SANITATION FOR DEVELOPMENT

Progress made in 22 countries of Latin America and the Caribbean

SECOND EDITION
SANITATION FOR DEVELOPMENT

Progress made in 22 countries of Latin America and the Caribbean

SECOND EDITION
Second edition
October 2008

**WSP Mission**
To help the poor gain access to improved water supply and sanitation services.

**WSP donor partners**
The governments of Australia, Austria, Belgium, Canada, Denmark, France, Ireland, Luxemburg, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, the United States of America, the United Nations Development Programme, the World Bank and the Bill and Melinda Gates Foundation.

**Acknowledgements**
This publication has been made possible by contributions from the following individuals and institutions:

**General supervision**
François Bikiké, Regional Team Leader of WSP-LAC.

**Coordination, data compilation and edition**
Cecilia Balcázar / CBS Consultoría Internacional, Consultant.

**Country level coordination**

We are also grateful to all those who appear in the acknowledgements section of each country report for their valuable contributions to data collection and processing.

**Production support**
Beatriz Schippner and Luciana Mendoza (WSP-LAC).

**Design and layout**
Ana María Origone / LEDEL S.A.C.

The Water and Sanitation Programme for Latin America and the Caribbean (WSP-LAC) takes sole responsibility for the compilation of information. The results, interpretations and conclusions given in this document must not be attributed to the World Bank, their affiliate organisations, members of their Board of Executive Directors or the companies they represent.
## Contents

<table>
<thead>
<tr>
<th>Country</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prologue</td>
<td>5</td>
</tr>
<tr>
<td>Argentina</td>
<td>9</td>
</tr>
<tr>
<td>Bolivia</td>
<td>15</td>
</tr>
<tr>
<td>Brazil</td>
<td>23</td>
</tr>
<tr>
<td>Chile</td>
<td>33</td>
</tr>
<tr>
<td>Colombia</td>
<td>41</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>49</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>59</td>
</tr>
<tr>
<td>Ecuador</td>
<td>67</td>
</tr>
<tr>
<td>El Salvador</td>
<td>77</td>
</tr>
<tr>
<td>Guatemala</td>
<td>87</td>
</tr>
<tr>
<td>Guyana</td>
<td>95</td>
</tr>
<tr>
<td>Haiti</td>
<td>107</td>
</tr>
<tr>
<td>Honduras</td>
<td>115</td>
</tr>
<tr>
<td>Jamaica</td>
<td>123</td>
</tr>
<tr>
<td>Mexico</td>
<td>135</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>143</td>
</tr>
<tr>
<td>Panama</td>
<td>151</td>
</tr>
<tr>
<td>Paraguay</td>
<td>159</td>
</tr>
<tr>
<td>Peru</td>
<td>169</td>
</tr>
<tr>
<td>Suriname</td>
<td>181</td>
</tr>
<tr>
<td>Uruguay</td>
<td>191</td>
</tr>
<tr>
<td>Venezuela</td>
<td>201</td>
</tr>
<tr>
<td>Annex: The Joint Monitoring Programme (JMP) for Water and Sanitation</td>
<td>211</td>
</tr>
</tbody>
</table>
In November 2007, a group of partner institutions composed of the Inter-American Association of Sanitary and Environmental Engineering (AIDIS), the Inter-American Development Bank (IDB), the World Bank and the United Nations Children's Fund (UNICEF), the Pan-American Health Organisation (PAHO) and the Water and Sanitation Programme (WSP), in concert with the governments of the countries of Latin America, took the initiative of compiling a publication to report on the issues, coverage, statistics and recommendations relating to sanitation in the region. The objective was to build on the First Latin American Conference on Sanitation - LATINOSAN 2007 - that sought to raise awareness of sanitation and to foreground the issue as a crucial priority on national and regional agendas. It also offered a valuable opportunity for the exchange of experiences, lessons learned and advances made by the countries of the region, showing clearly how close they are to meeting the remaining challenges of the Millennium Development Goals.

Today, as the second anniversary of LATINOSAN 2007 approaches, we believe advances have been made: in fact, the first outcome of LATINOSAN was the signing of the Cali declaration, where 16 Latin American countries made a commitment to give political priority to the sanitation issue. The basis of these commitments lie in three concrete actions: i) prioritising sanitation in national development policies; ii) support for the main objectives of the International Year of Sanitation; and iii) strengthening intergovernmental cooperation in the region.

Many countries of the region are currently working on the shared objective of translating the Cali Declaration into national and regional actions that will impact on the life and health of the neediest sections of the population.

Several initiatives undertaken to date reflect the impact of LATINOSAN at a sub-regional and national level, and similar events aimed exclusively at the sanitation situation in the Caribbean are also under way. CARIBSAN 2008, the Regional Conference on the Integration of Sanitation Policies in National Development Plans in the Caribbean Region was held in Kingston, Jamaica from 28 to 29 April 2008, with the key objective to improve the wellbeing of the Caribbean population by the integration and development of sanitation.

The most important outcome of the CARIBSAN 2008 workshops was the signing of the Kingston Recommendations, which contained eight groups of recommendations including real commitments to develop national sanitation policies; assess the financial needs and explore alternatives or innovative options to ensure increased financial support; increase the awareness and commitment of stakeholders at all levels; mobilise governmental counterparts (regional, national and local) and existing alliances; promote sustainable and traditional solutions; develop and strengthen human and institutional capacity; increase sustainability as well as the effectiveness of available sanitation solutions; and promote and prioritise sanitation at the regional level.

In Central America, the Central America and Dominican Republic Forum for Water and Sanitation (FOCARD-APS) promoted the construction of a National Sanitation Agenda in each of the member nations. This agenda outlines clear strategies and concrete actions to be taken by governing bodies, in order to induce large-scale change in the basic sanitation situation at the country level, in order to achieve a significant and measurable impact on the health and well-being of the population of Central America. The agenda includes the following components: a) increased national coverage in basic sanitation, b) improved hygiene practices and c) increased coverage in the collection and treatment of solid waste and waste waters.
In March 2008 FOCARD-APS with the support of WSP, held a regional video conference to launch the International Year of Sanitation with 100 participants from the seven member countries. Similarly, national workshops were held to draw up route maps for sanitation strategies with support from the National water and sanitation networks (RAS-HON in Honduras, RASNIC in Nicaragua, RASGUA in Guatemala and RASES in El Salvador). Costa Rica, Panama and the Dominican Republic also outlined their sanitation strategies during the same period.

In Honduras, in May 2008, RAS-HON organised the III Forum on Water, Basic and Environmental Sanitation entitled ‘Saneamiento la Agenda Inconclusa’ (sanitation - unfinished business) which aimed to promote a national sanitation plan and to encourage the production of policies, strategies and investments in sanitation. Honduras now has a draft strategy that will require the participation and commitment of all institutions linked to the sector - government institutions, NGOs and international bodies – in order for it to be fulfilled.

Meanwhile, Nicaragua has a Sanitation Action Group comprising government institutions and co-operation agencies dedicated to sanitation development. Similarly, from 10 - 14 of March 2008, the water and sanitation sector held a ‘Sanitation Week’ to promote the role of sanitation in a healthy environment amongst government authorities, organisations and the general public. Events held during the week included presentations of research, conferences, round tables and other activities related to promoting a sanitation culture.

In Ecuador, the LATINOSAN 2007 conference and the ministerial signing of the commitments produced sufficient drive to place the sanitation issue on the government agenda. National strategy guidelines for the integrated management of solid waste are currently being drawn up in a participatory manner. Field visits were arranged to Brazil and Peru in order for government officials to experience condominium systems in situ; three large workshops were held to disseminate the condominium sewerage model in three regions of Ecuador, with the participation of Ecuador’s Ministry of Urban Development and Housing (MIDUVI), local government, NGOs, independent consultants and the private sector; and a process is under way to strengthen labour competences in the sector, with engineering and social science professionals recruited to provide training in condominium systems and other water and sanitation issues.

In Peru and Bolivia the national conferences PERUSAN and BOLIVIASAN were held in November 2008.

The above shows only a small sample of the impact of LATINOSAN 2007 and it is important that we continue to provide new opportunities for interaction between stakeholders in the sector.

As a result, we feel sanitation sector stakeholders will be interested to receive this second edition of the document, ‘Sanitation for Development: Progress made in 22 Countries of Latin America and the Caribbean.’ This report will feed interest in the region’s sanitation situation by providing updated versions of the country reports presented in the first edition and by including the Jamaican report missing from the previous edition.

This publication has been inspired by the urgent need for a better understanding of the sanitation situation in Latin America and the Caribbean. More than 900 participants attended LATINOSAN 2007 and we saw the inception of professional and institutional alliances on sanitation related actions; we witnessed the birth
of initiatives planning similar opportunities for dialogue in other countries of the region, and we increased our knowledge by seeing more than 60 presentations and reports on successful experiences shared during the conference. In the light of this enthusiasm and activity, we believe this document will once more contribute to the productivity of any action undertaken in the quest for universal sanitation.

Once again, I would like to thank those contributors who made the initial publication of the document possible, and also the professionals and institutions - in governments and the international co-operation agencies - who responded to our call and helped provide updates for the second edition, revising any content that may have held involuntary inaccuracies in the information originally received from each country.

François Brikké
Regional Team Leader
Water and Sanitation Program
Latin America
Section A: Overview

1. Fulfilment of the sanitation goals

- The most recent available figures indicate that 20 million people in the country were not covered by safe excreta disposal in 2001. Given population projections for 2015, and in accordance with the MDGs it is hoped that around 11.5 million people will have sanitation coverage.

- Estimated investment of US$ 19.2 billion would be needed to complete safe excreta disposal systems. The Federal Health Council (CONFESA) has also projected that investment of US$ 13 billion would be needed to achieve the MDGs.

- Up until October 2007, the number of people lacking coverage had fallen by 8 million and although there is no long-term plan, the goals of the APLA Plan that runs until 2011 state that 9 million people will be served. This has implied investments of US$ 1.83 billion from 2003 to 2007 and has benefited 6.5 million people.

- Programmes to improve sanitation indicators in Argentina include PROARSA (subsidies through recovery funds up to US$ 500,000); the ‘Agua + Trabajo’ programme (subsidies to municipal governments); PROMES (National Treasury loans); IDB VI (finalised in June 2005); IBRD 4484 (finalised in July 2007); and PROESA (special sanitation programmes with National Treasury funds). These have received investment of US$ 489 million and a total of 7 million people have benefited.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Lack of specific policies and strategies for the sector, both at national and provincial level.

- History of instability in long-term policies for the sector.

- High turnover in institutions and technical teams.

- Insufficient resources (human, material and organisational).

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collection(b)</td>
<td>Acute diarrhoea(c)</td>
<td>Infant mortality(d)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2007</td>
<td>2007</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N.T.</td>
<td>2001</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2006</td>
<td>2006</td>
<td>2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2006</td>
<td>2006</td>
<td>2006</td>
</tr>
<tr>
<td>Total</td>
<td>36'320,130</td>
<td>42'403,087</td>
<td>44.0%</td>
<td>39.0</td>
<td>57.0</td>
<td>90.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.2</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.788</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.3</td>
</tr>
</tbody>
</table>

N.T. – National Target
(1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) Children between 1 and 4-years-old. (3) First semester. (4) Second semester.
N.A. – Not Available
(a) In number of inhabitants.
(b) In 2001, the total population of the country was 36,320,130 inhabitants. In the 10-year interval between this count and the 1991 census, the relative variation of the population was 11.2%.
(c) There are differences between provinces.
Argentina

• Problems of intra-sector, intersector and interjurisdiction coordination, evident in nation - province, province - province and province - municipal area relationships.
• Weaknesses in regulatory bodies and those controlling operations.
• Heterogeneity between the provinces.

Inequities in access, quality of service and appropriate use

• Significant disparities in coverage between provinces and widespread delays in coverage for improved excreta disposal in all provinces.
• Intra-provincial, national and provincial heterogeneity in service quality and environmental aspects.
• Correlation between poverty and lack of coverage more accentuated in the rural sector.
• Weakness and gaps in standards and regulations.
• Weakness in terms of social participation.

Section B: Summary of the sanitation situation

1. Policies and strategies

• Following the crisis of 2001 and 2002, strategies were focused on dealing with the emergency, channelling subsidised investment into existing projects fostering inefficient resource distribution.
• From 2007, the new Government identified the need for planning in the sector and the design of public policies which became an established objective.
• Some plans (for example the ‘Agua + Trabajo’ programme) set out strategies for public investment, which include employment opportunities for the unemployed or those receiving social benefits, which can be interpreted as a poverty reduction impact mechanism.
• Sector policies and strategies have not yet been developed in relation to hygiene promotion and sanitation education; the disposal of excreta, the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

2. Legal Framework

» Excreta disposal and the collection, treatment and sanitary disposal of sewage sludge and treatment of waste waters
EnOHiSA standards (voluntary, used nationally); Agua y Saneamientos Argentinas (AySA) manuals, conditions for use and practices; dumping standards and details of each concession contract in the provinces; and Food Code for water quality.

» Collection, treatment and sanitary disposal of solid waste; monitoring of contamination in water catchment areas; and reuse of municipal waste waters and solid waste
National and provincial laws.

No specialised regulations have been developed for health promotion and sanitation education, or for the reuse of human excreta and sewage sludge.

Critical aspects of the legal framework
1. Use of the legal framework is heterogeneous.
2. There is no one standard for obligatory universal application.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Each provincial jurisdiction has its own institutional framework as this is a country politically divided into federal entities under the Constitution. In 14 of the 24 provinces there are regulatory bodies and most of these do not have total independence in exercising their duties in governance, regulation and the provision of services/facilities.
- On a national level, platforms for coordination are made up of ENOHSA and the executor units of programmes in various jurisdictions.

### Critical aspects of the institutional framework

1. There are overlaps in functions on both national and provincial level.
2. Planning, regulation and provision of services are not always separated as functions.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Water Resources</td>
<td>ENOHSA</td>
</tr>
<tr>
<td>Regulatory body (Province)</td>
<td>Entity responsible for project implementation</td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
</tr>
<tr>
<td>Regulation</td>
<td>••</td>
</tr>
<tr>
<td>Project implementation</td>
<td>••</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>••</td>
</tr>
<tr>
<td>Monitoring</td>
<td>••</td>
</tr>
</tbody>
</table>

- **Responsibe**
- Involved
- Not involved

3.2 Collection, treatment and sanitary disposal of solid waste

- As yet, there has been no division of roles in terms of governance and regulation in the sector. However, service provision has been separated and the roles are exercised by local institutions.
- There are no platforms for coordination on this issue. In some provinces, there are provincial plans, but levels of fulfilment are low.

### Critical aspects of the institutional framework for solid waste management

1. The existence of a National Law of Minimum Budgets was not accepted by all provinces.
2. Municipal authorities are responsible for solid waste management.

3.3 Hygiene promotion and sanitation education

In general, there is no hygiene promotion and sanitation education programme nor is there a specialist institution to execute it. Individual initiatives have been provided by service providers.

### Critical aspects in hygiene promotion and sanitation education

1. A regulatory programme must be designed for hygiene promotion and sanitation education.
2. It has not been possible to measure results due to the diffuse nature of activities.
4. Funding

Subsidy policies have been developed, as have: cost recovery and tariffs for excreta disposal; the treatment of waste water; and the collection, treatment and sanitary disposal of sewage sludge and solid waste; meanwhile these types of policies have not been planned for health promotion and sanitation education. Each institution has created its own monitoring system in order to monitor finances.

Critical aspects of sanitation funding

1. Lack of efficient allocation of scarce resources to meet the MDGs.
2. Lack of medium and long-term financial planning.

5. Monitoring and evaluation

There are no national indicators. Given the lack of specific information systems for the sector, the data from the 2001 National Census of Population Homes and Houses is used.

Critical aspects of sanitation monitoring and evaluation

1. There are no regulatory frameworks to strengthen operations in institutions.
2. The regulatory function is generally not independent of the current government.

6. Capacities

- There is great concern over the lack of trained staff in the various participating sectors (universities, public bodies and the private sector).
- It is believed that the necessary technology is available to achieve the Millennium Goals.

Critical aspects of capacity in the sector

1. There is no policy to promote development of available staff in the sector.
2. There is no relevant investment in research and development.

Section C: Recommendations

1. Policies and strategies

- National Government and Provincial Governments must be responsible for promoting and creating policies and strategies through CONFESA.

2. Legal Framework

- Each one of the provinces must be responsible for promoting and creating a legal framework in coordination with National Government.

3. Institutional framework

3.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of domestic waste water

- Municipal administrations are responsible for promoting and creating these services, as they are in charge of service provision.
3.2 Solid waste management

- Municipal administrations are responsible for promoting and creating these services, as they are in charge of service provision.

4. Funding

- ENOHSA must administer resources for funding the sector.

**Successful experience: Drinking Water and Drainage for smaller communities programme**

A large part of the resources provided by IDB funding were used in the sanitation sector in Argentina in locations with populations of less than 15,000 through stages I to VI of the Drinking Water and Drainage Programme, through which US$ 423.2 million was spent to the benefit of around 2 million people. In Stage VI alone, locations with a population of between 500 and 15,000 people were provided with drinking water and sanitation services. A total of 103 projects were funded in 101 locations in 16 of the 23 provinces of the country. Funding was provided for 62 sanitary drainage systems, 37 drinking water systems, mainly extensions of existing systems, and for combined drinking water and sanitation systems, benefiting some 710,000 people. This resulted in achievement of 93% of targets in the number of systems planned, exceeding targets in terms of the size of the beneficiary population. Similarly, drinking water coverage in these locations was increased from 78% to 83.6% and sanitation coverage from 10% to 20%.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFESA</td>
<td>Consejo Federal de Saneamiento</td>
</tr>
<tr>
<td>ENOHSA</td>
<td>Ente Nacional de Obras Hídricas de Saneamiento</td>
</tr>
<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>IDB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>INDEC</td>
<td>Instituto Nacional de Estadística y Censos de la República Argentina</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PROARSA</td>
<td>Programa de Asistencia en Áreas con Riesgo Sanitario</td>
</tr>
<tr>
<td>PROESA</td>
<td>Programas Especiales de Salud</td>
</tr>
<tr>
<td>PROMES</td>
<td>Programa de Obras Menores de Saneamiento</td>
</tr>
</tbody>
</table>

**References**

INEC
ENOHSA


IDB sources.

**Acknowledgements**

We are grateful to Normando Birolo, Carmiña Moreno and Cecilia Centeno of the Inter-American Development Bank for their contributions to this report.

**Editor's Note**

This report has not been endorsed by sector authorities in Argentina.
Section A: Overview

1. Fulfilment of the sanitation goals

- In order to meet the MDGs and national targets, Bolivia must increase sanitary disposal of excreta from 51% to 64%; treatment from 39% to 57%; and solid waste collection from 66% to 90%. Investment of US$ 494 million is required, or US$ 62 million per year on average, for the reconditioning of systems and community hygiene and development actions. Past investments in sanitation have been low and the sector requires almost double the financial resources and number of projects.

- Policies contained in the National Development Plan and the Plan Sectorial Agua para la Gente water sector plan state that i) water is in the public domain; its provision and monitoring is a State responsibility; water use must be sustainable; it must also be prioritised for human consumption and irrigation; there must be respect for the customary use of water granted to the people, indigenous and rural communities; and ii) the provision of drinking water and sanitation services must be carried out with direct State participation, without exposure to the principles of supply and demand.

- The strategy for the sector aims at full customary access to water and sanitation through increased service coverage, with programmes in urban, periurban and rural areas, in villages, and the territories of indigenous and native peoples. It also considers investments in geographical socio-productive enclaves and environmental management with the national programme for solid waste management and waste water treatment plants.

- The National Development Plan sets investment budgets for the various programmes which are executed through sectoral financial policy and resource attribution mechanisms based on lack of coverage and poverty factors.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

Opportunities

The current policy framework proposes:

- Access to services within the framework of integrated management of water resources and water catchment areas.

- User participation, transparency, social equity and justice respecting traditional uses and customs.

<table>
<thead>
<tr>
<th></th>
<th>Populationa</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>6'400,665</td>
<td>7'794,604</td>
<td>55.0 68.0</td>
<td>40.0 57.0</td>
<td>77.0 90.0</td>
<td>66.0 81.0</td>
</tr>
<tr>
<td>Rural</td>
<td>3'426,857</td>
<td>3'616,047</td>
<td>41.0 59.0</td>
<td>37.0 59.0</td>
<td>N.A. N.A.</td>
<td>N.A. N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>9'827,522</td>
<td>11'410,650</td>
<td>51.0 64.0</td>
<td>39.0 57.0</td>
<td>65.7 90.0</td>
<td>43.2 81.0</td>
</tr>
</tbody>
</table>

N.T. – National Target

(a) In number of inhabitants.

(1) Percentage of children aged less than 5-years-old who will acute diarrhoea in 2003. (2) In terms of delayed growth in children under 5-years-old. (3) Deaths in the first year of life per 1,000 live births for the 1993-2003 period. (4) Human Development Index. (5) According to national criteria. (6) Sanitary landfill. Does not include collection in rural areas.

N.A. – Not Available

Sources: INE, ENDASA, ENGIRS, UDAPE, UNDP
• Reasonable tariff levels allowing for the recovery of costs, sustainability, service quality, transparency, solidarity and social participation

Weaknesses

• Insufficient investment in sanitation.
• Poor participation at departmental and municipal level and low management capacity at local level.
• Poor coordination with education and health to improve hygiene and sanitation education.
• Low generation of demand and effective use of sanitation, mainly in sparsely settled rural areas.
• Lack of specific policies, plans and strategies.

Inequities in access, quality of service and appropriate use

• Coverage gap mainly affecting the poorest populations in sparsely populated rural areas with fewer than 500 inhabitants. Some 72% of these have no sanitation facilities.
• Infrastructure is almost non-existent in marginal urban areas.
• Connection costs impede access by the poorest sectors.
1. Policies and strategies

- The importance of sanitation has been highlighted in the National Development Plan which establishes universal access to services, State participation in the provision and increase of coverage through specific programmes relating to i) sanitary excreta disposal with the emphasis on access by the poorest sectors; ii) waste water treatment and the improvement and extension of sanitary landfill services within the framework of environmental management for the protection, preservation and sustainable exploitation of water resources; and iii) investments in socio-productive enclaves.

- Additionally, health promotion and the right of access to sanitation have been prioritised as a determining factor for health.

- Sector policies and strategies have been established on hygiene promotion and sanitation education; excreta disposal; the collection, treatment and sanitary disposal of solid waste; and the treatment of waste water. Meanwhile, policies related to the collection, treatment and disposal of sewage sludge are under development.

- Sector policies set specific objectives for more vulnerable populations like indigenous peoples, those settled in sparsely populated rural areas and marginal urban areas, as well as for the treatment of waste water, solid waste and socio-productive enclaves.

2. Legal Framework

Legislation and some regulations are in place on: hygiene promotion and sanitation education; excreta disposal; waste water treatment; the collection, treatment and sanitary disposal of solid waste; monitoring of contamination in water courses; and the reuse of sewage sludge, municipal waste water and solid waste. However, regulations on the collection, treatment and sanitary disposal of sewage sludge and the reuse of human excreta are still under development.

3. Institutional framework

3.1 Excreta disposal, management of sewage sludge and treatment of domestic waste water

The regulatory roles of the Ministry of Water and Vice-ministry of Basic Services MDA/VSB, SISAB regulations and the drinking water and sanitation service providers (EPSAs) are defined, but are only partially fulfilled. Sludge management does not have a specific regulatory framework.

Platforms for coordination between stakeholders.

The main platforms include the Consejo Interinstitucional del Agua (CONIAG), the Government-Sector Cooperation Board, departmental platforms, mancomunidades (associations of municipalities), municipal and operator associations, and the water and hygiene forum.
### 3.2 Collection, treatment and sanitary disposal of solid waste

The regulatory function is undertaken by the MDA/VSB and service provision by municipal government. Solid waste management is not regulated and no service has been established in intermediate sized towns and rural settlements. There are no platforms for coordination.

#### Critical aspects of the institutional framework for solid waste management

1. Confused institutional and legal framework that sets out contradictory attributions and management competences.
2. No regulatory function on solid waste.

### 3.3 Hygiene promotion and sanitation education

**Programmes, institutions and impact of hygiene promotion and sanitation education in the country**

- Hygiene promotion and sanitation education form part of investment programmes in the sector but the results have not been sufficiently evaluated. The health sector has several national programmes working on this issue.
These programmes are run by MDA/VSB and the Ministry of Health and Sport (MSD), PROANDES/UNICEF, ACDI/VOCA, FHI/Bolivia, Save the Children, PROAPAC, Plan International, ADRA, CARE, Sumaj Huasi and others. Evaluations indicate that hygiene promotion and sanitation education have not achieved the desired impact. UNICEF indicators show that the use of latrines only reaches 40% in the rural sector nationally.

**Critical aspects in hygiene promotion and sanitation education**

1. Interventions in hygiene promotion and sanitation education have not been given the necessary institutional support and they have not developed sufficient local and community capacity.

2. Sector policies have not included sufficient action for hygiene promotion and sanitation education, nor have intersector actions occurred with health and education. This limits the demand for and sustainability of sanitation services.

4. **Funding**

<table>
<thead>
<tr>
<th>Title</th>
<th>Urban</th>
<th>Rural</th>
<th>Investments required to comply with the MDGs/National Targets (thousands of US$)</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td>10,534</td>
<td>13,272</td>
<td>23,806</td>
<td>6,600</td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td>230,500 *</td>
<td>59,300 **</td>
<td>289,800</td>
<td>208,800/37,100</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td>103,600</td>
<td>N.A.</td>
<td>N.A.</td>
<td>64,700/38,900</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td>76,500 ***</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – Not Available

* Includes US$ 21.3 million for infrastructure improvement and renewal and US$ 28.4 million for pre-investment and supervision.

** Includes US$ 17.1 million for improvement and renewal and US$ 3.8 million for pre-investment and supervision.

*** Investment from 2007.

Source: MDA

Subsidies are available for investment in hygiene promotion, excreta disposal, waste water treatment, while this type of policy is not available for the collection of sewage sludge. Municipal subsidies exist for services related to solid waste.

VSB is responsible for physical and financial monitoring except for solid waste. The Vice ministry of Public Funding (VIPFE) collects data and processes investment information and the economic and social analysis entity UDAPE monitors the MDGs and national targets.

**Critical aspects of sanitation funding**

1. City councils and municipal authorities provide low levels of funding for the subsector, even though both institutions have been given larger budgets. Tariffs and rates for sanitation services and solid waste are not sufficient for sustainability.

2. Funding of US$ 36 million is being negotiated for the sector, but this is insufficient.
5. Monitoring and evaluation

**National indicators and information systems for the sector**

The main indicators include coverage for the disposal of excreta in all forms; waste water treatment; the quality of sanitary effluent entering the excreta network and the quality of effluent from treatment plants. Moreover, the coverage of collection and final disposal of solid waste services is also measured.

VSB has developed a water and sanitation information system (SIAS), but this has been discontinued and does not include solid waste or hygiene promotion.

**Sanitation within the analytical tools**

Sanitation is identified as a determining factor in health policies and programmes, but no analytical tools incorporate this element. Sanitation is also considered when drawing up environmental data, and in the indicator of unsatisfied basic needs (UBN).

### Critical aspects of sanitation monitoring and evaluation

1. No recent official information is available for the sector.
2. There is no compatible monitoring system that correlates advances in sanitation coverage and impacts on health.

6. Capacities

**National reflection on human resources to achieve the MDGs/national targets**

Sector policy has initiated the process of making this operational and providing technical assistance through FUNDASAB and other involved parties, in order to organise capacity development. VSB/PROAGUAS have complied an important resource for the country that identifies sources of information and technical assistance.

**Technologies needed to achieve the MDGs/national targets**

Appropriate technologies are available and so are methodologies for hygiene promotion and sanitation education, except for the management of dangerous waste.

### Critical aspects of capacity in the sector

1. Urban sanitation staff are underused. In the rural area, there are insufficient resources to ensure community development and the operation and maintenance of systems.
2. Technical support must be consolidated in order to ensure the sustainability of investments.

Section C: Recommendations

1. **Policies and strategies**
   
   - Establish specific policies to eliminate bars on access to sanitation and to approach the subsidised funding of domestic sanitation installations for the lower income population. Define specific strategies for the disposal and treatment of liquid waste and put solid waste systems into operation.
   
   - Establish planning policies for urban and rural areas that facilitate greater organisation in the rural area and the legalisation of sites in periurban areas.
• Include effective intersector actions in coordination with health and education aspects of social intervention strategies. Municipal and city administrations must all work in an integrated manner, in line with policies and strategies.

2. Legal Framework
• Complete laws and regulations in the legal framework for sector services, funding, community development and solid waste.
• Produce and promote regulations for: the collection, treatment and sanitary disposal of sewage sludge; the reuse of excreta, sewage sludge and municipal waste water; and the reuse and recycling of solid waste.
• Seek consensus with social organisations and other institutions involved.

3. Institutional framework
3.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of waste water
• Hygiene promotion must be the responsibility of an inter-agency commission involving the MDA/VSB, Ministry of Health and Ministry of Education.
• The programme must be executed with a greater input from social organisations, teachers and health centres.

3.2 Solid waste management
• Review of the institutional framework, considering an intersector approach and outlining stakeholder competences and attributions.
• Regulate the solid waste sector.

4. Funding
• Establish a legal instrument to ensure that city councils and municipal authorities assume their responsibilities in sanitation, allocating a fixed percentage of resources to fulfilment of the MDGs.
• The VSB must work to prepare an investment plan for resource management supportive of sanitation development principally aiming to subsidise city municipal authorities in smaller towns and rural areas.

5. Monitoring and evaluation
• Realignment of the sector information system, inclusion of solid waste and community development (DESCOM). Organise and complement the sector information system with the National Institute of Statistics (INE).
• Request information from service providers, municipal authorities, NGOs and others and put this into operation.
• Specialist staff and funds are needed

6. Capacities
• Develop institutional capacity and local staff, especially in rural areas, increasing sanitation coverage within the framework of integrated management and community development with the participation of health and education personnel.
• Provide adequate funding for technical assistance mechanisms and organise, coordinate and execute alliances with institutions involved in institutional strengthening, technical assistance and training.
• Strengthen MDA/VSB with the necessary staff and funding.
Successful experience: Trinidad drainage system

The Trinidad Drinking Water and Drainage Cooperative (COATRI) serves a city of 89,000 people, and spent four years on building a drainage system that only achieved 23% coverage. In 2006, the city council, the municipal authorities and COATRI signed an agreement to add users to the drainage service and created a rotating fund offering interest free loans over four years. To date, COATRI has completed 2,600 of the 4,600 planned connections.

The programme also includes technical assistance in building sanitation modules. This experience reveals that organised work between service operators, municipal authorities and the city council can generate widespread benefits.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>COATRI</td>
<td>Cooperativa de Agua Potable Trinidad</td>
</tr>
<tr>
<td>DESCOM</td>
<td>Desarrollo Comunitario</td>
</tr>
<tr>
<td>ENDSA</td>
<td>Estadísticas Nacionales en Salud</td>
</tr>
<tr>
<td>ENGIR</td>
<td>Estrategia Nacional de Gestión Integral de Residuos Sólidos</td>
</tr>
<tr>
<td>EPSA</td>
<td>Entidad Prestadora de Servicios de Agua y Saneamiento</td>
</tr>
<tr>
<td>FHI</td>
<td>Food for the Hungry International</td>
</tr>
<tr>
<td>FPS</td>
<td>Fondo Nacional de Inversión Productiva y Social</td>
</tr>
<tr>
<td>FUNDASAB</td>
<td>Fundación de Apoyo a la Sostenibilidad en Saneamiento Básico</td>
</tr>
<tr>
<td>INE</td>
<td>Instituto Nacional de Estadísticas</td>
</tr>
<tr>
<td>LOPE</td>
<td>Ley de la Organización del Poder Ejecutivo</td>
</tr>
<tr>
<td>MDA/VSB</td>
<td>Ministerio del Agua/ Viceministerio de Servicios Básicos</td>
</tr>
<tr>
<td>MDRyMA</td>
<td>Ministerio de Desarrollo Rural Agropecuario y Medio Ambiente</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MEC</td>
<td>Ministerio de Educación y Cultura</td>
</tr>
<tr>
<td>MSD</td>
<td>Ministerio de Salud y Deportes</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PFS</td>
<td>Política Financiera Sectorial</td>
</tr>
<tr>
<td>PND</td>
<td>Plan Nacional de Desarrollo 2006 -2011</td>
</tr>
<tr>
<td>SIAB/SIAS</td>
<td>Sistema de Información de Agua Bolivia – Sistema de Información de Agua y Saneamiento</td>
</tr>
<tr>
<td>SISAB</td>
<td>Superintendencia de Servicios Básicos</td>
</tr>
<tr>
<td>UDAPE</td>
<td>Unidad de Análisis de Políticas Económicas y Sociales</td>
</tr>
<tr>
<td>UBN</td>
<td>Unsatisfied Basic Needs</td>
</tr>
<tr>
<td>VIPFE</td>
<td>Viceministerio de Inversiones Públicas y Financiamiento Externo</td>
</tr>
</tbody>
</table>

References

Law 1333 of the Environment, 1992
Law 1654 Law of Administrative Decentralisation, 1995
Law 2028 Law of Municipalities, 1999
Law 2066 Law of Drinking Water and Sanitation, 2000
LOPE 3351, Law of Organisation of the Executive Power, 2006
Other sources of information:
Ministry of Water and Viceministry of Basic Services
Water and Sanitation Programme – World Bank
UNICEF
Pan-American Health Organisation
Superintendencia de Saneamiento Básico
Fondo Nacional de Inversión Productiva y Social
PROAGUAES

Acknowledgements

1. Fulfilment of the sanitation goals

- In Brazil 67.2% of the population have access to waste water collection; 77.3% in urban areas and 18.5% in rural areas. The MDGs indicate that by 2015, 69.7% of the population should have access to these services, which means Brazil will be close to achieving that goal.

- National directives for the provision of water services, sewerage, the management of solid waste and rainwater were approved in January 2007; the creation of the Growth Acceleration Programme (PAC), which established investments of US$ 22.4 billion1, between 2007 and 2010, so that 55% of homes will be connected to sewerage networks and 47% will have adequate disposal of solid waste; and the establishment of management of public services through the contracting of public consortiums are all aspects which mark the new climate of sanitation in Brazil.

- The main programmes and actions are under way to achieve the MDGs include: the Sanitation for All programme which finances sanitation works in public and private sectors, in order to promote increased coverage and the quality of water, sewerage, rainwater drainage and solid urban waste services; the PAT-PROSANEAR technical assistance programme for the sanitation project and that provides technical and financial support to state and municipal authorities in drawing up the PSI (recovery of degraded urban areas, definition of actions and interventions for integral development of the area and the search for mechanisms to make this feasible); and PDLI (actions necessary for environmental preservation, agricultural organisation and land use and occupation regulations) in towns with more than 75,000 people or members of metropolitan regions; the interministerial Rural Sanitation Programme to extend coverage and improve the quality of environmental sanitation services in rural areas; the Water Sector Modernisation Programme PMSS - aiming to improve conditions, encouraging an environment of change and development in the sanitation sector in the country, the improvement of the quality of life, the level of efficiency and effectiveness in service provision; a sustainable urban drainage programme - a shared initiative between the Ministry of Cities, FUNASA and the Ministry of National Integration - to promote sustainable management of urban drainage with actions directed to preservation, control and minimisation of

<table>
<thead>
<tr>
<th>Sanitation coverage and health and human development indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population(^a)</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Urban</td>
</tr>
<tr>
<td>151'844,467</td>
</tr>
<tr>
<td>Rural</td>
</tr>
<tr>
<td>34'926,095</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>186'770,562</td>
</tr>
</tbody>
</table>

M.T. – National Target. (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) Human Development Index. (5) Percentage of indigent. (6) Open air disposal.

(a) In number of inhabitants.
(b) Coverage by collection systems and septic tanks.
(c) National Targets have not been formulated.

Sources: POF, IBGE, 2006, Ministry of Health, PNAD.
impact is provoked by floods; the urban water and sewerage services programme -to extend coverage and improve the quality of public urban water supply and sewerage services for the urban population in the lower socio-economic brackets; and the urban solid waste programme- to increase the extent and efficiency of public solid waste management services.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- The PAC growth acceleration plan made rules for the fiscal regime more flexible allowing states and municipal authorities to receive new loans for investments in the expansion and improvement of sanitation services in the country. This is only valid for the 2007 to 2010 period, whereby there is no guarantee that this pattern of investment in the sector will be continued.
- Difficulty in implementing the large investments, due to an absence of planning in most states and municipal areas in Brazil.
- Regional differences in the performance of service providers. There is no adequate sewage sludge management and collection, and sewage sludge treatment is also lacking.

Inequities in access, quality of service and appropriate use

- Homes situated in non-urban areas of towns or villages have the worst indicators for access to sanitation: little over half (52.5%) have access to water supplies and only a fifth (20.4%) are attached to sewerage systems.

![Disposal of waste water and excreta](chart.png)

![Coverage of collection and forms of final disposal of solid waste (2005)](chart2.png)
• Some 72.4% of families with incomes equivalent to 4.5 minimum salaries or more have access to sewerage, and 95% have access to solid waste collection. This demonstrates the high correlation between access and income levels.

• Racial minorities have low levels of access, showing that access is also closely related to colour and race issues. Similarly, the higher the level of education, the higher the percentage of access to sanitation.

• In municipal areas in the north of Brazil, only 11.6% of homes have access to sewerage systems. There is a similar low level of access for homes in the north-east of the country.

Section B: Summary of the sanitation situation

1. Policies and strategies

• Sanitation effectively became a public policy priority in Brazil in recent years, as was shown in the approval of a new legal framework for the provision of services in January 2007 and the significant increase in availability of resources. Moreover, in the 2003 to 2006 period investments of US$ 6.8 billion were made, of which US$ 3.2 billion are non-repayable. Investments of US$ 22.3 billion are expected for the 2007 to 2010 period.

• Sector policies and strategies are in place on: hygiene promotion and sanitation education; excreta disposal, the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

• Law 11.445 states policies for water supply, sewerage, the management of solid waste and rainwater must be established in coordination with national, regional and municipal sanitation plans.

• The increased availability of resources for sanitation from 2003, reinforced during the 2007 to 2010 period, forms part of a wider development strategy established by the Federal Government.

2. Legal Framework

Special regulations have been developed for health promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; the treatment of waste water; the reuse of human excreta, sewage sludge, municipal waste water and solid waste.

Critical aspects of sanitation policies and strategies

1. Absence of a culture of planning and regulation of services.
2. Lack of a sustainable long-term policy for investments in the sector.

Critical aspects of the legal framework

1. Law 11.445 needs national regulations.
2. There is no definition of tenure for service provision in metropolitan regions. The decision-making process is the responsibility of the Supreme Federal Tribunal.
3. Institutional framework

3.1 Excreta disposal, management of sewage sludge and treatment of domestic waste water

The Council of Cities, ConCidades, was created in 2004. It is a collegiate body of the Ministry of Cities with a remit to study and propose directives for the formulation and implementation of the National Urban Development Programme (PNDU), and to accompany its execution. ConCidades is a forum for negotiation where social stakeholders participate in the decision-making process on Ministry of Cities policies in housing, environmental sanitation, transport, urban mobility and land use planning.

---

### Critical aspects of the institutional framework

1. Inadequate integration of policies and governmental actors.
2. The regulation of service provision is insufficient and precarious.

---

3.2 Collection, treatment and sanitary disposal of solid waste

As well as ConCidades, the National Environmental System (SISNAMA) takes action through the co-ordinated organisation of its constituent bodies and entities, monitoring public access to information on damage to the environment and environmental protection actions in accordance with the model developed by the National Environmental Council (CONAMA).

State government, the Federal district and municipal authorities are responsible for implementing the measures produced by SISNAMA in their region, producing standards and supplementary and complimentary frameworks.

---

### Critical aspects of the institutional framework for solid waste management

1. Limited funding of services for the collection, treatment and final disposal of waste.
2. Lack of organisation and management of service providers for the collection, treatment and final disposal of waste.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

- The Ministry of Health, Ministry of Cities – through the National Secretariat for Environmental Sanitation, the PMSS, the states – through state offices, municipal authorities, municipal regulators, the national college of sanitation education and communication (CONESCO) and the Ministry of the Environment undertake programs on this issue.

- The environment and sanitation programme PEAMSS environmental education and sanitation programme has sought to resolve the fragmentation and discontinuity of environmental education actions for sanitation. Its basic premise is to promote environmental education and social mobilisation supporting programmes and actions on environmental sanitation, driven by the Federal Government.

- PEAMSS is an instrument that contributes to the qualification of public spending on sanitation and the efficient allocation of resources. A working group on the issue – GTEAMSS - was created in 2006 to lead production of the PEAMSS.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investment required for universal access 2000-2020 (billions of US$)</th>
<th>Estimated investments for the next 4 years (billions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>Urban: 40.4, Rural: 2.6</td>
<td>Urban: 43.0, Rural: N.A.</td>
</tr>
<tr>
<td>Treatment of municipal waste waters&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>Urban: 18.2, Rural: 1.2</td>
<td>Urban: 19.4, Rural: N.A.</td>
</tr>
<tr>
<td>Management of municipal solid waste&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>Urban: 6.7, Rural: N.A.</td>
<td>Urban: N.A., Rural: N.A.</td>
</tr>
</tbody>
</table>

N.A. - Not Available
Exchange rate: US$1 = 1.7964 reals (Banco Central do Brasil).

- (1) Waste water collection (expansion and replacement of services).
- (2) Expansion and replacement of services.
- (4) Sewerage systems.

Sources: Ministry of Cities, National Environmental Health Office, Ministry of the Environment.
Policies have been developed on: subsidies, cost recovery and tariffs for the disposal of excreta; the treatment of waste water; and the collection, treatment and sanitary disposal of solid waste. Such policies are not planned for hygiene promotion and sanitation education, or for the collection, treatment and sanitary disposal of sewage sludge.

Financial monitoring mechanisms are in place. The ruling councils CCFGTS and CODEFAT execute financial monitoring of the resources of the FGTS and FAT funds, respectively. CCFGTS monitors and evaluate the economic and financial management of resources of the fund, the largest source of funding for investments in sanitation in the country.

**Critical aspects of sanitation funding**

1. Funding restrictions are in place.
2. Most solid waste collection service providers charge a rate that does not cover the costs.

---

5. Monitoring and evaluation

**National indicators and information systems in the sector**

- The National System of Information on Sanitation (SNIS) has a direct relationship with the implementation and monitoring of public sanitation policies in Brazil. Service providers receiving grants from the Sanitation for All programme must negotiate a performance improvement agreement with the Ministry of Cities. Supplier performance levels are measured and monitored by the SNIS indicators contained in the agreement.

- The system produces operational information of sewerage systems, economic financial information and information extracted from the balance of accounts.

**Sanitation within the analytical tools**

The Sanitation for All programme uses infant mortality indicators and information sent to SNIS by service providers to support prioritisation for sanitation investment projects.

---

6. Capacities

The country is working on a comparison of existing staff (governmental institutions, universities, training and research centres, and the private sector) with the appropriately trained staff required in order to achieve the MDGs in sanitation, hygiene promotion and sanitation education. Similarly, the necessary technologies are available.

**Critical aspects of capacity in the sector**

1. Deficiencies in the management of sewerage services.
2. Deficiencies in the capacity to implement investment projects.
Section C: Recommendations

1. Policies and strategies

- Implement the legal requirements imposed by the national sanitation policy, recently approved by law, for all federal entities. A stable model of funding is fundamental to achieving the MDGs.
- Seek financial and institutional support for municipal authorities in order to draw up basic municipal sanitation plans. Support the operation of solid waste collection co-operatives in order to expand selective collection.

2. Legal Framework

- Approval of the Bill for the National Policy of Solid Waste sent to National Congress in September 2007.

3. Institutional framework

3.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of domestic waste water

- Regularisation of service provision contracts that are currently in a precarious condition.
- Integration of policies and governmental actors. Effective performance in the regulation, supervision and social control of services.

3.2 Solid waste management

- Establishment of funding mechanisms for waste collection, treatment and final disposal services.
- Incentives to improve institutional organisation and management in waste collection, treatment and final disposal services, including all stages of management (planning, regulation, supervision, social control and the provision of services itself).

4. Funding

- Implementation of a national sustainable funding system for a basic and continued sanitation system.
- Definition of a sustainable charging policy, including subsidies in the sanitation sector, and coverage of the costs of services for urban cleaning and the management of solid waste.

5. Monitoring and evaluation

- Establishment of efficient mechanisms for evaluating the effective outcome of investments made. Creation of alliances with technical and institutional, public and private stakeholders.
- Development of training actions for service owners and providers in the administration of information systems and local evaluations and in order to supply data to SNSA.

6. Capacities

- Programmes and actions that stimulate improvements in the management of basic sanitation services, including all activities (planning, regulation, supervision, social control and service provision) and all stakeholders (federal entities, service providers, regulators, councils, etc). Training programmes and actions in order to improve the implementation of investment projects.
- Implementation of new service management models, with a regional perspective. Broadening and consolidation of the Environmental Sanitation Training Network (ReCESA), led by the Ministry of Cities.
Selective collection of solid waste in the Londrina municipality

The Municipal Selective Collection Programme – ‘Recycling Lives’ run by the local council of Londrina is recognized nationally for its efficiency, and for viewing recycling operators as valuable citizens who provide an asset to the city. The local council transport and urbanisation department set up the selective collection programme in 2001. The system is based on manual house-to-house collection with the general public actively participating by separating their waste as they dispose of it at home, delivering clean recyclable materials to the collectors. This offers the street rubbish collectors the opportunity to recycle products through local recycling NGOs, generating income and social inclusion. The municipal council supplies green bags and helps with transportation of the material collected to sorting facilities. In each region, the recycling operative calls at each house at least once a week, providing an empty green bag to replace the full bag containing materials sorted during the week. The recyclable materials are already clean and only need to be sorted in order to be sold. One of the great advances was the union of NGOs with the compaction, weight and sales unit CEPEVE, as the amount of recyclable material collected adds value at the point of sale, reducing the action of intermediaries and guaranteeing the highest possible value for each item sold.

Notes

1. Editor’s Note. Equivalent to 40 billion reals. Exchange rate: US$1 = 1.7964 reales (Banco Central do Brasil).
2. Editor’s Note. Equivalent to 12 billion reals. Exchange rate: US$1 = 1.7964 reales (Banco Central do Brasil).

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNDES</td>
<td>Banco Nacional de Desenvolvimento Economico e Social</td>
</tr>
<tr>
<td>CAIXA</td>
<td>Caixa Econômica Federal</td>
</tr>
<tr>
<td>CCFGTS</td>
<td>Conselho Curador do Fundo de Garantia do Tempo de Serviço</td>
</tr>
<tr>
<td>CEPEVE</td>
<td>Central de Pesagem e Venda</td>
</tr>
<tr>
<td>CMTU</td>
<td>Companhia Municipal de Trânsito e Urbanização</td>
</tr>
<tr>
<td>CODEFAT</td>
<td>Conselho Deliberativo do Fundo de Amparo ao Trabalhador</td>
</tr>
<tr>
<td>CONAMA</td>
<td>Conselho Nacional do Meio Ambiente</td>
</tr>
<tr>
<td>CONESCO</td>
<td>Colegio Nacional de Educação Sanitaria e Comunicação Para a Saúde</td>
</tr>
<tr>
<td>FAT</td>
<td>Fundo de Amparo ao Trabalhador</td>
</tr>
<tr>
<td>FGTS</td>
<td>Fundo de Garantia do Tempo de Servico</td>
</tr>
<tr>
<td>FUNASA</td>
<td>Fundação Nacional de Saúde</td>
</tr>
<tr>
<td>GTEAMSS</td>
<td>Grupo de Trabalho Interinstitucional de Educação Ambiental e Mobilização Social em Saneamento</td>
</tr>
<tr>
<td>IBAM</td>
<td>Instituto Brasileiro de Administração Municipal</td>
</tr>
<tr>
<td>IBGE</td>
<td>Instituto Brasileiro de Geografia e Estatística</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PAC</td>
<td>Programa de Aceleração do Crescimento</td>
</tr>
<tr>
<td>PAT-PROSANEAR</td>
<td>Proyecto de Assistência Técnica ao Prosaneanar</td>
</tr>
<tr>
<td>PEAMSS</td>
<td>Programa de Educação Ambiental e Mobilização Social em Saneamento</td>
</tr>
<tr>
<td>PMSS</td>
<td>Programa de Modernização do Setor de Saneamento</td>
</tr>
<tr>
<td>PNAD</td>
<td>Pesquisa Nacional por Amostra de Domicilios</td>
</tr>
<tr>
<td>PNDU</td>
<td>Política Nacional de Desenvolvimento Urbano</td>
</tr>
<tr>
<td>POF</td>
<td>Pesquisa de Orçamentos Familiares</td>
</tr>
<tr>
<td>ReCESA</td>
<td>Rede Nacional de Capacitação e Extensão Tecnológica em Saneamento</td>
</tr>
<tr>
<td>SISNAMA</td>
<td>Sistema Nacional do Meio Ambiente</td>
</tr>
<tr>
<td>SNIS</td>
<td>Sistema Nacional de Informações sobre Saneamento</td>
</tr>
<tr>
<td>SNSA</td>
<td>Secretaria Nacional de Saneamento Ambiental, Ministry of Cities</td>
</tr>
</tbody>
</table>
References

SNIS – Sistema Nacional de Informações sobre Saneamento, www.snis.gov.br
Ministry of Cities, www.cidades.gov.br
Presidencia de la República, Objetivos de desarrollo del milenio, principales iniciativas del Gobierno Federal, September, 2006.
PNAD (2006), www.ibge.gov.br
IBAM, www.ibam.og.br
IBGE-PNAD (2004), Atención por redes y por pozos sépticos.
Ministry of Cities. Inversiones Federales en Saneamiento, Informe de Aplicaciones entre 1 de enero de 2003 y 31 de diciembre de 2006, SNSA.

Acknowledgements

Nyedja da Silva Marinho (PMSS), Ernani Ciriaco de Miranda (PMSS), Téia Magalhães (PMSS).
Section A: Overview

1. Fulfilment of the sanitation goals

- The urban population have coverage of 95.2% in sewerage. However, some homes are still not connected, even when the service runs close to them. Coverage for waste water treatment is currently 84.3%. The national target for the end of 2009 is for all water collected in sewerage systems to be treated.

- A large number of rural settlements had sewerage and waste water treatment systems at the end of 2006. However, it is not possible to give a precise number as the systems have not always been built by municipal authorities. The regional development department (SUBDERE) of the Ministry of the Interior is compiling a study on the current situation of wastewater systems in rural areas. Rural locations without waste water collection and treatment systems generally have individual solutions for the disposal of excreta and waste water through septic tank systems and soak away pits or sanitary latrines.

- As a result of the above, it is possible to state that national sanitation targets will be met.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

There is no institution responsible for waste water in the rural sector or for the drinking water service in sparsely settled rural areas. A Bill currently working its way through parliament that will establish an institution to adequately approach pending objectives in drinking water supply and sanitation in the rural sector. This institution will take an integrated approach to sanitation in rural areas.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>13'559,719</td>
<td>N.A.</td>
<td>95.2</td>
<td>N.A.</td>
<td>99.0</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>84.3 N.A.</td>
<td>N.A.</td>
<td>82.0</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>2'062,322</td>
<td>N.A.</td>
<td>96.6(c)</td>
<td>N.A.</td>
<td>38.0</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N.A.</td>
<td>80.0</td>
<td>80.0</td>
</tr>
<tr>
<td>Total</td>
<td>15'395,067</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>91.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

N.T. – National Target
(1) Incidence of acute diarrhoea illness in children aged under 5 years old.
(2) In terms of delayed growth in children aged under 5 years old.
(3) In children aged under 5 years old.
(4) Human Development Index. Related to health, education and income. UNDP adopted a different, more demanding methodology for Chile, meaning this is not comparable internationally.
(5) In number of inhabitants. This includes the ‘indigent population’, understood as people residing in homes with a per capita income of less than the per capita monthly basket of staple goods.
(6) Controlled sanitary landfill.
N.A. – Not Available
(a) The data corresponds to number of inhabitants.
(b) Total estimated investment for 2007 in drinking water, sewerage and waste water treatment in the urban area was US$ 107.9 million, on 31 December 2006.
(c) Includes all improved technologies.
Sources: UNDP; Mideplan; INE, Minsal.
Inequities in access, quality of service and appropriate use

There are no inequities in access to drinking water, except for those people settled in informal settlements where it takes some time for the situation to become formalised and for them to be supplied by the corresponding urban settlement.

The demands for drinking water quality are the same in all services in the country as there is a single quality standard that must be fulfilled by all drinking water suppliers, both urban and rural.

The systems are generally considered adequate by users. However, there are isolated incidences of clandestine connections to the sewerage services that occasionally lead to blockages due to inappropriate use.

Section B: Summary of the sanitation situation

1. Policies and strategies

- Sanitation is very important for the country and this is reflected in current levels of coverage and investment.
  Sector policies and strategies are in place on the disposal of excreta and the collection and treatment of waste water. Sludge from the treatment of waste water is mostly disposed of in sanitary landfill and mono-landfill. Regulations are being produced for the management and reuse of the sludge produced by wastewater treatment plants.
• The construction of sewerage systems in rural sectors aims to improve the living conditions of the lower income population, especially in terms of excreta disposal. Policies and strategies related to the management of sewage sludge, the treatment of waste water and the management of solid waste are linked with environmental protection and economic development policies.

• Since January 2005 Chile has used an integrated waste management plan approved by the National Environmental Commission (CONAMA). This public policy comes under the environmental protection policy and establishes the general objective of forms of solid waste management that present the minimum risk to the health of the population and the environment, offering an integrated perspective on waste that ensures sustainable and efficient development.

Critical aspects of sanitation policies and strategies
1. Construction of rural sewerage systems is not supported by an institutional framework that would ensure their operation and maintenance, adequate planning, efficiency in the use of resources and use of appropriate technologies.
2. Reuse of sludge generated in wastewater treatment is restricted by the very heavy demands in regulations currently under discussion. This has hampered implementation.

2. Legal Framework

» Hygiene promotion and sanitation education
DFL Nº 725/67, Sanitation Code.

» Disposal of excreta

» Collection, treatment and sanitary disposal of sewerage sludge
DFL MOP Nº 382/88 and DS Nº 1199/04, Regulation for the management of sludge produced in waste water treatment plants (in process); and DFL Nº 725/67, Sanitation Code.

» Waste water treatment

» Collection, treatment and sanitary disposal of solid waste

» Monitoring of contamination in water catchment areas
DS Nº 90/2000, Standards of the secondary quality for the protection of continental surface waters in various water catchment areas of the country (in production).
Reuse of sewage sludge

Regulations are being produced for the management of sewage sludge from wastewater treatment plants that will outline conditions for the use of sludge in agriculture.

There is no specific regulation for the reuse of municipal waste water. Where effluent from treatment plants is used in the irrigation of crops standard NCh N° 1333/1978 on the requirements for water quality for different uses, must be fulfilled. Similarly, it has not been considered necessary to develop regulations for the reuse of human excreta except for treated sludge from wastewater treatment plants.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

Concessionaries (sanitation companies) operate the drainage systems, whereby they are responsible for the disposal of excreta, management of sewage sludge and the treatment of waste water. The Superintendence of Sanitation Services (SISS) funds them and CONAMA grants the environmental permits for any projects that may affect the environment.

In the rural sector, the Ministry of Public Works (MOP) is responsible for running the National Programme for Rural Drinking Water, and that includes the tasks of planning and execution of the services. This is operated by committees or co-operatives made up of representatives elected from amongst the end users. In those areas where there is no concession (the rural sector), sanitation is regulated and funded by the Health Ministry. There is coordination between MOP and municipal authorities in some cases.

Platforms for coordination between stakeholders

As part of the evaluation process for the granting of environmental permits, CONAMA consults all state entities related to the projects. These can include the Ministry of Health, MOP, the Ministry of Agriculture (SAG), the Ministry of Housing and Urban Development and municipal authorities.

3.2 Collection, treatment and sanitary disposal of solid waste

<table>
<thead>
<tr>
<th></th>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) A role in regulation and monitoring in the urban sector.
(2) A role in project implementation in the rural sector.
(3) A role in regulation and monitoring in the urban sector.
(4) Some municipal authorities administer sanitation concessions in the urban sector, where they implement, manage and operate drinking water and waste water services. Sanitation projects have been implemented in the rural sector.
(5) Sanitation companies.
(6) A role in project implementation in the rural sector.
(7) Cooperatives and committees in the rural sector.
Division of main functions between institutions

The treatment of domestic solid waste is regulated by a heterogeneous group of standards, which establish rules for management and monitoring across a broad group of ministries and public entities. In general, there is no particular institution with specific responsibility or competence over the group of solid waste management tasks, either from the perspective of the environmental and sanitation aspects, or from the economic point of view. Moreover, on certain issues there is no clear idea of which institution is responsible or has been allocated the task.

The current institutional establishment does not have a higher level entity politically responsible for implementing a strategy for solid waste management. This deficient institutional situation has meant waste management has not been given the due, unique and exclusive attention it deserves when sanitation and environmental problems have made themselves evident.

The Ministry of the Interior acts through the municipal authorities, who are legally responsible for the collection, transportation and final disposal of domestic solid waste. This waste is generated by trade, waste from public highways, and public leisure spaces. The Ministry of the General Secretariat of the Presidency acts through CONAMA.

---

### Critical aspects of the institutional framework for solid waste management

1. **Lack of capacity and coordination at various levels in the planning, supervision and monitoring of policies and standards existing on the matter of waste, as well as the inexistence of an entity responsible for centralising and processing information generated by the various competent bodies.** Excessive delays in the production and processing of the required sanitation and environmental standards.

2. **Insufficient environmental education, both at the level of public and private institutions and among the general public.** Similarly, it has not been possible to promote a long-term nationwide policy on waste reduction.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

The Ministry of Health is responsible for hygiene programmes and sanitation education in the country and in 2002 it produced a document on sanitation objectives for 2000-2010, which set targets for basic sanitation.

4. Funding

According to information from SISS, investments of US$ 860.7 million are planned in concessions granted for drinking water provision and the collection and treatment of waste water within the public sanitation services.

Policies have been developed for: subsidies, cost recovery and tariffs for hygiene promotion and sanitation education; the disposal of excreta; the treatment of waste water; and the collection, treatment and sanitary disposal of sewage sludge and solid waste.

In the specific area of solid domestic waste, the tariff system is decided through the Municipal Income Law that states that the municipal authorities are responsible for deciding the real cost of domestic waste services each year and for establishing the tariffs applicable to users of these services. The real costs are not transferred effectively to service users as the waste service tariff is calculated equally for all users of the service (a flat rate).

Meanwhile, the Municipal Income Law states that all users whose home or housing units worth 225 Monthly Tax Units (UTMs) or less are exempt from paying water charges. Furthermore, for service users who are exempt from the payment of Local Land Tax (contributions), the Law states that the municipal authority must think of an efficient system for charging for water charges. In richer municipal areas, most users pay their water charges as part of the Local Land Tax - a tax that is generally paid by most of the wealthier population - whereby the municipal authority effectively operates as an intermediary between the user and the water service provider. In the case of poorer communes, the municipal authority does not totally transfer the cost of waste disposal due to the higher exemption levels, whereby it is forced to become a user of the system itself.

5. Monitoring and evaluation

National indicators and information systems for the sector

All indicators for coverage, service quality and fulfilment of requirements in the sanitation sector in Chile (sanitation companies, concessions sectors) are summed up in the management report, presented yearly by SISS. Information on rural systems is spread between MOP, the Ministry of Health and some municipal authorities.

Sanitation within the analytical tools

Sanitation indicators are related to monitoring in public health programmes, especially those related to the reduction of epidemic outbreaks of typhoid and paratyphoid fever, hepatitis A and diarrhoea.
6. Capacities

Chile has sufficient trained professionals to achieve the MDGs and national targets. The fulfilment of commitments will depend on how many of the necessary responsibilities are attributed and institutional frameworks provided. The technology needed to achieve the goals is also available.

Successful experience: Local companies in sanitation. The case of COOPAGUA

The Cooperativa de Agua Potable Santo Domingo Ltda (COOPAGUA) is a group of 1,750 members that has provided permanent drinking water and sewerage systems to more than 3,000 homes in the commune of Santo Domingo, San Antonio province since 1974.

It employs 61 people and is a non-profit entity. The revenues from services amount to an annual income of US$ 1.5 million, and profits exceeding US$ 250,000 per year, and these are entirely reinvested in water and sanitation works. It has a drinking water plant that produces 200 l/s, and two waste water treatment plants of 20 l/s, and 16 l/s respectively. The drinking water treatment and sewerage systems are advancing in line with the Development Plan agreed with SISS. Some 62% of their clients are connected to the sewerage system, and it is expected that 100% of clients will have access to the service by 2010. Its home service Serviciohogar is free to members and deals with any minor domestic repairs to pipes and sewage installations within the property.

The commune will also be starting a water resources conservation project in a joint Water Education campaign with UNESCO as part of the Culture Programme. In 2007, for the fifth consecutive year, SISS rated COOPAGUA first in the annual evaluation of performance and quality in drinking water and sewerage systems.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASEN</td>
<td>Encuesta de Caracterización Socioeconómica</td>
</tr>
<tr>
<td>CONAMA</td>
<td>Comisión Nacional del Medio Ambiente</td>
</tr>
<tr>
<td>COOPAGUA</td>
<td>Cooperativa de Agua Potable Santo Domingo Ltda</td>
</tr>
<tr>
<td>INE</td>
<td>Instituto Nacional de Estadísticas</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>Mideplan</td>
<td>Ministerio de Planificación</td>
</tr>
<tr>
<td>Minsal</td>
<td>Ministerio de Salud</td>
</tr>
<tr>
<td>MOP</td>
<td>Ministerio de Obras Públicas</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>SAG</td>
<td>Servicio Agrícola y Ganadero</td>
</tr>
<tr>
<td>SISS</td>
<td>Superintendencia de Servicios Sanitarios</td>
</tr>
<tr>
<td>SUBDER</td>
<td>Subdirección de Desarrollo Regional</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational Scientific and Cultural Organisation</td>
</tr>
</tbody>
</table>

References

Mideplan (2006). Encuesta CASEN.

Acknowledgements

Drawn up by the Asociación de Ingeniería Sanitaria y Ambiental, AIDIS-Chile (Soledad Pérez and María Pía Mená). We are also grateful to Marcia Vallejos, official from the Ministry of Planning, as well as Gonzalo Velásquez and Cristián Araneda.
1. Fulfilment of the sanitation goals

- Estimates of public domestic service and sewerage services from the National Planning Department (DNP) are 85.9% and 92.4% for the urban sector and 66.6% for the rural areas. MDG goals for sewerage system coverage for 2015 and 2019 - the bicentenary of the independence of Colombia - proposed by the National Government aim for 97.6% in urban areas and 70.9% for the rural sector.

- Around 410 waste water systems have been built in 354 municipal areas, a figure which represents 32.2% of all municipal areas. However, the percentage of a real impact of Biochemical Oxygen Demand and Total Suspended Solids are not known, nor are the levels of operation and coverage of the sewerage network that discharges into the system, or the amount of industrial waste waters dumped into the network or into bodies of water. It is estimated that only 33% of systems operate adequately. Around 8% of urban waste water was treated in 2003 and National Government has set a target of 30% urban coverage by 2010 and 50% by 2019.

- In December 2006, 80 9% of solid waste (21,940 tonnes/day in 643 municipal areas) were disposed of adequately and a further 11% (2,676 tonnes/day), inadequately. Targets set by National Government in the National Development Plan 2006-2010 aim for 135 municipal authorities to have access to sites technically suited to the final disposal of solid waste (sanitary landfill or transitional cells).

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- There must be improved awareness of the MDGs amongst the different stakeholders.

- Territorial entities must internalise the action needed to achieve the MDGs within their development plans.

- Coverage of the sewerage system must be extended before investing in waste water treatment systems.

## Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population³(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>31’886,605</td>
<td>N.A.</td>
<td>92.4</td>
<td>97.6</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>11’001,987</td>
<td>N.A.</td>
<td>66.6</td>
<td>70.9</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>
| Total          | 42’888,592 | N.A.  | 85.9  | n.d.  | 8.0    | 30.0   | N.A.   | N.A.   | 89.0   | 100.0  | 15.0  | 12.0  | 302   | 0.79  | 52.7  | (a) In number of inhabitants.
(b) Adequate disposal of solid waste.
Sources: MPS, DDUPA-DNP.

N.T. – National Target. (1) Incidence of acute diarrohoea illness in children aged under 5-years-old. Deaths per 100,000 inhabitants. (2) In terms of delayed growth in children aged under 5-years-old, measured as small size for age. (3) In children aged under 5-years-old. Deaths per 100,000 inhabitants. (4) Human Development Index. (5) Percentage of the population under the poverty line. N.A. – Not Available
Tariff calculation methods could allow for municipal authorities with high levels of political influence to refuse to build water treatment plants in order not to increase tariffs to users for this service.

**Inequities in access, quality of service and appropriate use**

- Although significant increases have been made in the coverage of the sewerage system on a national level, large differences still persist between regions. In some departments, coverage is above 83%, while in others it is less than 36%. In the capital, coverage is close to 100%.

- General Participation System (SGP) resources - the main source of funding for the sector - are not being invested optimally. The cost of service provision varies widely between cities - due to the topographical conditions and energy costs - leading to marked differences in tariffs between cities.

### Section B: Summary of the sanitation situation

#### 1. Policies and strategies

- The objective of the sector policy proposed by the Vice Ministry of Water and Sanitation (VAS) is to provide the tools to ensure the efficient provision of services of clean water supplies, sewerage and cleaning for all Colombians. Sector policies and strategies are in place on: the disposal of excreta; waste water treatment; the collection, treatment and sanitary disposal of solid waste.

- In 2005, National Government set targets and strategies for Colombia, including national targets for basic sanitation in order to achieve the MDGs for 2015, through the National Council of Economic and Social Policy (CONPES) Social 091 document. In order to improve conditions for families living in extreme poverty, National Government also created the Network to Overcome Extreme Poverty. Action by the network led to 54 achievements, grouped in nine sections, including health, nutrition and habitability. The latter specifically refers to family access to adequate basic sanitation and rubbish disposal systems.
Critical aspects of sanitation policies and strategies

1. Sanitation in water catchment areas is prioritised because contamination from municipal waste water requires high levels of investment.
2. Institutional strengthening of the territorial authorities is fundamental in fulfilling the targets set by National Government.

2. Legal Framework

Disposal of excreta


Waste water treatment


Collection, treatment and sanitary disposal of solid waste


Monitoring of contamination in water catchment areas


3. Institutional framework

3.1 Disposal of excreta, treatment of domestic waste water and solid waste

The body operating as a rector on policy at a national level is the Ministry of the Environment, Housing and Territorial Development (MAVDT), through the recently created Vicemistry of Water and Sanitation (VAS). The regulation of these services is the responsibility of the Commission for the Regulation of Drinking Water and Basic Sanitation (CRA) and inspection, control and monitoring fall to the Superintendence of Public Domestic Services (SSPD) which is also responsible for issuing the accountancy standards that must be applied to those supplying public domestic services. Since 1994, public domestic services of sewerage and sanitation have been a municipal responsibility and must be provided by companies of an official, private or mixed nature and, in exceptional circumstances, by the municipal authorities themselves.

<table>
<thead>
<tr>
<th>Policy and strategy development</th>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAVDT</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>DNP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>MPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>Ministry of the Interior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>CRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>Independent corporations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>SSPD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>SSPD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>MPS1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>••</td>
<td>••</td>
</tr>
</tbody>
</table>

** Responsible  • Involved  •• Not involved

(1) Territorial Departments. (2) Health section offices. (3) Municipal authorities. (4) Service providers.
Platforms for coordination between stakeholders

In order to support the actions of the territorial entities, from April 2006 the Attorney General’s Office (PGN) led the formation of a board known as the ‘Inter Institutional Board for Achievements in the Drinking Water and Basic Sanitation Sector.’ The Board is made up of the PGN and the CGR, forming an interface with the national bodies; the National Planning Department (DNP); MAVDT; the Ministry of Social Protection (MPS); SSPD; CRA; the National Apprenticeship Service (SENA) and the National Statistics Department (DANE). It also has cooperation support from various public and private institutions, both national and international, including UNICEF, the environmental and sanitation engineering association ACODAL and the national association for domestic services ANDESCO.

Critical aspects of the institutional framework for solid waste management

1. Process of ending the use of open tips, landfill and disposal in bodies of water has not been completed.

2. Support is required for territorial entities in implementation of the plans for Integrated Management of Solid Waste.

3.2 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

VAS runs the Hand-washing Programme, the objective of which is to implement a campaign in Colombia to promote hand-washing with soap at critical times during the day. The aim is to reduce the incidence of diarrhoea in children under five-years-old - especially in the lower income sectors of the population – and to establish the hand-washing habit amongst the general public.

Critical aspects in hygiene promotion and sanitation education

1. Adoption of the hand-washing practice requires a strong awareness raising strategy, in order to establish the habit and make it memorable.

2. There are insufficient resources to achieve hand-washing practice objectives in the medium and long term.

4. Funding

Policies have been established on subsidies, recovery of cost and tariffs for the disposal of excreta and the treatment of waste water and solid waste.

The country has a large deficit of resources with which to meet the levels of subsidy set by law. In order to resolve this situation, National Government issued a methodology that allows for a balance to be found between contributions and subsidies.
In terms of financial monitoring mechanisms: regulatory commissions have defined the obligatory criteria, methodologies, indicators, parameters and models for evaluation of the management and performance of service providers. The CRA establishes methodologies for vetting providers of aqueducts, sewerage and sanitation, according to their risk level, calculating the relevant financial indicators and quality operating standards.

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to meet national targets(^{(1)}) (millions of US$)</th>
<th>Estimated investments for the next 5 years(^{(2)}) (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>8,367</td>
<td>9,830</td>
</tr>
<tr>
<td>Rural</td>
<td>1,463</td>
<td>472</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
<td>1,062</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
<td>1,292</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Comments:
(2) Investments for 2007-2010.
Sources: DDUPA-DNP.

**Critical aspects of sanitation funding**
1. Greater follow-up is needed in the execution of resources in order to ensure that works benefit people in lower income brackets.
2. Evaluation of the level of financial risk of service providers requires that reports of the information necessary to SSPD.

**5. Monitoring and evaluation**

**National indicators and information systems for the sector**

SSPD is responsible for establishing, administering, maintaining and operating an information system for domestic public services in the country. The Single Information System (SUI) has been created for this purpose, and public domestic service providers must all provide information related to commercial issues, technical cooperation, administration and finances.

**Sanitation within the analytical tools**

National Government has monitoring systems to assess progress toward the targets established. A target has been set relating to the number of people newly gaining benefit from the sewerage service.

**Critical aspects of sanitation monitoring and evaluation**
1. SSPD is not yet receiving regular reports of the required information, and therefore does not have a solid basis on which to issue regulations and policies, nor to establish control, monitoring and planning mechanisms.
2. Low institutional capacity amongst service providers serving only a small number of users hampers the reporting of information in rural areas.
6. Capacities

National reflection on human resources to achieve the MDGs/national targets

There is a National Plan for Training and Technical Assistance, a group of policies, programmes, strategies, instruments and institutions that guide training, technical assistance and the acquisition of work competence, aimed at workers linked to public entities, private enterprise and mixed domestic public water, sewerage and sanitation service providers, in order to improve the quality of these services in urban and rural areas.

Similarly, ACODAL and ANDESCO offer their members training programmes in various areas relating to water, sewerage and sanitation service provision.

MAVDT offers technical assistance and training in water and sanitation through various programmes.

Technologies needed to achieve the MDGs/national targets

Waste water treatment systems exist at the site of origin; there are centralised systems and undersea emitters. As for the disposal of solid waste, current regulations state obligatory use of sanitary landfill as a reference technology in the management of this waste.

Critical aspects of capacity in the sector

1. The MDGs must be disseminated and adopted by society throughout all territorial entities.
2. More alternatives are needed for the management and treatment of waste waters and by-products.

Section C: Recommendations

1. Policies and strategies

• Consolidate the formulation and implementation of Departmental Water and Sanitation Plans in all the departments and municipal areas of the country in order to improve the coverage and quality of drainage and sewerage services.

• Make progress on programmes that link water and sanitation policy with environmental and housing policies. Environmental authorities must implement quality objectives that are achievable by those operating under the regulations, while service providers must formulate sanitation and waste management plans as a planning tool.

2. Legal Framework

• Promote unification of sector regulations in order to improve the training process and technical assistance to various stakeholders.

• Integration of regulatory tools in order for them to be consistent with planning instruments.

• Standards issued by National Government must be disseminated to all related stakeholders; mayors, governors, public service providers and the community in general, in order to guarantee that they are applied correctly.

3. Institutional framework

3.1 Waste water treatment

• Advances must be made in works required to resolve the issue of water contamination as a result of municipal dumping in priority water catchment areas.

• Integration of the various planning instruments implemented by the diverse bodies of National Government (the sanitation and tipping plan (PSMV), waste water management plan (PMAR), regional environmental management plan (PGAR), and the watershed organisation plan (POMCA)).
3.2 Solid waste management
- Strengthen the sewerage sector, through training and the generation of a business culture.
- Develop the regionalisation processes in the service, especially in the final disposal of solid waste.

4. Funding
- The long-term commitment of resources is required from territorial entities in order to guarantee set targets are met.
- The nation must provide the support needed in those cases where credit is required from multilateral banks.
- There must be greater awareness is needed of the need to move forward on investments in wastewater treatment plants, where these are the priority. This requires that all stakeholders contribute to the organisation of sources of funding.

5. Monitoring and evaluation
- Reduce dispersed allocation of resources for the drinking water and basic sanitation sector in order to ensure greater monitoring of these.
- Design tools that allow for the efficiency of defined policy strategies to be monitored.

6. Capacities
- Optimise operations in the waste water treatment systems already built.
- Strengthen the formulation and implementation of the PSMV.
- Develop alternative forms of waste water and by-product management and treatment.

Successful experience: Private participation in sanitation
MAVDT has supported links with specialist operators as service providers, and indicators on coverage and quality in cities that did not previously have a sewerage system have improved. In the four years from 2002 to 2006, 22 contracts were signed with specialist operators.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACODAL</td>
<td>Asociación Colombiana de Ingeniería Sanitaria y Ambiental</td>
</tr>
<tr>
<td>ANDESCO</td>
<td>Asociación Nacional de Empresas de Servicios Públicos Domiciliarios y Actividades Complementarias</td>
</tr>
<tr>
<td>CONFIS</td>
<td>Consejo Nacional de Política Económica y Social</td>
</tr>
<tr>
<td>CONPES</td>
<td>Consejo Nacional de Política Económica y Social</td>
</tr>
<tr>
<td>CRA</td>
<td>Comisión de Regulación de Agua Potable y Saneamiento Básico</td>
</tr>
<tr>
<td>DANE</td>
<td>Departamento Administrativo Nacional de Estadística</td>
</tr>
<tr>
<td>DBO</td>
<td>Demanda Bioquímica de Oxígeno</td>
</tr>
<tr>
<td>DDUPA</td>
<td>Dirección de Desarrollo Urbano y Política Ambiental</td>
</tr>
<tr>
<td>DNP</td>
<td>Departamento Nacional de Planeación</td>
</tr>
<tr>
<td>FSRI</td>
<td>Fondo de Solidaridad y Redistribución de Ingreso</td>
</tr>
<tr>
<td>IDEAM</td>
<td>Instituto de Hidrología, Meteorología y Estudios Ambientales</td>
</tr>
<tr>
<td>LSPD</td>
<td>Ley de Servicios Públicos Domiciliarios</td>
</tr>
<tr>
<td>MAVDT</td>
<td>Ministerio de Ambiente, Vivienda y Desarrollo Territorial</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MPS</td>
<td>Ministerio de la Protección Social</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
</tbody>
</table>
References


Instituto de Hidrología, Meteorología y Estudios Ambientales (2004). Informe anual sobre el estado del medio ambiente y los recursos naturales renovables en Colombia.


Silva Salamanca, Julio Miguel and Andia Rey, Tatiana (Año). No más niños muertos por falta de agua: transformación institucional y coberturas 100%.


Acknowledgements

The general coordination of the present document was undertaken by the Vicemintery of Water and Sanitation (VAS) with contributions from the following entities: SSDP, CRA, PGN, DANE, ANDESCO, DNP and UNICEF.
Section A: Overview

1. Fulfilment of the sanitation goals

- The targets will be fulfilled, if we take into consideration the indicator of access to improved sanitation (technologies for excreta and wastewater management), defined in the JMP. This indicator refers to neither the quality nor sustainability of the service.

- In the National Development Plan 2006-2010, Central Government aims to achieve an advance of more than 50% in sanitation targets through an environmental improvement project in the metropolitan area of San José, the ‘Ciudades Limpías’ (clean cities) programme and the installation of collection centres for the reuse or recycling of solid waste in 22 cantons.

- The Health Ministry aims to advance from treating illness to a health promotion as a social value.

- The Ministry of the Environment and Energy has defined five working priorities, including the integrated management of water resources and environmental quality management (covering the prevention and monitoring of contamination).

2. Main critical aspects

- Sanitation is not identified as a national political issue.

- There is no clear and effective monitoring of regulations/legislation.

- There are no integrated regulations for septic tanks - the most widely used technology in the country. No actions have been defined for the management, treatment and disposal of sewage sludge, as in most cases these are removed by operators with no clear idea of treatment and disposal norms.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th>Year</th>
<th>Population&lt;sup&gt;(a)&lt;/sup&gt;</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic wastewater&lt;sup&gt;(b)&lt;/sup&gt; (%)</th>
<th>Solid waste&lt;sup&gt;(b)&lt;/sup&gt; (%)</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4'476,614</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>5'021,911</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007 MDG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007 N.T.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007 M.N.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 N.T.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>4'476,614</td>
<td>5'021,911</td>
<td>99.2</td>
<td>100.0</td>
<td>37.1</td>
<td>58.9</td>
</tr>
</tbody>
</table>

N.T. – National Target (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) Specify type of final disposal.

(a) In number of inhabitants.
(b) Percentage of treatment plants operating. 50% of the information on septic tanks is taken, as there is no information on quality of operation. The projection includes the AyA sewageage project for San José.
(c) To comply with objective, projections are for collection of at least 50% of that not collected in 2006. Similarly, sanitary landfill is expected to be provided to 50% of those currently not covered.

Sources: Ministry of Health, INEC.
• Current legislation does not deal clearly with the treatment and final disposal of sludge from waste water treatment systems.

• The regulations and institutions themselves limit technological innovation to alternative drainage and treatment systems. This obstructs solutions in marginal settlements or areas with special geographical or geological conditions.

• Public service companies and municipal authorities have access to neither sources of funding at advantageous rates or state subsidies. Sanitation tariffs must use methodologies that allow for automatic updating. Drainage systems are partly charged for at present, but treatment is not.

• Coastal areas and the developing tourism sector demand special products and extraordinary investments, as do most urban centres.

• Projects currently underway in coastal urban centres have not taken into account the effects of climatic variability and climate change.

• Most municipal authorities lack plans for regulation and where these do exist, they are out of date. There are no local master plans to provide figures and correct technical details for future connections and to prevent clandestine connections.

• There are illicit connections and rainwater connections to the sewerage system, which reduces the sustainability of the system - a situation that is aggravated by limitations in urban rain water drainage management.

• Basic aid is undertaken in indigenous communities.

---

**Percentage of treatment of domestic waste water**

- **Current situation (2007)**
  - % treated: 63%
  - % untreated: 37%

- **National target (2015)**
  - % treated: 41%
  - % untreated: 59%

---

**Coverage of collection and forms of final disposal of solid waste (2006)**

- **With coverage %**: 83.3
- **No coverage %**: 16.7

- Sanitary landfill: 58.5%
- Dumping in open air or water courses: 21.3%
- Controlled landfill: 19.8%
• Collections of solid waste are of a low quality, with municipal authorities proving deficient in technical, administrative and financial capacity. There is large-scale dumping of waste in river beds. The private sector must be encouraged to participate in management.

• There are no control or technical monitoring mechanisms for the private management of sanitary landfills or tips.

• There is no national body for the municipal sector to consult on techniques, regulations, etc.

Section B: Summary of the sanitation situation

1. Policies and strategies

• The National Development Plan 2006-2010 proposes projects like sewerage systems for the metropolitan area of San José and similar projects in Heredia, Alajuela, Limón and Cartago. The Costa Rican Institute of Aqueducts and Sewerage (AyA) under the Rural Aqueducts Division (DAR) direction and the German KfW Bank programme, incorporates the sanitation variable into new projects, and these will be used as a basis for policies in this sector.

• Solid waste has been discussed more than liquid waste nationally, due to the sanitation problems generated as a consequence of poor collection and final disposal.

• The National Urban Development Plan for the large central metropolitan area covers the environmental issue and network infrastructure of as two of its main considerations.

• Sector policies and strategies are in place on hygiene promotion and sanitation education; the disposal of excreta, the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

2. Legal Framework

Hygiene promotion and sanitation education
General Health Law No.5395; Organic Law on the Environment No.7554.

Disposal of excreta
General Health Law No.5395; regulation on treatment plants and tips.

Collection, treatment and sanitary disposal of sewage sludge
General Health Law No.5395; Regulation for the management of sewage sludge from septic tanks (No.21297-S).

Critical aspects of sanitation policies and strategies

1. Institutional plans of action do not contain the correct information, training or strategic values for the issue. There is a lack of understanding of the problem and the responsibilities that should be fulfilled by decision-makers.

2. Inconsistency in the formulation of targets amongst municipal authorities and local entities in relation to current environmental regulations and other norms. Deficient monitoring and control.
Costa Rica

» Waste water treatment

General Health Law No.5395; AyA Constitutional Law (No.2726); Organic Environmental Law No.7554; Regulation of the creation of environmental norms on tipping (No.31176-S MINAE); first phase of application of environmental norms on tips (No.082-MINAE); Regulation on the approval and operation of systems (No.31545-S MINAE); Declaration of public interest in waste water treatment systems (No.32133-S); Regulation on the dumping and reuse of waste water (No.33601-S MINAE); Decree of national emergency in waste water treatment (No.33726-S MINAE).

» Collection, treatment and sanitary disposal of solid waste

Regulation for the collection and management of sanitary waste; Regulation on waste management (No.19049-S).

» Monitoring of contamination in water catchment areas

Organic Environmental Law No.7554; General Health Law No.5395; AyA Constitutional Law No.2726; Biodiversity Law; Wildlife conservation law; General Law on drinking water No.1634 of September 1953; Law on land use, management and conservation No.7779 of May 1998; Phytosanitary Protection Law No.7664 May 1997; Norms on the location of waste water treatment plants, Decree 21518-S September 1992; Regulation on drinking water quality, Decree 25991-S April 1997; Regulation on the dumping and reuse of waste water No.26042-S MINAE; Regulation of irrigation services, National service of subterranean waters, irrigation and drainage; Regulation for agricultural aviation activities, Decree 15846 November 1984; Regulation on agricultural farms, Decree 22814-S January 1994; Regulation on pig farms, Decree 22815-S January 1994; Regulation on the registration, use and control of agricultural pesticides and fertilizers, Executive Decree No.24112 November 1994; Regulation on waste management, Decree No.19049-S August 1989 article 41 subsection a); Regulation on sanitary landfill, Decree 22595 October 1993; Regulation on the management of sewage sludge from septic tanks, Decree 21297 May 1992; Regulation on the procedure for testing in order to determine substances that render waste dangerous due to its toxicity for the environment, Decree 27002-MINAE April 1998; Regulation for quality evaluation and classification of surface water bodies (Executive Decree No.33903-MINAE-S).

» Reuse of municipal waste waters

Regulation on dumping and reuse of waste waters (No.33601-S MINAE).

No specialised regulations have been developed for the reuse of human excreta, sewage sludge and solid waste.

Critical aspects of the legal framework

1. Enactment of laws and regulations takes a lot of time, whereby the updating of control, sanction and incentive mechanisms is very slow. There is duplication (overlap) of competencies and a lack of inter-institutional coordination.

2. Legal framework does not provide resources in order for its stipulations to be fulfilled. The existence of laws on paper does not guarantee they will be fulfilled.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

The division of functions is adequate. However, there are deficiencies in some municipal authorities, mainly due to a lack of human, technical and financial resources. Sewage sludge is removed by private companies when requested by clients.

Platforms for coordination between stakeholders

There are no formally established coordination platforms. The ‘tankers’ or companies that remove sewage sludge privately, have their own organisation. The Commission for the Regulation of the Dumping and Reuse of Waste Water is the most formal body in existence, with representatives from most of the interested sectors. Its functions include: review of the regulations and improvements in these, but not application of the regulations themselves.

3.2 Collection, treatment and sanitary disposal of solid waste

- Even where there is a division of functions being fulfilled, some municipal authorities have signed contracts with private companies for the collection, transportation and final disposal of waste.
- Municipal authorities have organised themselves into federations or leagues of municipalities, grouped by province or region. In some cases, shared tips or landfills have been proposed for use by several municipal authorities.
- There are networks of private service providers to collect and sort recyclable materials.

Critical aspects of the institutional framework for solid waste management

1. Policies on correct regional and local management are not very clear. There are no appropriate mechanisms for monitoring and control.
2. Municipal authorities and the State have no programmes to promote rational management of solid waste (reduction, reuse, etc.). These services with high levels of arrears.
3.3 Hygiene promotion and sanitation education

- The Ministry of Health (MINSA) and various organisations (Union of Local Governments, Council of Highway Security, Costa Rican Social Security (CCSS), Municipal Development and Evaluation Institute (IFAM), Central American Association for Economy, Health and Environment (ACEPESA), Ministry of the Environment and Energy (MINAE), AyA, PAHO, National Power and Light Company (CNFL), National Banana Corporation (CORBANA), municipal authorities, etc.), participate in the coordination of programmes like the network of ecological and healthy cantonments, clean cities, amongst others, with whom they carry out environmental education activities, placing emphasis on the use of water.

- The strongest of these programmes is known as Bandera Azul (blue flag), which generally aims to establish an incentive to promote the organisation of local committees, in accordance with the protection of natural resources, the quest for a better hygienic and sanitation conditions and improved public health in Costa Rica. This is administered by an inter-institutional commission made up of representatives of the Costa Rica Tourism Board (ICT), MINAE, the Chamber of Tourism (CANATUR), MINSA and AyA.

- The AyA has overseen the sanitation quality seal (PSCS) incentive in the National Water Laboratory (LNA), awarding prizes to drinking water suppliers. There is also an environmental improvement project for the metropolitan area of San José that offers environmental education focused on the management of domestic waste water. Similarly, there is a programme ‘Bandera Ecológica’ (ecological flag) that provides ecological certification to private and public companies when they manage to considerably reduce their energy consumption and improve the treatment of their solid waste and waste waters.

- Similarly, in State universities, programmes are underway for community training in environmental issues, placing emphasis on programmes for the rational use of water, cleaner technologies, and the integrated management and general management of water resources.

- There is no clear hygiene and sanitation education policy to be applied to projects, whereby actions have generally focussed on environmental education.

Critical aspects in hygiene promotion and sanitation education

1. Most of the projects do not place emphasis on hygiene and sanitation education, nor do they cover sanitation aspects adequately and directly.

2. No funding or specific national programmes are available for hygiene and sanitation education. Municipal authorities have not established educational campaigns, nor have they implemented programmes for the separation and differentiated management of waste.

4. Funding

Subsidy policies have not been specifically developed, and nor have cost recovery and tariffs for hygiene promotion and sanitation education; the disposal of excreta; and the collection, treatment and sanitary disposal of sewage sludge.
In terms of waste water treatment, the plan is to establish a levy on dumps, where part of the money raised will be used for specific action on this issue. Some municipal authorities and institutions providing the service will charge subsidised rates. Municipal authorities will set tariffs for the collection, treatment and sanitary disposal of solid waste. Collection costs are generally subsidised as the municipal authorities themselves carry out the work. The treatment and disposal (that is becoming a more widespread practice) is contracted out to companies, who set their tariffs according to costs and profits.

A financial monitoring mechanism is in place as the institutions managing sewerage systems, waste water treatment and solid waste facilities, presenting financial and economic reports to State economic regulators when adjusting their tariffs.

### Critical aspects of sanitation funding

1. There is no appropriate integrated scheme defined for funding.
2. Tariff adjustments for solid waste are not brought in line with real costs fast enough in most municipal authorities.

### 5. Monitoring and evaluation

#### National indicators and information systems for the sector

- There is no national and centralised information system for the sector. However, there are some small opportunities for data collection in the universities. The National Development Plan 2006-2010 includes a plan for a National System for Environmental Information that will include a component of environmental indicators, some of which will be related to sanitation. This initiative is coordinated by MINAE in order to guarantee sustainability in these indicators.

- The National Institute for Statistics and Censuses (INEC) carries out surveys and national censuses that provide direct information on citizens (connection to sanitation, drainage, connection to a septic tank, use of latrine, defecation in the open, access to sanitation services, access to a bathroom, number of bathrooms, removal of rubbish, availability of basic services).

- The social security system, now organised in integrated basic health care teams (EBAIS), collects data from communities (access to sanitation services, within or outside the home, how far distant), covering sanitation issues. But this data is often only processed for annual reports by the institution. A similar situation occurs with the information collected by municipal authorities and companies in relation to solid waste.

### Table: Estimated investments for the next 5 years (thousands of US$)

<table>
<thead>
<tr>
<th>Title</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education (1)(2)</td>
<td>2,100</td>
</tr>
<tr>
<td>Disposal of excreta (3)</td>
<td>248,700</td>
</tr>
<tr>
<td>Management of sewage sludge (4)</td>
<td>59,900</td>
</tr>
<tr>
<td>Treatment of municipal waste waters (5)</td>
<td>99,000</td>
</tr>
<tr>
<td>Management of municipal solid waste (5)</td>
<td>91,300</td>
</tr>
</tbody>
</table>

(1) The values given are a national estimate on the basis of projects promoted by AyA and ESPHSA.
(2) Includes Ministry of Health investments to strengthen the health promotion section where sanitation education will be worked on.
(3) Includes Ministry of Health projections to cover the shortage of 9,000 dry latrine solutions in 5 years.
(4) For all homes in 2006, connected to a septic tank, it is estimated that half of them will have the sludge removed. At the average current cost of US$28 per home for cleaning.
(5) Estimated value on the basis of current sanitary landfill disposal of 3,400 Tonnes/day; at USD$25 per Ton, in 5 km.
Sources: Ministry of Health, AyA and ESPHSA.
Sanitation within the analytical tools
As part of the National Development Plan, the issue is included in social sector strategies, where institutions like the Ministry of Health and the Ministry of Housing are involved.

Critical aspects of sanitation monitoring and evaluation
1. Legal norms do not consider the content, procedures, or strategies involved in training staff and acquiring necessary equipment for correct monitoring and evaluation.
2. Information collected is not analysed in an appropriate manner, nor has it been used to design plans and programmes that aim to improve sanitation conditions. The information is not shared or exchanged between institutions.

6. Capacities

Several institutions like the AyA have proposed exchanges through agreements with national educational institutions, at both technical and university level. They will design staff training programmes in systems directly administered by them, by community aqueduct associations (ASADAS) and the municipal authorities. Similarly, IFAM has promoted agreements so that the universities and the National Institute of Learning (INA) can also contribute to administrative and technical issues that will improve municipal operational capacity.

The country has enough adequately trained human resources to identify the technologies needed to resolve national problems. However, current regulations, the lack of sanitation education at all levels and the attitude of officials frequently hampers the use of alternative technologies applicable to very specific cases. Some technologies have been appropriately applied in various areas of the country.

Critical aspects of capacity in the sector
1. There is a lack of inter-agency work on the provision of correct support and exchange.
2. There is no integrated national policy on sanitation, meaning that the appropriate adjustments are not made. National capacity is not fully exploited.

Section C: Recommendations

1. Policies and strategies
   • Produce an integrated national policy to deal correctly with sanitation in interaction with other national programmes on the basis of regional planning for water catchment areas amongst others.

2. Legal Framework
   • Encourage training amongst decision-makers and middle management in order that they may recognize and approach the sanitation issue correctly.
   • Encourage the productive sector and respective organisations to help improve legislation and regulations in order to achieve a healthy environment where health is protected.

3. Institutional framework
   3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
   • Outline a national policy on sanitation providing regulations to evaluate the impact of the techniques used in order to achieve national, regional and local indicators that measure and promote advances made toward fulfilling targets.
3.2 Solid waste management

- Define an integrated national policy on sanitation to guide local actions that provide measurable outcomes and contribute to fulfilment of the indicators.
- Encourage users to become involved responsibly and communities to be vigilant on proposals and processes executed in their municipal areas.

4. Funding

- Seek user support through public consultation on investments in view of the financial impacts of projects on tariff adjustments.

5. Monitoring and evaluation

- Define the sanitation objective on a national level to allow institutions and organisations involved to work jointly on the monitoring and evaluation of quality indicators in order to execute corrective actions - like the verification of improvements.

6. Capacities

- Outline training programmes at all levels, for officials – mainly in middle management.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEPESA</td>
<td>Asociación Centroamericana para la Economía, la Salud y el Ambiente</td>
</tr>
<tr>
<td>ARESEP</td>
<td>Autoridad Reguladora de los Servicios Públicos</td>
</tr>
<tr>
<td>ASADAS</td>
<td>Asociación Administradora de Sistemas de Acueductos</td>
</tr>
<tr>
<td>AyA</td>
<td>Instituto Costarricense de Acueductos y Alcantarillados</td>
</tr>
<tr>
<td>CANATUR</td>
<td>Cámara Nacional de Turismo</td>
</tr>
<tr>
<td>CCSS</td>
<td>Caja Costarricense del Seguro Social</td>
</tr>
<tr>
<td>CEPRONA</td>
<td>Fundación Centro de Productividad Nacional</td>
</tr>
<tr>
<td>CNFL</td>
<td>Compañía Nacional de Fuerza y Luz</td>
</tr>
<tr>
<td>CORBANA</td>
<td>Corporación Bananera Nacional</td>
</tr>
<tr>
<td>DAR</td>
<td>Dirección de Acueductos Rurales</td>
</tr>
<tr>
<td>DPAH</td>
<td>Dirección de Protección al Ambiente Humano</td>
</tr>
<tr>
<td>EBAIS</td>
<td>Equipos Básicos de Atención Integral en Salud</td>
</tr>
<tr>
<td>ESPHSA</td>
<td>Empresa de Servicios Públicos de Heredia, S.A.</td>
</tr>
<tr>
<td>ICT</td>
<td>Instituto Costarricense de Turismo</td>
</tr>
<tr>
<td>IFAM</td>
<td>Instituto de Fomento y Asesoría Municipal</td>
</tr>
<tr>
<td>INA</td>
<td>Instituto Nacional de Aprendizaje</td>
</tr>
<tr>
<td>INEC</td>
<td>Instituto Nacional de Estadística y Censos</td>
</tr>
<tr>
<td>ITCR</td>
<td>Instituto Tecnológico de Costa Rica</td>
</tr>
<tr>
<td>JBIC</td>
<td>Japanese Bank for International Cooperation</td>
</tr>
<tr>
<td>KiW</td>
<td>Kreditanstalt für Wiederaufbau</td>
</tr>
<tr>
<td>LNA</td>
<td>Laboratorio Nacional de Aguas</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MIDEPLAN</td>
<td>Ministerio de Planificación Nacional</td>
</tr>
<tr>
<td>MINAE</td>
<td>Ministerio de Ambiente y Energía</td>
</tr>
<tr>
<td>MINEREM</td>
<td>Ministerio Energía y Minas</td>
</tr>
<tr>
<td>MINSA</td>
<td>Ministerio de Salud</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>OD-UCR</td>
<td>Observatorio del Desarrollo – Universidad de Costa Rica</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pa-American Health Organisation</td>
</tr>
</tbody>
</table>
References

AyA programmes and information.
Contributions in workshops for this document on 14 and 24 September 2007.
Estado de la Nación. Informe 12.
Gaceta, diario oficial.
MINA programmes and information.
Ministry of Health programmes and information.
Presentación del MS: Rectoría de la producción social de la salud y garantía de acceso a servicios de salud. En Taller Guías OMS en AyA.
PRU-GAM

Acknowledgements

This report was prepared with the agreement of the Health Minister and was facilitated by the environmental protection department (DPAH), with the collaboration of the PAHO/WHO Sustainable Development and Environmental Health Adviser in the country. Compiled by: Mr Elías Rosales, who acted as technical secretary for two meetings called by DPAH (14 and 24 September 2007). This version should be considered as a working document. Acknowledgement is also due to the workshop participants: Álvaro Araya, Isabela López A., Jorge A. Vargas S., Manuel López and Mayrand Ríos B., Danner Mora and Andrés Lazo P. (AyA), Armando Moreira M., Orlando Rodríguez B., Azalea Espinoza, Jorge L. Mena A. and Vanessa Alvarez G. (MINSA), Daniela García S. (UNA), Elías Rosales E. (ITCR); Gerardo Galvis (PAHO), Marco Chinchilla (MINAE), Natalie Montiel U., Gustavo A. Vega Arias y William Miranda H. (ESFHSA), Sergio González (CEPRONA), Xinia Alvarado (UCR).
Section A: Overview

1. Fulfilment of the sanitation goals

- In 2007, nearly 98% of the population of the Dominican Republic had access to adequate disposal of excreta, although only 20% had access to sewerage systems. The MDGs indicate that by 2015 there will be 100% coverage for the first indicator, while the second will stand at just over 30%.

- From the information available it can be surmised that 35% of the urban population has waste water treatment service coverage. The MDG here is 67.5%

- High levels of investment are required in order to meet the MDGs, and this will be spent on construction of the new infrastructure and the operation and maintenance of existing sanitation services. Some US$ 51.2 is needed for building latrines; US$ 305 million for sewerage in the urban sector; and US$ 494.4 million for the treatment of urban waste waters. The schemes will benefit nearly three million inhabitants and 4,114 l/s of water will be obtained as an outcome of these investments.

- PAHO figures put national coverage for the collection of solid waste at 69.4% and final disposal at 39%. The country does not have goals on the solid waste issue within the framework of the MDGs.

- All recent analysis (2006) has stated that the fundamental causes of the problems with drinking water and sanitation services do not lie in a lack of funding, but rather in the way the investments are made, given the absence of a suitable institutional framework to promote the implementation of effective policies and strategies. Updates of the situation a year ago do not show any change in the sector - a tendency that suggests only the goals set for the adequate disposal of excreta will be met in urban areas nationally.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>5,955</td>
<td>6,337</td>
<td>98.4 100.0 35.0 46.7 N.A. N.A. N.A.</td>
<td>13.5 7.9 N.A. N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>3,408</td>
<td>3,799</td>
<td>94.8 100.0 N.A. N.A.</td>
<td>N.A. N.A. N.A. 14.9 10.8 N.A. N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,363</td>
<td>10,136</td>
<td>97.8 100.0 20.1 30.1</td>
<td>69.4 N.A. 39.0 N.A. 14.0 8.9 37.7 0.751</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M.T. – National Target. (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria.

N.A. – Not Available
(a) In thousands of inhabitants.

Source: Abreu, R.U., PAHO, ENDISA, UNDP.
In the first year after the country assumed the MDGs in water and sanitation, investment in new infrastructure exceeded 100% of the annual requirement. However, the sum invested in urban sanitation represented only 17.8% of the annual average deemed necessary in order to achieve the MDGs.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Inadequate mechanisms for executing investment in the sector
- Absence of sector planning and, therefore, of master plans for national piped water and sewerage systems. Both issues suffer from the common problem of a general absence of public sector policies, specifically those aimed at reducing gaps.
- Indicators for service quality are even more worrying than those for coverage, revealing yet another important gap.
- The amount of investment being made in the Dominican Republic exceeds that of most countries for fulfilment of the MDGs, except in countries where service coverage is far lower than the national goals.
- The methodology used to establish the MDGs in water and sanitation in the country led to the adoption of a useful instrument for change in the water and sanitation sector, which contributes to reducing existing gaps.
• The lack of an institutional entity responsible for planning in the sector able to negotiate with service providers and establish management commitments.

• The strategy approved within the framework of the MDGs and the traditional availability of funding in the sector constitute two strengths that will help guarantee achievement of the MDGs.

Section B: Summary of the sanitation situation

1. Policies and strategies

Even though there are policies and strategies on many aspects of sanitation and modern legal frameworks are in place, the way the national budget is executed shows that sanitation is actually given very little priority.

Policies and strategies are in place for: hygiene promotion and sanitation education; the disposal of excreta; the treatment of waste waters; and the collection, treatment and sanitary disposal of solid waste. However, there are none established for the collection, treatment and sanitary disposal of sewage sludge. Similarly, no links exist between these policies and the poverty reduction strategy.

Critical aspects of sanitation policies and strategies
1. There are no mechanisms in place to encourage investment in sanitation by service providers.
2. There is no national entity responsible for planning in the water and sanitation sector.

2. Legal Framework

There is a legal framework on: hygiene promotion and sanitation education; disposal of excreta; waste water treatment; the collection, treatment and sanitary disposal of solid waste; monitoring of contamination in water courses; and reuse of municipal waste water and solid waste. However, regulations on the collection, treatment and sanitary disposal of sewage sludge and the reuse of human excreta and sewage sludge still need to be developed.

Critical aspects of the legal framework
1. The existing legal framework for the drinking water and sanitation sector is obsolete and diffuse with large gaps.
2. Although the environmental legal framework is quite complex and up to date, the mechanisms to guarantee implementation are very weak.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

In the drinking water and sanitation sector, there is no division of functions. Service providers fulfil all the functions within their respective areas of jurisdiction. As a result, there are no platforms for coordination between stakeholders.
**Critical aspects of the institutional framework**

1. Lack of definition of roles and weakness of institutions in the sector.
2. Overlapping roles within the institutions themselves due to the lack of institutional organisation.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Local Government(1)</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPE</td>
<td>SEMARENA</td>
<td>SESPAS</td>
<td>INAPA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>·</td>
<td>·</td>
<td><strong>·</strong></td>
<td><strong>·</strong></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td>·</td>
<td><strong>·</strong></td>
<td>·</td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td><strong>·</strong></td>
<td></td>
<td></td>
<td>·</td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td><strong>·</strong></td>
<td><strong>·</strong></td>
<td>·</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td><strong>·</strong></td>
<td><strong>·</strong></td>
<td>·</td>
<td></td>
</tr>
</tbody>
</table>

(1) CORAS.

---

### 3.2 Collection, treatment and sanitary disposal of solid waste

The governing entity is the Office of the Secretary of State of the Environment and Natural Resources (SEMARENA) and municipal authorities providing services. No platforms for coordination have been developed between the stakeholders.

**Critical aspects of the institutional framework for solid waste management**

1. In practice, the municipal authorities assume various roles: governance, regulation and service provision.
2. Lack of specific policies, strategies and national laws on the issue.
4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>313.4</td>
</tr>
<tr>
<td>Rural</td>
<td>42.8</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>494.4</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – Not Available
Source: Abreu, R.U.

Policies have not been developed on subsidies, cost recovery and tariffs for the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; the treatment of waste waters; hygiene promotion and sanitation education. There are also no mechanisms for financial monitoring.

Critical aspects of sanitation funding
1. There is no specific funding for sanitation.
2. The absolute freedom of service providers in the planning and use of resources in the drinking water and sanitation sector has meant that more than 95% of resources are used for drinking water services to the detriment of sanitation initiatives.

5. Monitoring and evaluation

- The main indicators for the sector are: adequate disposal of excreta; sewerage coverage; and the percentage of waste water collected and receiving treatment. There are no information systems in operation.

- Sanitation issues and actions are included in: major surveys; and projects and studies to analyse health improvements, the mitigation of environmental pollution and poverty reduction.

Critical aspects of sanitation monitoring and evaluation
1. Absence of a sector information system.
2. National indicators only include information on infrastructure. The National Census of 1981 barely incorporates sewerage coverage.
6. Capacities

There has been no national consideration of the shortfall in the number of existing sanitation staff (governmental institutions, universities, training and research centres, the private sector) compared with number of appropriately trained staff needed to achieve the MDGs in sanitation.

However, there has been, and still it is, a deeply rooted national culture in the use of appropriate water and sanitation technologies.

Critical aspects of capacity in the sector

1. Very high level of turnover in qualified staff due to political patronage.
2. A multiplicity of stakeholders in each function: governance, regulation and service provision.

Section C: Recommendations

1. Policies and strategies
   - Approve the Reform Bill for the Drinking Water and Sanitation sector to create a national specialist entity that will outline national policies and strategies on water and sanitation.
   - Use special mechanisms to request obligatory quotas on sanitation from service operators, for example, through the approval and monitoring of institutional budgets.

2. Legal Framework
   - Approve and implement the Reform Bill for the Drinking Water and Sanitation sector.
   - Improve mechanisms for financial auditing and for monitoring the implementation of laws and regulations.

3. Institutional framework
   3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
      - Strengthen mechanisms necessary for implementing standards and the current legal framework on hygiene promotion and the treatment of waste waters.
      - Develop laws, regulations and standards relating to the collection, treatment and sanitary disposal of sewage sludge.
   3.2 Solid waste management
      - Strengthen the institutional framework linked to the management of solid waste.
      - Develop laws, regulations and standards relating to the collection, treatment and sanitary disposal of solid waste.
4. Funding

- Increase national funding for sanitation.
- Create mechanisms that guarantee the use of specific funds for sanitation.

5. Monitoring and evaluation

- Implement a sector information system.
- Complete evaluations of the health impact of changes in hygiene habits resulting from sanitation programmes.

6. Capacities

- Implement the law for the civil service and administrators in institutions providing drinking water and sanitation services.
- Implement mechanisms that coordinate the capacities of official institutions with those in the private sector and communities.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADIS</td>
<td>Asociación Dominicana de Ingeniería Sanitaria y Ambiental</td>
</tr>
<tr>
<td>APS</td>
<td>Agua Potable y Saneamiento</td>
</tr>
<tr>
<td>CAASD</td>
<td>Corporación de Acueductos y Alcantarillados de Santo Domingo</td>
</tr>
<tr>
<td>CNE</td>
<td>Comisión Nacional de Emergencia</td>
</tr>
<tr>
<td>COAAROM</td>
<td>Corporación de Acueductos y Alcantarillados de La Romana</td>
</tr>
<tr>
<td>CODIA</td>
<td>Colegio Dominicano de Ingenieros, Arquitectos y Agrimensores</td>
</tr>
<tr>
<td>CONANI</td>
<td>Consejo Nacional para la Niñez</td>
</tr>
<tr>
<td>CONAU</td>
<td>Consejo Nacional de Asuntos Urbanos</td>
</tr>
<tr>
<td>CORAAPLATA</td>
<td>Corporación de Acueductos y Alcantarillados de Puerto Plata</td>
</tr>
<tr>
<td>CORAASAN</td>
<td>Corporación de Acueductos y Alcantarillados de Santiago</td>
</tr>
<tr>
<td>CORAMOCA</td>
<td>Corporación de Acueductos y Alcantarillados de Moca</td>
</tr>
<tr>
<td>CORAs</td>
<td>Corporaciones de Acueductos y Alcantarillados</td>
</tr>
<tr>
<td>DEPRIDAM</td>
<td>Despacho de la Primera Dama</td>
</tr>
<tr>
<td>ENDESA 2002</td>
<td>Encuesta Nacional de Salud, 2002</td>
</tr>
<tr>
<td>INAPA</td>
<td>Instituto Nacional de Aguas Potables y Alcantarillados</td>
</tr>
<tr>
<td>INDRHI</td>
<td>Instituto Nacional de Recursos Hidráulicos</td>
</tr>
<tr>
<td>INVI</td>
<td>Instituto Nacional de la Vivienda</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>ONE</td>
<td>Oficina Nacional de Estadística</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan-American Health Organisation</td>
</tr>
<tr>
<td>PNMN</td>
<td>Parque Nacional Mirador Norte</td>
</tr>
<tr>
<td>SEE</td>
<td>Secretaría de Estado de Agricultura</td>
</tr>
<tr>
<td>SEMARENA</td>
<td>Secretaría de Estado de Medio Ambiente y Recursos Naturales</td>
</tr>
<tr>
<td>SESPAS</td>
<td>Secretaría de Estado de Salud Pública</td>
</tr>
<tr>
<td>SPE</td>
<td>Secretaría de Planificación y Economía</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
</tbody>
</table>
References


Acknowledgements

Report compilers: M Rosa Urania Abreu, Consultant and engineer Carlos Morales, PAHO/WHO Sustainable Development and Environmental Health Advisor in the Dominican Republic. Institutions participating in the consultation (two meetings): Red Dominicana de Vivienda Saludable (SESPAS, SEMARIN, INVI, Poder Ejecutivo, CONAU, Centro de Estudios Sociales Padre Juan Montalvo, PROCOMUNIDAD, Fundación SUR FUTURO, Ciudad Alternativa, ECOCLUBES, Proyecto CONECTA and the PAHO/WHO as advisory entity) and the Comité Permanente para la Celebración de la Semana del agua (SEMARIN), SESPAS, INAPA, INDRHI, CODIA, SEE, CAASD, CORAASAN, CORAAPLATA. CORAMOCA, COAARCOM, Colgate Palmolive, ADIS, Acuario Nacional, CONANI, Dirección de Atención a la Primera Infancia, Cruz Roja Dominicana, ONE, ECOCLUBES, PNMN, Asociación dominicana de Mitigación de Desastres, UNDP, UNICEF, PAHO/WHO.
Section A: Overview

1. Fulfilment of the sanitation goals

- Requirements for coverage in the country are high if national sanitation targets are to be met. Waste water and excreta disposal services must increase by 29% nationally; wastewater treatment by 6%; the collection of solid waste by 22%; and the sanitary disposal of solid waste by 23%. Hygiene promotion and sanitation education must be incorporated as a key dimension with a more integrated outlook on work in the sector.

- In 2002 the National Policy on Water and Sanitation was formulated. This was accompanied by the Sector Development Plan that contain short-, medium- and long-term goals and sector reforms to comply with the MDGs. However, these have not been implemented. Isolated and diffuse efforts have been made, but there has been no high-level political decision to fulfill MDG commitments. The new government that took office in January 2007 proposed a national objective of significantly increased coverage for basic services, incorporating national targets higher than those of the MDGs, providing funding and designing the National Social, Productive and Environmental Development Plan 2007-2010.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

Strengths

- The few programmes encouraging co-participation have made important contributions to the design and implementation of new management models in small municipal authorities.

- The inter-agency water and sanitation committee CIASE has become stronger, has held meetings and provided support for the implementation of sector policy and national plans for water and sanitation and solid waste in collaboration with the governing body.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th>Year</th>
<th>Population(a)</th>
<th>Disposal of excreta (%())</th>
<th>Treatment of domestic waste waters (%())</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collection (%)</td>
<td>Sanitary disposal(b) (%)</td>
<td>Acute diarrhoea(c) (%)</td>
<td>Chronic malnutrition(d) (%)</td>
<td>Infant mortality(e) (%)</td>
<td>HDI(f)</td>
</tr>
<tr>
<td>2007</td>
<td>8'580,090</td>
<td>52.0</td>
<td>24.0</td>
<td>85.0</td>
<td>90.0</td>
<td>37.0</td>
</tr>
<tr>
<td>2015</td>
<td>11'080,000</td>
<td>85.0</td>
<td>30.0</td>
<td>90.0</td>
<td>37.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Urban</td>
<td>52.0</td>
<td>24.0</td>
<td>85.0</td>
<td>90.0</td>
<td>37.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Rural</td>
<td>31.0</td>
<td>70.0</td>
<td>N.A.</td>
<td>N.A.</td>
<td>35.9</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>51.0</td>
<td>80.0</td>
<td>N.A.</td>
<td>N.A.</td>
<td>68.0</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.T. – National Target

(1) Incidence of acute diarrhoea illness in children aged under 5-years-old.
(2) In terms of delayed growth in children aged under 5-years-old.
(3) in children aged under 5-years-old.
(4) Human Development Index.
(5) According to national criteria.
(6) Sanitary landfill.

N.A. – Not Available

(a) In number of inhabitants.

(b) The Human Development Indices calculated in Ecuador are not comparable with those of the world reports, due to the use of primary sources and, in some cases, approximate indicators or substitutes for those proposed by UNDP international methodology.

Sources: AME, MIDUVI, SISE.
• Positive experiences and good practices have occurred with international cooperation (CTB, CARE, IOM, Sustainability and Regional Unity (PSUR)). The drinking water boards (JAAPs) have also offered a quality service for rural areas with a transparent administration that could be replicated on a greater scale.

• Initial inter-institution effort in the design and implementation of the water and sanitation planning, monitoring and evaluation system (SIPME).

Weaknesses

• Various types of State interventions: some encourage shared participation but most operate as charitable or commercial entities, underestimating shared participation, ownership and sustainability.

• Inefficient funding, with inadequate tariffs that do not cover costs or allow funds to be generated for improvements or emergencies.

• Poorly directed subsidies that favour the higher income brackets and discourage local efforts, efficiency amongst service providers and water conservation.

• There is no regulation and control.

• Corruption at various levels.

• Poor control and citizen monitoring of management and service provision.

• Difficulties in reaching the poorest sectors: lack of research, unsustainable models, complex procedures.

---

**Coverage of collection and forms of final disposal of solid waste**

- **Actual coverage (2007)**: 68.0%
- **No coverage %**: 32.0%

---

**Disposal of waste water and excreta**

- **Actual coverage (2007)**: 80.0% for urban and 60.0% for rural areas
- **Difference in relation to national target (2015)**: 10.0% for urban and 5.0% for rural areas

---

**Percentage of treatment of domestic waste water**

- **Urban sector**
  - 24% treated
  - 76% untreated
  - Current situation (2007): 70%
  - National target (2015): 90%

---

(*): The figures for final disposal correspond to the urban sector.
Inequities in access, quality of service and appropriate use

- Geopolitical: a) imbalance between regions (mountain areas are better supplied than coastal or Amazonian areas); b) urban-rural gap (cities are better supplied than rural areas).
- Economic: the richest 10% of the population has total coverage with a better quality service, while the poorest 10% has less coverage with unsustainable modes of improved sanitation in rural areas.
- Ethno-cultural: indigenous areas have lower coverage and poorer quality services.

Section B: Summary of the sanitation situation

1. Policies and strategies

- Historically, sanitation has been considered of secondary importance in Ecuador. Government intervention by past regimes concentrated exclusively on improved drinking water coverage, widening the gap between drinking water and sewerage services. Over the last year, the new central government and local governments have given greater priority to the issue. In the larger cities, strategies are being designed for funding and investment plans that will allow this gap to be closed in the long term.
- There are sector policies and strategies for hygiene promotion and sanitation education; the disposal of excreta; and the treatment of waste water, while those for the collection, treatment and sanitary disposal of sewage sludge and solid waste are still in the development process.

There are no clear and explicit links between sector policies and the national strategy for poverty reduction, environmental protection and economic development.

2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Collection, treatment and sanitary disposal of solid waste**

No specialist regulations have been developed on the disposal of excreta; the control of contamination in water catchment areas; the collection, treatment and sanitary disposal of sewage sludge; and the treatment of waste water: the reuse of human excreta, sewage sludge, municipal waste waters and solid waste.

Critical aspects of sanitation policies and strategies

1. Policies and strategies produced by the regulatory body have not been fulfilled and has long-term perspective has not been established.
2. General policies and strategies exist for the sector, but important issues like sewage sludge and solid waste need to be addressed.

Critical aspects of the legal framework

1. There is no secondary legislation for sanitation and the technical regulations are diffuse. A Bill on standards for service providers is currently working its way through Congress.
2. There is an overlap in roles and functions between the Ministry of Urban Development and Housing (MIDUVI) and the Ministry of the Environment (MAE) on the matter of solid waste.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

Governance exists in the ministries: MIDUVI, Ministry of Health (MSP), MAE. Municipal authorities are responsible for service provision but there are no regulations in place.

Platforms for coordination between stakeholders

CIASE members are the main institutional players in water and sanitation. Members include related ministries, national institutions and national and international cooperation entities.

### Critical aspects of the institutional framework

1. Various public sector entities are involved in water and sanitation, implementing contradictory policies and perspectives.
2. There is institutional chaos with no definition of limits of the responsibilities of one institution in relation to another.

3.2 Collection, treatment and sanitary disposal of solid waste

There is no division of functions. Governance activities are executed by MIDUVI, MAE and MSP. Municipal authorities are responsible for service provision, but they also exercise regulatory functions within their territory.

### Critical aspects of the institutional framework for solid waste management

Overlapping roles and functions between State institutions.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

The Ministry of Health has implemented a programme on alternative methods of domestic water disinfection through Environmental Education - public health staff in rural areas are trained to produce chlorine and rural communities are shown how to use this to disinfect water appropriately. MIDUVI runs a water disinfection programme in rural communities following the SODIS solar water disinfection methodology. Meanwhile, the Ministry of Education is running a health promotion programme in 700 schools with outreach to the surrounding communities.

Critical aspects in hygiene promotion and sanitation education

1. Programmes do not follow long-term policies, and there are insufficient human, technical and financial resources.

2. Issue is not given sufficient importance and is still not seen as an integral part of interventions in the sector.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (millions of US$)</th>
<th>Estimated investments for the next 5 years (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban 585</td>
<td>966</td>
<td>422</td>
</tr>
<tr>
<td>Rural 381</td>
<td></td>
<td>233</td>
</tr>
<tr>
<td>Sewage sludge management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban 101</td>
<td>101</td>
<td>26</td>
</tr>
<tr>
<td>Rural N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban 112</td>
<td>112</td>
<td>80</td>
</tr>
<tr>
<td>Rural N.A.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.A. - Not Available
Sources: MIDUVI, MSP
Subsidy policies have been developed for: hygiene promotion and sanitation education; and urban tariffs for the disposal of excreta and the treatment of waste water. Such policies are not planned for the collection, treatment and sanitary disposal of sewage sludge and solid waste.

There is no national mechanism for financial monitoring. Each State entity and each intervention programme creates its own mechanisms.

5. Monitoring and evaluation

Percentage of service coverage is the most commonly used national indicator but the various institutions define coverage in different ways.

The current government is implementing a national water, sanitation and solid waste census in urban areas. The same procedure will then be followed in rural areas in order to compile a baseline for the planning, monitoring, evaluation and adjustment of public policies and national strategies on the subsector.

Critical aspects of sanitation funding
1. There are various different policies on resource attribution for the sector within the State.
2. The absence of a national mechanism for financial monitoring means that resources have often been disbursed for the same system repeatedly while people still have no access to the service.

Critical aspects of sanitation monitoring and evaluation
1. There is currently no system for information, monitoring and evaluation of the subsector, nor is there an integrated strategy to provide coherent relationships between variables such as investment, coverage, quality, efficiency of management, etc.
2. The lack of monitoring and evaluation blocks opportunities for learning that could lead to prompt correction and better guidance on intervention strategies.

6. Capacities

National reflection on staff to achieve the MDGs/national targets

Both governing entities and institutions in the sector agree there is a deficit of trained and competent staff. There is clear awareness of the urgent need for national investment in strengthening water and sanitation capacity at various levels (local, national, urban and rural) across all players (governance, service providers, regulators). It is important for universities to incorporate the sector demands and adjust technological and engineering training provision, as well as providing postgraduate and specialist qualifications. Municipal authorities and administrative councils have a proven need for capacity strengthening as they are the main bodies responsible for service provision. Work is currently underway on the design of a National Plan for Strengthening Capacities in the Sector.

Critical aspects of capacity in the sector
1. Local governments, especially in small municipal authorities, are given responsibility for service provision, but do not have the technical or management capacity needed to offer a quality service.
2. Universities are not offering academic provision tailored to the demands for training and specialisation in the sector.
Technologies needed to achieve the MDGs/national targets

No technological research is being undertaken into alternative sanitation solutions in the country. There has been insufficient political will, resource allocation and determination to test and adapt alternative technologies.

Section C: Recommendations

1. Policies and strategies
   - Revise the 2002 national water and sanitation policy in order to update this in a participatory manner under the leadership and coordination of National Government through the national planning department (SENPLADES), MIDUVI and the national water resource council (CNRH). Incorporate a multisector and decentralised perspective.
   - Complete an analysis - national inventory of the water and sanitation situation in order to implement a system to monitor and evaluate fulfilment of the public policy cycle.

2. Legal Framework
   - Build a coherent and legal framework integrated with existing legislation, containing definitions of institutional roles, and approve the Law for the provision of water and sanitation services.
   - Create and disseminate regulations on wastewater, sewage sludge, the treatment of excreta and sanitation in general.

3. Institutional framework

3.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of domestic waste water
   - Strengthen the institutional framework for water and sanitation in the national forum, section governments and the JAAPs. Achieve a clear definition of institutional roles.
   - Promote the creation of a national water system (including water and sanitation), with an integrated management outlook for water catchment areas.

3.2 Solid waste management
   - Provide clear definitions of institutional roles and their fulfilment at various levels (national and local).
   - Promote the perspective of integrated solid waste management in the country.

4. Funding
   - Make the requirements for State loans and resources more flexible, according to the size and nature of the investment project. Promote management indices as qualifying elements in the award or retention of non-repayable funds.
   - Promote single funding policies that include NGOs, State Banks in accordance with poverty/social inequality maps, considering the importance of counterpart contributions.

5. Monitoring and evaluation
   - Design, training for and implementation of SIPME with a unit established within the governing body.
   - Generate and institutionalise citizen participation mechanisms and social monitoring of water and sanitation services.
6. Capacities

- Creation of a National System for Strengthening Capacity in the Sector that considers current efforts (the CAMAREN training system developed by Ecuador’s cocoa sector stakeholders, universities, etc.) and business models for service provision in Municipal authorities and JAAPs. Link the issue of capacities to that of funding.
- Design and implementation of a National Plan for Information and Training in Hygiene and Sanitation Education, focusing on issues like water quality, rational use of the resource, the preservation of water sources, etc.

**Successful experience:** Incentive for practical improvements in the integrated management of solid waste: The experience on the southern frontier of Ecuador.

Since the peace agreement between the governments of Ecuador and Peru in October 1998, the province of Loja has seen dynamic development in many aspects, one of which is the Integrated Management of Solid Waste (GIRS), achieving large improvements on the basis of co-ordinated and synergies with various institutions including USAID, CARE, Plan International, municipal authorities, provincial councils and the local people themselves. At present, all of the cantons of Loja manage their solid waste in an integrated manner, considering socio-cultural, politico-legal, organisational, economic and financial, environmental and technological aspects. This process has been strengthened in the last three years by an interesting mechanism: the Fondo Concursable (an award fund) provided by the Provincial Government of Loja which aims to guarantee the sustainability of the GIRS in the province, recognizing and rewarding that the best practices of municipal authorities each year. As an outcome of the process, coverage has been improved by 7% and an initiative has been created that can be visited and replicated by other national and international actors.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEISA</td>
<td>Asociación Ecuatoriana de Ingeniería Sanitaria</td>
</tr>
<tr>
<td>ANEMAPA</td>
<td>Asociación de Empresas Municipales de Agua Potable y Alcantarillado</td>
</tr>
<tr>
<td>BEDE</td>
<td>Banco del Estado</td>
</tr>
<tr>
<td>CAF</td>
<td>Corporación Andina de Fomento</td>
</tr>
<tr>
<td>CIASE</td>
<td>Comité Interinstitucional de Agua y Saneamiento del Ecuador</td>
</tr>
<tr>
<td>CNRH</td>
<td>Consejo Nacional de Recursos Hídricos</td>
</tr>
<tr>
<td>CODEMPE</td>
<td>Consejo de Desarrollo de los Pueblos y Nacionalidades del Ecuador</td>
</tr>
<tr>
<td>CONCOPE</td>
<td>Consorcio de Consejos Provinciales del Ecuador</td>
</tr>
<tr>
<td>CTB</td>
<td>Coopération Technique Belge</td>
</tr>
<tr>
<td>ECORAE</td>
<td>Instituto para el Ecodesarrollo Regional Amazónico</td>
</tr>
<tr>
<td>FISE</td>
<td>Fondo de Inversión Social de Emergencia</td>
</tr>
<tr>
<td>GIRS</td>
<td>Gestión Integrada de Residuos Sólidos</td>
</tr>
<tr>
<td>IOM</td>
<td>International Organisation for Migrations</td>
</tr>
<tr>
<td>JAAPs</td>
<td>Juntas Administradoras de Agua Potable</td>
</tr>
<tr>
<td>JICA</td>
<td>Japan International Cooperation Agency.</td>
</tr>
<tr>
<td>MAE</td>
<td>Ministerio del Ambiente</td>
</tr>
<tr>
<td>MCDS</td>
<td>Ministerio de Coordinación del Desarrollo Social</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
</tbody>
</table>
References

AME, Encuesta Municipios, julio 2007
MIDUVI, Plan de Desarrollo del Sector de Agua Potable y Saneamiento. Proyección de población. MIDUVI 2002
SIISE (ECV y ENDEMAI, 1999).

Acknowledgements

Document produced by Patricia Aguilar, MIDUVI; Rodrigo Pareja, AME; Rosario Jácome, PAS-Ecuador. Validation of the document and strategy design in the workshop of 18 September 2007 in Quito, Ecuador, with the participation of the following institutions: Banco del Estado, MAE, MCDS, MIDUVI, MEF, ODM, CIASE, AME, ANEMAPA, CONCOPE, AEISA, JICA, Gobierno Provincial de Pichincha, CARE, PLAN INTERNACIONAL, IMO, SODIS, NATURA, WORLD VISION, USAID, WSP-LAC.
Section A: Overview

1. Fulfilment of the sanitation goals

- Access to sanitation services stood at 74.7% of the population in 2006. There are considerable inequalities in access to sanitation between the rural population and urban populations. In the urban areas 91% of people have access to latrines and 69% in rural areas.

- In 2006, systems administered by the National Aqueduct and Sewerage Administration (ANDA), decentralised operators and former rural water and sanitation plan PLANSABAR provided 91% coverage in urban areas and 58% in rural zones.

- There are 262 municipal areas in El Salvador, of which, 168 were administered by ANDA and 89 by municipal mayoral offices, water boards, mixed ventures, etc. Less than half of those administered by ANDA – 81 - have sewerage systems, and only eight of these include a waste water treatment plant for domestic waste water.

- UNDP guidelines state that even where MDGs have already been achieved in merely quantitative terms, rigorous evaluation of the use of latrines and the disposal of excreta of a population would probably show qualitative deficiencies in fulfilment. The situation of the quality of waste water presents an alarming situation, as most of this is tipped into rivers with practically no treatment at all.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Deficient application, monitoring and sector management in terms of land use regulation.

- Disorganised population growth.

- Obsolete laws.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3,090,944</td>
<td>N.A.</td>
<td>91.0%</td>
<td>94.5</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>2,984,770</td>
<td>N.A.</td>
<td>58.0%</td>
<td>86.9</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>6,075,714</td>
<td>N.A.</td>
<td>74.7%</td>
<td>96.7</td>
<td>3.0</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.T. – National Target

(1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of children under 5 years-old with low weight. (3) In children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) Sanitary landfill.

N.A. – Not Available

Comments

(*) Estimated indicators to 2006.
(a) In number of inhabitants.
(b) Global coverage in relation to total population.
(c) Cases of diarrhoea illnesses increased by 35% and cases of intestinal parasites doubled from 1989 to 1999.
(d) Figures from the UNDP report of 2005.
(e) The indicator must be understood in relative terms, as a very high proportion of the population still live in poverty.
(f) For 2005, 35% of the waste collected was dumped in nine sanitary landfills.
(g) Tonnes per day.

Sources: ANDA, MSPAS, FUSADES, UNDP.
- No updating of policies and laws in the drinking water and sanitation subsector.
- Public funding inadequate for needs.
- Minimal knowledge of environmental regulations amongst the private sector and civil society, leading to ignorance of responsibilities, duties and rights.
- Minimal application of sanctions.
- Improvement of indicators to support decision making.
- Strengthening of control and monitoring of established legal resolutions for the sanitation area.
- Coordination and unification of inter-agency efforts to improve outcomes.
- Local governments and communities are barely involved in integrated sanitation plans.
- Absence of innovatory mechanisms for funding investment in infrastructure.

Inequities in access, quality of service and appropriate use

- There is no adequate policy as more attention is given to resource use and distribution than resource conservation. While it is important for the entire population to have access to basic services, the coverage offered must be of a good quality and resource sustainability must also be taken into consideration. Therefore, the end users of drinking water supplies must be guaranteed a continuous service providing water acceptable for human consumption, meaning that policies must incorporate investment for ongoing monitoring and the impact on climate change.

<table>
<thead>
<tr>
<th>Coverage (%)</th>
<th>With coverage</th>
<th>No coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>74.7</td>
<td>25.3</td>
</tr>
<tr>
<td>Urban</td>
<td>81.9</td>
<td>18.1</td>
</tr>
<tr>
<td>Rural</td>
<td>58.0</td>
<td>42.0</td>
</tr>
</tbody>
</table>

<p>| Percentage of treatment of domestic waste water |</p>
<table>
<thead>
<tr>
<th>% treated</th>
<th>% untreated</th>
</tr>
</thead>
<tbody>
<tr>
<td>97%</td>
<td>3%</td>
</tr>
</tbody>
</table>

<p>| Disposal of waste water and excreta |</p>
<table>
<thead>
<tr>
<th>% treated</th>
<th>% untreated</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.0</td>
<td>78.0</td>
</tr>
<tr>
<td>91.0</td>
<td>9.0</td>
</tr>
<tr>
<td>28.0</td>
<td>72.0</td>
</tr>
</tbody>
</table>

| Sanitary landfill, 35.0% |
| Others, 65.0% |

Coverage of collection and forms of final disposal of solid waste (2006)
El Salvador is urgently in need of a general national plan on access to and the appropriate use of water resources and the country also requires a water reuse strategy.

Sanitation in rural areas is largely managed through the construction of latrines, while urban areas generally have flushing toilets with sewerage. As a result, rural homes are more vulnerable to the contamination of water sources where sanitation is inadequate.

Section B: Summary of the sanitation situation

1. Policies and strategies
Sanitation has not been given adequately prioritised within national public policy. However, there are currently actions underway to foreground this issue on the political agenda. Sector policies and strategies are in place on: hygiene promotion and sanitation education; the disposal of excreta, the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Disposal of excreta**

- **Collection, treatment and sanitary disposal of sewerage sludge**
  Special Regulations on Waste Waters, Decree 39, National Environment Law (LMA).

- **Waste water treatment**

- **Collection, treatment and sanitary disposal of solid waste**

- **Monitoring of contamination in water catchment areas**
  Irrigation and Drainage Law, Decree 153; Environment Law, Article 48; Decree 233, Law for the Creation of National Service for Territorial Studies (SNET), 2001.
Reuse of:

- Municipal waste water
  Special Regulation for Waste Water, Decree 39, Chapter V; Environment Law, Article 22 Decree 233.
- Solid waste
  Special Regulation on the Integrated Management of Solid Waste, Decree 42.

No specialist regulations have been developed for the reuse of human excreta and sewage sludge.

**Critical aspects of the legal framework**

1. Diffuse regulations on the sanitation sector, allowing for existence of institutional vacuums and a lack of clarity on roles and competences
2. Weak political will to fulfil existing legislation added to financial limitations on investments.

**3. Institutional framework**

**3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water**

At present, there are no definitions of the extent of governance, regulation and service provision. These functions are exercised by the Ministry of Health, Ministry of the Environment, National Administration of Aqueducts and Drainage Systems and municipal mayors’ offices, even when they have not been adequately fulfilled.

It is important to point out that a Bill on the drinking water and sanitation subsector has been presented to the Technical Secretariat of the Presidency of the Republic for revision.

<table>
<thead>
<tr>
<th>National Government</th>
<th>MSPAS</th>
<th>MARN</th>
<th>ANDA</th>
<th>FISDL</th>
<th>FGR</th>
<th>PEM/ Environemnt</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs(1)</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Regulation</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Project implementation</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Monitoring</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

(1) Includes international entities.
Platforms for coordination between stakeholders

There are platforms for coordination such as the Water and Sanitation Network of El Salvador (RASES) and FOCARD-APS. However, these still need to be institutionalised and responsible government entities must become more involved.

3.2 Collection, treatment and sanitary disposal of solid waste

Division of main functions between institutions

In general, the division of functions between governance/regulation/service provision is produced partially between MARN, the Ministry of Public Health and Social Assistance (MSPAS) and the municipal authorities.

Platforms for coordination

There are no platforms for coordination.

Critical aspects of the institutional framework

1. Overlap of legislation does not allow for definition of competences.
2. Little political will to prioritise these issues in the national arena.

3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

A hand-washing and hygiene initiative is currently underway, providing promotion and education in areas selected because of their high epidemiological risk levels. This will help reduce the incidence and prevalence of disease associated to inadequate hand-washing and hygiene in children less than 10-years-old. These programmes include the following:

- **FOCARD-APS, RASES, MSPAS, ANDA.** The impact of this programme is particularly directed at children under 10 years old in areas of high epidemiological risk, to improve their health conditions through the promotion of improved hand-washing and hygiene practices and education on the issue.
• **Introduction of safe water and latrines in school centres under the healthy school programme (SNF, ANDA, MSPAS, MINED, CARE).** This programme will contribute to improved access to safe water for human consumption and latrines. It will provide appropriate solutions for 20 school centres in municipal areas of extreme poverty in the Northern corridor under the Healthy Schools Programme run by the Red Solidaria NGO.

• **Social Red Solidaria Programme of the Government of El Salvador.** Aims to serve 100 municipal areas suffering from severe and extremely severe poverty, improving the living conditions of families through an integrated approach to basic rural sanitation.

• **The Healthy Home Water Methodology,** supported by UNICEF, the Canadian International Development Agency, MSPAS and NGOs.

**Critical aspects in hygiene promotion and sanitation education**

1. Need for a permanent national plan for education of the population.
2. Improve inter-agency coordination.

### 4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (millions of US$)</th>
<th>Estimated investments for the next 5 years (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td>1,648</td>
<td>N.A.</td>
</tr>
<tr>
<td>Waste water treatment</td>
<td>1,632</td>
<td>6,000(2)</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td>N.A.</td>
<td>6,022(1)</td>
</tr>
</tbody>
</table>

N.A. – Not Available

(1) Decontamination programme for critical areas.
(2) Investment for treatment plants.
Sources: Alvarado, Julio (2007); MARN, ANDA; IDB.

Policies have been developed for: subsidies, cost recovery and tariffs for the collection, treatment and sanitary disposal of solid waste in some municipal authorities. These have not been developed for hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and disposal of sewage sludge; and the treatment of waste water.

It is important to indicate that the ANDA tariff currently does not include an element for collection, transportation and treatment, and the same is true of water administration association charges. Municipal authorities do not include a charge for sanitation either. Some rural drinking water councils have funding programmes to cover infrastructure costs for the disposal of excreta and the treatment of grey waters. However, communities do not tend to prioritise investment in these areas.

Monitoring mechanisms exist through external and internal auditors.

**Critical aspects of sanitation funding**

1. Lack of awareness of the economic value of water.
2. There are no tariffs for sanitation.
5. Monitoring and evaluation

National indicators and information systems for the sector
Coverage is the only national indicator used for sanitation. There is no processed information on the sector and the data that does exist on a national level is not updated yearly.

Sanitation within the analytical tools
Sanitation is linked to improvements in health. The sustainable management of water resources in all areas and for all uses is related to the reduction of poverty and environmental contamination.

Critical aspects of sanitation monitoring and evaluation
1. Lack of clarity in basic concepts: each institution defines how, when, where and what should be measured.
2. There is no uniformity of criteria to evaluate indicators.

6. Capacities

National reflection on staff to achieve the MDGs/national targets
There is a paucity of staff. The Universities spend their time on data collection and not on researching appropriate technologies for the country. Educational programmes must be modernised and updated.

Technologies needed to achieve the MDGs/national targets
The necessary technology is available on the national and international markets, but this has not been adequately promoted and funding is not available.

Critical aspects of capacity in the sector
1. Lack of clarity in making the MDGs known on a national level.
2. Lack of support for research and replication of successful ventures.

Section C: Recommendations

1. Policies and strategies and legal framework
   • Despite some advances made in the matter of legal frameworks, the country still needs a General Water Law and subsidiary laws for the drinking water and sanitation subsector.
   • There is an urgent need to close legal gaps and eliminate overlaps of institutional competence as indicated in the Environment Law. The responsibility for this falls upon the Technical Secretariat of the Presidency, the legislative assembly and MARN.

2. Institutional framework
   2.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of domestic waste water
   • A permanent national plan is needed on education, awareness raising and access to information on sanitation and cleaner production. The responsibility for this falls upon the government institutions responsible, municipal authorities, the academic sector, the private sector and civil society.
2.2 Solid waste management

- Increased political will is needed to improve inter-agency coordination in order to make sanitation a priority within the government plan. The responsibility here lies with Technical Secretariat of the Presidency and the legislative assembly.

3. Funding

- Establish tariffs that reflect the real cost of the service of transportation, collection and treatment of waste waters including subsidies for the poorest sectors. Raise awareness on the economic value of water and sanitation. The responsibility for this lies with the legislative assembly, sewerage system operators and consumers in the residential, industrial and commercial sectors.

4. Monitoring and evaluation

- Strengthening of the regulatory and monitoring functions of MARN.
- Provide MARN with a greater resources in terms of finances, technical provision, staff and institutional management. Responsibility for this falls upon the Technical Secretariat of the Presidency, the Ministry of the Interior and MARN.

5. Capacities

- Creation of an academic policy to form the basis for professionals trained in sanitation related issues, whilst also encouraging research at the University and at the professional level. Responsibility for this falls upon the Ministry of Education and MARN.

---

Successful experience: Treatment of waste waters in La Villa de Apaneca

The city of Apaneca, department of Ahuachapan, is a tourist development centre in the region. However, the city was unhealthy due largely to the absence of a sewage system, the discharging of grey water into the open, and contamination where raw waste water was discharged to a seasonal riverbed.

In 2001, ANDA decided to improve sanitation conditions for the resident population of an estimated 5,500 inhabitants, through a project to introduce a sewage system and construct a waste water treatment plant for La Villa de Apaneca. Approval of the environmental permit included a public debate due to opposition raised against the project by residents and mountain municipalities down river from the town. A year on, a favourable outcome was achieved in the first environmental hearing ever held by the Ministry of the Environment.

At present the control and monitoring mechanisms in the project include: local technical operator training; registers of samples taken from the various stages of the process: appraisals; cleaning; operation and maintenance, etc., in accordance with current environmental regulations.

The desired objective was finally achieved once the plant opened and was seen to function and through the coordination of municipal authorities and campaigns: the population of La Villa de Apaneca was improvements in health conditions; no damage was done to the environment; and the experience served as an example for other municipal authorities inspiring them to consider similar projects. The knock on effects were seen in cities like Juayúa - a small municipal power that had the full backing of the local population to begin the construction of an environmentally valid and health promoting black water treatment plant in 2007.
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDIS</td>
<td>Asociación Interamericana de Ingeniería Sanitaria y Ambiental</td>
</tr>
<tr>
<td>ANDA</td>
<td>Administración Nacional de Acueductos y Alcantarillados</td>
</tr>
<tr>
<td>FGR</td>
<td>Fiscalía General de la República</td>
</tr>
<tr>
<td>FISDL</td>
<td>Fondo de Inversión Social y Desarrollo Local</td>
</tr>
<tr>
<td>FOCARD-APS</td>
<td>Foro Centroamericano y República Dominicana Agua Potable y Saneamiento</td>
</tr>
<tr>
<td>MARN</td>
<td>Ministerio de Medio Ambiente y Recursos Naturales</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MINED</td>
<td>Ministerio de Educación</td>
</tr>
<tr>
<td>MSPAS</td>
<td>Ministerio de Salud Pública y Asistencia Social</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PLANSABAR</td>
<td>Plan Nacional de Saneamiento Básico Rural</td>
</tr>
<tr>
<td>PNC</td>
<td>Policía Nacional Civil</td>
</tr>
<tr>
<td>RASES</td>
<td>Red de Agua y Saneamiento de El Salvador</td>
</tr>
<tr>
<td>SNET</td>
<td>Servicio Natural de Estudios Territoriales</td>
</tr>
<tr>
<td>SNF</td>
<td>Secretaría Nacional de la Familia</td>
</tr>
</tbody>
</table>

### References


### Acknowledgements

The sources consulted were obtained thanks to various entities and individuals. Rubén Alemán and Celia de Mena of ANDA, and Gloria de Ávila of RASES were responsible for general compilation of information and editing. Special recognition and gratitude are extended to technicians from ANDA, MSPAS, MARN, COSUDE, AIDIS, CARE and other institutions and organisations for their contributions to the development, validation and conclusion of this report.
Section A: Overview

1. Fulfilment of the sanitation goals

- The estimated shortfall of coverage of improved sanitation services infrastructure in 2005 was 49%, while the maximum expected for 2015 is 34%. The greatest requirement for infrastructure coverage is in the rural area where the 2005-2015 coverage deficit is 23%.

- The country needs to commit approximately US$ 73 million per year in order to overcome this deficit by 2015. Most investment is needed in the urban area (US$ 51 million per year) as there is a downward tendency in numbers for the rural population as a result of rural-urban migration.

- In recent years there has been a reduction in investments in water and sanitation from US$ 86 million in 1998 to around US$ 14 million in 2005. The gap between public and private investments in sanitation has been met in urban areas where building areas and house repairs have significantly increased.

- Hygiene promotion is a legal requirement in environmental regulations, but the limited input provided has been reinforced through efforts by municipal corporations in urban and rural areas where only limited programmes have been implemented.

- Passive advances made in recent years (2005-2007), meaning that sanitation coverage is at the same percentage figure although actual numbers have changed. This is largely a result of vegetative population growth being covered by the interventions of various private and publicly funded housing projects.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- The sanitation issue is dealt with only spontaneously and collaterally, as the real priority is seen to be drinking water.

- There are sufficient legal instruments to support growth of sanitation coverage.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta(b) (%)</th>
<th>Treatment of domestic waste water(b) (%)</th>
<th>Collection(c) (%)</th>
<th>Sanitary disposal(c) (%)</th>
<th>Acute diarrhoea(d) (%)</th>
<th>Chronic malnutrition(e) (%)</th>
<th>Infant mortality(f) (%)</th>
<th>HDI(g)</th>
<th>Extreme poverty(h) (%)</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>6,435</td>
<td>11,495</td>
<td>76.7</td>
<td>80.0</td>
<td>8.0</td>
<td>50.0</td>
<td>47.0</td>
<td>65.0</td>
<td>0.0</td>
<td>50.0</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>6,309</td>
<td>6,776</td>
<td>16.8</td>
<td>43.0</td>
<td>5.0</td>
<td>35.0</td>
<td>4.0</td>
<td>10.0</td>
<td>5.0</td>
<td>50.0</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>12,744</td>
<td>18,271</td>
<td>46.9</td>
<td>66.0</td>
<td>9.0</td>
<td>45.0</td>
<td>25.0</td>
<td>60.0</td>
<td>0.0</td>
<td>50.0</td>
<td>9.87</td>
</tr>
</tbody>
</table>

N.T. – National Target

(1) Incidence of acute diarrhoea illness in children aged under 5-years-old. The percentage relates to infant mortality in 2005, equivalent to 153,777 cases. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) There is no sanitary landfill in Guatemala. However, in the rural area waste is disposed of on the land.

Source: SEGEPLAN, Rafael Landívar University and the Instituto de Incidencia Ambiental, MSPAS, UNDP.
- Private investment in housing developments tends to increase the coverage of sanitation services, adding to improvements and home ownership that are paid for by family income and access to the private banking system.

- In urban areas, local governments provide counterpart investment with funds from central government and a high level of social participation occurs through the Development Councils.

- Over the years various initiatives have been suggested to organise the sector.

- Municipal authorities have provided these services in a totally independent manner over the years, with no regulation or control over technical and commercial operations and client relations from Central Government, although limited monitoring and support on aspects related to water quality and health has been provided by MSPAS.

- No resources are available to extend coverage and progress has been slow, especially amongst the poorest sectors and the excluded sectors in rural zones.

- The greatest deficit sanitation service coverage occurs in rural areas of the country and in marginal urban areas of the big cities. There is still a tendency for migration to urban areas, and greater investment is required here in order to meet the ensuing population growth. In spite of this, the coverage deficit persists in rural areas, particularly where settlement is sparse.

---

**Coverage of collection and forms of final disposal of solid waste (2007)**

<table>
<thead>
<tr>
<th>Disposal of waste water and excreta</th>
<th>Percentage of treatment of domestic waste water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual coverage (2007)</td>
<td>% treated</td>
</tr>
<tr>
<td>Difference in relation to MDGs (2015)</td>
<td>% untreated</td>
</tr>
<tr>
<td>Controlled landfill, 15.0%</td>
<td>91%</td>
</tr>
<tr>
<td>Dumping in open air or water courses, 85.0%</td>
<td>9%</td>
</tr>
<tr>
<td>25.0</td>
<td>55%</td>
</tr>
<tr>
<td>75.0</td>
<td></td>
</tr>
</tbody>
</table>
Inequities in access, quality of service and appropriate use

- Water and sanitation services acquire special significance in the light of cultural diversity. There are significant gaps in access to these services amongst the indigenous populations and the issue is further complicated by traditional views of water use and management in many indigenous communities that date back to ancestral times.
- The lack of adequate access to water supplies and sanitation services in the home particularly impact on girls and women - above all in rural areas and urban settlements.

Section B: Summary of the sanitation situation

1. Policies and strategies

- Even though laws and regulations are in place, there are no sanitation policies in practice. Isolated actions are undertaken to provide drinking water services, with accompanying actions in sanitation and sanitation education.
- There are sector policies and strategies on: the disposal of excreta; the collection, treatment and sanitary disposal of solid waste; and waste water treatment. Those referring to hygiene promotion and sanitation education are still in the development process.
- Regulations for the Discharge and Reuse of Waste Water and Sewage Sludge Disposal, issued by the Ministry of the Environment and Natural Resources (MARN), and the proposed Regulation for the Management of Solid Waste are indicative of important links with environmental protection.

2. Legal Framework

- Collection, treatment and sanitary disposal of sewage sludge; treatment of waste water; monitoring of contamination in water catchment areas; and reuse of sewage sludge, waste water and municipal solid waste.

Regulation on the Discharge and Reuse of Waste Water and the Disposal of Sludge; and Governing Agreement 236-2006 of 6 May 2006 of MARN.

- Collection, treatment and sanitary disposal of solid waste

Municipal regulations.

No specialised regulations have been developed for hygiene promotion and sanitation education; the disposal of excreta and reuse of human excreta.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

Current legislation makes the municipal authority responsible for service provision for drinking water supply and waste water; while the Ministry of Health, MARN and the Institute of Municipal Development (INFOM) have some regulatory powers and governance functions. However, at present there is no division of functions and these are undertaken in a partial, compartmentalised manner.
There are no platforms for coordination between stakeholders within the State apparatus. There is a lack of leadership on the issue. There is the National Commission for Solid Waste Management (CONADES) initiative, but it is not binding. Sanitation activity is linked to the water sector (drinking water supplies for human consumption).

### Critical aspects of the institutional framework

1. There is no governing entity in the sector.
2. Diversity of stakeholders and an absence of leadership.

### 3.2 Collection, treatment and sanitary disposal of solid waste

- At present there is neither division of functions nor regulation on a national level. The responsibility falls on local government. Management of solid waste is weak and collection is the only process undertaken.
- There are no platforms for coordination between stakeholders within the State apparatus. There is a lack of leadership on the issue. There is the National Commission for Solid Waste Management (CONADES) initiative, but it is not binding.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country.

Some institutions (INFOM, social funds) run sanitation education programs (directed at operation and maintenance) as a element in projects. These are often short initiatives during the construction process and their impact is not measured or monitored. There is an inconsistency in programmes between institutions, dependent on the outlook of the body implementing the programme and the rules established by funders. The projects have a limited impact focused only on programme beneficiaries.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (millions of US$)</th>
<th>Estimated investments for the next 5 years (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>25.6</td>
<td>36.4</td>
</tr>
<tr>
<td>Rural</td>
<td>10.8</td>
<td>729.3</td>
</tr>
<tr>
<td>Disposal of excreta&lt;sup&gt;(a)&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>512.9</td>
<td>729.3</td>
</tr>
<tr>
<td>Rural</td>
<td>216.4</td>
<td>729.3</td>
</tr>
<tr>
<td>Sewage sludge management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>19.7</td>
<td>26.1</td>
</tr>
<tr>
<td>Rural</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>118.3</td>
<td>166.2</td>
</tr>
<tr>
<td>Rural</td>
<td>49.9</td>
<td></td>
</tr>
<tr>
<td>Management of municipal solid waste&lt;sup&gt;(b)&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>390.0</td>
<td>435.0</td>
</tr>
<tr>
<td>Rural</td>
<td>45.0</td>
<td></td>
</tr>
</tbody>
</table>

<sup>(a)</sup> Improved solution (does not include latrines) in the form of sewerage (service with running water).

<sup>(b)</sup> The same goal as the sanitation MDG on the basis of calculations by the Instituto de Incidencia Ambiental.

Source: SEGEPLAN.

There are no plans for policies on subsidies, cost recovery or tariffs. There are no financial monitoring mechanisms. Income from tariffs on drainage systems in local governments are paid into drinking water supply service funds. Income from solid waste collection tariffs is paid into municipal authorities general funds. There is monitoring of national accounts, but water and sanitation usually appear as a single item.
5. Monitoring and evaluation

The indicators used are conventional and basically refer to percentage of coverage that can be disaggregated into urban and rural areas, municipal areas, departments or regions. The indicators used (information on the basis of a five-year census) do not reflect the quality of the sanitation service, nor customer satisfaction. In relation to additional information systems, these surveys only cover homes and living conditions. Sanitation is used as an analytical tool for complementary action in interventions by other sectors.

6. Capacities

There are sufficient adequately trained staff to meet MDG requirements. Sector leadership and focussed investment are pending issues. The use of technologies has also been developed, organised and promoted.

Critical aspects of sanitation monitoring and evaluation

1. Absence of a particular and solid baseline.
2. Lack of specialised monitoring and control entities.

Critical aspects of capacity in the sector

1. Lack of inclusion of specialist staff in decision-making spaces.
2. Absence of stimulus for staff involvement in the institutional system of the country.

Section C: Recommendations

1. Policies and strategies
   - Unify existing instruments, making them operational and nationally linked.
   - Promote the application of the tools at all levels of decision-making and by all stakeholders.

2. Legal Framework
   - Promote a legal framework to regulate tasks in the sector.
   - Complement the limited existing regulations, according to the dimensions and needs of the sector.
3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Promote the creation of a governing entity suited to the dimensions and needs of the sector.
- Group stakeholders into discussion forums allowing them to contribute to an efficient dynamic in the sector.

3.2 Solid waste management

- Promote the creation of a governing entity suited to the dimensions and needs of the sector.
- Group stakeholders into discussion forums allowing them to contribute to an efficient dynamic in the sector.

4. Funding

- Increase and promote the allocation of funds to the sector.
- Verify the quality of spending in the sector through specific controls.

5. Monitoring and evaluation

- Promote the staff involvement institutional decision-making activities.
- Promote the recruitment of specialist staff in national institutions.

6. Capacities

- Establish a particular, specialised and solid baseline for the situation in the sector.
- Incorporate specialised aspects of the sector to national control mechanisms.

Successful experience: Water, source of peace.

The ‘Agua, fuente de paz’ water programme began in 1992 as a scheme to build drinking water and latrine systems in rural zones experiencing extreme poverty. The project was executed in three stages, as a basic model with central government, international co-operation and municipal authorities and communities working together. The government and international co-operation funding contributed about 40% of the funds in equal parts; the communities, a further 35%, and municipal governments and other local stakeholders (NGOs), 25%. The former basically supplied materials, transport, qualified workers and sanitation, education; the communities provided skilled workers and local materials; and the municipal authorities and other stakeholders, contributed qualified labourers, additional transport and the remaining materials.

During the first three years of operation, more than 800 communities - a population of approximately 283,000 people - were covered by the scheme.

In 1996, this programme was transferred over to INFOM in order to support community efforts and those of municipal authorities within the framework of a decentralisation policy.
Acronyms

CONADES  Comisión Nacional para el Manejo de los Desechos Sólidos
CONAGUA  Comisión Nacional de Coordinación del Recurso Agua
COPECAS  Consejo Permanente de Coordinación de Agua y Saneamiento
EMPAGUA  Empresa Municipal de Agua de la Ciudad de Guatemala
INFOF  Instituto de Fomento Municipal
MARN  Ministerio de Ambiente y Recursos Naturales
MDG  Millennium Development Goal
MSPAS  Ministerio de Salud Pública y Asistencia Social
NGO  Non-Governmental Organisation
PAYSA  Proyecto de Agua Potable y Saneamiento del Altiplano
RASGUA  Red de Agua y Saneamiento de Guatemala
SEGEPLAN  Secretaría de Planificación y Programación de la Presidencia
UNEPAR  Unidad Ejecutora del Programa de Acueductos Rurales

References


Acknowledgements

Dr. Ramiro Quezada, UNICEF.
Guillermo Duarte, Department of Regulation of the Health and Environment Programmes and General Coordinator of the MSPAS National Plan for Water and Sanitation.
Rudy Morales, MSPAS Consultant.
1. Fulfilment of the sanitation goals

- In general, Guyana has achieved a ‘modest advance’ toward achievement of the MDGs. However, the lack of exact information and data collection systems present serious challenges in terms of measurement. Goal 7 (environmental sustainability) and 11 (access to sanitation) can ‘probably’ be achieved.

- Critical advances made toward the sanitation MDGs included the preparation of a Bill for a National Law on the Management of Solid Waste in 2004 that, once enacted, will be used to develop a National Strategy for Waste Management, a System for the Management of Used Oils and a Code of Practice for Solid Waste Management.

- Reforms made for more efficient performance in the sector have included the Ministry of Health developing a National Strategy in 2004 in order to empower communities and allow them to assume greater responsibility for their own health. Other proposals include, the National Health Plan (PNS) 2003-2007, including the allocation of new funding and the more equitable reallocation of existing funds; the Ministry of Health Bill bringing in greater accountability and the regulation of various activities within the sector; the Regional Health Authority Bill proposing the reform of regional health services and the establishment of Regional Health Authorities; and the draft Bill for Health Promotion and Protection, which would cover public health, environment and sanitation.

- In September 2003, the Municipality of Georgetown established the Municipal Solid Waste Management Department in an effort to separate out the management of solid waste and to increase the authority and general independence of municipal services.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

Strengths

- The Mayor and Councillors of Georgetown are running programme designed specifically for the critical aspects of solid waste.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Disposal of excreta&lt;sup&gt;b&lt;/sup&gt; (%)</th>
<th>Treatment of domestic waste water&lt;sup&gt;c&lt;/sup&gt; (%)</th>
<th>Solid waste Collect&lt;sup&gt;d&lt;/sup&gt; (%)</th>
<th>Sanitary disposal&lt;sup&gt;e&lt;/sup&gt; (%)</th>
<th>Acute diarrhoeas&lt;sup&gt;f&lt;/sup&gt; (%)</th>
<th>Chronic malnutrition&lt;sup&gt;g&lt;/sup&gt; (%)</th>
<th>Infant mortality&lt;sup&gt;h&lt;/sup&gt; (%)</th>
<th>HDI&lt;sup&gt;i&lt;/sup&gt;</th>
<th>Extreme poverty&lt;sup&gt;j&lt;/sup&gt;(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>751,223</td>
<td>100</td>
<td>0</td>
<td>77.7</td>
<td>61.7</td>
<td>2.3</td>
<td>39</td>
<td>4.6</td>
<td>79.3</td>
<td>12.3</td>
</tr>
<tr>
<td>2015</td>
<td>801,623&lt;sup&gt;k&lt;/sup&gt;</td>
<td>100</td>
<td>0</td>
<td>71.7</td>
<td>42.6</td>
<td>N.A.</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>2006</td>
<td>771,223</td>
<td>100</td>
<td>0</td>
<td>71.7</td>
<td>N.A.</td>
<td>42.6</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>MDG/NT.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>85.9&lt;sup&gt;l&lt;/sup&gt;</td>
<td>N.A.</td>
<td>42.6</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>2003</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>2004</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>2006</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
<tr>
<td>N.T.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>40.0</td>
<td>78.9</td>
<td>13.7</td>
</tr>
</tbody>
</table>

N.T. – National Target
<sup>a</sup> Children less than 5 years old that receive oral rehydration and continued feeding.
<sup>b</sup> In terms of delayed growth in children aged under 5-years-old.
<sup>c</sup> In children aged under 5-years-old.
<sup>d</sup> Human Development Index.
<sup>e</sup> According to national criteria.
<sup>f</sup> Controlled landfill only in Georgetown. All others use open tips.
<sup>g</sup> Moderate malnourished.
<sup>h</sup> The PRSP 2001 classed Extreme poverty in terms of Georgetown and other coastal urban and rural zones and the rural interior.
<sup>i</sup> Averages of the rural and urban indicators were calculated for the figures given above.

Source: Bureau of Statistics, WHO/UNICEF, GASWMA, UNDP.
• The management of solid waste is considered to be a matter of political urgency on a national level.
• Solid waste management is recognised as an interdisciplinary matter that requires an inter-agency perspective rather than mere technical specialisation.

**Weaknesses**

• The institutional solid waste management framework does not operate effectively in urban areas and is even worse in rural areas due to low levels of staffing.
• The legal and regulatory frameworks are outdated and unrelated to modern standards for solid waste management.
• Municipal authorities and the Neighbourhood Democratic Councils (NDCs) have limited capacity over the economic sustainability of solid waste management services, including charges to the public, setting costs and estimating suitable tariffs.
• Data collection is limited and only refers to waste management. There is no information on impact on health indicators.
• There has been no awareness raising or community participation in solid waste management.

**Inequities in access, quality of service and appropriate use**

• There is a lower percentage of population with access to improved sanitation in rural regions.
• Communities in the interior of Guyana have low socio-economic and health indicators, and the lack of progress is widely attributed to the lack of appropriate water supply. Alternative sanitation options and better hygiene practices have not been presented in an integrated and participatory manner.
• Homes in rural zones of the interior and other interior regions of Guyana, have the lowest percentage figures for improved sanitation services.
Section B: Summary of the sanitation situation

1. Policies and strategies

- There is no national policy or strategy to deal effectively with sanitation or integrated waste management. However, national policy documents have identified integrated waste management as an area that requires attention in national development.

- Three are sector policies and strategies on: hygiene promotion and sanitation education; the disposal of excreta, the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

- The National Development Strategy (NDS) is one of the first political frameworks to define the Guyana development strategy. It outlines priorities for economic and social development in the country for the 2001-2010 period and has identified solid and liquid waste management as one of the main principles underpinning the development policy.

- The Economic Recovery Programme (ERP) objective for the sanitation sector is to improve the sanitation conditions of the population in Georgetown and to reduce current levels of environmental degradation through improvements in the quality and availability of water supplies and drainage.

- The National Environmental Action Plan (NEAP) 2001-2005 is the clearest declaration of national environmental strategy, which identifies environmental contamination and the integrated management of waste as two of the nine action areas of the programme.

2. Legal Framework

» **Hygiene promotion and sanitation education**
Regulations on the keeping of livestock (Georgetown); and Regional Health Authority Law.

» **Disposal of excreta**
Water and Sewerage Act (N° 5 of 2002) Cap 30:01; and Town and Country Planning Law Section 20:01.

» **Collection, treatment and sanitary disposal of sewage sludge**
Guyana Water Authority Law, Cap 55:01; and code of practice for the design and construction of septic tanks and secondary treatment associated to the elimination system.

» **Waste water treatment**
Environmental Protection regulations (Water Quality) 2000; Mining Law N° 20 of 1989 Cap 65:01; and standard for the discharge of industrial effluents.

» **Collection, treatment and sanitary disposal of solid waste**
Cap 145 of the Laws of British Guyana – Public Health Ordinance Decree; Law No. 11 on Environmental Protection 1996; Municipal and District Councils Law, Cap 28:01; Statutes of the City of Georgetown (Waste Collection and Elimination) 1981; Statutes of the City Government; Statutes for the Collection of Refuse and
Cleaning of the City; Customs Law, Cap 82:01; Law No.11 of 1984 on Guyana National Bureau of Standards; Summary Jurisdiction Law (Offences), Cap 8:02; Local Government Law, Cap 28:02; and Criteria for the Identification and Approval of Sites for Sanitation Landfill.

» Monitoring of contamination in water catchment areas
Pesticides and Toxic Chemicals Law (No. of 2002), Cap 68:09); Occupational Safety and Health Law, Cap 99:10; Water Conservation in Eastern Demerara Law, Cap 55:03; Environmental Protection Regulations (management of dangerous waste); Environmental Protection Standards (Water Quality); Water and Sewerage Act (No. 5 of2002), Cap 30:01; and Mining Law No 20 of1989, Cap 65:01.

No specialist regulations have been developed for the reuse of human excreta, sewage sludge, municipal waste waters and solid waste.

**Critical aspects of the legal framework**

1. The regulations are obsolete, disjointed and unclear. The definitions, classification and categorisation of solid wastes within the laws, regulations and standards are incoherent and diffuse.

2. There is no clear definition of the function of each institution in monitoring fulfilment of solid waste regulations, leading to weak fulfilment of legal resolutions.

### 3. Institutional framework

#### 3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Guyana Water Incorporated (GWI) is responsible for many aspects of excreta disposal, including regulation, service provision and governance functions for almost half of the city of Georgetown (the older section). The Environmental Protection Agency (EPA) is responsible for standards on environmental protection and monitoring of the construction of sanitation works in new areas of housing. In situ sanitation is controlled by the Ministry of Local Government and Regional Development (MLG&RD) and the Ministry of Health (MOH), through NDCs or municipal authorities. The Ministry of Health also has some responsibility in the construction of sanitation works for new urban areas through the Central Board of Health (CBH).

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Governmenta</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWI</td>
<td>MOLGRD</td>
<td>EPA</td>
<td>MOH</td>
<td>RDC</td>
<td>Municipalities(3)</td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulationb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management(2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Responsible** • Involved • Not involved

(1) Municipalities are included under Regional Government as they existed before the creation of the Regional Government system and they have maintained their historic direct relations with Central Government.

(2) International entities play a role in these functions to support Guyana in achieving its poverty reduction targets.

(3) NDCs.
The management of sewage sludge is also monitored by the MOLGRD and the Ministry of Health through the FSAIs. Collection is carried out through a service supplied by private companies.

EPA regulates industrial waste waters. Water treatment for domestic use is monitored by the GWI for those houses that also have access to a sewerage system.

**Platforms for coordination between stakeholders**

A memorandum of understanding was recently signed between the Ministry of Health and the GWI in order to share information on water quality and water borne diseases.

The building approval procedure also provides openings for association between various stakeholders, including the private sector, in order to achieve adequate management of sewage sludge and domestic waste water.

The CBH coordinates public health programmes (including environmental health).

### 3.2 Collection, treatment and sanitary disposal of solid waste

#### Division of main functions between institutions

- The main functions of governance, regulation and service provision are not clearly divided. The main stakeholders are the Ministry of Health and the MOLGRD (including the respective municipal authorities and NDCs), EPA and the Ministry of Housing and Water, amongst other entities and ministries.
- Around 10 RDCs, six municipal authorities and 129 NDCs have been established since 1980. The municipal authorities are responsible for the collection, transportation and disposal of municipal solid waste, for street cleaning and the cleaning of public spaces, water supplies, environmental health, street paving, markets, slaughterhouses and maintaining recreational spaces. The RDCs execute the functions delegated by central government, ministries or other entities.
- EPA plays a regulatory function for the management of solid waste. The Ministry of Housing and Water (MoH&W) is responsible for urban settlements or groups of houses, where planning includes the consideration of solid waste management.

#### Critical aspects of the institutional framework

1. GWI has reported that users abuse the sewerage system, replacing parts of the infrastructure with materials that offer unhealthy alternatives.
2. Deficient environmental sanitation is associated with inadequate sanitation design and a lack of planning for domestic waste water disposal.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy development</td>
<td>EPA</td>
<td>MOH</td>
<td>MOLGRD</td>
<td>MOH&amp;W</td>
<td>RDC</td>
<td>Municipalities(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation(2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management(3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Responsible
- Involved
- Not involved

(1) Municipalities are included under Regional Government as they existed before the creation of the Regional Government system and they have maintained their historic direct relations with Central Government.

(2) International entities play a role in these functions to support Guyana in achieving its poverty reduction targets.

(3) NDCs.
Platforms of coordination

- The Association for Advice on the Management of Solid Waste offers advocacy services to institutions involved in solid waste management and raises awareness of waste management issues.
- The CBH also offers a platform for association and communication between various stakeholders.

Critical aspects of the institutional framework for solid waste management

1. Lack of human resources both in terms of quantity and training and education. The lack of awareness of solid waste management and its importance begins at the highest levels of government.
2. Monitoring and enforcement are not taking place, especially by the EPA, which is responsible for some of these tasks. The FSA completes some of these inspections, but they are generally very limited.

3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

- The Ministry of Health has a Health Education Department that is responsible for promoting health and good hygiene practices. The City Council Public Health Department also promotes good hygiene practices and responsible environmental practices.

- The EPA is working with the Guyana Citizen’s Initiative to evaluate water, sanitation and health in the community, from a highly participatory perspective. Similarly, a water, sanitation and hygiene project has been developed for region three in association with the Ministry of Health and the Ministry of Housing and Water, with Department for International Development (DFID) backing.

- Between 2005 and 2006, Oxfam carried out a pit latrine project for rural communities including demonstrations of how to build these.

- Hygiene and environmental sanitation education was introduced in 20 primary schools as part of the Amazon project, in association with the Ministry of Health Environmental Health Unit. UNICEF also works with the Ministry of Education to develop family education in schools, including the promotion of healthy lifestyles.

Critical aspects in hygiene promotion and sanitation education

1. Information on environmental health related disease is not being made available through public education and awareness raising exercises.
2. Education and awareness raising programmes do not focus clearly on the safe management of human excreta, solid waste and safe final disposal of excreta. Hygiene promotion practices amongst health workers are limited to messages on the need to boil drinking water for children aged less than five-years-old.
4. Funding

There have been no calculations of the funding required to achieve the MDGs. However, estimates provided for similar countries suggest that current spending tendencies will fall significantly short of required spending on infrastructure and other requirements. New injections of funds are needed to increase productive capacity.

Policies have been developed for subsidies, cost recovery and tariffs for hygiene promotion and sanitation education; the disposal of excreta; the treatment of waste water; and the collection, treatment and sanitary disposal of sewage sludge and solid waste.

The sector is funded from local land rates and a 1% subsidy from central government. Municipal income does not even cover recurrent costs and municipal and city councils depend on central government for budget subsidies and capital donations for maintenance and other essential works.

Planning in the solid waste sector is deficient as it is included in Government accounts as a separate budget item.

5. Monitoring and evaluation

National indicators and information systems for the sector

National indicators for sanitation include ‘connection to the sewerage system or a septic tank’ and ‘access to solid waste collection and disposal’.

There is no data management system to monitor effective operation of the sector. However, the Bank of Guyana is the main coordinator and producer of economic statistics, including national accounts.

The IDB has given the government a loan of US$3.5 million to reinforce the Bank of Guyana and the statistical capacity of the ministries in order to create and manage a social database.

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to fulfill the MDGs / National Targets (millions of US$)</th>
<th>Estimated investments for the next 5 years (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td>N.A.</td>
<td>7,344(1)</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td>7,200</td>
<td>218(1)</td>
</tr>
</tbody>
</table>

N.A. – Not Available
(1) Public Sector Investments for 2008 and 2009.
Note: The strategic plan being produced will provide a great deal of information on the sector, above all on liquid residues.
Sources: PRSP, PAHO.

Critical aspects of sanitation funding

1. Insufficient funding from local land rates due to low collection rates and the low value of properties in the sector.
2. There is no transparency of accounts and private investors are therefore not interested in running the risk of investment.
Sanitation within the analytical tools

Increased access to improved sanitation facilities is generally seen as one of the main ways to relieve poverty. Both liquid and solid waste is considered damaging to the environment in terms of environmental pollution.

The National Development Strategy shows the impact of inappropriate environmental and natural resource management practices on human health and the environment. The contamination of both surface waters and ground waters has a serious impact on fishing resources in coastal and marine waters and the toxins go on to enter the human food chain.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

The Municipality of Georgetown has sufficient employees for solid waste management, while the other five municipalities have only 43 formal workers - 0.5 employees per 1,000 inhabitants.

Municipal governments find it difficult to recruit trained staff and to provide financial support for the programmes. Deficient infrastructure, poor governance and management capacity and the lack of public confidence are challenges shared by all municipal authorities.

All university graduates are aware of the various aspects of sanitation management and are trained in related fields. Students have completed important research relating to the management of solid and liquid waste, including waste water treatment.

Technologies needed to achieve the MDGs/national targets

Private recycling companies operate on a small scale and the government of Guyana is currently working on the first sanitation landfill site. This site will include waste separation services, gas collection and a recycling station will be established adjacent to the sanitation landfill site. There is a lack of knowledge on the suitable location, construction, operation and maintenance of latrines.

Critical aspects of capacity in the sector

1. The effectiveness and efficiency of services depend a great deal on the current level of funding in the sector.
2. There is high staff turnover, which generates a constant loss of improved capacity and a the knowledge base.
Section C: Recommendations

1. Policies and strategies
   • The strategic sanitation plan must deal with the issue of liquid waste and define institutional functions and responsibilities. Special attention must be given to monitoring and evaluation components.
   • There must be standardised formats for reports and variables in order for all stakeholders to interpret them in the same way. A single entity must be responsible for compiling and disseminating information between stakeholders in the sector.

2. Legal Framework
   • Current legislation must be revised in order to evaluate overlaps, gaps and needs for updating. The functions of various organisations must be clearly defined.
   • Entities must ensure that standards have sufficient basis to become laws.

3. Institutional framework
   3.1 Hygiene promotion, excreta disposal, management of sewage sludge and treatment of domestic waste water
      • Information, education and communication to increase awareness of the issue amongst citizens.
      • Train users to apply the new standards of the Guyana National Bureau of Standards.
   3.2 Solid waste management
      • A legal unit must be established, and EPA staff must be trained in the appropriate legal procedures.
      • Government officials must be trained in sanitation matters.
   3.3. Hygiene promotion and sanitation education
      • Indicators must be prepared for the monitoring of environmental health, and information collection sheets must be made uniform.
      • There must be increased awareness of standards on the issue among the general public. Public outreach programmes should improve in situ sanitation practices.

4. Funding
   • A framework is needed to guarantee private sector participation, along with the formation of a more productive alliance with the private sector under a public sector initiative.
   • The sector framework must include incentives such as concessions, tax reductions, etc.

5. Monitoring and evaluation
   • A baseline must be established for the measurement of performance indicators, which means tools such as computers, networks and trained staff will be needed.
   • Community participation in environmental monitoring must be revived.

6. Capacities
   • Urban Development Programme recommendations on tax systems must be implemented in order to improve municipal income and offer better salaries to employees in order to attract better qualified staff.
   • Participatory mechanisms are necessary to strengthen the functions of the regulatory bodies.
Successful experience: the Guyana Amazon Programme

The Guyana Amazon Programme began with government contributions in 1994. UNICEF funded the project in order to try to level the disparity between social development and improved living conditions of children and women in the Amazonian region of Guyana. The sanitation component of the programme concentrates on the construction of improved ventilation latrines in regions 1 and 9. During the 2000-2002 period, a total of 41 latrines were built in markets, infant and primary schools and 22 family homes. A total of approximately 9,962 people benefited from the scheme.

One of the main outcomes of this first phase was the preparation of a WUN kit (a Wapishana term meaning ‘water’). The kit includes educational materials in Wapishana and English, with illustrations by children and adults of the Deep South Rupununi zone, designed to serve as a learning guide in strengthening local capacity for the management of water resources and the improvement of environmental sanitation.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBH</td>
<td>Central Board of Health</td>
</tr>
<tr>
<td>DFID</td>
<td>Department for International Development</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agencies</td>
</tr>
<tr>
<td>ERP</td>
<td>Economic Recovery Plan</td>
</tr>
<tr>
<td>GWI</td>
<td>Guyana Water Incorporated</td>
</tr>
<tr>
<td>IDB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOH&amp;W</td>
<td>Ministry of Housing and Water</td>
</tr>
<tr>
<td>MOLGRD</td>
<td>Ministry of Local Government and Regional Development</td>
</tr>
<tr>
<td>NDC</td>
<td>Neighbourhood Democratic Council</td>
</tr>
<tr>
<td>NDS</td>
<td>National Development Strategy</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan-American Health Organisation</td>
</tr>
<tr>
<td>RDC</td>
<td>Regional Democratic Council</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
</tr>
</tbody>
</table>

References


GINA. 2006. Plan de Cinco Años para la Independencia Financiera de las Municipalidades.


Guyana Poverty Reduction Strategy Paper. Disponible en línea en:

Guyenterprise. (2005). Normas de Protección Ambiental 2000 sobre el Manejo de Ruidos, Manejo de Residuos Peligrosos, Calidad del Aire y el Agua. OPA.


Laws of Guyana. Decree on Municipal and District Councils. Cap 28:01


ma del Sector de Agua de Guyana. (PSADG).


grave Macmillan. NY.


Acknowledgements

Dr. Teofilo Monteiro – Environmental Health Adviser, WHO/PAHO, Guyana.

Dr. Curtis Lefleur – UNICEF Guyana.

Ms. Saudia Rahat – Consultant.

Ms. Lalita Sohail – MICS3 Dissemination Coordinator, UNICEF, Guyana.

Mr. Aubrey Wiggins – Division Sub-Director, GWI.

Mr. Hubert Urlin – Director, Municipal Department of Solid Waste Management.

Mr. Parmanand Chandramuth – Project Officer, Governability and Municipal Management Programme.

Mr. Ronald Rajnarine – Project Director, IDB Programme, GWI.

Ms. Johnson – Secretariat, Central Board of Health.

Ms. Stacey Phillips – Environmental Officer, EPA.
Section A: Overview

1. Fulfilment of the sanitation goals

- Haiti lags considerably behind the rest of the region of Latin America and the Caribbean in terms of indicators. This backwardness in all levels of basic sanitation is characterised by a very low rate of solid waste collection (around 30%); an enormous deficit in terms of equipment for the final disposal of excreta; marked institutional fragility; and an obsolete regulatory framework out of step with the current situation. The targets set include 70% coverage for the collection of solid waste; 69% of the population with access to a latrine; updating and adaptation of the regulatory framework; institutional strengthening; the identification of sites and reconditioning of infrastructure (sanitary dump, etc.).

- The strategy will be implemented with funding from the National Budget and international funding bodies (USAID, the World Bank and IDB), promoting activities linked to basic sanitation and achievement of both MDGs and national targets.

- The funding and launch of this strategy has allowed for: road cleaning and refuse collection in the metropolitan area (US$ 6 million); reconditioning of the tip area (US$ 8 million); the purchase of materials and equipment (US$ 2.3 million); refuse collection (US$ 5 million); a waste management plan (compost) at Carrefour Feuilles (US$ 1.23 million); the Social Pacification programme (US$ 2 million); a basic sanitation programme in Cité Soleil (US$ 715,000); preparatory studies for the location of dumps in Jacmel/Cap Haitien/Gonaïves/Saint Marc (US$ 370,000); sanitation in the city of Jacmel (US$ 3.9 million); and sanitation in Cité Soleil (US$ 350,000).

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(^{(a)})</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3,664</td>
<td>3,674</td>
<td>23.3</td>
<td>62.0</td>
<td>5.0</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>5,494</td>
<td>5,511</td>
<td>30.0</td>
<td>65.0</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,158</td>
<td>9,186</td>
<td>27.0</td>
<td>63.5</td>
<td>5.0</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M.T. – National Target. \(1\) Incidence of acute diarrhoea illness in children aged under 5-years-old. \(2\) In terms of delayed growth in children aged under 5-years-old. \(3\) In children aged under 5-years-old. \(4\) Human Development Index. \(5\) According to national criteria.

N.A. – Not Available

(\(a\)) In thousands of inhabitants.

Sources: EMMUS 2007, IHSI 2003 and UNDP.
2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

**Strengths**
- Political will for intervention in the sector.
- Existence of consensus at the highest State level.
- Proven interest of the private sector and financial entities.

**Weaknesses**
- Absence of cost recovery mechanism.
- Lack of systems maintenance.
- Lack of measures to provide incentives and encourage private-sector intervention.
- Fragility of awareness raising and education programmes.
- Insufficient trained technicians.
- Lack of monitoring.

**Inequities in access, quality of service and appropriate use**

Low levels of coverage in basic sanitation in rural and periurban areas and poor waste disposal practices encourage the development of disease. Moreover, insufficient investment in the sector does not allow for significant improvement of this situation.
Sección B: Resumen de la situación del saneamiento

1. Policies and strategies
Sector policies and strategies exist on: hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water. These sector policies are linked to strategies on poverty reduction, the disposal of excreta, environmental policy and economic development policies.

2. Legal Framework

- **Hygiene promotion and sanitation education**
  Hygiene Code (revised, to be ratified).

- **Disposal of excreta**
  Environmental Code (in progress, 2007) and Hygiene Code (revised, to be ratified).

- **Collection, treatment and sanitary disposal of sewage sludge**
  Environmental Code (in progress, 2007) and Hygiene Code (revised, to be ratified).

- **Collection, treatment and sanitary disposal of solid waste**

- **Monitoring of contamination in water catchment areas**

- **Reuse of solid waste**

No specialised regulation has been produced for the treatment of waste water and the reuse of human excreta, sewage sludge and municipal waste water and solid waste.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

The Ministry of the Environment (MDE) and the Ministry of Public Health and Population (MSPP) exercise governance and regulation functions, while the Ministry of Public Works, Transport and Communications (MTPTC) is in charge of service provision. These institutions fulfill their functions thoroughly. Regional boards are the main platform for coordination between institutions.
3.2 Collection, treatment and sanitary disposal of solid waste

The Ministry of the Environment is in charge of regulation of solid waste, while the Ministry of Public Works and the Ministry of the Interior are responsible for service provision. These institutions fulfil their functions thoroughly. Regional boards are the main platform for coordination between institutions.

3.3 Hygiene promotion and sanitation education

Hygiene promotion and sanitation education programs exist in the country, led by the Ministry of Public Health in the Ministry of the Environment and some NGOs. The impact of these programmes has not yet been evaluated.
4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td>73,542</td>
<td>N.A.</td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td>74,995</td>
<td>45,195</td>
</tr>
<tr>
<td>Sewage sludge management</td>
<td>57,052</td>
<td>11,104</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td>19,500</td>
<td>48,500</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td>205,000</td>
<td>118,500</td>
</tr>
<tr>
<td>Hospital solid waste management</td>
<td>2,000</td>
<td>1,250</td>
</tr>
</tbody>
</table>

N.A. – Not Available
Sources: MTPTC, MDE and MSPP.

Policies have not been developed for: subsidies, cost recovery and tariffs for hygiene promotion and sanitation education; the disposal of excreta; the treatment of waste water; and the collection, treatment and sanitary disposal of sewage sludge and solid waste. There are no financial monitoring mechanisms.

**Critical aspects of sanitation funding**

1. Funding policies and mechanisms have been neglected within the sector.
2. There are no tariffs for sanitation services.

5. Monitoring and evaluation

The number of inhabitants with access to a latrine, and the volume of waste disposed of in dumps are the main indicators used in the sector. The data collection system is known as the Water and Sanitation Monitoring System.

**Critical aspects of sanitation monitoring and evaluation**

1. Follow up is not ongoing and has been neglected.
2. There is no monitoring.

6. Capacities

The country is aware that existing human resources (governmental institutions, universities, training and research centres, and the private sector) are insufficient in terms of the appropriately trained human resources required in order to achieve the MDGs and national targets in sanitation, hygiene promotion and sanitation education.

Technologies are available to cover: refuse management and treatment; sanitary landfills; incineration, compost production; the construction of latrines and others.
Section C: Recommendations

1. Policies and strategies
   - A Strategic Sanitation Plan must be produced.

2. Legal Framework
   - Strengthening of the legal framework and accompaniment measures.
   - Improve lobbying mechanisms amongst members of Parliament and mobilise users and the general public.

3. Institutional framework

   3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
   - A single institutional structure is needed for the sanitation sector.

   3.2 Solid waste management
   - Municipal authorities need to be strengthened in order to provide adequate management of solid waste.
   - Promote the creation of public-private joint ventures.

4. Funding
   - Encourage the mobilisation of national and international funds to the sector.
   - Develop a tariff system.

5. Monitoring and evaluation
   - Strengthen the monitoring and evaluation system.

6. Capacities
   - Consolidate mechanisms for the training of sanitation technicians.
   - Launch the application of appropriate technologies in the sector.

Critical aspects of capacity in the sector

1. There is no continuity in the training of technicians within the sector and existing staff have not been evaluated.
2. Funding for capacity training is insufficient and there is an ongoing brain drain effect.
Successful experience: Projects for solid waste collection

A clear improvement has been seen in the collection and disposal of refuse with the installation of adapted rubbish bins (metal containers). This project was funded by the French Development Agency and the IDB with technical support from the Ministry of Public Works. A group of awareness raising agents contributed to improving environmental health in the streets. There was active private sector participation, and the media supported the experience mainly concentrating on awareness raising. Meanwhile, the Government encouraged the creation of small businesses in the collection of organic waste and compost production. The most noteworthy projects include a pilot project by Carrefour Feuilles funded by the UNDP with technical support from the Ministry of the Environment; and the composting project at Quisqueya University.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFD</td>
<td>Agence Française de Développement</td>
</tr>
<tr>
<td>EMMUS</td>
<td>Enquête Mortalité, Morbidité, et Utilisation des Services</td>
</tr>
<tr>
<td>IDB</td>
<td>Interamerican Development Bank</td>
</tr>
<tr>
<td>IHSI</td>
<td>Institut Haitien de Statistique et d’Informatique</td>
</tr>
<tr>
<td>MDE</td>
<td>Ministère de l’Environnement</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MICT</td>
<td>Ministère de l’Intérieur et des Collectivités Territoriales</td>
</tr>
<tr>
<td>MSPP</td>
<td>Ministère de la Santé publique et de la Population</td>
</tr>
<tr>
<td>MTPTC</td>
<td>Ministère des Travaux Publics, Transports et Communications</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
</tbody>
</table>

References

Public Hygiene Code (revised, to be ratified).
Environmental Code (in progress).
EMMUS IV 2005-2006
National Health Sector Strategic Plan.

Acknowledgements

This report was prepared by the Interministerial Commission made up of the Ministry of Public Works Transport and Communications (Jean Fritz Chamblin); the Ministry of the Environment (Astrel Joseph); and the Ministry of Public Health and Population (Dr. Jocelyne Pierre-Louis). Collaboration was provided by the PAHO/WHO (Frantz Metellus) and the IDB (Marie Alice D. Jean).
Section A: Overview

1. Fulfilment of the sanitation goals

- Waste water treatment infrastructure coverage is 15% nationally. The Poverty Reduction Strategy (ERP) target is 50% coverage, but achievement of this will depend on political will and the availability of human and financial resources for the construction and operation of new wastewater treatment plants, at least in the main cities of Honduras.

- Coverage in drainage and latrines – a system as yet unsustainable in the country – stood at 76.9% nationally for 2006. The ERP sets a target of 95%, a level difficult to accomplish because of the financial requirements and capacity available in the country. The disposal of excreta, through sewerage systems and latrines stands at 88.5% although there is no consideration of the waste water treatment.

- There has been some analysis of projects underway and the projects required in order to fulfil the MDGs.

- Funding must be found from national GDP in order to close the gap between existing services and MDG targets. Progress is being made in urban areas with the installation of purification plants, while a healthy homes and schools programme (ESCASAL) is under way in rural and periurban areas.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Modernisation of the sector has begun. However, four years after implementation of the water and sanitation framework legislation, institutions are still weak and the strategies and policies designed are awaiting discussion and approval by the National Council for Water and Sanitation (CONASA) in the coming 18 months.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3,752,579</td>
<td>8,894,975</td>
<td>73.6 95.0</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>3,784,373</td>
<td>4,759,970</td>
<td>76.4 95.0</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>7,536,952</td>
<td>4,135,005</td>
<td>75.1 95.0</td>
<td>48.2</td>
<td>27.9</td>
</tr>
</tbody>
</table>

N.T. – National Target (1) In terms of delay of growth in children aged under 5-years-old. (2) In children aged under 5-years-old. (3) Human Development Index. (4) According to national criteria. N.A. – Not Available (a) In number of inhabitants. Source: INE.
• The institutional roles are clear, as service provision has been separated from regulation and technical support, and from the formulation of sector policies and strategies.

• A plan for the integrated management of solid and liquid waste has been implemented - including physical and ecological considerations for hazardous waste - with community, inter-agency and intersector participation.

Inequities in access, quality of service and appropriate use

There has been no monitoring of access to appropriate sanitation systems in marginal areas and amongst indigenous populations.

There is inequitable access to a water supply for unprotected sectors in peripheral neighbourhoods around cities, and residents can pay up to 100 times the minimum tariff for water supplies per cubic metre for deliveries from private water transporters. Changes to the system require both drinking water and sewerage treatment in these areas of cities.

Rural areas have self-administration through 5,000 Water Administration Boards; but there is a lack of effective State accompaniment to ensure the upkeep of sanitation systems, mainly latrines.

Section B: Summary of the sanitation situation

1. Policies and strategies

• No sector policies and strategies are in place on: hygiene promotion and sanitation education; the disposal of excreta, the collection, treatment and sanitary disposal of sewerage sludge and solid waste; and the treatment of waste water.

• None of the above policies is considered within the poverty reduction strategy framework. However, this mechanism is being revised and there should be sections on future actions to be completed.

Critical aspects of sanitation policies and strategies

1. Very slow progress toward implementing policies.
2. Financial policy is not clearly defined.
2. Legal Framework

» Hygiene promotion and sanitation education
Health Code.

» Disposal of excreta
Technical Standard for the control of discharge into sewerage systems and receiving bodies.

» Waste water treatment
General Environment Law and Technical Standard for Discharges.

» Collection, treatment and sanitary disposal of solid waste
Solid Waste Regulation.

» Monitoring of contamination in water catchment areas
General Environment Law.

No special regulations have been developed for the collection, treatment and sanitary disposal of sewage sludge - although the General Environment Law is applicable - nor for the reuse of human excreta, sewage sludge, municipal waste water and solid waste, although Bills have been drawn up on these matters.

Critical aspects of the legal framework
1. The law is not always effectively fulfilled, sometimes due to poor supervision and lack of sanctions.
2. There are different interpretations of the laws and the appropriate stakeholders are not held responsible in certain cases.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

The CONASA Technical Secretariat, with its subsidiary Department of Sanitation Drainage-Management of Drainage Systems (SANAA) is responsible for managing aqueducts and proposing drinking water and sanitation sector policies. Municipal authorities are responsible for solid waste and drinking water systems and sanitation. The Regulatory Entity of the Drinking Water and Sanitation Systems (ERSAPS) is responsible for monitoring and regulating drinking water and sanitation services.

<table>
<thead>
<tr>
<th></th>
<th>National Government</th>
<th>Regional Government</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONASA</td>
<td>Ministry of Health</td>
<td>SERNA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ERSA</td>
<td>ERSAPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SANAA</td>
<td>Municipalities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local Government</td>
<td>Private sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NGOs</td>
<td>User committees</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Users</td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>Regulation</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Project implementation</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Monitoring</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

- • Responsible
- • Involved
- • Not involved
The Water Boards are in charge of the administration, operation and maintenance of the resource in rural areas. The Natural Resources and Environment Office (SERNA) lobbies for protection of the environment and the fulfilment of laws, and the Ministry of Health for the health of people and the environment.

Each institution fulfilled its function and, where aqueducts exist, the Autonomous National Service of Aqueducts and Drainage (SANAA) works specifically on the treatment of waste water from a percentage of homes in the capital of the country.

**Platforms for coordination between stakeholders.**

The main openings for coordination are the Honduras Water Platform (PAH), the Honduras Water and Sanitation Network (RASHONI), the Water and Sanitation Sector Board and the Honduras Association of Water and Sanitation Councils (AHJASA).

**3.2 Collection, treatment and sanitary disposal of solid waste**

Municipal authorities are responsible for managing solid waste, drinking water and sanitation systems. The Ministry of Health lobbies for human and environmental health and SERNA for environmental protection and legal fulfilment. The SANAA (Sewerage Department) manages drainage systems in Tegucigalpa as technical secretary of CONASA, when solid waste management affects dams and drainage networks.

The Inter-American Association on Sanitary and Environmental Engineering (AIDIS) is an important platform in the country.

### Critical aspects of the institutional framework

1. There is a legal authority over offenders.
2. The operational plan is designed difficult to fulfil.

### Critical aspects of the institutional framework for solid waste management

1. Municipal authorities have insufficient capacity for solid waste management due to the lack of awareness of hygiene aspects amongst the population.
2. Solid waste management is not considered a priority. Institutionality is weakened, as the responsibility all falls to municipal authorities, reducing intervention in the sector to a single actor.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

Honduras runs the Healthy Homes and Schools programme (ESCASAL) and others with similar aims under the Ministry of Health, SANAA and the Ministry of Education. Their impact is mainly in the rural area, where they have been employed with greater regularity.

Critical aspects in hygiene promotion and sanitation education

1. The ESCASAL programme is not used as an official criterion for other initiatives in the same area.
2. Hygiene and sanitation education policies are not applied as rigorously in urban areas.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (thousands of US$)</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>241,815</td>
<td>128,143</td>
</tr>
<tr>
<td>Rural</td>
<td>31,381</td>
<td>16,845</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>222,746</td>
<td>123,748</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – Not Available

(1) According to the August 2007 sector plan (ERP), education promotion and sewage sludge management are not considered separately.

Source: ERP.

Policies have been developed for subsidies, cost recovery and tariffs for the collection, treatment and sanitary disposal of solid waste and for the disposal of excreta and treatment of waste water to some extent. Such policies have not been planned for health promotion and sanitation education and the collection, treatment and sanitary disposal of sewage sludge. Financial monitoring mechanisms are in place.

Critical aspects of sanitation funding

1. Solid waste disposal quotas are paid once a year within local land and property tax, and there is great resistance to payment due to the poor services offered by responsible companies and institutions.
2. Equitable payment for the maintenance of treatment plants has not been established as part of the tariff.
5. Monitoring and evaluation

The Rural Aqueduct System (SIAR), the National Information System on Water and Sanitation in Honduras (SINAPSH) and the National System of Municipal Information (SINIMUN) have been created. Sanitation has only been included in mid-level analysis.

**Critical aspects of sanitation monitoring and evaluation**

1. No thorough fulfilment of the laws.
2. Institutional weakness due to a lack of economic capacity to recruit staff for monitoring and control.

6. Capacities

**National reflection on human resources to achieve the MDGs/national targets**

Staff training is discussed whenever policies, strategies or investment plans are dealt with. However, there is no plan to monitor the achievement of training projects, like the diploma courses on environmental aspects aimed at mid-level officials in municipal authorities provided by universities. Informal training also occurs in hygiene campaigns. No links have yet been formed between these programmes in order to achieve the MDGs.

**Technologies needed to achieve the MDGs/national targets**

Hygiene promotion technologies are available through, SANAA technicians, NGOs and the Ministry of Health. Institutional weakness hampers achievement of the MDGs, as investments are not channelled through or approved by CONASA.

**Critical aspects of capacity in the sector**

1. Insufficient installed capacity.
2. Lack of cooperation and follow up by stakeholders.

**Section C: Recommendations**

1. **Policies and strategies**
   - Activate the Drinking Water and Sanitation Sector Board.
   - Strengthen the CONASA Council of Directors.

2. **Legal Framework**
   - Establish the Drinking Water and Sanitation policy.
   - Establish technical-administrative regulation for CONASA.
3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
- A collegiate body is required to cover these issues.
- Approval of the General Water Resources Law.

3.2 Solid waste management
- 1. Greater training.
- 2. Trials of new and improved tariff structures.

4. Funding
- Definition of a government financial policy to cover all the modernisation issues in the sector.
- Strengthen the current institutionality economically in order to increase installed capacity in the country.

5. Monitoring and evaluation
- Training on the advantages of monitoring at all levels.
- Activate complimentary information systems.

6. Capacities
- Appropriate institutional frameworks exist under the drinking water and sanitation framework law and other State modernisation tools.
- Existing institutional capacity must be increased.

Successful experience: Healthy Schools and Homes Project

Joint work between SANAA and UNICEF from 1996, led to the ESCASAL project which arose in response to the statement that the mere implementation of a sanitation services infrastructure alone would not necessarily lead to favourable change in community hygiene and environmental health practices.

Results indicate that under the project: communities experienced favourable changes in hygiene and sanitation habits; indices of illness caused by poor water use reduced; there was greater female participation in project activities; community organisation was strengthened and citizen awareness improved; and healthy hygiene practices were disseminated through the ‘visitor committees’ made up of community members.

The most important lessons learned included: community participation is essential in order to ensure the sustainability of the intervention; teaching materials must be adapted to the community context; the community can be stimulated by the possibility of accessing the service; community-based technicians work best; female participation is necessary as an equity criterion; and that children should included as the target audience, and their impact can be used as a form of improving attitudes and skills.
Notes

1. Current capacity in the sector is not sufficient to meet requirements and achieve the goals.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHJASA</td>
<td>Asociación Hondureña de Juntas de Agua y Saneamiento</td>
</tr>
<tr>
<td>AIDIS</td>
<td>Inter-American Association of Sanitary and Environmental Engineering</td>
</tr>
<tr>
<td>APS</td>
<td>Agua Potable y Saneamiento</td>
</tr>
<tr>
<td>CONASA</td>
<td>Consejo Nacional de Agua y Saneamiento</td>
</tr>
<tr>
<td>DIAT</td>
<td>División de Investigación y Análisis Técnico</td>
</tr>
<tr>
<td>ESCASAL</td>
<td>Escuela y Casa Saludable</td>
</tr>
<tr>
<td>ERP</td>
<td>Estrategia de Reducción de la Pobreza</td>
</tr>
<tr>
<td>ERSAPS</td>
<td>Ente Regulador de los Servicios de Agua Potable y Saneamiento</td>
</tr>
<tr>
<td>FHIS</td>
<td>Fondo hondureño de Inversión Social</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PAH</td>
<td>Plataforma de Agua de Honduras</td>
</tr>
<tr>
<td>RASHON</td>
<td>Red de Agua y Saneamiento de Honduras</td>
</tr>
<tr>
<td>SANAA</td>
<td>Servicio Autónomo Nacional de Acueductos y Alcantarillados</td>
</tr>
<tr>
<td>SERNA</td>
<td>Secretaría de Recursos Naturales y Ambiente</td>
</tr>
<tr>
<td>SIAR</td>
<td>Sistemas de Acueductos Rurales</td>
</tr>
<tr>
<td>SINAPSH</td>
<td>Sistema de Información Nacional en Agua Potable y Saneamiento de Honduras</td>
</tr>
<tr>
<td>SINIMUN</td>
<td>Sistema Nacional de Información Municipal</td>
</tr>
<tr>
<td>UNAT</td>
<td>Unidad de Análisis Técnico</td>
</tr>
</tbody>
</table>

References

Documento de Estrategia de Reducción de la Pobreza.
Documento del Desarrollo Sectorial de Agua Potable y Saneamiento.
INE. Censo Nacional de Población del Instituto de Estadística.
Plan Estratégico de Modernización del sector Agua Potable y Saneamiento (PEMAPS).
SANAA/BM workshop held in September 2007.
Plan Sectorial del Programa de Inversiones.
Various studies by DIAT/SANAA.

Acknowledgements

Coordination: SAANA Technical Analysis and Research Department, (DIAT/SANAA/CONASA). The support of organisations such as Agua Para el Pueblo (APP), AHJASA, Presidential Committee on the Modernisation of the State (CPME), CONASA, ERSAPS, FHIS, Sector Modernisation Programme (PROMOSAS)/World Bank, Water and Sanitation Programme (WSP/World Bank), Public Health Office (SS), Office of the Presidency Technical Support Unit (UNAT), Swiss Cooperation for Development (COSUDE), RASHON Executive Office, PAHO, Central America Regional Network for Water and Sanitation (RAS-CA), Center for the Study and Control of Contaminants (CESCCO) and the United Nations Children’s Fund (UNICEF) was gratefully received.
Section A: Overview

1. Fulfilment of the sanitation goals

- Data from WHO indicate the percentage of the population with sustainable access to improved sanitation was 80% in 2004. This percentage stands at 91% in the urban sector, while it is only 69% in the rural sector.

- Current low levels of waste water treatment and disposal mean that domestic waste water causes serious contamination in surface and ground waters. Current waste water disposal systems do not contribute much in terms of treatment, and the cost of good mechanical technological systems (activated sludge, oxidation troughs, etc.) is extremely high.

- Approximately 2,500 tonnes/day of waste is generated across the island. Around 72% - approximately 1,300 tonnes/day – of this is collected. There is a hybrid collection service operated by public and private service providers. The State is the only provider of solid waste management services in some water catchment areas.

- Sanitation and hygiene are not currently included as separate subjects on the primary and secondary school curricula. No specific attention is given to the significance and importance of hygiene and sanitation, the role of the child and the consequences of inadequate hygiene and sanitation practices.

- It is highly possible that Jamaica will exceed the MDGs and the ministries and agencies involved have set very ambitious national goals.

- Many of the worst affected rural areas and marginal urban communities are still not getting the level of attention they need, as there is often confusion between local and national institutions on roles and responsibilities for urban development, the cleaning of streams and drains, solid waste management, and city planning and development.

- In 2005, the Government of Jamaica started to formulate a National Sanitation Policy with a Special Multi-disciplinary Sanitation Unit to promote it. The objective was to unite existing sanitation policy elements into a single policy while solving problems in the sector that are not covered by any existing policy. The policy is still being negotiated and it has yet to be adopted and implemented as a national policy by Government.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water (%)</th>
<th>Solid waste indicators</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>1'372,280</td>
<td>1'558,000</td>
<td>91.0 93.0 N.A. N.A. 75.0 N.A. N.A. 29.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1'266,720</td>
<td>1'190,000</td>
<td>69.0 82.0 N.A. N.A. 68.0 N.A. N.A. 25.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2'639,000</td>
<td>2'748,000</td>
<td>80.0 88.0 80.0 90.0 72.0 75.0 20.0 19.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.T. – National Target
(1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) According to national criteria.
N.A. – Not Available
(a) In number of inhabitants.
Sources: Planning Institute of Jamaica; UNStats.
• Some of the objectives are already covered in existing policies like the National Solid Waste Management Policy and the Water Sector Policy and some of the strategies are being implemented. When the Sanitation Policy is totally implemented, Jamaica will achieve its national goals and, by extension, the MDGs.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

Strengths

• Clear identification of the problems in a documented form.

• Recognition that sanitation is a multidisciplinary/multisector matter related to housing, water supply, waste water disposal, solid waste management, the maintenance of streams and drains, healthcare, environmental management, poverty and education - all issues which currently present difficulties as no ministry or agency assumes total responsibility.

• Existence of policies focussed on many important aspects of sanitation.


• Urban sanitation is quite good.

Weaknesses

• There is no single policy covering all aspects of sanitation and allowing stakeholders to work toward the achievement of common goals.

• Confusion between local and national government institutions on roles and responsibilities in relation to urban development, the cleaning of streams and drains, solid waste management and town planning and development in cities.

• Insufficient cooperation between NGOs, CBOs, members of the community, local and national government institutions in identifying the roots of sanitation problems and contributing effective and lasting solutions better suited to communities.

• Implementation of water projects without due consideration of the related waste water disposal infrastructure.

• Less attention on rural sanitation.

• Insufficient understanding of the link between water supply, sanitation and hygiene, and its impact on poverty, school attendance, productivity and economic growth.

• Failure to resolve the problem of informal settlements (land invasions).

• Systems insufficient for resolving sanitation problems related to natural disasters (hurricanes and floods), that increase incidences of water borne diseases.

• Inadequate uptake, management, use, access and socialisation of information.

Inequities in access, quality of service and appropriate use

• The Kingston Metropolitan Area (KMA), rural areas and other cities show positive tendencies in access to water closets in homes, but it is clear that far greater access is available in urban areas - like KMA and other cities - than in rural areas.
• It is clear that there is still significant use of pit latrines in Jamaica, especially in rural areas. In some rural areas up to 56.5% of people use pit latrines or some other method of excreta disposal. Some of these are dependent on environmental factors such as inappropriate soil conditions or proximity to water sources that impede the use of toilets with septic tanks and soak aways or any access to drainage systems.

• Recognition of the fact that children spend a significant amount of time in school and that they learn many social skills in the school environment means the availability of adequate sanitation is very important for the wellbeing of children. In State schools, from preschool to secondary, pit latrines are still being used in significant numbers, especially in rural areas. Even though many schools are equipped with toilets and piped water, the infrastructure is frequently not in satisfactory conditions.

• As for solid waste, rural parishes, especially in the southeast and northeast of the country have low collection levels and this means some solid waste is eliminated in an inadequate manner. While the tourist areas of the northeast (Retirement) and the areas of the southeast/metropolitan areas (Riverton) have better collection coverage, there are areas that have irregular or no collection, resulting in the same problem. Marginal urban communities affected by hygiene-related illnesses still do not have the level of attention they need. In spite of this, the government has implemented community outreach programmes through entities such as the National Solid Waste Management Authority (NSWMA) in order to educate people on adequate techniques for the disposal of non-biodegradable materials, especially those – such as plastic - that present a health hazard when dumped or incinerated.

• Studies on other developing nations have shown the lack of access to water and sanitation largely affects women in poor homes, as they spend a large part of their day fetching water for their many tasks in the home.

• Data from the Ministry of Health for the 2002-2004 period indicated a general increase in the incidence of gastroenteritis during the five-year period, which could be attributed to a combination of a greater number of reported cases, or to greater problems with sanitation.

Section B: Summary of the sanitation situation

1. Policies and strategies

• Great importance is given to sanitation in public policy in Jamaica. However, inadequate inter-ministerial and inter-agency cooperation and limited resources prevent the effective implementation of these policies. The Water Sector Policy, the National Solid Waste Management Policy and the Poverty Eradication Policy approach some important aspects of sanitation.

• The Government of Jamaica also provides an Investment and Development Manual with guidance for waste management and infrastructure system providers and investors when systems are needed for excreta disposal. This document was produced through inter-ministerial and inter-agency cooperation.

Critical aspects of sanitation policies and strategies

1. The links between policies have not been well defined. Conflicts sometimes result in the suboptimal use of scarce resources. The long-term beneficial impact of some programmes are never understood.

2. There is no governing institution to ensure the implementation of policy.
• Other similar documents ‘Guidelines for dealing with squatters including prevention, eviction, relocation and regularisation’, Ministry of Lands and Environment (October 2004) and ‘Guidelines for Septage and Biosolids Management in Jamaica’ (June 2005).

• Policies and strategies are in place on: hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

2. Legal Framework

» Hygiene promotion and sanitation education
Public Health Law and National Solid Waste Management Act.

» Disposal of excreta
Public Health Law.

» Collection, treatment and sanitary disposal of sewerage sludge
Draft Guidelines for Septage and Biosolids Management in Jamaica.

» Waste water treatment
Public Health Law, Permits and Licences Regulations Natural Resources Conservation Authority (NRCA); and Trade Effluent and Sewage Effluent Standards.

» Collection, treatment and sanitary disposal of solid waste
National Solid Waste Management Act, Public Health Law, Permits and Licences Regulations NRCA.

» Monitoring of contamination in water catchment areas
Watershed Protection Act and the Natural Resources Conservation Authority Law.

» Reuse of:
  • Human excreta
    Guidelines for Septage and Biosolids Management in Jamaica.
  • Sewage sludge
    Guidelines for Septage and Biosolids Management in Jamaica.
  • Municipal waste water
    Public Health Law, Permits and Licences Regulations NRCA and Trade Effluent and Sewage Effluent Standards.
  • Solid waste
    National Solid Waste Management Act.

Critical aspects of the legal framework

1. Various regulations related to sanitation are in draft form waiting for approval and implementation.

2. Insufficient financial provision and staff for the effective implementation of all sanitation-related regulations.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

There is a division of functions, but the entities have dual roles in some cases. The Ministry of Health and the Environment, the Ministry of Housing and water and the local authorities are responsible for management. The National Environment and Planning Agency (NEPA), the Ministry of Health and the Environment, local authorities and the Office of Utilities Regulation (OUR) are responsible for regulation. The National Water Commission (NWC) and the private sector service are the service providers.

The functions are generally fulfilled, but there is room for improvement.

<table>
<thead>
<tr>
<th>Policy and strategy development</th>
<th>National Government</th>
<th>Regional Government</th>
<th>Local authorities</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEPA</td>
<td>Ministry of Health and Environment</td>
<td>Ministry of Water and Housing</td>
<td>NWC</td>
<td>OUR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Critical aspects of the institutional framework**

1. There is no ownership of the sanitation sector, which is weakening the effectiveness of the National Sanitation Task Force.

2. Users and NGOs are not always sufficiently involved in the development of policies, laws and the implementation of projects.

3.2 Collection, treatment and sanitary disposal of solid waste

There is some division of the main functions related to the collection, treatment and sanitary elimination of solid waste, but there are problems pending. Governance is under of the Office of the Prime Minister (Local Government Portfolio), the Ministry of Local Government, local authorities and the Ministry of Health and Environment. The NSWMA is responsible for regulation; establishing and monitoring fulfilment of legal standards for the storage, collection, transportation, treatment and elimination of solid waste. Local authorities, the Ministry of Health and the Environment and NEPA also play a role.

NSWMA is responsible for providing the service through regional companies and the private sector.

The platforms for coordination include the National Sanitation Task Force.
3.3 Hygiene promotion and sanitation education

The Ministry of Housing and Water, the Ministry of Health and Environment, NEPA and NSWMA are the key institutions involved in sanitation education and hygiene promotion.

The Ministry of Health and Environment implements an Environmental Health programme working on health promotion and disease prevention by monitoring environmental factors in order to ensure a safe and healthy environment.

The Rural Water and Sanitation Programme is an initiative of the Ministry of Housing and Water (funded by the IDB), that operates in association with the health authorities, NEPA and the NSWMA.

The Whitehorses, Botany Bay & Pamphret Development Benevolent Society has selected and trained several WASH promoters and has completed a survey on sanitation at home. The Mile Gully/Warwick Castle Development Benevolent Society, in collaboration with NEPA, the Rural Agricultural Development Authority (RADA), NSWMA, the Jamaica Agricultural Society (JAS) and the Social Development Commission (SDC), has trained community environment monitors, increased awareness and worked on sanitation in two primary schools, and has improved the quality of life and food handling.

Critical aspects in hygiene promotion and sanitation education

1. Community initiatives are not adequately funded and must be institutionalised in order to guarantee the sustainability of programmes.

2. Water, sanitation and hygiene must be integrated with disaster management as they are unfailingly linked. The sensitivity of the gender issue must also be considered in developing hygiene promotion and health education programmes.
The Gravel Hill Beneficent Society, in association with the Ministry of Education, has worked to improve access to sanitation installations at a local primary school.

The Five Star Development Beneficiary Society, in association with the Rural Water Programme, the Ministry of Agriculture and Lands, NSWMA, NWC, RADA, SDC, the Forestry Department, the Jamaica Environment Foundation, the Global Environment Facility (GEF) and the International Development Research Centre (IDRC), improved waste collection and the access to sanitation installations in several communities.

These programmes have had an impact, but interventions must be repeated in other communities.

4. Funding

According to a report from the IDB in 2004, the level of investment required to fulfill the national goals/MDGs stand at US$ 254 million for the disposal of excreta and US$ 514 million for municipal solid waste management.

Policies have been developed on: subsidies, cost recovery and tariffs for the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water. Such policies have not been planned for hygiene promotion and sanitation education.

The government has stated its commitment to the cost recovery mechanisms of the Jamaica National Environmental Plan (JANEAP, 1994:6). The Solid Waste Management Policy also covers the polluter pays principle and cost recovery mechanisms and incentives. The Water Sector Policy mentions a cost recovery mechanism sufficient to maintain good water supply and drainage services whilst also taking into account social considerations where necessary.

Some financial monitoring mechanisms are already in place. Office of Utilities Regulation (OUR) regulates tariffs for water supplies and drainage. The Office of the Prime Minister (Local Government Portfolio) monitors the use of property tax funds for waste collection and disposal services.

5. Monitoring and evaluation

National indicators and information systems for the sector

- Indicators used for the disposal of excreta include: the percentage of population with access to improved sanitation; the concentration of faecal coliforms in fresh water; the percentage of the population connected to drainage systems; the percentage of the population with access to toilets; and the quantity of sewage treatment plants that fulfil the NRCA sewage effluent standards.

- Indicators for solid waste management include the quantity of municipal and industrial solid waste generated; collection coverage; the amount of dangerous waste generated; road cleaning coverage; the amount of waste taken to the disposal site; the rate of recycling and reuse.

- There are several information systems in the Ministry of Health, NEPA, the Ministry of Water and Housing, NSWMA and the Water Resources Authority. But they are not necessarily interrelated. Agencies like the
Statistical Institute of Jamaica (STATIN) and the Planning Institute of Jamaica (PIOJ) collect and compile information on sanitation from various agencies and independent surveys including the Population Censuses and the Jamaica Survey of Living Conditions respectively. NEPA has previously produced reports on the state of the environment which give an indication of the national situation in sanitation and environmental issues.

Sanitation within the analytical tools

There are only weak connections between instruments and indicators linking sanitation to social issues such as poverty, health and literacy, as well as economic issues such as productivity and GDP.

**Critical aspects of sanitation monitoring and evaluation**

1. Data collection must be made relevant and executed consistently, access to information must be linked to a single source, for example: STATIN or PIOJ.
2. Sanitation information should be reported at a higher level, in parliament for instance, to drive forward the idea of effective monitoring and evaluation.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

Various attempts have been made to analyse human resource capacity for economic development in general, and also for sanitation and public health. However, this analysis is not necessarily related to achievement of the national targets/MDGs on sanitation.

One concern that has arisen is the lack of local opportunities for specialised training in some critical areas of sanitation and the resulting limitations on specialist skills. This has a knock-on effect on the efficient operation of sanitation installations such as a waste water treatment plants and sanitary landfills.

Most waste water plants are staffed by operators who lack the necessary technical knowledge. Most of the sites do not have documented operation and maintenance procedures. Some operators are self taught.

**Critical aspects of capacity in the sector**

1. There is a lack of analysis of the human resources situation in the sanitation area and greater integration is needed between supply and demand in research and training.
2. Opportunities are needed for specialist training in critical sanitation and areas such as the management of sanitary landfill, the development of alternative techniques for the treatment of solid waste such as recycling, and the treatment of waste water.

Technologies needed to achieve the MDGs/national targets

The country has access to technology for the management and elimination of excreta and solid waste. The main problem is resourcing (human and financial) in order to implement the technologies.
Section C: Recommendations

1. Policies and strategies
   - The Ministry of Health and the Ministry of Waters and Housing must ensure that the National Sanitation Policy is completed and implemented.
   - Policies and strategies relating or connecting to sanitation, some already existing, must organise the roles and responsibilities of ministers and agencies in order to establish a basis for development strategies and plans of action that will achieve the goals and objectives.
   - A detailed integrated National Sanitation Policy must be developed, considering specific areas such as: waste management and environmental issues; economics, housing, health and education.
   - The Sanitation Task Force must be institutionalised in order to thus promote the implementation of policy strategies.

2. Legal Framework
   - All Bills on sanitation must be processed quickly. These include the Act for Water Supply and Drainage Services (Ministry of Waters and Housing); and the National Solid Waste Management Act.
   - Implement recommendations to the Waste Water Management Policy.

3. Institutional framework
   3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
      - Revise the roles and responsibilities of ministries and agencies and restructure these, where necessary in order to eliminate overlap, fill gaps and clearly define the extent of the responsibilities and interrelation between entities.
      - The Ministry of Health and the Ministry of the Environment in conjunction with the Ministry of Waters and Housing and NSWMA must cooperate in order to produce public hygiene promotion messages and to maintain a sustained programme.
      - The Ministry of Education needs to include hygiene as a specific element in primary and secondary programmes of study.
      - The Ministry of Waters and the Ministry of Health and Environment need to focus more on rural sanitation issues and to ensure that there is a safe method for the management and disposal of waste waters wherever a water supply is established.
      - Hygiene promotion must be an integrated part of all water and sanitation programmes and projects.
      - Civil society must join the government in tackling sanitation issues.

   3.2 Solid waste management
      - The Office of the Prime Minister and the Local Government Portfolio must work with local authorities and the NSWMA to drive forward waste collection and the operation of sanitary landfill sites, and to implement cost recovery mechanisms.
      - The solid waste management authority must run more social outreach programmes to educate people in rural communities.

4. Funding
   - The Government must develop a funding strategy for sanitation and increase budget allocation through the Ministries of Health, Environment and Waters and Housing.
   - Stimulate private sector participation in sanitation projects offering incentives like those outlined in the Water Sector Policy.
5. Monitoring and evaluation

- The Government must decide which entity or ministry will be responsible for monitoring sanitation nationally.
- Agree indicators to evaluate the sanitation situation in relation to national targets and MDGs and establish systems for the ongoing collection of relevant information.
- The effectiveness of the implementation of policy goals and objectives must be activated and monitored by the National Sanitation Labour Force.
- Establish the need to present an annual report to Parliament on the sanitation situation in Jamaica.
- Involve communities and gender criteria in monitoring.

6. Capacities

- Provide more opportunities for specialist training to strengthen skills and attitudes in the Sanitation Task Force.
- Support community empowerment in adopting sanitation practices and options that are both accessible and environmentally safe.

**Successful experience: Rural Water and Sanitation Programme**

The Ministry of Water and Housing worked in association with the Rural Water and Sanitation Programme, the Public Health authorities, NEPA, NSWMA and the Whitehorses, Botany Bay & Pamphret Development Benevolent Society to train several WASH promoters and to complete a house to house sanitation survey. The organisation worked with the Public Health Department, the Environment Foundation of Jamaica (EFJ), UNEP, USAID and the Jamaica Social Investment Fund JSIF to achieve the success. The programme benefited 61 homes and has increased access to sanitation installations, improved refuse collection, improved excreta disposal and has also raised the self-esteem of the beneficiaries of the programme.

**Acronyms**

- **CBO**: Community Based Organisations
- **CIDA**: Canadian International Development Agency
- **EFJ**: Environmental Foundation of Jamaica
- **GEF**: Global Environment Facility
- **HDI**: Human Development Indicators
- **IDB**: Interamerican Development Bank
- **IDRC**: International Development Research Centre
- **JANEAP**: Jamaica National Environment Plan
- **JAS**: Jamaica Agricultural Society
- **JSIF**: Jamaica Social Investment Fund
- **KMA**: Kingston Metropolitan Area
- **KSAC**: Kingston & St. Andrew Corporation
- **MDG**: Millennium Development Goal
- **NEPA**: National Environment and Planning Agency
- **NGO**: Non-Governmental Organisation
- **NRCA**: Natural Resources Conservation Authority
- **NSWMA**: National Solid Waste Management Authority
References


Acknowledgements

Linnette Vassell, Water Programme, Ministry of Waters and Housing.
Peter Knight, Director of the Environmental Health Unit, Ministry of Health & Environment.
Sandra Buchanan, Ministry of Health and Housing.
Patria Snow-Young, Ministry of Waters and Housing.
Ian Gage, Rural Water Programme, Ministry of Waters and Housing.
Dr. Homero Silva, PAHO Consultant.
Ianthe Smith, Environmental Engineering Consultant.
1. Fulfilment of the sanitation goals

- According to the outcome of the Population and Housing Survey 2005, national coverage for drainage and basic sanitation (latrines) is 85.6% - an achievement that has allowed the country to reach the goals set in the MDGs. National coverage of 86.2% is expected by December 2007; 94.5% in the urban environment and 59.2% in rural zones.

- These advances are the outcome of extension of the sewerage network on a national level and the installation of ecological sanitation in rural zones, meaning a further 35.6 million people have been provided with a service: 26 million in urban areas and 9.6 million in rural zones.

- While the coverage levels achieved are considered reasonable, increases must still be made, mainly in rural areas where there is a greater deficit. The National Water Programme 2007-2012 has targets for national sewerage coverage of 88% (63% in rural areas and 95.6% in urban zones).

- Investments of US$ 2.7 billion will be required to achieve these objectives, US$ 500 million for the rural sector and US$ 2.2 billion for the urban sector.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- New funding mechanisms must be introduced by all three levels of government for the building of infrastructure.

- Technical and financial capacity must be strengthened in order for the systems to be operational.

- Tariffs charged for the service do not reflect operation, maintenance and depreciation costs.

- The legal and regulatory frameworks need to be adapted.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(1)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>78.2</td>
<td>N.A.</td>
<td>94.5</td>
<td>80.8</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>24.1</td>
<td>N.A.</td>
<td>59.2</td>
<td>93.0</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>102.3</td>
<td>N.A.</td>
<td>86.2</td>
<td>57.0</td>
<td>36.0</td>
</tr>
</tbody>
</table>

N.T. – National Target (1) Prevalence of diarrhea (events in the previous two weeks) in children less than 5 years-old. (2) In terms of delayed growth in children aged under 5 years-old. (3) In children less than 5 years-old. Estimate. (4) Human Development Index. (5) Corresponds to lack of property. Includes the basic basket of food and other basic needs, and also those things that allow a human being to live with dignity.

N.A. – Not Available

(a) In millions of inhabitants.

Sources: INSP, PAHO, ENIGH, CONAPO.
Avoid the politicisation of decisions.

There is no planning for medium and long-term investment programmes.

Technical staff in operating entities are on temporary contracts, whereby there is no continuity in service quality.

Materials are needed for waste coverage and the control of biogas and leaching.

**Inequities in access, quality of service and appropriate use**

In Mexico, urban zones have the highest sewerage coverage. There are 185,000 rural locations that are home to the poorest population and that have low levels of service coverage. Many of these are in south-eastern Mexico, where coverage is lowest. These locations are generally scattered settlements and their physical geography makes the installation of formal sanitation systems considerably more difficult.

---

**Section B: Summary of the sanitation situation**

1. **Policies and strategies**

Sanitation services are extremely important to the Mexican Government and coverage has been established as the second objective of the National Water Plan 2007-2012. Policies and sector strategies are in place on: hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water. These policies and strategies were covered by the National Hydraulic Programme 2000 - 2006 and still stand under the National Water Programme (PNH) 2007 – 2012, in the following threads: i) treatment of waste water and promotion of reuse and exchange; ii) increase the number of people with access to drinking water and sewerage systems in rural communities, encouraging the sustainability of services; and iii) increase the number of people with drinking water and sewerage services in urban communities.

Work is presently underway on the a national programme for integrated waste prevention and management, a document that explores the funding needed to resolve the issue in almost 100 locations in the coming five-year period.
• The Ministry of Social Development SEDESOL Habitat Programme provides infrastructure for the integrated management of solid urban waste in marginal urban zones. It currently runs programmes in Guerrero, Oaxaca and Tamaulipas.

Critical aspects of sanitation policies and strategies

1. Insufficient financial resources for the construction of new infrastructure at all three levels of government.
2. Lack of technical and financial capacity for the operation of systems, resulting in the implementation of tariffs that do not reflect operation and maintenance costs.

2. Legal Framework

» Disposal of excreta

» Collection, treatment and sanitary disposal of sewage sludge
Federal Law of Ecological Balance; Regulation on Dangerous Waste SEMARNAT-PROFEPA; and NOM-004 SEMARNAT-2002

» Waste water treatment

» Collection, treatment and sanitary disposal of solid waste

» Monitoring of contamination in water catchment areas

» Reuse of:
  • Sewage sludge
  • Municipal waste water
  • Solid waste
    Regulation of Dangerous Waste SEMARNAT-PROFEPA; State and Municipal Legislations; General Law for Waste Prevention and Integrated Management.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

There is a clear division of functions. Federal Government is responsible for governance and regulation on a national level, regulating the application of laws, regulations and standards that come under its jurisdiction in coordination with the state governments. Environmental issues (water, air and solid waste) are dealt with by SEMARNAT, in coordination with the National Water Commission (CONAGUA) and the Federal Prosecutor for Environmental issues (PROFEPA) that are decentralized entities.

By law, service provision is the responsibility of municipal authorities, but they can work in coordination with state governments to provide the service if they require.

In many cities and other locations, the state government is in charge of service provision as municipal authorities do not have the technical, economic and administrative capacity, nor do they have many of the resources needed to carry out these functions efficiently.

<table>
<thead>
<tr>
<th>Policy and strategy development</th>
<th>Regulation</th>
<th>Project implementation</th>
<th>O&amp;M management</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Government (Federal)</td>
<td>Regional Government (State)</td>
<td>Local Government(1)</td>
<td>Private sector</td>
<td>NGOs</td>
</tr>
<tr>
<td>SEMARNAT</td>
<td>CONAGUA</td>
<td>Gobierno</td>
<td>CEAS</td>
<td></td>
</tr>
<tr>
<td>(1) Municipal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Platforms for coordination between stakeholders

Intersector coordination occurs through the Development Planning Committees (COPLADES), where representatives of federal, state and municipal instances work together on drinking water and sanitation projects.

Critical aspects of the institutional framework

1. Greater coordination is required between related institutions that contribute to sanitation development from different perspectives.

2. Works must be executed promptly and follow-up provided in order for them to deliver the planned benefits.

3.2 Collection, treatment and sanitary disposal of solid waste

Municipal authorities are responsible for all functions. These are mostly executed in a deficient manner, as there is a lack of professional outlook amongst institutional post-holders; they are not provided with sufficient information for decision-making and they lack economic resources (no charges are made for the service in most municipal areas of the country).
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

Cultura del Agua (Water Culture) is a CONAGUA program that promotes and executes education campaigns on water management and use throughout the country. These campaigns are run in coordination with the Ministry of Education (SEP), and are provided to schools, students and the general public through the water section of the municipal government. Many promotional murals have been painted. Leaflets were provided along with various water disinfection products during campaigns that provided information on the disinfection and care of drinking water, and the importance of latrines for public health. Similar programmes were run by the Health Ministry (SS) Brigades.

4. Funding

Policies have been developed for subsidies, recovery of costs and tariffs to help hygiene promotion and sanitation education (through the Federal Government and state governments). This type of policy has not been considered for the collection, treatment and sanitary disposal of solid waste.

Federal Government has provided support for building sewage works in various parts of the country, using resources from several programmes for the purposes for: excreta disposal; the collection, treatment and sanitary disposal of sewage sludge; and waste water treatment. Costs are recovered through: adjustments to service tariffs; service provider organisations; the authorisation of municipal councils or state congresses; or through state or municipal subsidies.

Federal Government is responsible for monitoring investments made and the works executed through its various constituent institutions.

Critical aspects of the institutional framework for solid waste management

1. Ignorance of integrated waste management amongst municipal authorities.
2. Waste management given a low priority amongst municipal authorities.

Critical aspects in hygiene promotion and sanitation education

1. The scattered nature of the locations and difficulties in access have hampered the implementation of support programmes and the latrines programme.
2. More human and financial resources are required in order to provide coverage in more communities with high levels of marginalisation and difficult access.

Critical aspects of sanitation funding

1. Low profitability of service providers due to poor administration and low tariffs.
2. Sanitation services are not charged for in many parts of the country as they are not included in the tariffs.
5. Monitoring and evaluation

National indicators and information systems for the sector
Access to sewage services and waste water treatment coverage are the main indicators used. CONAGUA has data systems, through which it can monitor the various programmes implemented to extend the coverage of its services. At present it is working on implementation of the National Water Information System (SINA) which unites information from all the various systems in order to allow interested entities to consult this information more easily.

Sanitation within the analytical tools
Sanitation has been incorporated into analysis of national issues as it forms part of the chain of cause and effect. The higher the sanitation index, the lower the incidence of water borne disease, the higher the reuse of water in added-value agricultural products, and the greater the prospects of improving industrial and tourist development.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets
Degree and master’s programmes have been developed in environmental engineering in several universities in the country in view of the need to train more technicians in sanitation-related issues. The training will provide staff for recruitment into the various bodies at the three levels of government. It will also be important for these trained staff to be employed by service providers and entities responsible for sanitation education.

Technologies needed to achieve the MDGs/national targets
The necessary technologies are available in Mexico, but technical staff training is needed for service providers. The country would benefit from the application of successful sanitation experiences from other developing countries, complemented by technology exchange within the framework of national development.

Section C: Recommendations

1. Policies and strategies
   - The three levels of government must encourage private investment in sanitation projects.
• Promote updating of tariffs for charges for the service amongst responsible authorities to help operators achieve financial self-sufficiency and to provide a quality service to users.

2. Legal Framework
• Bring about reforms to make federal legislation more efficient on sanitation matters.
• Develop regulatory frameworks for the management of urban solid waste and waste that requires special handling.

3. Institutional framework
3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
• Federal Government must organise working groups from entities involved in sanitation projects in order to monitor execution and to ensure that they meet given targets.
• Consolidate state governance with public support for sanitation and environment policy.

4. Funding
• Seek and promote new funding mechanisms for sanitation works that allow for the healthy development of service providers.
• Create mechanisms for the execution of sanitation works in small and medium-sized localities.

5. Monitoring and evaluation
• Strengthen and extend the current monitoring network.
• Develop the participation of state and water catchment area entities in the monitoring and evaluation of sanitation works.

6. Capacities
• Develop the training of technical staff in sanitation in state and municipal authorities and amongst service providers, and encourage the development of professional career paths for the former.
• Develop programmes for technical, administrative and operational updating in sanitation entities.

Successful experience: Monterrey Water and Drainage Services
The Monterrey Water and Drainage Services are responsible for the drinking water, sewage distribution and waste water treatment services in the city of Monterrey, Nueva León. It is a ‘healthy’ entity in both administrative and financial terms, having a high level of efficiency in operations, maintenance and technical matters. It has made great advances in efficient use of the infrastructure and the treatment and reuse of waste water, placing it firmly in the national, and even international, vanguard.

The service provides sewerage coverage for 98% of the population and treatment for 100% of the waste water and sludge it collects, keeping local natural receptor bodies clean. Around 20% of the reused treated water goes to agricultural and industrial ends (1,500 to 2,000 l/s), leaving more fresh water available for urban services.
Acronyms

**APAzu**
Programa de Agua Potable, Alcantarillado para Zonas Urbanas

**BANOBRAS**
Banco Nacional de Obras y Servicios (del Gobierno Federal)

**CEAS**
Comisiones Estatales de Agua y Saneamiento

**CONAGUA**
Comisión Nacional del Agua, dependencia desconcentrada de SEMARNAT

**CONAPO**
Consejo Nacional de Población

**COPLADES**
Comités de Planeación para el Desarrollo (comités a nivel estatal y regional)

**ENIGH**
Encuesta Nacional de Ingresos y Gastos de los Hogares

**FINFRA**
Fideicomiso para Infraestructura

**IDB**
Inter-American Development Bank

**INSP**
Instituto Nacional de Salud Pública

**MDG**
Millennium Development Goal

**NGO**
Non-Governmental Organisation

**PAHO**
Pan-American Health Organisation

**PND**
Plan Nacional de Desarrollo (sexenal)

**PNH**
Programa Nacional Hídrico

**PRODDER**
Programa de Devolución de Derechos

**PROFEPA**
Procuraduría Federal de Protección al Ambiente, instancia de SEMARNAT

**PROSSAPYS**
Programa para la Sostenibilidad de los Servicios de Agua Potable y Saneamiento en zonas rurales (Joint programme between Mexico and the IDB)

**SEDESOL**
Secretaría de Desarrollo Social

**SEMARNAT**
Secretaría del Medio Ambiente y Recursos Naturales

**SEP**
Secretaría de Educación Pública

**SINA**
Sistema Nacional de Información de Agua

**SS**
Secretaría de Salud

References

Conteo de Población y Vivienda, INEGI, 2005.

Comité Técnico de Medición de la Pobreza (2005), Medición de la Pobreza 2002-2004.


INEGI. II Conteo de Población y Vivienda 2005.


PAHO. Iniciativa Regional de Datos Básicos de Salud y Perfiles de País.

Acknowledgements

The following individuals contributed to the production of the document: José Ramón Arámbula Ituarte, Antonio Fernández Esparza, Roberto J. Contreras Martínez, Judith Vásquez Vásquez, Sergio Fonseca Parra, Griselda Medina Laguna, Alejandro Chavez, Gabriel Hernández García, Noel Hernández Cruz and César Chávez Ortiz.
Section A: Overview

1. Fulfilment of the sanitation goals

- According to the 2005 Census, total sanitation coverage was 84.4% (96.1% in the urban zone and 69.2% in rural areas) - a level that has allowed fulfilment of the MDG goal of 73.3%.

- There has been a significant increase in coverage in rural areas since the water and sanitation programmes began in 1976.

- This data is different to that presented in the JMP, as the criteria for defining coverage here are different to those used in the 2005 Census. The Government of Reconstruction and National Unity is working with co-operation agencies to harmonise the defining criteria of the indicators.

- The country has a Drinking Water and Sanitation Policy (ESAPS 2005-2015), currently under revision that will include a separate chapter on sanitation integrated with discussion of the investments required to fulfil the MDGs.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- The special sanitation policy outlined within plans made by the National Drinking Water and Sanitation Commission (CONAPAS) Executive Secretariat has not been promoted at all.

- Weak application of laws and regulations.

- Lack of human resources and budget for Nicaraguan Institute of Aqueducts and Sewage systems (INAA) and CONAPAS to fulfil their functions.

- Need for massive investment to restore existing systems and to extend coverage of sewage and waste water treatment systems.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3'260,324</td>
<td>3'444,457</td>
<td>84.4</td>
<td>92.0</td>
<td>50.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Rural</td>
<td>2'342,917</td>
<td>2'380,679</td>
<td>96.1</td>
<td>95.0</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>Total</td>
<td>5'603,241</td>
<td>5'825,136</td>
<td>69.2</td>
<td>87.6</td>
<td>50.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

M.T. – National Target. (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) Sanitary landfill.
N.A. – Not Available
(a) In number of inhabitants.
Sources: Census 2005, UNDP, PAHO.

Nicaragua
• There is still heavy dependency on foreign cooperation for investment in drinking water systems due to subsidies and low tariffs within the country.

• There is a need for greater promotion of improved technologies in periurban and rural areas.

• Most small locations do not have sewerage systems.

Section B: Summary of the sanitation situation

1. Policies and strategies

The Government has established drinking water and sanitation as the second national priority. As a result, policy and strategy reviews are underway - including the General Health Law, Environmental Law and ESAPS 2005-2015 - in order to establish a sanitation chapter.

Sector strategies exist on hygiene promotion and sanitation education (disposal of excreta; waste water treatment; and the collection, treatment and sanitary disposal of solid waste) and these contribute to improving sanitation conditions.

These policies are all interlinked, and the ESAPS is derived from these.
2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Disposal of excreta**

- **Waste water treatment**
  General Law of the Environment and Natural Resources, Law 271, enacted by MARENA on 2 May 1996 and MARENA Decree 33-95; Disposition for the Control of Contamination From Discharges of Domestic, Industrial and Agricultural Waste Waters.

- **Collection, treatment and sanitary disposal of solid waste**

- **Monitoring of contamination in water catchment areas**

- **Reuse of:**
  - **Municipal waste water**
    Decree 33-95, MARENA.
  - **Solid waste**

3. Institutional framework

3.1 Excreta disposal, management of sewage sludge and treatment of domestic waste water

The division of functions between institutions states that CONAPAS is in charge of governance; INAA regulation; the Nicaraguan water and sewerage company ENACAL is the urban service provider; and the social fund RISE is the rural service provider. Furthermore, the Ministry of the Environment and Natural Resources (MARENA) is in charge of regulating discharges of domestic waste water, while the Health Ministry (MINSA) carries out epidemiological monitoring.

**Critical aspects of the institutional framework**

1. Lack of in depth attention to sanitation in the rural and periurban sectors.
2. Municipal authorities have not assumed an active role in the development or sustainability of sanitation services and disposal of excreta.

**Platforms for coordination between stakeholders**

Under Presidential Agreement 71-2003, boards have been created for coordination in the sector with members from the government, international cooperation and civil society.
### 3.2 Collection, treatment and sanitary disposal of solid waste

#### Division of main functions between institutions

There is no formal division of functions. Municipal authorities are responsible for normal solid waste and MINSA for hospital solid waste.

<table>
<thead>
<tr>
<th></th>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINSA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>●●</td>
<td>●●</td>
<td>●●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Regulation</td>
<td>●●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td>●●</td>
<td>● ●</td>
<td>●●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Monitoring</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

- ●● Responsible
- ● Involved
- Not involved

### Critical aspects of the institutional framework for solid waste management

1. The legally designated institutions do not carry out their functions efficiently.
2. Application of the national General Water Law requires revision and adaptation of the existing institutional framework.

### 3.3 Hygiene promotion and sanitation education

#### Programmes, institutions and impact of hygiene promotion and sanitation education in the country.

MINSA is responsible for hygiene promotion and sanitation education. Campaigns have been aimed toward the prevention of cyclical illnesses (dengue, malaria) and to vaccination more than any other elements. The former have had very little impact in promoting a hygiene culture amongst the population; the latter have had an impact in and improved culture of prevention and vaccination.
There is a sanitation education component in the rural drinking water and sanitation project programme cycle but this is given insufficient time and resources to achieve the necessary change in public hygiene habits and behaviours.

4. Funding

No policies have been developed for: subsidies, cost recovery or tariffs for hygiene promotion and sanitation education and the collection, treatment and sanitary disposal of sewage sludge. Investment subsidies are available for the disposal of excreta through latrine programmes. INAA tariff policies are applied for waste water treatment, while tariffs are set by municipal authorities for the collection, treatment and sanitary disposal of solid waste.

Financial monitoring mechanisms have been established by Central Government through the National System of Public Investment and the Integrated Financial Management System (SIGFA).

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (thousands of US$)</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Rural</td>
<td>16,200</td>
<td>16,255</td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>111,000</td>
<td>111,000</td>
</tr>
<tr>
<td>Rural</td>
<td>48,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Sewage sludge management (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>28,500</td>
<td>34,500</td>
</tr>
<tr>
<td>Rural</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>57,000</td>
<td>57,000</td>
</tr>
<tr>
<td>Rural</td>
<td>12,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Management of municipal solid waste (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>42,700</td>
<td>42,500</td>
</tr>
<tr>
<td>Rural</td>
<td>9,000</td>
<td>9,000</td>
</tr>
</tbody>
</table>

Comments
(1) Estimated 50% treatment of waste waters.
(2) Estimated 75% treatment of waste waters.
Source: CONAPAS Executive Office.

Critical aspects of sanitation funding

1. The drinking water and sanitation sector must define the sanitation concept in order to establish a sanitation strategy.

2. The new drinking water and sanitation sector strategy currently under review must propose and estimate sanitation funding.
5. Monitoring and evaluation

National indicators and information systems for the sector

- Physical coverage alone is used as a national indicator. Data systems exist, but improvements are needed.

Critical aspects of sanitation monitoring and evaluation

1. National sanitation indicators only consider coverage and infrastructure.
2. There are no methodologies in place for verification of the sanitation programme impact on health, except for infant health programmes.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

There is awareness in the sector of the need to improve training in order to promote hygiene promotion in sanitation projects. Hygiene promotion is not the only important element to consider achieving the MDGs; other sanitation and related issues are also required.

Technologies needed to achieve the MDGs/national targets

The country has the necessary technology and organisations for implementing improved latrine systems. Greater institutional capacity is needed in urban areas for the execution of projects. It is necessary to explore new innovatory low-cost technologies, like improved latrines, condominium and sewerage systems, wetlands, etc.

Section C: Recommendations

1. Policies and strategies

- Review and updating of ESAPS 2005-2015, and inclusion of a chapter referring to basic sanitation. This activity is being funded by the IDB.

- Agreement in the water and sanitation sector board for priority investments according to guidelines issued in the sanitation chapter of ESAPS 2005-2015.

2. Legal Framework

- Approval and implementation of a policy to link the various existing laws on the issue.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Strengthen leadership of MINSA to exercise hygiene promotion functions, management of sewage sludge and waste water.
• Promote links between CONAPAS constituent institutions in order to execute actions in the sanitation chapter of ESAPS 2005-2015 in conjunction with other stakeholders in the sector (International cooperation, NGOs and municipal authorities).

3.2 Solid waste management

• Effective application of MINSA technical standards for hazardous and non-hazardous waste.
• Strengthening of Local Governments on the disposal and management of solid waste.

4. Funding

• Gain commitments from co-operating countries in the official development aid group on financial support for plans and programmes arising from the sanitation chapter of the revised ESAPS 2002-2015.
• Promote the use of resources from municipal funds for sanitation activities.

5. Monitoring and evaluation

• Provide financial and technological reinforcement for the information systems of CONAPAS constituent institutions.
• Carry impact assessments on health and hygiene habits planned for sanitation programmes, considering all the factors that affect human health and establishing a baseline.

6.6. Capacities

• Include ongoing municipal training programmes in sanitation for institutions in the sector.
• Promote alliances between sanitation stakeholders on the one hand, and technical training centres and the private sector on the other, on both a small and large scale.

Successful experience: Clean Municipality: Healthy Lake Initiative.

Lake Nicaragua and the San Juan River are one of the most valuable water resources in the country, and the 36 municipal authorities in the water catchment area formed the Association of Municipal Authorities of the San Juan River (AMUCRISANJ) in order to improve the sanitation conditions of the constituent municipal areas in the San Juan basin. AMUCRISANJ has developed a sanitation competition between municipal authorities, where a panel of judges evaluates proposals and the application of sanitation actions. The competition has been held for the past four years, with municipal authorities highlighting the issue of solid waste disposal each time. The Mayoral Offices have evaluated the performance of public service units, their collection capacity, treatment, identification of weaknesses and proposals for improvement of their systems.

This competition has allowed the mayoral offices to carry out sanitation interventions increasing numbers of security staff, identifying clandestine dumps, relocating unauthorised dumps and holding awareness-raising campaigns amongst the local population.

These actions have prompted commitments from most local governments to protect the water catchment area and Lake Nicaragua, and has encouraged the Mayoral Offices to keep promoting sanitation actions.
Acronyms

APyS Agua Potable y Saneamiento
AMUNIC Asociación de Municipios de Nicaragua
AMUCRISANJ Asociación de Municipios de la Cuenca del Río San Juan
CONAPAS Comisión Nacional de Agua Potable y Alcantarillado Sanitario
EMNV 2005 Encuesta de Medición del Nivel de Vida, INEC 2005
ENACAL Empresa Nicaragüense de Acueductos y Alcantarillados Sanitarios
ENDESA 2001 Encuesta Nacional de Salud, 2001
FISE Fondo de Inversión Social de Emergencia
HDI Human Development Indicators
INIDES Instituto Nacional de Información de Desarrollo
INAA Instituto Nicaragüense de Acueductos y Alcantarillados
INETER Instituto Nicaragüense de Estudios Territoriales
JMP Joint Monitoring Programme (JMP-PAHO-UNICEF)
MARENA Ministerio del Ambiente y los Recursos Naturales
MDG Millennium Development Goal
MINSA Ministerio de Salud
NGO Non-Governmental Organisation
NTON Normas Técnicas
PRGF Programa de Facilitación de Reducción de la Pobreza
RAAN Región Autónoma del Atlántico Norte
RAAS Región Autónoma del Atlántico Sur
SISAPS Sistema de Información Sectorial de Agua Potable y Saneamiento
SWAp Sector Wide Approach
SETEC Secretaría Técnica de la Presidencia
SIGFA Sistema Integrado de Gestión Financiera y Administrativa
UNDP United Nations Development Programme
UNICEF Fondo de las Naciones Unidad para la Infancia
WHO World Health Organisation

References


Acknowledgements

We are grateful to Yuri Espinosa of CONAPAS for his collaboration in the production of this report.
1. Fulfilment of the sanitation goals

- Water coverage from piped water supply is available to 88.2% of people; 60.9% in urban zones and 27.3% in rural areas. There is average adequate excreta disposal coverage of 49.5%, 61.3% in the urban area and 30.3% in the rural area. The MDG goal for basic sanitation coverage is 75.3% for 2015, 80.7% in urban areas and 65.2% in rural areas.

- Amongst the 49.5% of the population with sanitation coverage, 29.9% have infrastructure in place for the treatment of domestic effluent, 23% are collected to a septic tank and 46.2% use latrines. The limited coverage of sanitation and drainage systems in urban areas encourage the proliferation of septic tanks, which are inadequately maintained and operated.

- Collection services are available to 46.8% of homes in Panama. Amongst the urban population, collection is available to 83.3%, in the rural sector this is 24.5% and 15% amongst indigenous peoples. The MDG goal is to increase collection to 73.4% throughout the population.

- Some 19.3% of budget investments for the health sector come from external resources budgeted specifically by the Ministry of Health to deal with three important projects: Sanitation in Panama City and the Bay; the Multiphase Programme for Transformation of the Health Sector I; and a new loan operation to deal with the water and sanitation issue in poor communities throughout the country.

- The Ministry of the Presidency implements highly relevant projects which aim to improve the quality of life of Panamanian citizens living in poverty and extreme poverty.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Lack of policies allowing for the consideration of particular regional and local characteristics in the process of planning for national development in sanitation.

- Overlap in activities between public institutions responsible for national policy in the sector.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>1 729,582</td>
<td>2 471,133</td>
<td>61.3 80.7 15.6 54.5</td>
<td>N.A N.A 62.2 81.1</td>
<td>N.A N.A N.A</td>
<td>0.753 15.0</td>
</tr>
<tr>
<td>Rural</td>
<td>1 057,650</td>
<td>1 293,033</td>
<td>30.3 65.2 5.7 N.A</td>
<td>N.A N.A 15.6 57.8</td>
<td>N.A N.A N.A</td>
<td>0.597 21.0</td>
</tr>
<tr>
<td>Total</td>
<td>2 787,232</td>
<td>3 764,166</td>
<td>49.5 75.3 11.8 38.0</td>
<td>46.8 73.4 44.5 73.1</td>
<td>19.2 6.5 1.3</td>
<td>0.697 41.0</td>
</tr>
</tbody>
</table>

• Lack of development of agreement processes between the public entities of the sector and civil society. Such action would allow different stakeholders the opportunity to participate in the planning and execution of actions in the sector.
• Lack of plans for coordinated action based on the existing legal framework.
• Shortfall in macroeconomic policies linked with local and regional sector activities to sustain the political and economic viability of these actions.

Section B: Summary of the sanitation situation

1. Policies and strategies

• Ministry of Health policies and strategies for the 2005-2009 period included prevention and early protection from health risks due to contamination and other environmental factors, and also established guidelines to improve sanitation levels in the country.
• In Panama, sector policies and strategies are in place on: hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; the treatment of waste water; and the collection, treatment and sanitary disposal of solid waste.
• As part of an overall strategy, health sector policies link their policies through environmental protection integrated with educational activities and rational water use projects that emphasise the importance of con-
serving natural water sources. This helps improve living conditions amongst the population, linking in with poverty reduction policies and the economic development of the country.

2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Disposal of excreta**
  Law 66 of November 1947, creating the Sanitation Code of the Republic of Panama; Decree Law No. 2 January 1997, dictating the regulatory and institutional framework for drinking water and sewerage service provision; Law No. 77 December 2001, which organises and modernises the Institute of National Aqueducts and Drainage Systems and other resolutions; and Decree 323 of 4 May 1971, Department of Sanitation Engineering, on standards for sanitation plumbing, creating the Sanitation Plumbing Technical Council, sanitation plumbing inspectors and other subsidiary staff dependent on the Ministry of Health.

- **Disposal of excreta and collection, treatment and sanitary disposal of sewage sludge and treatment of waste waters**
  Law 66 of November 1947, creating the Sanitation Code of the Republic of Panama; Decree Law No. 2 January 1997, dictating the regulatory and institutional framework for drinking water and sewerage service provision; Health Ministry (MINSA) Technical regulation DGNTI-COPANIT 39-2000 AGUA, on the discharge of liquid effluents directly into waste water collection systems; MINSA Technical regulation DGNTI-COPANIT 47-2000 AGUA, on the use and final disposal of sludge; and MINSA Executive Decree No.293 of 23 August 2004, on sanitation standards for obtaining building and operation permits, as well as monitoring of incineration and co-incineration systems.

- **Collection, treatment and sanitary disposal of solid waste**
  Bill, dictating resolutions on the sanitation service and the legal and institutional framework for the integrated management of waste and other resolutions; MINSA Executive Decree No.16S of 26 August 1999 under which the new tariff system was adopted for urban and domestic sanitation services in the metropolitan region; Law No.41 of 27 August 1999, on the transferal of services related to urban and domestic sanitation in the metropolitan region to the municipalities of Panamá, San Miguelito and Colón; Regulation for the management of solid waste from health institutions, Executive Decree No. 111 23 June 1999; MINSA Executive Decree No. 197 of 19 August 1968, which creates the national solid waste network; and MINSA Executive Decree No. 156 of 28 May 2004, on sanitation standards for the approval of projects for the construction and operation of secure sanitary landfills and other resolutions.

---

**Critical aspects of sanitation policies and strategies**

1. Lack of a precise definition of coordination activities amongst sanitation sector stakeholders for the implementation of the strategies designed.
2. Lack of specific funding to link environmental protection and poverty reduction through increased sanitation coverage.

---

**Critical aspects of the legal framework**

1. Overlap in the definition of institutional roles.
2. Lack of linked legal instruments relating to sustainable development and sanitation with up to date scenarios on technological development and research.
Monitoring of contamination in water catchment areas

Law 1 of February 1994, establishing Forestry Legislation in the Republic of Panama and other resolutions, published in Official Gazette Nº 22.470 of 7 February 1994; MINSA technical regulation DGNTI-COPANIT 35-2000 AGUA, on the discharge of liquid effluent directly into surface and underground bodies of water; and Decree 222 of 16 May 1990, creating the Interinstitutional Committee on water and sanitation and the environment on a national level.

Reuse of:
- **Municipal waste water**
  Law 66 November 1947, creating the Sanitation Code of the Republic of Panama; Decree Law Nº 2 January 1997, dictating the regulatory and institutional framework for the provision of drinking water and sanitation drainage services; and Law Nº 77 December 2001, which organises and modernises the Institute of National Aqueducts and Drainage Systems (IDAAN) and other resolutions.
- **Solid waste**
  Bill dictating resolutions on sewage services and the legal and institutional framework for integrated waste management and other resolutions.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

A general regulatory framework has been established to identify institutions responsible for the main roles, missions and functions in the sector. The Health Ministry will be responsible for the formulation and coordination of sector policies and long-term planning through the national drinking water and sanitation authority DISAPAS.

Economic regulation, service quality and funding are all in the hands of the public services regulator ERSP that was recently renamed the National Authority of Public Services (ASEP). Services will be provided by entities, institutions and public or private companies.

There are some platforms for coordination between sector stakeholders that also include institutions and organisations not directly involved.

### Critical aspects of the institutional framework

1. Existence of grey areas, lack of definition and overlap in the institutional roles in the sanitation sector.
2. Lack of complimentary legislation, such as regulations from recent laws, in particular Decree Law No. 2.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINSA</td>
<td>ASEP</td>
<td>IDAAN</td>
<td>JAARs/Other service providers</td>
<td>Regional Government(1)</td>
<td>Local Government(1)</td>
<td>Private sector</td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Regulation</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
| Project implementation | ••(2) | •• | •• | • | • | • | • | • | •
| O&M management | •• | •• | •• | • | • | • | • | • | •
| Monitoring | •• | • | • | • | • | • | • | • | •

**Responsible** • Involved • Not involved

(1) Municipalities.
(2) Latrinisation.
in the sector, such as: the national environmental authority (ANAM), the Ministry of Economics and Finance (MEF), the Ministry of Commerce and Industries (MICI) and the Panama Chapter of the Inter-American Sanitary and Environmental Engineering Association (PANAIDIS). These platforms include support for project design and technical assistance in regulations for drinking water and sanitation. Other International entities that provide technical and financial support for the sector include PAHO, IDB, IBRD, UNICEF and the World Bank.

3.2 Collection, treatment and sanitary disposal of solid waste

A Bill is in progress on sewage services and the legal and institutional framework for the integrated management of waste and other issues. This defines the roles of the governing entity, the regulator and the service providers. MINSA will be in charge of governance, through the creation of the National Department for the Integrated Management of Waste and Potentially Dangerous Substances. Service provision and functions will be assigned to municipal authorities, both national and regional.

Critical aspects of the institutional framework for solid waste management

1. Lack of an approved Law on the management of solid waste.
2. Lack of funds assigned to the implementation of plans and projects planned on the basis of current legislation.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional and Local Government(1)</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td>••</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>••</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

•• Responsible  • Involved  Not involved

(1) Municipalities.

3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

The Health Ministry, in its role as sanitation authority, has stated that it main aim will be to improve the level of health in the country by strengthening the Primary Care Strategy. It aims to offer the population equitable and universal access to programmes, projects and services for health promotion, prevention, recovery and rehabilitation; with the main beneficiaries being families supported by the Social Promotion Services.

Critical aspects in hygiene promotion and sanitation education

1. Technicians in the sector need to apply an increased intercultural perspective, providing sanitation education amongst indigenous populations.
2. Lack of sustainable programmes for sanitation education in areas of poverty and extreme poverty.
4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>33,191</td>
<td>36,291</td>
</tr>
<tr>
<td>Rural</td>
<td>3,100</td>
<td></td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>8,000</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1,000</td>
<td></td>
</tr>
</tbody>
</table>

N.A. – Not Available
(a) Panama Bay Sanitation Project.
Source: MEF.

Policies have been developed for subsidies, cost recovery and tariffs for hygiene promotion and sanitation, education; the disposal of excreta and the treatment of waste waters. These types of policies have are not foreseen for the collection, treatment and sanitary disposal of solid waste and sewage sludge.

Critical aspects of sanitation funding

1. Lack of financial decision-making involving the operational level of the sector.
2. Lack of direct planning of prevention measures for environmental risks.

5. Monitoring and evaluation

National indicators and information systems for the sector

National indicators used in sanitation are: the percentage of coverage of the sanitation service; malnutrition - the prevalence of diarrhoea in children aged under five-years-old; and water borne diseases. Sanitation service coverage is broken down into services connected connections to sewage systems, latrines or those connected to septic tanks.

Data is compiled through water quality monitoring programs in urban and rural areas of the country (ASEP and MINSA respectively) and it is possible to calculate the incidence of diarrhoea and developments in the physical and chemical characteristics of water sources.

Sanitation within the analytical tools

Local sanitary inspections mean sanitation used as an analytical tool for health improvements by MINSA. Social promotion services aimed at people living in poverty or extreme poverty include poverty indicators amongst their monitoring tools. It must be pointed out this programme began in 2005. It has a minimal percentage of tools and with specific objectives defined on a national level, which contribute to the mitigation of contamination of the environment.

Critical aspects of sanitation monitoring and evaluation

1. There is a lack of human resources and equipment for monitoring activities.
2. Information is under registered when moving between local and regional level and from regional to national level.
6. Capacities

MINSA is seriously limited in its monitoring activities by a clear lack of staff and transport. Professional training is available in degree level programmes, masters and postgraduate qualifications, which train qualified sanitation staff capable of driving development in the country forward with a view to achieving the MDGs. However, there is very little funding available in the health sector, especially in rural and indigenous areas. Although the technologies needed for achieving the MDGs are available the fact that funds are assigned by sector means they may not be used, and fulfilment of the MDGs is therefore not guaranteed.

Section C: Recommendations

1. Policies and strategies
   - Design of policies with specific definition of roles in the sanitation sector, avoiding overlap of functions between institutions.
   - Adopt a management strategy allowing active participation by leading entities in the subsector, forming a small coordination body with highly qualified staff.

2. Legal Framework
   - Promote the development of interlinking legal instruments, with an up-to-date vision of technological development and research on the issues of sustainable development and sanitation.
   - Develop complimentary legislation is to regulate laws in the sanitation sector.

3. Institutional framework
   3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
   - Implement technologies appropriate to current legislation in the management of sewage sludge.
   - Produce regulations for the obligatory use of treatment plants in the public and private sector.

   3.2 Solid waste management
   - Approve the Bill on solid waste management.
   - Once the bill is approved, design policies and strategies on solid waste management.

4. Funding
   - Creation of funding mechanisms with specific objectives that link environmental protection and poverty reduction through increased sanitation coverage.
   - Creation of programmes that directly fund the prevention of environmental risk.

5. Monitoring and evaluation
   - Creation of an information system providing a platform for the statistical analysis and monitoring of environmental tendencies in sanitation.
   - Acquire equipment (transport) and mathematical models to form part of a technical toolkit for monitoring sanitation activities.

6. Capacities
   - Encourage the recruitment of suitable staff in sector institutions in order to increase the efficiency of their problem-solving capacity.
   - Increase training programmes to benefit sanitation staff at local and regional levels.
Successful experience: Treatment of waste waters in the Bay of Panama

The Panama Bay Sanitation Project aimed to develop waste water collection and treatment systems in the city of Panama in order to eliminate the health risks of water borne diseases. As they have progressed through the various phases of building waste water treatment collectors and plants, the indicators for sanitation service coverage have increased, as have the disposal of excreta and treatment of domestic waste waters. By the time the project is completed, sanitation coverage will have increased from 21.3% to 60.7%.

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMP</td>
<td>Autoridad Maritima de Panamá</td>
</tr>
<tr>
<td>ANAM</td>
<td>Autoridad Nacional del Ambiente</td>
</tr>
<tr>
<td>ASEP</td>
<td>Autoridad Nacional de los Servicios Publicos</td>
</tr>
<tr>
<td>DQNTI-COPANIT</td>
<td>Dirección General de Normas y Tecnología Industrial -Comisión Panameña de Normas Industriales y Técnicas</td>
</tr>
<tr>
<td>DISAPAS</td>
<td>Dirección Nacional del Subsector de Agua Potable y Alcantarillado Sanitario</td>
</tr>
<tr>
<td>ERSN</td>
<td>Ente Regulador de los Servicios Publicos</td>
</tr>
<tr>
<td>JAARs</td>
<td>Juntas Administradoras de Acueductos Rurales</td>
</tr>
<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>IDAAN</td>
<td>Instituto de Acueductos y Alcantarillados Nacionales</td>
</tr>
<tr>
<td>IDB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MEF</td>
<td>Ministerio de Economía y Finanzas</td>
</tr>
<tr>
<td>MICI</td>
<td>Ministerio de Industria y Comercio</td>
</tr>
<tr>
<td>MIDES</td>
<td>Ministerio de Desarrollo Social</td>
</tr>
<tr>
<td>MINSA</td>
<td>Ministerio de Salud</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan-American Health Organisation</td>
</tr>
<tr>
<td>PANAINDIS</td>
<td>Capítulo Panameño de la Asociación Interamericana de Ingeniería Sanitaria y Ambiental</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNICEF</td>
<td>Fondo de Naciones Unidas para la Infancia</td>
</tr>
</tbody>
</table>

References

Schifini, Juan Pablo (2002). Estrategia de gestión y plan de acción. DISAPAS.
Ministry of Health. La Oferta de los Servicios de Salud del Sistema de Protección Social 2005.
Análisis de la situación de salud en Panamá. PAHO-MINSA, 2005.

Acknowledgements

We are grateful to PAHO in Panama for coordinating the report; to officials in the sector for their collaboration; and to Haydée Osorio Ugarte, M.Sc. D.S, for revising and producing the report.
1. Fulfilment of the sanitation goals

- There is 74.8% coverage for the adequate disposal of excreta. Some 20% of the urban population have access to sanitation drainage systems and 66% have access to some form of improved excreta disposal system. Around 60% of the rural population have some form of improved excreta disposal.

- The target for basic sanitation coverage set by the MDGs is 69% in 2015, which has already been exceeded. National targets set in the anti poverty programme (ELP) aim to achieve 76.7% on average for the same year with 70% coverage for sewerage in urban areas and 86% improved sanitation in rural areas.

- Infrastructure for the treatment of domestic effluent provides 15% of the population with access to sanitation and drainage, but there is no national target in terms of waste water treatment.

- Coverage of urban solid waste collection is 57%; but only 28.3% have adequate disposal. The national target is to achieve 90% for both collection and sanitary disposal.

- National health policies and hygiene promotion campaigns have been initiated through programmes under the Ministry of Health and Ministry of Education, which have contributed to improvements in the sanitation situation, mainly in rural areas. UNICEF is working on water and sanitation programmes for indigenous communities and vulnerable groups with a hygiene promotion and health component. The ELP is one of the main government strategies and contains targets for basic water and sanitation that are especially directed at poor rural communities and indigenous populations. Some US$ 747.7 million of investments will be needed over the next eight years to complete these.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(^{(a)})</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water(^{(c)})</th>
<th>Solid waste Collection (%)</th>
<th>Sanitary disposal (%)</th>
<th>Acute diarrhoea(^{(1)}) (%)</th>
<th>Chronic malnutrition(^{(2)}) (%)</th>
<th>Infant mortality(^{(3)}) (%)</th>
<th>HDI(^{(4)})</th>
<th>Extreme poverty(^{(5)}) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3'477,766</td>
<td>4'111,914</td>
<td>86.0(^{(b)})</td>
<td>79.8</td>
<td>15.0</td>
<td>90.0</td>
<td>57.0</td>
<td>90.0</td>
<td>28.3</td>
<td>90.0</td>
</tr>
<tr>
<td>Rural</td>
<td>2'652,113</td>
<td>2'952,440</td>
<td>72.5</td>
<td>53.9</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>6'129,879</td>
<td>7'064,354</td>
<td>74.8</td>
<td>69.0</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

M.T. – National Target.  
(1) Incidence of acute diarrhoea illness in children aged under 5-years-old.  
(2) In terms of delayed growth in children aged under 5-years-old.  
(3) In children aged under 5-years-old.  
(4) Human Development Index.  
(5) According to national criteria.  
(6) In sanitary and controlled landfills.

N.A. – Not Available  
(a) In number of inhabitants.  
(b) Percentage, in relation with the population with sewerage.  
(c) 20% of the urban population have sewerage.

Sources: UNDP, PAHO, SENASA, ESSAP.
2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Weakness in institutional capacities, both national and local, inefficient management of services.

- Lack of inter-agency coordination between the various stakeholders (sanitation providers ESSAP and SENASA, ministries, State offices, municipal authorities, governance, NGOs etc.) in systems building and maintenance.

- The legal framework is still inefficient in the regulation and control of sanitation service quality, especially in areas with no access to sewerage systems.

Inequities in access, quality of service and appropriate use

- Poor level of citizen demand for their rights, low public participation in decision-making, and monitoring of public sector actions due to a lack of access to information and organisational capacity.

- Lack of definition of a unified funding policy. This should provide secure and permanent sourcing including State subsidies for socially equitable development in the sector.

- Failure to apply appropriate low-cost technologies that would permit better access to sanitation services amongst poorer populations, especially amongst indigenous groups and in marginal urban areas.

---

Disposal of waste water and excreta

- Urban (sewerage) 86% coverage, of which 20% is in sewerage.

Sanitary landfill, 3.9%

Dumping in open air or water courses, 71.6%

Controlled landfill, 24.4%

---

Coverage of collection and forms of final disposal of solid waste (Año 2004)

- With coverage % 57.0

- No coverage % 43.0

---

*(1) In Paraguay, the MDG for coverage has already been met.
*(2) 86% urban coverage, of which 20% is in sewerage.*
1. Policies and strategies

- Environmental health and basic sanitation are important aspects of the health promotion policy 2006-2010 that is also included in the ELP. There are sector policies and strategies on hygiene promotion and sanitation education and the disposal of excreta. Meanwhile, those relating to: the collection, treatment and sanitary disposal of sewage sludge; water treatment; and the collection, treatment and disposal of solid waste; are still in the development process.

- The ELP sets targets for the water and sanitation sectors. The Department of the National Strategy to Fight Poverty (DIPLANP) was created to coordinate design of the plan, the strategy and interaction activities between institutions responsible for executing programs. DIPLANP coordinates the actions of various government and non-governmental institutions. This includes work with the National Service of Environmental Sanitation (SENASA) on a programme funded by the European Union focussing investments and promoting access to basic sanitation services in 64 districts with similar degrees of extreme poverty. The country also has a National Environmental Policy in place.

2. Legal Framework

- **Hygiene promotion and sanitation education**
  - Law Nº 836/80 Sanitation Code;
  - Law Nº 369/ 72 creating SENASA; and

- **Disposal of excreta**
  - Law Nº 836/80 Sanitation Code;
  - Law Nº 369/ 72 creating SENASA; ‘Organic Municipal’ Law Nº 1894/87;
  - Law Nº 1615 of ESSAP;
  - Law Nº 1614/02 ‘Regulatory and tariff framework for the drinking water and sanitation drainage service’; and
  - Law Nº 294/93, on Environmental Impact.

- **Waste water treatment**
  - Resolution 222 (SEAM), water quality; and
  - Law Nº 716/96 ‘Crimes against the environment’.

- **Collection, treatment and sanitary disposal of solid waste**
  - Law Nº 716/96 ‘Crimes against the environment’;
  - Resolution No 750/02 regulation of the Management of Solid Urban, Hazardous Biological – Infectious Industrial and Similar Waste; Ministry of the Environment (SEAM) Regulation No 281/04 on criteria for the selection of sites for tips; and
  - Law No 42/90 which bans the importing, dumping or use of dangerous industrial waste or toxic refuse.

- **Monitoring of contamination in water catchment areas**
  - Law Nº 836/80 Sanitation Code; ‘Organic Municipal’ Law Nº 1894/87; Law Nº 3239/07 on the Water Resources of Paraguay; and
  - SEAM resolution Nº 170 on the formation of Water Councils for Water Catchment Areas.
No specialist regulations have been developed for the collection, treatment and sanitary disposal of sewage sludge (general standards are provided in Law No 294/93 on the Environmental Impact and SEAM Resolution 1334-05 (transportation of effluents)) nor on the reuse of human excreta, sewage sludge, municipal waste waters and solid waste.

**Critical aspects of the legal framework**

1. There is a legal vacuum on the disposal of excreta in cases of individual sanitation solutions as regulations only exist for the use of conventional sewerage systems.

2. There are no strategies in place for the creation of laws and regulations to gradually phase in quality levels demanded of sanitation dependent on geographical aspects and implementation schedules.

### 3. Institutional framework

#### 3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

There is no governing entity in the sector. There is a drinking water and sewerage service regulatory body, ERSSAN, but its remit only covers conventional sewerage systems. SENASA is responsible for the promotion and construction of drinking water and sanitation systems in towns of less than 10,000 inhabitants, where Sanitation Councils are responsible for operations and maintenance. Services are provided by a range of suppliers including the national sanitation service ESSAP, Sanitation Councils, neighbourhood committees, binational entities, municipal authorities and governances. SEAM is the national environmental authority. The national environmental health department DIGESA is responsible for implementing the environmental health policy and also administers water quality control and monitoring.

**Platforms for coordination between stakeholders.**

- Cooperation agreements exist between ERSSAN and SENASA, and ERSSAN and the National University.
- Cooperation agreements exist between ESSAP, ERSSAN, SEAM and several municipal authorities for the implementation of sewerage systems and small scale effluent treatment.
- Cooperation agreements exist between SENASA and some governances.
- Modernisation of the drinking water and sanitation system is in progress. This will include an ‘environmental management seal of approval’ validation system to be implemented jointly between ERSSAN, ESSAP, SENASA and SEAM.

### Diagram of responsibilities

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP</td>
<td>ERSSAN</td>
<td>ESSAP</td>
<td>SENASA</td>
<td>DIGESA</td>
<td>SEAM</td>
<td>ITAIPU</td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td><strong>●</strong></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Regulation</td>
<td><strong>●</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td><strong>●</strong></td>
<td><strong>●</strong></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td><strong>●</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td><strong>●</strong></td>
<td><strong>●</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **●** Responsible
- **●** Involved
- Not involved
3.2 Collection, treatment and sanitary disposal of solid waste

Division of main functions between institutions

By law, the responsibility and competence for management of urban solid waste is strictly a municipal responsibility. This includes a commitment to collect and transport all solid waste produced by the community, provide adequate treatment and appropriate final disposal. No institution has assumed the role of governor or regulator. There is no national inter-agency body responsible for planning actions and encouraging development of the sector, or to provide technical assistance to municipal authorities.

Platforms for coordination

Some platforms for coordination exist between municipal authorities and NGOs working on joint projects.

3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country.

- Hygiene promotion and sanitation education programmes exist led by the Ministry of Public Health and Social Welfare through SENASA. These consist of sanitation education campaigns in locations where latrines are being installed, directed at both future users and students in local schools.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy development</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>●●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Critical aspects of the institutional framework**

1. Absence of a governing body in the sanitation section able to link and coordinate the public policies of institutions involved in the sector.

2. There is no assignment of specific functions and financial resources to municipal authorities for the management, promotion and implementation of sanitation systems.

**Critical aspects of the institutional framework for solid waste management**

1. No institution is responsible for coordinating policies and strategies on solid waste.

2. Municipal authorities do not have the capacity for self management and depend to a large extent on Central Government; they cannot contract debt or seek funding without approval of the Ministry of the Interior.
A hand-washing programme is being prepared in cooperation with the private sector, the Ministry of Health and SENASA.

A National Commission for Health Promotion was established in 2005, with bids from various government institutions on promotion programmes for healthy schools and homes with public and private funding. These initiatives are incipient but offer some level of potential for sanitation education in the country.

**4. Funding**

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (thousands of US$)</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene promotion and sanitation education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
<td>11,400</td>
</tr>
<tr>
<td>Rural (*)</td>
<td>11,400</td>
<td></td>
</tr>
<tr>
<td>Disposal of excreta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>436,600</td>
<td>516,300</td>
</tr>
<tr>
<td>Rural</td>
<td>79,700</td>
<td></td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>110,000</td>
<td>110,000</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td></td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>110,000</td>
<td>110,000</td>
</tr>
<tr>
<td>Rural</td>
<td>N.A.</td>
<td></td>
</tr>
</tbody>
</table>

N.A. – Not Available  
(*) Included in the costs of the excreta disposal systems.  
Sources: SENASA, ESSAP, PAHO.

Subsidy policies, cost recovery and tariffs have been developed for: health promotion and sanitation education; the disposal of excreta and the treatment of waste water. Meanwhile, these types of policies have not been foreseen for the collection, treatment and sanitary disposal of sewage sludge and solid waste.

Some mechanisms are implemented by ESSAP and SENASA, mainly linked to the international credit received.

**Critical aspects in hygiene promotion and sanitation education**

1. Education programmes are not reinforced through time. There is no coordination with the Ministry of Education and Culture.

2. SENASA, the main institution for promotion in the sanitation sector, is not a member of the National Commission for Health Promotion.

**Critical aspects of sanitation funding**

1. Sector institutions have no individual capacity for funding works; the State is in charge of funding investments through grants, credits and international aid.

2. The private sector has not provided alternative funding for the sector.
5. Monitoring and evaluation

**National indicators and information systems for the sector**

National indicators used in sanitation are: percentage of coverage of sanitation; malnutrition; prevalence of diarrhoea and water borne diseases. The information collected by the Department of Biostatistics of the Ministry of Public Health cannot be considered acceptable indicators due to existing levels of under reporting. There are no operational information systems in the sector.

**Sanitation within the analytical tools**

Sanitation is beginning to be introduced as an analytical tool in new programmes, although no results have yet been produced. DIGESA could play an important role by establishing monitoring and evaluation of human health linked to sanitation in their monitoring programmes.

### Critical aspects of sanitation monitoring and evaluation

1. Under reporting on a departmental and area basis (rural and urban) makes data interpretation difficult and prevents the formation of links with variables related to sanitation coverage and the consequences.
2. There is no monitoring of improvements in sanitation systems after drinking water systems are devolved to Sanitation Councils.

6. Capacities

**National reflection on human resources to achieve the MDGs/national targets**

There are enough adequately trained staff to achieve the MDGs. However, they are not used fully by national or local institutions. At a national level, the best trained members of staff are not in positions where they can generate change. At a local level, there is poor availability of staff heavy investment in training and greater job security are required.

**Technologies needed to achieve the MDGs/national targets**

The technologies needed to achieve in the MDGs and national targets are available. Universities have advanced programmes in these technologies and in hygiene promotion and sanitation education. Stable technical bodies must be created at local level and given strong support for institutional development in order to move sector policies and strategies forward - especially in municipal authorities and Sanitation Councils.

### Critical aspects of capacity in the sector

1. The lack of coordination between public institutions and universities means much of the capacity present in the country is not adequately used.
2. Municipal authority posts can only be held for five years - this limits effective training as there is no staff continuity.
Section C: Recommendations

1. Policies and strategies
   • Create a legal governing body for the sanitation sector.
   • The policies and strategies must be implemented by national laws and regulations drawn up jointly between the governing entity, the government planning office (STP) and other entities involved in the sector.

2. Legal Framework
   • Approve a law on solid waste.
   • Fill the legal vacuum on the regulation of in situ disposal of domestic effluent and make regulations on the tipping of liquid effluent into bodies of water more flexible, allowing for the gradual installation of treatment plants.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water
   • Establish an institution responsible for coordinating hygiene promotion actions, sewage sludge management and the treatment of waste water.
   • Define the Central Government institution responsible for providing assistance to municipal authorities in order to empower their participation in sector policies and strategies.

3.2 Solid waste management
   • Define a governing entity for the management of solid waste.
   • Define a Central Government institution responsible for providing technical and financial assistance to municipal authorities.

4. Funding
   • Create medium and long-term funding schemes through the use of local resources (bonds, grants etc) as a sustainability tool for sanitation investments.
   • Incorporate incentives for private sector participation in sanitation works. Adapt the regulatory framework in order to create an inter-municipal financial vehicle with both public and private participation that will encourage investment.

5. Monitoring and evaluation
   • Implement a coordinated information system between institutions responsible for monitoring sanitation programmes and develop indicators.
   • Incorporate DIGESA and the universities in monitoring and evaluation tasks.

6. Capacities
   • Generate strategic alliances with local universities to promote technological development in the sanitation area.
   • Strengthen the capacity of local people and sanitation councils in order for them to intercede more directly in local action like the municipal budget for sanitation and solid waste.
Successful experience: Private participation in sanitation

Private companies providing the collection, transportation and final treatment of waste waters and soak aways are equipped with the tools they need for collection, transportation and treatment of the effluent. At present they mainly work in urban areas where population density and problems with soil absorption mean the ground does not have sufficient capacity for infiltration. This private sector initiative can be extended and improved to cover the collection, transportation and treatment of sewage sludge. At least two of these companies already have the approval of the Ministry of the Environment.

Acronyms

CGR  Contraloría General de la República
CONAM  Consejo Nacional del Ambiente
CONAVI  Consejo Nacional de la Vivienda
DGEEC  Dirección General de Estadísticas Encuestas y Censos
DIGESA  Dirección General de Salud Ambiental
DIPLANP  Dirección Nacional de Lucha contra la Pobreza
ELP  Estrategia de Lucha contra la Pobreza
ERSSAN  Ente Regulador de Servicios Sanitarios
ESSAP  Empresa de Servicios Sanitarios del Paraguay
INAN  Instituto Nacional de Alimentación
INTN  Instituto Nacional de Tecnología y Normalización
KiW  Kreditanstalt für Wiederaufbau
MDG  Millennium Development Goal
MSP y BS  Ministerio de Salud Pública y Bienestar Social
NGO  Non-Governmental Organisation
PAHO  Pan-American Health Organisation
SAS  Secretaría de Acción Social
SEAM  Secretaría del Ambiente
SENASA  Servicio Nacional de Saneamiento Ambiental
STP  Secretaría Técnica de Planificación
UNDP  United Nations Development Programme

References


Acknowledgements

Document produced by Guido A. Duarte Amado. Collaborators: M. Lilian Fleitas (SENASA). We are also grateful to the following institutions for their support in obtaining the information used in this document, and for their participation in the Seminar Workshop on 10 September 2007: SENASA, Ministry of Public Health and Social Welfare, ESSAP, ERSSAN, SEAM, STP, SAS, World Bank, UNDP, PAHO, UNICEF, Gabinete Social, DGEEC, INAN, Itaipú Binacional.
Section A: Overview

1. Fulfilment of the sanitation goals

- In 2004, there was 57% national coverage of sewerage and other forms of excreta disposal. This coverage stood at 68% for the urban sector and 30% for the rural population.

- The National Sanitation Plan 2006-2015 aimed to provide 77% of the total population with sewerage or another sanitary form of disposal of excreta – a target that would also fulfill the MDGs – representing service provision to 24.5 million people, 19.1 million in the urban areas (84% coverage) and 5.4 million in rural zones (60% coverage).

- In 2006 more than 75% of waste water generated was not treated before final disposal. It is estimated that only 23.7% of waste water collected in urban areas received any type of treatment before being discharged into a receiving body. In Lima, where most of the waste water is generated, the Lima water company SEDEPAL only treats 9.4% of all waste water collected; and the remaining 90.6% is tipped into rivers or directly into the sea. By 2015, the national target is to achieve 100% treatment of waste water in urban areas, which means waste water collected from the population served by sewerage systems will also be treated.

- Only 75% of solid waste is collected in urban areas by municipal services, while 50% of streets and pavements are cleaned. It is estimated that only 30% of all refuse collected (22% of that generated) is finally disposed of in sanitary landfill.

- The sector requires investments of at least US$ 265 million per year if it is to achieve both water and sanitation MDGs. This would include refurbishment works in order to ensure that systems work properly. Similarly, an additional US$ 103 million per year will be needed to achieve 100% waste water treatment in urban zones.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Populationa</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>19.5</td>
<td>24.8</td>
<td>68.0 84.0 23.0 100.0</td>
<td>N.A. N.A. N.A. N.A.</td>
<td>N.A. 10.1 N.A. N.A. 37.1</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>8.0</td>
<td>7.0</td>
<td>30.0 60.0 N.A. N.A.</td>
<td>N.A. N.A. N.A. N.A.</td>
<td>N.A. 39.0 N.A. N.A. 4.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27.5</td>
<td>31.8</td>
<td>57.0 77.0 23.0 100.0</td>
<td>73.7 N.A. 65.7 N.A.</td>
<td>24.0 24.1 47.0 0.767 16.1</td>
<td></td>
</tr>
</tbody>
</table>

M.T. = National Target. (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (3) In children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) Sanitary landfill. Percentage of waste generated at a municipal level.

N.A. = Not Available
(a) In millions of inhabitants.

Sources: MVCS, SUNASS, PAHO, MINSA, INEI / ENDES.
2. Main critical aspects

Key critical aspects for fulfillment of the sanitation goals

- Low coverage of water, sanitation and waste water treatment services.
- Poor quality of service provision.
- Low sustainability of systems built.
- Tariffs that do not cover the costs of extending and improving services (tariff gap).
- The size of the markets of some service providers does not allow economies of scale, quality professionals or financial viability.
- There is no effective monitoring and funding for solid waste.
- Institutional and financial weakness.

Inequities in access, quality of service and appropriate use

- The sanitation situation is more critical in the rural sector where there are great inequities in coverage due to restricted access to services.
- International funding that has already been agreed will be used to increase current levels of rural sanitation coverage through the provision of latrines, avoiding projects with sewerage systems as far as possible.

---


<table>
<thead>
<tr>
<th>Coverage %</th>
<th>No coverage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary landfill</td>
<td>30.0%</td>
</tr>
<tr>
<td>Dumping in open air or water courses</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

---

(1) In terms of final disposal, the percentages apply to waste generated on a municipal level that received some form of final disposal.
Section B: Summary of the sanitation situation

1. Policies and strategies

- Sector policies and strategies for the safe disposal of excreta are defined in the National Sanitation Plan 2006-2015, which establishes the technical, environmental, economic and social actions planned in order to correct the infrastructure deficit.

- The general objective of the Sanitation Plan is aligned with the national plan for competitiveness which aims to provide sustainable improvements to the quality of life of the Peruvian population. The specific objectives include: the promotion of ongoing sanitation education programmes; the execution of works to extend sewerage coverage; the executions of works to extend the coverage of other excreta disposal systems (latrines or others); and waste water treatment works - both public and private.

- The policy objectives stated in the Plan aim to contribute to: extended coverage and improved quality and sustainability of sewerage systems; wastewater treatment and disposal of excreta in accordance with the National Plan to Overcome Poverty - one of the main themes of which is for all social programmes or projects to pursue the development of human capacity, where sanitation is one of the main areas of intervention; policy 13 and 21 of the National Agreement signed in 2002; and the MDGs.

- The country also has a National Plan for the Integrated Management of Solid Waste, which identifies investments needed in infrastructure and training.

Critical aspects of sanitation policies and strategies

1. The National Sanitation Plan and the National Plan for the Integrated Management of Solid Waste prioritise the provision of infrastructure and do not clearly establish the importance of the relationship between sanitation, hygiene promotion, sanitation education and its implementation.

2. Support is needed to strengthen service provider and municipal authority policies and strategies in order to allow for the effective decentralisation of services.

2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Disposal of excreta and waste water treatment**
  Law Nº 26338, General Law of Sanitation Services; Supreme Decree Nº 023-2005, Single Text Ordaining the Regulation of the Law of Sanitation Services; Law Nº 28611; and General Environment Law.

- **Collection, treatment and sanitary disposal of solid waste**

- **Monitoring of contamination in water catchment areas**
  Decree Law Nº 17752, General Waters Law; and Regulation of the General Waters Law.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

- The Ministry of Housing and Sanitation (MVCS) is the governing state entity on sanitation service issues through the National Sanitation Office (DNS). SUNASS is the sanitation services regulatory body in the urban areas.
- The Ministry of Health (MINSA) exercises functions in the sanitation aspects of drinking water quality and environmental health through its environmental health and sanitation departments DIGESA and DESAB. DIGESA is responsible for standards, supervision, evaluation and authorisation of the use of waste waters and the tipping of these, and also approves projects for effluent treatment systems. The Regional Health Offices (DIRESA) act as their regional counterpart. The Ministry of the Economy (MEF) has a special role in aspects of economic planning in the sector and financial regulation; NGOs and international cooperation agencies play a role in sanitation service provision, through training, technical advocacy and funding of investments. The National Fund for Cooperation for Development (FONCODES) also plays a role in the development, execution and funding of projects in the sector.
- Service providers in the urban area are SEDAPAL in Lima and EPS in the rest of the country. These are responsible for operating, maintaining and administering the services for 62% of the total population. Sanitation Boards (JASS) provide services to 29% of the population mainly in rural areas; and for the remaining 9% of the population there are specialist operators in 20 locations while others are served by municipal authorities.
- Regional governments should provide technical and financial support for local governments in

---

**Critical aspects of the institutional framework**

1. Poor coordination, gaps and overlap between various entities centrally and between these and other levels of government, in terms of planning, funding and other aspects.
2. Lack of corporate government in the EPS, including a lack of accountability and difficulties encountered by SUNASS in efficiently exercising its regulatory function.

---

### Organizational Chart

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMCS/DNS</td>
<td>SUNASS</td>
<td>DIGESA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>•</td>
</tr>
<tr>
<td>Regulation</td>
<td>••</td>
<td>•</td>
</tr>
<tr>
<td>Project implementation</td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Monitoring</td>
<td>••</td>
<td>••</td>
</tr>
</tbody>
</table>

**•• Responsible**  **• Involved**  **Not involved**
providing sanitation services; promoting and preserving environmental health in the region; and implementing the regional environmental management system in coordination with the Regional Environmental Commissions.

Platforms for coordination between stakeholders
The Grupo Agua is a water committee made up of bilateral and multilateral agencies, led by the MVCS, and the Sector Harmonisation Committee constituted by members of various institutions working in the sanitation field.

3.2 Collection, treatment and sanitary disposal of solid waste

Division of main functions between institutions
Integrated solid waste management is the responsibility of the National Environmental Council (CONAM) which is the governing body. Provincial and district municipal authorities are responsible for managing municipal solid waste management services. Private enterprises, small businesses, associations of rubbish sorters, neighbourhood associations and unions, the public cleaning equipment and implements industry, the recycling industry and others are involved in the provision of solid waste collection services through the solid waste service providers. DIGESA is in charge of funding.

Regional governments are responsible for promoting environmental health in their regions and for implementing the regional environmental management system.

Platforms for coordination
CONAM has assumed an active role in coordinating the various stakeholders, developing actions for exchanges of experiences, consultation workshops and training events, and the formulation of working plans.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONAM</td>
<td>Ministries</td>
<td>SUNASS</td>
<td>DIGESA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>••</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Regulation</td>
<td>•</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td>•</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
<td>••</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>••</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>•(1)</td>
<td>•(1)</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*•• Responsible  • Involved  • Not involved

(1) Sanitation monitoring. (2) Environmental monitoring.

Critical aspects of the institutional framework for solid waste management
1. There is no national governing entity, while institutional weakness is common on a local level due to staff turnover and lack of capacity. This hampers advances and prevents continuity.
2. There are no national level mechanisms to support agreement on sanitation activities at regional and local levels. The intermediate level of the sector organisational structure has not been developed, meaning district municipal authorities are not linked on local monitoring of services.
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country

- In rural areas, Peru’s National Water and Sanitation Programme (PRONASAR) has incorporated sanitation education and hygiene into each of the projects it is implementing. These aspects are approached before, during and after execution of the works.

- In urban areas, SEDAPAL has developed the coverage extension programme (PAC) for condominium sewage services, with pilot projects including a methodology that incorporates hygiene promotion and sanitation education.

- The Hand-washing initiative is being developed nationally under MINSA leadership with the support of private partners, public partners and civil society. The aim is to improve the health of populations nationwide who are at risk of contracting diarrhoea - especially children aged less than five-years-old - by acquiring new hygiene habits like washing their hands with soap.

Critical aspects in hygiene promotion and sanitation education

1. Successful experiences have not been replicated in the urban and rural ambit meaning the failure to ensure the sustainability of sanitation services.

2. The social and cultural background of the beneficiary population are not taken into consideration in the vast majority of sanitation services.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to comply with the MDGs/National Targets (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1,389</td>
</tr>
<tr>
<td>Rural</td>
<td>66</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>1,131</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>104</td>
</tr>
</tbody>
</table>

N.A. – Not Available

Sources: MVCS, PAHO.

Since 2006, as part of the government’s Investment Shock framework, the MVCS has been transferring finances to municipal authorities, service providers and regional governments, in order to fund projects with the viability granted by the national public investment office (SNIP).

Supreme Decree N° 021-2007-VIVIENDA on housing has approved requirements for resource allocation for funding in the sector. These requirements aim to seek sustainability in the beneficiary entities receiving the resources.

Law N° 29061, has created the Investment Fund for the Sanitation Sector to channel financial resources from domestic and foreign sources, to service providers (EPS and municipal authorities and the rural sector) operating on the criteria of efficiency, sustainability and choice.

In the case of the EPS, the tariff schedules are designed to allow the recovery of costs for drinking water services, the disposal of excreta and the treatment of waste water, on the basis of Optimised Master Plans approved by SUNASS.
Peru

According to the Regulation of the General Law on Sanitation Services family quotas must cover administration costs, operation and maintenance of services for small locations and the rural sector.

Regulations on the collection, treatment and sanitary disposal of solid waste state that rates for public services should be paid in the form of a tribute, meaning they must be calculated in relation to the actual cost of the service. However, this is not what occurs in practice and municipal revenue is not always spent on the same service from which it is raised, being diverted instead to other areas of the municipal budget. There are no effective charging mechanisms for public cleaning services, whereby there is a high level of arrears. Similarly, the few resources available are directed toward refuse collection, with final disposal left untouched.

**Critical aspects of sanitation funding**

1. MVCS needs to define a financial policy, and to activate INVERSAN as an overall mechanism for resource assignation, allowing for optimal use on the basis of economic efficiency, equity and sustainability of services.

2. There must be guaranteed sources of funding, mainly foreign and private capital in order to accomplish the goals of the National Sanitation Plan 2006-2015.

5. Monitoring and evaluation

**National indicators and information systems for the sector**

The most commonly used indicators for monitoring coverage and quality indicators include: continuity of water service (number of hours per day); micro measurements (percentage achieved by each EPS); unit production (l/inhabitant/day); and services with a disinfection system. Financial indicators are also monitored, including: arrears; operational margins of the EPS; active connections; and tariff levels.

In the solid waste sector, although coverage indicators are monitored, municipal authorities do not have the capacity needed to produce indicators for operational and technical quality.

Since 1994, SUNASS has run a basic technical and economic regulation information system for the business sector.

In 2006, the SIAS PERU information system was created under the DNS, in order to provide an up-to-date database of the main indicators for the sanitation sector. SIAS, which is currently being implemented, will consist of a group of processes that compile, develop and distribute information on the water and sanitation sector nationally to be used in sector operations and to support the decision-making processes in direction and control of the sector.

Another initiative has been undertaken by CONAM in association with the National System of Environmental Information (SINIA), where on-line information will be entered by non-municipal producers of waste in the form of cargo manifests. These companies must also produce a waste management declaration and a management plan each year. However, the information collected is of a very limited nature.

**Critical aspects of sanitation monitoring and evaluation**

1. There is no monitoring and evaluation system for solid waste management or the safe disposal of excreta and treatment of waste waters.

2. Implementation of a monitoring and evaluation system is essential; hence SIAS must be implemented quickly.
Sanitation within the analytical tools

Access to sanitation is the indicator used to measuring poverty levels, and these figures provide the basis for the national Poverty Reduction Strategy. These figures are also used for resource assignation and distribution by the municipal fund, FONCOMUN, which is transferred to municipal authorities by National Government, and for the regional fund, FONCOR, with transfers of funds to regional governments.

Feeding programs run by MINSA also use access to sanitation in analysis and criteria for formulating goals.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

There are very few sanitation specialists. The DNS is working on a Capacity Strengthening Programme to train staff in water supply and sanitation, a scheme which includes research and technical support elements. The National Sanitation Plan also includes the creation of a National Institute to offer technical assistance and training programmes in the sector.

Universities are able to train professionals in the sanitation field. But there are some serious failings, for instance: only a sanitation engineer is legally entitled to authorise the technical specifications of solid waste projects but the university programmes of study do not include a single module on the issue.

Some universities run research projects, but these are seriously limited by budget availability and dependence on funding from international co-operation entities.

Some NGOs hold training events, but these are also severely limited and there are no detailed programme specifications behind them. Training provided by the professional associations is also of a very limited nature.

Critical aspects of capacity in the sector

1. There is no information on actual numbers of sanitation professionals, nor are there any estimates of the number of newly trained graduates expected over the coming years.

2. In the vast majority of cases, the technical solutions implemented are dependent on techniques proposed by project designers, with no consultation with or participation from the beneficiary population.

Technologies needed to achieve the MDGs/national targets

There are low-cost, easy operation and maintenance technologies available, including some conventional ideas like individual sanitation disposal systems and collective (condominium) systems. Similarly, the design criteria for reed beds have been exported to other countries in the region, including some linked to the development and promotion of ecological sanitation systems (ECOSAN) and bio filters. The challenge, however, is to develop individual solutions in flood zones.

SEDAPAL now offers technological alternatives for sanitation systems including condominium sewerage systems for neighbourhoods of Metropolitan Lima. In rural areas, policy is limited to the building of latrines, despite the fact that both regional governments, district governments and FONCODES have been implementing sewerage systems with wastewater treatment plants in rural communities.

In solid waste, compactor trucks are the most commonly used technology in the country, although they are not entirely appropriate as in most of the waste collected is organic. There is also little capacity for sanitary landfill design.
1. Policies and strategies

- Establish the relationship between the implementation of hygiene promotion and sanitation education and improved health conditions for the population as part of sector strategy.
- Establish the strategy of strengthening sanitation service providers and municipal authorities in order to ensure effective decentralisation of services. This includes developing a financial policy which will introduce incentives for investment sustainability.

2. Legal Framework

- Revise the Regulations of the General Law on Sanitation Services in order to define user rights and duties in sanitation service provision, as well as the role of sanitation education and hygiene promotion.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Improve coordination and links between the various stakeholders in order to ensure adequate development of the sector.

3.2 Solid waste management

- Establish support and coordination mechanisms at regional, provincial and district levels.
- Funding capacity must be strengthened in all sectors involved in monitoring, and environmental consciousness must be fostered in the management of solid waste.

4. Funding

- Define a clear financial and tariff policy to ensure adequate economic resources to extend sanitation coverage and improve existing services.
- Execute an intensive promotion campaign for private sector participation in sanitation service provision, allowing for contributions to the sustainability of investments.

5. Monitoring and evaluation

- Make more flexible efforts for the rapid implementation of SIAS.
- Create a solid waste management monitoring system within CONAM, establishing mechanisms for coordination and responsibilities at the national, regional, provincial and district levels.

6. Capacities

- More flexible production of the Programme for Strengthening Capacity in the Sector with the agreement of the various stakeholders.
- Define the technological options to be used, in agreement with the various stakeholders, and with support from international technical cooperation.
Successful experience: Project for Extended Coverage in Lima and Callao

SEDAPAL has been implementing the PAC since 2003, and US$ 30 million will be spent in the first stage. The project will serve 30,000 houses in settlements in areas of poverty and extreme poverty in the periurban areas of Lima and Callao. The scheme provides technical service feasibility and legal ownership of housing, working alongside neighbourhood organisations that are willing to participate in the scheme and that have been officially recognized by municipal authorities.

The outcomes include radical changes in the quality of life of the population, providing condominium systems in the place of a total absence of sanitation. Entire household connections and multi-household systems are installed; the population has organised a Water and Sanitation Committee that manages demand for the service; environmental promoters have taken responsibility for monitoring service use and hygiene practices; and local people have been trained in exercising their rights and duties.

Efficient sewerage systems have also been built with sanitary facilities inside each home. The average cost of the condominium systems is less than half that of a conventional system, and local people take a leading role in implementing the projects, with some guidance, which leads to the effective and healthy use of both interior and exterior installations.

This project model will have a national impact as it could be replicated by other drinking water and sanitation providers in order to reduce the shortfall in services.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONAM</td>
<td>Consejo Nacional del Ambiente</td>
</tr>
<tr>
<td>DGPM</td>
<td>Dirección General de Programación Multianual del Sector Público</td>
</tr>
<tr>
<td>DESAB</td>
<td>Dirección Ejecutiva de Saneamiento Básico</td>
</tr>
<tr>
<td>DIGESA</td>
<td>Ministerio de Salud, Dirección General de Salud Ambiental</td>
</tr>
<tr>
<td>DIRESA</td>
<td>Dirección Regional de Salud Ambiental</td>
</tr>
<tr>
<td>DNS</td>
<td>Dirección Nacional de Saneamiento</td>
</tr>
<tr>
<td>DRVCS</td>
<td>Direcciones Regionales de Vivienda, Construcción y Saneamiento</td>
</tr>
<tr>
<td>EPS</td>
<td>Empresa Prestadora de Servicio de Saneamiento</td>
</tr>
<tr>
<td>EPS-RS</td>
<td>Empresa Prestadora de Servicios de Residuos Sólidos</td>
</tr>
<tr>
<td>FONCODES</td>
<td>Fondo Nacional de Cooperación para el Desarrollo</td>
</tr>
<tr>
<td>FONCOMUN</td>
<td>Fondo de Compensación Municipal</td>
</tr>
<tr>
<td>FONCOR</td>
<td>Fondo de Compensación Regional</td>
</tr>
<tr>
<td>INVERSAN</td>
<td>Fondo de Inversión Social y Saneamiento</td>
</tr>
<tr>
<td>JASS</td>
<td>Junta Administradora de Servicios de Saneamiento</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MEF</td>
<td>Ministerio de Economía y Finanzas</td>
</tr>
<tr>
<td>MINSA</td>
<td>Ministerio de Salud</td>
</tr>
<tr>
<td>MVCVS</td>
<td>Ministerio de Vivienda Construcción y Saneamiento</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>PARSSA</td>
<td>Programa de Apoyo a la Reforma del Sector Saneamiento</td>
</tr>
<tr>
<td>PROMUDEH</td>
<td>Fondo Nacional de Cooperación para el Desarrollo</td>
</tr>
<tr>
<td>PRONASAR</td>
<td>Programa Nacional de Agua y Saneamiento Rural</td>
</tr>
</tbody>
</table>
SEDAPAL  Servicio de Abastecimiento de Agua Potable y Alcantarillado de Lima
SIAS    Sistema de Información en Agua y Saneamiento
SINIA   Sistema Nacional de Información Ambiental
SNIP    Sistema Nacional de Inversión Pública
SUNASS  Superintendencia Nacional de Servicios de Saneamiento
VMCS    Vice Ministerio de Construcción y Saneamiento

References


Consejo Nacional del Ambiente (2005), Plan Nacional de Gestión Integral de Residuos Sólidos.


Ministerio de Vivienda Construcción y Saneamiento (2005), Estudio de Sostenibilidad de los Servicios de Alcantarillado en zonas rurales del país; PRONASAR.

Acknowledgements

We would like to thank the institutions that contributed to the preparation of this report: MVCS-DNS, CEPIS-PAHO, MINSAS-DIGESA and CONAM.
Section A: Overview

1. Fulfilment of the sanitation goals

- According to the Suriname Multiple Indicator Cluster Survey (MICS) 2006, 92% of the population live in homes with improved sanitation installations. In urban areas, this figure is 98% and in rural coastal areas and the interior, percentages are 91.6% and 33% respectively.

- Coverage had reduced slightly in the urban area and increased slightly in rural zones in comparison with MICS 2000. No national objective has been set and the MDGs cannot be achieved infrastructure coverage continues to advance at this rate. In the interior, where basic hygiene practices are at a very limited level and foci of contamination imply greater risks, the main requirement is for better infrastructure coverage coupled with complimentary hygiene promotion.

- In terms of environmental policy, the Multiannual Development Plan (MOP) 2001-2005 emphasises the protection, conservation, improvement and rehabilitation of the quality of the environment and sustainable development. Existing environmental legislation, the government entities in charge of implementation and inadequate monitoring mechanisms all limit increased access to improved sanitation. The MDGs on sanitation will probably not be achieved due to the lack of support given to the issue.

- Meanwhile, sanitation management has improved significantly in Paramaribo. The Government of Suriname has provided considerable amounts of funding, especially for the maintenance of open sewers. It has calculated investment of US$ 6 million for improved sanitation in urban and coastal areas until 2010.

- In the rural area in the interior of the country, the main government strategic advance has been in the community development perspective promoted by the Ministry of Regional Development (MRO) in cooperation with other ministries. The Community Development Fund of Suriname (CDFS) and Interior Development Fund (FOB) have implemented improved sanitation installations in the neediest communities, with total investment of approximately US$ 4 million in 25 projects for drinking water supply and sanitation. Improved sanitation elements have been implemented over the last four years.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste water</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>242,946</td>
<td>98.0 100.0</td>
<td>89.0 N.A.</td>
<td>82.0 N.A.</td>
<td>0.0 N.A.</td>
<td>8.4 N.A. N.A.</td>
</tr>
<tr>
<td>Rural coast</td>
<td>201,532</td>
<td>92.0 100.0</td>
<td>73.0 N.A.</td>
<td>42.0 N.A.</td>
<td>7.0 N.A.</td>
<td>8.2 N.A. N.A.</td>
</tr>
<tr>
<td>Rural interior</td>
<td>48,351</td>
<td>33.0 65.0</td>
<td>4.0 N.A.</td>
<td>0.0 N.A.</td>
<td>0.0 N.A.</td>
<td>11.3 N.A. N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>492,829</td>
<td>92.0 97.0</td>
<td>73.0 87.0</td>
<td>58.0 N.A.</td>
<td>3.0 0.012</td>
<td>9.8 25.0 0.759</td>
</tr>
</tbody>
</table>

M.T. – National Target. (1) Incidence of acute diarrhoea illness in children aged under 5-years-old. (2) In terms of delayed growth in children aged under 5-years-old. (4) Human Development Index. (5) According to national criteria. (6) Controlled landfill with compacted concrete base.

N.A. – Not Available
(a) In number of inhabitants.
Sources: MSAH, PAHO, UNDP, ABS.
2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Most of the institutions in the sector are weak. Many offer services that are not self-sustaining or self-funding, and there is limited allocation of funds. The sewerage system is inadequate and it is managed inefficiently and ineffectively, as responsibilities for sector management are fragmented across several institutions and departments. There is a lack of qualified staff and no clear legal and regulatory framework.

- In the 1960s a Master Plan for the Sanitation of Paramaribo was drawn up, but only a small number of the planned projects were ever implemented due to a lack of funds. Although studies have been made, Paramaribo still has no Sewerage Authority.

- In the rural interior of the country, similar institutional problems are compounded by the absence of a solid and co-ordinated rural sanitation program and poor health education – elements that form serious limitations.

Inequities in access, quality of service and appropriate use

- Technical problems - like inadequate septic tank design that does not allow appropriate removal of solid waste - affects the quality of sanitation services in urban and rural coastal areas.

- There is a serious lack of appropriate sanitation practices, and the limited availability of installations in rural parts of the interior is equally poor.
There is clear inequality of access. Access to improved sanitation installations is almost three times lower in the rural interior than in urban and rural coastal areas. The United Nations encountered serious human rights violations in indigenous and tribal communities. Children in particular have limited access to basic health services; there are high rates of maternal and infant mortality and malnutrition along with poor sanitation and limited access to drinking water.

Section B: Summary of the sanitation situation

1. Policies and strategies
   • The MOP 2006-2010 emphasises the commitments made by Suriname within the MDG framework. Objective 7 especially demands a strategy aimed towards an integrated and sustainable environmental policy that attends to biodiversity, the management of chemicals and waste, the atmosphere, water management, land management and renewable energy.
   • Hygiene promotion and health education policies form an integral part of public health preventive policies and educational strategies. Policies on the disposal of excreta constitute a dominant part of poverty reduction strategies, especially for rural areas of the interior. Policies on the collection, treatment and disposal of sewage sludge and solid waste are linked with environmental protection policies. No policies have yet been developed for the treatment of waste water. None of the policies in the sector form part of the economic development policies.

2. Legal Framework
   » Disposal of excreta
     Some aspects are covered by the Law on Ankylostomiasis: Anchylostoomwet (G.B. 1937 No. 23, z.l.g. bij S.B. 1980 No. 116), on prevention of the development and propagation of ankylostomiasis, through regulations for private installations and discharges in rural districts; and Anchylostoombesluit (G.B. 1937 No. 24), that regulates application in the sector and establishes quality requirements for building private facilities.

   » Collection, treatment and sanitary disposal of solid waste
     Some aspects are covered in the Law on Nuisances, which, amongst other issues, considers industrial and commercial waste. Other aspects are covered by Criminal Law, which includes resolutions on the tipping of waste in public spaces. The Law on Pesticides stipulates the safe elimination of unwanted pesticides.

     No specialist regulations have been developed for: hygiene promotion and sanitation education; the collection, treatment and sanitary disposal of sewage sludge; the control of contamination in water catchment areas; or for the reuse of human excreta, sewage sludge, municipal waste water and solid waste. There is currently a Bill for a Law on Waste (Afvalstoffenbesluit) pertaining to these matters.

Critical aspects of sanitation policies and strategies
1. MOP strategy is not an integrated sanitation policy, as it is limited exclusively to solid waste.
2. Policies and links between all sectors of sanitation must be clearly outlined.

Critical aspects of the legal framework
1. Existing legislation on health and environmental matters is vague and outdated. There is an urgent need to update the legal framework on sanitation in the country.
2. The system of for applying the law must be strengthened and reorganised.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

Responsibility for sewage management and the disposal of waste water is shared between the Ministry of Public Works (MOW) Sewerage and Drainage Division and the Public Health Office (BOG) Environmental Control Division (MI). The Ministry of Regional Development (MRO) offers logistical support. The MOW mandate covers the capital. The Ministry of Health is responsible for the management of environmental health, which includes testing the quality of drinking water and waste disposal (domestic, hospital and industrial). There are no structural platforms to facilitate coordination between various stakeholders.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government(1)</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees(2)</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOW</td>
<td>ATM</td>
<td>MOH</td>
<td>MRO (CDFS and FOB)</td>
<td>District Commission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Regulation</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Project implementation</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Monitoring</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* Responsible  * Involved  Not involved


**Critical aspects of the institutional framework**

1. Lack of coordination and integration of responsibilities between various institutions, which results in the inefficient use of staff, unfocused planning of the needed investments, and variable charges for services.
2. Responsibilities are heavily centralised in the capital.

3.2 Collection, treatment and sanitary disposal of solid waste

**Division of main functions between institutions**

Responsibilities for the operational aspects of solid waste management are mainly assigned to three ministries: MOW, Public Services Department (for the planning and funding of solid waste collection and disposal in Paramaribo) and the Solid Waste Collection and Disposal Division (for waste collection and disposal); MRO for solid waste collection and disposal in districts; and MOH, Environmental Management Department, for specialist services throughout Suriname, including road sweeping.

The National Institute for the Environment and Development of Suriname (NIMOS) of the Ministry of Work, Technology and the Environment (ATM)

**Critical aspects of the institutional framework for solid waste management**

1. There is inadequate community participation in Local Government structures.
2. Responsibilities are heavily centralised in the capital.
is responsible for the environmental legislation, regulatory framework, guidelines and standards, as well as monitoring and coordination of the application of these. This is not active in the areas mentioned. The BOG-MVZ carries out routine sanitation and environmental inspections on a national level and investigates complaints raised by the community.

There are no structural platforms to facilitate coordination between the various stakeholders.

### 3.3 Hygiene promotion and sanitation education

**Programmes, institutions and impact of hygiene promotion and sanitation education in the country.**

The BOG-MVZ leads some programmes in the health and environment sector raising public awareness of these issues. NGOs have received training from the PAHO/WASH programme for regular community training. The Ministry of Education has included hygiene as an important component in the primary school curriculum.

**Critical aspects in hygiene promotion and sanitation education**

1. The sustainable development of existing technology has not been continued.
2. The hygiene promotion and health education perspective has been applied in schools in the rural interior.

### 4. Funding

Policies have not been developed for: subsidies, cost recovery and tariffs for hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

Most sanitation in Suriname is funded by the state budget. Community projects for drinking water supplies and sanitation have been funded through CDFS and FOB through loans from donors and subsidies, especially in the rural coastal area and the rural interior. There are no financial monitoring mechanisms.
5. Monitoring and evaluation

National indicators and information systems for the sector

The MICS form their baseline from the number of improved and non-improved sanitation facilities, along with the percentage of the population using sanitary means for the disposal of excreta. There are no established information systems in the sector.

Sanitation within the analytical tools

Sanitation information is not used in tools to analyse health improvements, the mitigation of environmental pollution and poverty reduction.

6. Capacities

There has been some reflection on existing human resources, but this has been limited to government institutions assuming the main responsibilities in the sector.

The country has access to appropriate technologies needed to achieve the MDGs and national targets. Institutions working on the implementation of sanitation projects in rural areas of the interior have a sustainable technology perspective that includes the promotion of composting toilets. Anton de Kom University is another institution with technological knowledge.
Section C: Recommendations

1. Policies and strategies

• Develop an integrated sanitation policy to include all sectors.
• Sector policies must be clearly outlined and links between sectors must be made explicit.

2. Legal Framework

• Update the national legal framework on sanitation.
• The system for applying the law must be strengthened and reorganised.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

• Coordination and integration of responsibilities currently fragmented across various institutions would result in a more efficient use of staff and resources, plans that are better focused on the necessary investment and a more uniform level of service charges.
• Delegate more responsibilities and assign greater budgets to the District Commissions, especially in the rural interior and rural coastal areas.

3.2 Solid waste management

• Improve community participation in Local Government structures. Delegate more responsibilities and assign larger budgets to the District Commissions, especially in the rural interior and rural coastal areas.
• Create a national solid waste authority, which has administrative, planning and monitoring autonomy in order to guarantee that national regulations, guidelines and technical standards are implemented on a district level.

4. Funding

• The coordination and integration of budgets fragmented across various institutions would result in: a more efficient use of staff and resources; planning that is better focused on the necessary investment; and a more uniform level of service charges.
• Introduce a tariff structure based on equity and adhering to the principle of total coverage of costs or operating costs.

Critical aspects of capacity in the sector

1. Human resource development is needed, especially in terms of work productivity, efficiency and effectiveness.
2. There is a shortage of human resources in the solid waste sector. There are no career paths offering specific training.
5. Monitoring and evaluation

- Establish an information system.
- Develop analytical tools for sanitation and evidence-based analysis on health, environmental contamination and poverty reduction.

6. Capacities

- Develop human resources for sanitation in the country.
- Continue with the sustainable development of existing technology on the same scale.

**Successful experience: Baku and sustainable sanitation in the interior of Suriname**

Baku is an isolated Cimarrón settlement, of approximately 7 families. The people live in simple wooden huts, making a living from fishing and local agriculture. The residents live far below the poverty line; they have inadequate sanitation and no basic facilities. The residents deposit their excreta in the open air behind their houses. Under an initiative implemented by the United States Peace Corps, under PAHO guidance, the people of Baku have built seven improved and ventilated pit latrines since 2007. Peace Corps volunteers have collected the money and materials from the people themselves and have also organised the free distribution of materials by local businesses. With a little guidance, a small town in the rural interior can improve its own sanitation conditions, with guaranteed independence from central government, creating a sense of community ownership and increasing sustainability.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>National Statistics Office</td>
</tr>
<tr>
<td>ATM</td>
<td>Ministry of Labour</td>
</tr>
<tr>
<td>BOG</td>
<td>Public Health Office</td>
</tr>
<tr>
<td>CDIF</td>
<td>Community Development Fund of Suriname</td>
</tr>
<tr>
<td>FOB</td>
<td>Interior Development Fund</td>
</tr>
<tr>
<td>HDI</td>
<td>Human Development Index</td>
</tr>
<tr>
<td>IDB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>MB</td>
<td>Environmental Management Division</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MI</td>
<td>Environmental Control Division</td>
</tr>
<tr>
<td>MICS</td>
<td>Multiple Indicator Cluster Survey</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOP</td>
<td>Multi-annual Development Plan</td>
</tr>
<tr>
<td>MOW</td>
<td>Ministry of Works</td>
</tr>
<tr>
<td>MRO</td>
<td>Ministry of Regional Development</td>
</tr>
<tr>
<td>MSAH</td>
<td>Ministry of Social Affairs and Housing</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NIMOS</td>
<td>National Institute for Environmental and Development of Suriname</td>
</tr>
<tr>
<td>PAHO</td>
<td>Panamerican Health Organisation</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNICEF</td>
<td>Fondo de las Naciones Unidas para la Infancia</td>
</tr>
</tbody>
</table>
References


Acknowledgements

Coordination and production: Niels Van Eybergen (PAHO). Acknowledgement of information contributed by MOW, MOH, MRO, MSAH, ATM and PAHO.
Section A: Overview

1. Fulfilment of the sanitation goals

Access to water and sanitation is a fundamental human right established under the Constitution of the Republic, whereby a State policy must be enacted to make access universal. There is a high level of coverage by networks offering high quality permanent drinking water services and sanitation services in relatively large urban areas. The nation’s commitment to the goals set is shown in the willingness to create a new institution to formulate specific policy on the issue and the level of capacities developed.

2. Main critical aspects

**Key critical aspects for fulfilment of the sanitation goals**

- **Strengths:** the current coverage provided by the national sanitation company, OSE, in the safe disposal of excreta and the execution capacity provided by their own funds and funding from the World Bank; programmes for the regularisation of settlements in marginal areas; the fact that a governing institution has existed for the sector since 2005 within the Ministry of Housing, Land Registration and Environment (MVOTMA) National Department of Water and Sanitation (DINASA).

- **Weaknesses:** recent institutional governance; multiple institutions in the sector; recent efforts for inter-agency coordination.

**Inequities in access, quality of service and appropriate use**

- Disparity in coverage of sanitation sewerage system infrastructure between the city of Montevideo and other urban areas of the country.
- Great disparity in of sanitation infrastructure between urban or suburban zones of extreme poverty and the remaining urban area.
- Reduction of the quality of sanitation services, mainly in the urban interior, due to clandestine rainwater drainage connections to the sewerage system infrastructure.

**Sanitation coverage and health and human development indicators**

<table>
<thead>
<tr>
<th></th>
<th>Population (%)</th>
<th>Disposal of excreta (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste Collection (%)</th>
<th>Sanitary disposal (%)</th>
<th>Acute diarrhoea (%)</th>
<th>Chronic malnutrition (%)</th>
<th>Infant mortality (%)</th>
<th>HDI</th>
<th>Extreme poverty (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>91.8</td>
<td>N.A.</td>
<td>98.0</td>
<td>100.0</td>
<td>57.0</td>
<td>78.5</td>
<td>86.0</td>
<td>N.A.</td>
<td>68.1</td>
<td>N.A.</td>
</tr>
<tr>
<td>Rural</td>
<td>8.2</td>
<td>N.A.</td>
<td>91.1</td>
<td>100.0</td>
<td>91.0</td>
<td>95.5</td>
<td>0.0</td>
<td>N.A.</td>
<td>0.0</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>N.A.</td>
<td>97.5</td>
<td>100.0</td>
<td>60.0</td>
<td>80.0</td>
<td>78.9</td>
<td>N.A.</td>
<td>62.5</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

**Notes:**

- M.T. – National Target
- (1) Incidence of acute diarrhoea illness in children aged under 5-years-old
- (2) In terms of delayed growth in children aged under 5-years-old
- (3) In children aged under 5-years-old
- (4) Human Development Index
- (5) Indigence, according to INE, 2002 methodology
- (6) Sanitary and controlled landfill
- N.A. – Not Available

(a) Data from 2004, when the total population of the country was 3,241,003 inhabitants. In the eight years since the last Census in 1996, the population habitually resident in Uruguay grew by an average national rate of 3.5%.

Sources: MSP, UNICEF, UNDP, INE.
• Lack of control over leakage from individual excreta disposal systems.

• High percentage of housing with no connection to existing networks.

• Deficiencies in the provision of sewage sludge removal services. For locations with populations of over 5,000 inhabitants, the service is the responsibility of departmental government and the private sector. For smaller locations, the service is the responsibility of the departmental government which generally has very little management capacity.

Section B: Summary of the sanitation situation

1. Policies and strategies

• Montevideo has a public sanitation policy implemented by the departmental government. Even though there is currently no formal sanitation policy for the country, DINASA was created within MVOTMA in 2005 charged with the task of creating one. Sector policies and strategies have not yet been developed on: hygiene promotion and sanitation education; the disposal of excreta; the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water.

• Links between policies are formed through a transverse coordination policy within the Executive Power; however, this must be improved and institutionalised.
2. Legal Framework

» Disposal of excreta
Waters Code (Law 14.859 and amendments), regulates the introduction of substances into water; Decree 253/79 and modifications establish standards for monitoring of water; and Decree 497/88, regulates the discharging of sewage sludge tankers.

» Collection, treatment and sanitary disposal of sewerage sludge
(Only applicable in the Department of Montevideo) Montevideo Municipal Council (IMM) Resolution 117/97, establishes criteria on the final disposal of industrial sludge and Resolution 162/97, modifies criteria on acceptable non-hazardous sludge.

» Waste water treatment
Waters Code (sanctioned by Law 14.859 and amendments), regulates the introduction of substances to water; Decree 253/79 and amendments, sets monitoring standards for water and industrial effluent; Law 16.466, regulates environmental impact evaluation and Decree 349/05 approves the Regulation of Environmental Impact Evaluation and Environmental Authorisations.

» Collection, treatment and sanitary disposal of solid waste
Law 17.283, on environmental protection; Law 16.466 on evaluation of environmental impact; and Decree 349/05 approves the Regulation of Environmental Impact Evaluation and Environmental Authorisations; Art. 402 of Law 17.296, regulates the location of treatment plants and sites for the final disposal of waste; Organic Municipal Law establishes competence over the urban solid waste at the departmental level; Decree 135/99, regulates solid waste from hospitals; Decree 373/03, regulates the final disposal of used batteries; and Decree 260/07 regulates the final management and disposal of packaging.

» Monitoring of contamination in water catchment areas
Waters Code (sanctioned by Law 14.859 and amendments), regulates the introduction of substances to water; Decree 253/79 and amendments, sets monitoring standards for water and industrial effluent; Law 16.466, regulates environmental impact evaluation; and Decree 349/05 approves the Regulation of Environmental Impact Evaluation and Environmental Authorisations.

No specialist regulation has been developed for: hygiene promotion and sanitation education; or for the reuse of human excreta, sewage sludge, municipal waste water and solid waste.

Critical aspects of the legal framework

1. The regulatory framework for water and sanitation in Uruguay is fragmented and dispersed. It is hard to understand and presents inorganic and unclear regulation.
2. There is an absence of specific regulations to establish norms and indicators regulated by general standards.
3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water
In recent years there has been a tendency to divide functions between service providers, policy-makers and regulators. In 2005, DINASA was created as an entity responsible for formulating policies on water and sanitation. In 2002 the Energy and Water Regulation Unit (URSEA) was created as a comptroller and regulator entity. Service providers continue to be IMM and OSE. The remaining city councils participate through agreements to extend networks with OSE. Given the early stage of the process, the various functions have not yet been totally assumed and implemented.

Platforms for coordination between stakeholders.
DINASA is creating openings for coordination between the various stakeholders.

Critical aspects of the institutional framework
1. Multiplicity of competent institutions on the issue. There is some overlap of functions, leading to reduced efficiency in the outcome of tasks undertaken.
2. OSE provides the sewage system throughout Uruguay except in the Department of Montevideo. This has led to location-related differences in terms of the criteria employed and levels of service provided.

3.2 Collection, treatment and sanitary disposal of solid waste

Division of main functions between institutions
- MVOTMA: ‘will dictate and apply the measures necessary to regulate the generation, collection, transportation, storage, commercialisation, treatment and final disposal of waste’ according to the General Law on Protection of the Environment (LGPA).
- Departmental Governments: management of domestic waste.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>DINAMA</td>
<td>DINASA</td>
<td>URSEA</td>
<td>OSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Responsible * Involved * Not involved
Platforms for coordination

MVOTMA through DINAMA, has promoted national openings for coordination on non-urban waste (including civil society), as well as opportunities for interdepartmental interchange and coordination on urban solid waste.

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>DINAMA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy and strategy development</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>•</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>•</td>
<td>•</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Responsible
- Not involved

3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country.

- Hygiene promotion programmes are run by IMM, the Ministry of Social Development (MIDES), the Ministry of Public Health (MSP) and MVOTMA.
- There are no indicators to measure the impact.

Critical aspects in hygiene promotion and sanitation education

1. The absence of policy leads to a lack of coordination. The situation has improved since MIDES was created in 2005 to act for those in the poor or extremely poor economic brackets.
2. Existing programs mostly cover issues of hygiene promotion and sanitary education in a subsidiary manner, as these are fundamentally social programs.

4. Funding

Policies have been developed for subsidies, cost recovery and tariffs for the disposal of excreta (2); the collection, treatment and sanitary disposal of sewage sludge and solid waste; and the treatment of waste water. This type of policy has not been considered for hygiene promotion and sanitation education and the collection, treatment and sanitary disposal of solid waste. There are financial monitoring mechanisms in place.

Critical aspects of sanitation funding

1. Need for review of the tariff structure.
2. Absence of financial provision for achieving the MDGs by 2015.
5. Monitoring and evaluation

National indicators and information systems for the sector

- **Indicators**: area covered by sanitation, coverage for each house, number of connections.
- **Information systems**: IMM has an information system for the sector.

Sanitation within the analytical tools

No information is available on improvements in health as no analysis has been undertaken. However, the IMM does consider mitigation of environmental pollution and uses the improvement of urban water courses as an indicator. As for poverty reduction: the HDI does not cover sanitation and the Unsatisfied Basic Needs (UBN) covers it through the precariousness of housing.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

No calculation has been made of numbers, although consideration of quality has leading to the conclusion that there is a deficit.

Technologies needed to achieve the MDGs/national targets

The necessary technologies exist and, in many cases, these are known and are being used.

<table>
<thead>
<tr>
<th>Title</th>
<th>Urban</th>
<th>Rural</th>
<th>Estimated investments for the next 5 years (thousands of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td>N.A.</td>
<td>3,000 (2)</td>
<td></td>
</tr>
</tbody>
</table>
| Sewage sludge management                   | N.A.  | N.A.  | Included in ‘Treatment of municipal waste waters’.
| Treatment of municipal waste waters        | N.A.  | 3,000 (2) |
| Management of municipal solid waste        | 30,135 (1) | N.A.  |

N.A. – Not Available
(1) Investment in municipal solid waste corresponds to the PDRS proposal for AMM, in terms of infrastructure and equipment.
(2) Public investment estimated on the basis of municipal and OSE sewage sludge collection services.
Sources: OSE, IMM, DINAMA, PDRS.

Critical aspects of sanitation monitoring and evaluation

1. Information is hard to access. Conditions are only monitored in cases of need and rarely in a prospective manner.
2. There is no integrated and systemised knowledge of how the sewage sludge removal system operates.

Critical aspects of capacity in the sector

1. Deficit of human resources in the sanitation sector, as there is a shortage of trained professionals compared with demand.
2. There is a shortage of staff in the solid waste sector; a situation compounded by the lack of specific career paths as only generic training is available.
Section C: Recommendations

1. Policies and strategies

- Formulation of a National Plan for Waters and Sanitation that defines the objectives, goals, activities, timing, stakeholders, priorities, instruments and indicators. This has been developed in a participatory manner with contributions from the various stakeholders.
- Strengthening and consolidation of the new institutions created.

2. Legal Framework

- Formulation of an explicit and adequate regulatory framework fitted to the objectives proposed and the necessary institutionality. This must be proposed by the Executive Power and approved by Parliament.

3. Institutional framework

3.1 Hygiene promotion, disposal of excreta, management of sewage sludge and treatment of domestic waste water

- Continue to formalise treatment of sludge and waste water, in accordance with dumping standards.
- Incorporate the actions necessary to tackle this issue in a systematic, regulated manner considering continual improvement within the National Plan for Waters and Sanitation.
- Approve the Bill currently working through the Executive Power on obligatory connection to the sewerage system wherever this passes close to homes.

3.2 Solid waste management

- Incorporate solid waste treatment plant management into sector planning, providing adequate final disposal and, wherever possible, reuse for productive ends (a fundamental responsibility of service providers).
- Strengthen departmental governments on the issue of solid urban waste.

4. Funding

- Plan necessary resources for the implementation and execution of activities in the coming national budget five-year plans. The Executive Power must assume these activities and Parliament must approve them.

5. Monitoring and evaluation

- Monitoring and evaluation of sector policies by DINASA. The indicators used must be reported and serve as a database, with the cases of the remaining stakeholders pending implementation.
- The environmental authority, DINAMA is responsible for monitoring and control of the dumping and final disposal of liquid effluent and solid waste. Specific actions are planned for these aspects.

6. Capacities

- Strengthening of planning capacities of DINASA, under the Programme for the Modernisation of Public Services and the operational management of OSE, through the Programme for the Modernisation of Management with Funding from the International Bank for Reconstruction and Development (IBRD).
- Strengthening of capacities for innovation, technological development and training through technological development centres, under agreements and conventions between the various stakeholders.
Successful experience: Montevideo Urban Sanitation Plan, Stage III (PSU III)

The objective of the programme was to improve the living conditions of the population in the urban area of Montevideo, through increased coverage of the sewerage system and a reduction of both domestic and industrial pollution in the water courses of the city - mainly the Pantanoso, Miguelete and Carrasco.

The programme had four component parts: (a) institutional strengthening of IMM; (b) solid waste (programme to reduce the tipping of solid waste into the Miguelete and Pantanoso rivers); (c) control of contamination in the Pantanoso and Miguelete; and (d) sanitation.

The following outcomes of PSU III were selected as indicators:

- **Coverage**: The works provided sanitation to 140,000 more inhabitants, increasing coverage from 80% to 88% of the population.
- **Resettlement**: Around 300 households were resettled from risk zones.
- **Loads in Montevideo Bay and the Pantanoso and Miguelete rivers**: Reduction of the loading of contaminants to the watercourses mentioned, reduction from previous levels.

Notes

1. This refers only to solid urban waste.
2. There are two tariff structures for areas covered by OSE and IMM, respectively, with independent criteria. The OSE tariff structure dates back 40 years and has been distorted and corrected by successive modifications, whereby it is difficult to relate prices to costs for the service provider. The current tariff regime does not provide incentives for efficiency within the company. Existing crossover subsidies are not explicit. The tariff structure for the Department of Montevideo is more recent and simple, although it needs to be fitted to clear and explicit objectives. DINASA still has to develop tariff and subsidy policies as a basic tool to achieve the objectives outlined for the universal access to and efficiency of services.

Acronyms

- AIDIS: Asociación Interamericana de Ingeniería Sanitaria y Ambiental.
- AIQ: Asociación de Ingenieros Químicos.
- AIU: Asociación de Ingenieros del Uruguay.
- AMM: Área Metropolitana de Montevideo.
- CNDAV: Comisión Nacional Defensa del Agua y la Vida.
- COASAS: Comisión Asesora de Aguas y Saneamiento.
- DINAMA: Dirección Nacional de Medio Ambiente.
- DINASA: Dirección Nacional de Aguas y Saneamiento.
- DINAVI: Dirección Nacional de Vivienda.
- IBRD: International Bank for Reconstruction and Development
- IMM: Intendencia Municipal de Montevideo.
- INE: Instituto Nacional de Estadísticas.
- LGPA: Ley General de Protección al Ambiente.
- MDG: Millennium Development Goal.
- MIDES: Ministerio de Desarrollo Social.
- MSP: Ministerio de Salud Pública.
- MVOTMA: Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente.
- NBI: Necesidades básicas insatisfechas.
NGO Non-Governmental Organisation
OSE Administración de las Obras Sanitarias el Estado.
PAHO Pan-American Health Organisation
PDRS Plan Director de Residuos Sólidos de Montevideo y Área Metropolitana.
UBN Unsatisfied Basic Need
UdelaR Universidad de la República.
UNDP United Nations Development Programme.
URSEA Unidad Reguladora de Energía y Agua.
WHO World Health Organisation

References

Fitchner (2004). Plan Director de Residuos Sólidos de Montevideo y Área Metropolitana.

Acknowledgements

Individuals consulted
M. Selva Esteva (OSE), Marisol Mallo (DINAMA), Alfredo Spangenberg (CSI Ingenieros), Ismael Piedracueva (UdelaR Engineering Faculty), Dr Carmen Ciganda (MSP), Cristian Mirza (MIDES), Manuel Chabalgoity (PIAI), Cecilia Carne (ANEP), Alicia Pettí (DINAVI), Enrique Alonso (MEVIR), Andrés Hermida (URSEA), Rafael Bernardi (PNUD), Dr Roberto Salvatella (OPS), Jorge Alcina (IMM).

Eduardo H. Wirth (AIQ), Carmen Sosa (CNDAV), Jose Luis Genta (DINASA), Daniel Greif (DINASA), Luciana Macedo (DINASA), Juan Martínez (DINASA), Germán Saralegui (DINASA), Magdalena Marinoni (DINASA), Andrés Gilmet (MIDES), Adriana Marchisio (CNDAV), Enrique Alonso (MEVIR), Isabel Dol (MSP), Teresa Chaves (MEF), Alejandro Nicolini (AIU), Alejandro Irubio (AIDIS), Selva Esteva (OSE).

Production of the report
Contact: M. Alessandra Tiribocchi Barelli (independent consultant). Counterpart: Daniel Greif (DINASA). Contributors: Dr Magdalena Marinoni (DINASA), Luciana Macedo (DINASA), Juan Martínez (DINASA), Germán Saralegui (DINASA).
1. Fulfilment of the sanitation goals

- In June 2007, coverage for the collection and disposal of waste water was 83.8% in the urban areas and 72.3% for the rural sector. According to public strategies, policies and investment plans for the sector, the goal of 100% coverage will be achieved by 2010. The country has estimated costs of approximately US$ 1.5 billion to meet national targets. The MDGs were met in 2006.

- Coverage for the treatment of waste water was 20.2% in June 2007. The Bolivarian Government has prioritised this situation, and in 2006 works (construction of wastewater treatment plants, sanitation of riverbeds and beaches, amongst others) worth an approximate US$ 300 million were undertaken. These and other investments, will contribute to 27% national coverage by the end of 2007. The national target is to achieve coverage of 40% by 2010 and 60% by 2015. Investments of US$ 3.621 billion will be required.

- The Bolivarian Republic of Venezuela is committed to strategic objectives on solid waste as laid out in Chapter 21 of Agenda 21 on rational ecological waste management. The Government is especially keen on going beyond the simple elimination or reuse of safe waste products to tackle the root of the problem by changing unsustainable production and consumption patterns.

2. Main critical aspects

Key critical aspects for fulfilment of the sanitation goals

- Problems in the planning, production and execution of projects, given population dispersal, disorganised settlement growth (suburban and rural), training of infrastructure construction staff, operators and maintenance workers.

Sanitation coverage and health and human development indicators

<table>
<thead>
<tr>
<th></th>
<th>Population(a)</th>
<th>Disposal of excreta (b) (%)</th>
<th>Treatment of domestic waste waters (%)</th>
<th>Solid waste</th>
<th>Health indicators</th>
<th>Poverty indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>22'499,241</td>
<td>N.A. 83.8 100.0</td>
<td>N.A. N.A. N.A. N.A. N.A.</td>
<td>N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>3'054,263</td>
<td>N.A. 72.3 100.0</td>
<td>N.A. N.A. N.A. N.A. N.A.</td>
<td>N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25'553,504</td>
<td>31'017,064</td>
<td>82.1 100.0 20.2 60.0 75.0 90.0 34.0 90.0 33.3 1.6 17.5 0.8144 18.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M.T. – National Target. 
(a) In number of inhabitants. Projections based on the 1990 census. 
(b) Based on the 2001 census. 
(c) N.A. – Not Available 
(d) In terms of incidence of acute diarrhoea illness in children aged under 5-years-old. Preliminary figures. 
(e) In terms of acute diarrhoea illness in children aged under 5-years-old. 
(f) In children aged under 6-years-old. For 2005 it is 5.06%. 
(g) In children aged under 5-years-old. For 2005 it is 5.06%. 
(h) Human Development Index. 
(i) This section of the population has an income below the cost of the basic basket of foods. 
(j) Sanitary landfill.
• The rugged nature of some geographical zones hampers the installation of integrated and efficient solutions.

• Many municipal authorities do not yet have the staff, infrastructure and equipment required for the efficient management of solid waste collection and disposal.

• Investment planning is not yet adequately coordinated.

**Inequities in access, quality of service and appropriate use**

• For many years, low income population groups in both urban and rural areas did not receive a waste water collection and disposal system, and where they did, it was a lower quality service. This situation is being overcome through community participation in all areas (urban, rural and indigenous), with investments of US$ 7.6 million in works executed and administered directly by communities that have benefited 200,000 people.

• In the matter of solid waste, difficulties in access and the distances between settlements makes it difficult to extend urban sanitation coverage to all the population. Municipal authorities are currently revising management models to open the way for new forms of community participation (community councils, technical boards) and to improve the efficiency of services.
Section B: Summary of the sanitation situation

1. Policies and strategies

- Environmental sanitation is a priority and is one of the strategic goals of the General Economic and Social Development Plan for the Nation (2001-2007). This forms the basis for guarantees of inclusion and universal public services, including the provision of good quality waste water collection, treatment and disposal services for those members of the public who do not yet have these; optimising existing services, and promoting responsible public participation in environmental management.

- Integrated solid waste management form and integral part of strategies for inclusion and improvements in quality of life.

- All sector policies are linked to poverty reduction strategies, protection of the environment and the economic development of the nation, working toward the well-being of the entire population.

2. Legal Framework

- **Hygiene promotion and sanitation education**

- **Disposal of excreta**

- **Waste water treatment**
  Organic Law for the provision of drinking water and sanitation services of December 2001; Decree N° 1.977 Partial Regulation N° 1 of the Organic Law for the provision of drinking water and sanitation services of 22 November 2004; Decree N° 883, Standards for the classification and quality control of bodies of water and tipping or liquid effluent of December 1995.

- **Collection, treatment and sanitary disposal of solid waste**

Critical aspects of sanitation policies and strategies

1. The planning and execution of projects by various territorial political entities (ministries, governances, mayors’ offices, community councils) without any coordination between them.

2. The cumulative housing shortage generates urban pressure that results in the appearance of unsupervised developments.
Monitoring of contamination in water catchment areas


Critical aspects of the legal framework

1. The dispersed nature of standards hampers regulation by the State. The overlap of national competences on governance, service provision and regulation demands extensive project planning and execution in order for targets to be met.

2. Solid waste regulations are new and they require evaluation and updating. The ordinances dictated by the various municipal authorities are assumed as organic laws and they obviate the general principles of the legislation on management of activities.

3. Institutional framework

3.1 Disposal of excreta, management of sewage sludge and treatment of domestic waste water

HIDROVEN, a public company owned by the Ministry of the Environment, serves 70% of the population through nine subsidiary companies. The rest of the population is served by five decentralised companies with the participation of governances and municipal authorities, by decentralised entities of the governances and municipal authorities, and by community organised through the Technical Water Boards. The latter are community-based organisations working on the water issue - they keep the community informed; they serve as mediators in the event of conflicts, they provide services in some sectors; and they execute works to extend and improve the service. The functions of governance and regulation are fulfilled through HIDROVEN.

Platforms for coordination between stakeholders.

- The Ministry of the Popular Power for the Environment (MINAMB), HIDROVEN and its subsidiaries, and the decentralised companies and other service providers throughout national territory have mechanisms to
coordinate actions, above all in terms of planning investments to expand the service, economic and technical regulation, and the strengthening of community participation.

- Technical Water Boards form a platform and mechanism for coordination. There are more than 2,800 technical boards that were basically constituted with the support of the Regional Hydraulic Companies (EHR) and decentralised groups to resolve any problems in services detected by members of user communities. The Education Ministry has provided support for educational programmes in the sector.

3.2 Collection, treatment and sanitary disposal of solid waste

**Division of main functions between institutions**

The functions of governance and regulation come under the National Public Power, through competent entities like the Ministries of Environment and Health. States are obliged to provide technical and financial support for the management of municipal authorities, whilst designing and supporting joint plans with the national executive and local governments for special purposes (contingencies, emergencies and natural disasters). The municipal authority is responsible for protection of the environment and co-operation in environmental sanitation.

MINAMB is the governing entity on the matter. There is a refuse and waste management section under the General Department for Environmental Quality, which sets all guidelines and strategies on this matter. There is also a Solid Waste Execution Unit responsible for building sanitary landfills on a national level and the sanitation of solid waste dumps.

**Platforms for coordination**

MINAMB has staff employed in the regions to supervise solid waste projects. Coordination mechanisms exist in community councils and Mayors’ offices. There is a Technical Commission in Caracas made up of all entities involved in the urban and domestic sanitation services. Also, the Law on Refuse and Solid Waste establishes a National Commission on the issue, with representatives from governing entities including: health and the environment, education, representatives of Mayors’ offices and governances, and the private sector.

---

**Critical aspects of the institutional framework**

1. Achieving cultural change is not easy.
2. Raising awareness of shared environmental management is proving to be a challenge for managers within current service providers.

---

**Matrix of institutional framework**

<table>
<thead>
<tr>
<th>National Government</th>
<th>Regional Government</th>
<th>Local Government</th>
<th>Private sector</th>
<th>NGOs</th>
<th>User committees</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and strategy development</td>
<td>●●</td>
<td>●●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Regulation</td>
<td>●●</td>
<td>●●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Project implementation</td>
<td>●●</td>
<td>●●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>O&amp;M management</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>●●</td>
<td>●●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.3 Hygiene promotion and sanitation education

Programmes, institutions and impact of hygiene promotion and sanitation education in the country.

- The Environmental Education Plan 'El agua en nuestras vidas' (water in our lives) is being developed by the water companies in order to raise public awareness on the responsible and sustainable use of drinking water and the value of environmental sanitation. HIDROVEN, as the governing body for the sector, designs annual strategies for the programme and directs resources to 2,122 schools dealing with 500,000 children nationally.

- The Ministry for Health and Social Development (MSDS) has been creating education and communication strategies to provide the community with advice, information and guidance on disease awareness and prevention, setting up programmes to strengthen primary and secondary health care.

4. Funding

<table>
<thead>
<tr>
<th>Title</th>
<th>Investments required to meet national targets (millions of US$)</th>
<th>Estimated investments for the next 5 years(^1) (millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of excreta</td>
<td>N.A.</td>
<td>1,500</td>
</tr>
<tr>
<td>Treatment of municipal waste waters</td>
<td>3,600</td>
<td>3,600</td>
</tr>
<tr>
<td>Management of municipal solid waste</td>
<td>280</td>
<td>600</td>
</tr>
</tbody>
</table>

N.A. – Not Available

\(^1\) Investments considered for the 2006-2010 period.

Sources: HIDROVEN, Ministry of the Environment.

- Service providers do not request payment from the poorest 35% of the population, and 16% of the remaining 65% are considered social subscribers, whereby they pay only 20% of the actual tariffs. This policy is related to the principle of solidarity and the recognition of social debt in sector policies.

- The cost of the large investments in service expansion and improvements are not passed on to users (subsidies to demand). Current tariffs do not cover the operation and maintenance costs of all the companies. In spite of this, resources are diverted into hygiene promotion and sanitation education. National Government also subsidises extensive investments in sanitation education programmes.

- Solid waste tariffs show no consideration the large investments being made in open landfill sites or investments made by the National Executive.
Municipal authorities have their own financial control mechanisms on contracts or with services operators for the collection and disposal of solid waste.

5. Monitoring and evaluation

National indicators and information systems for the sector

Coverage is used as the national indicator, as both billing and charging are linked to drinking water services. Even though there is no information system for the sanitation sector, certain methodologies provide sufficient data for monitoring and integrated evaluation.

HIDROVEN works directly with Barrio Adentro social health programme and with the dependencies responsible for rural development like the Ministry of Popular Power for Citizen Participation. The National Institute of Statistics (INE) carries out ongoing house-to-house surveys with six monthly results allowing for monitoring of waste water collection, treatment and disposal.

Sanitation within the analytical tools

The data obtained in the sector are sometimes considered in drawing up analytical tools to improve health, mitigate environmental pollution and reduce poverty.

6. Capacities

National reflection on human resources to achieve the MDGs/national targets

The Bolivarian Government considers it is important to strengthen public management in order to obtain results. The government priority on the sector can be seen in: educational programmes for environmental engineering and other related issues at university level; revised university programmes for postgraduate degrees in the management of rural aqueducts; educational programmes implemented by HIDROVEN on a national scale (the training of operators etc); the Environmental Education Programme ‘Water in Our Lives,’ with support from the Ministry of Education.

Technologies needed to achieve the MDGs/national targets

The Government has moved forward on science and technology in order to strengthen the way this is managed. The sector has been reviewing the technologies on offer to be used in new investment projects that could increase service coverage and improve sanitation on a national level.

Critical aspects of sanitation funding

1. Project formulation and evaluation process is slow in the sector, making it difficult to guarantee optimal decisions in resource allocation.

2. Staff training and strengthening of the technological platform are critical in achieving efficient investment and expected results.

Critical aspects of sanitation monitoring and evaluation

1. Capacity to generate, organise and disseminate statistical information and management indicators is underused in the sector.

2. Lack of an information system complicates the monitoring and evaluation of behaviour in waste water collection, treatment and disposal services on a national level.
Section C: Recommendations

1. Policies and strategies
   • Creation of the Central Planning Commission – to establish precise and integrated planning for all economic, social and political factors in the country - will allow for coordination and more ordered investment of resources in the sector.
   • The solid waste sector must be maintained as a specific item for investment, in order to guarantee continued progress through time and to deepen educational aspects in order to achieve changes to unsustainable production and consumption patterns.

2. Legal Framework
   • The new legal framework is currently being implemented.
   • There is a need for review and strengthened application of the legal framework to include the extended responsibility of producers and measures to discourage the use of non-reusable or disposable packaging.

3. Institutional framework

   3.1 Solid waste management
   • Make environmental education programmes more systematic in order to increase valuation of this service and contribute to its sustainability by providing payment.
   • Move forward on aspects of inter-agency coordination in order to improve refuse and solid waste management nationally.

4. Funding
   • Strengthen sector planning and investment systems and involve the competent entities at all territorial political levels. This will make public investment more efficient and the outcomes are more likely to have the expected results amongst the public.

5. Monitoring and evaluation
   • There is an overwhelming need for review and updating of methodology and procedures for the monitoring and evaluation of environmental sanitation.
   • Well designed information systems will provide for evaluation of resource investment, the effectiveness of these and their impact on the population.
6. Capacities

- Strengthened plans and programmes for the training of officials, community leaders and individuals involved in the areas analysed contributes to improved environmental sanitation management.
- Capacities must be strengthened in official entities, above all in the matter of planning, management by results, information systems management and the design and evaluation of impact indicators and results. Citizen education on hygiene and environmental sanitation is a priority for the Government.

Successful experience: Waste water networks in the María Concepción Palacios Neighbourhood

The María Concepción Palacios neighbourhood, in southern Maracaibo, Manuel Dagnino Parish, has a population of approximately 200 families (1,400 inhabitants) who are poor but responsible. For many years, the waste water flowed from their homes directly into the streets or across neighbouring pavements. In order to deal with the resulting serious hygiene and health problem, they decided to build the wastewater collectors and network they needed. These works, at an estimated cost of US$ 100,000, had been put on hold for many years by various entities at different levels of territorial politics, due to: a lack of financial resources; the difficulties inherent in digging pipelines across the main motorway of Maracaibo; and the refusal of the 700 families in the neighbouring community of Santa Clara to allow the waste to cross their property. The Santa Clara residents would not allow the waste water to be channelled into the network that discharged in the main collector within their jurisdiction.

After 22 months of mediation, the National Guard, the Police of Maracaibo, the Public Prosecutor, the Environmental Prosecutor and the State service provider Hidrolago were assembled. An agreement was reached and the community proceeded to execute the works directly through the Technical Water Board. The 20-year conflict between the two communities was finally resolved and joint approaches adopted to problems of hygiene and health, sanitation and environmental education.

Acronyms

- HIDROVEN: C.A Hidrologica Venezolana, leader of the drinking water and sanitation sector
- INE: Instituto Nacional de Estadistica
- MDG: Millennium Development Goal
- MINAMB: Ministerio del Poder Popular para el Ambiente
- MPPPD: Ministerio del Poder Popular para la Planificacion y Desarrollo
- MSDS: Ministerio del Poder Popular para la Salud y el Desarrollo Social
- NGO: Non-Governmental Organisation

References

Instituto Nacional de Nutrición.
Acknowledgements

The following institutions and individuals contributed supporting data for this document: MINAMB, INE, C.A Hidrolago; C.A Hidrocapital; C.A Hidrofalcon; Cristóbal Francisco O., Vice Minister of Water, President of HIDROVEN; Miguel Rodríguez, Vice Minister of Conservation, (MINAMB); Francisco Duran, Vice President of HIDROVEN; Jesús Castillo, Director General of Environmental Quality (MINAMB); Vladimir Valera, Director of the Mangement of Refuse and Solid Waste (MINAMB); Junel Briceño, Environmental Quality (MINAMB); Francisco Duran, Vice President of HIDROVEN; Jesús Castillo, Director General of Environmental Quality (MINAMB); Vladimir Valera, Director of the Management of Refuse and Solid Waste (MINAMB); Eufe Valderrama, Manager of the Technical Board Finance Fund. HIDROVEN; Dora Salas, HIDROVEN Regulation Management Specialist; José Sotolano, Minister of the Environment's Office (MINAMB); Yemina Guzman, Vice Minister's Office (MINAMB); Zulay Ocanto, Coordinator of the Environmental Education Programme 'Water in Our Lives', Hidrocapital; Oswaldo Velazco, Superintendent of Human Resource Management; Hidrofalcon.
Joint Monitoring Program (JMP)

The JMP is the product of collaboration between two United Nations agencies – the World Health Organisation (WHO) and the United Nations Children’s Fund (UNICEF) with the objective to: a) monitor tendencies and progress within the drinking water and sanitation sector on a world level; b) strengthen capacities of countries to monitor these indicators; and c) inform decision makers and civil society on the situation in the sector.

Indicator of access to sanitation services

<table>
<thead>
<tr>
<th>Definition</th>
<th>Percentage of the population using “improved” sanitation installations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td>- Connection to sewerage.</td>
</tr>
<tr>
<td></td>
<td>- Public or shared latrine.</td>
</tr>
<tr>
<td></td>
<td>- Connection to septic tank.</td>
</tr>
<tr>
<td></td>
<td>- Simply dry pit latrine without slab.</td>
</tr>
<tr>
<td></td>
<td>- Pour flush system latrine.</td>
</tr>
<tr>
<td></td>
<td>- Bucket.</td>
</tr>
<tr>
<td></td>
<td>- Simple pit latrine with slab.</td>
</tr>
<tr>
<td></td>
<td>- Ventilated improved pit latrine.</td>
</tr>
<tr>
<td>Not improved</td>
<td></td>
</tr>
</tbody>
</table>

Sanitation coverage in Latin America and the Caribbean (in percentages)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total(%)</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1990</td>
<td>81</td>
<td>86</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>91</td>
<td>92</td>
<td>83</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>91</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belize</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>47</td>
<td>71</td>
<td>25</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1990</td>
<td>33</td>
<td>49</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>46</td>
<td>60</td>
<td>22</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>67</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brazil</td>
<td>1990</td>
<td>71</td>
<td>82</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>79</td>
<td>85</td>
<td>37</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>86</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chile</td>
<td>1990</td>
<td>84</td>
<td>91</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>91</td>
<td>95</td>
<td>62</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>82</td>
<td>95</td>
<td>52</td>
</tr>
<tr>
<td>Colombia</td>
<td>1990</td>
<td>82</td>
<td>96</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>91</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>91</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>92</td>
<td>89</td>
<td>97</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cuba</td>
<td>1990</td>
<td>98</td>
<td>99</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>98</td>
<td>99</td>
<td>95</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>99</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1990</td>
<td>52</td>
<td>60</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>78</td>
<td>81</td>
<td>73</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>76</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1990</td>
<td>63</td>
<td>77</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>89</td>
<td>94</td>
<td>82</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>82</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1990</td>
<td>51</td>
<td>70</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>62</td>
<td>77</td>
<td>39</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>76</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1990</td>
<td>58</td>
<td>73</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>86</td>
<td>90</td>
<td>82</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>79</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Guyana</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>70</td>
<td>86</td>
<td>60</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total(%)</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haiti</td>
<td>1990</td>
<td>24</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>30</td>
<td>57</td>
<td>14</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>62</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Honduras</td>
<td>1990</td>
<td>50</td>
<td>77</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>69</td>
<td>87</td>
<td>54</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>75</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1990</td>
<td>75</td>
<td>86</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>82</td>
<td>91</td>
<td>69</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>88</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mexico</td>
<td>1990</td>
<td>58</td>
<td>75</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>79</td>
<td>91</td>
<td>41</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>79</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1990</td>
<td>45</td>
<td>64</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>47</td>
<td>56</td>
<td>34</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>73</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Panama</td>
<td>1990</td>
<td>71</td>
<td>89</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>73</td>
<td>89</td>
<td>51</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>86</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1990</td>
<td>58</td>
<td>72</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>80</td>
<td>94</td>
<td>61</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>79</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Peru</td>
<td>1990</td>
<td>52</td>
<td>69</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>63</td>
<td>74</td>
<td>32</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>76</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>89</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Suriname</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>94</td>
<td>99</td>
<td>76</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1990</td>
<td>100</td>
<td>100</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>100</td>
<td>100</td>
<td>99</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1990</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>68</td>
<td>71</td>
<td>48</td>
</tr>
<tr>
<td>MDG</td>
<td>2015</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1) Considers all improved sanitation installations, public and private.
The Latin America Sanitation Conference LATINOSAN 2007 is supported by the following institutions: Ministerio de Ambiente, Vivienda y Desarrollo Territorial de Colombia, Comisión de Regulación de Agua Potable y Saneamiento Básico de Colombia, Universidad del Valle, Instituto de Investigación y Desarrollo en Abastecimiento de Agua, Saneamiento Ambiental y Conservación del Recurso Hídrico (CINARA), Water and Sanitation Programme for Latin America and the Caribbean (WSP-LAC), World Bank, United Nations Children’s Fund (UNICEF), Inter-American Development Bank (IDB), Pan-American Health Organisation (PAHO), Swiss Agency for Development and Cooperation (COSUDE), German Technical Cooperation Agency (GTZ), Ministerio Federal de Cooperación Económica y Desarrollo, Andean Development Corporation (CAF), United States Agency for International Aid (USAID), Center for Disease Control and Prevention (CDC), Fundación Boliviana para la Salud (Fun Salud), Water Integrity Network (WIN), Proactiva Medio Ambiente, Escuela de Ingeniería de los Recursos Naturales y del Ambiente (EIDENAR), Empresas Municipales De Cali (EMCALI), Empresa de Acueductos y Alcantarillados del Valle (Acuavalle), Corporación Autónoma Regional del Valle del Cauca (CVC), International Water and Sanitation Centre (IRC), Federación Nacional de Cafeteros de Colombia, Bavaria, Productora de Papeles S.A. (PROPAL), Agua Cristal Sensations, AGUA 2007, ACUACOL, Gender and Water Alliance (GWA), Global Water Partnership, PAVCO S.A., Cámara de Comercio de Cali, United Nations Department of Economic and Social Affairs (UNDESA), Asociación Interamericana de Ingeniería Sanitaria y Ambiental (AIDIS), Water Supply and Sanitation Collaborative Council, Water Sanitation Hygiene (WASH), Superintendencia de Servicios Públicos Domiciliarios de Colombia.