

# Machángara River Basin, Ecuador

## Strengthening inter-institutional collaboration for enhanced resource conservation

**The Machángara Basin Council is effectively using inter-institutional coordination to facilitate technical, administrative, economic and logistic cooperation for the integral management of water resources to enhance regional energy, potable water and agricultural irrigation.**

Urban NEXUS Case Story 2014 - 08

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### The project in brief

The Machángara Basin Council (MBC) is an inter-institutional organization created in 1998 to improve coordination among the regional water and Sewerage Authority (ETAPA), the National Irrigation Institute or Instituto Nacional del Riego (INAR), the main electric power utility or Empresa Electro Generadora del Austro, the National Secretariat for Water or, Secretaría Nacional del Agua (SENAGUA), the Ministry of Environment, the Water Users Board or, Junta General de Usuarios del Sistema de Riego Machángara or Machángara (JGUSRM), private companies, universities and research centres, and small-scale farmers of the basin.

Prior to the formation of the Council, the conflict between the electricity, potable water and sewerage sectors for the use of the Machángara River Basin led to the indiscriminate exploitation of the Basin's resources.

Currently, cross-sectoral coordination is underway through a 10-year strategic plan consisting of specific strategies to foster inter-institutional coordination. The main objective of the MBC is the integral management, conservation and preservation of the Basin which produces hydroelectric energy and water for human consumption, irrigation and industry, to benefit over 140,000 inhabitants, 3,100 farmers and 133 industries.

### What makes it "Urban NEXUS"?

The MBC's institutional NEXUS coordination between municipalities, rural communities, organizations, partners and the National Ministry of Environment, has enhanced resource and planning efficiencies and delivery models on the regional level. The 10-year plan additionally improves communications and behaviors via technical assistance through a secretariat of certified communal promoters, extension programs and training on environmental education for shared knowledge dissemination.

Around 1,400 families living in the Basin have been incorporated into the Basin's management through training programs to improve land productivity through the formation of plant nurseries, organic fertilizer production, and microenterprise development. Beyond that, the Council has generated sources of employment for the local population, and has facilitated dialogue and improved decision making among the Basin's community.



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<b>Date</b>	1998-ongoing
<b>NEXUS Sectors</b>	Water-food-energy
<b>NEXUS Innovations</b>	Institutions; Communications + User Behavior, Delivery Models
<b>Scale</b>	Region-wide (over 140 000 inhabitants, 133 industries)
<b>Budget</b>	715 000 USD

## Urban NEXUS Definition

The Urban NEXUS is an approach to the design of sustainable urban development solutions. The approach guides stakeholders to identify and pursue possible synergies between sectors, jurisdictions, and technical domains, so as to increase institutional performance, optimize resource management, and service quality.

It counters traditional sectoral thinking, trade-offs, and divided responsibilities that often result in poorly coordinated investments, increased costs, and underutilized infrastructures and facilities. The ultimate goal of the Urban NEXUS approach is to accelerate access to services, and to increase service quality and the quality of life within our planetary boundaries.

ICLEI / GIZ 2014

## Further Reading

ETAPA Gestión Ambiental: [http://www.etapa.net.ec/DGA/dga\\_pro\\_fue\\_hid\\_con\\_cue\\_mac.aspx](http://www.etapa.net.ec/DGA/dga_pro_fue_hid_con_cue_mac.aspx) (20 Aug 2014)

World Water Forum, 2012 "Consejo de la Cuenca del Río Machángara", Water, Food & Energy NEXUS, Case Study NEXUS: <http://waterandfood.org/wp-content/uploads/2012/03/Water-Food-Energy-Nexus.pdf> (20 Aug 2014)

The Federal Government of Germany, 2012, The formation of the Machángara River Basin Council (Ecuador): [http://www.water-energy-food.org/en/practice/view\\_\\_563/the-formation-of-the-mach%C3%A1ngara-river-basin-council-ecuador.html](http://www.water-energy-food.org/en/practice/view__563/the-formation-of-the-mach%C3%A1ngara-river-basin-council-ecuador.html) (20 Aug 2014)

GIZ and ICLEI, 2014, Operationalizing the Urban NEXUS: towards resource efficient and integrated cities and metropolitan regions, GIZ Study: [www.iclei.org/urbanexus](http://www.iclei.org/urbanexus)

## Scope for improvement

The MBC is not legally recognized as an organization by the Ecuadorian legislation and is therefore unable to pursue independent decisions, leaving the Council heavily dependent on the intermediation of its member organizations for strategic action. Nevertheless, the MBC has provided inputs for the construction of effective legal and inter-institutional frameworks. The Basin Council lacks a permanent technical team with its own office space. Currently, they work from the Municipality's water and sanitation division offices, which has led to confusion among the population who think that the Council is part of the municipal government, rather than an independent organization of stakeholders.

Despite the MBC's educational outreach agenda, social behaviours towards the Basin have not shown significant change. Almost half of the population of the City of Cuenca does not know from where their potable water originates, thus there remains the lack of awareness problem of the importance of the hydrological services the Basin provides.

## Replication

The initiative can be scaled up to be applied to other cases due to its strategic plan which can be applied to other river basins where a more efficient use of water, energy and resources is needed.

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On behalf of:



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