TECHNICAL PAPER

CLIMATE CHANGE AND THE COFFEE INDUSTRY

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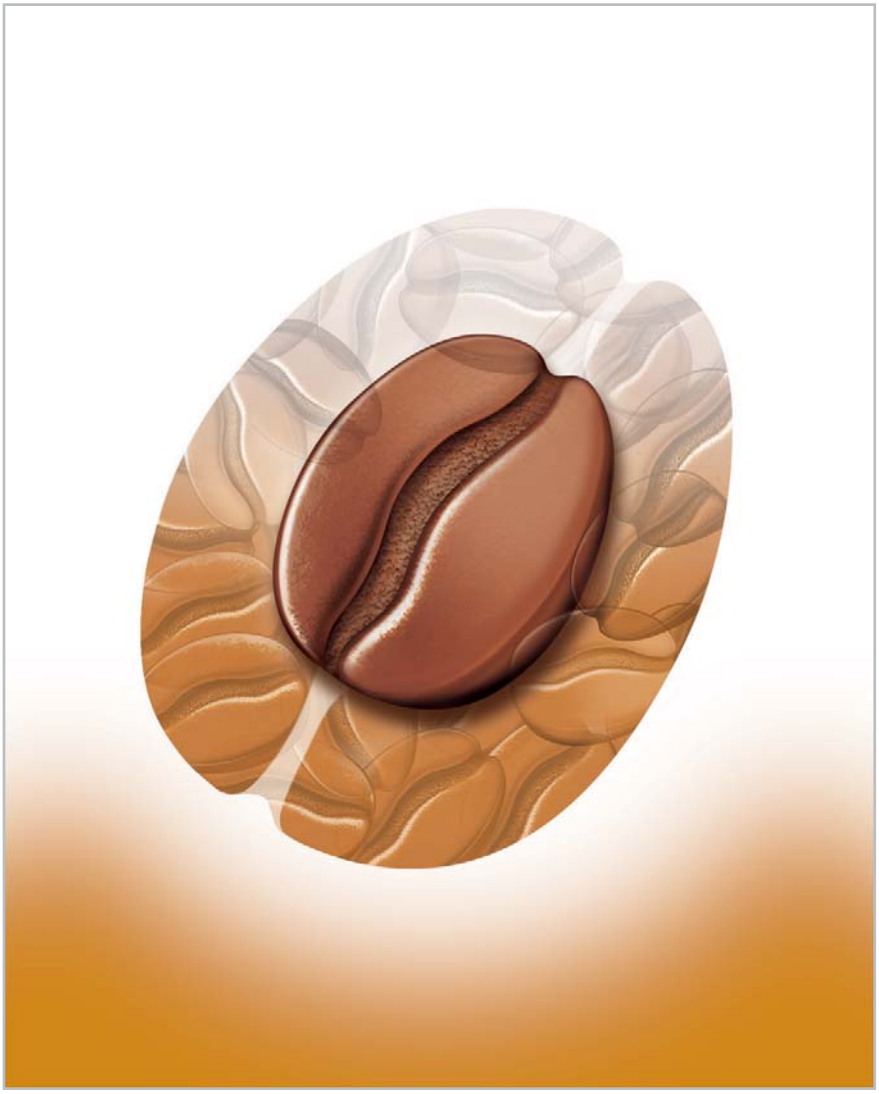

International Trade Centre

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CLIMATE CHANGE AND THE COFFEE INDUSTRY

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Climate Change and the Coffee Industry

Abstract for trade information services

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Climate Change and the Coffee Industry
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Paper focusing on the effect of climate change on global coffee production, with particular reference to small coffee producers in developing and least developed countries - highlights the possible effects of climate change on quality, yield, pests and diseases, and irrigation; considers potential areas of intervention, and looks at short-term solutions and long-term strategies to make coffee producers better prepared; discusses the issue of carbon credits, and provides examples of individual initiatives to reduce product carbon footprint; lists ongoing initiatives and information sources that may assist coffee growers.

Descriptors: **Coffee, Production, Climate Change, Environment.**

English

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Contents

This document is based on Chapter 13 of www.thecoffeeguide.org by February 2010.
There is a brief description of the website at the end of the document.

Climate Change and the Coffee Industry

Executive summary

Climate change will affect coffee producers, particularly smallholders who are least equipped to cope with it. Areas of intervention include (i) changing agricultural practices, (ii) creating social organization, and (iii) participating in new market strategies.

Strategic support areas include (i) improving access to information, (ii) establishing financial mechanisms and (iii) investing in social capital.

With respect to carbon market opportunities, gaining access to carbon credits has to be preceded by establishing greenhouse gas emission baselines and monitoring carbon sequestration rates. Methodologies for Monitoring, Reporting and Verification of emissions from land use projects are being developed.

The voluntary carbon market system appears to be the preferred option for credits from coffee production as land-use or agricultural mitigation projects are very limited in their eligibility for the mandatory markets like the Clean Development Mechanism (CDM). Furthermore, the application process is too costly and complex for small and medium enterprises.

Climate change and coffee

Whilst climate change is just one of numerous factors that may affect global coffee production, the International Coffee Organization considers it will likely be one of the most important ones with smallholders (who produce the majority of the world's coffee) the most vulnerable group. Moreover, it is important to note that current initiatives to reduce the extent of global warming are mostly aimed at limiting further warming, not to rapidly reverse it!

Complexity and uncertainty make it hard to be precise but it is generally accepted that climate change will affect both arabica and robusta producers. Rising temperatures are expected to render certain producing areas less suitable or even completely unsuitable for coffee growing, meaning production may have to shift and alternative crops will have to be identified. Incidences of pests and diseases will increase whereas coffee quality is likely to suffer, both factors that may limit the viability of current high quality producers. More coffee may need to be grown under irrigation, thereby increasing pressure on scarce water resources. All the foregoing will increase the cost of production whereas in the future fewer parts of the world may be suitable for coffee production. If so then the already evident growth in concentration could become even more pronounced, bringing with it an increased risk of high volatility. For example if an extreme event should severely curtail the output of one of the major producers.

Coffee production contributes to the emission of Greenhouse Gases (GHG) (as do other links in the chain). The industry therefore must not only focus on *adaptation* (help producers cope with climate change) but also on *mitigation* (reduce its own contribution to GHG emissions). It is important to differentiate between these two aspects, even though they are closely intertwined. Finally, the industry also needs to gear up to exploit the benefits that will spring from generating marketable carbon offset credits.

Short-term adaptation strategies include better farming practices and more efficient on-farm processing. Most progressive farmers apply these as a matter of course but smallholders do not always have the necessary resources and/or knowledge to do so. *Longer-term strategies* include capacity building, mapping of climate data, improving soil fertility, examining different production models, developing/planting drought and disease resistant varieties. And for some, in the extreme, diversify out of coffee and/or shift production to more suitable areas.

Short-term mitigation strategies include calculating and reducing the on-farm carbon footprint, and determining the feasibility of creating carbon sinks. *Longer-term strategy* would be to link producers, especially smallholders, with the carbon markets to exploit carbon footprint opportunities.[1]

Priorities

Smallholders produce the bulk of the world's coffee and the industry cannot afford steeply falling output in this sector. Yet, the ability of smallholders to cope with climate change is limited. Not all views on how to go forward concur but three priority areas are indicated:

Adaptation

1. Short-term technical solutions for adapting coffee production and processing to current climate variability, aimed at producers.

2. Long-term strategies to improve framework conditions for adaptation to future climate risks, and to build the necessary capacities including financing mechanisms.

Mitigation

3. Measures to reduce GHG and so contribute to climate protection and carbon credit generation, aimed at all participants in the value chain.

This is confirmed by a survey in the Mesoamerican region that ranked five potential areas of intervention as follows:

- **More important:** (i) changes in agricultural practices and (ii) social organization.
- **Important:** (iii) participation in new marketing strategies.
- **Less important:** (iv) new economic activities and (v) new cash crops.

Strategic recommendations include, in addition to recognizing the value of human capital, i.e. the collective farming knowledge that already exists in the smallholder sector:

- **Improving access to information,** including market information, farming technology etc., and developing the ability to interpret such information.
- **Establishing financial mechanisms,** including climate insurance, access to micro-credit to facilitate adaptation, i.e. organic, substitute crops, new varieties, shading etc.
- **Investing in social capital,** i.e. building structures that enable smallholders to access the resources necessary to adapt to climate change, access new markets and exploit the social and environmental value of their farming activities.

Although considerable preparatory progress has been made in the development of both methodologies and tools it is obvious that the industry as a whole is still in the preliminary stages of trying to transform strategy into widespread action.

[1] *Carbon sinks* are natural or man-made systems that absorb carbon dioxide from the atmosphere and store them. Trees, plants and the oceans all absorb CO_2 and, therefore, are carbon sinks. *Carbon footprint* opportunities arise from the wish by industry in developed countries to reduce or offset their carbon footprint, i.e. the total amount of GHG emissions caused directly or indirectly by an organization or a product.

Carbon credits

Agricultural carbon credits, i.e. credits generated through agricultural practices like coffee production, are not eligible under the mandatory carbon market, including the Clean Development Mechanism (CDM). Therefore, marketable carbon credits do not yet feature in coffee production and to date only one CDM project (the Coopeagri Forestry Project in Costa Rica) lists coffee growers amongst its indirect beneficiaries.[2]

There is more scope for land use based projects under the smaller voluntary carbon offset market – this is discussed in section13.04. Given the complexities surrounding CDM the general consensus amongst researchers appears to be that the voluntary carbon markets system presents the better option for coffee growers. But again, by end 2009 there were no obvious signs yet of any full-scale application in the coffee sector.

Meanwhile the retail end of the industry is increasingly looking across the supply chain to reduce the carbon footprint of products, including coffee. Measuring coffee's Product Carbon Footprint or PCF is costly and complex. Furthermore, generally there is a lack of consistency in calculating and reporting PCFs. Nevertheless, for coffee an encouraging start has been made through a study sponsored by the major German roaster Tchibo, covering coffee produced in Tanzania and consumed in Germany – see topic box 13.04.03.

Developing carbon projects is both complicated and time consuming whereas credible carbon monitoring methodologies for coffee farms have only recently come to the fore. But, a number of tools are now available and different initiatives are conducting or planning pilot projects that should facilitate extending carbon projects to the majority of coffee producing countries.

Provided the necessary capacity building and legislative support in those countries is forthcoming it may be assumed that progress will accelerate from 2010 onwards.

[2] Visit http://cdm.unfccc.int/Projects/index.html for information on all categories of CDM projects.

1. Climate change and the coffee industry

Acknowledgement

The text in Sections 1.1 to 1.7 is largely based on the report ***Climate change and coffee*** published by the International Coffee Organization – ICO (www.ico.org) in September 2009.

The full report, including a list of selected organizations that are funding mitigation and adaptation to climate change initiatives, is available on the ICO website. Search 'climate change' or go to: http://www.ico.org/show_document.asp?id=3308

The ICO's permission to make use of this report is gratefully acknowledged.

1.1 Overview and background[3]

New scientific evidence suggests that climate change is accelerating at a much faster pace than previously thought and that important tipping points, leading to irreversible changes in major Earth systems and ecosystems, may already have been reached or even overtaken.[4]

Human beings depend for their livelihood on agriculture more than on any other economic activity. This is particularly true for small farmers in developing countries whose economic well-being and food security hinges primarily on farming. Because of this and its high dependence on climate, agriculture has received a great deal of attention promoting studies and debates over how developing countries might adapt to the impact of climate change. The subject is exceedingly complex, not only from the agricultural perspective but also because of its implications for the global agricultural and trade policies that impact agricultural production and food security.

While climate change is just one of numerous factors that may affect global coffee production, it is nonetheless likely to be one of the most important ones. It is true that a great degree of uncertainty still exists with regard to how individual producing regions will be affected, and how climate change will affect overall coffee production. However, experts expect some changes to occur, and these could be significant in some regions. To complicate matters further, the potential impact will not only vary between countries but also within producing areas in individual countries, for example due to different altitudes.

Global initiatives to reduce the emission of *Greenhouse Gases (GHG)* are expected