Brussels, 9 August 2019

EXECUTIVE SUMMARY

IPCC report Climate Change and Land

The report itself is a huge volume counting 1200 pages. A summary for policy makers (SPM) was also released, structured in four parts: a state of play, from the best scientific knowledge (part A), followed by the possible response options in terms of adaptation and mitigation (part B) and how to enable them (part C). The 41-pages SPM concludes with recommended actions in the short term (part D).

This note provides some highlights from the SPM:

From the first part (part A, the factual chapter), one will find well-known elements or confirmation of facts, like:

- human use directly affects more than 70% of land of which about a quarter is subject to human-induced degradation;

- agriculture uses some 30 % of fresh water and 25-30% of total food produced is lost or wasted;

- expansion of areas under agriculture and forestry together with enhanced productivity have supported consumption and food availability for a growing population but have also contributed to increasing net GHG emissions, loss of natural ecosystems and declining biodiversity;

- agriculture, forestry and other land use account for 23 % of anthropogenic GHG emissions (period 2007-2016). This figure raises to a range 21-37 % if the whole food system is considered;

- food security is already affected by the increased frequency of extreme events like heat waves, droughts, dust storms, flooding etc.

Several cause for alarm are put forward, among others:

- Land surface temperature is higher than the average temperature used to measure global warming. Effects of climate change are stronger on land and the 1.5 ° is in practice already reached on land.

- Soil erosion outpaces soil formation by 10 to 100 times, with climate change exacerbating land degradation.

- Migration pressure increases due to desertification. Desertification affects millions of people mainly in South & East Asia, in the Sahara region (incl. North Africa, *particularly important for Europe*) and the Middle East. Furthermore, the frequency and intensity of droughts are projected to increase particularly in the Mediterranean region and southern Africa, while the frequency and intensity of extreme rainfall events are projected to increase in many regions.

- The role of land as carbon sink is uncertain. Land is simultaneously a source and a sink of CO2 due to both anthropogenic and natural drivers, making it hard to separate anthropogenic from natural fluxes. The complex balance between removals and emissions of CO2 by vegetation and soils, under strong influence of climate change, is a key source of uncertainty for determining the future of the land carbon sink.

- Methane emissions are increasing due to rice cultivation and ruminants as well as nitrous dioxide due to inefficient nitrogen application on cropland.

The report explores the implications of future socio-economic development on climate change mitigation, adaptation and land-use using 5 shared socio-economic pathways with varied hypothesis of world population, production and consumption patterns, world trade etc. All pathways result in increased demand for food, feed, and water in 2050.

Turning to part B (response options) provides a more optimistic picture:

Many land-related responses that contribute to climate change adaptation and mitigation can also combat desertification and land degradation and enhance food security. Most of the response options assessed contribute positively to sustainable development and other societal goals and many of them can be applied without competing for land and have the potential to provide multiple co-benefits (*NB this is close to our concept of Nature-Based Solutions).*

The response options include preserving and restoring natural ecosystems (e.g. peatland), afforestation, reforestation, agroforestry, soil carbon management on mineral soils, carbon storage in harvested wood products, improved management of cropland and grazing lands,

improved and sustainable forest management, increased soil organic carbon content, increased food productivity, dietary choices and food losses and waste reduction, etc.

Caution necessary however as some solutions could increase demand for land conversion. If applied at scales necessary to remove CO2 from the atmosphere at the level of several GtCO2yr-1, afforestation, reforestation and the use of land to provide feedstock for bioenergy could greatly increase demand for land conversion, which in turn could increase risks for desertification, land degradation, food security and sustainable development.

The report identifies a lack of knowledge of adaptation limits and potential maladaptation to combined effects of climate change and desertification. *This provides us with an area for investing into R&I with HE.*

The report shows that reducing deforestation and forest degradation lowers GHG emissions. Equally, farming systems such as agroforestry, perennial pasture phases and use of perennial grains, can substantially reduce erosion and nutrient leaching while building soil carbon. On a more general tone, sustainable land management, with an ecological and socioeconomic focus, not only can prevent and reduce land degradation and maintain land productivity bot also sometimes reverse the adverse impacts of climate change and contribute to mitigation and adaptation, with high confidence.

About livestock, reductions in the emissions intensity can be achieved with different farming and pastoral systems using better grazing land management, improved manure management, higher-quality feed, and use of breeds and genetic improvement. Interestingly, many of these options can enhance the adaptive capacity of rural communities, in particular, of smallholders and pastoralists.

About food systems, findings are consistent with our FOOD2030 strategy. The SPM says in particular that balanced diets, featuring plant-based foods, such as those based on coarse grains, legumes, fruits and vegetables, nuts and seeds, and animal-sourced food produced in resilient, sustainable and low-GHG emission systems, present major opportunities for adaptation and mitigation while generating significant co-benefits in terms of human health, with high confidence. The same applies to fighting food loss and waste, which counts up to 10 % of global anthropogenic emissions, through technical options such as improved harvesting techniques, on-farm storage, infrastructure, transport, packaging, retail and education, all that can reduce food loss and waste across the supply chain.

The SPM goes on in part C recommending policies orientations involving policy mixes (by contrast with stand-alone policy per sector) and across the whole food system.

This echoes with the calls from stakeholders for a more integrated food policy in the EU (and a vice-president appointed to that effect), and with the announcement by U. von den Leyen of a new "Farm to Fork strategy" in her political guidelines for the next Commission.

One notes in particular that policies that operate across the food system, including those that reduce food loss and waste and influence dietary choices, enable more sustainable land-use

management, enhanced food security and low emissions trajectories. The adoption of sustainable land management and poverty eradication can be enabled by improving access to markets, securing land tenure, factoring environmental costs into food, making payments for ecosystem services, and enhancing local and community collective action.

Barriers to implementation are recognised by the report, but acknowledging co-benefits and trade-offs when designing land and food policies is presented as a solution to overcome those barriers. This could be achieved by coordinating with other sectors, such as public health, transportation, environment, water, energy and infrastructure, etc. It is also recommended to maximise stakeholder input with structured feedback processes, particularly in community-based models, use of innovative fora like facilitated dialogues or spatially explicit mapping, and iterative adaptive management that allows for continuous readjustments in policy as new evidence comes to light. Inclusiveness in the measurement, reporting and verification of the performance of policy instruments can support sustainable land management.

Regarding agricultural practices, including indigenous and local knowledge is recognised as an element for overcoming the combined challenges of climate change, food security, biodiversity conservation, and combating desertification and land degradation. Coordinated action across a range of actors including businesses, producers, consumers, land managers and policymakers in partnership with indigenous peoples and local communities enable conditions for the adoption of response options *(this model fits well with the existing EIP-AGRI, although the research dimension is missing in the list of partners*).

In the near-term (part D), actions can be taken based on existing knowledge.

The report calls for prompt action on climate mitigation and adaptation aligned with sustainable land management and sustainable development depending on the region with a view to reduce the risk to millions of people from climate extremes, desertification, land degradation and food and livelihood insecurity. These actions include among others capacity-building, knowledge and technology transfer and enabling financial mechanisms, as well as raising awareness, education about sustainable land management practices, agricultural extension and advisory services, and expansion of access to agricultural services to producers and land users.

Early warning systems for extreme weather and climate events and seasonal forecasts are critical for food security and biodiversity monitoring including pests and diseases and adaptive climate risk management. *In line with our activities on Earth Observation*, the SPM notes that actions in this area are supported by the expanded use of new information and communication technologies (cellphone based applications, cloud-based services, ground sensors, drone imagery), the use of climate services, and remotely sensed land and climate information on land resources. High returns are expected on access to observation and early warning systems, and other services derived from in-situ hydro-meteorological and remote sensing-based monitoring systems and data, field observation, inventory and survey, and expanded use of digital technologies. Some response options (e.g., improved soil carbon management) have been implemented only at small-scale demonstration facilities and knowledge, financial, and institutional gaps and challenges exist with upscaling and the widespread deployment of these options.

To sustainably manage land, the SPM calls for investments saying that upfront investments in sustainable land management practices and technologies can range from about USD 20 ha-1 to USD 5000 ha-1, with a median estimated to be around USD 500 ha-1. Government support and improved access to credit can help overcome barriers to adoption, especially those faced by poor smallholder farmer. Near-term change to balanced diets can reduce the pressure on land and provide significant health co-benefits through improving nutrition.

Actions are urgent because the potential for some response options, such as increasing soil organic carbon, decreases as climate change intensifies, as soils have reduced capacity to act as sinks for carbon sequestration at higher temperatures. Delays in avoiding or reducing land degradation and promoting positive ecosystem restoration risk long-term impacts including rapid declines in productivity of agriculture and rangelands, permafrost degradation and difficulties in peatland rewetting.

Delaying action could result in irreversible impacts on some ecosystems, which in the longer-term has the potential to lead to substantial additional GHG emissions that would accelerate global warming, accompanied with irreversible loss in land ecosystem functions and services required for food, health, habitable settlements and production. It would lead to increasingly significant economic impacts on many countries in many regions of the world.

See the SPM…