INTEGRATING THE ENVIRONMENT AND CLIMATE CHANGE IN AGRICULTURE AND FOOD SYSTEMS

Global population is expected to reach over 9 billion by 2050, resulting in increased competition and growing pressures on finite land, water and other natural resources. Environment, climate change and biodiversity are closely intertwined with agriculture and food systems. Climate change and environmental degradation can have an impact on our capacity to produce food. Conventional agriculture and agri-business models are drivers of greenhouse gas (GHG) emissions, as well as key factors in ecosystems degradation and natural resource depletion. Such challenges significantly affect the ability of agri-food systems in meeting the demands of a rapidly increasing population and in ensuring enough safe and nutritious food for all in a sustainable manner.

The global transition to sustainable and healthy food systems will require major changes and improvements in resource use efficiency, environmental protection and systems resilience. It is therefore crucial to ensure that global agricultural and food systems become truly sustainable, with environment and climate change fully integrated.

This note provides quick practical tips to support the programming and design of EU support for sustainable agricultural and food systems that can contribute to food and nutrition security and sustainable development as well as the following objectives:

- Climate change adaptation and mitigation
- Sustainable and efficient management of natural resources
- Resilience and Disaster Risk Reduction
- Biodiversity preservation

It is important to note that many of the proposed measures contribute simultaneously to several or all of the objectives.

Align with national, EU and international environment and climate commitments and policies

- Check if the agriculture sector is part of the country's Nationally Determined Contribution (NDC), National Adaptation Plan (NAP), National Disaster Risk Reduction Strategy and National Biodiversity Strategy and Action Plan (NBSAP). Prioritise interventions that will support their implementation.
- Align the proposed action to the European Green Deal, notably the climate neutrality objective, the Climate Change Adaptation Strategy, the Farm to Fork and the Biodiversity strategies and the Circular Economy Action Plan.
- Identify how the proposed actions contribute to Aid to Environment and the Rio Conventions on climate change, biodiversity, and combating desertification, as well as to Disaster Risk Reduction, using the specific "markers" and the Guidance on activities in the agriculture sector that qualify for Rio markers.
- Use Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and/or Climate Risk Assessment (CRA) to identify risks and measures for minimising adverse impacts on the environment and on climate, as well as seizing opportunities to enhance and promote the conservation of ecosystems and natural resources, as well as climate change adaptation and mitigation. For budget support in particular, use SEAs to strengthen the environmental and climate sustainability of the partner country's agriculture sector policy strategy and investment plan.

Stone terraces for soil and water conservation in Ethiopia

Sustainable agriculture in Kyrgyzstan

- Include environmental and climate-related themes in policy dialogue on agriculture and ensure that appropriate performance indicators are included in sector budget support interventions.
- Provide technical assistance to strengthen the capacity of partner governments on environment, disaster risk reduction and climate change.
- Ensure that environmental and social safeguards used by lead and intermediary financial institutions in blending operations are up to EU standards.

Promote the sustainable and efficient use of natural resources

Land management and planning

- Support measures to reduce the need to convert natural ecosystems (in particular forests, wetlands) into agriculture (thereby reducing emissions from land-use change and protecting ecosystems).
- Avoid the use of late fire as a land clearance technique – promote other land clearing techniques or early/controlled fire. In the case of sugar cane, promote switch to green cane harvesting. (Burning is a major source of greenhouse gases and air pollutants).
- Promote secure and transparent land tenure systems as an incentive for sustainable land management investments, tree preservation or planting and land restoration.
- Support urban agriculture and farming as part of urban development schemes to increase the surface of green areas (thereby improving food security and availability, reducing urban heat, enhancing carbon sequestration, reusing urban wastewater, reducing disaster risks, etc.)

Soil management

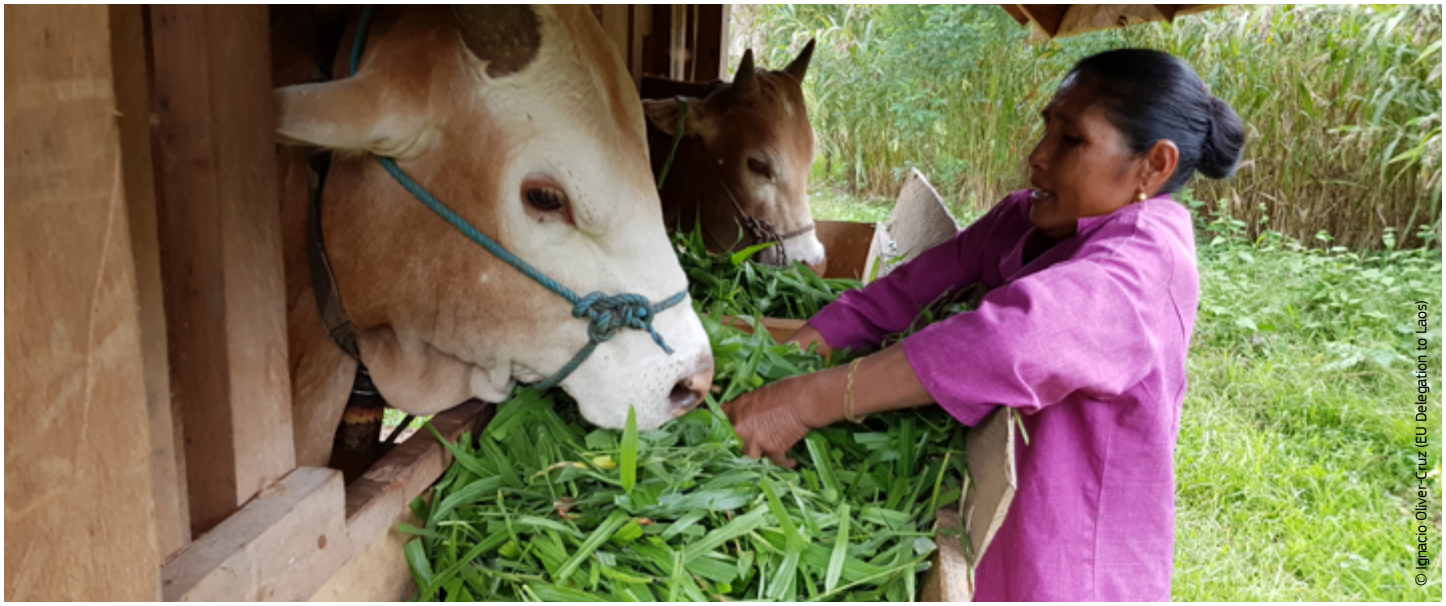
- Promote the principles of agroecology: conservation agriculture (e.g. minimum tillage and soil disturbance, permanent soil cover with trees, green manure, crop residues or live mulches, crop rotation, crop associations, intercropping, etc. and integrated/mixed systems e.g. agro-silvo-pastoral systems, permaculture, fish/rice, etc.).
- Secure and enhance soil health and functioning for improved plant growth and carbon sequestration, particularly by managing organic matter and by enhancing soil biological activity to capture nutrients and increase soil fertility.
- Promote erosion control measures and nature-based infrastructure (e.g. contour farming, water and soil conservation, agroforestry, wind breaks, etc.).
- Promote regeneration of grazing lands and establishment of livestock management systems that prevent overgrazing.

Water management

- Promote water use efficiency in irrigation systems (e.g. drip irrigation, rainwater harvesting and storage) and in food processing.
- Develop measures and fiscal incentives for water conservation (e.g. water pricing and metering, water user associations, reduction or elimination of subsidies to water use).
- In the case of large-scale irrigation schemes, ensure the intervention is aligned to a river basin management plan that includes watershed conservation.

Protect and enhance (bio-) diversity

- Promote diversified agri-food systems and agricultural landscapes – as diversity increases resilience and eco-system services and contributes to healthy and nutritious diets.
- Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agro-ecosystem over time and space at field, farm and landscape scales.



Landscape Management and Conservation Agriculture Development for Eco-Friendly Intensification and Climate Resilient Agricultural Systems in Lao PDR – EFICAS Project

- Promote agroforestry, agroecology and other forms of sustainable agriculture (conservation agriculture, no-tillage, climate smart, etc.) which enhance agro-biodiversity.
- Promote Integrated Pest Management (IPM) and pollinators protection.
- Promote and preserve agro-biodiversity, notably the use and conservation/recovery of native crops, seed varieties and livestock breeds and the rights of farmers to produce their own seeds.

Promote resilience to ecosystem degradation, natural disasters, climate change and related food crises

- Develop and promote the use of weather-index insurance schemes and drought early warning systems.
- Support partners to consider climate and environmental criteria alongside economic and social ones when identifying priority value chains and alternative crops.
- Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities (economic diversification).
- Climate-proof infrastructure design, considering the effects of climate change during the whole lifespan (e.g. rainfall patterns in the case of drainage systems, exposure of infrastructure to extreme weather events).
- Integrate disaster-risk reduction (DRR) in agriculture and food and nutrition programmes to protect beneficiaries' livelihoods from shocks and strengthen their capacity to face, and recover from, disruptive natural hazard-related events.

Support co-creation, innovation and dissemination of knowledge

- Recognise, promote and support the essential role of smallholder farmers, local communities and farmers' organisations in building sustainable food systems, managing natural resources and preserving biodiversity (on- and off-farm).
- Build and disseminate knowledge and capacity for sustainable agriculture, through vocational training, peer learning and extension services.
- Promote research & development on sustainable and climate change resilient agriculture.
- Integrate climate and disaster loss data and scenarios[1] (temperature and rainfall patterns, soil moisture, droughts, floods, storms, shifts in seasons and in agro-climatic zones, pest and diseases outbreaks and changes in their spatial distribution, freshwater availability, soil erosion, etc.) in agriculture decision-making using Earth observation and geospatial data (e.g. the EU's Earth Observation Programme Copernicus)[2].

Promote green economy principles in sustainable production

Reduce energy consumption and greenhouse gas emissions

- Where feasible, use local renewable resources.
- Promote the generation of electricity from agricultural and agro-industrial waste, the use of renewable energy (e.g. solar-powered pumps, micro-hydroelectricity) and energy efficiency.
- Enhance the use of renewable energies in agro-processing as well as for cooking, including through wastewater treatment facilities, animal waste and agro-industrial waste as sources of energy.

[1] Disaster risk country profiles might be already available.
[2] https://www.copernicus.eu/en

Preserve and increase carbon stocks

- Prevent the conversion of natural ecosystems (forests, wetlands, etc.) to agriculture and support zero-deforestation value chains.
- Preserve and ensure sustainable management of forests and mangroves; develop sustainable plantations for wood resources and promote land restoration.
- Preserve wetlands, marshes and promote mixed systems including aquaculture.
- Assess the feasibility of payments for carbon storage (CO2 compensation schemes, REDD+, etc.).

Minimise pollution

- Promote the recycling of nutrients, biomass and water within production systems, thereby increasing resource use efficiency, enhancing synergies and minimizing waste and pollution.
- Promote the substitution of inorganic fertilisers with organic fertilisers where feasible; if not, ensure their responsible and efficient use.
- Reduce/eliminate subsidies for more polluting agro-chemicals/shift to safer alternative products (promotion of Integrated Pest Management, inter-cropping, etc.).
- Champion cleaner production and resource efficient practices as part of value chain developments (improve food conservation, reduce post-harvest losses, enhance storage capacities).

Encourage sustainable consumption and healthy diets

Circular economy (waste, recycling, transport)

- Promote agri-food value chains that minimise resource use and greenhouse gas emissions, including where appropriate, the shift from meat value chains with the worst environmental footprint.
- Promote certification schemes focusing on sustainability, such as organic farming, sustainable aquaculture or forestry (e.g. including through financial incentives such as tax breaks).
- Promote measures to reduce, reuse or recycle food waste from farm to fork.
- Reduce the use of imported inputs and limit long-distance transportation, promoting short food chains, as well as linking producers and consumers.
- Reduce the use of non-recyclable packaging, promoting selective waste collection and recycling.
- Enhance local markets information systems and e-commerce schemes.

Healthy diets

- Build food systems that provide healthy, diversified, seasonally and culturally appropriate diets.
- Promote healthy and sustainable diets, increasing the consumption of healthy foods (such as vegetables, fruits, whole grains, legumes, and nuts), and decreasing the consumption of unhealthy foods (such as red meat, sugar and refined grains).
- Promote nutrition-sensitive approaches to family farming for the local production of organic nutritious food.
- Increase local capacity to make full use of food, improving conservation and reducing post-harvest losses.

Further information and support:

- Guidelines “Integrating the environment and climate change into EU international cooperation and development”
- Sector Note: “Agriculture, Food Security and Rural Development”
- OECD DAC Rio Markers for Climate Handbook
- European Green Deal
- EU Farm to Fork strategy
- EU Biodiversity Strategy for 2030 - Bringing nature back into our lives
- EU Climate Change Adaptation Strategy
- Circular Economy Action Plan
- The 10 elements of AgroEcology, FAO
- Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems
- Food systems at risk. New trends and challenges
- Food systems at risk: Trends and challenges - A Scientific Handout

* All documents are available in capacity4dev.eu (public groups: Agriculture & Rural Development; Environment and Green Economy; Climate change, disaster risk reduction & desertification)

Contact INTPA, MENA and ENEST Environment & Climate Change Mainstreaming Facility:
INTPA-GREENING-FACILITY@ec.europa.eu | MENA-GREENING-FACILITY@ec.europa.eu |
ENEST-GREENING-FACILITY@ec.europa.eu