*Global Research Alliance on Agricultural Greenhouse Gases, Izmir, Turkey, 18-19 November 2015*

**Food security and climate change - Summary**

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Recently FAO presented the latest edition of the annual report “The State of Food Insecurity in the World 2015”. It was reported that the number of hungry people has dropped to 12.9%. But there are a number of developments that make it a big challenge to reduce these numbers further

First, the world population is still increasing. And people are eating more and differently, in particular the amount of animal products is increasing strongly. The progress towards reducing the number of hungry people and the increased food availability to a large part of the population has also increased the pressure on natural resources. The amount of arable land in use per person has been gradually decreasing while at the same time agriculture was able to produce more and more, how was this possible? The answer is the dramatic and steady increase in yields that has been achieved. But it is also clear that there are limits, the annual growth rates of, for instance, world cereal production and yields are decreasing. And at the same time, many of the agricultural practices put more and more pressure on the natural resources and ecosystem services. These services include not only the provision of food and fodder, but also water control, maintaining healthy and fertile soils, providing natural pest control, erosion prevention, genetic diversity, and recreation and tourism. And this leads me to the first key issue we need to address: the need to increase, in a sustainable manner, the productivity and income growth in agriculture.

In addition to this, we introduce another variable: climate change. The various scenarios as developed by the Intergovernmental Panel on Climate Change (IPPC) predict changes in the nature and the geographic distribution of environmental conditions including, amongst others, air temperature, rainfall amounts and distribution, extreme weather events (droughts, storms), river flows, sea levels, ocean temperature and acidity, etc. These changes affect the growing conditions of crops, livestock, fish, trees as well as ecosystem services, and thereby the livelihood of people, often the poorest. The developing countries, mainly in the tropics, are likely to face the brunt of the negative impacts of climate change and need to be supported to adapt to these changes. This leads me to the second issue we need to address: support adaptation across the agricultural sectors to expected climatic changes and build resilience.

Agriculture is not only affected by climate change, it is also contributing to the emission of greenhouse gases. As far as global emissions are concerned, agriculture, excluding deforestation, produces about 11%. Livestock, including enteric fermentation and manure, is the biggest emitter; covering about 2/3 of total agricultural emissions. This is followed by the emissions from synthetic fertilizers (13%) and from paddy rice (10%). There are however ample opportunities to reduce these emissions while actually increasing productivity, in particular in the livestock sector and that leads me to the third issue: reduce, where possible, the greenhouse gas emission intensity of production systems

The three issues highlighted here form the core, the pillars, of what FAO has defined as “Climate-Smart Agriculture”, an approach to help guide actions to transform and re-orient agricultural systems to effectively and sustainably support food security under the new realities of climate change. The realization of this requires the integration of both food security and climate change considerations in strategies, policies and practices. FAO supports its member countries in this in a number of areas: (1) Including the agricultural sectors and the CSA approach in mid to long-term development planning processes and investments; (2) Creating the required policy, financial and enabling environment to provide the knowledge, support and access to required resources and services; based on a proper evidence base; (3) Technical support and capacity development of key institutions and organizations to provide the essential support for the sustained implementation and uptake of locally appropriate CSA systems; (4) Identification and assessment of technological, management and policy options for climate change adaptation and mitigation: Tools, Methods, Data, etc.; and (5) Preparation of, and readiness for, UNFCCC related planning, implementation, reporting and financing mechanisms: NAPs, REDD+, BURs, INDCs, NAMAs.

In particular in the fourth area Research and Extension have a key role to play. Transforming agriculture and addressing climate change cannot succeed without the proper tools, inputs and knowledge. This incudes the development of crop varieties that are more drought, salt, or temperature resistant and the identification of suitable land management and agricultural production systems that can result in increased productivity, increased incomes, and increased resilience of agricultural producers.