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INTERNATIONAL CHAMBER OF COMMERCE

Discussion Paper



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Environment and Energy

ICC views on Agriculture, Rural development, Land, Drought, Desertification and Africa for the 17th Session of the United Nations Commission on Sustainable Development

Highlights

- Contributing a mosaic of solutions to challenges through joint efforts
- Encouraging more integrated approaches
- Investing in agricultural R&D
- Addressing Climate Change
- Using water efficiently
- Conserving biodiversity
- Sustainable consumption and production patterns (SCP)

1. Contributing a mosaic of solutions to challenges through joint efforts

There is no single technology or policy to ensure sustainability in agriculture, as it operates in a wide range of geographies, climates and soils. Markets, policy frameworks and consumer demand all play a role, as do institutions and resources that support its implementation. For this reason, the International Chamber of Commerce believes in a multi-stakeholder approach to developing, promoting and achieving sustainable agricultural practices such as the Farming First initiative.

Agricultural food and non-food chains comprise many different stages and an increasing number of players. Achieving sustainability hence requires increased integrated approaches, to pursue food security and poverty alleviation (Millennium Development Goal #1), as well as environmental health (Millennium Development Goal #7). It also requires strong commitments, inclusive partnership (Millennium Development Goal #8) contributions and shared responsibility among all players involved.

For this reason, business and industry wishes to highlight ways in which it contributes – often in cooperation with other stakeholders - to addressing the agricultural challenges, such as productivity increases, investment in R&D towards integrated technology packages¹, climate change, water use efficiency and biodiversity conservation.

- THE NEW AGRICULTURAL PRODUCTION CONTEXT

Food prices, even after the 2008 oil price spike², still remain high by historical standards and evidence suggests that this situation will continue for the foreseeable future³. This is a threat to food security especially for the rural poor. In the past achieving food security through productivity increase was based on expansion of agricultural land and productivity growth. Today, however, additional challenges exist, which lead to a new agricultural production context: increased pressure on both land and resources. In addition, climate change impacts like water scarcity or droughts or the shift towards a more bio-based economy (bio-based chemistry and biofuels) amplify production constraints. Hence the changed agricultural production context will require production growth resulting primarily from efficient productivity increase.

Business and industry is convinced that the new production context requires more immediacy and more integrated and inclusive approaches, to assure agriculture's full potential in terms of productivity, efficiency and sustainability.

2. ENCOURAGING MORE INTEGRATED APPROACHES

A dramatic increase in productivity is among the most impressive 20th century achievements of agriculture. Today, through improved knowledge of interrelationships in crop and animal production more fine-tuned, integrated and holistic approaches, such as integrated farm management– that balance the economic, social and environmental dimensions of sustainability are taken. Farm practices such as conservation agriculture (reduced tillage), also has many positive sustainability

¹ **"Technology packages"** are combinations of technologies including: inputs such as seeds, fertilizers and crop protection, animal feed, veterinary medicines and services; agricultural equipment and machinery, including irrigation systems; capacity building and knowledge sharing; information and communication technologies; including mobile phones; insurance and financial services, including micro-credits. Technology packages provide integrated solutions for agriculture in specific production environments.

² IFPRI, Anatomy of a Crisis <http://www.ifpri.org/pubs/dp/IFPRIDP00831.pdf>, December 2008

³ ³ Humboldt University Berlin: Global agricultural market trends and their impacts on European Union agriculture, <http://ageconsearch.umn.edu/handle/6276> May 2008

effects. It prevents soil erosion and water loss, increases organic matter in the soil (CO₂ sequestration), saves fuel by up to 80% and reduces labour costs by 30-50%^{4 5 6}.

Altogether improvements have not only been made on yield increase, but also contributed to food quality and public health improvements. Micronutrient fertilization can now address deficiencies in soils, animals and humans, such as Zinc deficiency, which is the 5th leading risk factor for disease in developing countries.

Business and industry promotes sustainable land management approaches and practices. This makes significant contributions to productivity and quality increases as well as to public health.

- UNTAPPED PRODUCTIVITY POTENTIALS

Huge agricultural productivity potentials remain untouched: certain critical crops only achieve 20% of the productivity enjoyed elsewhere⁷. The lack of investment in agriculture (infrastructure, capacity building, entry into markets, access to technologies) as well as natural causes like water scarcity are the root cause for the productivity gap. In Africa, low soil fertility is one of the major causes responsible for the productivity gap on small-scale farms and for Africa's low agricultural productivity relative to other regions: cereal yields in Sub-Saharan Africa averaged less than 1.3 tons per hectare in 2000, as compared to yields in Asia of around 3 tons per hectare⁸. Low quality seeds also contribute to the low productivity. With climate change amplifying the productivity challenge, agricultural trade will further increase to make up for losses in local production and to buffer or compensate production gaps occurring elsewhere.

Business and industry strongly supports integrated policymaking, which ensures improved market creations and access to agricultural goods. We are convinced that the elimination of trade-distorting subsidies in developed countries can help farmers compete on a common ground in the global marketplace. A sustainable green revolution based on integrated policy making is needed to address food security and poverty in Africa.

- UNLEASHING THE POTENTIAL OF SMALL-SCALE FARMERS

Millions of farmers are resource poor, smallholders. Integrating them into local, national or international markets is an increasing challenge, as they are most vulnerable to increasing food prices (they are net food buyers) and climate change. Successful approaches build on public-private partnerships between small-scale farmers, governments, NGOs, industry and others actors. Such strategies include the creation of food markets, agro-institutions (extension services), capacity building, enhanced communication technologies (mobile phones) to improve market information or provide access to micro-financing. Replicating and scaling-up these success stories to provide benefits to small-scale farmers, requires ambitious joint efforts as well as significantly increased funding.

Business and industry is convinced that ambitious efforts need to be combined to integrate small-scale farmers into markets. In this context we complement efforts by other stakeholders with our assets: technology packages, R&D, people and expertise, outreach capacities, managerial and market development skills.

⁴ No-Till: How Farmers Are Saving the Soil by Parking Their Plows, June 2008
<http://www.sciam.com/article.cfm?id=no-till>

⁵ Conservation Technologies and the Plant Science Industry, CropLife International, September 2005
www.croplife.org

⁶ <http://www.sciam.com/article.cfm?id=no-till>

⁷ Radha Ranganathan, International Seed Federation; "Plant Genetic Resources for Food and Agriculture: A Common Heritage of Mankind?" (2007)

⁸ AGRA, Bationo A 2006 <http://www.agra-alliance.org/section/work/soils>

3. INVESTING IN AGRICULTURAL R&D

In the light of persisting high food prices and the current economic crisis the need to address a longer-term approach to raising efficiency in agricultural production should strongly focus on investment in agricultural R&D.

- AMOUNTS OF PUBLIC AND PRIVATE R&D INVESTMENT

Private agricultural R&D investment in agriculture was about one third of public investment amounting to a total of \$36 billion worldwide in 2000⁹. Over the past four decades, public interest in agriculture has slowed alongside public investment in agricultural R&D. During the same time, private R&D investment developed further, particularly for sophisticated technologies such as plant biotechnology, crop protection products, machinery, and food-processing.

- INNOVATIVE TECHNOLOGY DEVELOPMENT

Technology development is complex and constantly evolving, taking, on average, about 10 years of R&D. Although discovery cannot be mandated, it can be directed in support of current or future needs: water scarcity, other climate change effects, efficiency of resource use etc. Timely, well focused and more coordinated approaches need to be taken by both the private and the public sector to achieve the challenge of providing complementary and coherent solutions.

More recently, progress in maximizing crops' genetic potential with regard to yield, quality and health benefits has been made. Biotech soybeans, maize, cotton and canola yields increased by +20%, +7% (+36% in the United States¹⁰) +15% and +3% respectively between 1996 and 2006, allowing to produce more while using less land¹¹. While many factors contributed to these productivity increases, biotech varieties had a substantial share in yield increase. Biotech solution also include other enhancements to provide more nutritious and healthier foods (higher content in unsaturated fats, better quality seeds, reduced mycotoxins content through insect tolerance¹²) which also contribute to increased efficiency in production. Herbicide-tolerant crops to date are the most widely used biotech trait. Their use spurred greater use of Conservation Agriculture, a sustainable farming practice. The widespread adoption of these technologies (125 million hectares in 2008 by 13 million farmers in 25 countries since their first commercialization¹³), reflects the benefits gained by farmers: cost saving, based on stable and efficient production¹⁴.

- CONSIDERATIONS OF ALL OPTIONS

Precluding the use of technology hinders opportunities and deprives farmers of agricultural tools, which are a prerequisite for high productivity performance. While the need for technology options

⁹ P.G. Pardey, N. Beintma, S. Dehmer and S. Wood, 08 2006 Agricultural Research: A Growing Global Divide? IFPRI & ASTI, Food Policy Report, Washington D.C.

¹⁰ USDA Annual Summary Crop Production Report, 2009

¹¹ AgBioForum, August 2008 PG Economics Limited, Biotech crops: the real impacts 1996-2006 – yields
http://www.pgeconomics.co.uk/pdf/GM_Crop_yield_summary.pdf
http://www.pgeconomics.co.uk/pdf/GM_crop_yield_arial.pdf

¹² Hammond B., et al. 2003. Reduction of fumonisin mycotoxins in Bt corn. Toxicologist 72(S-1): 1217

¹³ James, Clive. 2008. Global Status of Commercialized Biotech/GM Crops: 2008. ISAAA Brief No. 39. ISAAA: Ithaca, NY.
<http://www.isaaa.org/purchasepublications/itemdescription.asp?ItemType=BRIEFS&Control=IB039-2008>

¹⁴ NCFAP, 02 2008. Quantification of the Impacts on US Agriculture of Biotechnology-Derived Crops Planted in 2006
www.ncfap.org/documents/2007biotech_report/Quantification_of_the_Impacts_on_US_Agriculture_of_Biotechnology_Executive_Summary.pdf

varies by countries, restrictions or unavailability of technologies reduces any farmers' competitiveness. This does not only have national or regional effects it has international implications as well. For instance crop protection products under a new European Union regulation may be restricted next year. This may equally restrict farmers around the world from using these tools, because import tolerances, which are a prerequisite for exports would be cancelled. At a time of growing food demand and of changing plant disease and pest patterns resulting from climate variability, this is as much a concern as is the lack of agricultural infrastructure.

Business and industry is committed to spearheading and investing in agricultural R&D, which is a lengthy undertaking. The development and use of sound technology options requires predictable and science based policy frameworks. Increased R&D investment should be prioritized and endeavor to be complementary.

4. ADDRESSING CLIMATE CHANGE

Climate change impacts on agriculture are creating new challenges. Adaptation is essential to address vulnerability and prevent decreases in productivity in many regions around the world. Agriculture is also responsible for about 14% of total global Greenhouse Gas (GHG) emissions from a variety of sources, such as nitrification and denitrification in soils and methane emissions from livestock and paddy rice production. Conversion of forests to agricultural land results in to high CO₂ and methane emissions¹⁵. Increasing productivity on existing land and using natural resources more efficiently can thus make substantial contributions to climate change mitigation.

- ADAPTATION OPTIONS

Sustaining agriculture in a changing climate requires incremental adaptation. Farm management approaches, practices and technologies play an important role in making agricultural production more resilient to climate variability. They already are, and will increasingly be part of a growing portfolio of response measures.

Adverse impacts of climate change already occur through the spread of biotic stresses (plant and animal pests and diseases) and abiotic stresses (drought, heat or cold)¹⁶. More healthy and vigorous crops are already today more resilient to climate variability. In future a broader choice of technology options for adaptations will be required and are already being developed: in the pipeline are varieties with stress-tolerance (which covers all abiotic stresses), focused drought-tolerance or nitrogen-use efficiency. While these developments focus primarily on key global crops, traits will also be transferable to other crops once the technology to do so is enhanced.

- MITIGATION AND SEQUESTRATION

Agriculture has a considerable technical mitigation potential, not only through reductions in methane and nitrous oxide emissions from livestock and rice cultivation¹⁷, but also through carbon sequestration in agricultural soils. Science and technology will have to be further developed to effectively reduce GHG emissions and manage soil carbon stocks. In addition, efficiency of land use is critical to reducing deforestation, which indirectly contributes to reduced GHG emissions.

Further emission reductions can be achieved through crop management practices such as seed treatment for protection against pests and diseases, which avoids up to 3 area treatments in field crops and reduces tractor fuel use. Conservation agriculture (reduced tillage) also reduces the number

¹⁵ IPCC 4th Assessment Report, Synthesis Report, 2007:7, Sir Nicolas Stern: „Review on the Economics of Climate Change“ (2007-01) – Annex 7.g http://www.hm-treasury.gov.uk/stern_review_report.htm
http://www.hm-treasury.gov.uk/d/annex7g_agriculture.pdf

¹⁶ http://ec.europa.eu/health/ph_threats/climate/climate_en.htm

¹⁷ FCCC/AWGLCA/2009/CRP.2 7. April 2009 <http://unfccc.int/resource/docs/2009/awglca5/eng/crp02.pdf>

of tractor operations and avoids GHG emissions.

Business and industry is contributing to both climate change adaptation and mitigation measures through appropriate technology development and the promotion of resource efficient land management. The challenge for us is to fully understand the key impacts of climate change and with that to anticipate future needs of farmers.

- BIOFUELS

Biofuels can contribute to a shift towards a low-carbon economy. However their production raises concerns relating to the competition of food versus biofuel crops in terms of food supply, prices, and water resources. Land conversion to biofuel production in some areas can induce complementary changes elsewhere, which need to be addressed. Where GHG reduction is a key driver, the contributions of direct and indirect land-use change can make or break the justification for introducing biofuels. Furthermore the sustainability of water use for biofuel production must also be fully understood: the UN¹⁸ have estimated that production of 1 litre of biofuel takes on average 2,500 liters of water, over 800 liters of which is in the form of irrigation.

Intensive R&D into second generation biofuels is needed to select an appropriate technology pathway¹⁹. Second generation biofuels can overcome many (though not all) of these sustainability problems while substantially improving carbon balance.

Business and industry regards biofuel production as an integral part of the evolution towards sustainable agriculture. We are aware that a full life-cycle approach needs to pursue sustainability of the right bioenergy options in the right place. Governments' policy framework and initiatives to promote biofuels should be cognizant of current and future technological potentials and take into account their implications – both intended and unintended – in other areas.

5. USING WATER EFFICIENTLY

If current trends continue, water shortages in agriculture are predicted to be the single most significant constraint facing crop production over the next 50 years. Around 70% of global average fresh water withdrawal is currently used for agriculture.

- KEY SOLUTIONS

While the efficiency of irrigation water merits the highest attention for action in agriculture, water collecting technologies in rain-fed agriculture, creating rainwater reservoirs as well as improved land management systems, such as conservation agriculture (reduced tillage), can help to maximize the "crop per drop". Equally subsidizing agriculture that uses water inefficiently or unsustainably should be avoided as they restrict the allocation of water to other uses.

On the global level, efficient water use efficiency can be improved through the reduction of trade barriers and the promotion of market access for regions with rain-fed agriculture (e.g., in Sub-Saharan Africa and Latin America). The recently trend towards bilateral state-supported foreign direct investment in the agriculture of water-rich countries, however, will increase the risk of massive turmoil in global food markets due to water shortages.

Business and industry provides water-use-efficient technologies and practices. But they are

¹⁸ Pages 110 – 111 of the 3rd UN World Water Development Report:

http://webworld.unesco.org/water/wwap/wwdr/wwdr3/pdf/WWDR3_Water_in_a_Changing_World.pdf

¹⁹ From 1st to 2nd generation biofuel technologies:- an overview of current industry and RD&D technologies: International Energy Agency: November 2008

only part of the solution. As water use efficiency in crop production varies by regions, governments need to take adapted actions and provide mechanisms, including incentives for farmers, to access appropriate management strategies.

6. CONSERVING BIODIVERSITY

Knowledge of interrelationships of agriculture and its natural production base is a prerequisite to work with nature. Since the 1980s approaches in agricultural land management have become much more integrated as knowledge increased; they also integrate conservation of soil fertility, biodiversity and water quality.

- AVOIDING LAND CONVERSION THROUGH PRODUCTIVITY INCREASE

Increasing agricultural productivity on land already cropped is by nature avoiding land expansion. For instance European average wheat yield was ~2.1 tonnes per hectare in the early 1960's (on 28.5 million hectares) and reached 4.5 tonnes per hectare (on 25 million hectares) in 2003²⁰. This more than doubled yield and saved 32 million hectares of land. At a global level by one estimate, increased productivity saved a landmass the size of North America from conversion to agricultural land since the 1960's. The benefits for biodiversity through avoiding encroachment into pristine land are obvious.

- INVASIVE ALIEN SPECIES (IAS)

IAS are the major economic threat to biodiversity conservation²¹ and their spread raises with climate change, while impeding agricultural productivity in many areas. Pesticides provide solutions to avoid their spread. Sophisticated ballast water management systems have also been developed to avoid invasion of IAS transported by sea and to protect native fishing grounds.

Business and industry contributes to biodiversity conservation by providing solutions to manage IAS and by promoting sustainable land management approaches, which have been increasingly adopted since the 1980s. Governments should provide policy frameworks and incentives for farmers to implement adapted and site-specific approaches to biodiversity conservation within agricultural production.

7. SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS (SCP)

SCP focuses on making the market work for sustainable development. It strives to de-link economic development from environmental impact and social disruptions through optimized resource use and eco-efficiencies across the life cycle of production, processing, distribution and consumption.

- EFFICIENCY OF PRODUCTION WITHIN THE LIFE-CYCLE

Food and non-food chains are increasingly global and comprise many different stages and players (farmers, processors, suppliers, retailers, transporters, consumers and waste managers). Information exchange for the benefit of sustainability aspects at different levels has increased among all players. Reasons for this are twofold: they lie in (1) enhancing efficiency of production, processing and distribution and in (2) guaranteeing safety and quality for consumers through traceability over the

²⁰ FAO production yearbooks 1963 and 2004

²¹ World Summit on Sustainable Development, Johannesburg Plan of Action, 2002
http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm

whole chain. Farmers for instance record information on land management aspects such as crop variety choice, use of inputs, irrigation as well as date of sowing and harvesting²².

- HARNESSING COMPETITIVE ADVANTAGES OF PRODUCTION

Trade in agricultural produce is continuing to generate rural development and has become much more global. Opportunities are equally arising for developed and developing countries and for small and large-scale farmers alike. Competitive advantages of geographies, labour or knowledge availability creates markets: Fresh fruit and vegetable retailers in Kenya, Chile or Columbia gained improved market opportunities in the past decades. The Netherlands is the biggest high quality seeds exporter in the world in terms of value²³, and specialization of this agro-science business is key to the nation's and importing countries economy.

- CERTIFICATION SCHEMES NEED TO ADDRESS SUSTAINABILITY

Voluntary certification schemes such as GLOBALGAP²⁴, respects individual (developing and developed) countries conditions. This scheme builds on the integration of the three dimensions of sustainability in the value chain: social equity, environmental health and income stability. It also represents an efficient opportunity for crop health and quality management and for implementation of Good Agricultural Practices.

A variety of certification schemes exist worldwide. Their focus varies and may not always balance the three dimensions of sustainability. Some only focus on environmental aspects, worker health and safety, biodiversity conservation, carbon emission reduction, reduction of external inputs, animal welfare or livelihood improvement. These schemes cover about 5% of the total production and serve niche markets, which often generate a premium price. To address the current challenges in agriculture, the focus of government policies should however, concentrate on introducing sustainable farm management in mainstream agriculture.

- NEED FOR ENABLING POLICIES

Government interventions and policies should enhance the market's ability to embrace sustainable agricultural production. They should not unduly restrain or impose consumer choice through government preferred purchasing forces, rigidities or unreasonable incentives. Enabling policies should offer incentives for farmers, be inclusive, allow for market flexibility, consumers' choice and foster innovation, not try to mandate it.

Business and industry is convinced that integrating the value chains is one of the most effective strategies in implementing sustainability in the whole agricultural life-cycle. In cooperation between stakeholders throughout the supply-chain we are contributing our assets, including for the benefits of small and large scale farmers alike.

²² Agricultural Economics Research Institute (LEI), The Hague: Dynamics in Crop protection, agriculture and the food chain in Europe, Jan 2008

²³ International Seed Federation, ISF annual collection of data from official customs data, 2007

²⁴ www.globalgap.org

The International Chamber of Commerce (ICC)

ICC is the world business organization, a representative body that speaks with authority on behalf of enterprises from all sectors in every part of the world.

The fundamental mission of ICC is to promote trade and investment across frontiers and help business corporations meet the challenges and opportunities of globalization. Its conviction that trade is a powerful force for peace and prosperity dates from the organization's origins early in the last century. The small group of far-sighted business leaders who founded ICC called themselves "the merchants of peace".

ICC has three main activities: rules-setting, dispute resolution and policy. Because its member companies and associations are themselves engaged in international business, ICC has unrivalled authority in making rules that govern the conduct of business across borders. Although these rules are voluntary, they are observed in countless thousands of transactions every day and have become part of the fabric of international trade.

ICC also provides essential services, foremost among them the ICC International Court of Arbitration, the world's leading arbitral institution. Another service is the World Chambers Federation, ICC's worldwide network of chambers of commerce, fostering interaction and exchange of chamber best practice.

Business leaders and experts drawn from the ICC membership establish the business stance on broad issues of trade and investment policy as well as on vital technical and sectoral subjects. These include financial services, information technologies, telecommunications, marketing ethics, the environment, transportation, competition law and intellectual property, among others.

ICC enjoys a close working relationship with the United Nations and other intergovernmental organizations, including the World Trade Organization and the G8.

ICC was founded in 1919. Today it groups hundreds of thousands of member companies and associations from over 130 countries. National committees work with their members to address the concerns of business in their countries and convey to their governments the business views formulated by ICC.



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Policy and Business Practices

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