

GLOBAL INFORMATION SOCIETY WATCH 2010

Focus on ICTs and environmental sustainability



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC)
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Introduction

The following report is geared towards evaluating the use and management of information and communications technologies (ICTs) in Venezuela as one of the ways to resolve the problems that threaten the country's environmental sustainability. Particular attention was given to the melting of the glaciers that make up the Venezuelan Sierra Nevada as one of the critical issues that affect global climate change. The analysis of the problem allowed for the evaluation of public and private institutions and civil society with regard to the way they are dealing with climate change in Venezuela.

Environmental laws in Venezuela

In Venezuela there is a legal framework dealing with environmental management, governed by principles of sustainable development as a basic right and duty of the state and society. Among the laws and regulations that are considered related to climate change are:

- The Environmental Organic Law¹
- The Environmental Criminal Law²
- Standards that regulate and control consumption, production, import, export and use of substances that deplete the ozone layer³
- Air quality and air pollution control regulations⁴
- Environmental assessment standards for activities that could lead to degradation of the environment.⁵

It is important to note that Decree No. 825 of May 2000 states that access to and use of the internet and ICTs in general is a priority policy for the cultural, economic, so-

cial and political development of Venezuela.⁶ This decree is extended to all ministries, including the People's Power Ministry for the Environment.

The ministries of education, culture and sports, infrastructure, science, intermediate technology and industry are responsible for coordinating the implementation of Decree No. 825. In this sense, in the laws and regulations listed above, ICTs are included in the articles related to the rational use of resources. Additionally, Venezuela is actively participating in international conventions⁷ with the aim of contributing to the reduction of gases causing the greenhouse effect as well as protecting the ozone layer.

Environmental context

In the following analysis, the melting of glaciers located in the Sierra Nevada in Mérida, Venezuela (which forms part of the Andes mountain range) was selected as a critical problem that is the result of global climate change. Currently, four glaciers have disappeared and two are in a process of accelerated melting, one located on Pico Bolívar or Bolívar Peak (Venezuela's highest peak), with an area of 7.48 hectares, and the other on Pico Humboldt, covering 35.61 hectares.

According to research conducted by Oriana Camacho, in the 1970s glaciers occupied 138.89 hectares of the Sierra Nevada of Mérida,⁸ but currently cover only 43.09 hectares. It is estimated that under current conditions, they have a life expectancy of twelve to thirteen years and experience an average vertical retreat of nine metres a year.⁹

This retreat of the glaciers in the Venezuelan Andes is mainly attributed to rising temperatures. In studies conducted by the Inter-American Institute for Global Change Research on the retreat of glaciers in the American Cordillera (of which the Andes form one part), "the Antarctic Oscillation, the El Niño phenomenon and the Pacific Decadal Oscillation (PDO) are important factors that control the balance of glacial mass. The change in temperature

1 Gaceta Oficial N° 5.833 de la República Bolivariana de Venezuela (2007) *Ley Orgánica de Ambiente*. www.minamb.gob.ve/files/Ley%20Organica%20del%20Ambiente/Ley-Organica-del-Ambiente-2007.pdf

2 Gaceta Oficial N° 4.358 de la República de Venezuela (1992) *Ley Penal del Ambiente*. www.vitalis.net/Ley%20Penal%20del%20Ambiente.pdf

3 Gaceta Oficial N° 38.392 (2006) *Decreto N° 4.435 de la República Bolivariana de Venezuela: Normas para Regular y Controlar el Consumo, la Producción, Importación, Exportación y el Uso de las Sustancias Agotadoras de la Capa de Ozono*. www.vitalis.net/Normas%20para%20Regular%20y%20Controlar%20el%20Consumo...Capa%20ozono.pdf

4 Gaceta Oficial N° 4.899 (1995) *Decreto N° 638 26 de la República Bolivariana de Venezuela: Normas sobre Calidad del Aire y Control de la Contaminación Atmosférica*. www.vitalis.net/Normas%20sobre%20Calidad%20del%20Aire%20y%20Control%20de%20la%20Contaminaci%20n%20Atmosf%20rica.pdf

5 Gaceta Oficial N° 35.946 (1996) *Decreto N° 1.257 de la República Bolivariana de Venezuela: Normas sobre Evaluación Ambiental de Actividades Susceptibles de Degradar el Ambiente*. www.vitalis.net/Normas%20sobre%20evaluaci%20n%20de%20actividades%20susceptibles%20de%20degradar%20el%20ambiente.pdf

6 República Bolivariana de Venezuela (2000) *Decreto N° 825: Se declara el acceso y uso de Internet como política prioritaria para el desarrollo cultural, económico, social y políticos de Venezuela*. www.cecalc.ula.ve/internetprioritaria/documentos/decreto_825.pdf

7 Gaceta Oficial (N° 34.010, N° 34.134, N° 4.825, N° 34.134), Convenios Internacionales. www.minamb.gob.ve/index.php?option=com_content&task=view&id=64&Itemid=98

8 In the state of Mérida, there are 70 peaks that are 4,300 metres or more in height; they are also the highest peaks in all of Venezuela. Of these, 54 are located in the Sierra del Norte, 14 in the Sierra Nevada of Mérida and two in the Sierra de Santo Domingo.

9 Camacho, O. (2004) *Retroceso glacial y colonización vegetal en los nuevos ambientes periglaciares de los Picos Bolívar, Humboldt y Bonpland*, thesis in Geography, Faculty of Forestry and Environmental Sciences, Universidad de Los Andes, Venezuela.

[also] has a significant impact on snowfall. The behaviours of the glaciers were clear signs of climate change.⁹¹⁰

Added to this, in the last ten years in cities like Mérida the emission of greenhouse gases (GHGs) has accelerated and natural carbon reservoirs like forests have deteriorated. The most critical factors include: a) an increase in the number of vehicles, which congest the roads and increase GHG emissions, and b) a lack of awareness of environmental problems amongst the general public, and the unsustainable use of natural resources, such as increased logging and burning of the Venezuelan wilderness, irresponsible adventure sports that contribute to deterioration of high-mountain ecosystems, fishermen and hikers who leave tonnes of garbage behind them, and the construction of houses in national parks.

Climatological stations in Venezuela

One of the needs that exist in the area of climate change is the provision of reliable climate data. This includes having long-term accessible records, monitoring climate change with efficient technologies, and having the tools for storage and processing of data and promoting the exchange of climate information. Different organisations and institutions have been dedicated to the promotion and support of projects in this area, including the University of the Andes Centre for Scientific Calculations (CeCalCULA), the University of Bremen (Germany) Institute of Environmental Physics, the Center for Astronomical Research (CIDE), Sierra Nevada National Park, the National Institute of Agricultural Research, and the Ministry for the Environment. Among their projects are:

- *Bioclimatic Network of Mérida*¹¹ is a network that aims to facilitate access to information collected and generated by nine weather stations¹² installed in Mérida. The project includes a web-based bioclimatic information system, a centralised data management system and a meta-data management system. The weather stations¹³ send data¹⁴ automatically to computers, and include sensors to measure temperature, precipitation, relative humidity, solar radiation, soil moisture, and wind direction and speed. The network provides free access to the data, and public access through the web. This information allows researchers to evaluate the behaviour of glaciers, which represents a significant contribution to the management of climate information on the web.

- *Mérida Atmospheric Research Station (MARS)*¹⁵ is part of a global network of monitoring stations that observe the status of and changes in stratospheric composition. MARS is installed on Pico Espejo,¹⁶ which is located in the Sierra Nevada de Mérida near Pico Bolívar and has an elevation of 4,765 metres. MARS is unique because it offers one of the best observation sites for a tropical tracking station below 10° latitude. The data captured at the station is transmitted through a wireless network and stored in a data repository located in CeCalCULA. Researchers can then access the data via internet. MARS facilitates the exchange of climate information at the international level which strengthens the scientific research of glaciers.
- *GLORIA (Global Observation Research Initiative in Alpine Environments) Network*¹⁷ is a network of high-mountain weather stations created in different countries to investigate the impacts of climate change on mountain environments. Its aim is to compare data from different mountains in the world. Currently in South America it is expected to install seventeen stations.¹⁸ One station is situated in the Cordillera de Mérida, which will be managed by the University of the Andes Institute of Environmental Sciences and Ecology (ICAE). This will facilitate the long-term monitoring of data from the Cordillera de Mérida.
- *Government institution stations* encompass a total of fifteen climatological stations¹⁹ administered by state agencies that handle valuable historical climate data to evaluate the behaviour of the Mérida glaciers. However, most Ministry for the Environment stations are inactive, including some run by the National Institute of Agronomic Research (INIA) of Mérida, which demonstrates serious weaknesses with regard to monitoring environmental problems.

New trends

In the last decade, Venezuela has suffered the vagaries of natural disasters (landslides,²⁰ floods, earthquakes, forest fires, etc.), energy problems (faults in strategic power plants, low water levels in dams, etc.) and environmental pollution, to mention the most outstanding problems. Confronting these situations has required the implementation of a series of short- and long-term measures in order to deal with the difficulties and to ensure a sustainable

10 Instituto Interamericano para la Investigación del Cambio Global (2010) *Derritiendo el hielo – Retroceso de los glaciares de la Cordillera Americana*. www.wsp.iai.int/files/communications/publications/communique/IAI_communique_2_2010_sp.pdf

11 Centro de Cálculo Científico de la ULA (CeCalCULA) (2005) *Red Bioclimática de Mérida*. www.cecalc.ula.ve/redbc/html/funcionamiento.html

12 www.cecalc.ula.ve/redbc/estaciones/estaciones_climaticas.html

13 www.hosmos.com.mx/fprod/davis.html

14 www.cecalc.ula/webclima/datos

15 Kunzi, K., Hochschild, G., Richter, A. and Wittrock, F. (2004) *Mérida Atmospheric Research Station, MARS*. www-imk.fzk.de/imk2/mira/Merida/MARS/SciSumMe.pdf

16 en.wikipedia.org/wiki/Pico_Espejo

17 Pauli, H. (2003) *Manual para el Trabajo de Campo del Proyecto Gloria*. www.gloria.ac.at/downloads/GLORIA_MS4_Web_espanol.pdf

18 www.gloria.ac.at/downloads/MemoriasCurso_GLORIA_Bolivia_200801.pdf

19 www.cecalc.ula.ve/redbc/estaciones/estaciones_climaticas.html

20 [es.wikipedia.org/wiki/Tragedia_de_Vargas_\(1999\)](http://es.wikipedia.org/wiki/Tragedia_de_Vargas_(1999))

approach that involves political, social and environmental considerations, among others.

There are several ICT trends that are emerging in Venezuela, which are oriented towards a progressive way to overcome environmental problems, and support the necessary changes in the state to achieve sustainable development of the environment. Here are some key trends:

- Implementation of plans, programmes and public policies that promote sustainable development in the country with environmental criteria where ICT plays a decisive role. Since 2007 the government has implemented its Economic and Social Development Plan (2007-2013). Initiatives here are expected to deepen policies that: a) ensure the sustainable management of the biosphere, b) redesign the national system of science, technology and innovation to support programmes using ICTs, including implementing programmes for environmental education, c) ensure that production and consumption of energy contribute to the preservation of the environment, among others. The plan explicitly considers that it is imperative to pay attention to global warming and its effects, including water levels along the country's coastline.
- National warning systems using ICTs, which will interface with telecommunications networks from several nations and other national bodies or groups.²¹
- Automated weather stations to promote the exchange of critical information.
- Environmentally friendly mass-transit systems.
- Systems that control traffic congestion (intelligent traffic lights, etc.).
- An anti-corruption system for corruption control in public institutions to detect irregularities in the management of public property and to promote efficient use and development of environmental resources.²² The feasibility of this system is supported by the Environmental Organic Law which establishes environmental audits as control mechanisms, including systematic, documented, periodic and objective assessments of the management of public institutions subject to regulation. The purpose of these is to verify compliance with the provisions of Venezuelan environmental regulations and conditions imposed by previous monitoring tools. Organisations such as CA PlaniGestion²³ offer auditing services and records

of activities that degrade the environment. The implementation of ICT-based anti-corruption systems can be used by various bodies to ensure environmental sustainability and good use of resources.

- The promotion of cleaner industries.²⁴

Action steps

Actions that need to be implemented in Venezuela include:

- Public policy: Strengthen current laws and regulations which explicitly mandate, at various levels of administration, the implementation of e-government and the use of ICTs when dealing with environmental issues²⁵ as a priority to ensure sustainable development.
- Awareness campaigns: Implement educational and information campaigns through web portals, email, chat, discussion forums, social networks, among others, to promote the use of web-based ICT services, mass transportation, clean fuels,²⁶ electronic waste (e-waste) recycling, efficient use of natural carbon reservoirs, and eco-sports and eco-fishing as a way to improve environmental conditions.
- Creating repositories with climate information and promoting the use of collaborative tools. This could include access to climate data via portals and software repositories in the interest of enhancing the exchange of scientific information and collaborative work. ■

21 Such as fire departments, civil defence, rescue teams, national, state and municipal governments, and the National Civil Aeronautics institute (INAC), among others.

22 The idea is to prevent illegal development concessions in national reserves, high risk areas, etc., which have caused irreparable damage to the environment.

23 www.planigestion.com/PlaniGestionEstudiosMinAmb.htm#AuditoriasAmbientales

24 Revista Producto (2007) Paciente planeta: Industrias más limpias. www.producto.com.ve/286/notas/portada12.html

25 Ministerio de Poder Popular para el Ambiente, Proliferación de desechos electrónicos en el mundo. www.minamb.gob.ve/index.php?option=com_content&task=view&id=162&Itemid=99; Ministerio del Poder Popular de Energía Eléctrica (2010) Plan Nacional para Dar Respuesta a la Energía Eléctrica. www.minamb.gob.ve/files/EMERGENCIA-ELECTRICA.pdf

26 Revista Producto (2007) Paciente planeta: Cambio climático llegó a Venezuela. www.producto.com.ve/286/notas/portada9.html

GLOBAL INFORMATION SOCIETY WATCH 2010 investigates the impact that information and communications technologies (ICTs) have on the environment – both good and bad.

Written from a civil society perspective, **GISWatch 2010** covers some 50 countries and six regions, with the key issues of ICTs and environmental sustainability, including climate change response and electronic waste (e-waste), explored in seven expert thematic reports. It also contains an institutional overview and a consideration of green indicators, as well as a mapping section offering a comparative analysis of “green” media spheres on the web.

While supporting the positive role that technology can play in sustaining the environment, many of these reports challenge the perception that ICTs will automatically be a panacea for critical issues such as climate change – and argue that for technology to really benefit everyone, consumption and production patterns have to change. In order to build a sustainable future, it cannot be “business as usual”.

GISWatch 2010 is a rallying cry to electronics producers and consumers, policy makers and development organisations to pay urgent attention to the sustainability of the environment. It spells out the impact that the production, consumption and disposal of computers, mobile phones and other technology are having on the earth’s natural resources, on political conflict and social rights, and the massive global carbon footprint produced.

GISWatch 2010 is the fourth in a series of yearly reports critically covering the state of the information society from the perspectives of civil society organisations across the world.

GISWatch is a joint initiative of the Association for Progressive Communications (APC) and the Humanist Institute for Cooperation with Developing Countries (Hivos).

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