

# Interoceanic Canals in the Mesoamerican Region: Bridges of Opportunities and Challenges

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**Case study of the Panama Canal Expansion Project  
and the Nicaraguan Interoceanic Grand Canal**

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## Abstract

The question this research seeks to answer is if Nicaragua can achieve its century old dream to build an interoceanic canal while minimizing the negative impacts on the Mesoamerican Biological Corridor (henceforth MBC)? A comparative analysis will review the case of the Panama Canal expansion project (currently underway) in contrast with the Nicaraguan Interoceanic Grand Canal project (henceforth NIGC), a legally awarded concession under the project finance form in its feasibility planning stage.

A combination of factors strongly indicates that the Nicaraguan canal is likely to be built; but only through careful planning and attention to the lessons learned from the expansion of the Panama Canal could the environmental damages of this mega infrastructure development project be mitigated. The factors that strongly suggest that the construction of the NIGC is possible are: the chosen route for the new interoceanic canal; the financial resources of the concessionaire; the weak state of Nicaragua's democratic institutions; the current trends of depletion of its natural resources and the limited financial ability of the government to reverse this situation coupled with the developmental goals and infrastructure portfolio that the Mesoamerican region is currently promoting; the increasing global demand for multimodal transportation systems due to the increase in global consumption trends; the possible participation of other geopolitical allies couple with the change on foreign policies strategies of the region; the professional expertise of those who are planning and will execute the future construction of the project, inter alia.

## Abbreviations and Acronyms

<b>ABC:</b> Atlantic Biological Corridor	<b>MIDP:</b> Mesoamerican Integration and Development Project
<b>ALIDES:</b> Central America Alliance for Sustainable Development	<b>MIGA:</b> Multilateral Investment Guarantee Agency
<b>BCIE:</b> Central America Bank for Economic Integration	<b>NCA:</b> Nicaraguan Canal Authority
<b>BEI:</b> European Investment Bank	<b>NIGC:</b> Nicaraguan Interoceanic Grand Canal
<b>BID:</b> Inter-American Development Bank	<b>NIS:</b> Non-Indigenous Species
<b>CAF:</b> Andean Development Corporation	<b>OECD:</b> Organization of Economic Cooperation and Development
<b>CAFTA-DR:</b> Central America Free Trade Agreement	<b>OPIC:</b> Overseas Private Investment Corporation. (U.S.)
<b>CCAD:</b> Central America Commission of Environmental and Development	<b>P-EMSA:</b> Mesoamerican Environmental Sustainability Strategic Plan
<b>CCC:</b> Caribbean Conservation Corporation	<b>PES:</b> Payment for Environmental Services
<b>CI:</b> Conservation International	<b>PPP:</b> Plan Puebla Panama
<b>CIA:</b> Central Intelligence Agency	<b>PROARCA:</b> Central America Environmental Program
<b>COCATRAM:</b> Central America Maritime Transportation Commission	<b>RETC:</b> Register for Emission and Contaminants Transfers
<b>ECA:</b> Emission Control Areas	<b>SICA:</b> Central America Integration System
<b>ECLA:</b> United Nations Economic Commission for Latin America	<b>SICAP:</b> Central America Protected Areas System
<b>EIS:</b> Environmental Impact Study	<b>SIECA:</b> Secretariat Office of SICA
<b>FDI:</b> Foreign Direct Investments	<b>SUCRE:</b> Unified Regional Payment Clearing System Treaty
<b>FOCADES:</b> Central America Environmental Fund	<b>TEU:</b> Twenty-Foot Equivalent Unit
<b>GEF:</b> Global Environmental Fund. World Bank	<b>TMCD:</b> Spanish Acronym for Short Distance Maritime Transportation System
<b>GTZ:</b> German Agency for Technical Cooperation	<b>U.S.</b> United States of America
<b>IDA:</b> International Development Association	<b>UNDP:</b> United Nations Development Program
<b>IFC:</b> International Financial Corporation	<b>UNEP:</b> United Nations Environmental Program
<b>IMF:</b> International Monetary Fund	<b>USAID:</b> United States Agency for International Development
<b>IPCC:</b> Intergovernmental Panel on Climate Change	<b>WB:</b> World Bank
<b>JBIC:</b> Japan Bank for International Cooperation	<b>WCS:</b> Wildlife Conservation Society
<b>MBC:</b> Mesoamerican Biological Corridor	<b>WTO:</b> World Trade Organization
<b>MCA:</b> Master Concession and Implementation Agreement between Nicaragua and Concessionary	<b>WWF:</b> Wildlife Fund for Nature
<b>MCRS:</b> Mesoamerican Coral Reef System	
<b>MEPC:</b> United Nations Marine Environmental Protection Committee	

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## I. Introduction

*‘Geography determines all’ – Napoleon Bonaparte<sup>i</sup>*

The Mesoamerican region is a natural bridge between the American continents. It is strategically located with a rich mixture of cultures; political and environmental diversity, and has an area of 3.6 million Km<sup>2</sup> (1,389,9678 m<sup>2</sup>) encompassing more than 195 million people from 9 independent countries.<sup>1</sup> Individually each country's economic potential is small but as a region its rich biodiversity of more than 200 distinct ecosystems in a volcanic chain of mountains with peaks that reach up to 4,211 meters above sea level, two oceans, coral reefs, deserts, wetlands and tropical forest gives it “a natural wealth with large economic potential”(OECD, 2006). Unfortunately, the region's potential suffers under developmental tendencies of unsustainable use of natural resources. (Network, 2011) The State of the Region report confirms that during the last decade, there has been a “remarkable disassociation between environment and development. The increasing number of endangered species, the loss of territorial wetlands areas and deforestation rates estimated at 45,100 hectares per year characterize its ecological debt.” (Nacion 2011)

Since 2001, under the Puebla-Panama Plan (PPP) and with the signature of the Central America Free Trade Agreement known as CAFTA-DR on August 2004, the economic integration of this region has significantly increased. According to The Office of the U.S. Trade Representative the total value of U.S trade with the CAFTA-DR countries increased 37% in only 5 years (2005-2010) from \$35 billion to \$48 billion.

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<sup>1</sup>Countries and states integrated in the Mesoamerican Region are: South-Southeast states of Mexico (Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Quintana Roo, Tabasco, Veracruz y Yucatan) Guatemala, Honduras, El Salvador, Belize, Nicaragua, Costa Rica, Panama, Dominican Republic and Colombia.

Trade within the region grew 50% in the same period.<sup>2</sup> In their attempts to consolidate their democracies, the Mesoamerican countries are currently engaged in promoting economic prosperity, equality and sustainable environmental development in two fundamental areas: “a) the economic hub that includes: transport, energy, telecommunications, trade and competitiveness, and b) the social hub that includes: health, environment, housing and risk management.”<sup>3</sup>

Major infrastructure projects such as the Pacific Corridor which promotes physical connectivity of 13,000 kilometers of highways along the Pacific coast will reduce the distance between Panama to Mexico approximately 300 km (186.5 miles) in comparison with the current Pan-American Highway and, the short distance maritime transportation system<sup>4</sup> that will connect private and public ports on both oceans, demonstrate the magnitude of changes that are currently happening in this region creating new economic opportunities for trade, tourism and logistics in rural communities and with important



geopolitical implications as well.

Exhibit 1<sup>5</sup> shows seven infrastructure projects in the Central America region that might impact the MBC which

<sup>2</sup> Source available at: <http://www.ustr.gov/about-us/press-office/fact-sheets/2011/may/us-trade-cafta-dr-countries>

<sup>3</sup> Source available at: <http://www.proyectomesoamerica.org>

<sup>4</sup> On June, 2013 a feasibility study was presented to the Central American Maritime Transport Commission (COCATRAM) many projects see section for more details.

<sup>5</sup> Source available at: <http://istmocentroamericano.blogspot.com/2013/07/suenos-canaleros-en-america.html>



main purpose is to create west to east bridges that facilitate global trade. Ms. Elayne White, Executive Director of the Mesoamerican Integration and Development Project (MIDP)<sup>6</sup>, reaffirmed that each of the regional projects under her management is set to complement other major infrastructure projects that each nation has interest in developing, for example: the Dry Railroad Canal in Guatemala, the expansion of the Panama Canal currently underway, or the eventual construction of the Nicaragua's Interoceanic Grand Canal (henceforth NIGC)

On June 14 2013, the Nicaraguan Legislature approved Bill No. 840, a concession contract<sup>7</sup> with HK Nicaragua Canal Development Investment Co (henceforth NKND Group); a Hong Kong based infrastructure Development Company, granting exclusive rights for the design, construction and operation of the NIGC and development of other related projects. Ronald MacLean-Abaroa, spokesperson for HKND Group<sup>8</sup>, said that this project (with an estimate cost of \$40 billion) has the potential to transform global trade and Nicaragua's economy as a new hub of global shipping in the region, breaking Panamas' Canal monopoly for maritime transportation.

With China's incorporation to the WTO in 2001, Central American countries are now competing for China's attention. In 2007, Costa Rica was the first country in the region to sign multiple agreements with China (after breaking diplomatic relations with Taiwan). In the words of, Former President and Nobel Laureate Mr. Oscar Arias Sanchez "free trade is beneficial for everyone and is inevitable, we join it with clear rules, order and

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<sup>6</sup> Interview to Ms. Elayne White Executive Director of the Mesoamerican Integration and Development Project. May 23, 2014.

<sup>7</sup> Concession Contract for the NGIC option 3 route through Nicaragua available <http://www.scribd.com/doc/151471904/ACUERDO-MARCO-DE-CONCESION-E-IMPLEMENTACION-con-relacion-a-EL-CANAL-DE-NICARAGUA-Y-PROYECTOS-DE-DESARROLLO>

<sup>8</sup> Interview to Mr. MacLean spokes person for HKND Group available <http://hknd-group.com>.

gaining the best possible benefits or we will join it in disarray and being the big losers of the process.”<sup>9</sup> By August 2011 Costa Rica approved the bilateral trade agreement with China; a year later Costa Rica’s total exports to China were \$331 millions and imports \$1.440 million. One could say that this balance of trade seems unfavorable for Costa Rica but the Costa Rican government is promoting it as a successful result being the first nation in this region to be able to consolidate this commercial relationship.<sup>10</sup> Another fact is that the difference in the productivity size of these economies might explain such disparity.

The latest regional economic report by the International Monetary Fund (IMF) recognizes the importance of the inter-oceanic canal as a long-term governmental strategy for economic development in Nicaragua and states that the presence of China in the Region is a key factor in this process. (IMF 2013) The World Bank action plan known as Transformation through Infrastructure states “without an infrastructure that supports green and inclusive growth, countries will not only find it harder to meet unmet basic needs, they will struggle to improve competitiveness. Today, the infrastructure gap in low and middle-income countries is estimated at US\$1 trillion. More and more, countries need to turn to the private sector as well as the public sector to build and operate their essential infrastructure.”(World Bank, 2012) The current infrastructure deficit that the Central American region have is a factor that contributes to the under development of the region and seems to be the reason for such an impressive portfolio of projects, the question remains if these infrastructure projects will be able to promote

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<sup>9</sup>Oscar Arias official website. The video is available <http://www.youtube.com/watch?v=pEDkaZl0PVE#t=36> Author’s translation.

<sup>10</sup> Costa Rican Ministry of Foreign Trade. Source available [http://www.comex.go.cr/tratados/vigentes/china\\_tlc.aspx](http://www.comex.go.cr/tratados/vigentes/china_tlc.aspx)



green and inclusive growth among their populations and if will have serious impacts on the natural wealth of this region.

Today's geopolitical, social and economic factors combined at the national, regional and international level indicate that Nicaragua's aspirations to develop its infrastructural needs in alliance with emerging powers like China, Russia or Brazil <sup>ii</sup> has a high degree of possibility and therefore it is important to ask if Nicaragua can build an interoceanic canal while minimizing the negative impacts on the Mesoamerican Biological Corridor?

The methodology used to research this topic is based on a comparative analysis between the Panama Canal expansion project and the NIGC project. The comparison indicates that it might be possible for Nicaragua's government to build an interoceanic canal with the cooperation of new geopolitical powers but only through careful planning and attention to the environmental lessons learned from the expansion of the Panama Canal.

The research of this paper will be present as follow: the second part of this paper will focus the analysis on the MBC: its origins, its role under the regional institutional frameworks and development plans, its resources and current threats. The third part will focus on the environmental impacts that marine canals produce and will present the environmental facts around the Panama Canal expansion project in comparison with the possible environmental impacts of the NIGC project. The fourth part presents a holistic analysis of facts in order to asset if the Nicaraguan government will be able to reconcile the development of the NIGC project while at the same time protects the natural resources that are part MBC within their territory. The fifth part will present my conclusions and recommendations.

## II. The Mesoamerican Biological Corridor

### A. Origins

The MBC gained wider attention in the late 1980's when Dr. Archie Carr III, ecologist of the Wildlife Conservation Society (WCS) popularized it in this study the “Path of the Jaguar”. In conjunction with the University of Florida, the Central American Commission on Environment and Development (CCAD) and the Caribbean Conservation



Corporation (CCC) he developed a conceptual map (Exhibit 2<sup>11</sup>) and a five year pilot project with the financial support of USAID (4 million dollars) “whose objective was to unite protected areas throughout the length of the Central

American isthmus so that necessary movement of wildlife would be achieved by means of ecological corridors.” (IEG 2011)

It was not until the mid-nineties when civil war conflicts in this area were resolved that the MBC project emerged as a transboundary “cluster of more than 600 protected areas and intervening land with significant indigenous populations” (Network, 2011) to promote sustainable development in harmony with the environment. The Central America Convention for the Conservation of Biodiversity and Wild Protected Areas, adopted during the XII Central American Presidential Summit celebrated in Nicaragua in June of 1992 incorporates the idea of corridors. It became the first regional framework when the Central American Protected Areas System (SICAP Spanish Acronym) was

<sup>11</sup> Source at: <http://www.afn.org/~wcsfl/cormap.htm>

created. (See Article 21 Endnotes<sup>iii</sup>)

Since that time, the region has been working towards the protection of its natural wealth, which is threatened by high levels of poverty, rapid population growth and dependence on subsistence agricultural practices. By July 1997, during the XIX Central American Presidential Summit in Panama, the Summit formally created the MBC Program as “a system of land management formed by protected wild areas, core areas of absorption and interconnected areas organized and consolidated to provide a set of environmental goods and services to the Central American region and the world. Providing spaces for social dialogue to promote investment in the conservation and sustainable use of the natural resources, in order to improve the quality of life of the region’s inhabitants.” (McCarthy, 2002) Additionally, the Presidents agreed to create the Central American Environmental Fund (FOCADES, Spanish acronym) designed and executed by the World Bank Global Environmental Fund (GEF) to ensure the financial assistance for a wide number of environmental projects. (Resolution, 1997)

The MBC has received the strategic financial support of multilateral international organizations and governments.<sup>12</sup> The MBC is under the responsibility of the Central America Commission on Environment and Development (CCAD<sup>13</sup>- forum of all the

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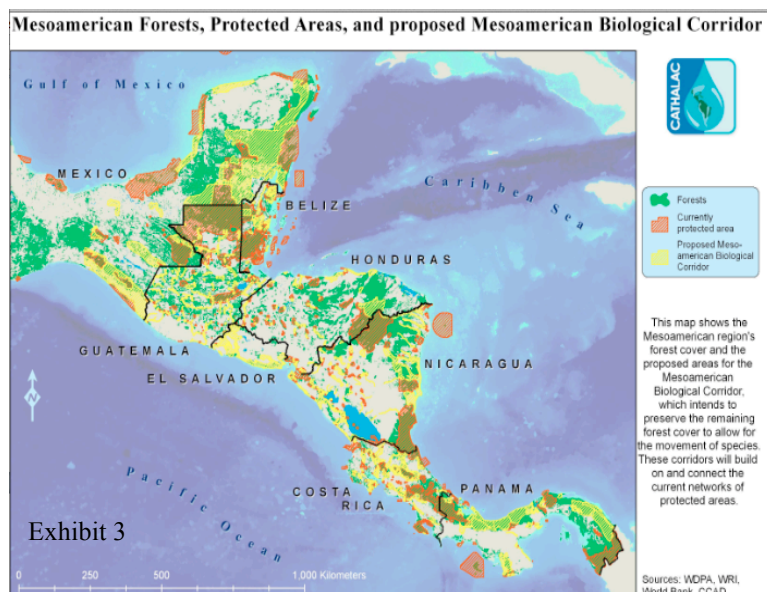
<sup>12</sup> Strategic multilateral partnership alliances of the MBC are: Global Environment Facility Program (GEF) from the World Bank, the Central American Bank for Economic Integration (BCIE Spanish acronym), the Inter-American Development Bank (IDB Spanish acronym), Andean Development Corporation (CAF); United Nations Economic Commission for Latin America (ECLA), United Nations Development Program (UNDP), United Nations Environmental Program (UNEP).

Strategic bilateral partnership alliances with the MBC are the governments of Canada, Denmark, England, European Union, Finland, France, Germany, Holland, Japan, Spain, Sweden, Switzerland and United States. Source: Table 1 (Finley-Brook, 2007)

<sup>13</sup> The CCAD is sponsored by the Central American Alliance for Sustainable Development (ALIDES) formed in 1992. The U.S. became an extra-regional member of ALIDES in 2001. NASA provides MBC offices with technical support and digital imagery. USAID funds the

Central America Environmental Ministers, created in 1989) in alliance with the Central American Integration System (SICA Spanish acronym) and its Secretariat office (SIECA). Nowadays the Mesoamerican Integration and Development Project (MIDP, former Panama Puebla Plan)<sup>14</sup> is trying to coordinate efforts and mandates of this institutional network in order to ensure that the region developmental strategies integrates sustainable use of its natural resources.

Exhibit 3<sup>15</sup> shows the Map of Ecosystems of Central America produced by the CCAD and the World Bank in 2001; this is one important achievement of these strategic



partnerships. The main objective of this project was to create a portrait of the natural resources within the MBC as a necessary first step to develop monitoring programs that systematically account for

Central American Environmental Program (PROARCA) that advises the CCAD since 1996. (Finley-Brook, 2007)

<sup>14</sup> Originally proposed under the Puebla-Panama Accord in 2001 and restructured as MIDP in 2007.

<sup>15</sup> Vreugdenhil, Daan, Jan Meerman, Alain Meyrat, Luis Diego Gómez, and Douglas J. Graham. 2002. *Map of the Ecosystems of Central America: Final Report*. World Bank, Washington, D.C. Available at: [http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2006/02/14/000012009\\_20060214131427/Rendered/PDF/352550rev.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2006/02/14/000012009_20060214131427/Rendered/PDF/352550rev.pdf)  
[http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2006/02/15/000012009\\_20060215155846/Rendered/PDF/352550v20ENGLI1ystemDescriptionsEng.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2006/02/15/000012009_20060215155846/Rendered/PDF/352550v20ENGLI1ystemDescriptionsEng.pdf)  
 Map source at: <http://www.servir.net/noticias/373-potential-impacts-of-climate-change-on-biodiversity.html>

progress or setbacks in regional environmental performance in order to implement sustainable development policies in each nation and as a region. However, the last State of the Region Report concludes that there is an urgent need (at national and regional levels) to implement monitoring systems that facilitate effective protection of the MBC. They also concluded it is urgent to implement environmental education programs that show the real costs (social, economic and environmental) of keeping business as usual (patterns of pollution and depletion of natural resources) and motivate grass roots changes. (Nacion, 2011. Pages 363, 396)

The MBC concept needs “new incentives in the form of more robust and attractive PES schemes, additional payments for carbon, and further support for the commercialization and marketing of sustainable natural goods will be important elements of a sustainable future platform for the corridor system” (IEG 2011) in order to ensure further development.

### ***B. The MBC: The third pillar of the region’s sustainable development plan***

The Central American countries have signed an important number of international framework conventions and protocols that obligate them to protect their environmental resources and implement actions in order to reduce pollution and depletion of resources.<sup>16</sup> (Nacion 2011) The original vision behind the MBC has been to procure regional cooperation in order to secure the connectivity north to south of its biological wealth and natural resources. However, “Dr. Carr III... acknowledged that the MBC appeared donor-

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<sup>16</sup> Vienna Convention for the Protection of the Ozone Layer (1985), Montreal Protocol (1987), Basel Convention (1989), Climate Change (1992), Kyoto Protocol (1997), Rotterdam Convention (1998), Stockholm Convention (2001), Cartagena Protocol (2000), MARPOL Convention (1973) inter alia.

driven and CCAD decision-making was being heavily influenced by those able to grant or refuse assistance.” (Finley-Brook 2007)

With the implementation of the PPP (today’ know as the MIDP) and the regional free trade agreement (CAFTA-DR) some environmentalist consider that the MBC changed its original environmental protective concept to a more “market oriented, eco-development corridor [that became] one leg of a tripartite vision supported by the region’s political leaders, foreign states and donors...The PPP is a scheme for transnational infrastructure corridors of highways, railroads, and electrical grids [complemented by] the CAFTA-DR expected to expand [trade on] manufacturing and agricultural production ... overlapping sponsors, advocates and agendas.” (Finley-Brook, 2007)

Ms. Leyla Zelaya<sup>17</sup>, Regional Coordinator for the Mesoamerican Biological Corridor at MIDP, defined the MBC as a system of land management integrated by four types of natural areas:

- **Core areas:** Exclusively designed for conservation and protection of ecosystems and species in which it is not possible to develop any kind of human activity.
- **Buffer areas:** There are areas with restrictive uses.
- **Corridors areas:** permit the movement, dispersion and migration of species and in which there are low-impact human activities.
- **Multiple use areas:** in which agricultural, livestock, fisheries and forest management activities are allowed.

By 2010, the region’s leaders adopted the P-EMSA strategy for 2013-2016 which enforces the principle of regional cooperation respecting the sovereignty of each nation<sup>18</sup>

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<sup>17</sup> Notes from a telephonic interview with Ms. Zelaya performed on June 4<sup>th</sup> 2014.

to pursue its own path for sustainable development. Three strategic areas of cooperation were defined under this plan: a) biodiversity and forest, b) climate change and c) sustainable competitiveness without compromising environmental, social and cultural viability. (CCAD & PM 2010)

With respect to the MBC the main actions proposed under the P-EMSA plan are:

- Coordination, unification and participation of other regional environmental regimes, such as the Atlantic Biological Corridor (ABC) a project financed by GEF <sup>19</sup> and the Mesoamerican Coral Reef System (MCRS) a project sponsored by WWF to promote its regional management.
- Coordinated planning and cooperation among all the institutions involved.
- Training and technological cooperation among the institutions and local communities.
- Implementation of communication and monitoring systems.

The sustainable competitiveness actions are related to pollution management, such as: creation of national registers for emissions and contaminant transfers (RETC Spanish Acronym), promotion of eco-production and consumption (green labels) and the implementation of control mechanisms to minimize environmental impacts (legal harmonization). With respect to climate change the actions are oriented to develop plans with local communities for mitigation and adaptation in areas such as: food security, protection of wetland, mangroves, forest and fisheries and *the promotion of infrastructure*

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<sup>18</sup> The plan states that each country will participate depending on their particular interest positions and national legislation.

<sup>19</sup> Source available at: [http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2006/01/23/000160016\\_20060123133712/Rendered/PDF/34757.pdf](http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2006/01/23/000160016_20060123133712/Rendered/PDF/34757.pdf)



*projects (water, transportation, tourism and production). (Emphasis added) (CCAD & PM 2010)*

The P-EMSA plan shows the complex debate around environmental protection and economic sustainable development for this regions and how they are trying to reach a balance approach. Many “[e]cologist have long recognized that to understand, monitor, conserve and sustainably use the biodiversity resources of Central America, these resources must be approached and studied from a regional perspective.” (CCAD, 2002) The same conclusion has been reached by the State of the Region report that still calls for regional actions as a fundamental way to ensure an adequate environmental management of the natural resources within this region. (Nacion 2011) Efforts like the coral reef nurseries currently underway in Belize by WWF in cooperation with the regional institutional framework is an example of effective regional actions that are helping to reverse the bleaching effect that climate change have over the MCRS.<sup>20</sup>

### ***C. The MBC: Natural resources and threats***

To consolidate the MBC, the CCAD published in 2005 the Regional Strategic Biodiversity Monitoring and Evaluating Program, financed by GEF and the German Agency for Technical Cooperation (GTZ) and implemented by UNDP. This report contains a detailed description of the rich biological diversity of the MBC that could be summarized as: “12% of the biological wealth of the world in only 2% of the continental area... with more than 20,000 species of flora and fauna, rich marine biodiversity with the second largest coral reef in the world, 200 ecosystems, some 33 natural eco-regions

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<sup>20</sup>See additional information at: <http://www.worldwildlife.org/videos/saving-coral-reefs-one-fragment-at-a-time>

and more than 300 types of landscapes formed from its volcanic geomorphology that produce fertile coastal plains... home of more than 46 ethnic groups.” (CCAD 2005)

This natural wealth is currently threatened by the direct impact of human action caused by the expansion of the agricultural frontier, population growth rates, infrastructure projects, poverty levels that favors the improper use of land (illicit trafficking of people and drugs), chaotic patterns of human settlements, lack of urban planning, deforestation, water and soil pollution, as well as, by indirect factors such as the occurrence of extreme events like Hurricane Mitch and other effects of climate changes. (CCAD, World Bank and 2002) (CCAD 2005) (Nacion 2011)

NASA’s analysis on forest cover change in this region during the period 1990 to 2000 “revealed that overall forest cover was higher and forest change is lower inside ecological corridors [protected areas] than outside”(IEG 2011) which proves that the original idea of creating biological corridors to preserve natural resources had positive results. Today the MBC continues to be threatened by “intense deforestation [that] continues in key natural frontier areas that could potentially disrupt the MBC connectivity.” (IEG 2011) As the World Bank report indicates, two of the most threatened forest reserves located in the Nicaraguan part of MBC are the Cerro Silva and the Wawashan Reserves, with a deforestation rate of 5.9 and 3.9 percent by 2003 respectively. (IEG 2011)

Strong economic asymmetry between the Mesoamerican countries threatens the MBC because each nation has different priorities and financial resources to invest in environmental conservation. For example, since 2008 the government of Mexico has funded “US\$2 million for corridor objectives” and the government of Costa Rica “has established a national Biological Corridor Program [known as Grúas Project II] with the financial support from the GEF and UNDP. The role of this project is to be the focal

point for (subnational) regional coordination, to develop networks of local corridors, and to leverage funding. Costa Rica developed the payments for environmental service [PES] program that is changing attitudes about the valuation of ecosystem services as an income generator asset. But current conservation incentives are not keeping pace with the rising value of land in Costa Rica, Panama, and other coastal MBC areas of attraction.”(IEG 2011) On the other hand, country’s like Nicaragua suffered poor land reforms and plan management, expansion of the agricultura frontier and cattle ranching with loss of soil fertility, population growth, inadequate institutional support and not enough professionals to help manage and implement national or regional conservation policies over their MBC resources.

As was mention in the introduction, another important threat to add to this list is the number of infrastructure projects that all the governments in the region are trying to develop, in particular the interoceanic canal in Nicaragua. Countries like Guatemala, Costa Rica, Honduras, El Salvador and Colombian are exploring options for the construction of “dry canals” with railways and oil pipes to facilitate the transportation of merchandise between the Pacific and Atlantic oceans. (See Exhibit 1) Non-governmental organizations with long participation in the protection of the MBC like, the World Wildlife Fund for Nature (WWF) believe that infrastructure projects are one of the biggest threats for the environment and Conservation International (CI) confirms that “rapid growth, poor land use, uncontrolled tourism development, and regional and global demand for natural resources are altering the land and seascapes of North and Central

America, which are home to four biodiversity hotspots and the most biologically important desert wilderness areas on Earth.”<sup>21</sup>

As was stated above, the MBC, a bridge that unifies the North and South parts of the American continents is now facing the threat of infrastructure projects that cross it from West to East. The increasing rise of trade between the U.S. and Asia couple with China’s interest in raw materials gives the Mesoamerican region a geographic strategic position to build bridges that connect the West with the East.

### **III. Comparative analysis of Interoceanic Canals as West to East bridges for development**

Extensive literature explains the economical, political, geological and historical reasons why the interoceanic canal originally plan for Nicaragua was built in Panama. Although these papers are not the subjects of the present analysis, they are sufficient proof for the argument that these kinds of infrastructure projects are keystones for the overall development of countries and they play an important role in the world of geopolitics within the American continent, as well as, other parts of the world.<sup>22</sup>

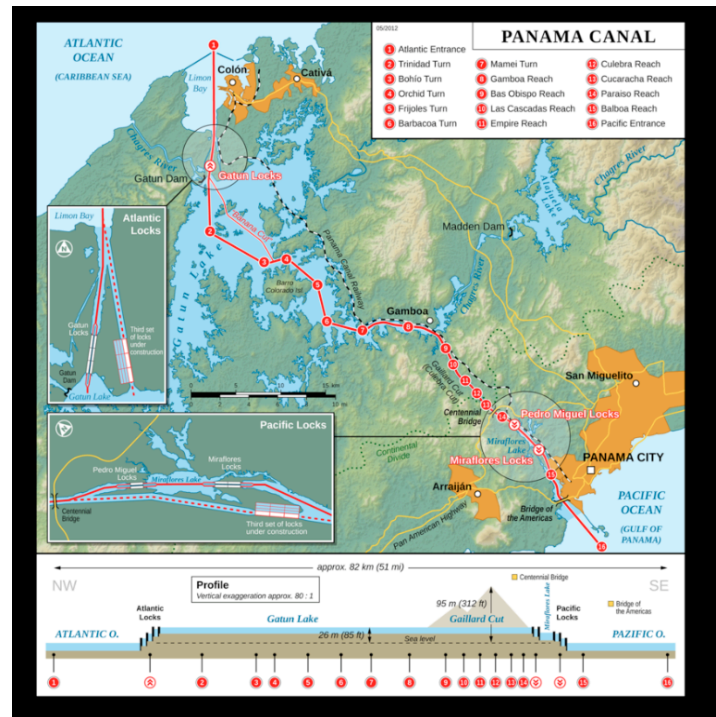
Professor John Curtis Perry at the Marine Studies of The Fletcher School of Tufts University analyzed the connection between marine resources as drivers of economic productivity and human settlements. His analysis focused on the connection between marine resources as generators of macro-geographic patterns of human settlements around the world (Perry 2003); one could argue that Panama’s major urban centers located at each end of the canal (Panama City located in the Pacific coast and Colon City

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<sup>21</sup> Source available at: <http://www.conservation.org/how/pages/hotspots.aspx>

<sup>22</sup> U.S. Congress. Hearings before the Senate Committee on Interoceanic Canals. On H.R. 3110. First Session 57 Congress. March 1902. Source available at: <https://archive.org/details/hearingsbefores00canagoog>

located in the Atlantic cost) have experienced the same economic and urban growth due to the existence of major ports connected with the Panama Canal, as the orange areas of Exhibit 4 shows.



**Exhibit 4. Panama Canal Expansion Project Profile**<sup>23</sup>

In 1914, the lock chamber dimensions of the Panama Canal set the standards for vessels builders who developed the “Panamax” ships which measures are 1,050 ft. in length, 110 ft. in width and a draft of 41 ft. Global shipping industry demands are rapidly growing and Panamax fleets are aged and new generation of ships known as Triple E Ships or Post-Panamax (1,400 ft. in length, 180 ft. in width and a draft of 60 ft.) does not fit the current locks, as the comparison chart on Exhibit 5 shows. (Lombardo 2011)<sup>24</sup>

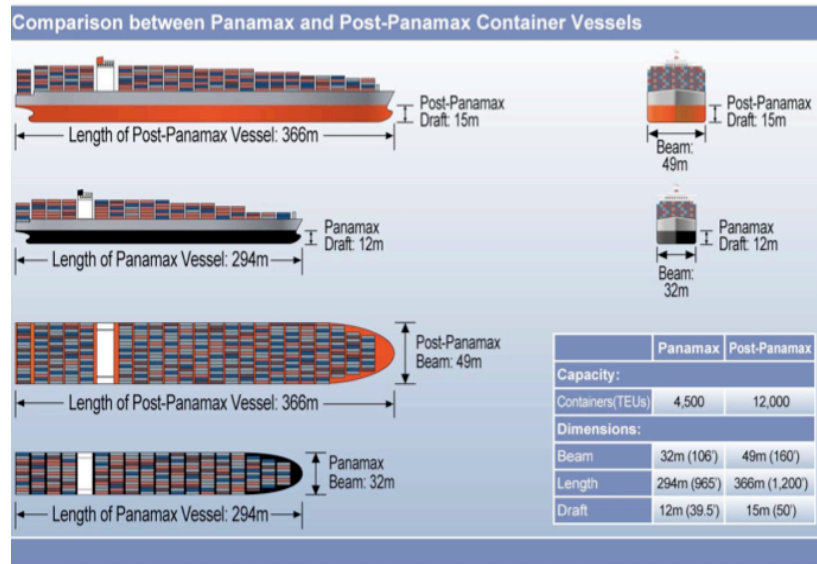
<sup>23</sup> Source available at:

[http://en.wikipedia.org/wiki/Panama\\_canal#mediaviewer/File:Panama\\_Canal\\_Map\\_EN.png](http://en.wikipedia.org/wiki/Panama_canal#mediaviewer/File:Panama_Canal_Map_EN.png)

<sup>24</sup> See footnote 1 on (Lombardo 2011)

Additional Source: <http://www.carbonpositive.net/media-centre/industry-updates/724-panama-canal-expansion-fuels-inter-oceanic-race.html>. Accessed October 2, 2013.

## Exhibit 5<sup>25</sup>



**Figure 30** Comparison between the largest Panamax container vessel that can transit the current Canal and a Post-Panamax size vessel with 12,000 TEUs container capacity. The larger vessel has 2.5 times the cargo carrying capacity of the Panamax vessel.

A century has passed since the Panama Canal started operations; its infrastructure has aged requiring constant maintenance, which increases waiting times that ultimate result in costly transportations costs increasing the final price of traded goods. The same result occurs with the cargo shipped from East Asia, Australia, New Zealand and the west cost of South America in the post Panamax vessels via U.S. land bridge, the cargo has to off-load on the west cost of the U.S. and move via trucks or rail transport to the U.S. east cost “which are normally more expensive than ship movement via the Panama Canal, and have greater detrimental environmental impact.” (Lombardo 2011)

The Panamanian government undertook the enormous challenge of expanding the capacity of the Panama Canal in 2007 with the financing support of international institutions such as: European Investment Bank (BEI), Japan Bank for International Cooperation (JBIC), Inter-American Development Bank (BID), International Financial

<sup>25</sup> Source available at: <http://www.micanaldepanama.com/expansion/wp-content/uploads/2014/04/ECR-2014-03.pdf>

Corporation (CFI) and CAF for a total of US \$ 2.3 billion. By May 2014, the expansion project with an estimate budget of \$ 5.25 billion dollars has reached a 76% completion progress. This expansion will double the Canal capacity, will generate economies of scale to global logistics maritime trade. Despite the economic recession of global markets; last year the Panama Canal moved 320.6 million PC/MUS tons of cargo generating US\$ 2,400 million in revenues (an increase of 3% compared with 2012), employing more than 10,000 workers and facilitating global export trade flows. (ACP 2013)

The authorities of the Panama Canal predict that the expansion project will encourage regional infrastructure developments to support the transportation and logistic industries. (ACP, 2013) As mentioned previously, the Pacific Highway Corridor under MIDP agenda and the Mesoamerican Short Distance Maritime Transportation System (TMCD Spanish Acronym) under COCATRAM are important examples of the domino effect that the Panama Canal expansion project is currently generating within the region.<sup>26</sup>

The COCATRAM 2012 Statistical Report shows an increase of cargo port movements in this region of 12.05% “mainly in Panama (19.68%) Honduras (7.58%), Nicaragua (6.22%), Costa Rica (3.41%) and Guatemala (0.90%) while El Salvador has a decrease of 0.70%” (COCATRAM 2012) There is enough evidence that infrastructure connectivity is an important component of the development agenda for the Mesoamerican region, increasing the risks of depletion of its natural wealth within the MBC.

The World Bank infrastructure strategy plan states that the Latin America region as a whole “contributes 12 percent of total green house gas emissions but contains only 8

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<sup>26</sup> In January 2014 a new Nicaraguan Maritime Company (NAMENIC) started operation within the context of the Short Distance Maritime Transportation System. (Marco 2014) Additional information about the feasibility study of TMCD available at: <http://www.cocatram.org.ni/Resumen%20Ejecutivo%20Estudio%20TMCD.pdf> Also available as video at: <https://www.youtube.com/watch?v=ADFZK5dxbtI>



percent of the world's population, these emissions come from energy-driven uses: transport, power, industry and land uses" and "the bank is working throughout the region to strengthen planning capacity to improve the selection of infrastructure projects and to conceive infrastructure as a network. Today's world requires a regional approach to resolve infrastructure challenges in Latin America and this approach is also essential to foster continued client demand for bank financing." (World Bank 2012)

Interconnection of the Mesoamerican region would primarily continue to be North-South but there is clear evidence that the world markets are demanding efficient, secure and fast bridges between the West and the East as the Panama Canal Expansion project proves because "ocean transportation offers higher fuel economy and lower pollutant emissions compared with land transport." (Lombardo 2011).

#### ***A. The Panama Canal Expansion Project and its environmental impacts***

The Environmental Impact Study (EIS) for the Panama Canal expansion project summaries the expansion project of the Panama Canal as follows: (ACP, EIS 2007)

- i. The construction of two lock facilities, one at each end of the Canal. Each facility will include three consecutive chambers and three lateral water saving basins per chamber. The Atlantic locks complex will be located east of the existing Gatun Locks; the Pacific locks complex will be located southwest of the existing Miraflores Locks. The location of both locks complexes make use of an extensive section of the excavations performed by the U.S. Government for the third set of locks project started in 1939. The new locks chambers will be 427 m (1,400 ft.) long, 55 m (180 ft.) wide and 18.3m (60 ft.) deep.
- ii. The excavation of new navigational channels to allow access between the new locks and the existing channels and the deepening and widening of the existing channels. Widening the existing channels to 218 m (715 ft.) will allow navigation of post Panamax vessels through these channels in one direction at a time.

- Gaillard's Cut and the Gatun Lake's navigation channels will be deepened by 1.2 m (4 ft.), to a PLD level of 9.2 m (30 ft.); and
- iii. Raising the maximum operational level of Gatun Lake by 0.45 m (1.5 ft.), from its existing 26.7 m (87.5 ft.) PLD to 27.1 m (89 ft.) PLD. This Project component will increase Gatun Lake's functional water reserve capacity.
  - iv. The removal of approximately 133 million cubic meters (83 Mm excavation, 50 Mm dredging) of material to a well studied and cleared geologic area.

The EIS concluded that the expansion project is environmentally feasible due to following facts: (ACP, Chapter 11 EIS - 2007).

- The expansion project will occur within areas that have been altered since the construction and operation of the canal and are for exclusive use of the ACP; therefore the impacts are minimum to moderate.
- Studies and simulations performed proved that the quality of the water in the Gatun Lake would not be altered by the addition of locks or increase level of operation.
- The areas surrendered to the Panama Canal expansion project have restrictive use and have been developed as secondary forests. The ACP will reforest an area twice as large as the one deforested during construction.
- The endemic species within the directly impacted area are widely found throughout the country and don't represent populations of national or global importance.
- The expansion project follows the International Financial Corporation (IFC) Environmental Performance Standards known as the Equator Principles.
- The country will increase its revenues from the project generating economic growth that will benefit the country as a whole.
- The expansion of the Panama Canal will increase the competitiveness of the route within the global maritime transportation system.
- The 2006 national referendum gave the expansion project the social support. According to the Political Database of the Americas of Georgetown University

the result was a 76.3% said yes and 21.8% said no from a total of 924.029 valid votes. Abstention was 56.7%.<sup>27</sup>

But the EIS clearly stated that the prevention, mitigation, monitoring and compensation measures included in the Environmental Management Plan (EMP) are an essential precondition for the environmental feasibility of the project. The estimated total cost of the EMP for the construction phase is \$27.7 million dollars and for the operation phase is \$0.5 million dollars per year (ACP, Chapter 8 EIS-2007), demonstrating that the environmental cost of mega infrastructure projects should be incorporated within the initial budget projections in order to determine the economic feasibility in the long run.

As with any infrastructure project, the construction phase presents higher environmental impacts such as: permanent deforestation of the new locks sites; higher landslide risks; soil erosion; higher sedimentation; potential loss of carbon capture due to deforestation; increase level of green gases due to machinery mobilization and gas emissions from blasting and dredged activities; alteration of rivers that will affect aquatic resources; alteration of marine ecosystems; wildlife perturbation; possible injuries to fauna species; workers accidents, etc.

By May 2014, as the construction phase advances, the Verification of the Implementation and Effectiveness of the Mitigation Measures for the Panama Canal Expansion Program report recognizes that this project has fulfilled the prevention, mitigation, monitoring and compensation measures included in the EMP such as: archeological assessments of the sites prior to construction demonstrated no important findings, the training plans for authorities, construction companies and workers are being fulfilled, the animal rescue and reforestation tasks are being performed, and waste

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<sup>27</sup> Source available at: <http://pdba.georgetown.edu/Elecdata/Panama/ref06.html>

management measures are being implemented. Efforts to control erosion, sedimentation and pollution control activities are being implemented. Contractors and ACP authorities had done social consultations and interacting with the communities that could potentially be affected by project's activities. (ACP, Mitigation Measures for Panama Canal 2014)

The only negative finding for the last review was in the area of occupational health and safety; one fatality was reported during this period adding 6 fatalities in total for the expansion project since its commencement. But in general, the report concludes that the construction phase of the expansion project of the Panama Canal is in compliance with the applicable environmental and social commitments established in the EMP's and in the approval resolution by Panama's National Environmental Authority (ANAM Spanish Acronym). (ACP, Mitigation Measures for Panama Canal, 2014)

Nevertheless, neither the EIS or the evaluation report include any data regarding green house emission impacts of the Panama Canal expansion project in the context of climate change. Lombardo and Mulligan's research model develops this topic with interesting findings about the global environmental benefits of the Panama Canal expansion project in relation with carbon emissions that affect climate change. They concluded that for cargo moving from East Asia to the U.S East coast the CO<sub>2</sub> emissions will be reduce by 324.4 kf. for each TEU <sup>28</sup> shipped directly via sea from Guangzhou to New York/New Jersey. Assuming the use of post Panamax vessels "it is reasonable to expect a minimum savings of approximately four billion kilograms of CO<sub>2</sub> emissions each year from 2025 on, and this annual savings is permanent and other noxious pollutants will also be reduced." (Lombardo 2011)

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<sup>28</sup> One TEU is equal to what is know as a standard intermodal container with dimensions of 20ft. in length, 8 ft. in width and a height from 4,25 ft. to 9.5 ft. (Lombardo,2011. Footnote 1)

However, they also indicated that vessel fuels contain higher amounts of sulfur gases (SO<sub>2</sub>, this gases contribute to acid rain) which might have a negative environmental impact on climate change if marine transportation increases. On this regard, the U.S. has declared that its waters are Emission Control Areas (ECA's) and vessels entering this areas will have to use refined diesel minimizing the impacts of SO<sub>2</sub> and other heavy metal gasses, which force the maritime logistics industry to start building vessels that operate only under this clean fuels. (Lombardo 2011) (Environmental Protection Agency 2014)

In addition, the Marine Environmental Protection Committee (MEPC) part of the UN International Maritime Organization, responsible for monitoring compliance with the international standards regarding marine pollution (within the framework of the MARPOL and other related treaties) will enforce the use of efficient fuels by 2016 in accordance with its resolution 251 (66) of last April.<sup>29</sup>

The ACP annual report states that the Panama Green Route<sup>30</sup> strategy implemented to manage the impacts of climate change within the Canal Zone will allow this route “to operate on low carbon footprint standards...[enhancing] the Canal’s qualification as an emission reduction route” (ACP, Annual Report 2013<sup>31</sup>) which according to Lombardo et

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<sup>29</sup> Information about the MARPOL amendments available at:

<http://www.epa.gov/otaq/documents/oceanvessels/resolution-mepc-251-66--4-4-2014.pdf>

<sup>30</sup> Some of the environmental economic incentives of the Panama Green Route strategy are: bunker fuel reductions; reforestation of more than 6,200 hectares; promotion of agroforestry sustainable environmental business for cacao and coffee; training in good agricultural practices waste water and solid management programs and new green construction specifications for building within the Canal Zone that promote the use of natural lights and energy efficient consumption patterns, insulation and high standards for air conditioning systems. During 2013 the ACP bought the first emission free all electric vehicle assigned to the mail unit. (ACP, Annual Report 2013)

<sup>31</sup> In 2013 the ACP received “its second certification for its Reforestation and Sustainable Production Models, from the Environmental Economics Incentives Program. In March 2012, the Canal obtained a second certification under the voluntary carbon standard from climate, community and biodiversity, and another this year under the auditable emission reduction Carbon-Fix Standard (in transition to Gold Standard). (ACP, Annual Report 2013)

al. is an indirect benefit that might be obtained if there is a reduction of emissions due to decongested highways and less railroad transportation trips. (Lombardo et al. 2011) Nevertheless, the same authors explain that these actions might have economic effects in the final cost of maritime transportation because removes the cost advantages of burning less refined fuel (bunker fuel).

Up to this point, one could say that marine canals seems to be more cost-efficient and eco-friendly transportation systems to use in order to satisfied the current trade tendencies of the global markets, with exceptions made for the changes in cost for the use of more refined fuels in the future. Thus, these reasons might explain why the Nicaraguan government wants to develop their own interoceanic canal creating an alternative route that breaks Panama's Canal monopoly fostering competition which will help the overall global trade and transportation systems while at the same time, generates important revenues that could be invested for sustainable development in other areas, as per Panama example.

One final aspect to analyze in order to measure the environmental impacts produced by the Panama Canal is its role as a maritime corridor that promotes biological invasions of ecosystems. In a comparative analysis between Kiel, Panama and Suez Canals, Gollasch et al. concluded that aquatic biological invasions occur mainly in two ways: "a) migration of organisms into or through the canal from adjacent waters and b) transfer of organisms by ships." (Gollasch et al. 2006<sup>32</sup>)

In the second case, the transfer occurs mostly when species stick to hulls, rudders, and other surfaces and most importantly through the ballast compartments that vessels use to

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<sup>32</sup> Source available at:

[http://download.springer.com.ezproxy.library.tufts.edu/static/pdf/620/bok%253A978-1-4020-5047-3.pdf?auth66=1397406034\\_9e6c530a2043e64ce4d365f17dec0c07&ext=.pdf](http://download.springer.com.ezproxy.library.tufts.edu/static/pdf/620/bok%253A978-1-4020-5047-3.pdf?auth66=1397406034_9e6c530a2043e64ce4d365f17dec0c07&ext=.pdf)

control stability in the sea. (Gollasch et al. 2006) There are some reports by “[ACP] employees saying that ships often discharge both bilge and ballast water within the locks, despite regulations prohibiting such discharge in waters of the Canal Zone...[because they need] to reduce draft to meet canal regulations or consumption of fuel, to prevent changes in draft when entering freshwater or to save time in port by starting the discharge of ballast water before arriving or when refueling at the Colon port.” (Gollasch et al. 2006)

Post Panamax vessels are bigger but more stable and discharge less metric tons of ballast water. A 1999 study conducted by Herbert Engineering about ballast water management at the Port of Oakland in California shows that a Panamax vessel discharges around 4,000 metric tons of ballast water for every 3,000 TEU of cargo compared with 1,000 metric tons discharge for a Post-Panamax vessel for every 5,000 TEU of cargo. (Herbert, 1999) One could say, that this is good news for the future stability of marine species around the Panama Canal.

However in 2008, the U.S. Coast Guard Report about living organisms in vessels ballast water discharged in U.S. waters recognized that “the primary management method for controlling ballast water discharged in U.S. waters is a mid-ocean exchange of ballast water obtained from waters outside the U.S. Exclusive Economic Zone (EEZ) [and there is] concern that this approach to ballast water management is not sufficiently effective in preventing the introduction of non-indigenous species (NIS) nor can many vessels conduct ballast water exchange because of safety issues and or voyage constraints.”<sup>33</sup>

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<sup>33</sup> U.S. Coast Guard -2001-10486 Report available at: [http://mercatus.org/sites/default/files/publication/2009\\_RIA\\_Standards%20for%20Living%20Organisms%20in%20Ships%20Ballast%20Water%20Discharged%20in%20U.S.%20Waters%20\(U\\_SCG-2001-10486\)\\_RIN%201625-AA32\\_1.pdf](http://mercatus.org/sites/default/files/publication/2009_RIA_Standards%20for%20Living%20Organisms%20in%20Ships%20Ballast%20Water%20Discharged%20in%20U.S.%20Waters%20(U_SCG-2001-10486)_RIN%201625-AA32_1.pdf)



Experts in this field agree that the invasion of NIS will continue to have a negative impact in the marine environment around major ports and canals and “the challenge remains for human ingenuity to understand, and manage, the biological implications of connecting the oceans.” (Gollasch et al. 2006) Even though one could say that nobody is trying to intentional promote the introduction of NIS with the canals zones, the international trade trends of this days globalize economy makes this environmental impact an unavoiable consequence to deal with.

## ***B. The Nicaraguan Interoceanic Canal Project and its environmental impacts***

### ***1. Feasibility arguments of the NIGC project***

In August of 2006 the technical Working Committee for the NIGC project <sup>34</sup> presented its final report about the feasibility of this project. This report constitutes the only technical document available at this time to do a comparative analysis between both Canals projects. This report was used by President Ortega to benchmark the project at the national level issuing Bill No. 800 that will be analyze in the next subsection and to negotiate with possible investors. The main feasibility arguments can be summarized as follow: (Nicaragua, 2006)

- i. Nicaragua has the only comparable geographical situation to the Panama Canal in this region because its flatlands are surround by significant hydrological resources. Estimates indicate that the NIGC will need 6.6 million m<sup>3</sup> of daily water to operate. The Lake of Nicaragua discharges 41.2 million m<sup>3</sup> of water daily to the San Juan river

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U.S. Ballast Water Management Regulations can be found at:

<http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=498c8aebd264bb3ea4ef4d66242780a7&rgn=div5&view=text&node=33:2.0.1.5.21&idno=33#33:2.0.1.5.21.4>

<sup>34</sup> NIGC Project Profile by Comisión de Trabajo del Gran Canal (Spanish name): This Committee was created by executive decree in December of 1999 under the presidency of Mr. José Arnoldo Aleman Lacayo and was amended by other executive decrees in March of 2002 and March of 2006 under the Presidency of Mr. Enrique Bolaños.

and the Escondido river does 33.7 million m<sup>3</sup> of water daily to the north of the canal route.

- ii. The proposed dimensions for the NIGC project are 286 Km (178 miles) in length compared with the Panama Canal that is 80 km (49.5 miles). The locks chambers proposed dimensions are 466 m (1,528 ft.) long, 64 m (210 ft.) wide and 22 m (72 ft.) deep compare with the new locks chambers of the Panama Canal will be 427 m (1,400 ft.) long, 55 m (180 ft.) wide and 18.3m (60 ft.) deep. The proposed dimensions of the NIGC project will represent an engineering challenge that have to be carefully assets by experts to ensure the feasibility of this project. Exhibit 6 shows an example of the dimensions that the new set of rolling gates for the Panama Canal expansion project have. The fabrication of these gates started in 2011 in Italy, a total of 16 rolling gates will be operating in the new chamber locks.<sup>35</sup>

**Exhibit 6. Panama Canal rolling gates for new lock chambers**<sup>36</sup>



- iii. Of six possible routes, route No. 3 is recommend because has the best geological, topographical, hydrological characteristics. Exhibit 7 shows the alternative routes.

**Exhibit 7. Alternative routes for the NIGC project**<sup>37</sup>

<sup>35</sup> To illustrate the engineering challenges of the Panama Canal readers might watch the documentary available at: <http://www.youtube.com/watch?v=xSLVPjKnbpk>

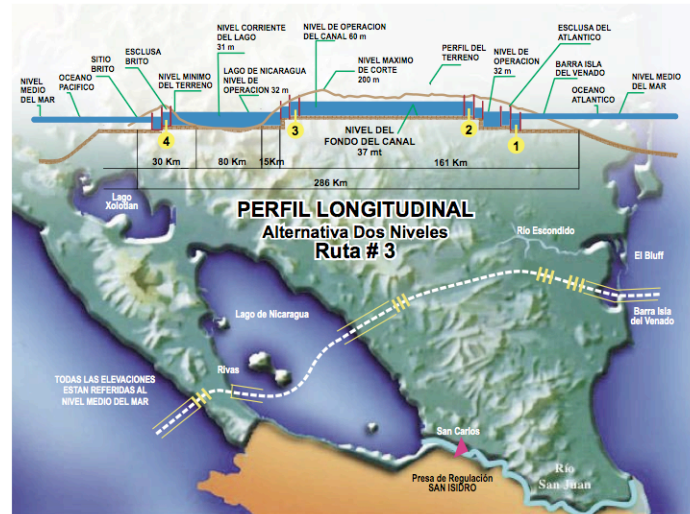
<sup>36</sup> Source available at: <http://gcaptain.com/photos-second-shipment-of-panama-canals-giant-new-gates-arrive-in-colon/>

<sup>37</sup> Source at (Nicaragua 2006)



This route presents the geological characteristics that will facilitate excavation process. Topographically, it is a relative flat zone, which permits developing a maritime canal with two water levels. The proposed route will requires less digging and dredged (estimated volume of 2,711 million of m<sup>3</sup> and 103 million of m<sup>3</sup> respectively), thus lowering construction costs. On this route will be possible to build a two transit lines with four lock chambers as the longitudinal profile on Exhibit 8 shows.

**Exhibit 8. Longitudinal Profile of the NIGC project<sup>38</sup>**



The annual rainfall levels analysis for this region is high, representing an annually average of 3,200 mm according with the report. There are going to build dams in the

<sup>38</sup> Ibid.

basins of the Escondido, Siquia, Mico and Rama Rivers that will supply the water requirements for the Canal. To regulate hydrological levels on the Lake of Nicaragua (during summer and winter time), the profile study also suggests building an additional dam in the junction of the Sábalos and San Juan Rivers.<sup>39</sup> The increase of water volume in the Lake of Nicaragua is estimated to be 15,000 m<sup>3</sup>, which is sufficient to meet future demands for new human settlements.

- iv. From an environmental point of view, Chapter 4 of the report stated that it is absolutely critical to assess the environmental impacts before starting with the project and they point out a number of specific studies that are required. However, they assess as generally “positive” the future environmental impacts of the project, based on the following arguments:
  - a. First, the proposed route has been depleted by deforestation over the last decades. The livestock and agricultural expansion are the main causes that some link to illegal mining and "... the trafficking of drugs [principally cocaine] has become a crucial and overlooked factor that accelerant forest loss” because the cartels buy the land from poor people or indigenous to create farms for pasture that they use to launder money or as a hiding places. (McSweeney et al. 2014) With the necessary zoning plan that the Canal will require there is an opportunity for reforestation of the area as secondary forest, as well as, to train farmers as producers of environmental services which gives Nicaragua the chance to participate in carbon trading markets. The calculation at the time of the report is that reforestation of the Escondido River basin (1,300.000 hectares) will generate US\$13 million yearly in carbon trading markets, coupled with the gains in water supply for the Canal.
  - b. Second, with the canal project there is going to be guaranteed resources for environmental conservation (as per example of the Panama Canal) that will

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<sup>39</sup> The propose dam could have hydrological effects on the San Juan River and the Colorado River water levels with new potential diplomatic tensions between Nicaragua and Costa Rica. Further studies must be done to assess the impacts of this particular secondary project of the NIGC over the economic rights that these riparian states currently share in accordance with the Cañas -Jeréz Boundary Treaty in 15 April 1858, the Cleveland Award of March 22 1888 and the Alexander Accord and the Central American Court of Justice ruling of 1926.

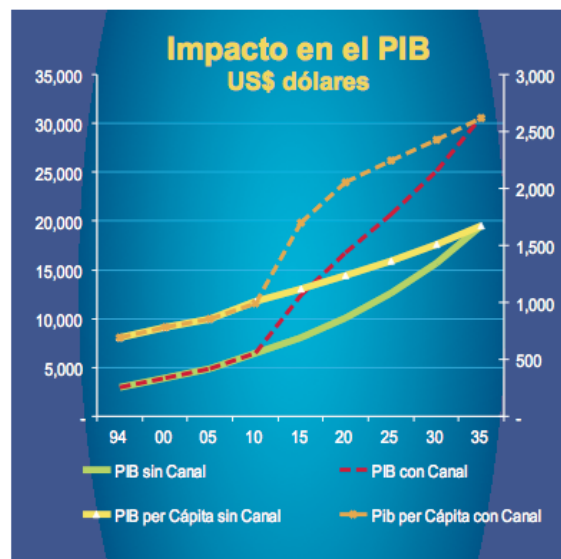
foster agroforestry, biodiversity management, ecotourism, aquaculture fisheries and biological investigation programs.

- c. The environmental impacts of the project are foreseeable and can be mitigated as per the Panama Canal expansion project example. The impacts impossible to mitigate or avoid should be compensated with restoration and restitution measures in neighboring ecosystems.
- v. The report based the socio-economic analysis for the NIGC project on the following assumptions:
  - a. The propose route has minor human settlements that could be relocated for an estimated total cost of US \$ 300 millions.
  - b. The expansion of the Panama Canal represents 2.9% of the global maritime transportation demand that is estimated to be around 10,529 million of metric tons by 2019, leaving a considerable percentage of unsatisfied demand. The NIGC will complement the expanded Panama Canal instead of competing against it.
  - c. The financial estimates of the project are based on a model for a 35 years concession or private-public-partnership (9 years for studies, design and construction and 26 years for operation) and in 2006 US dollar value. The model assumes a neutral financial structure (meaning own resources) and doesn't included taxes or other possible economic variables. The estimated internal rate of return is 22% based on a tariff of US\$ 13/metric ton and a volume of 416 million tons for the first year. Assuming that the NIGC will capture 3.9% of the estimate demand for global maritime transportation with an annual increase of 5.5% in the first year and 4.5% year after.
  - d. This report concluded that the NIGC project will have positive impact in global trade markets and maritime transportation systems (based on UNCTAD projections) The 2013 UNCTAD report about Maritime Transportation specifically mentioned as one important opportunity for the future of maritime transportation, the expansion of the Panama Canal and the opening of the new

Arctic routes, which validates the argument for the NIGC as an alternative new route that will serve the international community well.<sup>40</sup>

- e. Finally, Exhibit 9 shows the estimate positive impacts on the Nicaragua's GDP. The NIGC once in operation will raise employment levels (estimated numbers are 40,000 during construction, 20,000 during operation and indirect employment of 120,000), will stimulate the creation of new industries and the attraction of more FDI in Nicaragua. They also believe the project represents investment opportunities for international financial markets as the 'Transformation through Infrastructure strategy' of the WB suggest.

**Exhibit 9. Estimate impacts of the NIGC project of Nicaragua's GDP<sup>41</sup>**



## 2. NIGC concession project: legal support

Based on the above arguments the government of Nicaragua issued two important bills that constitute the legal support of this concession project. Bill No. 800 was issued by the Nicaraguan National Assembly in July 2012 and was drafted by the canal working committee in connection with their technical profile of the project. The main regulation

<sup>40</sup> The 2013 UNCTAD report about Maritime Transportation is available at: [http://unctad.org/en/PublicationsLibrary/rmt2013\\_en.pdf](http://unctad.org/en/PublicationsLibrary/rmt2013_en.pdf)

<sup>41</sup> Source: (Nicaragua 2006)

that this bill contains is the creation of an institutional framework: a) the Nicaraguan Canal Authority (NCA), as the autonomous governmental institution in charge of promoting, coordinating, supervising and regulating the Canal geographic zone, as well as the construction and operation of the Canal, with legal capacity to execute all type of acts and contracts needed for the Canal and, b) a state owned company (Empresa Gran Nacional de Nicaragua, Spanish name) under the supervision of the NCA, with the legal authorization to form partnerships with private investors in order to develop the NIGC project.

This bill also declared the NIGC a project of national interest because this infrastructure will provide international public services for the global maritime transportation system and the global trade markets as well. In chapter VII (Articles 21 to 28), the bill authorizes NCA to contract the EIS in order to ensure that the execution of the project will be done respecting the environmental, natural resources and specially taking into account all measures for prevention and precaution in accordance with national and international environmental regulations. Article 24 in particular mentions that the NCA has to develop capabilities to adapt to climate change hazards in accordance with the country's obligations under national and international treaties and in particular with the green gases from maritime traffic, as explained above in the Panama Canal section of this paper. (Asamblea Nacional de Nicaragua, 2012)

The second Bill, No. 840, was issued by the Nicaraguan National Assembly on June 13, 2013 and substantially modifies Bill No. 800. This bill was approved after a direct memorandum of understanding was negotiated between President Ortega and HK Nicaragua Canal Development Investment Company, Ltd (HKC) in September of 2012 and a Deed of Cooperation was reached in October of the same year. With this bill the



government of Nicaragua approved and granted the concession project as a project finance foreign investment to the Hong Kong company without any international competition; changed the institutional framework approved under the 800 bill; created a special expropriation procedure with minimum guarantees for private owners (especially for the Atlantic Coast Indigenous communities); amended and repealed any national or international law/regulation that expressly or by implication opposed the terms of the Master Concession and Implementation Agreement (MCA)<sup>42</sup> elaborated by the concessionaire dated June 14, 2013. (Asamblea Nacional de Nicaragua, 2013) (Asamblea Nacional Nicaragua, 2013 –MCA-)

This group of negotiated documents and legal norms are the rules under which the NIGC project will be develop. A legal analysis of them might be a good topic for further research. Suffice is to say that “opposition political parties, NGOs, human rights defenders, businessmen, lawyers, environmentalists and prominent people, turned against the bill as unconstitutional [and] the Nicaraguan Supreme Court rejected 32 legal claims against [the Bill No.840] on December 2013 [which gives it the green light to proceed].”<sup>43</sup>

The environmental principles and protections regulated under bill 800 seems to be indirectly modified by article 24 of the Bill 840 which states that “any law or regulation that opposed the bill or the MCA terms will be amended and repealed” (Asamblea Nacional de Nicaragua 2013) However the main arguments for environmental feasibility

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<sup>42</sup> The Master Concession and Implementation Agreement was published in the Official Gazette No. 116 on June 24, 2013. The concession project will develop a traditional waterway (wet) canal to connect the Pacific Port with a new port in the Atlantic side and a dry canal (railroad) for freight linking the same areas. It also contracted a number of sub projects such airports, free commerce zones in the Caribbean and Pacific side and a oil pipeline.

<sup>43</sup> La Prensa. Nicaraguan Newspaper. January 11, 2014. Available at: <http://www.laprensa.com.ni/2014/01/11/ambito/177854-construction-canal-interoceanico-inicia>

of the project seems to remain valid as supported by a statement issued by HKND Group Chairman.<sup>44</sup>

In order to portray the NIGC project fully, one needs to mention the fact that the concessionaire (HKND) hired Environmental Resource Management (ERM) as the company in charge of the EIS. This is the same company used by the ACP for the expansion of the Panama Canal and the one currently in charge of verifying that the environmental mitigation actions taking place with the Panama Canal expansion project.<sup>45</sup>

### ***3. Environmental risks to oppose the NIGC project***

Dr. Jorge A. Huete-Perez, president of Nicaraguan Academy of Science and Dr. Alex Meyer, a German Professor of Zoology and evolutionary biologist at the University of Konstanz are leading opponents of the NIGC. Exhibit 10 shows a map prepared by Huete & Meyer in order to demonstrate the negative environmental impacts that the NIGC project will have on the MBC.

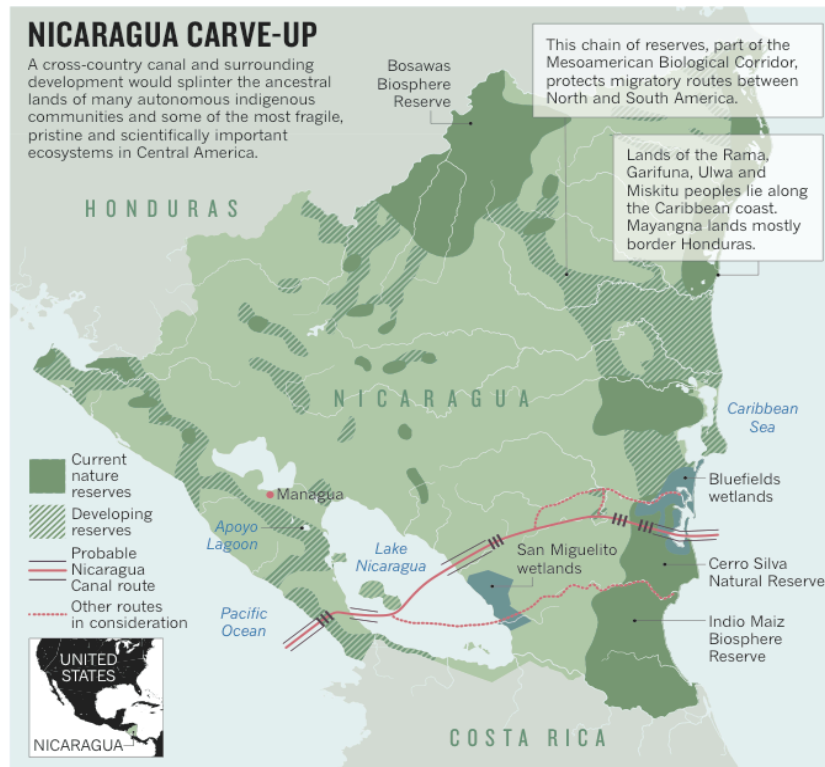
#### **Exhibit 10 The NIGC negative impacts on the MBC<sup>46</sup>**

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<sup>44</sup> Statement by HKND Chairman available at: <http://www.hknd-group.com/portal.php?mod=list&catid=33> Also the mission of the company states its commitment to protect Nicaragua's natural ecosystems and wildlife, available at: <http://www.hknd-group.com/portal.php?mod=list&catid=31>

<sup>45</sup> Information about HKND-Group partners for the NIGC project available at: <http://www.hknd-group.com/portal.php?mod=list&catid=38>

<sup>46</sup> Source at (Huete-Pérez 2014)



They estimate the negative environmental impacts as follows: (Huete-Pérez & Meyer, 2014)

- The project will destroy around 400,000 hectares of rainforest within the Cerro Silva Natural Reserve.
- The project will destroy the wetlands of San Miguelito (on Lake of Nicaragua shore) and Bluefield's (on the Caribbean Sea). These wetlands possess rich flora and fauna biodiversity. The Bluefield's wetland is a nesting/egg-laying habitat for several endangered sea turtles; there are important coral reefs and mangroves.
- The project threatens multiple indigenous communities and some of the most fragile, pristine and scientifically important marine, terrestrial and lacustrine ecosystems in Central America.

- The route over the Lake of Nicaragua will require major transformation of the lakebed in order to reach the proposed depth (average depth of the Lake is 15 meters) and local rivers.
- The volcanic Ometepe Island within the Lake of Nicaragua will be impacted. This island is a biosphere reserve protected by the UNESCO since 2010 because it is rich in pre-Columbian vestiges (petroglyphs, statues, ceramics) demonstrating a long history of human settlements.<sup>47</sup>
- The construction of dams within the Lake of Nicaragua will increase the risks of water shortages or flooding due to seismic activities
- Invasive species can have negative effects on native species, as was demonstrated with the introduction of African tilapia in the 1980 in the Lake of Nicaragua.
- Emissions and pollution from the wet and dry canals will affect vulnerable ecosystems.
- On land, animal populations will suffer disruption in their migration patterns, connectivity and their ecological dynamics will change due to the artificial cut of the MBC. The Indio Maíz and Bosawas biosphere reserves, key hotspots of the MBC will be permanently separated.
- Endangered species such as the Baird's Tapir, the spider monkey, the harpy eagle and the jaguar (*Panthera Onca*) will suffer destruction of habitats and food sources.
- The relocation of population (especially indigenous) will have a social, cultural, economic and environmental cost. Archaeological sites will be affected uprooting these populations from their ancient ties to their land and will add more tensions

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<sup>47</sup> UNESCO Biosphere Reserves: Ometepe Island. Information available at: [http://www.unesco.org/new/en/media-services/single-view/news/unesco\\_announces\\_selection\\_of\\_13\\_new\\_biosphere\\_reserves/#.U7tN-laMqhC](http://www.unesco.org/new/en/media-services/single-view/news/unesco_announces_selection_of_13_new_biosphere_reserves/#.U7tN-laMqhC)

between the autonomous regions and the central government of Nicaragua. These communities presented many of the unconstitutional claims against the Bill No. 840.<sup>48</sup>

The list of possible negative environmental impacts of the NIGC project is indeed worth to analyze with careful attention in order to assess the feasibility of the project. The analysis of this specific topic should be incorporated into the EIS that is being performed by EMR. Nevertheless, it is important to add another factors into the analysis to be able to understand with a complete perspective the real possibilities that this mega infrastructure project will happen in the near future; as will be presented in the next section of this paper.

#### **IV. Nicaragua's century old dream will finally come true<sup>49</sup>**

##### ***A. Geopolitical factors***

Latin America in general and Central America in particular have a rich history of geopolitical conflicts characterized by permanent changes and competition between political and economical powers of each era. The rise of China as the new economic power is challenging the international system in new ways and its presence in the Western Hemisphere is causing different reactions. By 2006, Chinese imports from Latin America were estimated around \$60 billion. (Chen & Erikson, 2007)

General John F. Kelly, commander of the U.S. Southern Command, during a hearing before Congress last February, stated that there is an “increased regional influence of external actors such as China and Russia... Russia continues to build on its existing

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<sup>48</sup> Additional information about this issue is available at: <http://www.envio.org.ni/articulo/4762>

<sup>49</sup> Marketing title used by concessionaire HKND-Group. Source available at: <http://www.hknd-group.com/portal.php?mod=list&catid=2>

strategic partnerships in Latin America pursuing an increased regional presence through arm sales, counterdrug cooperation, and bilateral agreements...Last year marked a noticeable uptick in Russian power projection and security force personnel in the region with the visit of two Russian long-range bombers to Nicaragua and Venezuela as part of a training exercise... China is also expanding relationships in Latin America...Chinese engagement is focused primarily on economics [and trade], but it uses all elements of national power to achieve its goals. *Major investments include potentially US\$40 billion to construct an alternative to the Panama Canal in Nicaragua* and US\$ 3 billion to Costa Rica and Caribbean nations for infrastructure and social development projects... China is the single biggest source of financing for Venezuela and Ecuador, due to China's thirst for natural resources and contracts for Chinese state-owned companies [they] hold notable investments in at least five major ports and are major vendors of telecommunication services to 18 nations in the region...with economics comes influence, the Chinese are very different than us they don't consider things like human rights [or] environmental impact on projects...They're easier, if you will, to work with and with that comes influence and that's what concerns me about the Chinese." (U.S. Southern Command 2014) Additionally, from July 15 to the 17, Russian President will be visiting the American continent in order to participate in the 6<sup>th</sup> BRIC summit in Brazil.<sup>50</sup>

Today in Latin America, there is an economic war under way, one that purchases allies and forms strategic coalitions that promise help to the poorest nations in overcoming their development challenges. Nicaragua is one of those battlefields, with a population of 5,991,700 inhabitants; it is the "second poorest country in Latin America

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<sup>50</sup> Source available at: [http://www.russia-direct.org/rd\\_monthly\\_july\\_2014?utm\\_source=foreignpolicy.com&utm\\_medium=banner\\_300x250&utm\\_campaign=Monthly\\_July&utm\\_term=Flashpoints](http://www.russia-direct.org/rd_monthly_july_2014?utm_source=foreignpolicy.com&utm_medium=banner_300x250&utm_campaign=Monthly_July&utm_term=Flashpoints)

after Haiti.” But after many years of political instability, the country “has achieved a remarkable economic turnaround. Disciplined macroeconomic policies since 2001, expansion of its exports and foreign direct investments (FDI) are contributing to a forecasted GDP growth of 4.2% for 2014.” (Unicef 2013) (The World Bank 2014) (CIA 2014)

### ***B. Nicaragua’s economic facts***

The 2013 economic report by the Economic Commission for Latin America and the Caribbean (ECLAC) reaffirmed the fact that economic growth in Nicaragua has been fostered by private investment (in new Free Trade Zones and tourism developments); higher private consumption; restructuration of the tax systems which has improved revenues; holding of its nominal crawling peg exchange rate at 5%, and bi-weekly and daily legal reserve requirements that produce normal levels of financial liquidity in the financial system. (ECLAC 2013)

With the Free trade Agreement between U.S. and Central American known as CAFTA-DR since April 2006, Nicaragua “has expanded export opportunities for many agricultural and manufactured goods accounting for nearly 50% of the country’s exports.” (CIA 2014) Entering the Latin American Integration Association (LAIA) in 2012 also enhanced Nicaragua’s trade policy, this allowed unilateral preferential treatment for its exports to its members <sup>51</sup> and, by adopting the Unified Regional Payment Clearing System Treaty (SUCRE) enhanced the country monetary and exchange rate policies.

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<sup>51</sup> LAIA members are: Argentina, Venezuela, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Paraguay, Peru and Ecuador.

Nicaraguan exports raised 14.1% compared with 2011 (a total of US\$ 4.581 billion) driven by higher exports of traditional products –coffee and sugar- and goods for Free Trade Zones. On the imports side, the total was US\$ 5.851 billion driven by purchases of capital goods especially machinery and equipment for industry and telecommunications, and the transport sector. FDI represents 7.7% of GDP with renewable energy (wind farms on the shore of Lake of Nicaragua) and mining inflows as the principal factors. (ECLAC, 2013)

Massive debt relief and grants to finance public sector investments are key components for the economic turnaround. Main donors are: World Bank through the International Development Association (IDA) that helped develop the Country Partnership Strategy 2013-2017, which is currently financing 16 projects for a total of US\$ 478.04 million in areas like:

- Maternal health,
- Land rights for the indigenous populations and,
- Road systems, electrification, telecommunications, water and sanitation in rural areas.

Other contributions included financing through the International Finance Corporation (IFC) that support energy and financial sectors and the Multilateral Investment Guarantee Agency (MIGA) supporting FDI in renewable power. (The World Bank 2014) Additional donors are Russian Federation, Switzerland and Japan. (ECLAC 2013)

Nicaragua's natural resources are also important to account for its potential economic value. It is the largest country in Central America with the largest fresh water source (Lake of Nicaragua). Its precious metals are gold, silver, copper, tungsten, lead, zinc. It has abundant timber and fish. (CIA 2014) The country is currently exploring its crude oil reserves with Noble Energy, a Houston based company that announced last November



the results of the first offshore drilling known as Paraíso 1, indicating that there aren't exploitable oil resources on this site.<sup>52</sup> These oil explorations are creating diplomatic conflicts with neighbor countries that believe there have been boundary violations of their maritime economic zones.<sup>53</sup>

From an economic point of view and following Professor Porter's Economic and Social Development Theory, "successful development requires improving the economic and social context simultaneously through improving competitiveness on the long run productivity scenario... a nation (or State) is competitive to the extent that firms operating there are able to compete successfully in the regional and global economy while supporting high and rising wages and living standards for the average citizen" (Porter 2013) Nicaragua's data shows important improvements in its macro and micro economic competitiveness coupled with the fact that the NICG project profile does evaluate Nicaragua's endowments (meaning their natural resources, geographical location, country size and population) as important assets to increase their productivity and transform through infrastructure, as per the World Bank strategy suggested (World Bank 2012) and because maritime transportation is the main way to exports goods through out this region (Cunha & Jaramillo 2013) investing on this type of infrastructures is a key priority of national interest, as per Bill No. 840 stated.

As Napoleon Bonaparte once said: "*geography determines all*", economists like Paul Krugman, Jeffrey Sachs, Porter and Snowdon support the argument that geography plays

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<sup>52</sup> Additional information about Nicaragua's crude oil exploration available at: <http://investors.nobleenergyinc.com/releasedetail.cfm?ReleaseID=806910>

<sup>53</sup> Additional information about boundary disputes for Nicaragua's crude oil exploration available at: [http://en.centralamericadata.com/en/article/home/Costa\\_Rica\\_vs\\_Nicaragua\\_Oil\\_in\\_Disputed\\_Seas](http://en.centralamericadata.com/en/article/home/Costa_Rica_vs_Nicaragua_Oil_in_Disputed_Seas)

an important role in explaining trade patterns and economic growth. (Krugman 1997) (Sachs 2003) (Snowdon 2006) The data presented throughout this paper reveals that the Mesoamerican region is experiencing growth trends due to increases trade as their economies continue to open. The interconnectivity of global markets and overall increasing levels of world consumption support the assertion that mega infrastructures projects like the NIGC within the Mesoamerican region are not only possible in the near future but necessary to ensure competitiveness and economic growth.

The maritime transportation system has experience in the last 10 years an increase in the size of the vessels but also a decline in the number of companies dedicated to this business which has created oligopolistic markets. (UNCTD, 2013) One could argue that the future existence of another West to East bridge could ultimately have a positive impacts in the final price of the goods improving the livelihoods of millions of consumers around the world. It might be possible to argue, as the preamble of Bill No. 840 does, that the NIGC project has an aggregated value because it will perform an international public service.

### ***C. Nicaragua's political facts***

On the political side, the Central Intelligence Agency (CIA) World Fact Book stated that under the Presidency of Daniel Ortega “democratic institutions have been weakened.” (CIA 2014) One fact of Nicaragua’s political reality today is that President Ortega has, since November 2011, the majority support of the National Assembly, 63 seats out of 92 votes. Another fact is that last January, the National Assembly approved (64 votes in favor against 25 votes) a constitutional amendment allowing President Ortega to run once again in the upcoming elections of 2016, also permitting indefinite

reelections that can be won with 35% of the votes cast (simple majority)<sup>54</sup>. The constitutional reform also empowers the President to rule by decree. While opposition forces argued that this constitutional amendment threatens the consolidation of Nicaragua's democracy, the Sandinista Party argued that the country "needs long-term stability to deal with its problems...The Sandinista government has made important gains in health, education and land reform." <sup>55</sup>

Opinion polls carried out by CID Gallup <sup>56</sup> gave Ortega a 43% of positive performance rating in 2011. By 2013, polls showed that half of Nicaraguans support Ortega and his political party because is the strongest political force available.<sup>57</sup> Borge & Associates "polls show [that] Ortega has reached a 74.7% favorable rating. Comparing the measurements of the past six years, the positive assessment of the President has risen, and today shows his broad popular acceptance." (Pastran Arancibia 2014)

One could say that the government under President Ortega has become what Fareed Zakarias called an "illiberal democracy", where liberal democratic institutions are not fully functional or weakened. Other political theorist will argue that "democracies can't be relativized and even though consolidated democracies can be of varying levels of quality, and have their ups and downs over time, too. They either meet the criteria of democracy,

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<sup>54</sup> The 35% of votes cast amendment was approved in January of 2000 when Mr. Ortega and Former President Aleman form an alliance in the National Assembly. This alliance is known as "[El Pacto](#)" (Spanish name). Source available at: <http://www.coha.org/the-upcoming-nicaraguan-elections/>

<sup>55</sup> Sources available at: <http://www.bbc.com/news/world-latin-america-25937292>, <http://www.bbc.com/news/world-latin-america-15544315> and <http://www.aei-ideas.org/2014/01/nicaraguas-daniel-ortega-president-for-life/>

<sup>56</sup> 2011 Presidential Performance in Central America available at: <http://www.cidgallup.com/Documentos/Boletin%20Nicaragua%20Octubre%202011.pdf>

<sup>57</sup> El Nuevo Diario.com available at: <http://www.elnuevodiario.com.ni/politica/286189>

or they don't.”<sup>58</sup> Historians like Professor Stephen Kotkin when analyzing the democratization process of the Soviet Union said that electoral institutions are important to create a democracy but if the country doesn't have other important institutions like a strong independent judiciary system where people can defend their constitutional rights, democracy does not work.<sup>59</sup>

Analysis of the background information and procedures followed by the National Assembly of Nicaragua for the adoption of the Bill No. 840 (as well as, the MCA per se), led me to conclude that President Ortega actions are an obstacle for the consolidation of Nicaragua's democracy and represent a high political risk for future investor on the project finance concession of the NIGC. Nicaragua's developmental agenda seems to be focusing on the promotion of “short term gains that may have long term cost to the country and its people.”<sup>60</sup>

Data from Transparency International Corruption Perception Index in 2013 rates Nicaragua amongst the corrupt countries in the world scoring 28 on a scale where 0 is highly corrupt and 100 is very clean.<sup>61</sup> The Global Competitiveness Index of the World Economic Forum rates Nicaragua's judicial independence a 2.6 of 7, where 1 is for systems that are heavily influence and 7 for those entirely independent.<sup>62</sup> The OECD reports that anti-corruption efforts funding by international donors have deteriorated under Mr. Ortega's Presidency and many "donors have decided not to continue support for a variety of reasons including doubts concerning the government's commitment and

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<sup>58</sup> Seleny, Anna. Professor of International Politics at the Global Master of Art Program. The Fletcher School. Tufts University. Blackboard-Week 10. July Session 2013-2014.

<sup>59</sup> Source available at: <http://www.c-span.org/video/?169713-1/book-discussion-armageddon-averted>

<sup>60</sup> Professor. William Moomaw. Thesis Advisor comment.

<sup>61</sup> Source available at: <http://cpi.transparency.org/cpi2013/results/>

<sup>62</sup> Source available at: <http://www.weforum.org/pdf/GCR08/Nicaragua.pdf>

political will to fight corruption [and] concerns over election fraud [inter alia]” (OECD 2011) As any other FDI project the NIGC project finance concession should be analyzing the country risks or political risks. High costs in the financial structure of the project might compromise the feasibility of it. HKND (the concessionarie) might mitigate this risk using modern mechanisms such as a political risk insurance through OPIC or the WB. This type of insurance are not only applicable for the financial part of the project but for the environmental impacts as well.<sup>63</sup>

The 2013 Fragile State Index <sup>64</sup> ranks Nicaragua in the position 73 of 177 countries (where 1 represents the most fragile and 177 the least fragile state) pointing out migration, poverty/economic decline, external intervention, human rights/rule of law, legitimacy of the state and uneven development as the main indicators of this fragile state However as column 5 on Exhibit 11 shows, this index also ranked Panama which is in the position 130, having the same 7.6 score in the uneven development indicator despite the revenues that the Panama Canal produces. (Foreign Policy 2014)<sup>65 iv</sup> One could say, knowing a priori that the analyzed could be criticized somehow too simplistic, that Panama faces important challenges in wealth distribution although they have the Panama Canal revenues.

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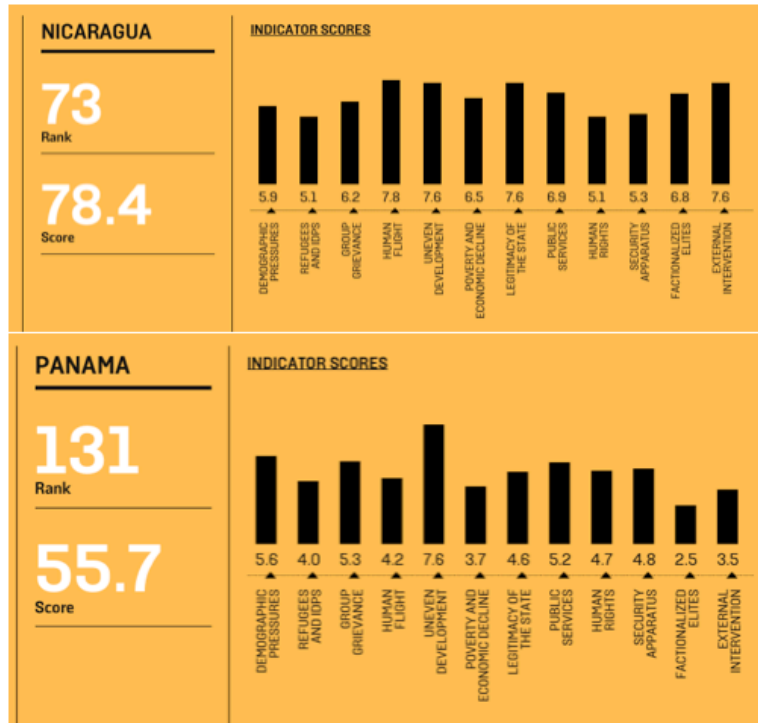
<sup>63</sup> Additional information available at: <http://www.opic.gov/projects/terraglobal/>

<sup>64</sup> Formerly known as Failed State Index.

<sup>65</sup> [2013 Fragile State Index](http://www.foreignpolicy.com/fragile-states-2014?utm_source=Sailthru&utm_medium=email&utm_term=Flashpoin&utm_campaign=Flashpoin). Published my Foreign Policy Magazine. For indicators definitions please refer to endnote VII. Available at: [http://www.foreignpolicy.com/fragile-states-2014?utm\\_source=Sailthru&utm\\_medium=email&utm\\_term=Flashpoin&utm\\_campaign=Flashpoin](http://www.foreignpolicy.com/fragile-states-2014?utm_source=Sailthru&utm_medium=email&utm_term=Flashpoin&utm_campaign=Flashpoin) June25

Also see Exhibit 5 for a graphical comparison.

**Exhibit 11. Fragile State Index comparison indicators between Nicaragua and Panama**



The above data shows that Nicaragua is a fertile field for other states like China or Russia to consolidated their economic and political interests. As per the Intelligence Unit of the Economist definition Nicaragua is a hybrid democratic regime, where democratic consolidation faces important challenges. (The Economist Intelligent Unit, EIU 2013) <sup>v</sup>

A legal analysis of the NIGC bills that support this project, demonstrates that President Ortega is willing to make all necessary changes (political, legal and institutional) to ensure that this project will happen, using to his advantage the institutional flaws of Nicaragua’s democracy. This is not different from what other historic leaders have done before.

#### ***D. Following the regions new foreign policy position***

President Ortega is following the current foreign policy trend that other Latin American leaders have: “Adios Taipei, Hola Beijing.” (Chen & Erikson, 2007) He is

forming strategic alliances with members of the Bolivarian Alliance of Latin American leaders (ALBA, Spanish Acronyms), with Russia and China, as well as, many bilateral and multilateral international financial agencies –as presented above- to ensure successful economic growth for his country.

From a geopolitical point of view with the NIGC, the Nicaraguan government is following a new political strategy of “joining the enemy’s enemy [as a] less powerful individual, group or nation [being able] to offset this disadvantage by offering or threatening to become a “pivotal” player in creating a winning coalition.” (Jeffrey & Jeswald, 1990). News reports revealed Russias’ interest in participating as part of the consortium of governments and private companies that will develop the canal project as announced by Mr. Mikhail V. Emelyanov, Russian Duma deputy and vice chairman of the State Duma Committee for Economic Policy, Development Innovations and Entrepreneurship, during his official visit to Nicaragua in March of this year.<sup>66</sup>

The US government through the Deputy Assistant Secretary Walter Bastian says that he finds the project “fascinating” and that the U.S. government will follow up to see if there is interest from U.S. investors as long as the process is transparent.<sup>67</sup> But many opponents had expressed concerns about the “transparency” of the process arguing that the man behind the NIGC is Wang Jing, a telecommunications businessman, with no experience in this kind of projects.<sup>68</sup> Mr. Wang Jing defended his participation on the project saying that his company does not want to be an example of failure for the Chinese

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<sup>66</sup> La Prensa. Nicaraguan Newspaper. Russian declares “great interest” on the Great Inter-Oceanic Canal. Article available at: <http://www.prensa.com/uhora/mundo/rusia-nicaragua-canal-interes/299152>

<sup>67</sup>Source available at: [http://www.huffingtonpost.com/2013/07/31/us-nicaragua-canal\\_n\\_3684390.html](http://www.huffingtonpost.com/2013/07/31/us-nicaragua-canal_n_3684390.html)

<sup>68</sup>Source available at: <http://alekboyd.blogspot.com/2013/07/wang-jing-hknd-nicaragua-canal-daniel-ortega.html>

investment sector <sup>69</sup> and the company is working with a respectable group of international professionals <sup>70</sup> that have interest in a successful project as well.

### ***E. Environmental impacts of the NIGC project***

From an environmental point of view, it is difficult at this time to assess with objective criteria how big or small the possible negative impacts the NIGC project will have over the MBC in order to decide its overall feasibility. As was analysed in the first part of this research the MBC in general and Nicaragua in particular is already suffering from serious deforestation problems. The Central America region is one of the most vulnerable areas to be affected by climate change. (Nacion 2011)

The IPCC reports that agriculture, forestry and other land uses “accounts for about a quarter of net GHG emissions and they play a central role for food security and sustainable development [and] the most cost effective mitigation options are afforestation, forest management, cropland management, grazing land management and restoration of organic soils.” (IPPC 2014) Thus, the aspirations of Nicaraguan authorities to use revenues from the NIGC project to implement such mitigating actions seems reasonable as “the [Panama] canal expansion [is] a unique example of a very large engineering project which simultaneously fulfills two goals often found to be conflicting: encouraging economic expansion, while alleviating environmental impacts. In this sense, it should serve as model for future mega-projects. The economic benefits will be substantial and widespread, and will go hand-in-hand with the environmental benefits of less fuel burned and lower emissions of pollutants and green house gasses.” (Lombardo 2011)

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<sup>69</sup> Source available at: <http://www.youtube.com/watch?v=Fjm5p3iH2rA>

<sup>70</sup> Source available at: <http://www.hknd-group.com/portal.php?mod=list&catid=32>



On the other hand, green house emissions from a combination of different transportation systems like the NIGC project pretends (vessels, trains, cars and airplanes) might be too big to offset with just forestry or agricultural mitigating actions post construction. The Panama Canal had a century to recover from the initial environmental impacts that its construction caused. Nevertheless, the Nicaraguan project can build on the Panama Canal expansion experience and formulate a holistic environmental and social mitigation plan to be implemented while construction is under way, this might be the reason why the HKND-group hired the same company to do the EIS for the NIGC project.

Population growth will add pressure over the country resources. If Nicaragua's forecasted rates of 1.2% for population growth over the next two decades is constant (Unicef 2013) one could say that a well planned development of new green urban settlements (as the Masdar City example in Abu Dhabi) along the route of the NIGC might be a sustainable solution worth considering, as well as, the fact that water sources could be managed in a sustainable way through dams as per the Panama Canal example.

Another main observation about future climate change effects for the subtropics and in particular for the Central American region provided by the IPCC is that as global climate warms the region will be expected to dry. (IPCC 2013) One could say that under this scenario the water resource becomes a precious commodity and its adequate management a compelling obligation for the governments in this region. Nevertheless, it is important to bear in mind that all types of infrastructure projects will impact the environment and communities. (Nacion 2011) This is especially true during the construction phase and the specific environmental concerns expressed by Dr. Jorge Huete-Perez and Andrew Cohen in section B part III of this paper have to be taken into

account.

Until the EIS for the NIGC project is done and a reasonable mitigation plan is conceived, it seems difficult to correctly assess the negative or positive impacts that this megaproject will have over the MBC. Dr. Huete and many other opponents of this project are calling for international actions in order to prevent it from happening. In my opinion, such a position lacks of a complete 360<sup>0</sup> perspective of what is currently happening in the Mesoamerican region that is working hard through all its regional institutions to promote economic development by opening markets to more trade, by developing essential connectivity in telecommunication, roads and ports and by seeking strategic alliances to attract FDI's that help them achieve their development goals.

## **V. Conclusions and Recommendations**

*“Nicaragua lives an undeniable political reality. You can question, accuse, contradict and be in opposition to the government of Sandinista Daniel Ortega, even at any cost, but the real and tangible facts in the economic and social fields cannot be hidden.”* (Pastran Arancibia 2014)

The NIGC is expected to break ground this December and up to the moment of writing this report there is no public evidence of the existence of an EIS that explains in details the possible environmental impacts and mitigating actions that will be taking into account to protect the rich biodiversity resources that form part of the MBC within the Nicaraguan territory.

A red flag should be raised on this matter. The political maneuvers that President Ortega is using in order to advance the project raises concerns about the legality and transparency of the process. It also raises concerns about the potential environmental damage that could be done to a rich and valuable natural biosphere area known as the Mesoamerican Biological Corridor as analyzed in section B subsection 3 of this paper.

While it is clear that this area has been scientifically researched over the past 30 years, it is also evident that there is a failure in taking full account of the economic value that the corridor's ecosystems can provide to all the countries in this region, for example: clean water, good-quality volcanic soils, timber and non-timber forest products, ecotourism, responsible management of fisheries to support local communities, scientific in situ lab as the coral reef nurseries created in Belize and carbon storage secondary forests under the PES regimen. Without a regional analysis of the economic value that this natural wealth encompasses it will be difficult for this region to effectively balance its policies in order to know how much development can be achieved through infrastructure or to environmental means. The P-EMSA plan seems to be the first regional initiative that includes the potential economic benefits of an environmental agenda for their development. An open and transparent conversation with a 360° perspective will open opportunities, foster ideas and plans to help face the development challenges of the region that complement the vision promoted by the Plan Puebla-Panama and the Central America Free Trade Agreement. The Mesoamerican Biological Corridor needs to be rethought by policymakers, environmental scientists, scholars and the citizens of each nation.

Nicaragua's century old dream of an interoceanic canal that generates important revenues is closer to be a reality. A combination of factors should be taken into account in order to support the argument. These factors include: the chosen route for the new interoceanic canal; the financial resources of the concessionaire; the weak state of Nicaragua's democratic institutions; the current trends of depletion of its natural resources and the limited financial ability of the government to reverse this situation coupled with the developmental goals and infrastructure portfolio that the Mesoamerican

region is currently promoting; the increasing global demand for multimodal transportation systems due to the increase in global consumption trends; the possible participation of other geopolitical allies couple with the change on foreign policies strategies of the region; the professional expertise of those who are planning and will execute the future construction of the project, inter alia.

The time has never been as ripe for Nicaragua to pursue their aspirations to develop its infrastructural needs in alliance with emerging powers like China, Russia or Brazil. However, to effectively balance the competing priorities of economic development through infrastructure while protecting the environment and in particular the natural resources of the MBC, the government of Nicaragua, in order to gain credibility and financial support for the project, needs to implement the following recommendations before breaking ground next December, there are:

- Perform an environmental impact study that carefully assess all the risks and develop a holistic mitigation plan in order to protect the biological resources contain within the MBC following the guidelines that the Mesoamerican Environmental Sustainability Strategic Plan from 2013-2016 (P-EMSA) established and in coordination with the CCAD and other regional institutions in charge of protecting the MBC natural wealth.
- Follow the lessons learned, standards applied and mitigating actions performed in the expansion of the Panama Canal, which has prove that is possible to develop this type of infrastructure project while protecting the MBC natural resources. In this regard, the fact that the same environmental company used in the expansion of the Panama Canal is doing the EIS for the NICG serves as clear evidence that the government of

Nicaragua and the concessionaire are trying to follow the lessons learned with the Panama Canal expansion project experience.

- Amend the legal framework (Bill No 840 and MCA) in order to procure a more balanced distribution of risks and benefits between the parties. As was indicate above is necessary a further study of the legal contract of the NIGC concession project in order to correct flaws regarding employment balance between Chinese workers and Nicaraguan workers; tax regimes; agencies responsibilities; ownership and rights for indigenous autonomous communities, inter alia.
- The inevitable environmental impacts that maritime non-indigenous species (NIS) might produce should be carefully asses in order to establish the necessary mitigation actions in accordance with international regulations.
- The establishment of communication - negotiation channels between the government of Nicaragua and the concessionaire on one side, and, the regional institutions (CCAD, MIDP, COCATRAM, etc.) in charge of the MBC and the implementation of the P-EMSA plans, on the other side, is essential to minimize the environmental impacts of the NIGC project, to avoid political instability in this fragile region and to facilitate collaborative efforts for environmental sustainability.
- The Nicaraguan government and the concessionaire should incorporate the participation of international actors involved with the Mesoamerican Biological Corridor project as strategic partners in order to find ways that balance the competing priorities of economic development and environmental protection.

The construction of the NIGC as a new bridge between the West and the East in the American continent is a project full of opportunities and challenges. Is justified by the

potential international service that will offer to global trade markets and the maritime transportation system. It has the potential to serve as an alternative maritime route able to host bigger and more fuel-efficient vessels, which ultimately will contribute with the global efforts to reduce GHG emissions. But Nicaragua's century old dream could become an environmental nightmare for the Mesoamerican region which could be avoided if this public-private partnership between the Nicaraguan government and the Chinese private investor assesses in a professional and transparent manner the environmental impacts of this project and the concessionaire execute the mitigation actions in a responsible social-environmental way.

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## ENDNOTES

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<sup>ii</sup> On March 21, 2014 the government of Nicaragua and Brazilian private investors (Electrobras and Queiroz Galvão) signed an agreement to build the Tumarín Hydroelectric Dam in the South Atlantic Autonomous Region of Nicaragua, with funding provided by Brazil's National Bank of Economic and Social Development (BNDES), the Inter-American Development Bank (IDB), the World Bank (WB) and the Central American Bank for Economic Integration (BCIE). The project will be generating 30% of the energy that the country is capable of produce nowadays. Source at: <http://www.energynews.es/english/the-tumarin-hydro-project-in-nicaragua-with-its-253-mw-will-generate-half-of-the-energy-consumed-in-the-country/> and [http://www.centralamericadata.com/en/search?q1=content\\_en\\_le:%22hydroelectric+Tumar%C3%ADn%22&q2=mattersInCountry\\_es\\_le:%22Nicaragua%22](http://www.centralamericadata.com/en/search?q1=content_en_le:%22hydroelectric+Tumar%C3%ADn%22&q2=mattersInCountry_es_le:%22Nicaragua%22) Additional information available at: <http://www.hydroworld.com/articles/2008/08/brazil-utility-to-develop-nicaraguas-160-mw-tumarin.html>

<sup>iii</sup> **Article 21.** To be created in association with the Central American Commission on Environment and Development-CCAD, the Central American Council on Protected Areas-CCAP, with people and institutions related to the World Commission on Protected Areas-CNPPA, and financed by the Regional Environment and Development Fund, charged with coordinating regional efforts to standardize related policies and the development of the Regional System of Protected Areas as an effective Mesoamerican biological corridor.” (Emphasis added) Source at: [http://www.inbio.ac.cr/estrategia/Leyes/convenio\\_C\\_A.HTML](http://www.inbio.ac.cr/estrategia/Leyes/convenio_C_A.HTML)

<sup>iv</sup> 2013 Fragile State Index Indicator Definition: **Demographic Pressures:** Concerns related to population, such as food scarcity, population growth, and mortality rates. **Refugees and Internally Displaced Persons:** Concerns associated with population displacement and refugees. **Group Grievance:** Tensions and violence among groups within the state. **Human Flight and Brain Drain:** Levels of migration out of the country including, but not limited to, the flight of refugees and educated individuals. **Uneven Economic Development:** Disparities in development among different ethnic and religious groups and among regions within the state. **Poverty and Economic Decline:** Poverty rates and economic performance. **State Legitimacy:** Corruption and other measures of democratic capacity, such as government performance and electoral process. **Public Services:** Provision of education, health care, sanitation, and other services. **Human Rights and Rule of Law:** The protection and promotion of human rights. **Security Apparatus:** Internal conflict and the proliferation of non-state armed groups. **Factionalized Elites:** Conflict and competition among local and national leaders. **External Intervention:** Levels of foreign assistance as well as imposed interventions, such as sanctions or military invasion.

<sup>v</sup> 2012 Democracy Index. Economist Intelligence Unit, Definition of **Hybrid regimes:** Elections have substantial irregularities that often prevent them from being both free and fair. Government pressure on opposition parties and candidates may be common. Serious weaknesses are more prevalent than in flawed democracies--in political culture, functioning of government and political participation. Corruption tends to be widespread and the rule of law is weak. Civil society is weak. Typically there is harassment of and pressure on journalists, and the judiciary is not independent. (The Economist Intelligent Unit, EIU 2013)