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The global economic crisis is deeply affecting developed and developing countries' economies. Indeed, 2009 will be a year full of critical challenges, but also potentially valuable opportunities for governments, business, and civil society actors to rethink current models of economic growth and investment patterns worldwide. Climate change and poverty challenges, however, require that any forthcoming solutions to the economic crisis are also socially and environmentally sustainable.

During the 13th UNFCCC's Conference of Parties (COP) in Bali, Trade Ministers highlighted the potential role of trade in climate change responses. Moreover, they stressed the need for deepening analysis and understanding of the trade and climate change nexus and its sustainable development implications. African countries are particularly vulnerable to the physical impacts of climate change. Their ability to withstand and recover from the global economic crisis, moreover, stands to be impaired by some of the responses to the challenges of climate change taken by other countries and the international community.

The majority of African countries face significant levels of poverty and increased

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levels of climate-related threats such as droughts, floods, hurricanes, superimposed upon existing vulnerabilities. While these countries represent only a small portion of world trade, they are amongst the most open and trade-dependent in the world. Their key trade sectors such as agriculture, fisheries and tourism are among the most susceptible to the impacts of climate change. Many of these countries have struggled and achieved limited success in diversifying their economies.

Given that most countries in the region are either Least Developed Countries (LDCs), Small and Vulnerable Economies (SVEs) or Small Islands Developing States (SIDS), which look towards trade as a driver of economic growth, trade policy will be an important element in strengthening these countries' resilience to external shocks, including those arising from climate change's physical impacts and the international regime being evolved to counter these consequences. The larger economies in Africa will also play an important leading role in the enhancement of trade and productive capacities in the region. The interface between trade and climate change has entered the international policy arena, however, much is yet to be explored in terms of deepening the various stakeholders' knowledge on nature of the links between these two issues and their future sustainable development implications.

As a contribution to this debate, the International Centre for Trade and Sustainable Development (ICTSD), the International Institute for Sustainable Development (IISD) and the South African Institute of International Affairs (SAIIA) organized a Regional Trade and Climate Change Consultation in Johannesburg, South Africa, on May 7-8, 2009. The objectives of the regional consultation were:

- 1) Explore the issues at the interface of trade and climate change of concern and interests to African countries;
- 2) Identify a positive agenda able to contribute to engagement of African countries in the process of negotiations towards the UNFCCC Copenhagen summit in December;
- 3) Provide a platform for interaction and exchange amongst climate change and trade negotiators; policy-makers; private sector; academia; and civil society.

The dialogue brought together trade officials from Africa; policy-makers; climate change and development analysts; civil society and private sector representatives; experts; academics; and IGOs for two days to discuss these issues and identify the policy priorities and future research agendas to address key trade and climate change issues for these countries.

Introductory remarks

Mr. Aaron Cosbey, IISD Associate and Senior Climate Change and Trade Advisor; Mr. Christophe Bellman, ICTSD Programmes Director; and Mr. Peter Draper, SAIIA Head of Development through Trade Programme, provided the institutional background for this jointly organised dialogue and introduced the main objectives

and rationale.

Subsequently, Mr. Aaron Cosbey stressed that at the UNFCCC conference in Bali, Ministers recognised the potential role of trade and investment in addressing climate change objectives. Addressing climate change will ultimately require an important level of economic restructuring around the world. To contribute to this debate, IISD is conducting research in order to propose innovative solutions and raise awareness of these issues. Moreover, IISD, jointly with ICTSD and other regional partners are conducting similar regional meetings in Asia and Latin America to discuss how trade and investment regimes can be part of the solution to the challenges and opportunities emerging from climate change.

Moreover, Mr. Christophe Bellmann highlighted that the aim of the dialogue was to identify critical areas of interest to Africa in the context of trade, climate change and sustainable development, where more research is needed. Likewise, he stressed that the meeting should serve as a platform for interaction among different African stakeholders. Finally, Mr. Peter Draper stated that both trade and investment regimes are crucial to deal with the implications of climate change and strengthen countries' resilience to climate change-related shocks. Additionally, he mentioned that Africa will have a crucial role to play in the context of climate change as many African countries are highly vulnerable to climate change physical impacts.

Interactive Panel I: Setting the Scene

The first panel set up the state of play and sustainable development implications of climate change negotiations for Africa. Ms. Alice Kaudia, Environment Secretary of the Ministry of Environment of Kenya, stressed the main issues at stake for Africa in climate change negotiations, including financing, technology & innovation, as well as mitigation and adaptation actions; Ms. Bernice Lee, Chatham House Director of Governance, highlighted key elements of the political economy of climate change negotiations; Mr. Peet du Plooy, Investment Advisor for the WWF-South Africa, discussed crucial issues for the development of renewable energy in Africa. Moreover, Mr. Aaron Cosbey highlighted the role of trade policy in the context of climate change and sustainable development. Finally, Mr. Ivan Mbirimi, Consultant, chaired the panel.

African countries are particularly vulnerable to climate change. Impacts, however, will vary from country to country and region to region. Despite these differences, Africa will greatly benefit from an identification of the common challenges faced. Indeed, key economic sectors such as agriculture, horticulture, fisheries, and tourism are particularly vulnerable to climate change mitigation responses that other countries in the international community may undertake (e.g. fuel levies). This could eventually undermine the competitiveness of many African countries.

Adaptation to climate change is one of the most important challenges for Africa since the continent is a minor contributor to greenhouse gas (GHG) emissions. The post-2012 regime should thus deliver on the specific interests and concerns of African countries. In the context of the Clean Development Mechanism (CDM), the

new regime should focus on relaxing the stringent conditions for project certification and evaluation; address the low price of carbon; and assess the control of regulated carbon markets by developed countries in the context of CDM projects. Currently, the management of CDM seems to be working synergistically against African countries' effective access to this instrument. Most of the CDM projects are by and large focused on middle-income countries.

Moreover, emerging land use options like agriculture, forestry, and other land uses (AFOLU) could be highly positive for Africa in the context of a post-2012 regime. Carbon capture in the soil, grasslands, savannas' woodlands, and other vegetation not conventionally defined as forests, which cover expansive areas of Africa need to be incorporated in the new global climate change regime. Likewise, low carbon and renewable energy technologies like wind power and geothermal could be promoted through enabling incentives and policies (e.g. price guarantees like feed-in tariffs, carbon tax, accessible finance, and market access).

Indeed, a new industrial revolution needs to be ignited based on a rapid global diffusion of existing and near-to-market low carbon technologies, as well as the promotion of energy efficiency. This would not only address climate change challenges, but also increase access to energy, support rural and economic development, and strengthen Africa's resilience. Furthermore, countries should agree on a more flexible intellectual property regime that provides incentives for innovation, while at the same time allows for the dissemination and adaptation of new technologies in Africa and other developing countries. In this context, South-South trade has also an important and potential increasing role, in particular for the transfer of "South-adapted technologies."

The international community, and in particular developed countries, need urgently come up with new and predictable financial mechanisms to help developing countries respond to climate change effectively. Except for the CDM's 2 percent levy for adaptation actions, existing financial mechanisms (e.g. LDCs Fund, GEF, etc) can be highly susceptible to shocks and cut-backs resulting from recessions and developed countries' priorities. Therefore, in Copenhagen, African countries would need to secure additional and reliable financial assistance to address specific adaptation needs. Indeed, the costs of inaction could, according to the Stern Report,² amount to about 20 percent in terms of global GDP. These costs could be even higher for African LDCs and SVEs.

Finally, trade could play an important role regarding the access and production of clean technologies and renewable energy in the context of climate change. The liberalisation of Environmental Goods and Services (EGS) could be highly relevant for both mitigation and adaptation objectives. However, areas where trade policy could potentially hinder climate change objectives should also be identified in the future.

Interactive Panel II: Trade and Development Impacts of Climate Change

² See http://www.hm-treasury.gov.uk/sternreview_index.htm

and Adaptation Needs in the Context of Africa

The second panel focused on the ways in which trade policy might be helpful in efforts to address adaptation needs in agriculture and ways in which it might – both intentionally and inadvertently- stand in the way of addressing those needs. Mr. Christophe Bellmann, ICTSD, discussed the main issues at the intersection of trade, competitiveness, and adaptation in agriculture in Africa; Mr. Paul Devine, Deloitte Climate Change Unit, South Africa, highlighted the role of financing mechanisms in addressing climate change objectives. Finally, the panel was chaired by Mark Pearson, Regional Trade Facilitation Programme, in South Africa.

The overall impact of climate change on agricultural production will vary at a regional level. Global food production might increase with changes in temperature from 1 to 3 degrees in temperate climates, but could decrease in warmer climates. Indeed, several studies reveal that overall African agricultural production will be affected more severely by the increase in frequency and severity of climate change related shocks. This will have negative socio-economic impacts given the number of people that depend on agriculture for income and food security. According to the International Food Policy Research Institute (IFPRI), as a result of the expected decline in agricultural production, the number of undernourished people in Sub-Saharan Africa will be three times higher in 2080 than in 1990 (from 138 to 410 million people) while in other developing countries malnutrition will decline (from 885 to 554 million people).

Moreover, climate change could provoke a shift in comparative advantages, resulting in higher trade flows from mid/high latitudes (cereals and livestock) to low-latitude countries (10-40%), including Africa. In order to continue enhancing Africa's trade and development potential, it is fundamental that developed countries, in particular, remove trade barriers and trade distorting subsidies, which have negative effects on agriculture in Africa and other developing countries. Currently, agriculture accounts for 14 percent of global GHG emissions. This share is expected to increase if mitigation measures are not urgently adopted. Additionally, 74 percent of total agriculture emissions originate in developing countries. Global agriculture, however, could also become part of the solution to climate change challenges given its mitigation potential (e.g. 89 percent through soil carbon sequestration). Moreover, possible synergies could be stressed among good agricultural practices (e.g. cropland management; yield improvements) and livelihood security, as well as environmental improvements (e.g. increase in the quality of water ground, soil, and ecosystems; enhancement of productivity and incomes).

Both mitigation and adaptation measures can have a mutual and reinforcing effect since there is a strong link among good agriculture practices, soil carbon sequestration, productivity, livelihood security, environmental benefits and poverty reduction. Moreover, trade measures could play an instrumental role in addressing these challenges. Indeed, trade negotiations could be instrumental to avoid unilateral or arbitrary trade restrictions in the context of possible border tax adjustment measures and food miles. Likewise, trade policy could be useful to foster the use of the 'right' incentives in agriculture (e.g. a halt in subsidising the

bad biofuels and taxing the good).

Effective policies combined with additional financial resources are required to respond to Africa's climate change challenges. Current financing mechanisms, however, are not yet sufficient to address both mitigation and adaptation actions. Thus, in Copenhagen Africa should secure additional and predictable financial resources. Moreover, climate change financing mechanisms should be coherent with trade-related assistance such as Aid for Trade, and the Enhanced Integrated Framework in order to reinforce and complement their respective objectives.

Along with additional financial mechanisms to address climate change, African countries also need to put in place regulatory frameworks and the right sets of incentives in order to foster adaptation and mitigation actions like the development of renewable energy. In the case of Germany and Spain, for instance, photovoltaic production emerged as a result of pro-industry incentives like an enabling price structure. Furthermore, the active role of the government in pursuing public-private partnerships and pilot projects, like the Carbon Trust in the United Kingdom, is crucial in order to attract more private investment in clean technologies.

Interactive Panel III: Trade, Technology-Transfer and Diffusion

The third panel explored the technological needs for adaptation to climate change, the potential barriers to innovation and technology transfer, and the ways of addressing barriers, including trade-related tools and instruments. Mr. John Mugabe, University of Pretoria, discussed innovation and technology transfer issues in Africa, as well as potential barriers including intellectual property (IP), absorptive and innovative capacity, and financing. Ms. Veena Jha, Maguru Consultant and University of Warwick, explored the productive and export opportunities for Africa in the context of climate-mitigating technologies. Mr Peter Draper, SALLA, chaired the panel.

Currently, there is a lack of empirical evidence to show that Intellectual Property Rights (IPRs) are barriers to technology transfer. In Africa, other constraints may be of greater significance. Barriers to innovation in most African countries seem to come from the poor quality of institutions in charge of research and development (R&D) and innovation, as well as a lack of science and technology and effective innovation policies. Moreover, most African countries lack sufficient financial resources to foster and sustain innovation. Additionally, there is higher emphasis on research rather than innovation. Knowledge, thus, accumulates but is not then channelled to domestic innovative processes.

Similarly, there is too much emphasis on technology transfer through Foreign Direct Investment (FDI) rather than technology diffusion. However, technology diffusion might be more relevant for Africa than technology transfer. There is a lack of strategy in Africa to scale up the quality of FDI currently attracted. In fact, FDI patterns mostly focus on the extraction of natural resources instead of effectively transferring and diffusing technology and promoting value addition for Africa's exports. Africa needs to move away from an IPR-focus given that most

patent systems are 'dormant' in Africa. Instead, African countries should strengthen their institutional negotiating capacity regarding FDI agreements. Moreover, it is crucial to question how FDI is currently been used at the national and regional level.

Similarly, technology needs assessments need to be effectively reviewed in the context of National Adaptation Programmes of Action (NAPAs). In order to enhance the use of technology in Africa, key actors should increase investment in infrastructure and build up public and private partnerships. Involving the private sector in technology transfer and diffusion actions is thus crucial given that innovation occurs mostly at the level of businesses and not necessarily in the policy spheres.

Trade liberalisation of environmental goods and services (EGS) has often been highlighted as crucial for fostering the diffusion and potential emergence of markets for climate friendly technology. Diffusion of and access to renewable energy products has indeed the potential of incentivising innovation and directing the economy into a low-carbon path. Thus, a major question emerges regarding current EGS negotiations in the WTO: will reduction of tariff and non-tariff barriers increase trade in renewables and the deployment of renewable energy technologies? Currently, 6 percent of global energy production comes from renewable sources, including biomass (47 percent), hydroelectric (45 percent), Geothermal (5 percent), Wind (2 percent), and solar (1 percent). Europe and China are the largest producers of renewable energy. China is a major exporter of all forms of renewable energy, but particularly solar energy. India is an important wind energy producer while Mexico, Hong Kong, Republic of Korea, Malaysia, Colombia, South Africa, and Brazil are all important producers of biofuels. In general, however, developing countries, and LDCs in particular, have little trade capacity in these goods. EGS negotiations may thus bear implications for only a handful of players, which are also exporters of industrial products.

Even though some renewables like hydroelectricity are non-tradable, the sector has a large trade potential. In some cases, tariffs are used as infant industry protection, particularly in emerging markets. However, some studies highlight that the reduction of tariff and non-tariff barriers might increase trade in renewable energy, the deployment of renewable energy technologies, and the production and trade of environmental goods and services. Moreover, the assembly of wind energy parts could also open market opportunities for third countries. Currently, large producers like India are mainly producing for the local market. Assembly activities of wind turbines and other components for instance could represent important business opportunities for African countries. This potential trade in components may also be important in the context of solar energy.

Moreover, subsidies in the form of feed-in tariffs, capital subsidies, and patents are important market drivers. Finance availability and investment is also crucial to foster the renewable energy markets. Indeed, tariff reduction by itself may facilitate trade, but will not generate markets automatically. Additionally, some studies suggest that patents may not be a barrier to the dissemination of

renewable technologies. Registering patents thus seems to increase exports. However, around two thirds of patents registered in developing countries are owned by multinational corporations. The potential sustainable development impacts emerging from this should thus be further analysed.

Finally, in order to link renewable energy production with sustainable development in Africa, the technological absorptive capacity of African countries needs to be harnessed. Trade financing instruments could play a potentially beneficial role in this. Moreover, in the context of emerging South-South cooperation, deeper discussions are needed regarding the trade and investment models currently pursued (e.g. technological investment vs. resource extractive activities) and the potential impacts on Africa's economic, social, and environmental development.

Interactive panel IV: Domestic Policies in Developed and Developing Countries to Address Climate Change and their Trade and Development Implications

The fourth panel explored key economic policies and measures African countries could implement in order to address climate change challenges in sectors like agriculture and energy. It discussed possible trade policy-related tools to address both climate and development-related concerns in Africa. Mr. Moustapha Kamal Gueye, UNEP Green Economy Initiative, talked about trade-related policy tools needed to address climate change and accelerate the transition towards a green economy in Africa. Mr David Lesolle, Winter Brothers from Botswana, discussed about the development opportunities and challenges of alternative sources of energy in Africa. Mr. Stephen Mbithi, Fresh Produce Exporters Association of Kenya, discussed the potential impacts of climate-related standards and labels for key export sectors in Africa. Moreover, Mr. Suryapratim Roy, SAIIA, discussed about the diffusion of clean technologies and the impact of domestic policies. Finally, Ms. Julianne Zeidler, Integrated Environmental Consultants of Namibia, chaired the panel.

In the last few decades, rapid and unprecedented economic growth has been accompanied by accelerated environmental decline. Between 1981 and 2005 global GDP more than doubled. However, during this period, 60 percent of world's ecosystems were exploited unsustainably. The world thus needs to rethink its growth and development path. Current food, financial, and fuel crisis increase the urgency of this while at the same time open up the possibility for restructuring the economy in order to move towards a greener path to development. UNEP argues that an investment of 1 percent of global GDP (i.e. approximately USD 750 billion) over the next few years could provide the critical mass of green infrastructure needed to seed a significant greening of the global economy. Global response to the financial crisis has amounted to USD 3.0 trillion directed to economic recovery in few months. Political will therefore proves to be crucial in enhancing resource availability to deal with global challenges.

Investing in key sectors including alternative sources of energy, clean technology, ecological infrastructure, and sustainable agriculture is essential for an effective greening of the economy worldwide. Indeed, this could stimulate economic

growth, save and create employment, and reduce poverty while addressing global environmental and climate change challenges. In recent years, about 2.3 million people have been employed in the renewable energy sector even though it currently represents only 2 per cent of global primary energy. Moreover, a global investment of US\$630 bn on renewable energy by 2030 would translate into 20 million additional jobs and a dramatic expansion of this sector. In Africa, solar and hydro power bear the potential to be further developed. Long-term sectoral strategies will thus be required. Currently, however, public support has not generally been directed to enhance energy access, but to the industry itself. This could partly explain the low levels of access to electricity in the continent. In Sub-Saharan Africa, for instance, 80 percent of people lack access to electricity and are, instead, highly dependent on burning biomass such as wood, charcoal, and dung.

Likewise, organic agriculture has an important potential to address climate change challenges and improve farmers' incomes. Indeed, an FAO study (Scialabba and Hattam 2002) concluded that CO₂ emissions per hectare of organic agriculture systems are 48 percent to 68 percent lower than in conventional systems. Additionally, despite common perception, organic agriculture has increasing labour and productivity opportunities. In fact, on average, it uses 30 percent more labour than conventional production (job creation potential). Moreover, an analysis of 114 cases of conversion to organic or near organic methods of production in Africa showed an increase of 116 percent in farm productivity and improved levels of natural, human, social, and financial capital. Likewise, high premiums paid to farmers can have a highly positive impact on farmers' income. In Uganda, the farm gate price of organic pineapples, ginger, and cotton are 80 percent, 185 percent, and 33 percent, respectively, higher than products sold conventionally.

Standards and labels are also important elements in the agriculture and horticulture sector, which often condition access to foreign markets. Many small producers, mainly in developing countries, have problems in complying with standards and labels. In the case of Kenya, where a large number of people depend directly or indirectly on the export of horticultural exports, most of the production takes place at a small and medium level. In the last few years, however, there was a proliferation of environmental standards, labels, and similar initiatives including eco-labelling, food miles labelling, and 'buy-local' campaigns. Some of these labels and standards are based on bad scientific evidence and generally advanced by lobby groups (e.g. food miles debate), which could bear potentially negative consequences on producers in the South.

Indeed, the food-miles discussion focuses on potential GHG emissions only on one side of the value chain (commercialisation). However, the GHG emissions coming from the production side of global value chains are generally four times higher when conducted in developed countries. Moreover, the food miles debate stresses the potential carbon footprint of airfreight. However, airfreight represents less than 1 percent of total GHG emissions. To address this, actors like TESCO and Oxford University have been trying to develop a fair food labelling scheme, based

on good science, which could benefit small producers in Africa.

Roundtable on recommendations, defining research gaps, and policy priorities for Africa

The roundtable aimed at sparking an interactive debate on the main knowledge gaps on trade and climate change of key concern for African countries. It attempted to identify both research and policy priorities for the region in the context of trade and climate change. Moderators from previous sessions: Ivan Mbirimi, Mark Pearson, Peter Draper, and Julianne Zeidler were invited to start the debate by providing a summary of key recommendations from their respective panel discussions. Ms. Gloria Carrión, ICTSD, moderated the session.

Main issues and recommendations highlighted were:

- Climate change adaptation and mitigation objectives should be pursued simultaneously in ways that make sense economically and set African countries into a low carbon future.
- Availability of; access to; and additionality of financial resources is crucial to pursue climate change adaptation objectives, in particular. Moreover, African countries should have a clear strategy on how to deploy these resources in order to build climate and economic resilience in the continent.
- Technology diffusion rather than technology transfer seems to be more relevant for Southern Africa. For other parts of Africa, building national systems of innovation; creating policies to foster technological innovation; promoting technology prospecting; and diffusing knowledge will be crucial. Thus, harnessing and applying indicators for selecting foreign direct investment will be important in order to attract FDI that addresses tangible technology transfer and diffusion objectives in Africa.
- Renewable energy currently represents by and large an untapped and underexplored area in the context of Africa. However, Africa could greatly benefit in terms of expanding access to electricity and creating new business opportunities (e.g. building parts for wind energy, etc.) on the renewable energy side. Moreover, the role of feed-in tariffs in renewable energy promotion requires further research in the context of the WTO (e.g. are they protectionist measures?) and sectoral development policies (e.g. would enhancing regulatory standards be better suited for the promotion of the sector than feed-in tariffs?).
- National development policies in Africa should be reviewed in order to ensure that adequate climate change and trade policies are mutually reinforcing and supportive of African countries' sustainable development. Moreover, sectoral studies (e.g. agriculture, energy, etc.) are needed in order to identify specific measures to be taken in order to promote climate change mitigation and adaptation, as well as economic resilience.
- The Clean Development Mechanism (CDM) should be reformed in order to address the interests and concerns of African countries. Moreover, shifting the focus from projects to programs in the context of the CDM will be crucial to lower transaction costs.

- Effective South-South cooperation should be fostered in ways that address the technological and innovation challenges Africa currently faces. Moreover, Africa needs to tap the potential for investment on renewable energy in the context of South-South relations. India and China may be important sources of knowledge, financial resources, as well as business opportunities in the context of renewable energy.
- Finally, the identification of specific technologies required for adaptation purposes in the context of particular sectors is crucial in order to inform policy making processes in Africa. Moreover, the links between trade and climate change adaptation need to be further explored and deepened.