

SUMMARY OF THE SECOND INTERNATIONAL CONFERENCE ON CLIMATE, SUSTAINABILITY AND DEVELOPMENT IN SEMI-ARID REGIONS: 16-20 AUGUST 2010

The Second International Conference on Climate, Sustainability and Development in Semi-arid Regions (ICID 2010) convened in Fortaleza, Brazil, from Monday, 16 August to Friday, 20 August 2010. The Conference brought together participants to discuss climate change and sustainable development in arid and semi-arid regions and sought to raise the priority of these issues in the agenda of the 2012 UN Conference on Sustainable Development (Rio+20 Earth Summit), in Rio de Janeiro, Brazil. ICID 2010 began with the launching of the UN Decade on Deserts and the Fight Against Desertification.

The main theme of ICID 2010, "climate, sustainability and development," was addressed in four sub-themes, namely: climate information; climate and sustainable development; climate governance, representation, rights, equity and justice; and climate policy processes.

These themes were explored in four plenary sessions, over 70 panel sessions, poster and multimedia presentations. Nearly 1,700 participants from over 100 countries attended, representing governments, UN agencies, intergovernmental organizations, non-governmental organizations (NGOs), academia, business and industry, indigenous groups, youth and the media.

ICID 2010 concluded on 20 August with discussion of the primary conference output, the Fortaleza Declaration, which will serve to raise the profile of issues facing semi-arid regions at the Rio+20 Earth Summit and during its preparatory processes.

A BRIEF HISTORY OF ICID

Arid and semi-arid regions cover over 40% of the terrestrial area of the earth and are home to nearly 35% of the global population. These regions face multiple challenges including land degradation and desertification, loss of biodiversity and livelihoods, all of which are exacerbated by climate change.

In response to these challenges, the International Conference on Climate, Sustainability and Development in Semi-arid Regions was initiated to influence the UN Conference on Environment and Development (UNCED or Rio Earth Summit) by raising issues facing arid and semi-arid regions to the forefront of the international development agenda. Convened in 1992, the first ICID took place within the context of the Rio Conventions – the UN Convention on Biological Diversity



(CBD), the UN Convention to Combat Desertification (UNCCD) and the UN Framework Convention on Climate Change (UNFCCC) – in addition to the UNCED meetings and preparatory processes. This brief history contains an outline of the first ICID and the Rio Conventions.

ICID I

ICID I, held from 28 January to 1 February 1992, in Fortaleza, Brazil, aimed to raise the profile of the challenges faced in semi-arid regions in the lead up to the Rio Earth Summit held from 3-14 June 1992, in Rio de Janeiro, Brazil. The Fortaleza Declaration that emerged from the conference called for policymakers to promote sustainable development

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The dais during the official opening of the meeting

of arid and semi-arid regions to make them less vulnerable to present and future disasters. The Declaration and the material outcomes helped foster debate about semi-arid regions at the Rio Earth Summit and contributed to the decision by UNCED to establish the negotiating committee that led to the creation of UNCCD.

THE RIO CONVENTIONS

CBD: The CBD, negotiated under the auspices of the UN Environment Programme, was opened for signature on 5 June 1992, and entered into force on 29 December 1993. There are currently 193 parties to the Convention, which aims to promote the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.

UNCCD: The UNCCD was adopted on 17 June 1994 and entered into force on 26 December 1996. Currently, it has 193 parties. The UNCCD recognizes the physical, biological and socioeconomic aspects of desertification, the importance of redirecting technology transfer so that it is demand-driven, and the involvement of local communities in combating desertification and land degradation. The core of the UNCCD is the development of national, subregional and regional action programmes by national governments, in cooperation with UN agencies, donors, local communities and NGOs.

UNFCCC: The international political response to climate change began with the adoption of the UNFCCC in 1992, which sets out a framework for action aimed at stabilizing atmospheric concentrations of greenhouse gases to avoid “dangerous anthropogenic interference” with the climate system. The UNFCCC entered into force on 21 March 1994 and now has 194 parties.

In December 1997, delegates at the third Conference of the Parties (COP 3) in Kyoto, Japan, agreed to a Protocol to the UNFCCC that commits industrialized countries and countries in transition to a market economy to achieve emission reduction targets. The Kyoto Protocol entered into force on 16 February 2005 and now has 190 parties.

In December 2009, delegates to COP 15 in Copenhagen, Denmark, agreed to “take note” of the Copenhagen Accord. Parties also established a process for indicating their support for the Copenhagen Accord and by 29 July 2010, 137 countries had indicated their support. More than 80 have also provided information on their emissions reduction targets and other mitigation actions, as agreed under the Accord.

ICID 2010 REPORT

ICID 2010 HIGH LEVEL PLENARIES

OPENING CEREMONY AND THE LAUNCHING OF THE UN DECADE ON DESERTS AND THE FIGHT AGAINST DESERTIFICATION:

In an introductory session on Monday morning, International Conference on Climate, Sustainability and Development in Semi-arid Regions (ICID 2010) Director Antônio Magalhães stressed that the Conference is not just about climate change or desertification, but rather about examining the combined challenges facing semi-arid regions and identifying opportunities and ways forward.



Antônio Magalhães, Director, ICID 2010

Several ICID 2010 partner organizations presented reports from preparatory meetings. Ambassador Alan Charlton, UK, described UK Department



Michel Laurent, Director-General, IRD

for International Development (DFID) meetings in Africa on protecting agriculture from climate uncertainties. Michel Laurent, Director-General, Institut de Recherche pour le Développement (IRD), reported on north-south research partnerships on sustainable development in arid regions. Luiz Antonio Elias, Ministry of Science and Technology, Brazil, highlighted meetings discussing strategies for education, planning, public management and zoning control to ensure effective water management. Dalton Melo Macambire, Department of the Environment and Water Resources, Piauí, Brazil, described partnerships to reclaim degraded lands. José Almir Cirilo, Secretariat of Water Resources, Pernambuco, Brazil, discussed regional cooperation on issues of climate change adaptation and mitigation.

Also providing brief statements in the introductory session were: Jesse Ribot, University of Illinois, US; José Sydrião de Alencar Júnior, Banco do Nordeste, Brazil; and Eduardo Sávio Martins, Ceará Foundation of Meteorology and Water Resources (FUNCEME), Brazil.



L-R: Eduardo Sávio Martins, FUNCEME, Brazil; José Almir Cirilo, Secretariat of Water Resources, Pernambuco, Brazil; Dalton Melo Macambire, Department of the Environment and Water Resources, Piauí, Brazil; José Sydrião de Alencar Júnior, Banco do Nordeste, Brazil; Jesse Ribot, University of Illinois, US; and Antônio Magalhães, Director, ICID 2010



Hervé Théry, University of Campinas, Brazil

In closing, Hervé Théry, University of Campinas, Brazil, gave a detailed presentation on the state of deserts and desertification around the world.

In the formal opening ceremony, Director Magalhães introduced representatives of the many sponsors and supporters of ICID 2010. He stressed that the conference outcome, the Fortaleza Declaration, will fulfill the

conference's top objective of influencing the agenda of the UN Conference on Sustainable Development 2012 (Rio+20 Earth Summit).

The UN Decade on Deserts and the Fight Against Desertification was launched by the UN Convention to Combat Desertification (UNCCD) Executive Secretary Luc Gnacadja who read the statement of UN Secretary-General Ban Ki-moon officially launching the Decade. Gnacadja expressed hope that ICID 2010 would provide key input on dryland issues to the Rio+20 Earth Summit.

Gnacadja's statement was followed by brief statements from Federal Deputy Eduardo Vieira Ribeiro, Chamber of Representatives, Brazil, José Machado, Executive Secretary, Ministry of Environment, Brazil, and Cid Ferreira Gomes, Governor of the host state, Ceará.



L-R: Antônio Magalhães, Director, ICID 2010, and Luc Gnacadja, UNCCD Executive Secretary, during the launch of the UN Decade on Deserts and the Fight Against Desertification

CONFERENCE KEYNOTE SPEECH

On Wednesday, Jeffrey Sachs, Director, Earth Institute, Columbia University, US, gave a keynote speech in which he warned that "we may be losing the battle" on anthropogenic climate change, underscoring the many climate-linked disasters in the past year, accompanied by "miserable outcomes" on the political front.

He recommended the ICID 2010 final declaration: declare the climate crisis in semi-arid lands a growing global security threat and a direct threat to the fulfillment of the Millennium Development Goals (MDGs); call for a UN Security Council special session on violence, security and semi-arid lands; and advocate the formation of a new political Alliance of Semi-Arid Countries (ASAC) to speak in a unified voice at the sixteenth Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC COP 16) to be held in Cancún, Mexico, in December 2010. He suggested that the ASAC call for: timely disbursement of adaptation funding, with the priority being hard-hit ASAC countries; the implementation of a global carbon tax to finance adaptation and mitigation efforts; large-scale solar power programmes in ASAC countries where appropriate, focusing on regions trapped in energy poverty.

SYNERGIES AMONG THE UN CONVENTIONS: On Tuesday morning, a plenary session convened, chaired by

Luis Alberto Figueiredo Machado, Ministry of Foreign Affairs, Brazil.

Via video message, Christiana Figueres, UNFCCC Executive Secretary, suggested better water management practices at the local level to bring the relevant UN Conventions closer together. Director Magalhães called for including indigenous peoples and local communities in the talks on creating synergies. Sergio Zelaya, UNCCD, on behalf of Jaime Webbe, CBD, described future initiatives including a proposed joint liaison group, joint expert group and scientific body, as well as a joint extraordinary session of the Rio Convention COPs at the upcoming Rio+20 Earth



Jeffrey Sachs, Director, Earth Institute, Columbia University, US



Luis Alberto Figueiredo Machado, Ministry of Foreign Affairs, Brazil



Margarita Astráraga, UNEP

Summit. Margarita Astráraga, UN Environment Programme (UNEP), highlighted that the Rio Conventions can draw from other processes where the synergistic approach is already being implemented.

Nora Berrahmouni, UN Food and Agriculture Organization (FAO), called for integrated action plans to secure resource bases,

conserve and preserve livelihoods, and to mitigate and adapt to climate change.

Walter Vergara, World Bank, emphasized the importance of understanding the costs and benefits of various adaptation approaches.

Luc Gnacadja, UNCCD Executive Secretary, called for greater investment in sustainable land and water management to ensure food security, decrease the rate of climate change, alleviate drought and avert further biodiversity loss.

In the ensuing discussion, participants discussed, *inter alia*: increased civil society involvement; greater information sharing on the Rio Conventions; and the inclusion of human rights in the synergies discussion.

THEMATIC PROCESS

From Monday to Thursday, over 70 thematic panel sessions and roundtables convened to address issues related to climate change adaptation, vulnerability and sustainable development. Panels were organized around the four sub-themes of the conference: climate information; climate and sustainable development; climate governance, representation, rights, equity and justice; and climate policy processes. A selection of panel sessions is presented below.

THEME 1: CLIMATE INFORMATION: On Tuesday, Wednesday and Thursday, participants attended sessions addressing the state of knowledge and research on vulnerabilities and adaptation to climate change and variability in semi-arid regions, including discussions and presentations on existing and potential knowledge on: impacts and adaptation in semi-arid regions; vulnerabilities in rural areas, and communities' response to climate change; developing early warning systems; and heeding and implementing recommendations from past lessons learned.

Vulnerability, impacts and adaptation to climate change in semi-arid regions: In this session on Tuesday, participants heard presentations on: managing existing complex data on climate impacts and presenting them in a manner decision-

makers can act upon; the impacts of climate change on Brazil's semi-arid northeast; country case studies on using rainwater harvesting; and climate change impacts on the semi-arid Mustang plains of Nepal.

Among the suggestions discussed were employment programmes to recover natural landscapes in drylands, reforesting riverbanks, and promoting solar-powered irrigation of cash crops.

Vulnerability and coping in rural areas: In this session on Wednesday, participants discussed: the role of "agro-ecology" promotion to help small-scale farmers in the semi-arid northeast of Brazil; the vulnerability of pastoralist communities to climate change and variability in northern Kenya; and climate variability reduction measures being undertaken in the semi-arid lands of Eritrea.

Among the recommendations presented were: developing a set of indicators defining "agro-ecology" before the term is co-opted and misused; incorporating guidelines into climate change policies on adaptation within pastoral systems that address both livestock issues and alternative livelihood options; fostering new forms of symbiotic cooperation between pastoralists and commercial farmers; and developing early warning systems for semi-arid lands that can predict climate impacts on forage supply and crop production.

Social learning and human capacity – higher education capacity development processes for climate change in

Africa: In this session on Wednesday, participants discussed conceptual frameworks for integrating social learning into higher education and research, the Mainstreaming Environment and Sustainability in Africa (MESA) Universities Project and issues to consider when integrating education into sustainable development in the context of climate change.

Among the ideas discussed were: focusing climate change adaptation education on problem solving; developing and applying innovative strategies to strengthen institutional capacity; and fostering cooperation between universities and communities.

Global Network of Dryland Research Institutes

(GNDRI): In this session on Wednesday, participants were briefed about the GNDRI. National institutes from Argentina, Brazil, India, Israel, Syria and the US discussed their institutions' work and research priorities, including sustainable use of cultural resources, food security, water management, alternative agricultural systems, biodiversity and the creation of "climate ready" crops.

Lessons learned about lessons learned: In this session on Thursday, participants examined how lessons and recommendations developed from past crisis assessments and



The dais during the session on "social learning and human capacity - higher education capacity development processes for climate change in Africa"

negotiating processes have not been heeded or implemented, including post-event assessments of natural disasters, problems faced in getting responses from hazard early warning systems, the lessons from the process leading to the Montreal Protocol, and lessons from the disappearance of the Aral Sea.

It was generally agreed that policy recommendations in “lessons learned” reports should always discuss increased risks from not heeding lessons.

Early warning systems for droughts: During this session on Thursday, participants heard presentations on essential components of early warning systems, the South American drought monitoring systems, indices and indicators for monitoring and assessing drought conditions worldwide, and the development of an international drought clearinghouse.

Among the recommendations discussed were the need for fuller understanding of drought impacts; use of a standardized precipitation index in addition to current tools; the development of a user manual on indicators and indices; and the implementation of indices and early warning systems with the end user in mind.

THEME 2: CLIMATE AND SUSTAINABLE

DEVELOPMENT: Participants attended sessions relating to this theme from Monday to Thursday. The theme broadly dealt with climate and sustainable development, with a specific focus on arid and semi-arid lands.

Desertification – the challenge of desertification and sustainable development in semi-arid regions: Participants attended this session on Monday and heard presentations on, *inter alia*, land degradation and desertification in the Arab region, and the management of scarce water resources in the drylands of Pakistan. They also discussed a case study on the development of a hydro-environmental project in Canindé municipality, Ceará, Brazil, and noted ongoing adaptation work, including planting drought-resistant crop varieties.

Speakers outlined the need, *inter alia*, to: reclaim degraded lands; switch to more sustainable agriculture and agricultural practices; and better manage flash floods.

Adaptation with a long view: promoting resilience: In this session on Monday, participants heard presentations on: climate change, rural poverty and the politics of resilience in Kenya; building resilience through water system innovations in drylands; and the future of maize in Mexico. Participants noted that a long view on adaptation requires “understanding vulnerability as an entangled crisis,” and that undernourished or malnourished populations live in most of the world’s drylands.

Participants recommended viewing resilience through a development-trajectory lens and looking at adaptation from a holistic perspective.

Climate, desertification and sustainable development: In this session held on Monday, participants discussed social, health and economic risks posed by lack of water and sustainable use, and the protection of micro-basins.

Participants also addressed water availability and argued that policymakers should take into account the contributions of geoscientists when developing public policies regarding geo-resources.

Sustainable energy for the development of drylands: In this session on Monday, speakers highlighted Brazilian case studies, including the history of renewable energy in the range of electricity provided in Ceará State and a report on a pilot programme to combat desertification and land degradation



Participants listening to the session on “climate, desertification and sustainable development”

in northeast Brazil. Participants stressed the need to: utilize renewable energy in rural drylands; create incentives for local communities to adopt renewable technologies; use wave energy for desalinization of water in drylands; and increase adaptive capacity for communities living in the drylands.

Development of semi-arid regions: On Tuesday, in this session, participants discussed the semi-arid regions of Latin America and the opportunities presented by climate change. Participants emphasized the need to: share ideas and coping strategies between different cultures and regions; maximize the opportunities presented by climate change; and effectively exchange knowledge and transfer technology.

They recommended challenging architects and urban planners to rethink cities and housing in the context of the new paradigm of climate consciousness, and reducing the price of technologies in order to increase acceptance and use of new technologies.

Food security, climate change and development in semi-arid regions: On Wednesday, during this session, participants heard presentations and case studies from Niger, Egypt, and Senegal. Participants called for: the exchange of knowledge, research and ideas; the reinforcement of socioeconomic investments by governments to increase food production; effective market governance; and technical assistance for less developed nations.

Speakers highlighted examples of projects to reduce crop losses with model forecasts; underscored the importance of agriculture for food production, job creation and increasing economic activity; and underlined the need to efficiently produce increased quality and quantity of food.

Adaptation strategies in dryland areas: In this session on Thursday, participants discussed local forest management in river basins as a means of addressing climate risk and vulnerability and adaptation to extreme weather events. Participants noted that adaptation projects require local collective action as well as an integrated effort by governments, civil society and the private sector. They emphasized solutions, such as diversification, reducing harvesting pressure by creating value-added products and understanding interactions between ecosystem services.

Vulnerability, impacts and adaptation in drylands: In this session on Thursday, participants discussed, *inter alia*: building development under climate change in arid Mongolia; climate change and the cocoa sector; and the impact of precipitation on the economy of Ceará, Brazil.

Participants then urged decision-makers to support local-level action instead of creating new “top-down” policies and stressed the need to frame adaptation within the economic and political circumstances in each region.



Participants during the session on "vulnerability, impacts and adaptation in drylands"

THEME 3: CLIMATE GOVERNANCE, REPRESENTATION, RIGHTS, EQUITY AND JUSTICE:

Participants met from Monday to Thursday to hear and discuss presentations on climate governance, representation, rights, equity and justice.

Climate change, adaptation and governance in the water sector: On Monday, participants heard presentations on several aspects of climate change, adaptation and governance in the water sector. They noted the need to implement effective adaptation to move out of the "vicious cycle" of ineffective adaptation, and discussed whether current adaptive strategies remain suitable for future climate stressors.

Some participants questioned whether desalinization is a maladaptive response to climate change and noted other challenges including "giving a voice" to vulnerable populations.

Other participants discussed implementing conservation measures in addition to the development of best management practices to reduce risks. They also highlighted the need to address water demand and quality, in addition to the current focus on supply.

The importance of community, culture, identity and equity in climate change adaptation strategies: In this session on Tuesday, participants lamented the increased migration of climate refugees, noting the possibility of "reactionary" policies to reduce cross-border movement of these refugees. They also noted the lack of detailed climate knowledge at the local level, which could ensure effective adaptation.

Some participants highlighted that social norms and culture constrain the adaptation process, but that in other cases these can present opportunities for adaptation. Participants also discussed the lack of studies measuring the impacts and vulnerabilities of local communities and the need for recommendations on good adaptation strategies.



L-R: Andrew Miccolis, ComSensos, Brazil, and Renata Marson Teixeira de Andrade, Catholic University of Brasilia, Brazil, during the session on "the importance of community, culture, identity and equity in climate change adaptation strategies"

Water governance in drylands: In this session on Tuesday, participants heard presentations on projects to increase water governance in dryland areas. They discussed challenges, including: lack of planning and transboundary cooperation; joint river management regimes not addressing groundwater or headwaters; research gaps; and demographic pressures.

Some participants noted the need to build capacity, share information, implement monitoring systems, and ensure the active participation of communities in governance.

Vulnerability and adaptation in Africa and Latin America: On Tuesday, participants in this session heard presentations on strategies and systems for increasing resilience and building sustainability within vulnerable communities. Participants noted the effectiveness of heat-warning systems and humidity indices to protect against the loss of livestock.

Some participants stressed the need to increase community involvement to encourage wealth creation and environmental conservation, and allow greater access to markets. Other participants discussed the use of conventional agronomic practices during extreme climate events, and the need for localizing drought management cycles and using regional approaches for shared resources.

Biodiversity, climate change and development in dry and sub-humid lands: During this session on Wednesday, participants highlighted approaches to addressing the interlinkages of biodiversity, climate change and development, including ecosystem restoration, improved protected-areas management, and ecosystem-based approaches. Noting examples from South America, they also discussed the use of traditional knowledge and indigenous plant species to protect biodiversity and recover degraded lands.

To maximize co-benefits, they called for: establishing baselines; using existing tools; conducting economic valuations; prioritizing actions; and practising adaptive management.

Climate evolution in West Africa – Traditional and Formal Governance: On Wednesday, participants in this session discussed the need for community involvement in state-initiated strategies and participatory natural resource management to enhance their success. Some participants noted the need for state assistance in regulating natural resources in areas with large migrant populations. Other participants highlighted conflict between pastoralists and agriculturalists due to misguided policy implementation.

Roundtable – social sciences research agenda in climate change responses: In this session on Thursday, participants questioned the role of social scientists within the climate debate, with some highlighting that the shift in debate to impacts has created a larger role for social sciences. Others queried if collaboration between natural and social scientists could ever be truly trans-disciplinary, with some calling for greater analysis in governance and rules to properly address the challenges.

One participant noted that new adaptation approaches should combine local knowledge with the sciences, and another stressed the need for greater coordination among researchers to provide more useful information for planning. Participants also discussed the extent to which adaptation policy informs collective decision-making.

THEME 4: CLIMATE POLICY PROCESSES:

Participants attended sessions under this theme from Monday to Thursday, addressing four topics. On "policy processes and the institutions they rely on," participants discussed policies undertaken at various scales ranging from the local to the



The dais during the session on “lessons from the Brazilian experience.”

national and international levels. Case studies were also presented on policy processes related to the management of the Caatinga Biome, Brazil, as well as diverse examples from Asia, Latin America and sub-Saharan Africa.

Lessons from the Brazilian experience: On Monday, this session addressed policy processes to combat deforestation, prevent desertification, promote sustainable agriculture, increase access to water and manage and disseminate information on climate.

Participants highlighted programmes to monitor the Caatinga Biome by satellite, sustainably manage water resources, promote family farming through financing and credits, encourage agricultural insurance and technical assistance, regularize access to water and create geographical information sets.

As solutions to bolster policy processes in Brazil, participants discussed: creating a new national commission in Brazil to coordinate the many ministries and agencies dealing with semi-arid regions at the federal and state levels; and improving environmental compensation mechanisms.

Participants also discussed efforts to recover degraded lands and control erosion, build cisterns in schools, and promote water catchment and small dam systems.

Impacts and Adaptation in Agriculture: In this session on Tuesday, participants discussed the effects of changing rainfall patterns on agricultural production and policy measures in the agricultural sector to reduce climate risk. Discussion included case studies from Zambia, Ecuador, India, Uganda, Brazil and Benin.

Participants highlighted challenges presented by ecosystems affected by unplanned agriculture and limited access to water, the latent and slow nature of observed climate change impacts, lack of baseline data, competing land use and lack of comprehensive area-specific management plans.

In response to these challenges, participants discussed policy responses including: crop diversification and the use of drought-tolerant crops; conservation farming techniques; improved farm extension services; investment in irrigation; democratizing access to productive resources (land, water and credit); herd management practices; culturally acceptable participatory processes; and adequate information for farmers on climate and adaptation strategies.

One participant called for development of national climate change policies with others discussing community farming as a means of promoting sustainable agriculture and food security.



Participants during the session on “impacts and adaptation in agriculture”

Financing strategies for sustainable development in arid and semi-arid regions: On Thursday, participants in this discussion addressed key areas for investment, financial mechanisms and programmes in the Latin American region.

On key areas for investment, participants identified as priorities: infrastructure; poverty reduction and social inclusion; improved living conditions in cities; water; and competitiveness. Current areas of investment highlighted were projects supporting sustainable economic activities, natural resource management, rural poverty reduction, and development of legal frameworks and management to improve water efficiency.

Participants also identified areas of financial innovation to support semi-arid regions, including programmes to provide financing for underserved rural areas to support development of rural enterprises, and creation of the new Brazilian National Fund on Climate Change, using existing funds under the Oil Act, originally intended to mitigate disasters caused by the oil industry, by redefining the impacts that these funds could address to include climate change.

Vulnerability and adaptation – implications of climate change at macro and micro levels in China: In this session on Thursday, speakers presented the policy experiences of China in the areas of forestry, agriculture, water management and local-level adaptation. On policy objectives participants noted that China hopes to have afforested 47 million hectares of land by 2050.

Participants discussed successes, including increased awareness of the importance of forests to climate change mitigation at the local level and the government stepping in to support local adaptation measures to reduce the vulnerability of farmers to climate change.

Participants also discussed local participation, including the lack of effective communication between climate scientists and local communities, the need for local participation in climate change discourses and national policy processes, and effective power-transfer from the national level to the local level.

From impacts to vulnerability – locating climate change adaptation in the development agenda: On Thursday, this session addressed the place of adaptation policies within the development agenda. Participants focused on local-level effects of policies processes.

Participants identified negative effects of policy processes on the ability of local communities to adapt, which include mobility restriction, loss of pastoral resources, settlement policies, access to markets, and conflict in the region.

Participants discussed elements that should be accounted for in government adaptation policy processes, including: recognizing historical dispossession through forest tenure rights; allowing access rights for vulnerable communities;

allowing local participation in policymaking, design and implementation; incorporating local knowledge; and innovating location-specific technologies accompanied by policy changes.

On policy processes, participants proposed taking a broader view of impacts, promoting nuanced discussions relating to present drought cycles, and increasing understanding of the complexity of real-world pastoral production systems.

International governance of environmental institutions: During this session on Thursday, participants discussed national and sub-national governance in France and Brazil.

Participants highlighted the evolution of legal frameworks governing land and water use and governance projects for sustainable development in Brazil, including the Mata Branca project for the sustainable development of the Caatinga Biome of northeast Brazil.

On recommendations for governance of sustainable development, participants addressed the need to revolutionize production technologically, economically and institutionally in the agriculture sector, and build local and regional capacity to sustainably manage resources.

Lessons from the Aridas Initiative: In this session on Thursday, participants reflected on the successes of the Aridas Initiative, founded in response to the first ICID meeting in 1992, and highlighted areas for further work.

Participants discussed the positive aspects of the Aridas Initiative, including that it helps eradicate poverty and inequalities in northeast Brazil, and is socially progressive, economically viable and environmentally sustainable.

Participants highlighted lessons from Rio Grande State and northeast Brazil, using them to draw out recommendations for further action, including creating legal instruments to institutionalize sustainable development in arid regions at the national and local levels and building additional dams to ensure sustainability of water access into the future.

DISCUSSIONS ON THE FORTELEZA DECLARATION AND CLOSING PLenary

LESSONS AND RECOMMENDATIONS FROM THE SESSION: Antônio Magalhães, Director ICID 2010, opened the plenary session on Friday by inviting the panel to reflect on the key recommendations emerging from the Conference.

Octavio Pérez Prado, UNCCD Bureau, on recommendations from discussions between participants from Latin America and the Caribbean, emphasized that sustainable development policies should recognize that land is a bio-productive unit that is important for alleviating poverty and of critical importance to the issue of food sovereignty (the right to produce food). He stressed the need for synergies between

national- and local-level projects to harmonize public policy and promote unified management programmes at the local level.

Christian Leduc, IRD, France, proposed observation systems to better characterize climate change and to provide the necessary data to create development policies, creating a database of dryland environmental conditions, and using the term “global change” rather than climate change to embrace a holistic view that considers all elements of environment and society.

Peter Roche, IRD, Burkina Faso, presented the recommendations from discussions on climate evolution in West Africa. He called for: equal rights and resource distribution at the local level; better-formulated policies to represent all groups in the drylands, including the most vulnerable; implementation of policies on social justice and land rights; and the translation of global policies to implementable actions at the local level.

Egon Krakhecke, Ministry of Environment (MMA), Brazil, noted proposals on the need for solidarity among dryland countries, use of effective monitoring and control systems in the Caatinga Biome, knowledge sharing and information sharing, and stronger implementation policies. He also called for stronger political will and financial support in the fight against desertification.

Renata Marson Teixeira de Andrade, Catholic University of Brasília, Brazil, emphasized recommendations on using social sciences to: address climate change-created vulnerability, as well as build capacity and strengthen institutions for adaptation; conduct vulnerability assessments in adaptation and mitigation project sites; create effective mitigation and adaptation policies; and draw attention to the complex nature of socioeconomic systems and the communities within them, and their role in promoting resilience and improving adaptation strategies.

Togtokh Chuluun, University of Mongolia, recommended: merging community- and ecosystem-based adaptation to address sustainability effectively; technological transfer to people in remote areas within drylands; and the inclusion of an environment dimension to the human development index, based on *per capita* emissions.

Xu Xiuli, China Agricultural University, emphasized that climate change must be examined at both the micro and macro levels and called for: safeguarding community rights; fostering local collective community action through policy; mainstreaming social protections for vulnerable groups in environmental policies; and fostering innovation in social science research methodology with the aim of aiding collective action at the local, government and regional levels.



L-R: Xu Xiuli, China Agricultural University; Michael Hall, NOAA, US; Peter Hochet, IRD, France; Octavio Pérez Prado, UNCCD Bureau; Antônio Magalhães, Director, ICID 2010; Christian Leduc, IRD, France; Renata Marson Teixeira de Andrade, Catholic University of Brasília, Brazil; Togtokh Chuluun, University of Mongolia; Mutizwa Mukute, Rhodes University, South Africa; Egon Krakhecke, MMA, Brazil; and Eduardo Sávio Martins, FUNCEME, Brazil

Mutizwa Mukute, Rhodes University, South Africa, stressed that social ecology needs to be given greater attention, be better-understood and fitted into climate change adaptation. He noted recommendations including focusing climate change work on changing behaviors *vis-à-vis* the environment and listening to communities through stronger practice-oriented ways of learning in higher education, as well as the promotion of trans-disciplinary learning.

Eduardo Martins, FUNCEME, Brazil, called for: focusing on local adaptation; recognizing the broad knowledge base in non-governmental organizations and communities; strengthening or rethinking institutions related to semi-arid areas; producing scientific information on the scale needed to make informed regional and local decisions; generating lessons learned from successful experiments; and promoting stronger cooperation between arid regions around the world.

Michael Hall, National Oceanic and Atmospheric Association (NOAA), US, called for: revisiting the research agenda, seeking truly integrated cross-disciplinary research aimed at providing useful information to decision-makers; greatly increasing the time-scale focus and spatial resolution of model projections; and understanding the human dimensions in climate change research and decision-making.

Analysis of the Meeting: Jesse Ribot, University of Illinois, US, noting the emergence of the term “adaptation to climate change” over the last 18 years, observed that while this brings attention to development, it might be at the cost of mitigating the vulnerability and risk of communities. On the outcomes of the conference, he noted three key themes: unequal power balances that still exist within countries and regions, with drylands receiving little economic or political support; the marginal focus



Jesse Ribot, University of Illinois, US

on drylands within the context of the global climate debate; and that traditionally drylands are poor producers and hard to govern, with little investment from central governments.

FORTALEZA DECLARATION: This session began with a brief speech by Celso Jaque, Governor, Mendoza, Argentina, who emphasized the extreme importance of linking scientific knowledge and decision-making and called for holding “ICID 2011” in Mendoza, Argentina.

John Redwood, World Bank read out the Fortaleza Declaration to plenary. In the ensuing discussion, participants requested the Fortaleza Declaration include: an increased focus on different energy sources; a greater emphasis on the sustainable use of resources; reference to strategies for using biomass, particularly in the Brazilian northeast; provision for regulations, limits and governance for payments for ecosystem services; and a stronger emphasis on cooperation amongst communities.

Participants noted that the Declaration did not include explicit reference to adaptation in semi-arid areas, general notes on education and capacity building, or examples of how urgent food security is in drylands.

Among the ideas and concerns raised by participants were: exercising caution in adaptation efforts to ensure they do not create unintended adverse consequences; considering the role

of markets in responding to climate variability; including communities in policy formation, as well as in implementation and monitoring; and valuing the role of women, workers and local agricultural knowledge in semi-arid lands.

Redwood explained that ICID 2010 organizers would review the draft Declaration and the suggestions offered, and “probably incorporate some.” He suggested some of the issues raised, such as gender and generational dimensions, could be topics for panels to explore more fully at the ICID 2011 conference being planned. He explained that the Declaration, along with the record of the suggestions offered and all the rapporteur reports from thematic panels and roundtables, will be posted on the ICID 2010 website.

The Fortaleza Declaration: On the challenges and opportunities of sustainable development and climate change, the Declaration calls for:

- better governance of the drylands, representation of their populations and enhanced livelihoods;
 - the enhancement of climate-sensitive sustainable development interventions in drylands;
 - recognition of potential synergies to reduce vulnerability and increase resilience for the poor;
 - the creation of favorable conditions for sustainable development in drylands through integrated actions to fight land degradation, mitigate drought effects, conserve biodiversity and adapt to climate change; and
 - investment opportunities to exploit the comparative advantage of drylands in renewable energy production.
- On political representation on multiple scales, the Declaration urges:
- enhanced representation of dryland populations in local, national and international policymaking and in the implementation of development activities;
 - strengthening the capacity of dryland nations to influence the global environment and development agenda;
 - the UN to consider the plight of dryland nations;
 - preparatory meetings of Rio+20 be organized on a global ecosystem basis, to highlight issues pertaining to communities living in, *inter alia*, the drylands and tropical forests; and
 - development and implementation of community-level information strategies to educate people on the implications of climate change.

On synergies among global environmental and development initiatives, the Declaration emphasizes:

- prioritizing sustainable use and conservation of biodiversity; and
- creation of synergies between local, national and global interventions to mitigate and adapt to climate change, conserve biodiversity and curb desertification.

On financing climate-sensitive sustainable development, it calls for:

- absorption of costs related to sustainable development by national economies;
- honoring previous financial obligations to support sustainable development by industrialized countries, the expansion of existing financial instruments, and acceleration of the disbursement of the Climate Investment and Adaptation Funds to local and national capacities; and
- including dryland regions in financial innovations to advance sustainable development under climate change conditions.



John Redwood, World Bank



The dais during the closing ceremony

On education for sustainable development, the Declaration calls for the prioritization of education for communities in dryland areas.

On knowledge and information exchange, it recommends:

- the design and implementation of an integrated climate research, observation, modeling and applications programme to inform the policy process;
- greater inputs from the social sciences on the causes and effects of climate change and variability;
- bridging the gap between scientific information and political action; and
- expansion and strengthening of knowledge networks.

On integrated planning and implementation of development strategies and programmes, the Declaration calls for increased convergence in development strategies and programmes, especially relating to land and water resource management, forestry and the fight against desertification.

Finally, on responding to urgency, the Declaration calls for decisive action from the international community on climate, development and sustainability challenges.

CLOSING CEREMONY: ICID 2010 Director Antônio Magalhães convened the closing plenary session. A 16-year old environmentalist, João Pedro Gurgel, urged participants to focus on teaching the young proper practices in their home and personal lives to make a difference in environmental protection in the future. Maria Theresa Farias, COMPAM, emphasized that the environment is a public good and stressed that actions undertaken to protect it need to be done daily.

René Barreira, Secretary for Science, Technology and Higher Education, Ceará State, Brazil, stressed the importance of involving government and mobilizing civil society to act in preserving the environment, especially in implementing the Fortaleza Declaration.

ICID 2010 Director Magalhães, with Jean Loup Guyot, IRD, thanked organizers and participants for their support of the conference. He closed the conference at 5:38pm.



L-R: Maria Theresa Farias, COMPAM, and Antônio Magalhães, Director, ICID 2010

UPCOMING MEETINGS

XXIII IUFRO World Congress: The theme for the 23rd World Congress of the International Union of Forest Research Organizations (IUFRO) is "Forests for the Future: Sustaining Society and the Environment." **dates:** 23-28 August 2010 **location:** Seoul, Republic of Korea **contact:** Korea Forest Research Institute **phone:** +82-2-961-2591 **fax:** +82-2-961-2599 **e-mail:** iufrococ@forest.go.kr **internet:** <http://www.iufro2010.com/>

Workshop on Forest Governance, Decentralization and REDD in Latin America: This country-led initiative in support of the UN Forum on Forests (UNFF) by Mexico and Switzerland, is expected to discuss how decentralization and forest governance contribute to sustainable management of forests. **dates:** 31 August - 3 September 2010 **location:** Oaxaca, Mexico **internet:** <http://www.cifor.cgiar.org/Events/Oaxaca/decentralisation-redd.htm>

Sustainable Land Management Enhances Water Availability and Quality: The UNCCD Secretariat is organizing this Seminar at the 2010 Stockholm International Water Week. **date:** 5 September 2010 **location:** Stockholm, Sweden **contact:** Emmanuel Chinyamakobvu, UNCCD Secretariat **phone:** +49-228-815-2819 **fax:** +49-228-815-2898/9 **e-mail:** echinyamakobvu@unccd.int **internet:** http://www.unccd.int/publicinfo/announce/seminar_water_desertification.php

UNFF Ad Hoc Expert Group on Forest Financing: This meeting will be the first open-ended intergovernmental *ad hoc* expert group on financing for sustainable forest management, as part of the UN Forum on Forest's strategic plan on forest financing. **dates:** 13-17 September 2010 **location:** Nairobi, Kenya **contact:** UNFF Secretariat **phone:** +1-212-963-3401 **fax:** +1-917-367-3186 **e-mail:** unff@un.org **internet:** <http://www.un.org/esa/forests/>

Global Expert Workshop on Biodiversity Benefits of Reducing Emissions from Deforestation and Forest Degradation in Developing Countries: This workshop is to support the efforts of parties in addressing reducing emissions from deforestation and forest degradation in developing countries (REDD) in the framework of the UN Framework Convention on Climate Change (UNFCCC) in a way that contributes to the implementation of the CBD programme of work on forest biodiversity. **dates:** 20-23 September 2010 **location:** Nairobi, Kenya **contact:** CBD Secretariat **phone:** +1-514-288-2220 **fax:** +1-514-288-6588 **e-mail:** secretariat@cbd.int **internet:** <http://www.cbd.int/>

International Scientific Conference on Advanced Scientific Tools for Desertification Policy: This conference aims to "set up a discussion on the scientific research

tools and results, recently achieved at the European and international levels addressing desertification assessment and mitigation.” **dates:** 28-29 September 2010 **location:** Rome, Italy **contact:** Maurizio Sciortini **phone:** +39-06- 8535- 5590 **fax:** +39-06-8535-6060 **e-mail:** desurvey@enea.it **internet:** <http://www.noveltis.net/desurvey/conference/>

20th Session of the FAO Committee on Forestry (COFO)/ 2nd World Forest Week: The biennial sessions of COFO bring together heads of forest services and other senior government officials to identify emerging policy and technical issues, to seek solutions and to advise FAO and others on appropriate action. **dates:** 4-8 October 2010 **location:** Rome, Italy **contact:** FAO Forestry Department **phone:** 39-06-5705-3925 **fax:** 39-06-5705-31 52 **e-mail:** COFO-2010@fao.org **internet:** <http://www.fao.org/forestry/cofo/en/>

Convention on Biological Diversity (CBD) COP 10: The tenth Conference of the Parties to the Convention on Biological Diversity is expected to, *inter alia*, assess the achievement of the 2010 target to reduce significantly the rate of biodiversity loss. **dates:** 18-29 October 2010 **location:** Nagoya, Japan **contact:** CBD Secretariat **phone:** +1-514-288-2220 **fax:** +1-514-288-6588 **e-mail:** secretariat@cbd.int **internet:** <http://www.cbd.int/cop10/>

Land Day 3: Land Day 3 is to meet in parallel with the 10th session of the Conference of the Parties to the Convention on Biological Diversity (CBD COP 10). **date:** 23 October 2010 **location:** Nagoya, Japan **contact:** UNCCD Secretariat **phone:** +49-22-8815-2800 **fax:** +49-22-8815-2898 **e-mail:** secretariat@unccd.int **internet:** <http://www.unccd.int/secretariat/docs/workplan/workplan2010eng.pdf>

Global Forum on Salinization and Climate Change: The Global Forum on Salinization and Climate Change will be an opportunity to discuss the problems associated with salinization and climate change. **dates:** 25-29 October 2010 **location:** Valencia, Spain **contact:** Jorge Battle-Sales, University of Valencia **phone:** +34-96-354-4289 **e-mail:** Jorge.Battle@uv.es **internet:** <http://www.uv.es/jorba/GFSCC2010>

Third International Conference on Drylands, Deserts and Desertification: The theme for the third International Conference on Drylands, Deserts and Desertification is “The Route to Restoration.” **dates:** 8-11 November 2010 **location:** Israel **contact:** Dorit Korine **phone:** +97-28-659-6781 **fax:** +97-28-659-6722 **e-mail:** desertification@bgu.ac.il **internet:** <http://cmsprod.bgu.ac.il/Eng/Units/bidr/desertification2008/>

Sixteenth Conference of the Parties to the UNFCCC and Sixth Meeting of the Parties to the Kyoto Protocol: The 33rd meetings of the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA) will also take place concurrently. **dates:** 29 November to 10 December 2010 **location:** Cancún, Mexico **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **e-mail:** secretariat@unfccc.int **internet:** <http://unfccc.int/>

Ninth Session of the UN Forum on Forests (UNFF 9): The theme for UNFF 9 is “forests for people, livelihoods and poverty eradication.” **dates:** 24 January - 4 February 2011

location: New York, US **contact:** UNFF Secretariat **phone:** +1-212-963-3401 **fax:** +1-917-367-3186 **e-mail:** unff@un.org **internet:** <http://www.un.org/esa/forests/>

UNCCD COP 10: The tenth session of the Conference of the Parties (COP 10) to the UN Convention to Combat Desertification (UNCCD) is expected to take place in October 2011. **dates:** 10-21 October 2011 **location:** Changwon City, Republic of Korea **contact:** UNCCD Secretariat **phone:** +49-228-815-2800 **fax:** +49-228-815-2898 **e-mail:** secretariat@unccd.int **internet:** <http://www.unccd.int/>

GLOSSARY

ASAC	Alliance of Semi-Arid Countries
CBD	Convention on Biological Diversity
DFID	UK Department for International Development
FUNCME	Ceará Foundation of Meteorology and Water Resources
GNDRI	Global Network of Dryland Research Institutes
ICID	International Conference on Climate, Sustainability and Development in Semi-arid Regions
IRD	Institut de Recherche pour le Développement
MDG	Millennium Development Goals
MESA	Mainstreaming Environment and Sustainability in Africa
MMA	Ministry of Environment
NOAA	National Oceanic and Atmospheric Association
Rio+20	2012 UN Conference on Sustainable Development
UNCCD	UN Convention to Combat Desertification
UNEP	UN Environment Programme
UNFCCC	UN Framework Convention on Climate Change

