Background Document

Interactive Panel 3: ICTs for Public Safety: Emergency Telecommunications and Climate Change

Emergency Telecommunications

Introduction

Disasters disrupt national economies, severely weaken poor and vulnerable communities, and they are recognized as major impediments to sustainable development and reductions in levels of poverty. When disasters strike they leave a legacy of lost or broken lives and often long-term economic damage.

The impact of natural disasters is worse for those living in remote and isolated areas who have no or limited access to basic and essential information and communication facilities that will provide vital information and ultimately save lives.

Disasters cost the world an estimated USD 356 billion in 2010 and more than USD 380 billion in 2011, the majority of which was attributed to disasters in Japan, New Zealand, and Thailand[1].

The impact of climate change and natural disasters

Most natural disasters resulting in social and economic losses are now being associated with climate change. The large number of weather related disasters in 2010, which tied 2005 as the warmest year globally since 1880 are not only affecting those people immediately involved but also impacting national and global economies.[2]

Both 2005 and 2010 were noted for exceptionally damaging weather events, such as Hurricane Katrina in 2005 and the deadly Russian heat wave in 2010. Pakistan's most damaging flood to date, Southwest Australia's driest year and Canada's warmest year on record all took place in 2010. According to the United

[1] In Japan, the damage from the earthquake and tsunami combined with the Fukushima nuclear power plant explosion in March 2011 cost USD 210 billon. The floods in Thailand during late October to December 2011 cost USD 4 billion. The earthquake in Christchurch, New Zealand, struck on 22 February 2011 and cost around USD 2.5 billion.

[2] National Climatic Data Center. (2010, December). State of the Climate Global Analysis: Annual 2010. Available at: http://1.usa.gov/fxdFai

States National Oceanic and Atmospheric Administration (NOAA), "The U.S. has sustained 134 weather/climate disasters since 1980 where overall damages/costs reached or exceeded $ 1 billion (including CPI adjustment to 2012). The total standardized losses for the 134 events exceed $ 880 billion." The world's largest reinsurance company, Munich Re, in its analysis concluded that from 1980 to 2010, the years 2007 and 2010 had the two largest number of recorded natural disasters and some of the greatest estimated economic losses. In 2010 alone, 874 weather and climate-related disasters resulted in 68 000 deaths and USD 99 billion in damages worldwide. It must be noted however, that there were far more deaths in 2010 from geological disasters – almost entirely from Haiti's massive 7.0 earthquake that struck Port-au-Prince, resulting in the death of over 200 000 people, and on 27 February 2010, an 8.8 magnitude earthquake struck Chile instigating tsunami warnings with a death toll of over 500 people.

Year after year, as in other regions, climate related disasters are exerting a profound social impact on the Americas region, where more than 90 per cent of all disasters and 65 per cent of associated economic damages were weather and climate related in the form of high winds, flooding, heavy snowfall, heat waves, droughts, and wildfires.

Role of ICT in disaster risk reduction and disaster management

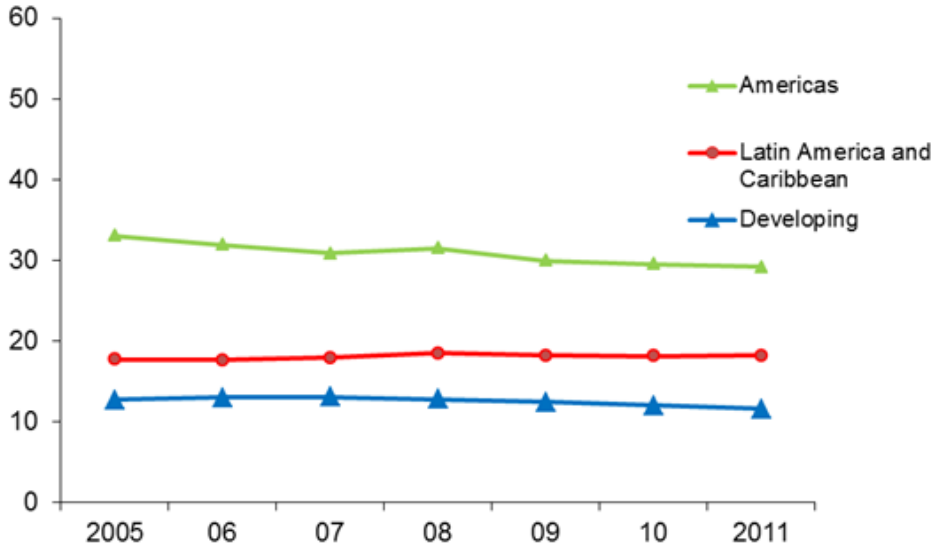
Emergency telecommunications/ICTs play a critical role before, during and after disasters strike. As part of disaster risk reduction and disaster preparedness, active and passive sensors can help in monitoring the environment and weather. In the period just before disasters strike, information obtained from such monitoring, leading to detection and prediction of an emergency situation, is disseminated to national and local authorities who can in turn alert people at risk.

When disaster strikes, ICTs play a critical role in providing vital information. For example, geographical information systems provide high resolution satellite maps for the coordination of humanitarian agencies involved in emergency support. However, one of the major challenges in the deployment and use of telecommunications in essential emergency functions such as search and rescue operations, providing food, shelter and medication, concerns the lack of or limited connectivity.

Access to ICTs in the Americas region

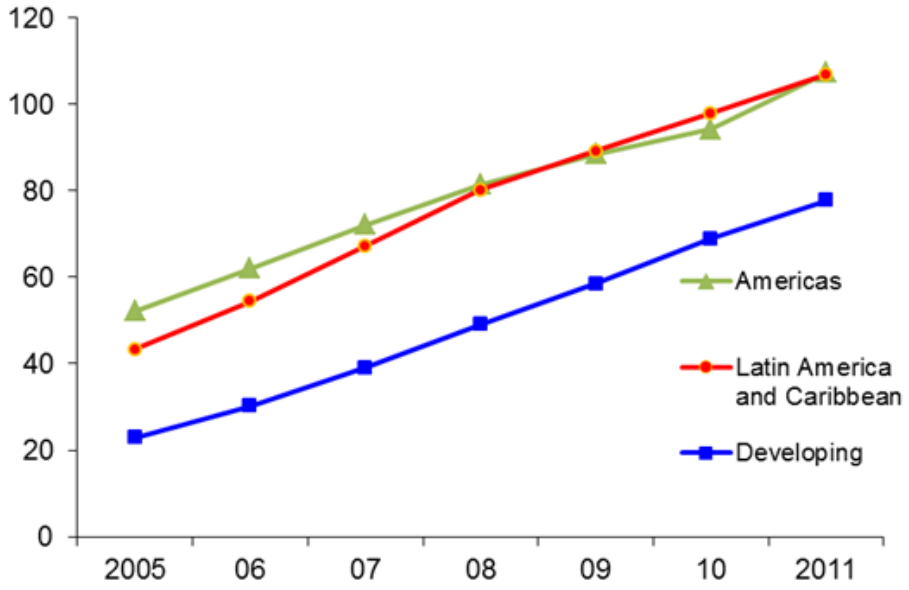
There have been very positive developments in terms of connectivity and access in the Americas region marked by a sharp increase in mobile telephone subscription and internet penetration. Below are tables showing mobile and fixed line subscribers and percentage of internet connectivity in the region from 2005 to 2011.

Fixed-telephone per 100 inhabitants



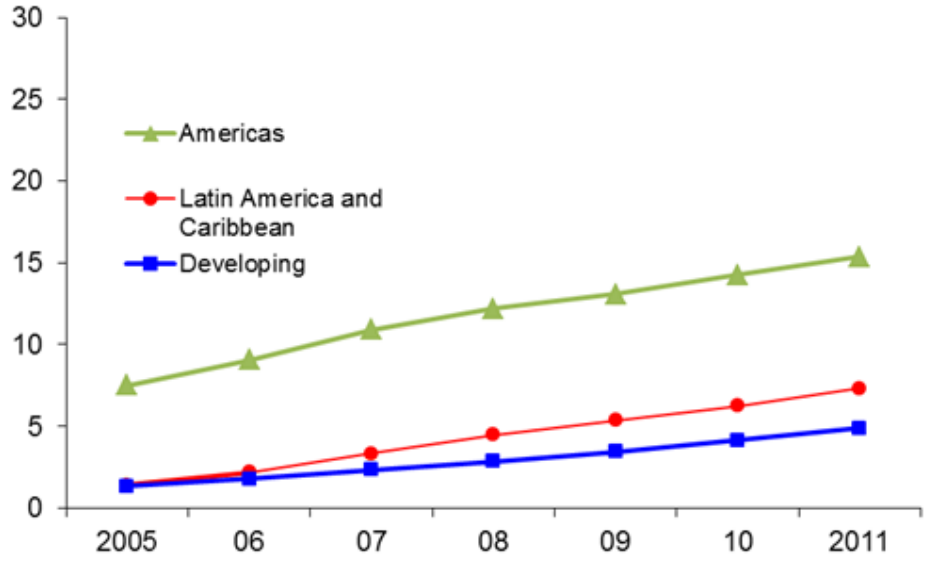
Source: ITU World Telecommunication/ICT Indicators database.

Mobile-cellular telephone subscriptions per 100 inhabitants



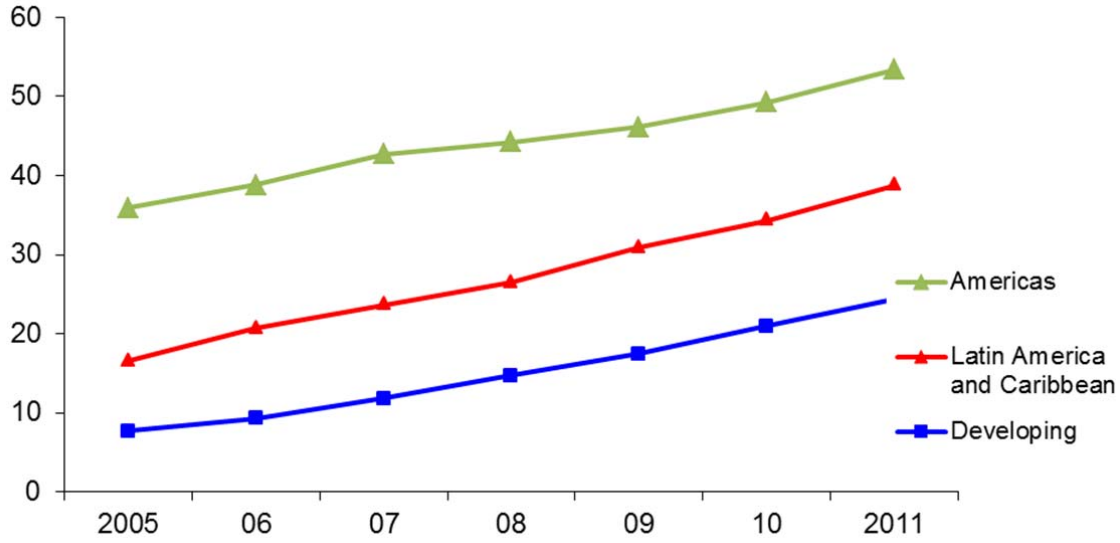
Source: ITU World Telecommunication/ICT Indicators database.

Fixed (wired) broadband subscriptions per 100 inhabitants



Source: ITU World Telecommunication/ICT Indicators database.

Percentage of the population using the Internet



Source: ITU World Telecommunication/ICT Indicators database.

What are the technical, policy, legal, regulatory and partnership options to mitigate the impact of disasters?

Could National Emergency Telecommunications Plans, Business Continuity Plans, telecommunication standards, and radiocommunication issues reduce social and economic costs?

Climate Change

Introduction

The global changes in climate over time, whether due to natural variability or as a result of human activity has been described by scientists as climate change. The impact and consequences of these changes have become some of the major challenges of our time. The United Nations Framework Convention on Climate Change, which came into effect in 1994, and its Kyoto Protocol that came into effect in 2005, address the same issues, seeking to stabilize atmospheric concentrations of greenhouse gases. Globally, climate change is being held to account for:

- Glacier melting: For instance, in slightly over 30 years, the Arctic ice shelf lost some 950 thousand square kilometres, or nearly 20 per cent of its previous extension, and in the Antarctica, total loss has reached about 3,240 square kilometres.
- Sea Level Rise: For various reasons, including the melting of ice masses in the polar zones and mountain regions, the sea and ocean levels are rising. Records show that during the 20th century, levels have risen by 17 centimetres. Small Island Developing States are the most vulnerable to climate change.
- Extreme Weather Events: Increasingly, the world is experiencing very intense but rare weather phenomena that have significant and adverse environmental and social impacts, such as hurricanes, tornadoes, droughts, floods, and frosts.

Natural disasters are becoming so frequent and striking with such intensity that the resulting loss of life and high costs to countries and their economies - to the tune of billions of dollars annually – are forcing governments from around the world to react.

For instance, "…the U.S. has sustained 134 weather/climate disasters since 1980 where overall damages/costs reached or exceeded $1 billion (including CPI adjustment to 2012). The total standardized losses for the 134 events exceed $880 billion[3]."

While the recovery period from the effects of disaster is for some very quick, for the economically and naturally vulnerable nations they are longer lasting and have a more crippling effect for their citizens and governments.

[3] www.ncdc.noaa.gov/billions/

The Americas and Caribbean region is particularly prone and has been marked by extreme natural disasters related to climate change, with about 600 million inhabitants and where 30 per cent of the population lives in disaster prone areas[4].

The countries and groups of population that are most likely to be affected by the consequences of climate change include those that are highly dependent on climate-sensitive sectors, such as agriculture, livestock, fisheries, or forestry, as well as those with less capacity to adapt to and recover from the effects of climate change due to poverty, poor education or limited access to technology. For this group of more vulnerable countries climate change is a serious obstacle to attaining the Millennium Development Goals (MDGs)[5].

ICTs and Climate Change

Information and Communication Technologies (ICTs) make a valuable contribution to monitoring, mitigating and adapting to climate change. ICTs allow for the collection and dissemination of accurate climate data, resulting in the forecasting of climate change and extreme weather events that can result in the mitigation of and adaptation to impacts. The establishment of early warning systems results in the dissemination of vital and timely alerts.

Other areas where information and communication technologies are used to address climate change challenges include: the design and manufacturing of energy-efficient devices, applications and networks; the introduction of energy efficient processes and procedures; the use of satellite and ground based remote sensing platforms for environmental observation and weather monitoring; and, the design and use of early warning systems to save lives in the face of dangerous weather events.

Greening the ICT Sector

While ICTs enable a low carbon future, these technologies also contribute to around 2 - 2.5 per cent of global greenhouse gas (GHG) emissions. ICTs can minimize the environmental footprint of the ICT sector, for example, the ITU global standard for a universal energy-efficient mobile phone charger will save up to 82 000 tonnes of redundant chargers a year and at least 13.6 million tonnes of CO2 annually.

Both adapting to unavoidable climate change and mitigating future greenhouse gas emissions are required to manage the risks of extreme weather in a warmer climate. It is generally accepted that by limiting the amount of CO2 in the atmosphere, we will limit the magnitude of climate change, and that reducing CO2 emissions is effective at preventing both linear increases in risks and the more difficult to predict, nonlinear changes in extremes.

With innovations such as smart grids, smart metering, smart billing and electro-mobility, ICTs are transforming global energy distribution, needs, usage and consumption. ICTs give us control over how much we consume at a personal level and allows utilities to better integrate renewable energy sources and reduce wastage. New developments seek to enhance existing processes, enabling innovative ways of working and transforming behaviour to help create a lower-carbon economy which will be crucial if we are

[4] http://ochaonline.un.org/rolactemp/LACRegion/tabid/4073/language/en-US/Default.aspx
[5] www.itu.int/ITU-D/ict/mdg/

to meet the Millennium Development Goals by 2015 and the Sustainable Development Goals set by the RIO +20 Summit. Scientists, using information and communication technologies can provide risk-based information that governments and businesses can use to understand how the risk and vulnerabilities are changing so that they can more effectively invest in prevention, mitigation, and adaptation.

What are the technical, policy, legal, and regulatory options available to decision makers to use ICTs to mitigate and adapt to climate change in the quest of preserving our treasured planet?

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