

TOWARDS SUSTAINABLE DEVELOPMENT: Mainstreaming Environment and Climate Change into Development

AGRICULTURE, FOOD SECURITY AND RURAL DEVELOPMENT

PART 1: Policy Basis

Agriculture, food security and rural development face similar challenges regarding the environment and climate change and are thus here treated as a single sector. Following is a brief review of policies, principles and strategies from the European Union (EU) that address development of this sector, with particular reference to or bearing on the environment and climate change.

- Sustainable management of natural resources is one of the policy goals in the [Communication on Fighting Rural Poverty](#) (EC, 2002). It notes that ‘environmental assessments must be mainstreamed into aid policy making and programming’, with the aim ‘to identify and promote win-win solutions that benefit both the rural poor and the environment, and to minimise trade-offs between environmental protection and rural poverty reduction’.
- The [Agenda for Change](#) (EC, 2011) highlights sustainable agriculture as one of the sectors where the EU should focus its support for inclusive and sustainable growth due to its strong multiplier impact on developing countries’ economies and its central role with regard to environmental protection and climate change prevention and adaptation.
- The [EU policy framework to assist developing countries in addressing food security challenges](#) (EC, 2010) establishes that sustainable small-scale food production should be the focus of EU assistance to increase the availability of food in developing countries. It emphasises that EU assistance should



‘...agricultural production will need to increase by at least 70 per cent to meet demands by 2050. Most estimates also indicate that climate change is likely to reduce agricultural productivity, production stability and incomes in some areas that already have high levels of food insecurity’.

—FAO, 2010

prioritise intensification approaches ‘that are sustainable and ecologically efficient’ (e.g. integrated pest management, improved soil and water management, stress-resistant crop varieties). The importance of mainstreaming climate change is further highlighted in ‘[Boosting food and nutrition security through EU action: implementing our commitments](#)’ (EC, 2013a) and ‘[Enhancing maternal and child nutrition in external assistance](#)’ (EC, 2013b); these stress that actions that address sustainable agriculture are highly relevant to undernutrition as well.

- The ‘[Advancing African Agriculture Proposal for continental and regional level cooperation on agricultural development in Africa](#)’ (EC, 2007) emphasises environment and climate change among its regional priority areas in several ways. The Agriculture in Development Strategies priority notes the need to analyse and build capacity on the inter-relationship between agricultural performance and climate

This sector guidance note, part of the toolkit Towards Sustainable Development: Mainstreaming Environment and Climate Change into Development, was prepared by the European Commission to complement its 2011 [Guidelines on the Integration of Environment and Climate Change in Development Cooperation](#) (referred to here as ‘the Guidelines’).

change, desertification and biodiversity. The Natural Resource Management: Land, Fisheries, Forestry priority is identified as an area for cooperation, with a focus on policy and governance as well as on management and institutional arrangements for sustainable natural resource use.

- The [EC Communication on the EU Approach to Resilience: Learning from Food Security Crises](#) (EC, 2012) emphasises the need to address chronic vulnerability to food insecurity and recurrent food crises caused by climate change, desertification, environmental degradation, pressure on natural resources and to build the resilience of rural populations in vulnerable countries. It acknowledges that sustainable development will need to tackle the root causes of recurrent crises rather than just their consequences, and that resilience strategies should contribute to the

EU Climate Change Adaptation Policy. To this end, it presents an approach developed in two recent EC initiatives, Supporting Horn of Africa Resilience (SHARE) and Alliance Globale pour l'Initiative Résilience Sahel (AGIR). The main components of this approach are (i) anticipating crises by assessing risks, (ii) focusing on prevention and preparedness, and (iii) enhancing crisis response.

- The EU is also a member of the [Global Donor Platform for Rural Development](#), a group of 30 donors and development agencies whose goal is to bring rural development policies in line with the Paris Declaration on Aid Effectiveness. The platform members recognise the critical importance of mainstreaming climate change into agriculture and rural development (Global Donor Platform for Rural Development, 2013).

Box 1

Did you know that ...?

- By 2050, the number of people at risk of hunger is expected to increase by an additional 10–20% as a result of climate change, and the number of malnourished children is expected to increase by 20 million—29% more than without climate change (WFP, 2009).
- Agriculture is responsible for 75% of global deforestation (CCAFS, 2014), and accounts for about 70% of global freshwater withdrawals—up to 90% in some fast-growing economies (UNESCO-WWAP, 2012).
- Some 19–29% of global greenhouse gas emissions come from agriculture (CCAFS, 2014); the livestock sector alone accounts for about 14.5% of anthropogenic greenhouse gas emissions (CCAFS, 2014) and is by far the single largest anthropogenic user of land (FAO, 2006).

...and some positive trends:

- By 2008, almost 106 million hectares of land were under conservation agriculture, compared to about 45 million hectares 10 years earlier (Derpsch et al., 2010).
- From 2003 to 2009, the global extent of agroforestry increased by over 140 million hectares (Zomer et al., 2014). In Niger's Zinder Region, the piloting of new policies facilitated the establishment of 5 million hectares of agroforestry, leading to a 500 000-tonne increase in millet/sorghum production (Reij et al., 2009).

PART 2: Why Mainstream?

Agriculture and livestock production requires the most land area of all human activities, consumes significantly more water than all other human uses combined and is a major source of greenhouse gas emissions. Hence, addressing environmental and climate change considerations as an integrated part of the development of the agriculture sector is a prerequisite for achieving

environmental sustainability and curbing climate change. Conversely, maintaining environmental integrity is critical to continued agricultural productivity and food security, and to increasing rural incomes in developing countries. Also, agricultural systems must be resilient and able to adapt to the changed conditions resulting from climate change.

Understanding farmers' and livestock breeders' risk management strategies and the underlying causes of their choices is critical, as these can have a profound impact on the environment and climate change. On the one hand, farmers and breeders may seek quick returns which degrade the natural resource/asset base and productive potential (and release carbon to the atmosphere); on the other, they may choose to invest in maintaining or enhancing the productive capacity of their land and other natural resources (and sequester carbon in soil and vegetation).

Integrating the environment and climate change into food and farming policies can help ensure that agricultural productivity is maintained or even increased so the future demands of a growing population can be met. The objectives of mainstreaming are to address risks and exploit opportunities, both in relation to programme/project delivery as well as to their broader influence and impact.

Such mainstreaming will (i) minimise impacts on the environment; (ii) ensure that agriculture, food security and rural development strategies and investments are resilient to climatic shocks and environmental influences; and (iii) ensure that the sector continues to contribute to the improvement of livelihoods and the wellbeing of the population. [Part 4](#) provides a starting point for mainstreaming. It enumerates risks and opportunities posed by typical agriculture, food security and rural development sector programmes/projects and activities. Addressing these will ensure better planning and programmes.

Table 1 presents the key reasons to mainstream the environment and climate change into sector development; the four categories noted in the table provide a structure for presenting the opportunities for mainstreaming in this Guidance Note.

Table 1

Why mainstream environment and climate change in the agriculture, food security and rural development sector?

To address environment- and climate-related risks and constraints that could jeopardise achievement of EU programme/project objectives

- **To ensure that EU programme/project results are sustainable in light of climate change** (e.g. crops promoted are drought resistant, irrigation schemes take future water availability into account)—agriculture and food security are highly vulnerable to the impacts of climate change such as droughts and dry periods, floods, increasingly unpredictable rainfall patterns
- **To ensure that EU programme/project results are not threatened by environmental degradation**—agricultural production depends on natural resources and ecosystem services, so land degradation, water scarcity, water pollution and damage to ecosystems/biodiversity (e.g. invasive species and pests) can have detrimental impacts on productivity, food security and rural incomes

To identify, avoid and mitigate any harmful impacts of EU development cooperation on the environment and climate

- **To ensure that EU programmes/projects do not cause significant environmental damage, including impacts on biodiversity**—agriculture is a major driver of environmental degradation (e.g. deforestation and destruction of wetlands caused by agricultural expansion, land degradation and erosion caused by cultivation and grazing of slopes and marginal lands, pressure on water resources due to abstraction for irrigation, pollution from the use of agrochemicals)
- **To ensure that EU programmes/projects do not significantly increase greenhouse gas emissions**—agriculture is a significant source of greenhouse gas emissions (e.g. methane emissions from ruminant livestock and paddy rice fields, carbon dioxide emissions from land conversion and clearance of natural vegetation, carbon released from the soil due to tillage)

To realise opportunities for longer-term benefits for socioeconomic development

- To integrate environmentally sustainable **low-carbon options** in programme/project activities (e.g. improved storage and processing to reduce post-harvest losses, conservation agriculture)
- To leverage **carbon financing** for enhanced programme/project outreach and impact (e.g. REDD+, Global Environment Facility, upcoming Green Climate Fund)
- To **reduce people's vulnerability** to external shocks and threats to their lives and livelihoods (e.g. crop loss and food insecurity due to drought or floods)
- To maintain and enhance **agricultural productivity, food security and agricultural income** over the long term
- To generate and enhance **rural income opportunities** based on sustainable natural resource management and ensuring the delivery of ecosystem services (e.g. catchment protection, storage of carbon in vegetation)
- To generate **green jobs**, contributing to the transformation to a green economy (e.g. in agro-industries)

To realise opportunities contributing to EU policies on the environment and climate change

- To contribute to global efforts to **reduce greenhouse gas emissions**, as the agriculture sector is a significant emitter
- To achieve **sustainable natural resource management** and ensure the delivery of ecosystem services (e.g. catchment protection, storage of carbon in vegetation)
- To ensure sector development will **not interfere with global commitments** to protect biodiversity and combat desertification

PART 3: When and How to Mainstream

There are various opportunities for mainstreaming throughout the cycle of operations. Table 2 shows entry points and tools for different stages of the cycle. Policy dialogue (Box 2) occurs at all phases as an ongoing process.

Table 2 Mainstreaming opportunities throughout the cycle of operations

Phase	Main tool
A. Programming	<ul style="list-style-type: none"> Country Environmental Profile (CEP)
B. Identification and formulation	<ul style="list-style-type: none"> Screening for a strategic environmental assessment (SEA) SEA Project environmental screening—i.e. environmental impact assessment (EIA) screening and climate risk screening EIA Climate risk assessment (CRA)
C. Implementation	<ul style="list-style-type: none"> Environmental management plan (EMP) Climate risk management plan (CRMP) Monitoring indicators Results-oriented monitoring (ROM) missions
D. Evaluation	<ul style="list-style-type: none"> Evaluation indicators

Policy dialogue

Note: — = programmes; — = projects; — = both.

Guidance for each phase is provided below; also see the [glossary](#) for definitions of the tools and other key terms.

A. PROGRAMMING

Identifying environmental and climate change risks and opportunities early on in the cycle of operations means they will be more effectively addressed, as necessary financial provisions can be made and the framework set for mainstreaming in subsequent phases.

The key elements of the EU’s development cooperation in any given country or region are specified in the programming documents which highlight the **overall objectives**, **specific objectives**, **expected results** and **indicators** for programming at that level. Programming documents include the National Indicative Programme (NIP), the Multilateral Indicative Programme (MIP), the Country Strategy Paper (CSP), the Single Support Framework (SSF) and the Regional Indicative Programme (RIP).

STEP 1: Explain the key environment and climate change challenges in the analysis of the sector

A CEP provides an overview of a country’s environmental and climate change issues, as well as of the related institutional, policy and regulatory framework. It analyses these vis-à-vis their relationship to poverty, and previous and ongoing donor support; and provides recommendations to the EU Delegation for better mainstreaming. Thus, a well-prepared CEP ensures that environmental and climate challenges and opportunities are identified and analysed, and informs the strategic orientation within these. The CEP should also cover the economic opportunities linked to improved environmental management and climate change mitigation and adaptation. Important points to map in the agriculture, food security and rural development sector include the following:

- The nature, magnitude and severity of **environmental degradation caused by agriculture**—e.g. erosion, deforestation and loss of biodiversity, hydrological impacts, greenhouse gas emissions, and water pollution from fertilisers and agro-industry
- The nature, magnitude and severity of **impact on agriculture** that environmental degradation and climate change have, and are likely to have—e.g. reduced productivity and crop loss due to droughts and floods
- The **strategies used by farmers and livestock breeders to manage risk** and their impact on the environment—e.g. whether farmers seek quick-return solutions which degrade the resource base and long-term productive potential, or engage in medium- to

Box
2

Policy dialogue: a key element of effective mainstreaming

Experience shows that simply applying tools such as an SEA, EIA or CRA does not necessarily lead to changes that result in improved environmental and climatic performance of a sector, especially if they remain donor-led exercises with little or no national ownership. This is where policy dialogue comes in. Such dialogue can help partner governments and the EU reach consensus on the goals and priorities of development cooperation, and it plays a critical role in the promotion of the environment and climate change mainstreaming agenda.

Policy dialogue takes place throughout the entire cycle of operations. Mainstreaming should be an integrated part of this dialogue:

- **Relevance of mainstreaming from a development perspective.** Policy dialogue should address the economic costs of environmental degradation and climate change (e.g. the impact of land degradation on agricultural productivity and exports), as well as the economic benefits provided by ecosystem services (e.g. increased production and revenue generation from rehabilitating degraded lands).
- **Need for, and value of, monitoring environmental performance and climate resilience of the sector to allow for informed decision-making,** e.g. to validate that policies promoting production and export of an agricultural commodity are not having negative environmental impacts or increasing vulnerability to the impacts of climate change.
- **Options for mitigating negative environmental impacts on the sector** (see Part 4 for examples).
- **Options for harnessing the social and economic benefits of sustainable use of natural resources,** e.g. to enhance agricultural productivity and generate new opportunities for rural incomes.
- **Capacity and institutional needs to enable national stakeholders to engage in these options,** e.g. the awareness and capacity of extension services to promote sustainable agricultural practices; collection of data on environmental indicators; and inclusion of environmental items in sector policies, plans and budgets.
- **Reflection on lessons learned and environmental performance of the sector.** Policy dialogue could address, e.g., experiences with agroforestry, conservation agriculture, rangeland management and organic farming.

Remember that policy dialogue is most effective when backed up with evidence and information, such as data, studies and examples of previous experiences.

long-term investments to maintain or enhance land productivity

- The **drivers of unsustainable land use practices**—e.g. increased pressure due to population growth; competition for land, water and other natural resources; illegal logging; and urbanisation and policies promoting land conversion
- **Obstacles to the adoption of sustainable land management practices**—e.g. lack of information on sustainable practices from extension services, poor access to financial services for investments in improved practices, insecure land rights (a disincentive to investing in medium- to long-term improvements), and perverse subsidies
- **Underlying reasons for vulnerability** to climate variability/change and extreme events—e.g. lack of alternative/supplementary income opportunities, dependence on crops/varieties which are not drought tolerant, poor access to weather information and warning systems, and poor access to insurance
- **Opportunities** and locally available capacities—e.g. traditional knowledge, local agro-biodiversity and varieties adapted to local conditions, new opportunities such as income generation from ecosystem services.

If a CEP is not available and cannot be developed, a range of other documents can be consulted for information on a country's environmental and climate change situation.

Part 5 provides a list of possible sources of information. Box 3 provides an example of the use of the CEP in the programming phase.

STEP 2: Integrate key environmental and climate change opportunities and challenges in the cooperation strategy for the sector

Reflect on the potential harmful effects that sector development could cause, as identified in Step 1. Next, reflect on the risks and challenges that can threaten the impact and sustainability of the sector, as identified in Step 1.

Based on the potential harmful effects and challenges identified, brainstorm as to how to mainstream climate change and the environment into the cooperation strategy to avoid or mitigate environmental damage and contribute to climate resilience. Part 4 provides examples of specific mainstreaming actions.

Look for opportunities in the programming document to contribute to the transition to a green economy. These opportunities should be reflected in the document’s overall objective, specific objectives, expected results and/or indicators. Again, Part 4 provides examples of specific mainstreaming actions.

In identifying opportunities for mainstreaming, consider the following mechanisms.

- **Develop or strengthen the policy and regulatory framework** (e.g. regulation of water use, cultivation on slopes and marginal lands, clearing of new land for agriculture and pastures).
- **Build capacity** of agricultural extension services, private sector actors and farmers’ associations to promote/implement environmentally sustainable and climate-resilient practices (e.g. sustainable agronomic and livestock practices, post-harvest storage/processing to reduce losses, green jobs, climate change vulnerability assessments).
- **Communicate and raise awareness** (e.g. through television and radio campaigns).

STEP 3: Indicate the use of specific environment/ climate change assessment tools to be applied during identification and formulation

Three tools are available to analyse in detail the relationships between a programme/project and the environment and climate change: an SEA (applicable to programmes), an EIA (applicable to projects) and a CRA (applicable to projects).

These tools help analyse the potential impacts of implementing a programme/project on the environment and on climate vulnerability and the effects of environmental degradation and climate change on programme/project

Box 3 Case Study, Programming Phase: 2014–2020 Multiannual Indicative Programme for Honduras

Food security with a focus on family agriculture is a priority sector in Honduras’s Multiannual Indicative Programme for 2014–2020. The programme took into account recommendations resulting from a 2013 CEP and a subsequent review by the EC Directorate-General for International Cooperation and Development – EuropeAid (DEVCO). These included recommendations promoting the use of environmentally friendly agricultural practices (such as conservation agriculture, integrated pest management, soil conservation techniques, organic fertilisers and agroforestry), awareness raising and training in the use of agrochemical products, adaptation to climate change and strengthening the network of agricultural schools. According to the programme, one of the two objectives of sector support is ‘To improve the resilience of the most vulnerable geographic areas through agricultural activities that are both environmentally sustainable and profitable’. One of the three expected results of sector support is that ‘The welfare of farming households will have been improved in priority areas thanks to the adoption of sustainable and climate-resilient agroforestry systems’. Two indicators monitored for the sector broadly relate to the environment: number of new hectares of family farming using sustainable practices; and number of farmers with access to agricultural extension services, with a focus on sustainable farming. These indicators are not entirely satisfactory, however, as ‘sustainable practices/farming’ is not clearly defined, and neither are the parameters by which this is to be measured.

Sources: Honduras Multiannual Indicative Programme 2014–2020; Honduras CEP, 2013.

effectiveness. They also help in identifying appropriate measures to minimise risks and impacts and to make best use of opportunities.

In the case of programmes, determine if an SEA has already been carried out (e.g. by the government, the EU or other donors) to enhance the government's agriculture, food security and rural development sector strategies. If not, either:

- indicate in the programming document that an SEA will be carried out during the identification phase to enhance mainstreaming of the government's agriculture, food security and rural development sector strategies and the EU's support programme; or
- justify, based on the SEA screening process in Annex 3 of the [Guidelines](#), why an SEA is not needed.

If projects are foreseen, indicate in the programming document that these will be subject to project environmental screening and, if required, to an EIA and/or a CRA (e.g. EIAs and CRAs would probably be required in relation to irrigation projects).

STEP 4: Include indicators in the programming document that capture key environmental and climate change concerns

The EC Directorate-General for International Cooperation and Development – EuropeAid (DEVCO) has developed [Sector Indicator Guidance for Programming](#) (2013), which provides a list of indicators that can be used in each sector, including environmental and climate change indicators for the agriculture, food security and rural development sector. See Box 4 for examples drawn from DEVCO.

B. IDENTIFICATION AND FORMULATION

Mainstreaming is especially important during identification and formulation. The identification of a programme/project takes as a starting point an analysis of the situation, which should include environmental and climatic concerns and opportunities. Formulation fleshes out the programme/project design, which must address measures to minimise environmental impacts and climatic risks and make best use of opportunities to enhance the

Box 4

Examples of environment and climate change indicators for rural development, sustainable agriculture, food and nutrition security in country programming

- % change of land under sustainable agriculture
- % of land classified as degraded
- Losses in agricultural productivity (i.e. ratio of agricultural outputs to inputs) due to environmental degradation (soil erosion or desertification)
- Agriculture-related greenhouse gas emissions (carbon dioxide-equivalent tons/year)
- Intensity of use of water in agriculture (hl/output unit or gross domestic product)
- Intensity of pesticide and fertiliser use (kg/output unit or gross domestic product)
- Share of area occupied by organic farming in total utilised agricultural area

state of the environment and contribute to low-carbon, climatically resilient development.

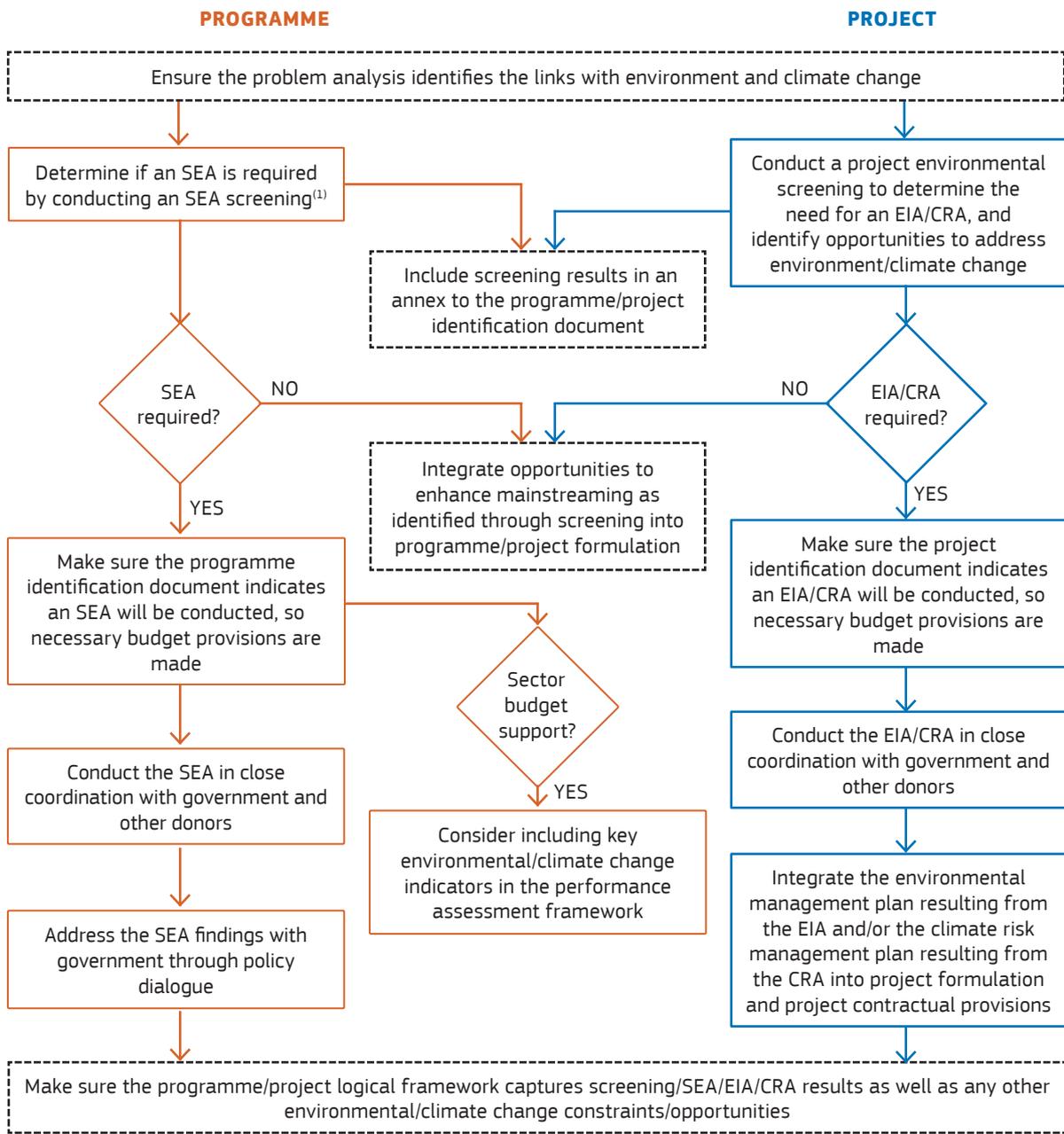
Figure 1 shows the stages of mainstreaming during this phase, from screening to final programme/project formulation.

STEP 1: Ensure the problem analysis identifies links with the environment and climate change

[Part 4](#) provides some insight into the environmental and climate change risks and opportunities in the agriculture, food security and rural development sector. These linkages can also be identified by reviewing certain key documents.

- **Policy documents**—such as sector policies, strategies and plans for the environment, climate change, agriculture, food security and rural development—may provide an overview of environmental and climate change challenges in the country with regard to the sector. They may also include specific environmental protection and climate change adaptation/mitigation activities relevant to the sector (e.g. commitments to reduce deforestation/land conversion, targets for increasing the share of land under sustainable agricultural practices, targets for increasing the area under irrigation, targets for reducing emissions from livestock).

Figure 1 Steps during identification and formulation



Note: — = programmes; — = projects; --- = both.
 (1) An SEA is normally required for support programmes in the energy sector.

● The **National Communications to the United Nations Framework Convention on Climate Change (UNFCCC)** provide an overview of the country’s vulnerability to climate change including in the agriculture, food security and rural development sector. Similarly, national reports to the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD) provide overviews

of important environmental issues (respectively, biodiversity and land degradation) which are closely related to agriculture and rural development.

See [Part 5](#) for additional documents with useful information and analyses.

Because the identification of programmes and projects is undertaken in close coordination with the partner government, ensure that environmental and climate change aspects are addressed through policy dialogue (see Box 2). Similarly, make sure to identify and engage relevant environment and climate change stakeholders (competent authorities, civil society organisations, non-governmental organisations, community-based organisations, community leaders, academia) in programme/project identification and formulation; these stakeholders can provide useful insights into the sector's environmental and climate change challenges.

STEP 2: Determine if the programme/project is environmentally or climatically sensitive and thus needs a detailed analysis to identify environmental and climate-related risks and opportunities

The formulation phase involves fleshing out the programme/project as well as analysing its feasibility. Environmental and climatic factors may compromise this feasibility and thus deserve careful attention. In the case of **more environmentally and/or climatically sensitive interventions**, SEAs (for programmes) and EIAs and CRAs (for projects) can be used to help explore linkages to the environment/climate change and identify appropriate measures to address these linkages adequately.

For programmes, the need for an SEA is determined by a screening process, which is delineated in Annex 3 of the [Guidelines](#). For projects, the need for an EIA is usually determined by national legislation, but the EC can also determine this based on the project environmental screening process described in Annex 7 of the [Guidelines](#). The need for a CRA is also determined on the basis of the project environmental screening. Screening processes should be carried out during the identification phase (if not before); the actual SEA, EIA and/or CRA is prepared during formulation. Box 5 provides an example of the use of an SEA in the programme formulation phase.

STEP 3: Ensure the environmental and climate change concerns and opportunities are reflected in the programme/project specifications and that necessary budget provisions are made

Environmental and climate-related considerations identified under Step 2 need to be integrated into the programme/project objectives, expected results and/or indicators (see Box 6), as relevant. For specific suggestions

Box 5

Case Study, Formulation Phase: National Sugar Adaptation Strategy, Kenya

The Government of Kenya and stakeholders in the sugar industry have been implementing the National Sugar Adaptation Strategy (NAS) with support from the Accompanying Measures for Sugar Protocol Countries since 2007. The NAS aims at rehabilitating the sugar sector to improve its productivity and competitiveness. In 2012, the EU financed an SEA of the strategy.

The SEA carried out a baseline study, then examined the potential positive and negative environmental impacts of the NAS along biological, physical environment, socio-cultural and socio-economic dimensions. The SEA then analysed four alternative scenarios for the sugar sector: business as usual (the zero alternative), full NAS implementation, irrigation for smallholders in Western Kenya, and establishment of a large-scale irrigated nucleus estate. The potential environmental, social and economic impacts of each scenario were analysed.

The SEA also provided an environmental management and monitoring plan with specific recommendations and indicators. The institutional capacity of the key sector stakeholders (public and private) to implement the plan was assessed. Throughout, extensive stakeholder consultations were conducted.

The EU Delegation found the SEA to be of excellent quality, and the findings were discussed with and approved by all key sector stakeholders. Moreover, some of the SEA findings guided formulation of the EU sector support programme.

Unfortunately, implementation of the recommendations in the environmental management and monitoring plan of the SEA has been limited. Further, NAS implementation has made only limited progress to date due to institutional constraints and restructuring; also, the EU support programme is not yet under implementation, with the exception of support to the Kenya Sugar Research Foundation to improve yields of cane varieties and disseminate these to farmers.

Sources: PEM Consult and Particip, 2012; ECORYS, 2014; communication with EU Delegation staff.

on opportunities for mainstreaming the environment and climate change that can be reflected in sector programme/project objectives, see [Part 4](#).

Box 6

Examples of environment and climate change indicators for monitoring performance of sector programmes and projects

- Climate change impact and vulnerability assessment completed and adaptation strategy for agriculture sector developed
- Number of extension workers trained in climate change adaptation, integrated pest management, integrated soil and water conservation
- Standards and/or guidelines for sustainable aquaculture/fisheries developed and approved
- Number of target farmers trained in sustainable crop and land management practices
- Arable land under functional soil protection measures
- Number of farmers using organic farming/conservation agriculture techniques
- Development and implementation of sustainable pasture management system
- Area (number of hectares) under drip irrigation or other water-efficient irrigation systems
- Proportion of farmers' households that have applied and retained new, more sustainable and climate-resilient technology or management, disaggregated by gender

NOTE: When defining an indicator:

- Make sure it provides a measure of the key environmental/climate change concerns identified.
- Make sure the data required to measure the indicator can be readily obtained. Is there an organisation that captures/generates the required input data on a routine basis? Are those data of good quality and reliable?
- Be clear about the mechanisms that will be used to discuss indicator findings and agree on appropriate responses to adverse trends.

Even in the case of **non-sensitive programmes and projects**—which do not require an SEA, EIA or CRA—the environment and climate change should be considered. The [Guidelines](#) provide specific guidance on integrating these considerations into formulation studies: Annex 4 of the Guidelines covers programmes and Annex 9 projects. Annex 6 of the Guidelines provides further insight into 'greening' the programme/project logical framework.

Budget allocations for the programme/project should take into consideration any additional costs that pertain to environmental and climate change mainstreaming. The tools and opportunities for mainstreaming in budget support are fewer than for programmes and projects; Box 7 provides a brief description of the key mainstreaming approaches available.

C. IMPLEMENTATION

During implementation, the programme/project has to be monitored to ensure it does not cause harmful environmental and climatic impacts, or that its results are jeopardised by climate change or environmental degradation—and to enable appropriate remedial action to be taken as necessary. Also during implementation, new

Box 7

Mainstreaming and sector budget support

Selection of indicators is critical under budget support, as they are the primary tool available to the EC to ensure the support it provides is delivering results. If there are any key environmental and/or climate change concerns associated with the sector (e.g. as informed by an SEA), the performance assessment framework should include indicators that capture such concerns, e.g. in relation to variable tranches.

Other mainstreaming options in relation to budget support are to include discussions on the environment and climate change in sector policy dialogue (see [Box 2](#)), and support capacity development for national stakeholders on mainstreaming.

Further guidance on mainstreaming under budget support is provided in Section 5 of the [Guidelines](#).

options/activities can be identified to further enhance positive environmental and climatic impacts.

Regardless of whether prior mainstreaming has taken place, an opportunity to address the environmental and climate-related performance of a programme/project is during a results-oriented monitoring exercise. The Delegation can include relevant indicators to ensure this external monitoring identifies opportunities to enhance programme/project environmental and climate change performance.

SCENARIO 1: The environment and climate change were mainstreamed into programme/project formulation

If substantive mainstreaming occurred during identification and formulation, all that remains to be done during implementation is to (i) track the relevant measures that were integrated in the programme/project design; and (ii) when dealing with a project that was subject to an EIA or a CRA, make sure the corresponding EMP and/or CRMP is implemented and monitored. This tracking should be integrated into the monitoring system.

An EMP is one of the products of an EIA. It specifies how the mitigation measures identified will be implemented (by whom, when, where) and how these will be monitored to verify their effectiveness to contain adverse environmental impacts. A CRMP is one of the products of a CRA. It identifies the actions needed to implement the CRA recommendations in the form of an operational plan. As EMPs/CRMPs are normally prepared by consultants as recommendations, ensuring their implementation and monitoring means incorporating these recommendations in the project contractual conditions (e.g. for construction works).

Programme/project monitoring should include appropriate indicators that can (i) help identify if key environmental and climate change concerns and opportunities have been addressed, (ii) track the efficiency and effectiveness of mainstreaming measures, and (iii) allow prompt identification of adverse environmental impacts that may arise, thereby enabling the programme/project to be adapted or revised accordingly. The participation of relevant stakeholders during monitoring should be encouraged.

SCENARIO 2: The environment and climate change were not mainstreamed into programme/project formulation

For ongoing programmes/projects where mainstreaming was not integrated in the design, options still exist for enhancing their environmental and climatic performance. The [Guidelines](#) (Section 6.3) provide useful ideas on enhancing the environmental and climate change performance of an ongoing programme/project; also see Box 8 for opportunities specific to the agriculture, food security and rural development sector.

Assess the situation with regard to the four objectives in [Table 1](#). Depending on the programme/project stage of implementation, this assessment can be done as part of the midterm evaluation, which offers a unique opportunity for re-orienting a programme/project if needed; as

Box 8

Examples of mainstreaming opportunities in an ongoing programme/project

Programme/project activities:

- Promote policy dialogue or exchange of experiences amongst stakeholders on policies in sustainable agriculture, food security and rural development.
- Screen agricultural inputs for their environmental performance and select those with a lower environmental and carbon footprint.

Programme management and operations:

- Adopt a green procurement policy (e.g. purchase/use fuel-efficient vehicles, energy-efficient lightning and appliances, recycled/Forest Stewardship Council (FSC) certified paper, FSC certified or Forest Law Enforcement, Governance and Trade (FLEGT) licensed wood for construction, biodegradable cleaning products, recycling and waste sorting).
- Identify opportunities to raise awareness and promote energy efficiency and sustainable consumption and production.
- Promote supply of goods and services from the local community/train community members to be able to deliver quality goods and services, e.g. to reduce carbon footprint from transport and shipping of imported goods.

part of a ROM mission; or through independent assessment of the programme/project environmental footprint. The findings may show that there is a need to re-orient existing activities, add some complementary activities, and/or add environmental and climate change-related indicators to the monitoring system.

Complementary activities such as capacity building and awareness raising can enhance the mainstreaming capacity of partner governments and stakeholders, including their provision of inputs to policy dialogue. Mainstreaming should also look at opportunities related to programme/project management and operations for reducing the environmental and climate footprint.

Box 9 provides an example of environmental and climate change mainstreaming in the implementation of a rural development project.

D. EVALUATION

The evaluation phase looks at the relevance, effectiveness, efficiency, impact and sustainability of the programme/project, so as to draw lessons to inform the next cycle of operations. Environmental and/or climate change factors may be relevant to all five criteria. There are two main points at which evaluation takes place: during the midterm review and at the end of a programme/project.

Box 9

Case Study, Project Implementation: Mainstreaming at the local level in Tanzania

In 2011–2014, the Global Climate Change Alliance (GCCA) supported the establishment of three ecovillages, where a multidimensional, integrated approach ‘touching almost every aspect of village life’ was used for climate change adaptation and mitigation at the local level. A range of interventions was implemented, which not only promoted a range of environmentally sustainable practices, but also enhanced and diversified incomes, food security and access to water for domestic purposes. These innovations involved the following areas.

- **Crops.** Several improved practices were introduced to increase soil fertility and crop yields and reduce vulnerability to climate variability. These practices included later planting to avoid crop losses during dry spells; ox-drawn ripping to break the hard-pans in soil and increase water retention and reduce the workload for land preparation; soil-water conservation measures such as contour ridges and gully restoration; the use of farmyard manure to increase soil fertility and improve the soil structure; open pollinated high-yielding and early-maturing crop varieties and community seed production; optimal spacing of plants; inter-cropping with legumes to improve soil fertility; and crop rotation to control weeds and pests. Yields increased significantly as a result of these techniques.
- **Livestock.** Improved practices were introduced to increase productivity, reduce the negative environmental impact of livestock grazing and enhance synergies between livestock and crop production. For example, improved cattle, goat and chicken varieties were cross-bred with local varieties to increase productivity while maintaining adaptability to local conditions; training was conducted on animal husbandry and dry season feeding; modern beehives and bee keeping were introduced to increase productivity; fish ponds were established; and training was conducted on tanning and production of leather goods to add value and generate incomes.
- **Water.** The domestic and livestock water supply for Chololo was enhanced through water pumps powered by solar energy, rooftop rainwater harvesting, a subsurface dam, and a sand dam to capture and store seasonal rains.
- **Natural resource management.** Nursery establishment, tree planting (including fruit trees) and land use planning (with by-laws) were introduced to counter soil erosion and maintain the supply of forest products, while simultaneously storing carbon.
- **Rural energy.** Alternative energy and energy-efficiency innovations were introduced to reduce reliance on fuelwood and charcoal, deforestation and thereby greenhouse gas emissions. These measures included energy-saving cooking stoves, solar panels and biogas digesters to convert dung into gas.

Source: Chololo Ecovillage Project, 2014.

The midterm evaluation results inform the continuation of the programme/project; the final evaluation results inform the next programming period.

STEP 1: Ensure the evaluation criteria selected capture the key environmental and climate change concerns

The indicators suggested in Boxes 4 and 5 for incorporation in the programming document and the project/programme logical framework, respectively, can also be useful impact indicators in evaluation. Examples of environmental and climate change–related aspects that could be addressed in evaluation are:

- whether an SEA, EIA and/or CRA was required and, if so, whether it was carried out;
- whether and to what extent the environment and climate change–related measures recommended (e.g. by SEAs, EIAs, CRAs or midterm evaluations) were implemented—and, if so, how successfully;
- whether the programme/project has addressed the environmental/climate change issues in a **relevant** manner (e.g. the most important environmental issues and options were identified in the problem analysis and activities were appropriately designed to address them);
- whether programme/project actions were **effective** in promoting environment-friendly and climate-resilient practices (e.g. successful introduction of integrated pest management or water harvesting);
- whether the programme/project made environmentally **efficient** use of means (e.g. minimising the use of polluting agrochemicals and water);
- whether the programme/project has had any positive **impact** by contributing to sustainable development, including environmental sustainability, low-carbon development and climatic resilience (e.g. restored soil productivity, increased farmer income as a result of accessing organic markets, reduced carbon emissions);

- whether the programme/project has had a direct or indirect negative **impact** on the environment and climate resilience (e.g. increased profitability and intensification of agriculture leading to increased clearance of natural vegetation and pressure on water resources);
- whether the programme/project's **sustainability** is threatened by environmental degradation and/or climate change (e.g. that the agricultural commodities promoted by a project cannot be produced in the future due to reduced water availability).

To ensure that the above points are adequately addressed in evaluations, (i) environment and climate change–related key points should be clearly reflected in the evaluation terms of reference, and (ii) the evaluation team should have relevant environment and climate change expertise. Experience shows that if these factors are lacking, evaluation coverage tends to be shallow and unlikely to adequately capture associated issues and opportunities.

STEP 2: Ensure the evaluation results inform continuation of the programme/project and of future programmes/projects

The results of the **midterm evaluation** should be discussed and necessary changes integrated in the programme/project to enhance its environmental and climate change performance. Lessons from the **final evaluation** regarding environmental and climate change performance should be drawn and disseminated to inform the design of future programmes/projects. Moreover, evaluation results can inform policy dialogue.

Box 10 provides an example of a country programme evaluation which assessed the environmental performance of cooperation in the agriculture, food security and rural development sector.

**Box
10****Case Study, Evaluation: Evaluation of EU Cooperation with Kenya**

In early 2014, the DEVCO Evaluation Unit commissioned an evaluation of EU cooperation with Kenya. The methodology used was a cascading one, with 10 evaluation questions defining the areas to be assessed. Each evaluation question was supported by two to four judgement criteria, which in turn were each informed by two to four indicators.

One question focused on the agriculture sector: 'To what extent did the EU support to the agricultural sector contribute to improved food security, in particular for ASAL [arid and semi-arid lands] areas?' Three judgement criteria were associated with this question, one of which focused on the environment and climate change: 'Environmental and climate change problems are adequately addressed through the various EU interventions in the ASAL areas as a result of EU support'. This judgement criterion was informed by three indicators: (i) more environmental measures taken by rural households that have resulted in increasing resilience; (ii) indications of change of agricultural and other land use practices (including drought management) because of environmental considerations (reforestation and watershed management); and (iii) the extent to which newly introduced environmental and agricultural practices proved to be sustainable.

The environmental and climate change performance of EU support to the agriculture sector was evaluated along the above indicators. The assessment resulted in a recommendation for continued support and strengthening of the index-based livestock insurance programme, as it provided income security for livestock producers in case of loss of livestock due to drought; it was recommended that the insurance scheme be strengthened by ensuring strict monitoring and enforcement of rules to prevent abuse, and to stimulate producers to invest in animal health care and additional feed.

Source: ECORYS, 2014.

PART 4: Environment and Climate Change Risks, Hazards and Opportunities for Sector Activities

CROP PRODUCTION	
1. Areas of intervention	<ul style="list-style-type: none"> • Cultivation of staple crops/grains • Irrigation • Horticulture • Tree/perennial crops (e.g. orchards, tea/coffee plantations, cocoa)
2a. Key risks & hazards	<ul style="list-style-type: none"> • Declining yields due to erosion/declining fertility • Declining water availability for irrigation due to hydrological disruption and saltwater intrusion (e.g. associated with deforestation and climate change) • Pest outbreaks (e.g. insects) due to loss of natural predators and climate change • Crop loss due to increasing frequency and magnitude of extreme weather events (e.g. drought, dry spells, floods) due to climate change • Reduced agricultural productivity due to long-term change in local climate (e.g. drier, hotter climate, shorter, more unpredictable/erratic rainy seasons)
2b. Addressing key risks & hazards	<ul style="list-style-type: none"> • Restoration of soil fertility. Options include: <ul style="list-style-type: none"> – Erosion control, e.g. gabions, terracing, tree barriers – Mulching – Organic manure – Promotion of farmer investments in soil conservation, e.g. by providing food for work or social transfers as investment incentives • Promote water-efficient irrigation to increase crop yields and contribute to climate change adaptation. Options include: <ul style="list-style-type: none"> – Small-scale infrastructure for water management such as rainwater harvesting and small earth dams. Methods of water capture must be carefully studied for their environmental and health effects. – Drip and sprinkler irrigation and other low-water-consumption irrigation – Incentives and charges to promote water savings, metering, communal management through water user associations • Based on an understanding of the potential impacts of climate change in the sector, support the development of approaches to modify farming practices. Options include: <ul style="list-style-type: none"> – Research on and implementation of changes in farming calendar – Research on and introduction of viable crops – Research on pest and disease dynamics expected under climate change – Research, development and introduction of drought-resistant crop varieties – Extension training on climate change adaptation • Support awareness raising of farmers on climate change and adaptation through e.g. extension services, farmer field schools, radio programmes • Take into account medium- and long-term climatic conditions expected under climate change in the design of drainage systems, which may otherwise become obsolete before their projected life-span • When planning agricultural expansion, identify sustainable water abstraction rates considering other competing water uses and climate change projections. Also take into account saltwater intrusion associated with sea level rise which can be exacerbated by groundwater abstraction.

CROP PRODUCTION	
<p>3a. Potential impacts of sector development</p>	<ul style="list-style-type: none"> • Erosion and declining soil fertility from cultivation of slopes, tillage, uncovered soils after harvest and monocropping • Deforestation and loss of wildlife and biodiversity from conversion of forests, wetlands and other natural vegetation to agriculture • Soil and water pollution, eutrophication and loss of biodiversity and soil fauna due to use of pesticides and fertilisers • Disruption of hydrological flows and water bodies due to clearance of vegetation in upper catchments and over-abstraction of surface- and groundwater for irrigation • Air pollution from burning of biomass due to land clearance and burning of crop residues • Loss of biodiversity due to introduction of alien invasive species • Soil salinisation due to accumulation of salts from irrigation water • Greenhouse gas emissions from: <ul style="list-style-type: none"> – Clearance of forests – Burning of crop residues and vegetation – Methane emissions from paddy rice – Fertiliser production
<p>3b. Avoiding/minimising impacts of sector development</p>	<ul style="list-style-type: none"> • Addressing land degradation through the promotion of soil and water conservation contributes to tackling underlying causes of reduced productivity, contributes to climate change adaptation and can create carbon sinks through re-vegetation. Options include: <ul style="list-style-type: none"> – Agroforestry – Conservation agriculture (following the principles of permanent soil cover, minimal soil disturbance and crop rotation) – Soil erosion control measures (e.g. terracing) – Extension training on the above approaches and techniques • Promote integrated soil and nutrient management to minimise fertiliser use, contributing to reduced water contamination as well as to climate change mitigation. Options include: <ul style="list-style-type: none"> – Inter-cropping with nitrogen-fixating plants – Composting manure and crop residues – Site-specific research on nutrient needs; matching fertiliser application to soil nutrient needs • Rehabilitate drainage systems to minimise soil salinisation associated with water logging. • Promote integrated pest management, reducing the need for synthetic pesticides and increasing climate change adaptive capacity • Improved fertiliser efficiency, including analysis of soil nutrient needs to optimise use of fertilisers, training on correct application of fertilisers • Minimise water contamination and occupational health hazards by training farmers in the correct use of agrochemical products and product selection • Minimise field burning practices such as sugar cane burning, as they can be a source of persistent organic pollutants (POPs, which are regulated under the Stockholm Convention) and a health hazard
<p>4. Opportunities</p>	<ul style="list-style-type: none"> • Promote organic farming, which can access high-value markets and contribute to reducing water pollution. The reduced reliance on inorganic fertilisers also reduces vulnerability to fluctuations in world market input prices and contributes to climate change mitigation. • Promote fair trade certifications, which can access high-value markets, reduce pollution and secure premiums that benefit the community. • Generate heat and electricity from agricultural waste, contributing to low-carbon development (conditions permitting). • Improved storage and on-farm processing to reduce post-harvest losses.

LIVESTOCK	
1. Areas of intervention	<ul style="list-style-type: none"> • Livestock breeding • Rangeland management • Poultry production
2a. Key risks & hazards	<ul style="list-style-type: none"> • Loss of livestock due to increasing frequency and magnitude of extreme weather events (e.g. drought, dry spells, cold spells, floods) due to climate change • Reduced productive potential and carrying capacity of rangelands due to erosion, declining soil fertility and long-term change in local climate (e.g. drier, hotter climate, shorter, more unpredictable/erratic rainy seasons) • Onset of new diseases/increased frequency of known diseases due to climate change • Competition with agriculture leading to reduced availability of rangeland and increased pressure on remaining grazing lands
2b. Addressing key risks & hazards	<ul style="list-style-type: none"> • Restoration of grazing lands. Options include: <ul style="list-style-type: none"> – Erosion control, e.g. gabions, terracing, tree barriers – Enrichment planting – Grazing control, e.g. restricted access to ensure that grazing is not exceeding the carrying capacity, periodic bans on grazing to allow regeneration – Increasing the number of watering points to reduce pressure on vegetation near water sources during the dry season – Destocking • Reduce the imperative to maintain large herds by enhancing productivity per animal: <ul style="list-style-type: none"> – Improving animal husbandry and veterinary services to improve livestock health and reduce livestock losses – Introduce improved breeds with higher productivity, which are adapted to local conditions • Develop climate change adaptation mechanisms such as creation of high grounds to protect livestock from floods, preparedness for new diseases and changes in known disease dynamics
3a. Potential impacts of sector development	<ul style="list-style-type: none"> • Deforestation and loss of wildlife and biodiversity from conversion of forests and other natural vegetation to pastures • Erosion and loss of soil fertility due to overgrazing • Pollution of water bodies and groundwater and transfer of diseases from animal waste • Greenhouse gas emissions from: <ul style="list-style-type: none"> – Clearance of forests – Burning of pastures – Methane emissions from ruminant metabolism
3b. Avoiding/minimising impacts of sector development	<ul style="list-style-type: none"> • Develop grazing land management systems to keep pastures under their carrying capacities (e.g. GIS-based systems, grazing fees, community-based regulation of access) • Establish additional watering points to reduce concentration of livestock around water sources • Enrichment planting in grazing land • Reverse pasture degradation and protect pastures (e.g. removing mobility on common pastures, controlled exclusion from sensitive areas), which also leads to reduced carbon emissions • Promote silvopastoralism, which can have benefits in enhancing soil protection and water conservation and generating carbon sinks • Promote improved diets to reduce enteric fermentation, contributing to reduced emission of greenhouse gases • Promote the production of climate-smart alternative protein sources to meat from cattle
4. Opportunities	<ul style="list-style-type: none"> • Promotion of organic meat, which can access high-value markets and contribute to reduced water pollution

AQUACULTURE AND FISHERIES	
1. Areas of intervention	<ul style="list-style-type: none"> ● Marine fisheries ● Inland fisheries ● Aquaculture
2a. Key risks & hazards	<ul style="list-style-type: none"> ● Loss of marine fish stock, e.g. due to: <ul style="list-style-type: none"> – Clearance of mangroves (fish spawning grounds) – Overfishing and destruction of seabeds by fishing fleets – Coral bleaching due to rising temperatures (fish spawning grounds) – Changing oceanic currents and water temperatures – Destruction of coral reefs due to rapid sea level rise ● Loss of freshwater fish resources due to disruption of freshwater ecosystems from: <ul style="list-style-type: none"> – Dam construction – Water pollution – Siltation and increased turbidity from erosion and mining – Water abstraction for agriculture, industrial and urban domestic use – Disruption to hydrological flows and freshwater systems due to changing weather patterns – Changing water temperatures
2b. Addressing key risks & hazards	<ul style="list-style-type: none"> ● Promote integrated water resources management ● Rehabilitate water courses ● Establish fish ladders in connection with dams to allow migration ● Establish captive breeding programmes ● Promote mangrove and coral reef rehabilitation and protection to protect fish spawning grounds; this will have co-benefits for climate change adaptation (e.g. natural sea defences to sea level rise and storm surges), climate change mitigation (creation/protection of carbon sinks) and biodiversity ● Engage in a dialogue with other sectors to address the risks and hazards created by actions in these sectors for fisheries
3a. Potential impacts of sector development	<ul style="list-style-type: none"> ● Collapse of fish stocks from overfishing and destructive fishing practices ● Pollution of downstream water bodies and groundwater and transfer of diseases due to release of wastewater from aquaculture ● Loss of aquatic biodiversity due to introduction of invasive fish and shellfish species and diseases transferred from farmed fish ● Pressure on wild fish populations as fishmeal is made with caught wild fish ● Greenhouse gas emissions from energy consumption in aquaculture and by fishing vessels
3b. Avoiding/minimising impacts of sector development	<ul style="list-style-type: none"> ● Raise awareness on the impacts of capture techniques ● Invest in enforcement of fishing regulations ● Promote aquaculture in rice farming as part of an integrated pest management approach and as a way to reduce use of agrochemicals. Aquasilviculture can also be promoted, integrating aquaculture and mangrove forestry, which sequesters carbon and is more resilient to shocks and extreme events (FAO, 2010) ● Promote energy-efficient aquaculture (e.g. farming of seaweeds, oysters and clams), which has a relatively low carbon footprint and contributes to low-carbon development
4. Opportunities	<ul style="list-style-type: none"> ● Promote organic and ASC (Aquaculture Stewardship Council) fish, which can (potentially) access high-value markets and contribute to reduced water pollution ● Promote MSC (Marine Stewardship Council) fish, which can potentially access high-value markets and contribute to reduced pressure on fish stock and destruction of seabeds from unsustainable fishing practices

CROSS-SECTORAL	
1. Areas of intervention	<ul style="list-style-type: none"> • Agriculture, food security and rural development policy • Extension services • Off-farm livelihood activities • Employment generation and entrepreneurship • Agro-industries • Fiscal reform
2a. Key risks & hazards	<ul style="list-style-type: none"> • As listed above • Loss of off-farm income opportunities, due to environmental degradation and climate change, e.g. loss of forest resources
2b. Addressing key risks & hazards	<ul style="list-style-type: none"> • When promoting agro-industrial development, promote the use of clean technologies and low-carbon processes including, e.g. reuse of water and wastewater treatment • Support climate change impact and vulnerability assessments in the agriculture sector (including crops, livestock and aquaculture/fisheries) to understand the risks and opportunities and develop adequate strategies for adaptation • Promote risk transfer through the development of weather insurance, increasing climate change adaptive capacity and social transfers/food • Invest in enhancing early warning systems (seasonal forecasts, yield predictions, drought warning, climate modelling) to help avert crises and allow for prompt action
3a. Potential impacts of sector development	<ul style="list-style-type: none"> • Policies can incentivise and promote practices, which lead to environmental degradation and/or vulnerability to climate change (e.g. incentives for land clearance, promotion of colonisation of virgin lands, subsidies on pesticides and inorganic fertilisers) • Greenhouse gas emissions from: <ul style="list-style-type: none"> – Energy consumption in industrial processing – Charcoal burning
3b. Avoiding/minimising impacts of sector development	<ul style="list-style-type: none"> • Review policies and (i) introduce incentives (e.g. fiscal mechanisms) for environmentally sustainable and climate-smart practices and inputs (e.g. less-polluting pesticides, improved seeds, secure land rights to promote investments in land productivity and restoration); (ii) remove incentives that promote unsustainable practices or hamper the adoption of sustainable and climate-smart practices; and (iii) reduce/remove subsidies that result in polluting practices (e.g. for fossil fuels, inorganic fertilisers), whilst addressing associated socio-economic impacts (e.g. via cash transfers) • Develop regulatory framework to control clearing of new land and water abstraction • Include environmental and climate indicators in sector monitoring • Include environmental and climate change actions and items in sector plans and budgets • Build the capacity and awareness of the extension system to promote environmentally sustainable and climate-smart agricultural practices • Promote integrated systems, which can improve efficiency, as the waste from one system is a resource for the other. Examples are crop-livestock integrated systems (manure increases crop production and crop residues and by-products feed animals); rice-fish integrated systems (which also reduce pesticide requirements in rice farming); agroforestry (contributes to soil and water conservation, reduces impacts of extreme weather, increases soil fertility, can boost yields, can provide fruit, fodder, timber and fuelwood and acts as a carbon sink) and silvopastoral systems • Explore options to build on and strengthen local/traditional knowledge, technologies and varieties/breeds adapted to local conditions • Develop adequate strategies for low-carbon development • Climate-proof rural infrastructure (e.g. rural roads, river bank protection, irrigation schemes)
4. Opportunities	<ul style="list-style-type: none"> • Seek opportunities for rural incomes from improving the status and productivity of natural resources, and payments for ecosystem services and carbon storage • Seek opportunities for the creation of off-farm employment and green jobs, e.g. in new/emerging green industries in rural areas and ecotourism • Promote markets for organic products • Introduce incentives for cleaner production in agro-industries (e.g. labels, awards)

PART 5: Resources

General guidance on mainstreaming

Guidelines on the Integration of Environment and Climate Change in Development Cooperation (EC, 2011). Key reference document for mainstreaming environment and climate change in EC development cooperation. Provides model terms of reference for CEPs, SEAs and EIAs; and environmental and climate risk screening procedures.

Applying Strategic Environmental Assessment – Good Practice Guidance for Development Cooperation (Organisation for Economic Co-operation and Development Development Assistance Committee, 2006). Guidelines prepared in response to commitments under the Paris Declaration for Harmonisation of Donor Approaches to Environmental Assessment. Provide an overview of different approaches to SEA used by donors and basic principles for SEA. Complementing the guidance, Advisory Notes have also been prepared on:

- SEA and Biofuel Development (2011)
- SEA and Post-conflict Development (2010)
- SEA and Disaster Risk Reduction (2010)
- SEA and Climate Change Adaptation (2010)
- SEA and Ecosystem Services (2010)

Global Climate Change Alliance. EU initiative with training materials on climate change mainstreaming.

UNEP-UNEP Poverty-Environment Initiative (PEI). EU-supported programme on county-led environmental mainstreaming, which has developed a comprehensive methodology and toolbox on mainstreaming.

Guidance for mainstreaming in the agriculture/food security/rural development sector and relevant documents

Agriculture, Mainstreaming Environment and Climate Change. (IIED and Irish Aid, 2011)

FAO Environmental Impact Assessment Guidelines for FAO field projects. (FAO, 2012)

Asian Development Bank Environmental Assessment Guidelines. (2003). See Rapid Environmental Assessment checklists (in Appendix 1) for irrigation, fisheries, and agro-industrial projects.

Climate-Smart Agriculture Sourcebook. (FAO, 2013)

The 2050 Criteria: Guide to responsible investment in agricultural, forest, and seafood commodities. (WWF, 2012)

Climate impacts on food security and nutrition. (WFP and Met Office Hadley Centre, 2012)

Climate change and hunger, Responding to the challenge. (WFP, 2009)

The adaptation advantage: the economic benefits of preparing small-scale farmers for climate change. (IFAD, 2013)

Organic Agriculture Information Note. (EuropeAid, 2012)

Environment and climate change

Country Environmental Analyses (CEAs). Detailed state of the environment reports prepared by the World Bank for some countries; provide good overview of environmental issues.

Country Environmental Profiles. CEPs provide an overview of the state of the environment (including pressures and trends); the expected impacts of climate change; the institutional, policy and regulatory framework for environment and climate change; an overview of donor activity in environment and climate change; and recommendations for EU programming.

National Adaptation Programmes of Action (NAPAs). Produced by all least developed countries and submitted to the UNFCCC. They identify priority climate change adaptation projects. In many cases, NAPAs are outdated.

Nationally Appropriate Mitigation Actions (NAMAs). Prepared in the context of the UNFCCC by developing country parties to the convention. They identify priority climate change adaptation actions. Discussions are ongoing in climate negotiations to see if NAMAs could qualify for carbon credits under the New Market Mechanisms.

National Communications to the UNFCCC. All countries that are a party to the UNFCCC have to submit these reports to the UNFCCC Secretariat. They include an overview of the country situation, expected impacts from climate change, an inventory of greenhouse gas emissions, an indication of climate change vulnerabilities in different sectors, and an indication of opportunities for greenhouse gas reductions and adaptation.

National Environmental Summaries (NESs). Prepared by UNEP for some countries; offer a good synthesis of a country's most important environmental issues.

Examples of SEAs in the agriculture, food security and rural development sector

SEA of the agriculture sector in Rwanda (EC, 2012). Under the Sugar Accompanying Measures, the EC has produced a number of SEAs for sugar sector adaptation strategies, which have an important component on agriculture and rural development. For example: Guyana (2013), Kenya (2012); Zambia (2010); Swaziland (2010); Malawi (2010); Jamaica (2009); Mauritius (2007).

Web-based resources

The Economics of Ecosystems and Biodiversity (TEEB).

EU-supported initiative with resources on mainstreaming of biodiversity

Conservation Agriculture (FAO)

Climate Smart Agriculture

IFAD-WFP Weather Risk Management Facility

Livestock and the Environment (FAO)

Sustainable Farming (WWF)

World Agroforestry Centre

Sustainable Agriculture and Rural Development (DEVCO)

Food and Nutrition Security (DEVCO)

capacity4dev.eu – Agriculture & Rural Development.

Knowledge sharing platform on agriculture and rural development in development cooperation

CORDIS (Community Research and Development Information Service).

Provides a list of research projects funded under the Seventh Framework Programme for Research and Technological Development (FP7)

Useful information sources on country's environmental and climate change situation

- National Communications to the United Nations Framework Convention on Climate Change (UNFCCC)
- National Adaptation Programmes of Action (NAPAs)
- Nationally Appropriate Mitigation Actions (NAMAs)
- National Environmental Summaries (UNEP)
- National reports to the Convention on Biological Diversity (CBD)
- National Biodiversity Strategies and Action Plans (NBSAPs)
- National Reports to the United Nations Convention to Combat Desertification (UNCCD)
- National agriculture, food security and rural development policies
- National Environment Policy
- National Water Policy
- National Land Use Policy/Plan
- National Climate Change Policy
- National State of the Environment reports
- Country Environmental Analyses (CEAs) produced by the World Bank
- Any Strategic Environmental Assessment (SEA) carried out in the sector
- Research, evaluations and analysis produced by other donors in the agriculture, food security and rural development, environment and climate change sectors.

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