ANNEX I

TECHNICAL SPECIFICATIONS

EUROCLIMA II
Desertification Land Degradation and Drought (DLDD), and bio-physical modelling for crop yield estimation, in Latin America under a changing climate

Joint Research Centre
Institute for Environment and Sustainability

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Acronyms

DLDD	Desertification Land Degradation and Drought
LA	Latin America
JRC	Joint Research Centre
EC	European Commission
DEVCO	Directorate-General for Development and Cooperation - EuropeAid
EU	European Union
OEDC	Organisation for Economic Co-operation and Development
TA	Technical Assistance (to DEVCO)
IICA	Inter-American Institute for Cooperation on Agriculture
CEPAL	Economic Commission for Latin America and Caribbean
MDG	Millennium Development Goal
UNEP	United Nations Environment Programme
IPCC	Intergovernmental Panel on Climate Change
EPS	Ensemble Prediction Systems
CPTEC	Centro de Previsão do Tempo e de Estudos Climáticos (Brasil)
CIAT	Centro Internacional de Agricultura Tropical
INTA	Instituto Nacional de Tecnología Agropecuaria (Argentina)
CONAB	Companhia Nacional de Abastecimento (Brasil)

1. Project Summary

Title: Desertification Land Degradation and Drought (DLDD), and bio-physical modelling for crop yield estimation, in Latin America under a changing climate.

Geographical Area: 18 countries of Latin America - Argentina, Bolivia, Brasil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, México, Nicaragua, Panamá, Paraguay, Perú, Uruguay, Venezuela.

Total Budget: 1,340,000 Euro

Summary

Foreseen period	• 36 months
Project Objectives	• **General Objective:** • Facilitate the integration of climate change mitigation and adaptation strategies and measures into Latin American public development policies and plans at national and (sub) regional levels[1]. • **Specific Objective:** • Contribute to Food Security in LA by disseminating and deepening knowledge about desertification, land degradation and drought, and their impacts assessed through crop modelling as well as crop yield estimation, considering also the potential effects of and adaptation to climate change.
Partners	• DLDD Latin America scientific and technical network, crop modelling community as established in EUROCLIMA
Target group	• EUROCLIMA Focal Points and their staff. • Scientific and technical staff of technical and scientific institutions (environment, agriculture, academic, and science sectors, etc., including government institutions). • Latin American scientific community involved in the problematic of DLDD. • Latin American private sector organizations involved in the problematic of DLDD. • National and regional agricultural research institutions
Indirect beneficiaries	• Agricultural sector and society as a whole, by providing easily accessible science-based information that can enable a better management of land systems.
Sector	• Agriculture, Environment
Results/Activities	**R1. Together with EUROCLIMA national focal points and expert network, new priorities for research on DLDD have been defined and the corresponding models and tools**

[1] With "regional", unless otherwise stated, the reference is to the 18 beneficiary countries of the EUROCLIMA programme.

	have been developed; to be coordinated by JRC in close collaboration with Latin American national focal points and scientific partners and involving EU and Latin American-based researchers. To be followed by promotion of research results in public policies and plans A.1.1. Shared identification of research needs and subsequent structured exchange of ideas on research methodologies and preliminary results through varied forms of communication (blogs, virtual meetings, workshops). A.1.2. Development of models and tools to address the biophysical aspects of desertification and land degradation A.1.3. Development of models and tools to address the biophysical aspects of drought
	R2. Knowledge transfer has been accomplished through the update, maintenance and transfer to Latin American partners of the DLDD information system developed under EUROCLIMA in its first phase. A.2.1. Maintain and extend the current data provision of meteorological and remote sensing data at continental level A.2.2. Maintenance and review of Land Degradation, Desertification and Drought products; A.2.3. Training and transfer of web-mapping and decision support system technology to LA partners;
	R3. Capacity building and South-South cooperation on DLDD has been achieved through case studies, workshops and specific training sessions. A.3.1. Execution of a number of specific case studies, on Desertification Land Degradation and Drought, by the members of the expert network of EUROCLIMA. A.3.2. Organising expert meetings in Latin America to promote the coordination by Latin American institutions of the scientific network initiated during the 1st phase of EUROCLIMA. A.3.3. Organizing training on tools of interest for the scientific network on Desertification Land Degradation and Drought
	R4. Context-specific bio-physical modelling for crop yield estimation under climate change has been accomplished. A.4.1 Further enhancement and tailoring of the BioMA modelling platform to needs of LA partners and to local and regional conditions. A.4.2 Running state-of-the-art climate change scenarios of yield estimates for dominant crops in main producing regions of LA. A.4.3 Exploration of adaptation options under climate change through integration of local knowledge on agro-management. A.4.4 Reinforcing research partner relationship through a scientific workshop and dissemination through a scientific conference on climate change in agriculture in LA

2. Objectives

The overall objectives of EUROCLIMA II are to contribute to poverty reduction of the Latin American (LA) population by reducing their environmental and social vulnerability to climate change, as well as reinforcing the resilience of the LA region to climate change and promote opportunities for green growth.

The specific objective of EUROCLIMA II aims to facilitate the integration of climate change mitigation and adaptation strategies and measures into Latin American public development policies and plans at national and regional levels.

The specific objective of the project proposed by the JRC (component 3b and 3c of EUROCLIMA II) is to contribute to Food Security in LA by disseminating and deepening knowledge about desertification, land degradation and drought as well as about their impacts on estimation of crop yields as estimated through bio-physical and crop growth modelling, considering also the potential effects of climate change.
The project will provide information and tools that can support stakeholders in terms of taking actions and decisions for the mitigation and adaptation to the effects of climate change regarding land degradation processes and drought that affect food security.

The main activities to be developed during EUROCLIMA II are divided in three components: Policy dialogue, Adaptation and mitigation "no-regrets" measures, and Sustainable agriculture, food security and climate change. In order to assure a successful outcome of the project there should be a clear definition of the interaction between these components that should be agreed at the beginning of the project between all the responsible partners.

Component 1: EU-LA policy dialogue on climate change. This component will raise political awareness and strengthen institutional capacity, knowledge and visibility of climate change impacts at national, sub-regional and regional levels. This will be the main activity of DEVCO with support of the Technical Assistance (TA) to DEVCO.

Component 2: Adaptation and mitigation "no-regrets" measures. "No-regrets" adaptation and mitigation measures will be identified, prioritized, and elaborated for implementation through pilot cases. This will be the main activity of CEPAL in collaboration with DEVCO and the Technical Assistance.

Component 3: Sustainable Agriculture, food security and climate change. The food security issue in a broader sense will be tackled from the technical and scientific point of view in order to contribute to climate change mitigation and adaption measures. This will be done through 3 principal lines of action:

> **3.a** Reinforce agriculture's capacity to mitigate the effects of and adapt to climate change (implemented by IICA)
>
> **3.b** Disseminate and deepen knowledge on desertification, land degradation and drought (implemented by JRC).

3.c Refine and Apply Bio-physical models for crop growth simulation, yield estimation and agricultural systems analysis under climate change (implemented by JRC).

3. Relevance of the project

Land degradation causing a general loss of productive capacity of the land is already affecting some 300 million ha of land in Latin America (*UNEP, 2007, GEO-4*). Land degradation, primarily by water erosion, salinization and reduction of soil fertility, affects approximately 22 per cent of the region's surface area (Bai et al., 2008). Degradation of cropland in the region's drylands has reached 28 per cent (Zika and Erb, 2009). Knowing where this happens and understanding why it happens is crucial in outlining local and territorial land use and policy strategies in view of ensuring food security. Promotion of sustainable land use programmes is best possible when there is proper knowledge on what the current or potential land problems are.

To meet the Millennium Development Goal (MDG) 1c on reducing hunger, global food production will have to increase and food distribution to improve. To meet MDG 7 and other environmental goals, agriculture needs to reduce its current environmental impacts (*UNEP, 2012, GEO5*).

During the last decennia the Latin American drylands, where the majority of land degradation processes occur, of which an estimated 28% is already degraded have seen a paramount increase of agricultural activities in response to commercial demands. Intensification of agricultural production poses considerable pressures on the land resource. The IPCC reports that the soybean cropping boom provoked critical land use changes that will enhance aridity as well as land degradation in already water stressed regions in e.g. Argentina, Bolivia, Brazil and Paraguay. Land degradation is the result of complex interactions with geo-physical, socio-economic and political aspects leading to trade-offs in which all too often environmental sustainability gets little consideration.

Extreme events, such as severe droughts, worsen this situation. Not adapted land use combined with increased drought recurrence resulting from climate change can affect the resilience of ecosystems tipping them into a less productive state. Land degradation is possible aggravating poverty in vulnerable areas. Hence, adapted land management is essential in combating those adverse conditions. To identify priorities and to monitor the consequences of actions, further knowledge on the trend of degradation processes, their spatial inventory and impacts can certainly contribute to this process.

Natural ecosystems, agriculture, water resources and human health in Latin America have been impacted by unusual extreme weather events reported in the past years. For example, the tropical forests of Amazonia are increasingly susceptible to fire occurrences due to increased El Niño-related droughts. Droughts related to La Niña create severe restrictions for water supply and

irrigation demands in central western Argentina and central Chile between 25°S and 40°S. Droughts related to El Niño impacts on the flows of the Colombia Andean region basins (particularly in the Cauca river basin), are causing a 30% reduction in the mean flow, with a maximum of 80% loss in some tributaries, whereas the Magdalena river basin also shows high vulnerability (55% losses in mean flow). Consequently, soil moisture and vegetation activity are strongly reduced/augmented by El Niño/La Niña in Colombia.

Droughts favoured the development of epidemics in Colombia and Guyana, and outbreaks of hantavirus pulmonary syndrome have been reported for Argentina, Bolivia, Chile, Paraguay, Panama and Brazil after prolonged droughts, probably due to the intense rainfall and flooding following the droughts, which increases food availability for peri-domestic (living both indoors and outdoors) rodents. Prolonged droughts in semi-arid north-eastern Brazil have provoked rural-urban migration of subsistence farmers, and a re-emergence of visceral leishmaniasis. A significant increase in visceral leishmaniasis in Bahia State (Brazil) after the El Niño years of 1989 and 1995 has also been reported. Human migration resulting from drought, environmental degradation and economic reasons may spread disease in unexpected ways, and new breeding sites for vectors may arise due to increasing poverty in urban areas and due to deforestation and environmental degradation in rural areas.

Over the coming decades, droughts are likely to intensify in some seasons and areas, including in Mexico, Central America and northeast Brazil. Elsewhere, however, the projected draught trends are prone to even larger uncertainties. Definitional issues, lack of observational data, and the inability of models to include all the factors that influence droughts preclude accurate drought projections.

4. Project Description

The proposal of JRC for the EUROCLIMA II project will address components 3.b and 3.c by disseminating and deepening knowledge about desertification, land degradation and drought as well as on bio-physical and crop growth modelling, considering also the potential effects of climate change, and allowing to link research results to climate change mitigation and adaptation measures, including where feasible issues of disaster risk management.

The general objective of the project of facilitating the integration of climate change mitigation and adaptation strategies and measures into Latin American public development policies and plans at national and (sub) regional levels, will be obtained by the implementation of a number of activities detailed below. The better understanding obtained regarding the current and future trends of desertification and drought as well as of crop yield estimation will allow the different LA stakeholders to have a solid basis for drafting proposals for mitigation and adaptation actions that will reduce the effect of climate change in land degradation in general and specifically in food security.

The project, in agreement with the needs of the Latin American stakeholders, will develop a number of models and tools that are relevant for the monitoring and understanding of the biophysical aspects of desertification, land degradation and drought, and estimating crop yield changes in a changing climate. In this, the relevance of the models and tools for food security will be an important criterion.

The products developed in the first phase of EUROCLIMA will be maintained through the DLDD information system that is in place (see http://edo.jrc.ec.europa.eu/scado) and new tools and continental products will be added to the system. New products at national, subnational and local level could be envisaged by LA partners and incorporated in the system.

A number of workshops and training courses on DLDD will be organised by JRC together with Latin American partners in order to contribute to capacity building and South-South cooperation.

JRC will be responsible to achieve the following results (R1, R2, R3, R4), as provided in the logical framework, through a number of activities. The first result refers to the definition and ensuing execution of research, the second result refers to the transfer of knowledge through the DLDD information system, the third result concentrates on capacity building and South-South cooperation, and the fourth result focuses on bio-physical modelling for crop yield estimation under climate change:

R1. Together with EUROCLIMA national focal points and expert network, new priorities for research on DLDD have been defined and the corresponding models and tools have been developed.; to be coordinated by JRC in close collaboration with EUROCLIMA national focal points and expert network and involving EU and Latin American based researchers. To be followed by promotion of research results in public policies and plans (through Component 1: EU Latin America policy dialogue on climate change).

Activity 1.1 Shared identification of research needs and subsequent structured exchange of ideas on research methodologies and preliminary results through varied forms of communication (blogs, virtual meetings, workshops).

Activity 1.2 Development of models and tools to address the biophysical aspects of desertification and land degradation

Activity 1.3 Development of models and tools to address the biophysical aspects of drought

R2. Knowledge transfer has been accomplished through the update, maintenance and transfer to Latin American partners of the DLDD information system developed under EUROCLIMA in its first phase.

Activity 2.1 Maintain and extend the current data provision of meteorological and remote sensing data at continental level.

Activity 2.2 Maintenance and review of Land Degradation, Desertification and Drought products

Activity 2.3 Training and transfer of web-mapping and decision support system technology to LA partners.

R3. Capacity building and South-South cooperation on DLDD has been achieved through case studies, workshops and specific training sessions: Execute case studies and organise expert meetings in Latin America to promote the coordination by LA institutions of the scientific network initiated by JRC and EuropeAid during the 1st phase of EUROCLIMA.

Activity 3.1 Execution of a number of specific case studies, on Desertification Land Degradation and Drought, by the members of the expert network of EUROCLIMA.

Activity 3.2 Organising expert meetings in Latin America to promote the coordination by Latin American institutions of the scientific network initiated during the 1st phase of EUROCLIMA.

Activity 3.3 Organizing training on tools of interest for the scientific network on Desertification Land Degradation and Drought.

R4. Context-specific bio-physical modelling for crop yield estimation under climate change has been acomplished.

Activity 4.1 Further enhancement and tailoring of the BioMA modelling platform to needs of LA partners and to local and regional conditions

Activity 4.2 Running state-of-the-art climate change scenarios of yield estimates for main crops in main producing regions of LA; and explorative model runs for land degradation scenarios.

Activity 4.3 Exploration of adaptation options under climate change through integration of local knowledge on agro-management.

Activity 4.4 Reinforcing LA partner relationship through a scientific training workshop and dissemination through a scientific conference on climate change in agriculture in LA

5. Methodology

The drought tasks will be developed by the JRC Climate Risk Management Unit (JRC.H07) working in close cooperation with the Land Resources Management Unit (JRC.H05) that will be developing the tasks related to desertification and land degradation (R1 to R3). Tasks under R4 will be executed by the Monitoring Agricultural Resources Unit (JRC.H04). A common usage of base data and a single web portal will be developed in collaboration improving the structure of the JRC-EUROCLIMA portal.

The JRC will build on the lessons learned from the first phase of EUROCLIMA in order to develop a better coordination with the focal points and with the different members of the project (CEPAL, IICA and TA). The JRC will also take in consideration the suggestions and recommendations of the focal points following the workshops in Honduras in May 2012 and in Colombia in February 2013. It will also take advantage of the different projects in which is involved with European and international scientific partners.

Further development of the DLDD Observatory developed by JRC-EUROCLIMA will be done by setting up an integrated model for drought mapping, monitoring and forecasting at different spatial scales. It will also include a model for mapping drought vulnerability and risk.

The monitoring of change in land surface phenology and productivity is an important and widely used approach to quantify the state and trend of degradation of ecosystems due to climatic or human influences. During the first phase of EUROCLIMA vegetation phenology and productivity metrics for the whole continent have been calculated using satellite based time-series imagery. This information will now be improved and maps indicating with high probability the areas with on-going degradation processes will be produced based on models combining spatial variables and indicators. This will be done through integrated modeling for assessing, mapping and monitoring land degradation situations at continental, sub-continental and national scale. The monitoring of land degradation processes is of main importance to understand the areas that are at risk, and keep them monitored in time will help to evaluate if the measures taken are being effective in combating desertification and land degradation.

The analysis and evaluation, together with Latin American cooperation partners, of climate change scenario simulations will allow evaluating the impact of climate change on drought and on ongoing land degradation processes and proposing mitigation and adaptation measures.

Close cooperation with and among LA partners is crucial to the success of the project. Sustainable results can only be achieved if local partner organizations will have enough support within EUROCLIMA II that enables them to incorporate the knowledge and technologies transferred. In this proposal we include the development of a number of case studies that would allow for a close cooperation with Latin American partners.

A call for collaboration will be launched to the LA partner organizations trough the national Focal Points in order to enhance the network created during

EUROCLIMA phase I and enlarging LA countries participation. In this regard, particular emphasis will be placed on disadvantaged countries and in those which have not participated in the first phase of EUROCLIMA.

The experience gained by JRC and its collaboration with a number of European and international partners will be a major asset EUROCLIMA that will be able to benefit from existing networks and know how, as well as creating synergies whenever possible.

Finally the project will include a number of expert meetings and training seminars on different topics of Desertification, Land Degradation and Drought. If there is interest from LA institutions, during this second phase of JRC-EUROCLIMA there will be an effort together with all stakeholders to find a LA institution that would become responsible to run and maintain the LA Desertification, Land Degradation and Drought Observatory in the future. Ideally, before the completion of this phase of the project the institution should already start this responsibility, so JRC-EUROCLIMA can accompany it in this task.

The activities of R4 will be a direct follow-up of the activities performed by JRC in EUROCLIMA phase 1. The EUROCLIMA-specific modelling solution of the bio-physical modelling platform BioMA as developed and presented in phase 1 will be further enhanced and tailored to the needs of partner organizations in LA, Context-specific model calibration through data collection on main crops in main producing regions at local and regional level, combined with the use of more specific soil data will enable more accurate and reliable crop yield estimates as compared to phase 1. State of the art climate scenario data for specific regions in LA will be incorporated into the BioMA platform and further enhanced and transformed as valuable climate forcing in climate change scenario modelling. The integration of local knowledge on agro-management will allow the exploration of adaptation options under climate change.

While local knowledge and data will be collected in collaboration with LA partners (collaboration will be sought in particular with partners engaged in the case studies), the model development, calibration, and the execution of model runs will be performed at JRC. Model results will be presented and discussed with LA partners and focal points in order to draw appropriate conclusions.

The developments of EUROCLIMA 2 will serve as best practice on how to implement context-specific regional and local climate change studies based on state-of-the-art bio-physical modelling of crop growing conditions.

Complementarities between EUROCLIMA 2 and the BASAL project will be fully explored to these projects' mutual benefit. In BASAL (also funded by DEVCO) Cuban experts and JRC researchers work together to adapt and apply at the BioMA-based modelling implementation framework to Cuban conditions, creating ownership in Cuba, and enabling the Cuban counterparts

to maintain and further extend the newly developed system according to their own needs.

In case DEVCO, the Technical Assistance, IICA or CEPAL, under Component 1 or 2, organize regional training seminars aimed particularly at political decision makers JRC will give support providing information on how the results of this component can be integrated into national policies and plan on climate change.

JRC will implement the project in close collaboration with the Focal Points and other participants in EUROCLIMA (AT, CEPAL, and IICA) through the EUROCLIMA Coordination and Monitoring Committee. The JRC will promote synergies and complementarities with the work developed by AT, CEPAL and IICA regarding the topics of climate change, sustainable agriculture and food security. Furthermore, together with the members of the Coordination and Monitoring Committee, the JRC will propose specific tools for a correct execution and coordination of EUROCLIMA such as: global and annual working plan, sustainability strategy, communication and visibility strategy, internal monitoring system. This will be discussed at the first meeting of the Monitoring and Coordination meeting and will have to be approved by the EC.

JRC will keep contact with the Focal Points in order to change information that will allow the Focal points to better understand the outcomes of the project and will allow the JRC to better understand the priorities of the countries through the opinion of the Focal Points. Although the Workshops organized by JRC are directed to technical/scientific experts in the field, if there is a specific interest on a topic a limited number of Focal Points could eventually attend these workshops (alternatively it could be envisaged to set up a webinar so all the interested Focal Points could follow the Workshop).

The technical and scientific networks established during the first phase of EUROCLIMA will be maintained and extended through a call for participation to scientific/technical Institutions that work in the thematic addressed with the objective of having participants from all the 18 countries. This call for participation will be done through the Focal Points and through the current network members. In this regard, particular emphasis will be placed on disadvantaged countries and in those not participated in the EUROCLIMA phase 1. Furthermore synergies will be sought with other projects or initiatives already in place in Latin America regarding the same topics.

The results and models developed in the framework of the project including any software tools developed will be disseminated by the JRC with the help of the network participants and of the Focal Points. The participants in the workshops and trainings will be asked to replicate the trainings received, in the measure of their possibilities, in their countries of origin and with the support of their national Focal Points. JRC will also disseminate the results of the project through its participation in international events such as scientific conferences or workshops.

5.1 Implementation of main activities

The implementation of the project will take in consideration gender balance whenever it's relevant. The limited access of poor women to resources, rights and their lack of geographical mobility, together with their lack of participation in decision making, make them more vulnerable to the effects of climate change. It is therefore recommended to integrate gender balance in the project design as much as possible. JRC will try to assure that all the measures recommended will benefit both men and women and will promote gender balance as much as possible among the participants of workshops and trainings.

The structured feedback on research methodologies and systemisation of preliminary results could be done through short regional training seminars aimed at political decision makers (Focal Points) giving emphasis on how the results of this component can be integrated into national policies and plan on climate change.

A consultation with the Focal points around the activities defined in this document, including workshops and training, will be done to better take in account the research priorities and needs of the countries.

The channels of communication with both the Focal Points and the project participants will be done mainly through email and web page news (including workshop agenda and minutes).

This section describes in more detail each of the activities that will be executed to achieve the expected results of the project. The activities proposed under each of the three main expected results (R1, R2, R3, and R4) have been drawn up mainly as a result of the outcome of the first phase of EUROCLIMA and discussed with the network of Latin American experts on DLDD during the final workshop in Natal (Brazil) in October 2012 (see minutes of the Workshop at http://edo.jrc.ec.europa.eu/scado/php/index.php?id=3208).

R1. Together with EUROCLIMA national focal points and expert network, new priorities for research on DLDD have been defined and the corresponding models and tools have been developed.

Activity 1.1 Shared identification of research needs and subsequent structured exchange of ideas on research methodologies and preliminary results through varied forms of communication (blogs, virtual meetings, workshops).

Although there has been a strong involvement of Latin American stakeholders in the definition of the proposed activities, in order to ensure pertinence and future application of research results into policies and plans, it is fundamental to ensure the consultation and continuous involvement of EUROCLIMA´s national focal points into JRC-EUROCLIMA actions. Also, maintaining channels of communication with the focal points helps the identification and

participation of nationally relevant research institutions. Finally, the participation of focal points can result in their help in making a case at national level for the assignment of funds for research in national plans and within climate finance proposals. A consultation with the Focal points around the activities defined in this document will be done to better take in account the research priorities and needs of the countries.

1.1.1 Set up of a group of EUROCLIMA – Desertification, Land Degradation and Drought (DLDD) on capacity4dev.eu

A EUROCLIMA group on Desertification, Land Degradation and Drought (DLDD) will be set up on the Capacity4Dev platform of the European Comission-EuropeAid. This group will allow maintaining communication among the different stakeholders involved in the project, to share information and stimulate discussion on the research topics addressed.

1.1.2 Exchange of ideas through Workshops and virtual meetings
The exchange of ideas between JRC and the national Focal Points will be done through virtual meetings depending on the technical constrains of both sides (phone conferences, videoconferences) and through their participation in Workshops organised by JRC, DEVCO and the Technical Assistance.

Activity 1.2. Development of models and tools to address the biophysical aspects of desertification and land degradation

The development of models and tools to address the biophysical aspects of desertification and land degradation will be further discussed with the national focal points and scientific partners of EUROCLIMA in Activity 1.1. However, the main aspects proposed by JRC to be considered and that will constitute the specific actions of Activity 1.2 are:

1.2.1 Interpretation of maps on the assessment of the Human-Environment system productivity into dedicated land degradation maps
Based on partner collaboration, relevant ancillary information layers will be identified and integrated with the EUROCLIMA regional products; more detailed maps on the assessment of the Human-Environment system productivity will be done to further interpret these maps into dedicated land degradation maps. Specific methodologies will be outlined and made available to all partners for implementation.

1.2.2 Methodologies for evaluation/modelling of climate change impacts on land degradation processes.
Methodologies for evaluation/modelling of climate change impacts on land degradation processes will be explored in order to have a better understanding on which degradation processes could be more affected by climate change

1.2.3 Final land degradation maps
Final land degradation maps will be linked to expected, documented effects of climate variability and change to gain more insight into the cause and effect feedback loops contributing to enhance climate change preparedness.

1.2.4 Economic valuation of land degradation and mitigation options considering the effects of climate change
Human-Environment (H-E) system productivity maps, as well as final land degradation maps, will be linked and integrated with econometric models to contribute to the valuation of land degradation and mitigation options and also considering the effects of climate change.

Activity 1.3 Development of models and tools to address the biophysical aspects of drought

The development of models and tools to address the biophysical aspects of drought will be further discussed with the national focal points and scientific partners of EUROCLIMA. However, the main aspects proposed by JRC to be considered and that will constitute the specific actions of Activity 1.3 are:

1.3.1 Drought prediction using meteorological forecasting models
Drought prediction will be done by using meteorological forecasts from Ensemble Prediction Systems (EPS) that could be applied to drought indices such as the SPI. This activity will rely on existing global EPS but also on information provided by regional partners such as the Centro de Previsão do Tempo e de Estudos Climáticos (CPTEC) of Brasil.

1.3.2 Development of a model for mapping drought vulnerability and risk.
In order to assess the drought risk for a certain region, the definition of vulnerability to drought should reflect the complex interactions between and the socio-economic systems and the physical environment. Models for drought vulnerability and risk will be developed at regional level but some countries might want to develop their own models at national or more local level.

1.3.3 Climate change impact on drought.
Analyse the impact of climate change on drought frequency, intensity and length, and analyse with local partners proposed measures for mitigation and adaptation of drought events

R2. Knowledge transfer has been accomplished through the update, maintenance and transfer to Latin American partners of the DLDD information system developed under EUROCLIMA in its first phase.

Activity 2.1 Maintain and extend the current data provision of meteorological and remote sensing data at continental level

2.1.1 Current data provision of meteorological and remote sensing data maintained and revised
The current and/or new meteorological and satellite image providers could be contacted to establish adequate cooperation protocols; new datasets from LA national and regional institutional partners need to be raised to increase system's interoperability and prominence.

Activity 2.2 Maintenance and review of Land Degradation, Desertification and Drought products

2.2.1 Current data products should be maintained and improved; new products from LA national and regional institutional partners need to be raised to increase system's interoperability and prominence

Activity 2.3 Training and transfer of web-mapping and decision support system technology to LA partners

2.3.1 Training and transfer of web-mapping and decision support system technology to LA partners; if there is interest from LA institutions it could be envisaged to implement the LA Drought Observatory in a LA institution that would become responsible to run and maintain the system;

R3. Capacity building and South-South cooperation on DLDD has been achieved through case studies, workshops and specific training sessions: Execute case studies and organise expert meetings in Latin America to intensify collaboration among LA institutions and promote their coordination of the scientific network initiated by JRC and DEVCO during the 1st phase of EUROCLIMA.

Activity 3.1 Execution of specific case studies on Desertification, Land Degradation and Drought, by the members of the expert network of EUROCLIMA.

3.1.1 Case studies proposed and executed by the members of the EUROCLIMA DLDD expert network
A certain number of case studies are proposed to be executed by the members of the EUROCLIMA expert network in communication and coordination with the national focal points. Some initial proposals have already been made during the last EUROCLIMA Workshop on DLDD that took place in Natal (Brazil) in October 2012 and these should be taken as the basis for discussion for the case studies (see minutes of the Workshop at http://edo.jrc.ec.europa.eu/scado/php/index.php?id=3208). The case studies are aimed at intensifying collaboration among network partners and at showing in practice the use of the DLDD tools. EUROCLIMA national focal points will be involved in the discussion on which case studies to execute taking in consideration the national interests and priorities of the countries together with the available resources. Ideally the case studies should be

distributed in different countries and when possible they could involve more than one country (transboundary). Common indicators that allow monitoring on a regional level, linked to GIS (where possible: free, open source), will be included.
The results of these case studies will be used as training material for training events of EUROCLIMA. Ideally, and if the development of other EUROCLIMA components and activities allows this, the case studies could be linked to the pilot cases to be developed under the principal line of action 2.c of Component 2.

Activity 3.2 Organising expert meetings in Latin America to promote the coordination by Latin American institutions of the scientific network initiated during the 1st phase of EUROCLIMA.

There are three workshop expert meetings foreseen to introduce LA partners to the results of the first phase of EUROCLIMA and to present and discuss results from the specific activities carried out during EUROCLIMA II.

3.2.1 The first Workshop could be jointly organised with IICA, CEPAL and AT during the first semester and should present the results of the first phase of EUROCLIMA and the second phase of the project to LA partners.

3.2.2 The second Workshop should take place during the second year and will cover the topics developed until that period (e.g. the results of the case studies)

3.2.3 The third and final Workshop should take place at the end of the last year and could also be organised jointly with IICA presenting the final results of the project.

Activity 3.3 Organizing training on tools of interest to the scientific network on Desertification, Land Degradation and Drought.

There are 3 training activities that could eventually be organised back-to-back with the second and third Workshops. The experts selected to participate in the training should compromise themselves towards the national Focal Points of their country to organise a training session for national experts to be selected by the national focal points.

3.3.1 The first training will be a Thematic Training on EUROCLIMA II model applications on Desertification, Land Degradation and Drought.

3.3.2 The second training will be a specific training on decision support system technology with emphasis on the specific case studies on Land Degradation and Drought from Activity 3.1.

3.3.3 The third training will be a specific training on web-mapping technology that will allow LA partners to learn how to implement similar web-mapping systems to the one developed in EUROCLIMA.

R4. Context-specific bio-physical modelling for crop yield estimation under climate change has been acomplished.

Activity 4.1 Further enhancement and tailoring of the BioMA modelling platform to needs of LA partners and to local and regional conditions

4.1.1 Improvement of the BioMA modelling platform for Latin America

Following the feedback from participants of the final EUROCLIMA first phase workshop of the JRC component held in Buenos Aires in March 2013, the BioMA modelling platform will be significantly improved regarding user friendliness in order to allow faster learning and using the components and modelling solutions already available within BioMA.

4.1.2 Context-specific crop parameterization for main crops in LA such as wheat, maize, soybean, rice, sugar cane

As requested by stakeholders in the final workshop of EUROCLIMA phase 1, more context-specific crop parameterization will be implemented for main crops in LA such as wheat, maize, soybean, rice, sugar cane. To this end, two external studies will deliver context-specific knowledge databases by the end of year one that allow for regional calibrations of the model for main crops under consideration. Specifications of the studies will be developed in close collaboration with partners from LA, such as INTA in Argentina or CONAB in Brazil, in order to build as much as possible on their local knowledge.

Activity 4.2 Running state-of-the-art climate change scenarios of yield estimates for main crops in the main producing regions of LA.

4.2.1 Post-processing of downscaled and bias-corrected climate scenarios for specific regions in LA

While in EUROCLIMA phase 1 the output of two generic Global Circulation Models have been used as climate forcing for the bio-physical simulations of climate change impacts on crop yields at the continental scale in LA, in EUROCLIMA phase 2 state-of-the-art climate scenarios that are downscaled and bias-corrected for specific regions in LA will be identified, acquired and post-processed in order to derive a best-available climate forcing for the BioMA-based crop model runs under climate change. The choice of climate scenarios will be done in close collaboration with competent partner organizations in LA such as CIAT in Colombia and others suggested by the Focal points, as well as with other stakeholders involved, taking into account the priorities of the respective countries under study.

4.2.2 Bio-physical simulations at climate change horizons of 2030 and possibly 2050

With this input, and benefitting from the knowledge database that will lead to considerably improved model calibrations of Activity 4.1, bio-physical simulations with tailored crop growth models will be performed to explore potential yields – in comparison to a baseline scenario close to today's conditions – at climate change horizons of 2030 and possibly 2050.

Activity 4.3 Exploration of adaptation options under climate change through integration of local knowledge on agro-management.

4.3.1 Selection of climate change adaptation options

Building on the results of Activity 4.2 and the knowledge collected on agro-management specific to main producing regions in LA, selected adaptation options will be evaluated in the context of climate change, thus identifying potential hot spots of vulnerability to climate change. Adaptation options will be identified in close collaboration with LA partner organization, and according to findings of Component 2 of EUROCLIMA 2.

4.3.2 Model simulations of future crop yields under different adaptation options

Model simulations will be performed that produce potential future yields under different adaptation options chosen for agro-management such as irrigation, crop rotation, tillage, or change of crop varieties. With the help of model simulations qualitative and quantitative estimates of vulnerabilities will be obtained. The simulation results on changes in yield and production based on chosen adaptation measures will be made available to agro-economic studies in Component 2 for the quantification of economic impacts of climate change in Latin America.

Activity 4.4 Reinforcing partner relationships through a scientific workshop and dissemination through a scientific conference on climate change in agriculture in LA.

For both events in LA (training workshop and scientific conference) the participation of appropriate experts from all relevant LA countries is encouraged, especially from countries that will benefit most from climate change impact studies and vulnerability assessments through bio-physical modelling exercises.

4.4.1 Consultations with expert LA partners on crop modelling

The scientific collaboration with partners on crop modelling of EUROCLIMA phase 1 will be supported through involvement of agricultural and research organizations such as INTA, CONAB, and others in the set up of the knowledge databases as well as through consultations on their expertise (e.g. as Fee Paid Experts).

4.4.2 Expert training workshop on the BIOMA platform

At the end of year two an expert training workshop will be held in order to present the development and implementation of the context-specific BioMA implementations in LA. The workshop will include lecturing as well as hands-on training.

4.4.3 Scientific conference on climate change impacts in agriculture

At the end of the third year a scientific conference on climate change impacts in agriculture will be organized, in which the results of the model simulations, including adaptation options, will be presented to the partner organizations, scientific public, and decision makers. EUROCLIMA 2 results will be confronted with findings of other related climate change studies performed in LA by partner organizations and third party.

5.2 Project Coordination

This second phase is built over the achievements and lessons learnt reached in the first phase, and will be guided by the principles of effectiveness, efficiency, coherence, and transparency. In the framework of the EUROCLIMA programme, JRC will actively contribute to the objectives of the second phase of the programme and will actively collaborate with DEVCO taking in consideration its recommendations, requests and orientations.

JRC will prepare an annual work plan that will be revised every six months. DEVCO will examine such plans and will call for a period of consultation with all the implementing organisations and National Focal Points. After incorporating possible comments and synergies, DEVCO will approve the annual work plans and send them to the implementing organisations and National Focal Points. JRC will inform DEVCO about the foreseen events and meetings according to the work plan with sufficient time in order to agree on its details and modalities.

This communication and coordination protocol defines the distribution of responsibility between DG DEVCO and DG JRC and describes the processes of approval and joint decisions.

DEVCO is responsible of the direct centralized management of EUROCLIMA II. The contractual arrangements between DEVCO and JRC regarding the execution of the EUROCLIMA II project are defined in the Administrative Arrangement signed by both parties.

The following protocols will be followed regarding the communication and coordination tasks between DEVCO and JRC:

Work Plan: At an early stage, (within one month after signing the Administrative Arrangement) DG JRC will send for approval a detailed annual plan of activities and budget breakdown by activities to DEVCO/G/2.

Reports: reports will be sent by JRC to approval by DEVCO at the deadlines foreseen below; DEVCO will provide comments to JRC within two weeks that will be incorporated by JRC within two weeks, except if a delay is duly justified.

JRC will provide DG DEVCO a summary progress report of the activities in Spanish every 6 months (); these progress reports will inform DEVCO on the progress done during the last 6 months according to the Action Plan, a proposal for next six-monthly action plan, potential problems and risks, as well as on the current spending of the resources (human resources and detailed breakdown and budget plan for the next six months).
There will be 3 annual reports in English submitted to DEVCO for approval (the third one will be the final report) at the end of months 14, 26 and 38. These reports will describe in detail all the activities done, including methods, summary of objectives and results obtained (see proposal in section 13). They should include information on project impact, risks and potential problems, and detailed spending by activity. In case of the first two reports they should also contain a detailed plan for the next year including the foreseen spending. The final report will also suggest the means to achieve the future sustainability of the project. The 6-monthly project reports will be submitted to DEVCO within 1 month after the end of the 6 months period. The annual reports will be submitted to DEVCO within 2 months after the end of the yearly period. The proposed Table of Contents for the 6-monthly will be agreed between DEVCO and JRC after the starting of the project. The proposed Table of Contents for annual reports might suffer modifications after agreement between DEVCO and JRC.

If necessary, additional information for dissemination of the project in LA can be requested by DEVCO at any moment regarding the current status of the project. This information will be provided in English although an effort will be made to provide it also in Spanish or Portuguese using the EC translation services.

Minutes and reports of attendance at meetings, missions, seminars, workshops, conferences, etc. will be submitted by JRC in agreed dates (preferably together with the annual reports).

Workshops: workshops and trainings foreseen in Activities 3.2 and 3.3 will be discussed and jointly agreed at least three months in advance by JRC and DG DEVCO (exceptions to this delay will have to be duly justified). Discussions will include the agenda content and the participants, as well as any other relevant matters. JRC will be responsible for the organization, writing of the final agenda, participants list and minutes of the workshops and trainings. In case the workshop is organized in collaboration with IICA, CEPAL or TA they should also contribute to the definition of the agenda; furthermore they should take care of the costs incurred by the participation of experts invited by IICA, CEPAL or TA as well as contribute to the logistic costs of the workshop.

Meetings: meetings between JRC and DG DEVCO (or with other partners such as CEPAL, IICA, and TA) will have to be planned at least with one month in advance and will have to be compatible with both services work plan and availability; meetings might be done by means of videoconference, telephone conference or at DEVCO or JRC premises. Any coordination meetings that take place in Latin America will need to be defined at least 3 months before the date of the event. A Kick-off meeting will be held at the start of the project implementation and communication and coordination protocol will be established.
Exchange of information: the JRC team implementing the project will maintain an informal communication exchange with DEVCO G2 project responsible. When possible and if time is available short informal meetings can happen in Brussels in the framework of JRC expert missions to Brussels.

A final meeting will be held at the end of the project. DG JRC will present the "draft final report" summarizing the project objective achievements and the state of the different tasks. These meetings will be held in Brussels.

JRC will hold working visits to institutions or partners in Latin America, if needed, (working meetings, conferences, seminars) for specific purposes related to the project.

Activities: all the activities executed by JRC are described in this document and the period of execution is detailed in the Action Plan. Changes to the timing of the Action Plan, if needed, will have to be discussed and approved by DG DEVCO.

DG JRC staff will present the annual reports on the state of advancement of project, on-going activities, annual plan proposal and any preliminary result available at the stage of the development of the project on request by DEVCO/G/2 and at the DEVCO/G/2 premises. They can also be held in the frame of conferences, seminars, or visits related to the project, in venues other than Brussels.

Coordination:
JRC will promote the participation of the LA countries and scientific experts, including the sharing and dissemination of results through the expert network and Focal Points, with a view to promote debate, exchange of information and dissemination at regional level.

5.3 Monitoring and Coordination Committee

JRC will participate in the Monitoring and Coordination Committee together with DEVCO, CEPAL, IICA and the representatives of the national focal points. The Monitoring and Coordination Committee will ensure the effectiveness and quality of implementation of the program in order to achieve specific objectives intended to optimize the appropriation of the results of the program by the beneficiaries, and report on progress of the program execution. JRC, like other implementing agencies, shall comply with the agreed mandate of the Monitoring and Coordination Committee. Furthermore, JRC will contribute to the coordination of activities together with the other

members of the Committee, in order to propose methodological and strategic directions. JRC will contribute together with the other members of the Committee to the definition of tools that will contribute to the execution and coordination of the project: sustainability strategy, communication and visibility strategy, and internal monitoring system. The general framework of these tools will be discussed by the Committee and the final document proposed will have to be approved by the EC.

JRC will follow the application of the document approved following the first meeting of the Committee, laying down the responsibilities of each member (this document might be updated by the Committee if deemed necessary).

5.4 Monitoring and evaluation system

The JRC has its own monitoring system that is applied to all the projects developed. All the JRC projects are ISO 9001 compliant and there are regular internal and external audits of the projects in order to keep the ISO 9001 certification that is done at Institute level. All the information related to the Project will be kept in a Project file allowing monitoring the project on a regular basis. The project file has the following structure:

Management

- up-to-date versions of the project plan/timetable with associated documents,
- statement or agreement on modalities about Customer property issues,
- list of objectives & deliverables (for a competitive project such as an Administrative Arrangement this is the agreed proposal or contract)
- particular issues concerning confidentiality of data, results or any part of the work should be highlighted (this must include any contractual obligation concerning confidentiality),
- procurement plan
- risk assessment checklist, from the proposal stage and updated as necessary
- contact information of all involved partners,
- resources allocated to the project, including roles & responsibilities (e.g. task leaders/task teams)
- section on customer feedback / complaints (incl. list of action(s) taken in response),
- evidence of formal approval of the end product,
- evaluation of the project after completion or on an annual basis
- non-conformity report, if this occurs

Correspondence

- correspondence including records of changes or deviations as well as records of their communication to and their approval by the customer

Meetings

- minutes of the kick-off meeting and of the meetings of the project team,

o where required, minutes of the meetings should include discussions on verification and validation to ensure that the product meets customer specifications

Missions
o mission reports related to the project

Output
o progress report
o publications, technical reports, and patent applications resulting from the project (or a reference list),
o final report when applicable
o any other output: databases, maps, websites, …

If needed, the JRC will collaborate with DEVCO in any other monitoring and evaluation system managed by DEVCO such as the ROM. Furthermore, the JRC will contribute to the elaboration of an Integrated Logical Framework (ILF) coordinated by the TA.

6. Human Resources

The coordinator for JRC will be Dr. Paulo Barbosa (JRC/IES/H07) from the Climate Risk Management Unit of the Institute for Environment and Sustainability (IES). He will be responsible for the overall coordination of the JRC contribution to EUROCLIMA, as well as for the technical reporting; he will represent the JRC in the Coordination and Monitoring Committee as well as other necessary EUROCLIMA meetings. The coordinator will dedicate the necessary time to the project to ensure its good development and completion and fulfilling the terms established in the general coordination document of EUROCLIMA.

The responsible for the Desertification and Land Degradation topic will be Dr. Michael Cherlet (JRC/IES/H05). He will be responsible for the coordination of the Desertification and Land Degradation activities of the JRC, including contribution to the necessary Technical reports and giving input for EUROCLIMA meetings. The responsible will dedicate the necessary time to the project to ensure its good development and completion.

The responsible for the Drought topic will be Dr. Paulo Barbosa (JRC/IES/H07). He will be responsible for the coordination of the Drought activities of the JRC, including contribution to the necessary Technical reports and giving input for EUROCLIMA meetings. The responsible will dedicate the necessary time to the project to ensure its good development and completion.

The responsible for the Bio-physical modelling topic will be Dr. Maurits van den Berg (JRC/IES/H04). He will be responsible for the coordination of the Bio-physical modelling activities of the JRC, including contribution to the necessary Technical reports and giving input for EUROCLIMA meetings. The responsible will dedicate the necessary time to the project to ensure its good development and completion.

It is foreseen to hire 3 experts (Contractual Agent) for a total of 72 Person/Month that will be responsible for the technical development of the project. One expert (30 months) will be responsible for the activities concerning the EUROCLIMA platform and for the drought activities; a second expert (24 months) will be responsible for the Desertification and Land Degradation activities; a third expert (18 months) will be responsible for the Bio-physical modeling activities.

It is foreseen to hire two people for intra-muros technical IT support for a total of approximately 396 working days (180 days for R2 and R3 +216 working days for R4).

In case of need, additional support staff working in other projects could give extra support to EUROCLIMA II.

For the hiring of experts, a consolidated effort will be made to advertise the positions also in Latin America although experts can only be recruited from Contractual Agents reserve lists.

7. Visibility and Communication

Regarding the visibility and communication of the Project the JRC will provide visibility to the project through its web portal and through technical and scientific publications that might derive from the execution of the project, as well as through the participation in conferences and possibly side events. The dissemination material in Latin America will be also done in Spanish and Portuguese. The JRC will also provide the necessary information regarding the activities presented in this document in order for DEVCO,IICA, CEPAL and the Technical Assistance to use it for any visibility and communication actions of EUROCLIMA programme such as regular EUROCLIMA Bulletins or other (these should be both in English, Spanish and Portuguese).

The dissemination publications will follow the directives of the manual on communication and visibility of the European Commission in its updated version:
http://ec.europa.eu/europeaid/work/visibility/index_en.htm

http://ec.europa.eu/dgs/communication/services/visual_identity/pdf/charter_en.pdf

http://ec.europa.eu/dgs/communication/services/visual_identity/pdf/partners-guidelines_es.pdf

At the initial meeting of the Monitoring and Coordination Committee the JRC will contribute to a proposal for a common strategy on communication and visibility.

8. Project Expected Impact

According to the OECD criteria for evaluating development assistance, impact is the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators. The examination should be concerned with both intended and unintended results and must also include the positive and negative impact of external factors, such as changes in terms of trade and financial conditions.
When evaluating the impact of a programme or a project, it is useful to consider the following questions:

What has happened as a result of the programme or project?
What real difference has the activity made to the beneficiaries?
How many people have been affected?

We expect that the results of the project as defined from R1 to R4 are well accomplished. It is expected that by the end of the project the national institutions in the 18 Latin American countries concerned with climate change will be better informed and prepared to put in practice adaptation measures that will make them more resilient to climate change regarding the problems of food security, desertification and drought. We also expect that the project contributes to foster the cooperation amongst all the LA countries creating synergies that will allow them to improve their knowledge and continue to further develop in the fight against the negative impacts of climate change, taking measures that will improve the living conditions of the local communities.

9. Risks and Assumptions

The main risks confronted by the EUROCLIMA Project are twofold:

1. Low regional commitment by national governments in the support and dissemination of the project

   The JRC will try to overcome this by a better interaction with the focal points and an effective dissemination of the results in LA.

2. Poor coordination amongst the implementation entities of the project (DEVCO, TA, CEPAL, IICA and JRC)

   The Monitoring and Coordination Committee will ensure an effective collaboration and coordination between the different components of the project.

10. Project Sustainability

According to the OECD criteria for evaluating development assistance, sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. Projects need to be environmentally as well as financial y sustainable.

When evaluating the sustainability of a programme or a project, it is useful to consider the following questions:

To what extent did the benefits of a programme or project continue after donor funding ceased?
What were the major factors which influenced the achievement or non-achievement of sustainability of the programme or project?

At the initial meeting of the Monitoring and Coordination Committee the JRC will contribute to a proposal for a common strategy on sustainability of the project.

Although the sustainability of the project can be only analysed after the project completion we expect that the networks built during the project will remain and be managed by LA institutions. The same is expected for the DLDD Information system in case this is hosted in LA. We also expect that the tools developed during the project will be widely used and that each of the participants in the trainings and workshops will have a multiplicative effect in the transmission of the knowledge in their own country.

All the technical and scientific documentation produced during the project will be accessible by different actors of the LA countries beyond the project duration. The strategy to ensure access and use of the knowledge generated during the project is based on the dissemination of results through seminars, publications, brochures and by the TA.

A EUROCLIMA group on Desertification, Land Degradation and Drought (DLDD) will be set up on the Capacity4Dev platform of the European Comission-EuropeAid in order to allow for communication among the different stakeholders involved in the project, to share information and stimulate discussion on the research topics addressed.

The participation of LA partners in the Workshops and trainings, as well as in the case studies will ensure ownership of the results and the methodology applied.
The systematization and dissemination of methodologies and tools used during the project together with the capacity building actions during workshops and trainings can be extended and replicated by the LA partners participating in the project.

The strengthening of the network developed during the first phase of EUROCLIMA will contribute to strengthen the exchange of information between key stakeholders across countries.

11. Policy/Institutional background for DEVCO/JRC collaboration

The Joint Research Centre is the scientific and technical arm of the European Commission. It is providing the scientific advice and technical know-how to support a wide range of EU policies among others in the area of Development and Cooperation. The JRC's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

In 19 July 2013, a MoU was signed between DG DEVCO and DG JRC (nº 32912-2013) following newly introduced institutional arrangements for the external actions of the European Union and for taking into account shifting priorities under the EU Development and Cooperation policy as put down in the Agenda for Change and other relevant EU policy documents.

12. Action Plan

Table 1. Action plan JRC-EUROCLIMA II and approximate budget distribution by Result and Activity.

	2014				2015				2016			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
R1.Together with EUROCLIMA national focal points and expert network, new priorities for research on DLDD have been defined and the corresponding models and tools have been developed.	52 K				97 K				82 K			
1.1 Shared identification of research needs and subsequent structured exchange of ideas on research methodologies and preliminary results through varied forms of communication (blogs, virtual meetings, workshops)	15 K				15 K				15 K			
1.1.1 Set up of a group of EUROCLIMA – Desertification, Land Degradation and Drought (DLDD) on capacity4dev.eu	x	x	x	x	x	x	x	x	x	x	x	x
1.1.2 Exchange of ideas during Workshops and virtual meetings		x					x				x	
1.2: Development of models and tools to address the biophysical aspects of desertification and land degradation	12 K				37 K				33 K			
1.2.1 Interpretation of detailed maps on the assessment of the H-E system productivity into dedicated land degradation maps			x	x	x	x	x					
1.2.2 Methodologies for evaluation/modeling of climate change impacts on land degradation processes.					x	x	x	x	x	x		
1.2.3 Final land degradation maps						x	x	x	x	x	x	x
1.2.4 Economic valuation of land degradation and mitigation options considering the effects of climate change								x	x	x	x	x
1.3 Development of models and tools to address the biophysical aspects of drought	25 K				45 K				34 K			
1.3.1 Drought prediction using meteorological forecasting models				x	x	x	x	x	x	x		
1.3.2 Development of a model for mapping drought vulnerability and risk.	x	x	x	x	x	x						
1.3.3 Climate change impact on				x	x	x	x	x	x	x		
R 2. Knowledge transfer has been accomplished through the update, maintenance and transfer to Latin American partners of the DLDD information system developed under EUROCLIMA in its first phase.	30 K				45 K				95 K			
2.1 Maintain and extend the current data provision of meteorological and remote sensing data at continental level.	15 K				15 K				15 K			
2.1.1 Current data provision of meteorological and remote sensing data maintained and revised	x	x	x	x	x	x	x	x	x	x	x	x
2.2 *Maintenance and review of Land Degradation, Desertification and Drought products.*	15 K				15 K				15 K			
2.2.1 Current data products should be maintained and improved; new products from LA national and regional institutional partners need to be raised to increase system's interoperability and prominence	x	x	x	x	x	x	x	x	x	x	x	x
2.3 *Training and transfer of web-mapping and decision support system technology*	-				15 K				65 K			
2.3.1 Training and transfer of web-mapping and decision support system technology to LA partners; if there is interest from LA institutions it could be envisaged to implement the LA Drought Observatory in a LA institution that would become responsible to run and maintain the system.								x	x	x	x	x
R3. Capacity building and South-South cooperation on DLDD has been achieved through case studies, workshops and specific training sessions.	195 K				105 K				100 K			
3.1 Execution of specific case studies, on Desertification Land Degradation and Drought, by the members of the expert network of EUROCLIMA	95 K				5 K				-			
3.1.1 Case studies proposed and executed by the members of the EUROCLIMA expert network.			x	x	x	x						
3.2 Organising expert meetings in Latin America to promote the coordination by Latin American institutions of the scientific network initiated during the 1st phase of EUROCLIMA	55 K				55 K				55 K			
3.2.1 First Workshop		x										
3.2.2 Second Workshop							x					
3.2.3 Third Workshop											x	

3.3 Organizing training on tools of interest to the scientific network on Desertification Land Degradation and Drought	45 K				45 K				45 K			
3.3.1 First Training on EUROCLIMA II model applications on Desertification, Land Degradation and Drought		x										
	2014				**2015**				**2016**			
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**I V**
3.3.2 Second Training on decision support system technology with emphasis on the 8 specific case studies on Land Degradation and Drought proposed by the LA partners							x					
3.3.3 Third training on web-mapping technology that will allow LA partners to learn how to implement similar web-mapping systems to the one developed in EUROCLIMA											x	
R4. Context-specific bio-physical modelling for crop yield estimation under climate change has been acomplished	135 K				74 K				120 K			
4.1 Further enhancement and tailoring of the BioMA modelling platform to needs of LA partners and to conditions local and regional conditions.	65 K				9 K				-			
4.1.1 Improvement of the BioMA modelling platform for Latin America	x	x	x	x	x	x						
4.1.2 Context-specific crop parameterization for main crops in LA such as wheat, maize, soybean, rice, sugar cane	x	x	x	x	x	x						
4.2 Running state-of-the-art climate change scenarios of yield estimates for main crop in main producing regions of LA.	-				30 K				85 K			
4.2.1 Post-processing of downscaled and bias-corrected climate scenarios for specific regions in LA					x	x	x	x	x	x		
4.2.2 Bio-physical simulations at climate change horizons of 2030 and possibly 2050					x	x	x	x	x	x		
4.3 Exploration of adaptation options under climate change through integration of local knowledge on agro-management.												
4.3.1 Selection of climate change adaptation options								x	x	x	x	x
4.3.2 Model simulations of of future crop yields under different adaptation options								x	x	x	x	x
4.4 Reinforcing partner relationships through scientific collaboration, a scientific workshop and dissemination through a scientific conference on climate change in agriculture in LA	50 K				35 K				35 K			
4.4.1 Consultations with expert LA partners on crop modelling	x	x	x	x	x							
4.4.2 Expert training workshop on the BIOMA platform								x				
4.4.3 Scientific conference on climate change impacts in agriculture												x
5 Project Management	70 K				70 K				70 K			
5.1 Coordination with other components of EUROCLIMA	x	x	x	x	x	x	x	x	x	x	x	x
5.2 Planning	x					x				x		
5.3 Monitoring	x	x	x	x	x	x	x	x	x	x	x	x
5.4 Reporting to DEVCO		x		x		x		x		x		
5.5 Final Report												x
TOTAL BUDGET (1340 K EURO)	482 K				391 K				467 K			

13. Proposal of Annual Report Table of Contents

1. INTRODUCTION

1.1. PROJECT FICHE (1 page)

- JRC
- AA number:
- Project Name:
- Project duration:
- Beginning and end date:
- Name, title and details of the contact person:
- JRC Website:
- Budget:
- Beneficiary countries
- Countries where activities took place:

1.2. BACKGROUND AND CONTEXT

1.3. EXECUTIVE TECHNICAL SUMMARY

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1.3.2. Main results and impacts[3]

1.3.3. Main recommendations and lessons learnt

1.3.4. Conclusions

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2.1. JRC-EUROCLIMA TEAM ORGANISATION

2.2. ORGANIZATION WITH REGARD TO OTHER STAKEHOLDERS

2.2.1. Role of the different stakeholders

2.2.2. Relationship with the stakeholders involved[4] (key stakeholders, national governments, other organisations)

2.3. PROJECT MANAGEMENT

2.3.1. Administrative and contact management

2.3.2. Monitoring and evaluation of activities

2.3.3. Processes used in order to achieve impact on the decision makers

[2] Give a general overview of the Project execution during the reporting period, including the type of stakeholders involved

[3] Impact of the results on the Latin American countries

[4] Communication, coordination, participation, type of contribution, etc.

3. TECHNICAL IMPLEMENTATION

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- 3.1.1. Methodological focus and implementation strategy
- 3.1.2. Resources
- 3.1.3. Logical Framework

3.2. SUMMARY
- 3.2.1. Main results and products[5]
- 3.2.2. Planned vs. achieved[6]
- 3.2.3. Objective Verifiable Indicators
- 3.2.4. Visibility and dissemination actions [7]
- 3.2.5. Synergies with other actions and components
- 3.2.6. Sustainability Activities
- 3.2.7. Monitoring and evaluation [8]
- 3.2.8. Conclusions[9], recommendations, good practices and lessons learnt[10]

3.3. DETAILED DESCRIPTION OF ACTIVITIES
- 3.2.1. Activity Nº…...
  - 3.2.1.1. Description of main results and products
  - 3.2.1.2. Main problems and solutions found
  - 3.2.1.2. Planned vs. achieved
  - 3.2.1.3. Review of the Objective Verifiable Indicators
  - 3.2.1.4. Conclusions recommendations

4. PLANNING FOR THE NEXT PERIOD (FROM/TO)

4.1. Annual Workplan
- 5.1.1. Summary of the workplan
- 5.1.2. Activities foreseen and expected results
- 5.1.3. Sustainability actions
- 5.1.4. Risks and potential problems
- 5.1.5. Available resources

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[5] Include how horizontal matters have been considered in the project (gender balance, human rights, good governance, environmental sustainability, etc.)

[6] A model will be made available by DEVCO

[7] Show how the contribution of the EU is being made visible, including new focus and innovative ways of communication

[8] How and who has been monitoring and evaluating the activities; if there was a ROM, how were the recommendations integrated in the Project?

[9] Evaluation of the results of the Project; include comments on how the specific objectives were reached and if there were unforeseen positive or negative results, including their impact (quantify if possible and refer to the Verifiable Objective Indicators of the Logical Framework);Include problems found and how their were dealt, and justify any changes or delays in the foreseen activities.

[10] What lessons have been learnt and how are they been used and disseminated

5.1.6. Calendar

4.2. Visibility actions and planned events
5.2.1. Planned events (place, number of participants, topic, etc.)
5.2.2. Calendar

4.3. Monitoring of the Logical Framework and possible proposed modifications

5. **BUDGET PLANNING FOR THE NEXT PERIOD (FROM/TO)**

5.1. Budget detail by activity for the next period

6. **BUDGET USED IN THE PREVIOUS PERIOD (FROM/TO)**

6.1. Budget used by activity in the previous period

ANNEXES

1. Logical Framework.
2. Summary of the achieved vs. the foreseen results (OVIs).[11]
3. List of stakeholders related with the project
4. Statistics of participation in workshops and seminars[12]
5. List of publications, studies or other products[13]
6. List of all the events (seminars, workshops, coordination meetings) including “web links” referring to these events (presentations, reports, agendas, etc.).
7. List of contributions of the project to international events through oral presentations or posters (place, date, name of the event, name of person participating, title of presentation, web links).
8. Internal coordination reports.

[11] A model will be provided by DEVCO
[12] Include satisfaction surveys if any
[13] Indicate number of copies produced, format, and how and where they were disseminated