 2009, reached similar results, showing that the use of water stored in the tanks gives the beneficiaries an improved water consumption, with a reduction in the incidence of diseases And the reduction of time and effort spent on trips to get water, especially women and children, on a daily basis.

With the Brazil Without Poverty Plan, launched in 2011, this action gains even greater visibility, since a goal established within the objective of eradicating extreme poverty in Brazil was the universalization of access to water in the semi-arid, to be carried out mainly Through the implementation of cisterns. This commitment was materialized in the WATER FOR ALL program, instituted by Decree No. 7,535, of July 26, 2011, in which the Cisterns

Program is inserted, which reinforced the importance of rainwater capture and storage systems as an alternative for the promotion of Health, food security and the local development of rural populations and in situations of social vulnerability.

Figure 2: Types of technologies supported by the Program

Implementation process of the Cisterns Program

The institutional arrangement for the implementation of the Cisterns Program has been consolidated over the years, involving the federal government's partnership with a small set of central actors, but whose resources are decentralized to a wide range of institutions with local or territorial performance. This execution design, in fact, is consolidated as the alternative considered most effective for the implementation of the policy, as evidenced in TCU's operational audit (2007, p.18). The conclusion reached by the agency is that "The good articulation existing between the three spheres of government, NGOs, community associations and unions is a strong point of the Action. The capillarity reached by the actors involved in the Brazilian semiarid communities is well executed and is of essential importance to the success of the action".

Since 2003, most of the technologies implemented from Cistern Program resources have had as central partners a set of state governments and civil society organizations. However, only 6.6% of the technologies were implemented directly by the direct partners of the federal government, mainly by municipalities and public consortium of municipalities

With this, a first element is that the design of the implementation system starts from the recognition of the importance of organized civil society in the implementation of the policy. Considering that the target audience is extremely complex in the implementation process, since they are low-income households, dispersed in rural areas or in isolated urban centers, it can be seen that the best performance is only achieved when the related activities To the implementation of technology are decentralized to local organizations active in policies associated with rural development, social assistance or food security. Such organizations generally have greater know-how, capillarity and technical and operational capacity to reach isolated audiences, a fact demonstrated by the program's own history of execution and corroborated by other bodies.

A second important element is the very legal definition of the concept of social technology for access to water. The concept of social technology has been widely discussed in the academic world, and social technology itself has also been part of an important set of public policies (COSTA, 2013, LASSANCE JR et al., 2004). However, even if it is based on the concept of social technology to guarantee implementation under the guidelines for which it has been implemented, only from Decree 8.038 / 2013 establishes a legal definition of what is involved. From this normative, and based on the practical and theoretical accumulation on the concept, it was defined that the implementation of this type of technology must necessarily involve a "set of techniques and methods applied for the abstraction, use and management of water, developed from of the interaction between local and technical knowledge, appropriate and implemented with the participation of the community "(Decree nº 8.038 / 2013, article 1º, IV).

In general, the execution logic involves a set of mechanisms that reduce the obstacles at all stages of the policy implementation process. The system consists of the following pillars: (i)

the formalization of service contracts, (ii) private non-profit entities previously accredited by the central government, and (iii) execution of social technologies with standard methodology and unit value.

Thus, the first instrument established was a Ministerial Order establishing criteria and procedures for the accreditation of private non-profit entities for the execution of the Program. The logic of this instrument was to bring to the Ministry the responsibility for defining which entities are able or not to execute the Program, based on transparent criteria, creating a network of institutions in a position to compete for notices to be published by the central government partners. That is, the Ministry, based on pre-defined requirements, continuously calls entities to postpone the implementation of the Cisterns Program. In compliance with the requirements and having been accredited, these entities become eligible to apply for any public call announcement issued by the partners under the Program

A second element of this new system is the standardization of the technology implementation methodology and the definition of unitary reference values for each one, with a view to ensuring uniformity in the execution process. In addition to a uniform quality standard, the reduction in the time associated with the negotiations for the preparation of the project was foreseen, as it eliminates the need to present price quotations for each item of expenditure. Finally, the federal government also takes responsibility for future improvements in technologies, together with a technical advisory committee specially created for this task.

In addition to the supported technologies, the instruments related to the selection and hiring processes of executing agencies were also standardized. In this case, a Public Call Notice was established with the same rules and procedures to be adopted by all partners, as well as a contract template was defined to be signed with entities accredited by federal government and selected through the Public Call Notice.

The logic is that the entities accredited by the federal government participate in Public Call Notice with uniform criteria, being the selection based on the territorial experience of the entities. In addition, by standardizing the above-mentioned instruments, based on a federal law, the idea was to reduce the time elapsed between the preparation of specific notices by each partner, through the analysis of the state attorneys' offices, and the effective contracting of local executing agencies.

Another innovation brought about is the permission for accredited entities, and later selected in the bidding documents, to be contracted out of bidding waiver, thus eliminating a set of time-consuming bureaucratic rites associated with bidding procedures. That is, within the new regulation that regulates the execution of the Program, a rule was inserted in the bidding law (Section XXXIII of Article 24 of Law 8,666 / 1993), allowing the waiver of bidding for the contracting of entities that have been previously accredited by federal government and selected in public announcement for the implantation of social technologies of access to water.

Another innovation brought by the new legislation concerns the advance of the first part of the contract signed with the contracted entity. By the traditional logic of the contracts, the contractor's remuneration is associated to the payment of products delivered by the contractor, that is, the payment is made after the effective proof of service accomplishment. Law No. 12,873 / 2013 authorizes this advance, while Decree No. 8,038 / 2013, which regulates the execution of the Program, stipulates this advance up to 30% of the total value of the contract. The explanation for this differentiated contract rule mainly concerns the nature of the contracted institutions, private non-profit entities, which do not have the financial structure or working capital to support the costs associated with the start-up of the technologies. On the other hand, in the legal framework created, the federal government brings responsibility for the type of accredited entity, the public call notice privileges entities with experience in the execution of similar action and also imposed strict sanctions in case of misuse of the public resource, mechanisms that aim to reduce the risk of this advance.

Finally, considering all the instruments established, especially the nature of the contract to be executed with the executing agencies, the last step in the design of this new system was to simplify and reduce the rites associated with the rendering of execution accounts. Since the perspective of the contract is the payment for a product referenced in a specific project, at the end of the contract the entity, in spite of receiving an initial advance, will only receive the complement of the total value of the contract after the effective delivery of all the goals Contractors, demonstrating the accomplishment of the stages foreseen in the technology implementation methodology.

This implementation system also provides mechanisms for transparency in the application of resources, since, in order to verify compliance with the targets, a computerized system of the federal government should be used, in which each Social Technology Receiving Term, which is a document signed by the family, containing, in addition to cadastral data, a photographic record of the technology, registration of the geographical coordinates of this technology, as well as the declaration of family participation in the methodological stages of mobilization, selection and training inherent in the respective social technology of access to water.

Conclusion

The Brazilian Cisterns Program has played a key role in guaranteeing access to water for low-income rural populations, especially those living in the semi-arid region. In this region in particular, the poor distribution of water resources coupled with the degradation of the caatinga soil due to intensive forms of exploitation results in low productive capacity and, consequently, low levels of socioeconomic development.

The importance for local socioeconomic development, as well as the effectiveness to improve the level of food and nutritional security and for the health promotion of low income families benefiting from this policy of access to water, as evidenced by several evaluation studies and by the National and international awards, resulted in a gradual increase in the resources

allocated to the Program over the years, with an investment totaling approximately 1 billion dollars, and with a direct impact on the number of families served.

Despite the advances, which were reflected in evident physical and qualitative results, the Cisterns Program still has a number of challenges for the future. Even with the large size of these numbers, the challenge of universalizing the service of the rural low-income population, even in the semi-arid region - which is more comprehensively addressed in this strategy - still demands the continuity of action on a large scale, since there is still significant demand Of service. Last survey carried out by the coordination of the Brazil Without Misery Plan, in April 2016, pointed to a demand, only in the semi-arid, of 487,5 thousand families with profile and not served. Adding the other regions of the country, accounting for low-income families living in rural areas and without access to the public supply network, this number is substantially higher, reaching almost 2 million families. That is, the challenge is still enormous, both in the semiarid and in other regions.

Over the last few years the expansion of the Program to other regions has been consolidated through the identification of technologies appropriate to each biome. The difficulty of access to water, especially for rural families in situations of social vulnerability, is not only associated with historically characterized regions with unfavorable climatic conditions, such as the semi-arid. The care of families in the Amazon and in the South, for example, has demonstrated that access to water has multiple dimensions, which require the adaptation of the strategy to the specific reality of each region. In this context, the legal framework that regulates the implementation of the Program currently has managed to reflect this complex scenario, offering efficient and effective instruments to enable access to water for rural poor populations throughout the country, spreading the use of technologies for abstraction and Rainwater storage as a suitable solution for each scenario.

However, there remains the challenge to identify partners with technical and operational capacity to deploy biomes on a wide scale, such as the one built in the semiarid region over the last few years.

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