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The Development Planning Unit
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**Service Provision Governance in the Peri-urban Interface of Metropolitan Areas
Research Project**

AN OVERVIEW OF THE WATER SUPPLY AND SANITATION SYSTEM AT METROPOLITAN AND PERI-URBAN LEVEL: THE CASE OF CARACAS

EXECUTIVE SUMMARY

Draft for Discussion

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About the project

This report is one of several outputs from the project *Service provision governance in the peri-urban interface of metropolitan areas*. This is a three-year project run by the Development Planning Unit, University College London in collaboration with a number of institutions from developing countries and with support from the UK Government's Department for International Development (DFID).

The purpose of the project is to improve guidance on governance and management of water and sanitation in the peri-urban interface (PUI) of metropolitan areas, in order to increase access by the poor and promote environmental sustainability. Presently there is a gap in the operating knowledge of implementing agencies on the specific problems that arise in the PUI. A premise of the project is that greater knowledge of the social, environmental and governance issues arising from changes in the management of water supply and sanitation in the PUI, and more specifically of the impact on these of different and changing regulatory frameworks, would be beneficial not only for the poor but also for these agencies and other local agents.

The project examines the cases of five metropolitan areas, each with different and changing service management regimes influencing the governance of basic service provision: Chennai (India), Dar es Salaam (Tanzania), Cairo-Giza (Egypt), Caracas (Venezuela) and Mexico City.

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An overview of the water supply and sanitation system at metropolitan and peri-urban level: the case of Caracas Metropolitan Region

Executive Summary

Caracas is a small metropolis in the Latin American context. The 2001 census put the Caracas Metropolitan Region's (CMR) total population at 4.2 million, 65.5% of whom live in the primary city. The latter's growth has been very slow; indeed it came almost to a halt in the 1990-2001 intercensal period. As a result, its proportion of the national population and that of the CMR has been declining. The CMR, for its part, has been growing, but has also lost ground as a proportion of the national population.

The metropolitan expansion of Caracas has overflowed the boundaries of its Metropolitan Area and given rise to the Caracas Metropolitan Region. Four large peripheral sub regions comprise the peri urban interface (Central Coast, the Miranda Highlands, Guarenas-Guatire and the Middle Tuy Valleys). The Caracas peri-urban interface has been growing substantially, with the exception of the Central Coast which was devastated by a natural disaster in December 1999. The Middle Tuy Valleys - which we call PUI-Tuy- have been chosen as the focus of this study. The PUI-Tuy is the fastest-growing sub region, its population having expanded by 50% in the 1990-2001 intercensal period, raising its share of the total CMR population from 9.6% to 12.7%.

The PUI-Tuy is defined in terms of the far-reaching processes of change that are occurring in the socio-economic and socio-environmental spheres, and to a lesser extent, in the physical-natural sphere because this is an area with strong and old processes of human intervention. A large portion of these changes are associated with the expectations created by the major transportation infrastructure projects (railways and metropolitan commuter rail system), private and public housing construction, and an abundant supply of land capable of being urbanised. This supply of housing for the vulnerable and downward-mobile middle sectors has permitted their displacement from the primary city, which has helped change the socio-economic profile and ways of living, making the PUI-Tuy more socially heterogeneous. However, it is necessary to bear in mind that these expectations have also attracted poor groups, who illegally occupy land and build informal settlements that make the socio-economic and socio-environmental character of the PUI-Tuy all the more complex.

Area of study and chosen communities

The PUI-Tuy area includes six municipalities. The Charallave-Santa Teresa (CST) axis has been selected, since it has a socio-economic and socio-environmental diversity which justifies its use for our case study. It includes two municipalities with cities that play important roles as local service centres and dormitory towns for Caracas. Though the most important economic sector is services, there are some industrial zones which have survived the de-industrialization process of the 1990s. In addition, this axis is the most dynamic part of the PUI-Tuy area, having strong linkages to the primary city through the flows of people, goods, and services, and it will receive a large proportion of the impacts of the new metropolitan commuter rail system because Charallave is its terminal. The two chosen localities, Bachaquero-El Cartanal and Paso Real 2000-Charallave, are representative of the change processes now taking place in the PUI-Tuy in general and in the Water and Sanitation System (WSS) in particular.

Bachaquero and Paso Real 2000 are two communities originating in illegal land occupations by poor families who are excluded from the formal housing market and have lived in poverty their entire lives; water shortage has been a permanent feature of their lives.

Bachaquero has about 3664 inhabitants, mainly nuclear families with an average of 4.6 persons per household. There is a female majority (52.8%) and 39.3% of the residents are under 15 years of age. Bachaquero is characterized by a high proportion of female-headed households (30%), higher than the average for the CST axis and the CMR.

Paso Real 2000 has approximately 4122 inhabitants. Average household size is 4.6 persons; most of the families are nuclear, and the settlement's growth has been based on the subdivision or sale of lands. 52.4% of the population is male, and predominantly young; 42.4% of the inhabitants are under 15 years of age. The proportion of female heads of household is low (16%) in comparison with the CMR average, the average for the CST axis, and the Bachaquero community.

The labor status of the inhabitants of both localities is extremely precarious. The rate of economic activity is very low and that of unemployment is higher than for the PUI-Tuy as a whole. That is to say, there is a low incorporation of working-age residents (> 15 years) and a great many unemployed. Our remarks on the precarious labor conditions in the PUI-Tuy are even more applicable to Bachaquero and Paso Real 2000, especially as regards the *discouraged worker phenomenon* and the exclusion of women from the labor market. There is a very high unemployment rate among the female residents of Paso Real 2000 (43.5%) and a very low rate of activity (38.5%).

These labor conditions influence the population's living conditions and degree of poverty. The combined method for measuring poverty (Unmet Basic Needs and Poverty Line) allows us to conclude that all the households in both localities are poor, even though a small percentage may have incomes above the poverty line. Both are structurally poor communities. 64% of the households in Bachaquero and 72% of those in Paso Real 2000 live in extreme poverty, having incomes below the cost of the standard food basket. Another 24% and 22%, respectively, are classified as structurally poor, with incomes varying from the cost of that basket to double its cost, and the remaining 12% in Bachaquero and 8% in Paso Real 2000 are moderately poor.

The Environment and the Water and Sanitation System

The HIDROCAPITAL State-owned company is responsible for all the phases of the WSS in the CMR. It is organized into six sub systems: Metropolitan Water Supply, Coastal Water Supply, Panamerican Water Supply, Fajardo Water Supply, Losada-Ocumarito Water Supply (PUI-Tuy), and Barlovento Water Supply (outside the CMR).

The principal sources of water for these six water supply systems are the Tuy River and the Guárico River. The catchment area includes two basins, the Tuy River Basin (50%) within the PUI-Tuy and the Guárico River Basin (50%), specifically the Camatagua Reservoir which is located outside the PUI-Tuy. The two basins are connected by a canal which carries water from Camatagua to the treatment and purification plants located in the PUI-Tuy.

The treated water runs through three main lines, all of whose intakes and processing plants are located at much lower altitudes than the cities served. The PUI-Tuy's water intakes are at 200m above sea level and the water must be pumped up to 1,500m above sea level to reach some parts of Caracas.

From the environmental standpoint we must stress the deterioration of the Tuy River, which is being used for two mutually exclusive purposes: *extraction of water for urban water supply systems and disposal of sewage*. In view of the absence of effluent treatment, both the pig farms and the industrial plants, as well as nearly all the cities of the Tuy Basin, dump their effluents into water courses that lead into the river upstream from the Hidrocapital intakes. The regulatory agency (the Ministry of the Environment and Natural Resources) is conspicuously absent in this respect: it does nothing to control the industries and pig farms, even though Hidrocapital is fully aware of the problems these effluents pose for its operations.

The PUI-Tuy participates in the metropolitan WSS as a water producing region, but it also suffers from low levels of water supply and has serious problems of disposal of every kind of effluent, but especially sewage from the poor segments of the population. These problems are only growing worse as a result of the population's rapid growth.

The WSS is subject to a wide variety of problems: environmental problems linked basically to the absence of effluent disposal but also others provoked by a persistent drought that has lowered water levels in the reservoirs; technical problems such as deterioration of facilities, losses in the network and an imbalance between supply and demand, low raw water quality, hydraulic breakdowns in the pumping systems, and irregularity of supply; economic problems involving low levels of invoicing and a high proportion of unpaid service; and social problems, especially a socially differentiated coverage and a total absence of service to many poor communities. To all these problems must also be added those stemming from the cultural dimension, especially misuse and waste of water, and a general unwillingness to pay for the service. These problems are replicated in the chosen communities.

In Bachaquero the condition of the WSS is precarious and it is characterized by the presence of a public network of mains that was built in parts and where service does not reach all the sectors with the same frequency and pressure. The principal water main was installed by Hidrocapital. The principal network has been extended in sections with funding from the state government and many of the household connections are informal, some of them relying on flexible hoses that are exposed to the air rather than embedded pipes. The networks are in a state of collapse and service has deteriorated in response to the population growth in the settlement and its environs. Sanitation is also an extremely serious problem because there are no sewers in most of the settlement and the residents use septic tanks whose useful life is coming to an end; there are even a certain number of houses with no connections of any kind.

- ✓ The water taps in Paso Real 2000 are illegally connected to the mains. Hidrocapital does not directly participate in the network's construction and operation, but only advises on the formation of the technical water forums. The distribution networks are self-built by the community. Water supply is especially critical in two terraces of the settlement where a number of factors interact: landslides provoked by the dumping of sewage on slopes, which have broken the informal pipes connected to the main, the difficulty of lifting water with pressure from the taps, and the poor technical quality of

the water distribution network self-built by community groups. The sewer network – still incomplete because of the lack of certain household connections – is frequently obstructed, so sewage is constantly dumped into the streets even though there is a sewer system built for industrial use to which the municipal government added some sections in an attempt to put it into operation and allow the families to embed their household connections.

The Institutional Framework and the Water and Sanitation System

A new arrangement was created in 1999 with the national new Constitution, approved by referendum that year. In the framework of the new institutional structure and the guiding principles of participatory democracy enshrined in the recently adopted Constitution, an Organic Pure Drinking Water and Sanitation Service Act (LOPSAS) was enacted for the first time in December 2001.

The new institutional model implied a basic change in how water service was envisioned and provided. Three fundamental aspects stand out:

The Constitution of 1999 contains an intensely debated and highly controversial principle, that of ownership of the natural resource. "All waters are *goods in the public domain* belonging to the Nation and indispensable for life and development."

The community participation prescribed in the Organic Drinking Water and Sanitation Service Act (LOPSAS) of 2001 is channelled through the Technical Water Forums, grass-roots community organizations through which each community's interests and relations with Hidrocapital can be articulated. The State-owned enterprise, for its part, undertook an organizational change to incorporate community participation into its operating procedures through the creation of the Community Management office.

The institutional scheme is to be completed by the transfer of the water service to the municipalities, a process scheduled to conclude in 2007 pursuant to the LOPSAS. This is to be done through concessions for limited time periods, during which the service can be operated directly by a municipality or metropolitan district, by groupings of municipalities, or by public, private, or mixed companies and/or the communities themselves. Community participation in the service provision phase can take the form of organization through the Technical Water Forums or direct operation of the service under concession.

HIDROCAPITAL has created a community management office that has expedited and implemented Water Forums throughout the CMR. More than 200 of them have been organised in the PUI-Tuy, though no exact number is available because some have dissolved while others are created all the time. They have contributed to an improvement of water service, even if not all continue to operate.

Conclusions

We believe that governance of the WSS at the present time rests on the following elements:

1. **Accountability:** management of the service by Hidrocapital reflects the mechanisms for evaluation and management of service laid down by the agency responsible for the

system's operation, HIDROVEN, as well as those adopted by the communities themselves.

2. The decision making process at the water supply company is transparent and supported by a clear and precise informational strategy relying on continuous communication with the communities, in order to combine the company's technical know-how with the communities' knowledge of their own networks and sources of water supply.
3. The quality of the water bureaucracy, committed to high levels of performance and efficiency in provision of the service and imbued with an integrative social orientation, ensures the existence of a high-quality service for all.
4. The legal and institutional framework spelled out in the LOPSAS introduces a legitimacy of origin based on its consensual and nearly unanimous enactment, in addition to its having the support of organisations and communities.
5. The law establishes principles of responsibility and clear rules of the game regarding the mechanisms and forms of participation by civil society and the private sector in the management and provision of the service, stressing that this is done on the basis of community participation in decision making through the Technical Water Forums.

The institutional change is still under way and is scheduled to conclude in 2007 with the transfer of the service to the municipalities. The participatory bases and nature of the process will strengthen governance of the water management and supply system in the CMR, and by extension, in the PUI-Tuy and the localities chosen for this study, favouring the poor populations.

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