Robert Mugabe

President of Zimbabwe

Alhaji Samuel Sam-Sumana

Vice President of Sierra Leone

Pakalitha B. Mosisili

Prime Minister of Lesotho

Mizengo Pinda

Prime Minister of Tanzania

Sheikh Ali Bin Khalifa Al Khalifa

Deputy Prime Minister of Bahrain

Government leaders and industry CEOs in a frank dialogue

Climate change tops the agenda

ITU TELECOM WORLD 2009 was attended by Presidents Paul Kagame of Rwanda and Robert Mugabe of Zimbabwe, Vice President Alhaji Samuel Sam-Sumana of Sierra Leone, Prime Ministers Pakalitha B. Mosisili of Lesotho and Mizengo Pinda of Tanzania, and Deputy Prime Minister Sheikh Ali Bin Khalifa Al Khalifa of Bahrain.

The event was also marked by the strong presence of the United Nations family, represented at the highest level. United Nations Secretary-General Ban Ki-moon took part in many of the week's activities, along with the Director-General of the UN Office at Geneva Sergei Ordzhonikidze; International Maritime Organization Secretary-General Efthimios Mitropoulos; World Intellectual Property Organization Director-General Francis Gurry; World Meteorological Organization Secretary-General Michel Jarraud; and Universal Postal Union Director General Edouard Dayan.

Ban Ki-moon describes the challenge

A round table debate by Heads of State and Government and chief executive officers of major ICT companies noted that every crisis brings with it fresh opportunities — and the current economic crisis is no different. Their discussion covered many of the key issues of our time — the global economy, the digital divide, and cybersecurity — but the main focus was on climate change. The session was moderated by ITU Secretary-General Hamadoun I. Touré, who began by welcoming United Nations Secretary-General.

Mr Ban commended the government leaders for their strong commitment to connecting the world. He also stressed the great potential influence of the private sector. "It is the business leaders who can invest their resources and make technological innovations happen," Mr Ban stated. He said that while all the issues to be discussed by

the round-table meeting are important, he wanted to focus on how the power of ICT could be used in addressing climate change.

"Amidst these multiple crises, this is a very pressing issue. And you are the leaders who have the tools in your hands. I urge you to use your wisdom and your policy priorities to bring ICT tools to help mitigate climate change," Mr Ban told the meeting. "I know that the ICT industry itself is part of the problem, causing 2 to 3 per cent of greenhouse-gas emissions. But at the same time, by using ICT as tools, you can reduce at least 15 per cent of greenhouse-gas emissions in other sectors," Mr Ban observed. He called on the leaders to provide answers and solutions rather than problems. "This is the main purpose of our meeting," he said.

Mr Ban then recalled the one-day summit on climate change that he had convened in New York on 22 September 2009, and which was attended by 101 Heads of State and Government. "I have been working, directly or indirectly, with the

> **"** *I know that the ICT industry itself is part of the problem, causing 2 to 3 per cent of greenhouse-gas emissions. But at the same time, by using ICT as tools, you can reduce at least 15 per cent of greenhouse-gas emissions in other sectors.* **"**

United Nations for more than 30 years. And now, as Secretary-General, I have seen only one case when more than 100 Heads of State have gathered at one time, at one place," said Mr Ban. He added that the richest nations had sat down together with the most vulnerable countries, not only sharing views and experience, but also demonstrating their political leadership and commitment.

Mr Ban went on to stress that even though the world is going through an economic crisis, it has resources to tackle climate change. "We were able to mobilize between USD 5 trillion to 6 trillion at the London meeting of the G20 countries in stimulus packages, coordinated internationally. The United States alone has mobilized more than USD 1.5 trillion, China, USD 600 billion, and most European countries, more than USD 1 trillion. So we have financial resources and technological capacity. What is largely lacking is the political will," Mr Ban noted.

He called on political leaders and industry CEOs to demonstrate their leadership on the issue of climate

> *Alternative energy supplies are crucial. Around the world, an estimated 1.6 billion people live without access to electricity. An additional 1 billion people live in areas with unreliable power supplies.*

change. Science has provided irrefutable evidence that climate change is happening much faster than we expected, he said. "Now, it is in the hands of business and political leaders to address these facts," Mr Ban said. "You have the choice," he told participants, as he urged all leaders to look at "climate change as a global issue, requiring global leadership and global priorities".

In the ensuing discussion, the round table meeting was unanimous in recognizing the role of ICT as a key tool in helping to mitigate and adapt to the effects of climate change. Solar power and other sources of renewable energy were seen by many participants as a part of the solution. But it was also clear that it would take a concerted global effort to make such technologies viable and sustainable.

Alternative power

Sierra-Leone's Vice-President Alhaji Samuel Sam-Sumana commented that "as a small country in Africa, and as a continent, we are facing the issue of climate change which was not of our making… In a small global village, we share the same problems. We should share the same benefits. We should all work together towards the enhancement of humanity, in order to share the good tidings of this Universe." He called for mechanisms to be put in place to curb deforestation and for ICT to be used to promote accountability and transparency in governance. He stressed that Africa is willing to cooperate in these efforts, especially through partnerships with the private sector. "We should also make use of alternative energy, such as hydro-electric, windmills and solar, to reduce effects on the environment," Mr Sam-Sumana stated.

Alternative energy supplies are crucial. Around the world, an estimated 1.6 billion people live without access to electricity. An additional 1 billion people live in areas with unreliable power supplies. In order to expand ICT into areas without regular electricity supplies, mobile networks, for example, have primarily used diesel generators for power. Although oil prices have dropped a little, the continuing cost of diesel fuel to power generators across many networks' base stations is still eating away at profit margins — and polluting the environment.

Robert G. Conway, CEO and Member of the Board of the GSM Association (GSMA) said that in the mobile industry which he represents, "energy is obviously one of the key elements powering our ability to reach out and connect people". But at the same time "we need to reduce that energy consumption, and as part of connecting people, we need to connect those who are off the electrical grid". As mobile network infrastructure is built in increasingly inaccessible regions, operators need a viable alternative to diesel. Mr Conway outlined GSMA's "Green Power for Mobile" programme, which has set the goal of helping the industry use renewable energy sources for new and existing off-grid base stations in developing countries.

> " *As much as we want to think green, the reality is that people need incentives. One of the greatest incentives is cost.* "

Mr Conway shared another vision with the participants on how individuals can control their energy consumption. The mobile phone, for example, should empower consumers to

ITU TELECOM Board members

monitor and lower their power consumption in real time, using smart meters and embedded sensors in other machines in their homes and offices. "Imagine a future in which we have a phone in our home, and devices which have chips in them. These radio chips would be connected to the phone and this would tell you the amount of consumption in your own home. As you switch down the lights, you see the reduction of energy consumption and the cost saved, "he said. "As much as we want to think green, the reality is that people need incentives. One of the greatest incentives is cost," he added. If people can see immediately how much money they save by reducing energy use, that will make a difference. "That vision is possible and achievable, and with broadband and mobile broadband, it becomes a reality," said Mr Conway.

Sunil Bharti Mittal, Chairman and Group CEO of Bharti Enterprises, India, said that India is beginning to bridge the digital divide which was "staring them in the face" only a few years ago. "We are now connecting 10 to 12 million people every month, with more than half of them in rural areas and this growth is set to continue," Mr Mittal told participants. He also underlined that this growth is putting severe strains on energy resources. India has 450 million mobile

phone subscribers and is looking to reach 1 billion in the next four to five years. "We need to look at leading-edge technologies. We have to make sure these networks are powered through technologies that will not harm our environment. We are building towers where there is no electricity and using generators," Mr Mittal explained. And, he added, "we believe that through ITU, policy-makers and Heads of State, we can together find ways and means of using technologies that are outside our industries and available to us. The problem is that countries that have money have no sun, and those with sun have no money. So we need to combine solar energy with technologies and money from the developed world." Despite these challenges, "we as an industry will deliver on the United Nations Millennium Development Goals by 2012," concluded Mr Mittal.

Indian telecommunication equipment manufacturer Vihaan Networks Limited (or VNL) unveiled its environment friendly solar-powered mobile system. Providing mobile coverage to remote and rural parts of the world is often hindered by high installation and operating costs. In addition, the specialized knowledge needed to set up and run a base station is not widely available. As a result, few operators have

Prime Minister Mizengo Pinda of Tanzania underlined the significance of holding a round table of government representatives and CEOs. "We feel it is a good opportunity, because together we can try to look at the factors that are affecting climate change," he said. "In developing countries, in almost all areas where you have ICT facilities, the challenge has always been power," the Prime Minister added. "We face acute shortages of power… so, invariably, all our major companies are forced to use standby diesel generators, which consume a lot of oil, produce a lot of emissions, and keep on hammering away on the environment and hampering our efforts to tackle climate change. We must develop a good model to help us out of this situation," he stressed. Welcoming the statement by Mr Conway that there are opportunities to move ahead, Mr Pinda said "we should look at companies not only as profit-making, but also as key tools to fight climate change". He also welcomed an idea put forward by Dr Touré that e-books would be an important way of reducing the use of paper. "From primary to secondary schools to universities, it is books, books, books! By preserving the trees we are cutting now, it will be part of our contribution to a green world," Mr Pinda said.

gone into these communities. VNL has helped overcome this obstacle with a low-power mobile base station that requires little capital expense and has almost no operating costs.

According to VNL's founder and Chairman Rajiv Mehrotra, the solar-powered network is designed to help mobile operators connect the unconnected in rural and remote areas where average revenue per user (ARPU) is less than USD 2 dollars, and still be financially viable. "Everyone is looking for solutions that create zero emissions. Today, many companies in India have designed end-to-end solar solutions for mobile. These systems are now widely available. Soon, India will have more solar-powered systems than the rest of the world put together," Mr Mehrotra added.

> " *In developing countries, in almost all areas where you have ICT facilities, the challenge has always been power. We face acute shortages of power… so, invariably, all our major companies are forced to use standby diesel generators, which consume a lot of oil, produce a lot of emissions, and keep on hammering away on the environment and hampering our efforts to tackle climate change.* "

Managing e-waste

Colombia's Minister of Information and Communications Technology María del Rosario Guerra de la Espriella called for better management of e-waste, especially discarded computers and mobile phones. She underlined that these devices are increasing in number, especially as "we have been promoting (and keep promoting) the use of personal computers in schools". Ms Guerra de la Espriella called for more action to deal with e-waste, which she said had grown to 20 to 50 million tonnes globally. Colombia has a national e-waste centre, which has been recognized in Latin America. "But we need to work with industry on this issue," she said. On the issue of cybersecurity Ms Guerra de la Espriella called on the United Nations to be more forceful in bringing about a safer Internet, particularly for children and young people, who are constantly threatened by pornography. "ITU can help us in these two areas," the minister concluded.

Lesotho's Minister of Communications, Science and Technology Mothetjoa Metsing shared the view expressed by Colombia on disposal of e-waste, which he stressed is becoming a real challenge. He added that, in an effort to connect everyone, many mobile phone companies are competing, resulting in the proliferation of transmission towers. Mr Metsing called for "policy intervention" which would require that "if you have a tower for one company, there must be agreement on co-sharing of that facility" by other companies.

More action is needed to deal with e-waste, which has grown to 20 to 50 million tonnes globally.

Colombia's Minister of Information and Communications Technology María del Rosario Guerra de la Espriella called for better management of e-waste

Human resources

Michael R. Gardner, Chairman of the United States Telecommunications Training Institute (USTTI), highlighted the importance of human resources development, particularly in developing countries. He said that USTTI was proud to have trained over 8000 graduates from 167 countries through public-private partnerships. But he added that a major effort should be "jump-started" over the next three to five years "so that the poorest developing country has parity in ICT development with other countries." Mr Gardner also pointed to the opportunity to harness the energy of young people. He underlined the need to find additional ways for the private sector to offer training within and outside their own countries, because "never before have the demographics been more exciting, in terms of the young women

and men who are energized to join the ICT revolution," he said.

The African Union's Commissioner for Human Resources, Science and Technology Jean-Pierre Ezin stressed the importance of capacity building, in which he said Africa is lagging far behind the rest of the world. "We have the lowest number of scientists and engineers on the planet. So there is lot of work to be done," said Mr Ezin. "There are important efforts to be made to train young people, create opportunities and adapt our structures. Every year, 20 000 professionals (students with bachelors or masters degrees) leave our continent to find better studying conditions. If we want to find solutions to the ICT problem, we should take this into account," he commented.

Mozambique's Minister of Science and Technology Venâncio Massingue

Solutions for developing countries

Mozambique's Minister of Science and Technology Venâncio Massingue noted how his country is exposed to the dangerous effects of climate change. He called for cooperation to establish early warning systems for the region to prepare for natural disasters. He said this could be achieved, for example, with the help of industry through the launch of low-Earth orbit satellites. Mr Massingue also welcomed the news about the possibilities of solar energy — but these are not yet evident in Mozambique. "When I look around in my country, I cannot find these solar energy solutions. The use of solar could really change our hospitals, clinics and schools," the minister said. Meanwhile, though, ICT is expanding in Mozambique. Mr Massingue spoke of a computer assembly plant launched recently as part of a joint venture between Sahara Computers of India and Mozambique Information and Communication Technology (MICTI), a semi-governmental organization.

Ghana's Minister of Communications Haruna Iddrisu called for a commitment to use equipment with low energy consumption, while emphasizing that "we must not lose sight of the electromagnetic effects of ICT on human beings; for example mobile phones". Mr Iddrisu also called for a greater focus on how operators and governments could cooperate in using ICT to meet the United Nations Millennium Development Goals. He stressed the need for solutions in e-health (notably in the areas of maternal health and child mortality) and e-education. Mr Iddrisu then cited Ghana's Investment Fund for Telecommunications as an example of best practice. He said the fund supports provision of telecommunication facilities to underserved and unserved areas. Licensed operators contribute 1 per cent of their net revenues to the fund.

Fiji's Minister of Public Enterprises, Tourism and Communications Aiyaz Sayed-Khaiyum stressed that the issue of economies of scale had to be addressed if Pacific island States are to meet the United Nations Millennium Development Goals. He noted that the companies represented at the round-table meeting operate in mass-market conditions. However, "the population of Pacific island countries averages between 200 000 and 300 000 people per nation. So it is an entirely different dynamic." Mr Sayed-Khaiyum cited a recent example in Fiji, where, he said, a leading mobile phone manufacturer had refused to serve the island State, due to its small size. On the issue of climate change, Mr Sayed-Khaiyum warned that some island States could soon disappear from the face of the Earth due to rising sea levels. He challenged industry leaders to bring much-needed technology to these countries.

Speaking of the recent disaster, Samoa's Minister of Communications and Information Technology Safuneitu'uga Pa'aga Neri stated that even though her country was going through some very difficult times, recovering from the shock and damage caused by a devastating tsunami on 29 September 2009, "I thought that I needed to be here at this time to convey my message on the importance of having efficient and reliable alert and warning systems in place to help save lives, and to request our partners for some assistance in this area".

She stressed that "Samoa, being a small island developing State located in the middle of the Pacific Ocean, we truly believe in the importance of having a good telecommunication and ICT infrastructure and network, to assist the nation at times of natural disasters and other emergencies". She commented that least developed countries, and most developing countries, are still far behind in terms of connectivity and broadband access. "Lack of broadband infrastructure and high connectivity costs are the main challenges we still face. With limited resources available, we continue to rely on our partners and assistance to help us put in place the appropriate and relevant infrastructure," the minister said.

International efforts

Francis Gurry, the Director-General of the World Intellectual Property Organization (WIPO) underlined that the answer to climate change is, ultimately, technology — and that ICT provide an enabling platform. "At WIPO, we try to provide an open innovation platform, which can signal the availability of the various technologies that can be of assistance to meet the challenges of climate change," he said.

The Universal Postal Union (UPU) is also committed to green growth, said its Director General

Samoa's Minister of Communications and Information Technology Safuneitu'uga Pa'aga Neri

Edouard Dayan. Worldwide, the postal sector delivers more than 430 billion letters and six billion parcels each year. In taking up the challenge of green growth, businesses can rethink their logistics chains and plan long-term measures to save energy. "We are measuring levels of greenhouse-gas emissions, in order to contribute to efforts to reduce them," Mr Dayan said. He went on to outline UPU's plan to help build a global physical, electronic and financial transmission network. "This should contribute to business development, and solve, for instance the problem of migrant workers sending money to their families," Mr Dayan explained.

He added that one of the key issues was the question of standards, whose adoption allows economies of scale and a cut in the cost of ICT. An example is

From left to right: Edouard Dayan, Director General of the Universal Postal Union and Michel Jarraud, Secretary-General of the World Meteorological Organization

UPU's Global Monitoring System project that was launched in August 2009. It involves the insertion of radio-frequency identification (RFID) tags into letters to measure the time taken to deliver mail between the 21 countries participating in the project. Ten years ago, the cost per transponder was considered too high at USD 23. "With international standards, we are now able to offer access to that technology at the much more affordable price of USD 0.30," Mr Dayan stated.

Ekwow Spio-Garbrah, Chief Executive Officer of the Commonwealth Telecommunications Organisation (CTO), stressed the crucial role of the World Meteorological Organization (WMO) in combating climate change. Speaking of the tsunami that hit Samoa, American Samoa and Tonga on 29 September 2009, Mr Spio-Garbrah outlined the importance of the *Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.* On the basis of this Convention, CTO, ITU and their partners are organizing workshops on the role of ICT in managing disasters. This is an issue that affects all countries, Mr Spio-Garbrah stressed, adding that "CTO is also involved in capacity building for disaster management".

Natural disasters have a considerable impact on lives, livelihoods and property. Just before the opening of ITU Telecom World 2009, the world witnessed, once again, a series of these deadly events. In late September 2009, typhoon Ketsana killed nearly 400 people, causing severe flooding in parts of the Philippines, Viet Nam and Cambodia. The tsunami in the South Pacific on 29 September resulted in nearly 200 deaths and significant damage. In Italy, heavy rainfall in Sicily triggered landslides that killed 25 people in early October. WMO is working with its

members and international partners to integrate early warning systems into countries' emergency plans, and help them learn from best practice.

Speaking at the session "GREEN@ICT: A digital new deal", WMO Secretary-General Michel Jarraud urged business leaders to talk to each other and to make the best possible use of scientific information available on climate change. Recalling the report of the Intergovernmental Panel on Climate Change and the fact that this Panel was a co-winner of the 2007 Nobel Peace Prize, Mr Jarraud stressed that there is no longer any place for any doubt. "Climate Change is with us today. If we do nothing about it, it is the future of this planet which is at stake."

Council of Ministers discuss the future of the Internet

At one session that brought together more than 50 ministers, the discussion was on the future of the Internet, with a focus on broadband and convergence, Internet public policy, and new and emerging cyberthreats.

The Council of Ministers was addressed by the following countries: Bangladesh, Bhutan, Cameroon, the Democratic Republic of the Congo, Egypt, Fiji, India, Indonesia, Lebanon, Lesotho, Malaysia, Mauritius, Mozambique, the Philippines, Samoa, Saudi Arabia, Serbia, Sierra Leone, Sudan, Sri Lanka, Swaziland, Tanzania, Tunisia, Viet Nam and Zimbabwe.

Over the last two decades, the Internet has grown dramatically. According to ITU statistics, there are some 1.8 billion Internet users worldwide, or around a quarter of the world's population, with the largest share in the Asia-Pacific region. Meanwhile, broadband and convergence are blurring the boundaries between infrastructure, applications and content. This, several countries said, is posing new policy and regulatory challenges. The broadband plans and projects highlighted during the meeting highlight the importance of this technology for socio-economic development.

On Internet governance, Saudi Arabia stressed the need to get to "the heart of the matter". ITU has made many services available around the world through the management of the radio-frequency spectrum, and so "ITU should be more than capable of carrying out Internet governance," Saudi Arabia stated. Egypt invited countries to take part in the fourth Internet Governance Forum in Sharm El Sheikh in November 2009.

The crux of today's Internet governance debate is resource management, the management of top-level domains and allocation of addresses. Developing countries feel they are under represented in current governance mechanisms, and that international governance frameworks should reflect new market realities.

Meanwhile, cybercriminals are exploiting online vulnerabilities and threatening the reliability, stability and security of the Internet. In some countries, new legislation on personal data protection is ready to be presented to national parliaments. The aim is to provide further assurance in the collection, processing and storage of personal data transmitted over electronic networks. In others, laws on cybersecurity are being finalized in line with national ICT policies.

Council of Ministers in session

Countries at the meeting were unanimous in saying that cybercrime is "a global threat that requires global attention and a global solution". Indonesia emphasized that cybersecurity has become a prime issue for almost every ITU Member State, so this must be made a first priority in future ITU programmes.

Cybercrime is often borderless and creates problems of jurisdiction. Underlining this point, Lesotho called for an international instrument and for "the leadership of ITU to take on board this issue on our behalf and come up with such an instrument, which will really help us in all our countries". Cameroon, followed by several other countries, noted the importance of the European Convention on Cybercrime, adopted in Budapest, Hungary in 2001. They also called for new global measures. As Swaziland put it, "we would like ITU to champion the enactment of a Convention for International Cooperation in prosecuting cybercriminals — there should be no place for them to hide".

Addressing the Council of Ministers, President Robert Mugabe of Zimbabwe described the status of ICT in his country — revealing that 600 secondary schools had benefited from a national computerization programme. He also called for investment in the country's ICT sector. "With a teledensity of less than 15 per cent, and Internet penetration rates of less than 10 per cent, Zimbabwe is certainly an emerging market and therefore ripe for investment," Mr Mugabe said. "In this regard, my government welcomes private-sector investment in Zimbabwe's ICT sector, taking advantage of our central location in the sub-region and our high literacy rate of over 97 per cent, which aids receptivity to these technologies."

Zimbabwe's mobile phone sector has grown from one million subscribers at the beginning of 2009 to 2.5 million at present, he said, and the figure is expected to reach four million subscribers by January 2010. "We are also developing a national communications backbone with cross-border connections into neighbouring countries, namely Mozambique, South Africa, Zambia and Botswana. Based on these developments, it is expected that telecommunication penetration will increase and high-speed broadband connectivity will be realized before the 2010 Football World Cup in South Africa," President Mugabe said.

ITU TELECOM WORLD2009

Bhutan's Minister
for Information and
Communications
Lyonpo Nandalal Rai

Burkina Faso's Minister of
Posts and Information and
Communication Technology
Noël Kaboré

Burundi's Minister of Transport,
Posts and Telecommunications
Philippe Njoni

Cameroon's Minister of Posts
and Telecommunications
Jean-Pierre Biyiti Bi Essam

The Democratic Republic of the
Congo's Minister of Posts and
Telecommunications
Louise Munga Mesozi

Fiji's Minister of Public
Enterprises, Tourism and
Communications
Aiyaz Sayed-Khaiyum

Jordan's Minister
of Information and
Communications Technology
Basem Rousan

Lebanon's then Minister of
Telecommunications
Gebran Bassil

Malaysia's Deputy Minister
for Information,
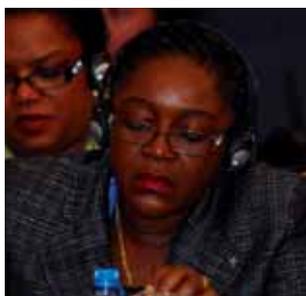Communications and Culture
Dato' Joseph Salang

Philippines's Secretary
of the Commission
on Information and
Communication Technology
Ray Anthony Roxas-Chua III

Saudi Arabia's Minister
of Communications and
Information Technology
Mohamed Jamil A. Mulla

Serbia's Minister of
Telecommunications and
Information Society
Jasna Matiæ

Suriname's Minister of
Transport, Communication
and Tourism
Richel Apinsa

Swaziland's Minister
of Information and
Communication Technology
Nelisiwe J. Shongwe

Tunisia's Minister of
Communication Technologies
Haj Klai