COPIA CONFORME

CREA
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Food and Agriculture Organization of the United Nations

Consiglio Nazionale delle Ricerche

crea
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

ENEA
Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

Sistema Nazionale per la Protezione dell'Ambiente

EXTENSION AND AMENDMENT

to the

MEMORANDUM OF UNDERSTANDING

between the

Food and Agriculture Organization of the United Nations (FAO)

and

Consiglio Nazionale delle Ricerche (CNR);

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA);

Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA)

Considering that the Food and Agriculture Organization of the United Nations ("FAO"), the Consiglio Nazionale delle ricerche ("CNR"), the Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria ("CREA") and the Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile ("ENEA") signed a Memorandum of Understanding on 23 June 2015, which provides a framework for cooperation with the overall goal of enhancing the sustainability of the food production and nutrition in developing countries (hereinafter the "MoU").

Considering that article 12, paragraph 2 of the MoU provides that "*[a]ny amendment to this MoU shall be effected only on the basis of written mutual consent by the Parties.*"

Considering that article 11 of the MoU provides that the MoU "*shall remain in force for a period of three (3) years following its entry into force and be renewable for successive similar periods thereafter by written agreement of the Parties, based upon successful past implementation.*"

Considering that the MoU is due to expire on 22 June 2018.

Considering that the Parties have expressed their willingness to extend the duration of the MoU for an additional period of three (3) years after the date of its first expiry.

Considering that the Istituto Superiore per la Protezione e Ricerca Ambientale (ISPRA) has expressed its interest in becoming a Party to the MoU and that FAO, CNR, CREA and ENEA have agreed to accept this request.

Now, therefore, the Parties agree to the following.

1. The duration of the MoU shall be extended for an additional period of three (3) years, starting from 22 June 2018 until 21 June 2021.

2. Annex 1 to the MoU is replaced entirely by Annex 1 Rev. 1 attached to this Extension and Amendment.

3. Article 7 of the MoU is amended as follows with regard to the CREA focal point:
   Via Po, 14 - 00198 Rome, Italy
   Attention: Anna Benedetti
   Delegato scientifico del Presidente
   Email address: anna.benedetti@crea.gov.it
   Telephone number: Tel. +39 06 47836250

4. ISPRA shall join the MoU as a Party thereto.

5. ISPRA acknowledges that it has received and reviewed a complete copy of the MoU and agrees that upon entry into force of this Extension and Amendment, ISPRA shall become a Party to the MoU and shall be fully bound by, and subject to, all of the covenants, terms and conditions of the MoU as though an original Party thereto.

6. In accordance with the provisions of article 7 of the MoU, the Focal Point of Contact for ISPRA will be:

   Istituto Superiore per la Protezione e Ricerca Ambientale (ISPRA)

Via Vitaliano Brancati 48
Rome 00144, Italy
Attention: Anna Luise
Email address: anna.luise@isprambiente.it; pres-int@isprambiente.it (please always use both addresses)
Telephone number: +390650072553

7. This Extension and Amendment shall enter into force on the date of the receipt of the last signature of the Parties, and the MOU will expire on 21 June 2021. This Extension and Amendment, including Annex 1 Rev. 1, is made integral part of the MoU. Except as set forth in this Extension and Amendment, all other provisions of the MoU shall remain unchanged and in effect. Any of the Parties can substitute its Focal Point of Contact during the implementation of the MoU through a notification sent via Certified or Registered Email (PEC) to all other Parties. Should it not be possible for the notifying Party to use Certified or Registered Email, a letter signed by the Party's legal representative shall be sent by post with acknowledgement of receipt (registered mail) or by courier.

8. This Extension and Amendment is drawn up in English in five copies, with one copy for each Party. Either copy is of equal validity.

IN WITNESS WHEREOF, the duly authorized representatives of the Parties affix their signatures below.

On behalf of the Food and Agriculture Organization of the United Nations (FAO)

Maria Helena Semedo
Deputy Director-General,
Natural Resources Coordinator

Date: 10-07-2018

On behalf of Consiglio Nazionale delle Ricerche (CNR)

Prof. Massimo Inguscio
President

Date: 10. VII. 2018

On behalf of Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA)

Dr. Salvatore Parlato
President
Date: _____

On behalf of Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA)

~~Prof. Federico Testa~~
~~President~~

Date: _____

On behalf of the Istituto Superiore per la Protezione e Ricerca Ambientale (ISPRA)

Dr. Stefano Laporta
President

Date: 10.07.2018

Annex 1 Rev. 1

Overarching objective: promoting sustainability in challenging times

The overarching objective of the cooperation between FAO and CNR, CREA, ENEA and ISPRA is the promotion of sustainability at large in the context of joint efforts for the attainment of Agenda 2030. This will include:

- Focusing on knowledge sharing as a transversal objective of collaboration;
- Paying special attention to the agricultural, environmental and socio-economic challenges of the African and Middle Eastern geographical regions, while not excluding cooperation focused on other regions;
- Jointly promoting communication initiatives aimed at enhancing the impact and visibility of the activities undertaken in the context of the Memorandum.
- Exploring opportunities for collaboration on issues related to (i) agriculture and climate change, (ii) food quality and nutrition, (iii) value chain development through a systemic approach to local innovation, (iv) land and water management and ecosystems quality. Jointly developing projects, programmes and initiatives eligible for potential funding by a wide gamut of national, regional and global sources, as well as exploring possibilities for secondment of staff and researchers. Common projects and activities could be developed in the framework of EU or other international funded initiatives in the Mediterranean region, aiming to support countries in terms of innovation, cooperation and technology transfer in key sectors such as agriculture, land and water management, in particular the Water-Food-Energy nexus. Examples of on-going actions which could be used as a reference due to their added value, include *PRIMA*, a long term and wide joint research and innovation programme involving EU (Cyprus, France, Greece, Italy, Luxembourg, Malta, Portugal, Czech Republic, Spain) and non-EU (Egypt, Jordan, Lebanon, Morocco, Tunisia e Turkey) countries of the Mediterranean basin. An example of upcoming international event where synergies and collaboration between the parties could be developed is the *FAO International Symposium on Agricultural Innovation for Family Farmers*, which will take place in November 2018 at FAO Headquarters.

1. *Agriculture and Climate Change*

Agriculture is an essential node of the nexus linking population growth with the need of more food, energy, and water. An estimated 60% increase of agricultural production will be needed by 2050 (FAO, UN) to match the current trends in population growth and food consumption. This will have dramatic consequences on the environment being agriculture now responsible for more than 30% of anthropogenic greenhouse gas emissions globally released, and substantially changing the climate of the planet. On the other hand, agriculture can effectively contribute to reduce climate-altering gas emissions through direct CO2 fixation by photosynthesis, and producing renewables (energy and chemicals) from biomass. The adoption of proper sustainable agricultural practices and the use of climate-ready organisms (through genotyping and phenotyping-assisted selection) can substantially reduce the environmental impact otherwise generated by the intensification of agriculture using conventional practices (e.g. herbicides, pesticides, plant protection products and synthetic fertilizers). Reconciling sustainable food production with the fight against climate change will be a future challenge, also requiring further and interdisciplinary research to implement innovative and effective solutions. Areas of collaboration include:

- Plant response, and adaptation to single factors and combined effects of climate change;

- Optimization of agriculture and forestry as main sinks for CO2 and other GHG driving climate change;
- Sustainable agriculture based on selection of proper genotypes and exploitation of crop wild relatives under low water availability and other climate change-exacerbated constraints;
- Impacts of extreme climate events and environments and mechanistic understanding of resilient plants (climate-ready) and agroecosystems;
- Investigating and selecting novel genetic and phenotypic traits conferring resistance or tolerance to biotic and abiotic stress while increasing the quality value of food and feed;
- Biodiversity conservation, ecosystem conservation and valorization of genetic resources (in situ, ex situ) under fast climate change conditions;
- Sustainable agricultural soil management, for improved carbon sequestration, beneficial microbiota, fertility, and for counteracting erosion and soil degradation;
- Advanced alert, control, and management systems for new pests and diseases, and alien species invasion driven by climate change.

2. ***Food quality and nutrition***

Particular attention will be focalized on the development of new technologies and protocols for food quality and human nutrition.
The intensification of agricultural productions must be obtained by the sustainable management of natural resources (soils, water, forests, etc.) according to the goals of sustainable development.
Areas of collaboration include:

- Agricultural techniques to improve the quality of soils for healthy life: foods with the nutrients calibrated on local soils characteristics to avoid malnutrition;
- Local mapping on polluted or contaminated soils/water/environment to attain food safety;
- Training instruments addressed to farmers on food quality, nutrition and risk assessment;
- Regional dataset on primary dietary data, food composition tables with a focus on typical and local products, and guidelines on nutrition.
- Valorization of animal, plant and microbial resources for high quality food productions.
- ICT and digital technologies for improved food quality, personalized diets and reduced waste.

3. ***Value addition of agricultural products and by-products, bio-economy and circular economy***

FAO and partner institutions will jointly explore opportunities for collaboration on issues related to value chain development through a systemic approach to local innovation and youth inclusiveness. The final objective is the enhancement of farm income and the improvement of rural livelihoods, the creation of new and better jobs, especially for youth, the reduction of the environmental footprint of agricultural production and a reduction of agricultural waste in the framework of circular economy and bio-economy perspective. Areas of collaboration include:

- Development of agro-food processing and post-harvest technologies (including biotechnologies) for value addition of agricultural products to facilitate access to domestic and export markets;
- Youth-centered value chain selection and assessment, and support to youth agripreneurs;
- Certification and traceability of agricultural products;

- New strategies on food bio-economy (increasing shelf life, re-using, transforming, waste of food production as raw material for production of fertilizers, feeds, animal nutrition, etc.)
- Use of agricultural by-products and waste for energy production and recovery of high added value compounds;
- Evaluation of the environmental footprint of agro-food products and industries:
- Monitoring and assessment of food waste.

4. *Land and water management, and ecosystems quality*

Thorough and cross-sectorial monitoring and assessment activities are key to improve the knowledge of state and trends of ecosystems, their various components and their interactions. Sustainable land and water management are two pillars to protect and/or maintain the provision of ecosystem processes, including the natural mitigation of hydrological extremes such as floods and drought. Environmental monitoring and planning procedures integrated according to a DPSIR concept, lead to a broader understanding of the processes and to the design appropriate and effective measures to avoid or mitigate the loss of ecosystem services. The integration of environmental issues is also useful for designing and implementing targeted programmes and projects. Common activities will also support FAO commitments for SDG Indicators as Custodian Agency (e.g. water use and water stress, biologically sustainable levels of fish stocks, implementation of international instruments for sustainable fisheries, forest monitoring and sustainable management) or as Contributing Agency (e.g. land degradation, conservation and sustainable use of the oceans and their resources and biodiversity policy frameworks). Thematic areas of collaboration include:

- Long-term conservation and sustainable use of marine living resources in the high deep seas, including the prevention of significant adverse impacts (SAIs) on vulnerable marine ecosystems (VMEs).
- Scientific methodologies for detection of seafood and fish contamination (e.g. heavy metals, organic compounds, plastic debris), in order to protect the marine environment.
- Analysis and assessment of environmental and biosecurity risks in aquaculture areas
- Sustainability assessment of fishing of species of commercial interest also in relation to climate change through ecosystem approach analysis and assessment of measures for the implementation of the FAO Deep-sea Fisheries Guidelines consistent with the Ecosystem Approach to Fisheries (EAF), in order to protect the marine environment.
- Study on the effects of climate change on coastal erosion and flooding: the response of biodiversity to habitat disruption and fragmentation, and species losses.
- Sustainable water management practices to protect and enhance the provision of ecosystem services.
- Prevention and mitigation of the impacts of invasive species to safeguard biodiversity and ecosystem services, including human and productive and natural ecosystems health.
- Urban growth, urban sprawl, land take and soil sealing analysis and mapping, for facilitating peri-urban agriculture and forestry in increasingly urbanized society.
- River habitat mapping and assessment through dedicated tools based on satellite data/services.
- *Land monitoring* and land use/land cover classification, mapping and assessment in the framework of advanced satellite methods and data/services.
- Terrestrial ecosystem and land degradation mapping and assessment, development and analysis of indicators, including SOC,

- Impact of global and regional deforestation and degradation on the environment, including loss of habitat and green-house gas accumulation into the atmosphere.
- Development of integrated forest monitoring programme for coordinating and harmonising inventorying, maximising the use of the data collected in order to restore degraded forestry ecosystems, outplanting and tending.