



SMART INFRASTRUCTURE FOR LATIN AMERICA

Latin America is heading for a development boom, fueled by demand for the region's mineral, agricultural and energy wealth. To avoid a history of poor examples in which development is good for people and bad for nature, regional leaders need "smart infrastructure" that balances development with conservation. ***The Latin America Conservation Council calls for designing Latin America's major energy, mining and transport infrastructure to have no net impact on natural capital.***

The Latin America Conservation Council (LACC)

Formed in 2011, the Latin America Conservation Council (LACC) is a group of influential global leaders committed to development with conservation at a scale that matters. The LACC promotes the science-based solutions of the Nature Conservancy (TNC), the world's largest environmental organization, respected for its non-confrontational approach. Together, the LACC and TNC are convening government, industry and civil society to test and expand access to innovative, sustainable solutions in three vital: Water Security, Sustainable Food Security and Smart Infrastructure.

Designing Smart Infrastructure

Latin America's population and economies are growing and will need more roads, ports, energy and mines to produce and transport goods, as well as the people who make and use them. Investment in 10 infrastructure sectors – from oil and gas to waterways and mining – is projected to top US \$37 trillion in Latin America alone over the coming decade. For example, there are at least 513 hydropower projects on the drawing board and the region has the world's second-largest oil reserves, becoming the "most popular exploration destination" for mining since 1994, with 25 percent of global mining investments. With trillions of dollars of investment pending, the question is not whether to build infrastructure, but *how and where to build it.*

Growing urban populations and an unprecedented scale of development in largely virgin landscapes challenge regional leaders to grow, while minimizing risks. The future will depend on transcending the either-or dichotomy of people (or jobs) versus nature by designing "smart infrastructure" that considers both short- and long-term needs. Communities need both jobs and intact habitats because rivers, forests, grasslands, and seas provide the



"ecosystem services" that are essential for life on Earth – providing water, food, energy and oxygen. Effective, science-based planning tools developed by organizations like the Nature Conservancy (TNC) can help regional leaders prepare for the Latin America development boom.

Minimizing Risk with the Mitigation Hierarchy

Clear ground rules are needed to 1) avoid, 2) minimize, and finally 3) offset unavoidable environmental impacts – in that order. Such guidelines, when properly applied, help government agencies, developers, and affected communities to anticipate risks early in project development, taking appropriate steps to eliminate, reduce or compensate for them. These *mitigation hierarchy policies* are in place in most Latin American countries, linked to project licensing systems and environmental impact assessments. In practice, however, a recent PricewaterhouseCoopers report concluded that "application of the mitigation hierarchy and offsets is in its infancy," adding that lenders "do not currently apply these tools to their maximum potential to reduce the underlying biodiversity risk...."

Another weakness in the current application of the mitigation hierarchy is using it to avoid, minimize and offset environmental impacts of specific projects, ignoring the cumulative effect of multiple projects on a given landscape. Instead, guidelines need to consider how projects in one sector (like dams) often affect projects in other sectors (like roads), causing unanticipated and often exponential impacts on nature. Sophisticated computer modeling facilitates this type of layered, landscape-level analyses to better understand, and plan for, these interactions to optimize development and conservation outcomes.

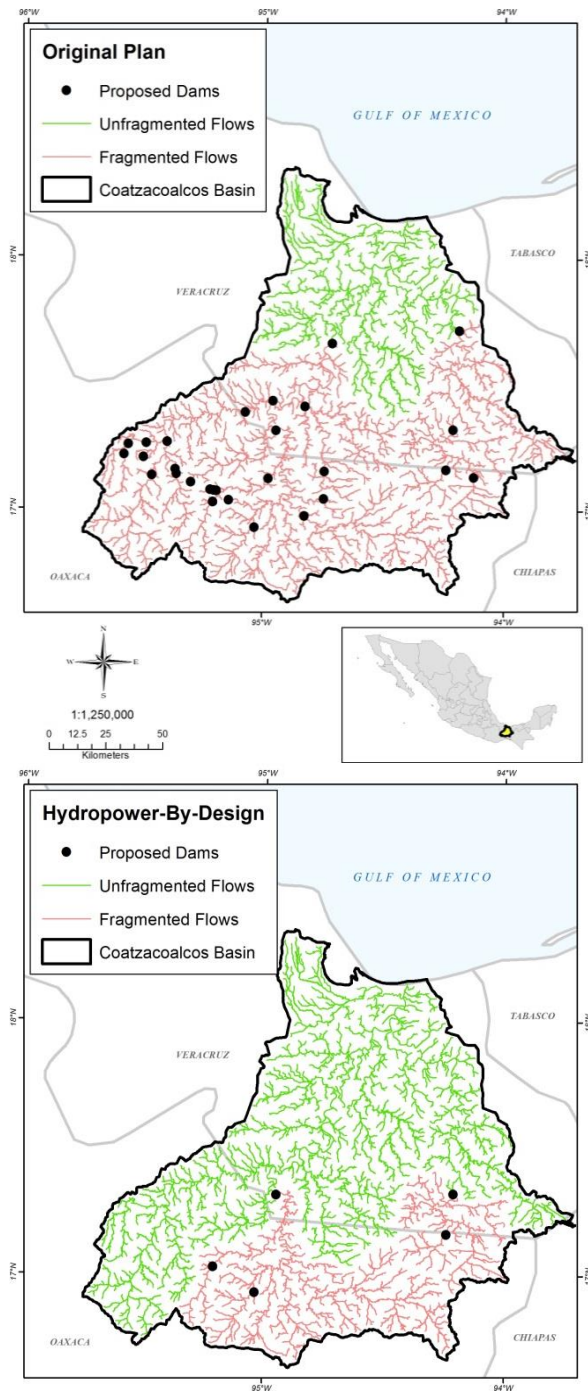
The LACC calls for reconciling social, economic and environmental interests in an inclusive, transparent process using available science-based tools. In a world overwhelmed by worst-case scenarios of population growth and environmental deterioration, the promise of smart infrastructure for sustainable growth presents a unique and exciting opportunity to influence the future of the region.

Early Win in Mexico

In 2012, the LACC and TNC began working with Mexico's Federal Electricity Commission (CFE) to use a smart infrastructure framework called *hydropower-by-design* to review numerous dams proposed for the Coatzacoalcos basin in the state of Veracruz. Technicians modeled various siting scenarios to reduce impacts on biodiversity and local communities, while ensuring sufficient energy production for regional growth. In 2014, CFE announced a revised plan greatly reducing the number of dams proposed from 32 to 5.

The original (*left, above*) and optimized (*left, below*) scenarios dramatically depict a reversal in overall impact on the ecosystem. While poorly planned placement of 32 dams would have fragmented 70% of the water flow in rivers across the basin (*in red, above*), efficient modeling to optimize placement of 5 dams will leave 70% of rivers free-flowing (*in green, below*). Maintaining free-flowing waterways will greatly reduce negative impacts on the Chimalapas rainforest – home to one-third of national biodiversity. The plan also reduces the number of total community members (particularly indigenous groups) displaced by dam construction from 24,000 to 4,000 people.

PROPOSED DAMS, COATZACOALCOS BASIN



The Next Frontier

Collaboration is on-going with CFE to use hydropower-by design more broadly in Mexico. The Latin America Conservation Council and the Conservancy are also working with government, industry and leading social organizations to promote a similar approach in key basins in Brazilian Tapajos and Colombian Magdalena basins. The potential impact of applying this approach worldwide was compellingly presented in a recent “Power of Rivers” study ([link](#)), which concludes that approximately **100,000 km of rivers can be saved from needless fragmentation and degradation by using hydropower-by-design compared to business-as-usual.**

Environmental impacts are inevitable, but early planning guided by science in a participatory and transparent process can effectively and efficiently avoid, minimize and offset them. The Council and the Conservancy call for creating an early planning fund to help governments and industry to access the technical capacity and tools needed to build the right projects, the right way, in the right places because a new generation of smart infrastructure is the foundation Latin America needs to build a sustainable future.