

ON THIS ISSUE

EDITORIAL	1
by Walter Ubal, Program Manager, EMS/UPE/IDRC	
ENVIRONMENTAL MANAGEMENT SPECIAL	1
Interview to José H. Penido, Asesor from COMLURB, RJ - Brazil	
EMS AGENDA AT A GLANCE	2
ONGOING INITIATIVES	3
Ground water management project in Heredia, Costa Rica	
CONTRIBUTIONS TO POLICY MAKERS	4
Hazardous Waste Management Guide	
Training on Integrated Urban Solid Waste Management in LAC: workshop and course	
NEW UNDERTAKINGS	4
UPE Focus Cities Program	
CITY PRESS	4
Events and opportunities	

ENVIRONMENTAL MANAGEMENT FEATURE: TRAINING IS ESSENTIAL



*Engineer José Henrique Penido Monteiro
Chief Adviser to COMLURB's Technical Industrial
Directorate
Rio de Janeiro Waste Management Municipal
Corporation (COMLURB), Brazil*

What is Integrated Urban Solid Waste Management (IUSWM)?

Integrated Management is the set of activities whose aim is the management of the solid waste generated in an urban area, bearing in mind that that waste, on account of its highly heterogeneous nature, has different characteristics and potentials which must be considered from the moment of its generation to the exhaustion of all the potential for technical and economic use of its components. That is to say, the activities that make up the system, such as collection, transport, use, treatment and final disposal, must be universalised (service to all the population) and happen under appropriate sanitary and environmental conditions, at the lowest possible cost for society, thus assuring its economic and environmental sustainability, with social responsibility.

What sort of institutional arrangements are most effective in Latin America and the Caribbean (LAC) in implementing IUSWM policies and plans?

The best solid waste management is that which is conducted by a strong institution held in high regard by the Municipality (or Mayor's Office), has a budget which is consistent with its needs and the necessary staff to meet them in accordance with the sanitary and environmental rules and the legislation of the country at the lowest possible cost for the population. The ways of hiring and/or providing the different services will have to respect the characteristics of each city, from the economic, social, cultural and urban-development point of view.

In what way are the facilities emerging from the Kyoto Protocol really an opportunity for LAC Municipalities?

There's no doubt that the projects built into the Clean Development Mechanism established by the Kyoto Protocol may become a lever for the

The water and the waste are gone but not forgotten

In the cities, when it comes to both water and waste, little do users care or know about where they end up after they have been used. However, this aspect is one of the greatest challenges facing local and national authorities in harmonising standards of living with development.

In the last months of last year, IDRC's EMS-UPE, through the IDRC-IMET Memorandum of Understanding, developed two activities aimed at strengthening municipal integrated solid waste management (ISWM) capacities. This approach incorporates the 4Rs concept (reduce, re-use, recycle and recover) into the multidisciplinary nature of the activity. As a result of these activities, first a series of basic guidelines for ISWM in LAC were elaborated, which were later incorporated into a capacity-building course that trained 25 municipal technicians in the making of municipal ISWM plans and their integration into the facilities of the clean development mechanisms (CDM). (See adjacent interview)

Local management on the way to sustainable development forces us to strive to research into forms of management that combine knowledge of integrated environmental management with the incorporation of suitable technologies which are accessible to local communities and enable the use and transformation of their environmental resources.

Two simple experiences funded by the EMS-IDRC through the small research grants programme are an example of how in one case, the Andean community in the small locality of Lacabamba in Peru is developing a waste water treatment system through the establishment of artificial wetlands (see EMS Agenda), and in the other, water supply to the population of the city of Heredia, Costa Rica, in the dry season is assured through the sustainable use of an underground aquifer (see Ongoing Initiatives).

Over the next few months, attempts will be made to extend the integrated solid waste management approach to integrated municipal waste water management so as to allow other municipalities to benefit from these programmes.

The abovementioned activities, in turn, are in line with two fundamental events taking place these days: The Global Ministerial Environmental Forum and the World Water Forum. The former, which recently came to a close in Dubai, placed energy at the heart of the environmental agenda. It **identified it as one of the most serious problems facing the planet**, stressing its impact on the economies of developing countries and the fight against poverty, while the World Water Forum, due to take place in mid March in Mexico, recognises water as the core of the problem of growth and development from a local perspective. Undoubtedly, energy and water are the cornerstones of development in the modern world. In both cases, their efficient use and integrated management are the axes of sustainability for the planet.

*Walter Ubal Giordano,
Program Manager*

Secretariado de Manejo del Medio Ambiente para América Latina y el Caribe

"IDRC is at the nexus of innovation and development: Research and innovation are fundamental to achieving a sustainable and equitable world and to reducing poverty"

"One of the main reasons for the chronic failure in waste management.... is the lack of training of the staff charged with this task"

improvement of waste management in Latin American cities through the contribution of resources resulting from the sale of carbon credits. Nevertheless, this is possible only if there is a political decision by the Mayor to the effect of implementing measures that will provide the system with long-term support, always assuring service to all the population and under appropriate sanitary and environmental conditions.

In what way do you think the IUSWM training activities that the EMS-UPE-IDRC has been promoting over the past few years will help LAC municipalities?

One of the main reasons for the chronic failure in waste management in most South American cities is the lack of training of the staff charged with this task. The activities developed by the EMS, which include, among others, the promotion of courses and seminars, address this shortcoming of municipalities, which don't always have the resources to provide their technicians with the

opportunity for training and professional evolution so that they can perform their waste management duties in their cities appropriately.

What kind of actions would you suggest the EMS-UPE-IDRC should promote so as to contribute to upgrading IUSWM in LAC municipalities?

Establishing a schedule of courses involving the different stages of integrated waste management, such as collection, rubbish tip (dump) closure plans, plans for the cleaning of neighbourhoods, the operation of sanitary embankments, composting and recycling, feasibility studies to secure carbon credits through improvements in the treatment and final use of waste, among others. Promoting meetings (workshops) with Mayors to sensitise them so that they will deal with the topic of waste as government priority, showing there are political and social advantages to appropriately managing the urban cleaning of their city. Promoting permanent contact among the students on the different courses promoted, with a view to sharing experiences and monitoring waste management activities in the different cities. Developing distance courses in the different topics involved in urban solid waste management, seeking, in an economically viable way, to train as many technicians and people interested in this major sector of basic sanitation as possible.

EMS AGENDA AT A GLANCE

On this occasion, we will include the activities that the EMS is developing within the framework of the topic which this bulletin focuses on Urban Environmental Management: Solid Wastes and Water.

MONITORING OF PROJECTS

Within the framework of monitoring activities of the [call for multistakeholder partnerships for the sustainable use of water in urban areas](#), of the EMS's Small Research Grants Programme, the following projects were visited:

- **EL SALVADOR:** Micro-región Ahuachapán Sur – (Project: "Application of local Legislation related to the protection and management of water resources and its impact on the ACASAPS (community structures in potable water management) in the Ahuachapán Sur Micro-region")
- **NICARAGUA:** San Jorge – (Project "Quality of water in the Lago de Nicaragua (Cocibolca) in the southern area of municipal influence of the Isle of Ometepe. A scientific-technical information contribution to develop a strategy to protect the Gran Lago basin of Nicaragua")
- **BRAZIL:** Governador Valadares – (Project "Alternatives in water use in the urban area of Governador Valadares")
- **COSTA RICA:** Municipalidad de Heredia ("Integrated management of the ground water resource in terms of potable water and protection supply" - See [Ongoing initiatives](#))
- **PERU:** Municipalidad de Lacabamba
Walter Ubal, on his assignment to the Andean Region, visited the project "Adaptation of a waste water treatment system in the urban community of Lacabamba, Ancash region, Peru, using the artificial wetlands technology," which is being implemented by the Municipality of Lacabamba in association with the Research Institute of the School of Geological, Mining, Metal and Geographical Engineering of the Universidad Nacional Mayor of San Marcos (II GEO - UNMSM).

This project will contribute to pollution reduction in the surface sources in the region, the protection of the inhabitants' health and preventing environmental deterioration, as well as promoting new options for the reuse of waste water in integrated agricultural production systems and giving it added value through the establishment of a community bio-farm in the community of Lacabamba. In the picture, the members of the community are placing the wetland waterproofing membrane.



TRAINING IN URBAN SOLID WASTE MANAGEMENT

Within the framework of the EMS-UPE-IDRC municipal training activities, with funding by the Italian Ministry of Environment and Territory (IMET), two agreements were signed whose objectives are the strengthening of municipal institutions for integrated solid waste management.

Thus, as announced in the last issue of INFO-EMS, two activities were conducted with two new EMS-UPE-IDRC partners:

- **AIDIS** - Inter-American Association of Sanitary and Environmental Engineering
A solid waste management workshop was organized (November 2005, Sao Paulo - Brazil)
- **IBAM** - Brazilian Institute for Municipal Administration
Training course on solid waste management (December 2005 – Rio de Janeiro, Brazil)

Learn more about these activities, see [EMS contributions to decision-makers](#) section.

EMS STEERING COMMITTEE MEETING

The EMS Steering Committee Meeting was held in Montreal, Canada on December 3rd, 2005.

Participants included the Italian delegation, represented by officials of the Ministry of Environment and Territory (IMET) and the IDRC's delegation.

During this meeting EMS presented the activities that are being carried out within the framework of the MoU signed between IDRC and IMET in 2004. The meeting also aimed to identify other environmental fields to broaden areas within IDRC-IMET collaboration intended to meet the environmental demands of local governments and to ensure sustainability to their environmental projects.

Project: Integrated management of the ground water resource in terms of potable water and protection supply - Empresa de Servicios Públicos de Heredia S.A. (ESPH), Heredia, Costa Rica

The aqueduct service in the municipalities of Heredia, San Rafael and San Isidro depends on supply conditions vulnerable to seasonality effects. Over half of ESPH's demand is met by the production of intakes of water from rivers, springs and deep wells (as much as 350m in depth). Rationing is enforced annually in the dry season (from January to May), which results in the dissatisfaction of customers and social discomfort. Current harnessing systems are defective, as they do not allow the flow of water to be kept up during seasonal changes which impact on the variations in the groundwater levels of aquifers feeding these springs. These drops occur every year in the dry season. At present, no hydraulic data are available on this aquifer called "Los Bambinos", so the findings that will emerge from the development of this project will contribute valuable information for the future implementation of water harnessing within the framework of a new management model for the use of lava aquifers. The aim is the technical and financial assessment of an alternative for the harnessing of ground water to help assure water supply throughout the year to the populations served by ESPH, particularly San Rafael and neighbouring communities, so as to eliminate the rationing of drinking water in the dry season. Replacing the current harnessing system with a modern horizontal drilling system, consistent with the natural conditions and existing water intake protection areas, will enable the flow of harnessable ground water on a permanent basis throughout the year. This technological innovation in water supply will contribute knowledge to nourish a model for the implementation of investments in the modernization of harnessing systems in this kind of aquifers so as to solve the rationing problem affecting the population served in the dry season. The methodology involves devising a detailed hydrogeological map on a 1:5000 scale, the development of a geophysics campaign using the electric resistivity method, and the drilling of a drainage or horizontal/subhorizontal well of the diamond core drilling type designed on the basis of the geological campaign and the hydrogeological map. For the purpose of replicating the experience, if proven advisable, the investments and operating costs related to the implementation of the proposed technology will be determined, and a management model will be devised for optimal harnessing of water resources in lava aquifers. The results of the project will provide a map and geological and hydrogeological profiles of the Los Bambinos aquifer in the area under study, as well as data on permeability and specific flow of water (litres by metre) for the proper design of the new harnessing to be conducted. A management model will emerge that will contemplate the evaluation of investments and spending related to the implementation of this kind of harnessing in lava aquifers.

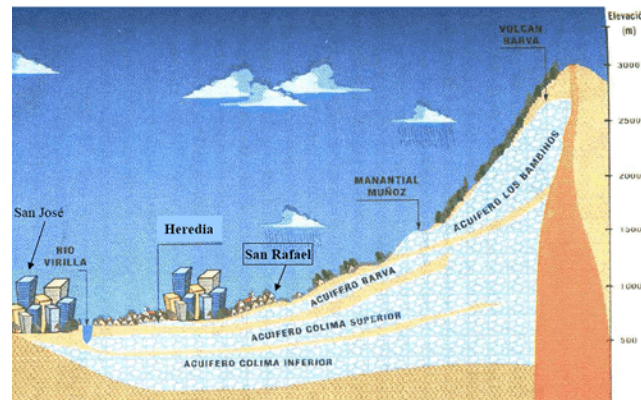


Diagram of groundwater in the region of Heredia and main aquifers (Adapted from J. Reynolds, 2003)

BACKGROUND AND RATIONALE

About 55% (annual average) of ESPH's demand is met by the production of 19 intakes of water from rivers and springs (13 from springs and 6 from rivers). The rest is met with water coming from deep wells (as much as 350m in depth) drilled in the area around the city of Heredia. The water from these intakes supplies the canton of San Rafael and some neighbouring communities. Rationing is typically enforced in the dry season (from January to May) from 7 am or 10 am to 10 pm. Current harnessing systems are defective, as they do not allow the flow of water to be kept up during seasonal changes which impact on the variations in the groundwater levels of aquifers feeding these springs.

On the basis of previous studies, the intakes at springs 29 and 29 A were identified. These intakes are located in an area of the basin of the River Ciruelas, which runs on a lava unit called Los Bambinos and houses a groundwater aquifer hanging inside the Los Bambinos lava. The location of these intakes on the exposed area of the lava units makes them extremely vulnerable to seasonal changes in the position of the saturation level upstream from the intakes, since a slight drop in the saturation level results in a decrease in the flow of water captured by them. These drops occur every year in the dry season. There is the hypothesis that a modern harnessing system, consistent with the natural conditions and the existing water intake protection areas, can be devised to enable a permanent harnessable flow throughout the year.

At present, no hydraulic data are available on the "Los Bambinos" aquifer, so the findings that will emerge from the development of this project will contribute valuable information for the future implementation of harnessing within the framework of a new management model for the use of lava aquifers.

HYPOTHESIS

Replacing the current harnessing system of intakes 29 and 29 A with a modern horizontal drilling system, consistent with the natural conditions and the existing water intake protection areas, will enable the flow of harnessable groundwater on a permanent basis throughout the year, in a lava aquifer like "Los Bambinos", as a model for the implementation of investments in the modernization of harnessing systems in this kind of aquifers so as to solve the rationing problem affecting the population served in the dry season.

METHODOLOGY

It involves developing the following activities:

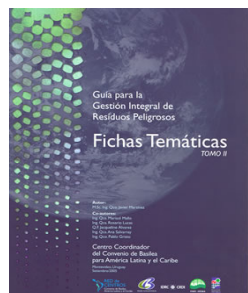
- Applying for licences and taking steps at the Environment Ministry
- Devising a detailed hydrogeological map on a 1:5000 scale.
- Developing a geophysics campaign using the electric resistivity method.
- Drilling a drainage or horizontal/subhorizontal well of the diamond core drilling type designed on the basis of the geological campaign and the hydrogeological map.
- Determining the investments and operating costs related to the implementation of the proposed technology.
- Devising a management model for optimal harnessing of water resources in lava aquifers.

EXPECTED RESULTS

- 1) Geophysical campaign.
- 2) The map and geological and hydrogeological profiles of the Los Bambinos aquifer in the area under study.
- 3) The data on permeability and specific flow of water (litres by metre) for the proper design of the new harnessing to be conducted.
- 4) A management model that will contemplate the evaluation of investments and spending related to the implementation of this kind of harnessing in lava aquifers.

ADVANCES

- a) Detailed knowledge of local geology and the geological history that has led to the formation of lava aquifers with enough potential to improve the water supply system for the population of San Rafael de Heredia. A geological and hydrogeological map illustrating the boundaries of the Los Bambinos aquifer is still pending.
- b) On the basis of the geophysical analysis involved in the development of detailed topography of the sector analysed, data were obtained on the geological structure in the area where exploratory drilling will take place for the improvement of water harnessing.
- c) The development of the project will result in the definition of new policies for the protection of the Los Bambinos lava aquifer, since its inherent vulnerability coupled with its potential for drinking water exploitation will lead to the establishment of regulations and policies for its protection which are not in place at the moment.



Hazardous Waste Management Guide

Within the framework of the activities of the Project "Training of Municipal Technicians in Sound Environmental Management of Hazardous Waste", developed by the

Basel Convention Coordinating Centre for Latin America and the Caribbean with the support of the Secretariat of the Basel Convention, the Ministry of Housing, Land Management and Environment (MVOTMA) of Uruguay and the EMS-IDRC, an "Integrated Hazardous Waste Management Guide" has been produced.

This manual is aimed at technicians from countries facing the challenge of managing the waste sector. It compiles the experience of developed countries, where significant progress has been made in the matter, as well as that of other countries that are taking their first steps along this road.

See complete text of both volumes at:
<http://www.ems-sema.org/respell/> (in Spanish)

Regional Workshop on Integrated Urban Solid Waste Management in LAC Cities

This workshop, held in November 2005 in Sao Paulo, Brazil, was organised by AIDIS in coordination with EMS-UPE-IDRC, the Pólis Institute, and the Health School of the University of Sao Paulo (Brazil), and with the support of the Italian Ministry of Environment and Territory. The workshop, aimed largely at municipal technicians, was attended by 95 people and based on 7 case studies: Santiago – Chile, Cuenca – Ecuador, Usulután – El Salvador, Trujillo – Peru, Santo Domingo – Dominican Republic, Londrina and Porto Alegre – Brazil. The recommendations based on 6 case studies (which were later picked up on at the IBAM course) that emerged from it included, for instance, the definition of goals and policies designed to minimise waste under Local Agenda 21, the need to make national solid waste policies defining responsibilities shared by the different sectors, considering local specificities (such as size of the municipality) in public policy making, and investing in capacity-building and training in the formal and informal education networks, addressing topics such as waste management, reduction, reuse and recycling, among others. Ultimately, these recommendations are made on the basis that integrated urban solid waste management should contemplate the proposals resulting from international conventions (Agenda 21, Basel Convention, Convention on Climate Change and Millennium Development Goals). More information: <http://www.ems-sema.org/eventos/aidis/>

Regional Course in Integrated Urban Solid Waste Management

On 5-16 December 2005, the Regional Course 'Assessing Integrated Urban Solid Waste Management' was held in Rio de Janeiro, Brazil. It was organised by the IBAM – Brazilian Institute for Municipal Administration. This 2-week course was attended by over 20 participants representing Latin America and the Caribbean and focused on the whole process of solid waste management: from the generation of waste to its final disposal, its use for the generation of power and other services and products from an integral perspective, incorporating environmental, social and economic aspects.



For further information: <http://www.ems-sema.org/eventos/ibam>

ON NEW UNDERTAKINGS

The Urban Poverty and Environment (UPE) Program Initiative of the International Development Research Centre (IDRC) – the process of selecting the first five cities to be highlighted in the Focus Cities Research Program – finished in January. Thus, over the next three years, City Teams in Kampala (Uganda), Dakar (Senegal), Jakarta (Indonesia), Colombo (Sri Lanka) and Moreno (Argentina) will each receive funds amounting to as much as CAD \$1.2 million (Canadian dollars) for innovative projects linking urban poverty alleviation, environmental management and the use of natural resources for food, water and income security. In LAC, the International Institute for Environment and Development (IIED Latin America) will improve a multi-stakeholder participation model for the supply of water and sanitation services and test it on other sectors in Moreno, Argentina. In June 2006, a call for proposals will be announced to select more Focus Cities in the regions of LAC, the Middle East and Northern Africa. For further information, visit: <http://www.idrc.ca/upe>

Dissemination Space – for further information, visit:

<http://www.ems-sema.org/english/evts/>

Call for papers: "Decentralization and Women's Rights in Latin America and the Caribbean" (Deadline: 30/03/2006)

Org: IDRC - Canada – in coordination with the Gender, Society and Policies Area, FLACSO - Argentina

WORLD WATER FORUM (16 – 22 /03/2006)

INTERNATIONAL CONGRESS - WATER MANAGEMENT & TREATMENT (April 2006 – Córdoba Argentina) - **More events...**

CITY
PRESS

The mission of the Secretariat is to foster a correct environmental management in Latin America and the Caribbean, by providing support in decision-making (policy formulation and implementation) in relation to the environmental effects of the different human activities, through a more dynamic relation between research, horizontal cooperation and a growing availability of relevant information.

EMS JOINS UPE - Since April 1st 2005 the EMS joins the Urban Poverty and Environment (UPE) Program Initiative of the IDRC. This initiative would allow IDRC and its partners to joint efforts to guarantee a stronger urban platform in delivering their programs in Latin America and the Caribbean.

"UPE will take an integrated approach to environment and natural resources issues in cities, working within the themes of urban agriculture, urban water and sanitation, waste management, and vulnerabilities to natural disasters, with land tenure as a crosscutting issue."

www.idrc.ca/upe

The EMS has the support of the International Development Research Centre, the Ministry for the Environment and Territory of Italy, the Interamerican Development Bank, Environment Canada, United Nations Environment Program, and the Ministry of Housing, Land Management and the Environment of Uruguay.

It is managed by the International Development Research Centre (IDRC, Canada - www.idrc.ca)

Avda. Brasil 26 55 - 11300 Montevideo, Uruguay
 Tel: (598-2) 709-0042 Fax: (598-2) 708-6776
www.ems-sema.org - info@ems-sema.org

Compilation and Graphic Design and Distribution
 is under the responsibility of:
 María Noel Estrada Ortiz (mestrada@idrc.org.uy)

