

# Orinoco River Basin, Colombia

## Sustainable Development in Fragile Ecosystems

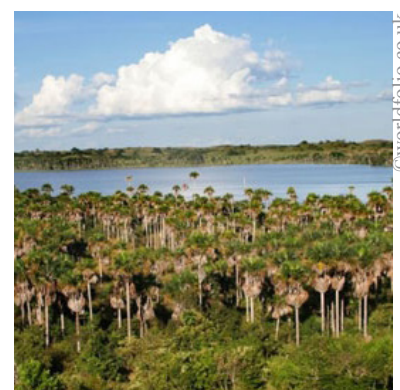
**The Orinoco River Basin in Colombia is facing major challenges amidst a surge of new infrastructure, oil extraction industries and industrial scale agriculture. The application of a NEXUS approach will determine whether the region becomes a model for development, or an ecological failure.**

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### The project in brief

The Alexander von Humboldt Institute for Research on Biological Resources of the Colombian government (IavH), and the Stockholm Environment Institute (SEI) have begun to examine how a NEXUS approach to water, energy and food can help decision-makers better understand sustainability challenges in the Orinoco River Basin. The two partners are currently seeking funding for an in-depth research project to integrate the fragmented water, energy and land use planning sectors in the region, to reduce the ecological impacts resulting from climate change, globalization, urbanization and environmental degradation. SEI and IavH aim to build understanding and knowledge of the Basin to help policy-makers shape integrated strategies and policies to reduce climate and human induced risks to the hydrological cycle and maximize its potential in providing water, food and energy security for the population.



### What makes it "Urban NEXUS"?

The project analyzes the relationship between water, food and energy security to support a more efficient use of resources, direct investment towards sustainable development and improved policy and institutional coherence. The combination of participatory approaches, scientific and technical analysis will help build local capacity and enable more effective decision-making. The project cycle includes the formulation of the problem, setting of priorities, identification of possible scenarios and solutions, use of structured decision-making tools to analyze the model results in a group setting, and follow-up workshops to refine the models and proposed strategies (Escobar & Mariño 2013, 2). The project cycle is still in the planning phase, however, will include stakeholder consultations between the Colombian Government, the IavH, the SEI, and other actors in the field at the regional and national levels. The NEXUS potential is strengthened by the construction of an analytical framework to support government institutions in thinking about development, together with its implications for biodiversity, ecosystems functioning, and the lives of indigenous people.

<b>Date</b>	2013-ongoing
<b>NEXUS Sectors</b>	Water-Energy-Land use
<b>NEXUS Innovations</b>	Law + Policy; Institutions; Communications + User Behavior
<b>Scale</b>	Regional (350,000 km2, 46 protected indigenous groups, 1.7 million people)
<b>Budget</b>	n/a

## 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

Escobar, M., 2012, The NEXUS of water-energy-food. In Sustainability Report 2011, Inter-American Development Bank: <http://www.sei-international.org/publications?pid=2100>

Escobar, M.; Mariño, J. and C. Lee, 2013, Discussion Brief "Sustainable Development in Fragile Ecosystems: Applying the 'NEXUS' Approach to the Orinoco River Basin in Colombia", Stockholm Environment Institute: <http://www.sei-international.org/publications?pid=2423>

Instituto de Investigación de Recursos Biológicos Alexander von Humboldt Colombia: [www.humboldt.org.co](http://www.humboldt.org.co)

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

From the systemic perspective, the proposed decision-making process lacks an integrated business model, financing arrangements, and human resources planning to facilitate the re-integration of the system. As the project is still in the planning stage, effectiveness cannot yet be assessed; however, the success of the NEXUS will depend on the participatory co-management of the different 'silos' to coordinate, customize, and optimize assets and services to achieve greater impact at lower costs.

## Replication

The strategic partnership will embed scientific and technical analysis into decision-making processes at local, regional and national levels in Colombia, which could greatly improve governance and natural resource management at a national scale. The insights from this project, once implemented, will be available for replication potential in other parts of Latin America and around the world.

## Acknowledgements

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On behalf of:



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