CSSPAR

CENTRE FOR STRATEGIC STUDIES, POLICY ANALYSIS AND RESEARCH

OCCASIONAL PAPER

PRESERVATION HESITATIONS?

A CONTRIBUTION TO BELIZEAN STRATEGIC THINKING

BY

Jean H. Cornec and David A. K. Gibson

AUGUST 2012

Can and should Belize benefit from developing its natural resources, turning the perception of poor resource management and use of economic proceeds - the resource curse- into the blessings it deserves?

The answer is yes. Alaska, Botswana, Chile and Norway, to cite notable examples, are blessed with oil and gas, diamonds and copper. These States are great models of achievement in successfully coping with the effects of sudden wealth derived from a single resource that became major economic drivers and income generators in their respective economies.

This paper is an effort to stimulate new thinking by Belizeans that challenge conventional ideas and policies which may seem sensible on paper and on maps, but which do not serve their intended purposes. The unmitigated and escalating incidents of deforestation, of forest degradation, agricultural encroachments in protected areas, and illegal exploitation of Belize's natural resources in the Maya Mountains and adjacent border regions, glaringly illustrates this inadequacy, to cite one critical area of concern.

The authors therefore seek to contribute to creative thinking in a non-polarizing way on the issue of what is termed development for preservation-the protection and sustainable management of Belize's natural resources in a way that preserves their many bounties for the benefit of future generations of Belizeans.

From a plethora of issues the following questions are given salience for purposes of the paper:

- What will be the condition of the Belizean landscape by 2025 if significant preservation measures are not systematically applied?

- Will most of the forested Maya Mountains, the Southwest (SW) and Northwest (NW) regions of Belize become pasture land bereft of the luxuriant Chiquibul and Columbia Forests?

- What is the future of water supply for the Belize River Valley and Belize City if the Chiquibul watershed of the Mopan River continues to be destroyed by deforestation and the unregulated gold panning activities of Guatemalans?

- Is the current review of national protected areas policy and their management relevant and game changing for their expanded contribution to sustainable development?

- How many Belizeans and tourists are able to enjoy the astounding beauty to be found in Belize's difficult to access National Parks of the Maya Mountain Massif?

- Could that number be increased through limited infrastructure development that facilitates responsible access?

It is believed that these issues can be addressed through cooperation and commitment among a necessary 'critical mass' of stakeholders – private sector, civil society, the Government and the people of Belize.

Similar type questions must also be framed with respect to the future of our marine resources, given the increasing degradation of the coral reef caused by pollutant deposits generated by contaminated river flows from Guatemala, Honduras and Mexico. It is notable that Belize's river pollutant deposits and their impact on the Meso-American Barrier Reef are minimal, but increasing because of weaknesses in the control of upstream pollutant run-offs.

The issue of the management and preservation of Belize's fish stocks is also one that requires priority attention given its significance as a source of livelihood for many fisher folks. So too is the issue of climate change related sea level rise and its potential negative consequences for the national tourism industry and for Belize's numerous coastal communities.

We believe, from a perspective of practicality, that there is no difficulty in establishing and embedding a system of natural resources accounting with a balance sheet that accurately records the state of Belize's natural assets, and that also quantifies the significance and causes of liabilities they are sustaining, This can then be used to inform policy decisions with respect to the preservation and enhancement of asset value, while reaping the benefits of these resources. Proper management will directly contribute to poverty reduction, improving the quality of life for all Belizeans.

SOME THOUGHTS AND OBSERVATIONS:

1-The Maya Mountains Potential
- Mineral resources
- Access to scenic sites-sustainable tourism enhancement
- North-South access for the western Maya Mountains

2-The Carbon Sequestration Potential
- Carbon dioxide and methane emissions
- Sustainable logging

3- Oil & Gas Resources
- Onshore oil & natural gas
- Offshore oil

Mineral Resources: The mineral resources of Belize include precious minerals such as gold and silver and base metals such as aluminum, lead, zinc, molybdenum, uranium and tin. Industrial minerals consist of barite, sands & gravels, granite, gypsum, dolomite, limestone and clays. The Maya Mountains potential for rare-earth metals has never been properly investigated. There has been a recent explosion in demand for many items that require rare earth metals such as computer chips, rechargeable batteries, cell phones, car catalytic converters, electric-vehicle batteries, wind turbines and solar panels. This is therefore a sound area for exploration activities.

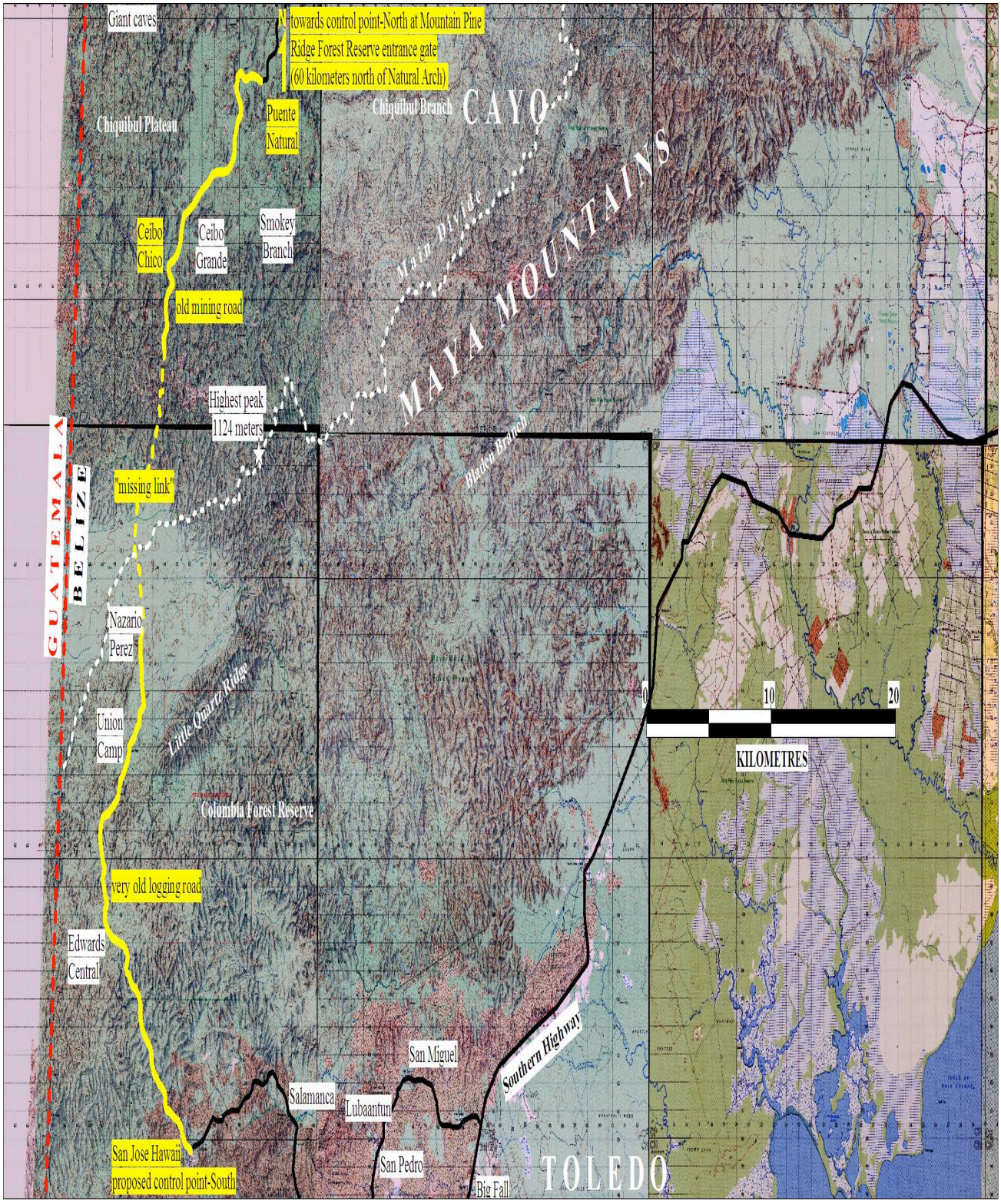
The Belizean gold exploration company, Boiton Minerals Ltd, has a proven record of environmentally sound practices for their placer operation at Ceibo Chico. Lode gold found in the Maya Mountains seem to be mostly associated with quartz in a "free" form and not locked into potentially polluting sulfur-rich minerals such as pyrite. Low-sulfide, free-gold bearing quartz veins, even though they may be low tonnage, can be very high grade and mined underground, leaving a small environmental footprint as most of the ore could be treated using chemical-free methods (no need for mercury).

All these mineral resources are irrelevant if left mostly unexplored and undeveloped. Even worse, there is risk of damage if resources are exploited in uncontrolled ways by unauthorized persons, such as the Guatemalans who are illegally extracting gold.

Accessing Scenic Sites: Some of the most wonderful sights in Belize are found in the Maya Mountains' National Parks and Forest Reserves including world-class scenery: giant cave systems and sinkholes, the Natural Arch ("Puente Natural"), waterfalls, historically important Mayan ruins and more. Their tourism potential is enormous. Yet most are inaccessible except by using four-wheelers or helicopters because of rugged terrain. This type of touristic access is not eco-friendly, nor does it contribute significantly to Belize tourism sector

earnings. One could actually argue that having tourists packed tightly on cruise ship is more environmentally sound than eco-tourists driving around in polluting all-terrain vehicles because poor road access prevents eco friendly vehicular tours to the sites.

North-South access for the Western Maya Mountains: one potential solution to this economic and environment dilemma would be the construction of a north-south road access across the main divide of the Maya Mountains. This transportation way is a crucial improvement for Belize to control and protect its territory, while allowing limited but improved access for ecotourism development. Also if this access becomes a reality, Belizeans can then better harvest their own xaté leaves and benefit from other eco friendly opportunities that are currently accessible only from the Guatemalan side. And the same goes for gold extraction.


Giant caves
towards control point-North at Mountain Pine Ridge Forest Reserve entrance gate (60 kilometers north of Natural Arch)
Chiquibul Plateau
Chiquibul Branch
CAYO
Puente Natural
MAYA MOUNTAINS
Main Divide
Ceibo Chico
Ceibo Grande
Smokey Branch
old mining road
Highest peak 1124 meters
Bladen Branch
GUATEMALA
BELIZE
"missing link"
Nazario Perez
Little Quartz Ridge
Union Camp
Columbia Forest Reserve
very old logging road
Edwards Central
San Jose Hawaii proposed control point-South
Salamanca
San Miguel
Lubaantun
San Pedro
Big Fall
Southern Highway
TOLEDO
0
10
20
KILOMETRES

ZOOM

Monitoring would be easy to achieve since everyone would have to check in and out at the entrance gate of the Mountain Pine Ridge Forest Reserve, with similar controls at a southern control point that could be installed at San Jose Hawaii.

A twelve-kilometer stretch of road could be built across the Main Divide to link the Upper Ceibo Chico watershed, and the Nasario Perez area located north of Little Quartz Ridge. Old logging and mining exploration roads could be rehabilitated on both sides of that missing link to connect Puente Natural to San Jose Hawaii (total distance: 55 kilometers). This access could initially be opened for BDF/Joint patrols and forest reserve monitoring, with immediate Force multiplier and logistical advantages. Once the area is secured such link could be used for ecotourism.

The mule trail linking the Cayo and Toledo districts in the early 1900's should be integrated into the alignment.

The network of Guatemalan cut trails and 'picados' that comprise the numerous illicit 'desire lines' that exist in the Chiquibul and Columbia Forests should be integrated into the tactical patrolling network.

The recommended road linkage will enable a higher level of force multiplier effectiveness through combined operations and 'Surges' by BDF Land Commands, North and South.

A permanent BDF presence-nucleus of a Maya Mountain Massif Central Land Command- strategically located near the main divide, will significantly improve general effectiveness in protecting western Belize's natural resources.

Carbon Sequestration: With regard to carbon sequestration, if we don't sustainably log our hardwood trees, they will eventually fall with hurricanes or from old age, and decay. One has to question what benefit does a quasi-complete ban on wood harvesting in National Parks and some Forest Reserves yield if ultimately the decaying wood contributes to and causes release of potent green-house warming carbon dioxide and methane gases. The solution to this carbon sink dilemma is to selectively harvest hardwoods allowing carbon to remain locked in the wood for the lifespan of furniture and other wooden products. At the same time, responsible, sustainable harvesting of the hard wood forests would create jobs, add value to local products, and generate new markets for Belizean exports. Obviously logging and wood manufacturing leave their own carbon footprint but likely a lesser one than allowing wood to rot. The scales are further tipped when new growth absorbs more carbon dioxide from the atmosphere creating the true carbon sequestration "sink". The logging of hardwoods could then be regarded as being carbon-positive instead of carbon-neutral as is the case under most present-day carbon sequestration

arrangements. Having National Parks/Forest Reserves on a map is meaningless ("paper parks") if one ends up with 100% of nothing and unless Belize has adequate funding to monitor the area on a long-term basis. Examples of limited and responsible access/development would allow the Government to consider awarding long term lodge concessions to private entities near places such as Puente Natural in a way similar to what has been done in the US, South African and Kenyan National Parks. It makes one question whether it is possible to re-establish healthy populations of colorful Scarlet Macaws to add to the country's attractiveness in the Maya Mountains and possibly in the west-northwest region of Belize (Gallon Jug area escarpments). Could private companies be encouraged to fund these efforts? Why not? Nowadays people are demanding both the benefits of development and the effects of preservation. "(Economic) Growth is Green" and innovative free-market environmentalism needs to be considered as advocated by the Montana-based Property & Environment Research Center (PERC).

Oil & Gas Resources: Belize's Petroleum laws require environmental impact studies to be carried out prior to the issue of exploration licenses and provide detailed regulations for the monitoring of all oil and gas exploration and production activities. The hydrocarbon resources of Belize consist of light and heavy crude oil, tar, natural gas (methane) and propane-butane. Ironically, oil & gas is a form of solar and biomass energy locked in plant and algal remains that were refined by Mother Nature into hydrocarbons.

Onshore: While not an immediately popular alternative, the oil industry generates a minor carbon footprint while contributing to preservation and access for other activities. Specifically, the Belize oil industry is the biggest export accounting for more than one-fourth of the nation's export earnings. It represents the single largest contributor to the Government's tax revenues while impacting less than 250 acres! Compare this tiny footprint, including flaring, to the huge surface impact of hundreds of thousands of acres affected by subsistence slash & burn "milpa" farming, citrus, banana, sugar cane, rice, cattle ranching and tourism. Technological advances in oil field development like the directional drilling of multiple wells from single pad are such that the footprint is only a fraction of what it used to be, even as recently as 20 years ago.

Are oil and wildlife compatible? When scientist Jared Diamond began bird-watching inside an oil field in New Guinea he was expecting to see much less numerous species than elsewhere on the island. Instead he was very surprised to find the opposite situation because of a prohibition against hunting being fully enforced: "In effect, the oil field functions as by far the largest and most rigorously controlled National Park in Papua New Guinea ". The same is true in many areas of mature oil fields in the U.S., where oil has in effect created natural preserves.

Oil exploration activities (seismic, drilling) are very transient in nature as shown by old seismic lines and drill sites being extremely difficult to relocate after just a few years. Since seismic surveying does not remove large trees, the actual damage to the carbon stock is very small for the ones concerned by this impact. Creating new access is sometimes blamed for an increase in poaching. However, as recent news reports show, illegal land clearing, logging, hunting, poaching of wild plants and exotic birds, and gold extracting are going unchecked in what used to be a stunning, rugged Chiquibul forest teeming with wildlife. These unfolding events are the results of a high rate of population growth and very high poverty in neighboring Guatemala but it also sadly demonstrates that having no access to forested areas from the east (Belize) side of the border just does not safeguard Belize's interests either.

Consequently, responsible oil exploration and resource development in NW Belize and in Toledo will create jobs and the roads that will pave the way for, much-needed monitoring, patrolling, and access for ecotourism. It is worth noting that pipelines have a better safety record than trucking and they are more environmentally friendly. Affecting less than1% of the land surface, this resource development likely will generate and diversify public revenue sources, a fraction of which could be specifically allocated to help protect the remaining, untouched 99%+ portion of those areas. The benefits of accessing areas via straight, narrow paths left after seismic testing in places which are otherwise inaccessible to Forest Rangers may outweigh the increased risks of poaching and illegal logging.

These efforts could include the creation of wildlife sanctuary "islands" to restore and protect high-profile species such as jaguars, pumas (mountain lion), howler and spider monkeys, scarlet macaws and tapirs (mountain cow), if and when a new oil discovery happens in Belize. These "islands" would result in spill-over replenishing of neighboring communities where hunting would still be allowed for certain game species such as red brocket (antelope) and white-tailed (savanna) deer, ocellated turkeys, crested guans, great currassows, chachalacas, collared (pecari) and white-lipped peccaries (warree), agoutis, pacas (gibnut), iguanas, to name a few.

In addition, there is also good natural gas potential in the onshore WNW Belize region. A natural gas discovery could have immediate positive impacts by decreasing electricity rates, reducing energy dependence on Mexico, improving balance of payments and providing cooking gas for domestic market. The Quam Hill#1 exploration well was drilled in 2009 north of Gallon Jug and it had intriguing shows of natural gas which are a positive indication of Belize potential. Global warming is being very negatively exacerbated by mankind's massive use of hydrocarbons and one first positive step forward would be to shift from coal and heavy oil to natural gas for electricity production.

Offshore: The subject of offshore exploration and production usually generates strong emotions yet 40 % of the gasoline used worldwide already comes from offshore production. The issue is even more sensitive in Belize since the Belize Barrier Reef Reserve System is a UNESCO World Heritage Site, now unfortunately considered in danger. Excessive mangrove cutting, coral dredging, overfishing, increase frequency in coral bleaching and hurricanes due to global warming, and finally earthquakes, are the main culprits. Belize cannot do much to mitigate some of these but financial investments in monitoring and controlling human activities could result in positive developments including increase in size of protected areas.

It is interesting to note that much oil seepage occurs offshore Belize, originating mostly from vents located on the seafloor in deep waters. On a side note these vents have been found elsewhere to be the sites of very exotic life forms (Gulf of Mexico, North Sea, etc.) so the seafloor off the Belize Barrier Reef is most likely the site of yet-to-be-discovered animal species, so the thrill of discovery awaits future Belizean marine biologists who will be bold enough to venture into the deep blue.

A map of the Bay of Honduras published in 1775 by Thomas Jefferys mentions "ambergreese often found on the beach" of "Ambergreese Key". Older San Pedranos use a peculiar word of Aztec origin, chapopote, to describe tar balls, a word also widely used in Mexico to describe tar/asphalt. Many of the giant offshore Mexican oil fields (Cantarell) and those in the US Gulf of Mexico were drilled in association with chapopote/chapopotera, or ambergris. The story is worth telling: "…In March 1971, a Mexican fisherman named Rudesindo Cantarell took a few geologists from state-run oil company Petroleos Mexicanos to this spot, (located in Campeche sound) where he had seen oil slicks. Mr. Cantarell didn't know it, but he had stumbled across one of the largest offshore oil fields ever found." ……."…..The field lay unnoticed until Mr. Cantarell, the fisherman, kept getting his nets smeared with oil as he trawled for shrimp in the 1960s. Assuming that the oil came from PEMEX operations, he regularly hauled his oil-stained nets hundreds of miles to the nearest PEMEX offices in neighboring Veracruz State to seek compensation. Finally, local PEMEX officials, of the oil giant say they grew so exasperated with Mr. Cantarell that they went to check out his story…." (Dow Jones Newswires, Apr 05, 2007). Note: so far the Cantarell Field alone has produced 13 billion barrels of oil.

The shoreline at Rocky Point, north Ambergris Caye is plastered with impressive amounts of asphalt cakes.

Could deep offshore hydrocarbon production generate revenues that would help adequately finance coastguard monitoring while protecting marine sanctuaries and replenish neighboring commercial fisheries? Reefs and atolls should be kept off limit to oil exploration and production except for pipelines buried under the seabed. Non-invasive exploration techniques such as seismic (not using dynamite as source) could be allowed offshore but it is suggested that no drilling should take place in waters shallower than eight fathoms

(approximately fifty feet) which would put the entire Barrier Reef, atolls and shallow lagoons off limit while allowing exploration in sectors with highest hydrocarbon potential.

Physicist and environmentalist Bruce Allen estimates that in the 38 years since the start of a moratorium on oil drilling in the Santa Barbara Channel and offshore California, an estimated 900 barrels of crude oil have accidentally leaked from production platforms in contrast to an estimated escape of three million barrels into the marine environment from natural seeps on the seafloor during the same time period. This sixty mile long stretch of coastline has leaked some 800 million barrels of oil over the last 10,000 years (equivalent to an average rate of per 80,000 barrels per year or 10,000 gallons per day).

The tar found on the shoreline of Rocky Point comes from crude oil venting naturally in deep waters off the Belize seafloor.

Can Belize develop offshore oil & gas safely? Industry self-regulation obviously doesn't work as evidenced by the recent Gulf of Mexico oil spill. More regulation is needed to prevent disasters by ensuring highest safety standards on exploration and production platforms. These redundancies should include the use of backup safety systems with remote control devices such as acoustic shut-off switches already required by law in Norway (since 1993) and in Brazil, but not in the US. Perhaps the Petroleum Safety Authority of Norway or Brazil could collaborate with the Government of Belize in these matters. Additionally safety audits of oil drilling platforms conducted by insurance companies should be required by GOB to be to Norway's standards prior to these platforms being allowed into Belize waters. The best way to clean up potential offshore pollution would be to prevent it in the first place. Oil can be extracted safely, which would ironically reduce natural oil and gas seepage. The Belize Government should consider partnerships with companies which have proven safety records such as Petrobras or Statoil. There is also substantial assistance that can be accessed through the Norwegian Agency for Development Cooperation (Norad)- Oil For Development Programme which promotes Norway’s success in sustainably managing its offshore hydrocarbon industry.

As in the case of the upcoming referendum to determine whether Belize should agree to go to the International Court of Justice on the issue of Guatemala’s territorial claim, there is need for a comprehensive public education exercise prior to the promised referendum on offshore oil exploration and drilling. The objective would be to clarify the ‘pros’ and ‘cons’ of surrounding the issue in a non emotive way. The Government of Belize and The NGO community should agree to a joint approach to implement this.

CONCLUSIONS:

Developing mineral resources along with sustainable logging practices that improve carbon sequestration, the creation of a road link across the Maya Mountains that facilitates access to wonderful scenery while enabling effective border region control, can result in very positive benefits for Belize.

In this context due recognition must be given to the efforts of the NGOs, Friends for Conservation and Development, and the Ya'axché Conservation Trust, to promote the sustainable, climate compatible management of the contiguous Chiquibul and Columbia Forests. They have been very effective in drawing the attention of Belizeans to the systematic pillaging of the natural resources that is occurring in the border adjacent forests. They have been persistent in advocating for the adoption of innovative approaches involving cross border collaboration to address the problem which is rooted in the conditions of poverty and landlessness that exists in the Department of El Peten, Guatemala. They represent a new way forward that assures the minimizing of the potential for cross border conflict while creating the conditions for generating sustainable alternative livelihoods.

Also notable is the initiative taken by the Friends for Conservation and Development to pursue a carbon credit pilot project for the Chiquibul Forest, encompassing the Columbia Forest. It is contemplated that revenues generated from this source could be used for self sustaining improved forest management while supporting income generating eco system services projects for the benefit of Belizean communities.

Regarding oil & gas and mining: It is counter-intuitive to think that oil & gas, and mining activities may generate economic development for preservation. However there is no axiom of inevitability that accompanies the clichés of an oil or a gold curse. Rather, the challenge is what a country does with revenues derived from nature's bounty. Is leaving that bounty untouched going to lift Belize's economy? Is the risk worth the reward? Economic opportunities need to be created to lift small farmer productivity, to name one area of enterprise, from subsistence slash/burn activities to higher income generating levels, thereby realizing Belize's regional 'food-basket' potential. Becoming a true techno-industrial society through the maximized sustainable harnessing and use of domestic natural resources will facilitate the transition to a self reliant, poverty free society. This in turn would likely result in increasing quantity and quality woodlands and wetlands. Media reports abound on the cutting down of forests but there is a lack of information to the general public on the fact that trends can be reversed. Germany's forest cover is at 32 % while France's is at 29% and growing. The New England States used to be on average forested at 55% some 150 years ago and the average now stands at 80 percent (presently 85% in both Maine & New Hampshire versus 75% & 45% respectively around 1860). India and China's forest cover are reportedly showing an average 0.4% yearly increase. One of India's most industrialized states, Gujarat, is recording

a net increase in mangrove cover. Panama is now reportedly experiencing a modest increase in forest cover after five decades of decline. Belize is losing forest cover at a rate of 25,000 acres per year but this trend can be reverted by developing other resources than agriculture.

While the adopted national policy recommendations to promote alternative renewable energy sources are sensible and feasible, the likelihood of Belize achieving energy and economic independence in the near future can only come from WNW onshore Belize and/or onshore Toledo commercial oil discoveries.

Since world hydrocarbon prices are forecast to keep going up it will make life very difficult for countries like Belize unless domestic production can increase. Hopefully this can be to the level where the current policy initiative to construct a refinery comes to fruition with the prospect of reducing pump prices for everyone's benefit including the tourism industry. A domestic production refinery would also eliminate the need for imports of hazardous gasoline/diesel being shipped to Belize City through the Barrier Reef and the Inner Lagoon.

The Belize oil industry has the capacity to create thousands of jobs. There are direct economic benefits for areas impacted by exploration & production operations. One third of the population of Belize survives on less than $5/day. It has been often said that the quickest way for Belize to escape poverty is to invest more in education. Oil & gas and mining can provide that financing. Since 2002 the State of Wyoming has been building and opening new elementary and primary schools at the rate of one every six months, in majority funded by minerals and oil & gas royalties. Economic development lifts people out of poverty. Wealthier people have an obligation to provide sound environmental stewardship, which is usually a luxury for poor people.

Belize, not only can, but must protect its environment while stimulating economic growth. Doing so is the only way to ensure the people and the land are protected and poised for the growth that they are meant to experience.

Science writer Charles Mann and others have pointed out that the notion of pristine wilderness is a bit of a myth. The Amazon rainforest represents a landscape that has been heavily shaped by humans and densely populated over the past 10,000 years. Successive Brazilian Governments have increasingly ensured that degradation of the Brazilian rainforest is contained. It is also worth noting that the Belize rainforest is not a pristine wilderness either since millions of people inhabited the region at the height of the ancient Mayan civilization during the Late Classic Period some twelve hundred years ago. So where does that leave present-day efforts and sentiments to restore nature to its original, "untouched" state?

It is prudent to synthesize these preservation hesitations into the problem solving policy matrices that are adopted to advance Belize's development agenda; guided and underpinned by the following consideration:

'The significant problems we face today cannot be solved at the same level of thinking as when they were created.' – Albert Einstein

References:

Allen, Bruce, 2012: Opinions: Offshore oil production saves local wildlife.

http://www.noozhawk.com/article/030812_bruce_allen_offshore_oil_production/

CATHALAC/Belize Land Information Centre 2010: Forest Cover and Deforestation in Belize 1980-2010

Cornec, Jean H., 2010: Gold Potential of the Maya Mountains, Belize's best kept secret?

Cornec, Jean H., 2010: Evidence for hydrocarbon seepage, offshore Belize.

Diamond, Jared M., 2005: Collapse: how societies choose to fail or succeed. Viking Press.

Esch, Aaron: How logging can increase forest carbon sequestration. http://logging.about.com/od/Eco-Friendly-Logging/tp/Forest-Carbon-Sequestration.htm

Gibson, David AK/Palacio, Joseph O. 2011: Belizean Strategic Culture-Florida International University-Applied Research Centre.

Halcrow Group Ltd/Decision Economics-Penny Ross & Hope/The Belize Team :Country Poverty Assessment 2010

Jefferys, Thomas, 1775: Geographer to His Majesty, Map of the Bay of Honduras.

Falaschetti, D., 2012: Growth is Green: Economic performance and Environmental Quality.

Property & Environment Research Center. http://www.perc.org/

Mann, Charles C., 2011: 1491, New revelations of the Americas before Columbus. Random House.

The Economist, 2012: Wyoming reveals the downside of getting billions in energy revenues.

Tillett, Ambrose/Locke, Jeffrey/Mencias, John: National Energy Policy Framework- Belize 2011

ABOUT THE AUTHORS

Jean H Cornec

Jean Cornec is a Geologist and Research Associate of the Centre for strategic Studies Policy Analysis and Research.

He holds an engineering degree in Petroleum Geology from the French Petroleum Institute (IFP), Paris. His work includes exploring for oil and minerals in Belize for over 28 years, serving as a Technical Adviser in the newly formed Geology and Petroleum Unit in the Ministry of Natural Resources in 1984, through the auspices of the United Nations Development Programme and the Government of France.

He compiled the first geologic map of Belize consolidating 25 different sources to accomplish this. On the field side, in 1985, he found the first lode (quartz vein) source for the alluvial gold reported by earlier prospectors at Ceibo Chico,Chiquibul. He also organized the only successful modern day east-west crossing expedition of the Maya Mountains in 1990 while prospecting for base metals and precious minerals.

Mr. Cornec participated directly with Belize Natural Energy BNE, in Belize's first commercial oil discoveries at Spanish Lookout in 2005, and at Never Delay and Cayo West in 2007.

He is an authority, and has written extensively on Belize's hard mineral and hydrocarbon potential, advocating for greater effort and investment in exploration and utilizing of these resources for Belize's development.

Other areas of geological expertise include exploratory work in Kansas and Nevada in the USA, and Bolivia.

David AK Gibson

Ambassador Gibson is founder and Coordinator of the Centre for Strategic Studies, Policy Analysis and Research (CSSPAR), a think tank that conducts public policy research, advocacy, and negotiation for governments, NGOs, and special clients. CCSPAR has conducted research and advisory work on national security strategy development, national petroleum resources management, international relations and conflict prevention, maritime affairs, sugar cane industry management, governance, and strategic culture redesign.

Ambassador Gibson holds a B.Sc. in Government (Honors), from the University of the West Indies, Mona Campus, and MA in Development Studies from the Institute of Social Studies, of The Hague, Netherlands. He is a trained and experienced international negotiator.

He served the Government of Belize for 22 years as a Permanent Secretary, and as Financial Secretary, and from 1993 to 2003 was the Permanent Secretary, then Chief Executive Officer, in the Ministry of Foreign Affairs. He is Belize's Ambassador (non-resident) to Japan and the Kingdom of Thailand, and served as a member of the Belize Guatemala Negotiation

Team. Together with Dr Joseph Palacio, he is co-author of the document 'The Belizean Strategic Culture' which analyses the strategic challenges to Belize's national development and security.

In 2002 he was honored by the Government of the Republic of China on Taiwan with the award of the Grand Cross of Diplomacy.

Ambassador Gibson is a member of the Public Policy Working Group of the University of Belize's Policy Observatory which is engaged in the development of social policy research, policy analysis, and evaluation capacity, pursuant to the formation of a Public Policy Research Institute within the University.

He currently provides track 2 level diplomatic advice to the NGO, Friends for Conservation and Development (FCD) which co manages the Chiquibul Forest on behalf of the Government of Belize.

***