Delegation studies climate change and alternative energy in Nicaragua
By Susan Lagos

(Susan Lagos is a retired Spanish and English teacher from northern California who traveled to Nicaragua in the 1970s, 80s, 90s and 00s. She and her Nicaraguan veterinarian husband Walter Lagos have a farm in the Dario area which produces calves, milk, cuajada cheese, chickens, eggs, ducks, pelibueys, pigs, horses, oranges, lemons, mangos, avocados, cashews, corn, and sorghum..)

We recently concluded a fascinating trip organized by Nicaragua Network/ Alliance for Global Justice and led by Paul Baker. As a Nicaraguan resident, I was glad to be able to visit projects that otherwise I wouldn't have been able to see, where I met people very dedicated to improving the care given to Mother Earth here.


Jinotega indigenous leader Jose Luis Gonzalez said that they were not compensated for the land lost to the dam at Apanas in the 1960s. Photo by Helen Jaccard

After an introduction by Jorge Capelan of Radio La Primerisima, where we bought copies of *Correo* magazine, we left for Jinotega, where we spent a day with Jorge Luis Gonzalez, *cacique* (chief) of the indigenous community there. I was surprised to learn that they have had title to 38,380 manzanas [66,000 acres] including the territory now covered by Lake Apanas, since 1723, but did not receive compensation when the dam forming the lake was built in 1965. We toured the Centroamerica Power Plant. That evening we learned about the Abya Yala café from its founders in Matagalpa, who chose the Kuna indigenous name for the continent of America, meaning Land that Flowers.

Next, we drove to the Solar Project near Totogalpa, which was explained by Susan Kinne, Jorge Lopez, and the community of women who use solar cookers, light their houses that receive tourists with small solar panels, and grow their food together. One can take a course to make a solar panel and cooker there, which also serves to dry coffee and fruit.

Near Telica, we visited the Del Campo Sesame Cooperative, where members collect, process and export their product to Europe. In Leon, we conversed with Nicholas Hoskyns, who has worked with the cooperative movement since the 80's and is quality manager for Albalinisa, exporting coffee, sesame, honey, beans, and corn.

In La Paz, Carazo, with Mike Boudreau, Wilmer, and Jorge, of the group Compas, we observed biodigestors, eco toilets, grey water filters, worm culture and saw the work of a local sculptor. *Mujeres en Accion* (Women in Action) in Managua is also part of his program, where women in Barrio La Primavera make purses and bags from recycled crocheted plastic bag strips, wonderful carved *jicaro* (gourd) objects, and soy products.

At the Ministry of the Environment and Natural Resources (MARENA), Bismark Morales provided us with some general data, such as 93% of water drainage is into the Caribbean, and only 7% to the Pacific. 70% of the population has electricity, but 30%, mostly on the east coast, do not. And 48% of families still cook with firewood (severely deforesting the rural areas), so alternatives of biodigestors, tanked gas, and improved stoves are greatly needed. The three biosphere reserves need more protection: Bosawas, 2 million hectares in the north central part of the country, Indio-Maiz on the San Juan River, and Ometepe Island. The three reserves hold 8% of world biodiversity. Tumarin Dam on the Rio Grande de Matagalpa is being built to provide 250 megawatts, which will be one fourth of electricity currently needed. The dam at Apanas provides 50 and Carlos Fonseca dam 50), the rest is provided partly by the wind farms near Rivas, solar panels near Diriamba, and Polaris geo-thermal plant near Telica and another one near Momotombo. We received a copy of the Second National Communication about Climate Change in Nicaragua for the UN. MARENA will produce a feasibility and environmental study for the canal proposal , with Monkey Point as deep water port in the east, and Pie de Gigante in the west, also a railroad to cross the country. Nicaragua is the only bicoastal Central American country not to have ports on both coasts and good roads connecting them, which has severely hampered its development.

In La Paz, Carazo, the delegation learned about growing crops with gray water filters and worm culture. Photo by Helen Jaccard.

Victor Campos at the Humboldt Center, an environmental organization working in Nicaragua for 23 years, spoke of its four focus points: climate change, water, the oil refinery being built, and protection against genetically modified organisms in foods and seeds. Then, he gave us some history on the Canal: In 1914 the Chamorro/Bryan Treaty was signed giving the US exclusive right to build a canal for 100 years, with a 20 k. wide zone along the Rio San Juan, even though Panama turned out to be technically and politically easier to do. In 1971 Somoza would have allowed Howard Hughes to build an oil pipeline through the US zone, but he left after the 1972 earthquake. Since then, the Japanese, Russians, and Chinese have been interested. But now the biggest problem is that water levels are lower and the ships are larger, requiring 25 meters depth when in many places Lake Cocibolca (Lake Nicaragua) is only 10 meters deep, and the San Juan River would be hard to channel. No feasibility and environmental studies have been done yet, and there has been a lack of transparency. The suggested route of Rio Oyate/Rama/Escondido averages 10 meters deep. Lake Cocibolca with 8000 square kilometers provides the largest source of fresh water for humans and crops in Central America, which with climate change heating and drying the area, is of extreme importance, and the fine silt on the bottom would be quite disturbed by dredging for a deeper channel, not to mention loss of water as ships pass through to the two oceans, polluting as they go. If the damage is irreversible, then precaution says DON'T.

President Ortega promised at the 2010 Cochabamba climate summit to protect this natural resource. Of course, we all want more employment and a way to lift the country out of poverty, Campos said, but the environmental costs seem too high. But the concession was already signed Thursday June 13 by Wang Jing for the HKND Group from Hong Kong. It includes two ports, two airports, an oil pipeline, and a railroad line. After studies are completed and discussed, a delay of permission will

entail fines. The vice-chairman of McLarty and Associates, hired to put together the consortium of investors, happens to be John Negroponte, the United States' infamous ambassador to Honduras during the Contra war in the 1980's. Campos also said that the canal doesn't fit into the CAFTA framework.

Katherine Vammeeen of CIRA talked about possible impacts of the canal. Photo by Helen Jaccard.

Next, we met with Katherine Vammen, who has been in Nicaragua since the mid 80's working for the Center of Investigation of Aquatic Resources (CIRA). She showed us a power point presentation of the work of 115 people in nine labs. Based on the mandates of Nicaraguan Law 3395, they control effluents from industries, analyzing chemical and biological samples. She told us that Nicaragua is blessed with 38,000 cubic meters of water available per capita per year, compared to the US, which only has 8,900 cubic meters. In 2007, Nicaragua became the only country in the area with Law 620 to manage water use. If a canal is built through Lake Cocibolca, which is too shallow, it can't also be a potable water reserve and a source for irrigation. It would need continuous dredging, since the sediment on the bottom is very fine. A coast-to-coast railroad would be a better solution, she said.

Vammen told us that the Caribbean side of the country, with a population of 715,000, receives 2000-4500 mm of rain yearly while the Pacific side, with over 3 million people, only receives 1,100 -1900 mm. So, 86% of the population lives on 20% of the land (on the west side) with only 6% of the yearly average rainfall. Deforestation is a huge problem, Vammen said, as agriculture moves into forested areas. There were 7 million hectares of forest in 1950, but in 2006 only 3.2 million, reduced 50% in 56 years, 70,000 hect./ yr. Another problem is pollution: over-fumigation of crops, mercury from the Penwalt battery factory near the Chureca dump, DDT used on cotton in the west during 1950-70, Nemagon used on bananas in Chinandega, mercury and cianide used to pan for gold, arsenic in well water. To combat climate change which is resulting in higher temperatures and less water on the Pacific side with more hurricanes for the Atlantic, solutions are to reforest watersheds and use water more economically.

At the Center for Promotion, Research, and Rural Social Development (CIPRES), Javier Pasquier explained the organization's history. When the Sandinistas lost the 1990 election , the new government wasn't interested in promoting the cooperatives that had functioned on state land inherited from the Somoza dictatorship. So worker-owned businesses were formed and trained in self- government, and given credit to grow their own food as well as crops for sale. CIPRES aided them in defense against the old landowners who wanted their land back. Starting in 1997, they began the *Programa Productiva Alimentaria* (Productive Food Program) with 100,000 families who had land but who weren't eating well. They received animals, seeds, fencing wire, and technical assistance to organize and start a loan fund, many forming coops. With the Sandinistas back in power in 2007, the government programs took over this job. So CIPRES formed FECODESA, a federation of coops with 16 central unions, providing technical assistance, developing youth, and supporting agro-ecology. Better seeds are developed on the farmers' own plots (NOT GMO seeds). Individual small farmers lose out often to the commercial middlemen, but a coop can control credit, processing, and sales, and can cut costs. CIPRES coops produce coffee, chiles, rice, honey, juice, jam, cashews, meat, and vegetables, all processed by the coops.

At the National Apiculture Commission, Felix Linarte explained that in Nicaragua, there is no beehive collapse syndrome, because the colonies are Africanized bees which are more productive, less easy to steal, better adapted to the climate, and, if there is no food in the area, they will leave. The honey produced is from mixed multi-flowers vs. the intensive one-crop pollination in the US. Most of their honey is exported to Germany.

We visited the Nemagon community, former banana workers crippled by pesticides used in Chinandega and Leon from 1972 to 1986. Standard Fruit, Dole, Chiquita, and Shell and Dow who made the chemicals are all responsible for the sickness and birth defects the workers suffer, even though Nemagon was outlawed in the US in the 1979. The workers told us that, even though they protested, Enrique Bolaños (later president) and his son still sold the chemical during those years. Finally, when the FSLN returned to power in 2007, the government built 72 houses in old downtown Managua for the banana workers and provides food, medicine, and legal support, but the companies have never given them pensions or compensation.

The group attended an out-door dance performance in front of the cathedral in Leon. Photo by Helen Jaccard.

Our most uplifting visit was to la Casa de las Botellas, home of the *Escuela de Mima y Comedia* (School of Miming and Comedy) in Granada. Gustavo our guide, was a young teen when he began to learn to be a mime, acrobat, clown, trapeze artist and unicycle rider with 8 others who live in the house, and 75 others who attend classes Mon-Fri. The house is made of recycled plastic bottles wired to a frame and plastered over chicken wire. There is a huge water tank under the floor which stores rain water from the roof. Another palm roof rancho also has an underground tank. Light comes in through glass bottles in patterns in the wall. Every first full moon in January, about 300 international volunteers come to do community work for the *Berrinche Ambiental*, an environmental party.

One of our last meetings was with Jefferson Shriver, Central American regional consultant on climate change and farming for Catholic Relief Services. He said that climate change is affecting small farmers most with higher temperatures and longer dry seasons in Matagalpa, Jinotega, and Nueva Segovia. They must reforest and use shade trees like guava for coffee, cacao, malanga, plantain, etc. to rescue the water in non-irrigation areas. The idea is prepare now and be part of the solution. Scientists note, Shriver said, that parts per million of carbon dioxide were 275 in the 1800's but 400 now, so the average temperature in 2050 will be 2-2.5 C degrees higher. Slash and burn clearing, and burning firewood contribute nitrous oxide and methane (from cow dung also) which contribute 22% to climate change (with carbon dioxide contributing 77%). Slash and burn agriculture removes topsoil and contributes to soil erosion, and loss of humidity. When the planet becomes less habitable due to temperature change and longer dry seasons, the most vulnerable are poor families who depend on agriculture—that is 60% of Nicaraguans. The sea level will rise because of the glacier melt in the Andes; those glaciers are down 50% since 1970 and this will affect coastal areas. Pacific lowlands will be drier, Shriver said, while there will be more rain at

higher altitudes. There will be less than the present 120 days for planting time; plants will stress at over 30 degrees C. (86 F.), causing leaf rust for example in coffee, and higher prices for consumers.

Shriver explained that one way to adapt is to diversify crops instead of producing only one. To mitigate the causes, we must reforest, stop deforesting, and reduce, reuse, and recycle, he insisted. Another adaptation is agro forestry, growing avocado, citrus, and bananas using taller shade trees to lower the temperature by 4 degrees, create a wind barrier, retain humidity, reduce erosion with leaf litter, and fix nitrogen with less dependence on chemicals. This can be a triple plus: it can increase income, help adaptation to climate change, and sequester carbon with trees.

Members of the group Women in Action in Barrio La Primavera in Managua crochets bags from recycled plastic bags. Photo by Susan Lagos.

Lastly, we met with Ernesto Garcia of newspaper El Nuevo Diario, who told us about the daily's ongoing campaign to sensitize citizens about stopping the use of illegal garbage dumping, about recycling, using bags for trash in cars, and stopping industrial waste in rivers.

I plan to start using what I learned on this trip by making a trash can of recycled plastic bottles for my street corner, learning to crochet recycled plastic bags so I can teach someone, eventually put a solar panel at the farm for irrigating when the electricity goes off, continue planting trees, cooking with the biodigestor at the farm, and convincing people to care more for Mother Earth.