



联合国
粮食及
农业组织

Food and Agriculture
Organization of the
United Nations

Organisation des Nations
Unies pour l'alimentation
et l'agriculture

Продовольственная и
сельскохозяйственная организация
Объединенных Наций

Organización de las
Naciones Unidas para la
Alimentación y la Agricultura

منظمة
الغذية والزراعة
للأمم المتحدة

E

COMMITTEE ON COMMODITY PROBLEMS

INTERGOVERNMENTAL GROUP ON TEA

Twenty-second Session

Naivasha, Kenya, 25-27 May 2016

POSSIBLE STRATEGIES TO ADDRESS SOCIO-ECONOMIC ADAPTATION POLICIES

I. INTRODUCTION

1. At its last session in Bandung, Indonesia, in November 2014, the Intergovernmental Group on Tea (IGG/Tea) recognized that the current agricultural practices employed in tea cultivation, particularly intensive mono cropping, inefficient water and energy use, as well as intensive use of fertilizers and chemical pesticides, have contributed to greenhouse gas (GHG) emissions and climate change. The IGG/Tea tasked the Working Group on Climate Change (WGCC) to review the methodology used in assessing the impact of climate change and to identify and suggest strategies to develop appropriate long term responses for mitigation and/or adaptation. The WGCC will be presenting its report on strategies to adapt to climate change as documented in its booklet that has been published entitled *Climate change adaptation in tea: technologies and practices*¹. To complement this initiative, the Secretariat has produced document CCP:TE 16/3 which proposes enabling socio-economic adaptation policies for consideration by delegates.

2. Achieving and maintaining inclusive economic growth is the foundation for sustainable development. Countries that are heavily reliant on the agriculture sector for their socio-economic development have become vulnerable to the effects of climate change in recent decades as a consequence of GHG emissions. In response to this phenomenon, development strategies are changing as governments adapt to the new reality and formulate policies and strategies that are aimed at achieving sustainability balanced across the economic, social and environmental dimensions rather than maximising economic returns at all cost.

3. The new international framework on climate change that countries will now be expected to operate under, particularly to strengthen global response to sustainable development and poverty eradication, is captured in Article 2 of the Paris Agreement², which, *inter alia*, includes:

¹ The booklet will be uploaded on the IGG/Tea website once endorsed by Group after the 22nd Session (<http://www.fao.org/economic/est/est-commodities/tea/tea-meetings/tea22/en/>).

² On 12 December 2015, the 195 countries participating in the 21st Conference of Parties (COP21) agreed by consensus to the so-called Paris Agreement which aimed at reducing GHG emissions.

- a) “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
- c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

[...] This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances....”

4. The predecessor to the Paris Agreement, the Kyoto Protocol, was relatively inflexible. While the signatories had the intention to address compliance costs, some of the commitments of the Kyoto Protocol were very challenging to adhere to, resulting in significant increases in GHG emissions, rather than a decrease of 5 percent that was the expected target of the Protocol.

5. The Paris Agreement will enter into force after 55 countries that produce approximately 55 percent of the total GHG emissions have ratified it (UNFCCC). The target set for emission reduction by ratifying countries will be voluntary; hence no procedures will be put in place obliging a country to establish a fixed target by a specific date, and no sanctions will be applied to countries not meeting their targets. Nevertheless, while enforcements measures are not foreseen, if a country does not meet its target, there is a plan to “name and encourage” (Pásztor, UN Assistant Secretary-General on Climate Change).

6. Decisions on the adaptation measures to be implemented are effective when taken within the context of a wider society and political community (Burton and Lim, 2005). While all societies need to boost their adaptation measures, climate-related issues and alleviations are often unique to specific areas, and they should thus be addressed at the local level. Local farming knowledge can help pinpoint the appropriate adaption policies required. However, there are also commonalities across regions and policymakers should encourage regional brainstorming dialogues and knowledge sharing. Moreover, much can also be done at the national and international level, such as³:

- Disseminating adaptation measures and lessons learned;
- Incorporating adaptation measures in development planning; and
- Providing financial support for implementing adaptation measures.

II. CLIMATE CHANGE AND TEA

A. ADAPTATION

7. Adaptation measures are increasingly being applied with the objective of addressing climate change. In order to maintain their livelihood, tea smallholders are adapting to these changing climate measures. However, adaptation cannot be imposed across the board, because many tea growers do not understand the implications of climate change or lack the know-how to adopt good agricultural (tea-growing) practices, while others simply do not have the resources. Nevertheless, adaptation measures recommended by the WGCC include, *inter alia*:

³ Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and Rosegrant, M.W.; Ewing, M.; Yohe, G; Burton, I.; Huq, S.; Valmonte-Santos, R. (2008). *Climate Change and Agriculture – Threats and Opportunities*. 2013, pp. 25-27.

- Replanting drought- and stress-resistant tea varieties;
- Planting shade trees to protect the tea bushes;
- Diversifying crop production in low-yielding, poor-soil tea areas with crops that do not require rich soil conditions for optimal growth;
- Improvements in efficient water management; and
- Investing in climate-resilient infrastructure, including, *inter alia*, drainage and irrigations systems and adapt national public infrastructure to climate change.

III. POLICY

A. MITIGATION, ADAPTATION AND RESIDUAL IMPACTS

8. Recalling the IPCC definition of mitigation (measures put in place to reduce human emissions of GHG at its source) and adaptation (measures introduced to reduce the vulnerability of social and biological systems to climate change effects), residual impacts refer to the effects of “climate change that would occur after adaptation” (IPCC Fourth Assessment Report). While it is generally agreed that climate change policies should support sustainable development, there are trade-offs involved in mitigation, adaptation and residual impacts. A major issue facing “policy [decision] is [the] combination of short-term and long-term actions [that]...minimize the total costs of climate change...across mitigation, adaptation and residual climate impacts that society is either prepared or forced to tolerate...” (*ibid*).

9. Climate should be a factor in the design stage of new development plans. The IPCC indicated that “...indigenous peoples’ holistic view of community and environment are a major resource for adapting to climate change...” Therefore, policymakers should bear in mind that integrating traditional knowledge and practices with new climate-smart technologies could be an important adaptation measure in designing infrastructure and developing new techniques. Furthermore, at the design stage of a new development, planners and designers should consider climate forecasts and projections.

10. Therefore, tea producing countries need to formulate appropriate policy responses for their tea sub-sectors in keeping with overall national climate change policies for mitigation and adaptation. To this end, taking Kenya as an example, projections indicate that the areas currently suitable for tea production will drop significantly by 2050 as climate change would hamper optimal tea growth in some of the tea-growing regions⁴. Consequently, in order to obtain the maximum growth rate of tea cultivation in Kenya, new land would have to be cleared in higher altitudes. In its struggle against climate change, the tea industry is taking measures to decrease its carbon footprint and is investing in efficient energy use at the tea factories (mitigation); drought- and stress-tolerant tea bushes are being planted (adaptation), but to be able to continue producing high quality tea, new land in higher altitudes would have to be cleared (residual impact). In other words, while Kenya is applying mitigation and adaptation measures, new land in higher altitudes would nevertheless be required for optimum tea growth and that is the trade-off (residual impact) that society would need to address.

B. STRENGTHENING RESEARCH AND DEVELOPMENT

11. Adaptation policies supporting ongoing tea research efforts and extension services need to be strengthened as climate change is an on-going, iterative process. In order to support the livelihoods of smallholder tea growers and in formulating suitable adaptation measures, scientific research and development on climate change should continue to be high on the agenda of tea-producing countries.

⁴ CIAT. 2011. *Future Climate Scenarios for Kenya’s Tea Growing Areas. A report*. International Center for Tropical Agriculture.

12. In response to reduced tea productivity caused by increases in climate-induced phenomena (such as a rise in temperatures, prolonged drought and frequent heavy and torrential rains) and higher incidences of pests and diseases, research and development policies should aim to, *inter alia*:

- Develop improved stress- and drought-tolerant tea varieties;
- Improve integrated soil nutrient management and ecological pest management; and
- Strengthen integrated water and land use planning.

C. WATER MANAGEMENT

13. Tea production requires large quantities of water. Therefore, measures to strengthen watershed management are critical in implementing overall national climate change adaptation policies. These could include:

- Investments in rural infrastructure to improve drainage and irrigation;
- Increasing water storage capacity;
- Improved washing techniques;
- Better recycling and more effective water management methods;
- Promotion of efficient water use; and
- Pricing reforms to support efficient water use.

D. CROP DIVERSIFICATION

14. When smallholders are dependent on only one crop, their livelihoods are more vulnerable and susceptible to the negative impacts of climate change. Therefore, adaptation measures that could strengthen the resilience of tea smallholders include :

- Crop diversification to improve economic returns and lessen the risks entailed if tea crops fail, as smallholders are no longer dependent on just one crop for their livelihood; and
- Intercropping with tree crops, such as rubber. The added value of the rubber tree is that it provides shade that is vital for tea bushes during rising temperatures, and also reduces water loss. In addition, rubber trees could be tapped for their latex to be sold to rubber traders and in the process contribute to the overall income of the smallholder household.

15. Crop diversification schemes could be developed by governments as a strategy to promote food and nutrition security of the smallholder tea growers.

16. Because tea growers have planted their land exclusively to tea, some farmers are facing food insecurity as their productivity is declining as a result of climate change, the effects of which are putting stress on tea plants and affecting tea quality. Hence, some tea smallholders are being further challenged with low returns from their produce, which are jeopardizing their food security. Poor smallholder tea growers could enhance their food security and improve their own nutrition by farming crops that can thrive in harsher climates, such as certain varieties of pulses. This could also provide higher economic benefits that could help them address the negative impacts of climate change. Strategies could be developed to provide technical, financial and institutional support to tea smallholders, including capacity training in adaptation measures, such as utilizing improved agricultural techniques, diversification and livestock ownership.

17. Other policy considerations to counter the effects of mono-cropping are sustainable land-use policies that limit soil degradation. Mono-cropping often leads to soil degradation and increased vulnerability to pests. Fertilizer is applied to remedy the loss of soil nutrients which can be highly polluting as runoff accumulates in rivers, lakes and aquifers. Excessive use of fertilizer also causes soil microbes to produce high levels of the GHG nitrous oxide. Pesticides, which are highly contaminating, are applied to kill certain pests, but they also affect other unintended species as well, affecting the

ecological balance. Excessive fertilizer and pesticide use must be addressed at the source, and developing tougher regulatory schemes could be a way to tackle this issue. Fertilizer and pesticide policies could aim at creating awareness of the issues at hand; promote improved products and technologies to enhance efficient fertilizer and pesticide use; and support agricultural research and development on improved fertilizer and pesticide use.

E. CARBON FOOTPRINTING

18. The carbon footprint of a product, whereby companies quantify the total amount of GHGs that are emitted from the production of their produce, is becoming more in demand by consumers. With carbon footprinting, a large number of standards and initiatives are also on the rise and meeting those standards can prove quite costly for smallholders.

19. Policy measures which could be adopted to meet these carbon footprint standards include providing incentives for tea growers to move away from producing conventional tea, shifting more towards organic tea production. However, a major discouraging factor in moving to organic tea production is the decline in productivity. Unless there is a price premium that could compensate for the loss in productivity then in many countries this becomes a constraint in converting to organic tea production. Hence, policy support is needed in developing and promoting organic tea production to boost export markets, protect the environment, develop the local market and improve smallholders' livelihoods. Policies could include devising a market mechanism, such as compulsory product labelling, to guarantee premium prices for organic tea. Other policies could focus on setting carbon budgets and investing in low carbon technologies.

F. ACCESS TO CREDIT

20. A major constraint to efficient tea production and to adopting adaptation measures by smallholders is their limited access to credit at an affordable servicing rate. Their situation is often exacerbated because they do not own assets that could be used for collateral. This in turn makes it difficult for them to purchase quality inputs to improve productivity in sustainable manner.

21. Therefore, government policies are required to improve access to credit by tea smallholders. As a first step, policy instruments could be quickly deployed to encourage/enable the establishment and efficient functioning of *micro credit* schemes. In the mid to longer term, enabling policies (including guarantees) to provide credit through mainstream lending institutions would be essential. These developments should go hand in hand with the essential institutional set up required, including the legal instruments required for smallholder land ownership which could be used as collateral, as well as legal producer entities such as cooperatives to facilitate micro credit schemes and reduce unit cost of agricultural inputs.

IV. CONCLUSIONS

22. Climate change brings with it many challenges, and because of its importance to sustainable of human development and poverty eradication, 195 countries have adopted and 177 countries have signed the Paris Agreement to show their commitment and solidarity to tackle these challenges.

Adaptation measures that the tea industry currently undertakes include, *inter alia*:

- Replanting drought- and stress-resistant tea varieties;
- Planting shade trees to protect the tea bushes;
- Diversifying crop production in low-yielding, poor-soil tea areas with crops that do not require rich soil conditions for optimal growth;
- Improvements in efficient water management; and

- Investing in climate-resilient infrastructure, including, *inter alia*, drainage and irrigations systems and adapt national public infrastructure to climate change.

23. While climate-related issues and solutions are unique to specific areas, commonalities throughout various regions also exist. Policymakers should encourage knowledge sharing, and the following can be done at the national and international levels:

- Disseminating adaptation measures and lessons learned;
- Incorporating adaptation measures in development planning; and
- Providing financial support for implementing adaptation measures.

24. When designing and adopting policies on diversification, countries should take into consideration that conversion to organic tea by smallholders might be too drastic a step as productivity could decline significantly, negatively impacting their returns. Perhaps green farming could be an intermediate step, as this form of agriculture could be adopted by using, for example, “green” fertilizers, such as manure.

25. In adopting research and development plans on improved stress- and drought-tolerant tea varieties and good agricultural practices (GAPs), countries should ensure that the improvements do not come at the expense of productivity.

26. In developing policies on water management, it is imperative that countries recognize the need to sustain national watersheds. As for developing irrigation facilities, countries should recall the need to develop appropriate drainage systems to enhance the efficiency of the irrigation system.

27. Given the demand for information on carbon footprinting by consumers, appropriate standards and labelling should be adopted, consistent with international standards and labelling schemes and accompanied by effective promotional campaigns.

28. Finally, for adaptation measures to be effectively implemented by smallholders, ensuring adequate access to credit is essential. Enabling policies should be a priority for governments.