

# CLIMATE



# CHANGE-R

REDUCTION OF GREENHOUSE GASES FROM  
AGRICULTURAL SYSTEMS OF EMILIA-ROMAGNA

LIFE12 ENV/IT/000404



# The Project

Negative consequences of climate changes have a direct impact on agriculture but they can be mitigated to a certain extent thanks to the adoption of more sustainable agricultural practices.

Climate changE-R is the Life+ project of the Emilia-Romagna regional administration and its aim is to develop techniques for growing crops and raising livestock, with the same yields and product quality, reducing the emissions of climate-altering gases.

Carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) are the gases most responsible for climate change.

Experts agree that agriculture and livestock-raising overall account for 6,7 % of the above-mentioned gas emissions into the atmosphere.

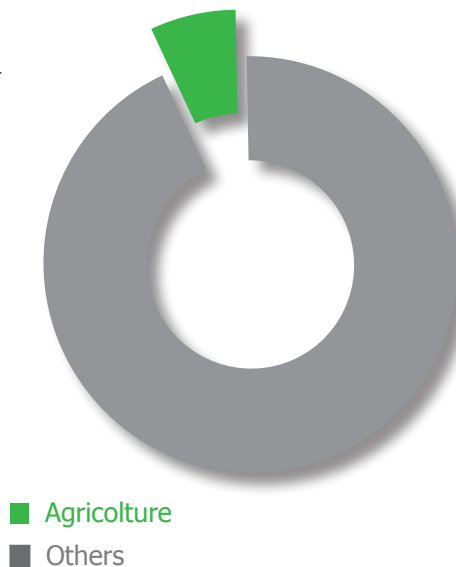
The Climate changE-R project mainly aims at developing production regulations for the agricultural and livestock

sectors to make these more environmentally friendly and virtuous in terms of greenhouse gas emissions.

To meet its goals, the Climate changE-R project benefits from the outcomes achieved by companies working in environmental sustainability, as well as from the well established experience of Emilia-Romagna in integrated production including P.D.O. and P.G.I. production regulations.

The Climate changE-R Project will develop farming and livestock-raising best practices that will considerably reduce greenhouse gases in the regional agricultural systems when applied. The project, for instance foresees a decreased use of fertilizers and pesticides, a more balanced management of water resources, lower impact of farming techniques, manure management and feeding methods.

## Green House Gases (GHGs) Emissions





## Project's beneficiaries

Climate changeE-R approved by the European Commission within the Life+ project, has a three-year duration (from July 1st, 2013 to December 31st, 2016).

The overall cost amounts to 1.8 million euros of which 50% is co-financed by the European Union.

The Agricultural Directorate of the Emilia-Romagna regional administration is the coordinator of the project while the partners include the most important companies in the agro-food and distribution sectors: Apo Conerpo, Barilla, Coop Italia, Granarolo, Parmareggio, UNIPEG and CSO. In addition, the Consortium of Parmiggiano Reggiano cheese is co-financing the project. Finally, the scientific partners are: ARPA (Regional Agency of Prevention and Environment), the Crop Production Research Centre (CRPV) located in Cesena and the Research Centre on Animal Production (CRPA) of Reggio-Emilia.

Like a great open-air laboratory for reducing greenhouse gas from agriculture, the project develops best growing and livestock-raising practices for some of the most representative production sectors of the Region: durum wheat, industrial tomatoes, pear and peach trees, green beans, beef cattle, and dairy cattle (including milk for Parmigiano Reggiano cheese).

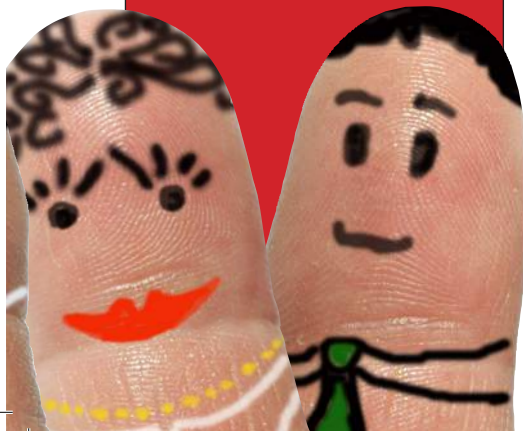
Production procedures are developed by the project's technicians through a shared path with involved operators and chain representatives.

Procedures are then applied in sample farms distributed throughout the regional territory.

Increasing Environmental Awareness Levels in demonstration farms will be assessed in order to measure benefits in terms of GHGs reductions and determine costs related to the application of Best Practices.

Upon project completion or in any case, at the end of the demonstration stage, the above-mentioned production regulations will be available to everybody and could be applied throughout the entire regional territory. Emilia-Romagna farmers will be further motivated in their adoption through the Rural Development Programme 2014-2020 which provides for funds in favour of environmental sustainability of agricultural systems.

**FROM EMILIA-ROMAGNA IDEAS AND SOLUTIONS  
FOR A SUSTAINABLE AGRICULTURAL DEVELOPMENT**

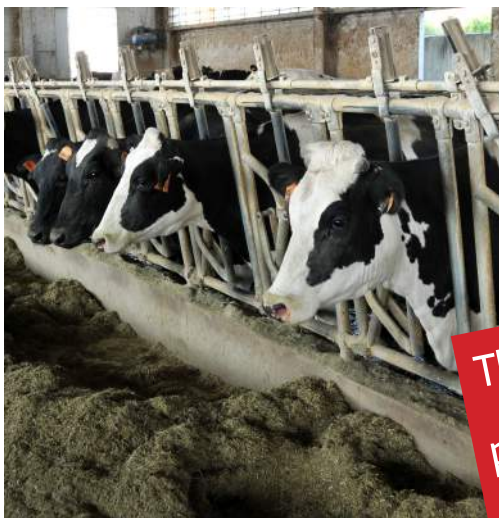


## PROJECT'S THREE OBJECTIVES

The Climate changE-R project, through an integrated approach in agricultural, transformation and organized distribution sectors aims at:

- ① decreasing in the Green House Gas emissions at the farming and livestock-raising stage. This decrease also includes other factors related to environmental sustainability, i.e. water conservation and power saving, reduction in the use of chemistry and pesticides and the adoption of advanced techniques in manure management.
- ② involving as many production chains as possible, including: pear and peach trees, industrial tomatoes, green beans, durum wheat, beef cattle, dairy cattle (including milk for Parmigiano Reggiano cheese) and indirectly, fodder and maize for zoo-technical foods.
- ③ enhancing the sustainability of a territory and the production stages as a whole and increasing the awareness of consumers.





The adoption of Climate change E-R production procedures will lead the Emilia-Romagna Region to the **reduction of agriculturally originating GHGs of 200,000 tons of CO<sub>2</sub>** equivalent in three years, in line with the goals of the European Strategy 2020.

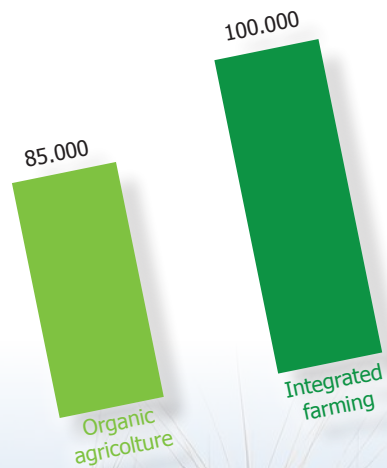


# Agriculture of Emilia-Romagna for a more sustainable future

For a long time now, agriculture in Emilia-Romagna has been adopting low impact farming and livestock-raising methods:

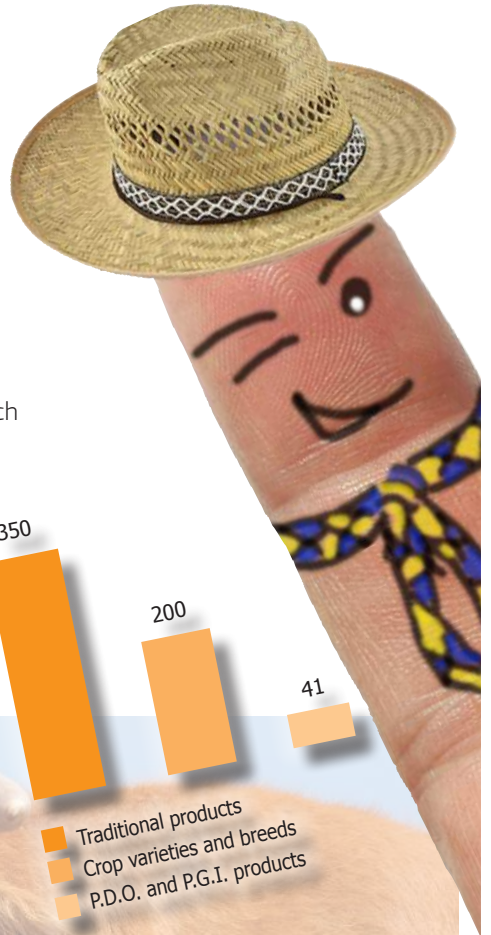
almost **85t thousand hectares** are **organically farmed** and almost **100 thousand** adopt **integrated farming management**.

This production system, complex but well balanced, has also benefited from the regional policy which has always protected the environment and the health of consumers and farmers.



High quality productions such as "Protected Denomination of Origin" (P.D.O.) and "Protected Geographic Indication" (P.G.I.) are a distinctive feature of the agriculture of Emilia-Romagna as well.

At present **Emilia-Romagna P.D.O. and P.G.I. products** are **41 in number**, to which more than **350 traditional products** and about **200 crop varieties and breeds** included in agricultural biodiversity Register should be added.



# Towards the environmental certification

The Climate changeE-R project suggests a “customized” estimate based on the regional conditions of carbon dioxide, methane and nitrous oxide emissions of agricultural origin. This systemic cradle-to-gate approach is extremely new. GHG emissions from different crops, or in other words, the carbon footprint (CF), are calculated according to the Life Cycle

Assessment methodology which covers the whole production chain with a sustainable approach to the overall system.

Up to now global estimates of GHG emissions of agricultural origin were calculated according to data from the National Inventory based on IPCC (Intergovernmental Panel Change). This methodology does not take into account emissions occurring upstream and downstream

in the agricultural production stage such as some energy consumptions for the desired end product, i.e. fertilizers, feeds, sales related consumption (transport, transformation, packaging, distribution, and so on).

IPCC methodology is also based on calculation factors set at an international level which often differ a lot from our working environment.

SOWING



GROWING

HARVEST



Thanks to Climate  
changE-R, impact  
assessments of our  
companies will rely  
on real data, collected  
in a database, made  
available to each farm or  
transformation company  
of Emilia-Romagna which  
will be able to measure the  
environmental impact of its  
production. Such data will  
be useful for the awarding  
of the environmental  
certification.

SALE

CONSUMPTION



TRANSFORMATION

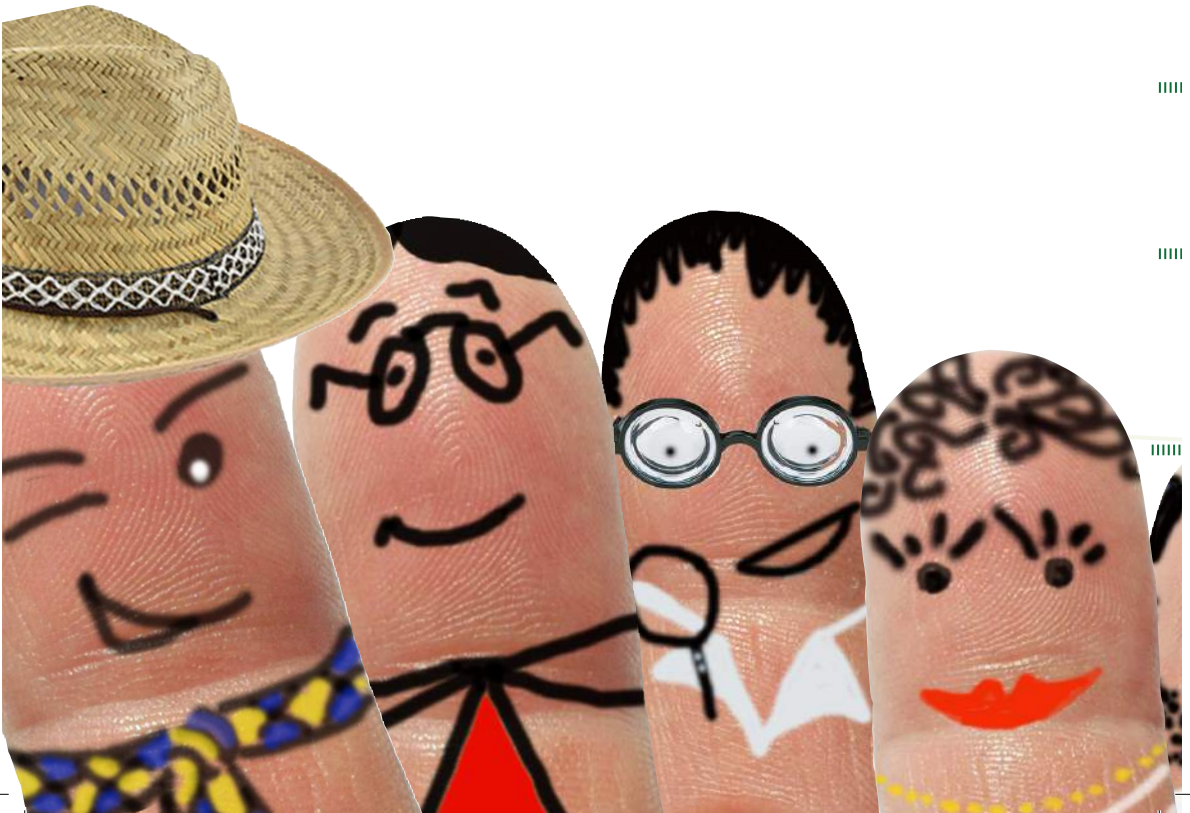


# The strength of the project is the team

The Partners, some of the most important national and international groups in the agro-food and distribution sectors, are the added value of the project inasmuch as they can involve a large representation of farms in different regional production chains.

They have decided to share their experience and use their organization and skilled resources to develop low environmental impact techniques and production methods.

Climate change-E-R partnership directly or indirectly accounts for about **30% of the regional farms** and more than **8 million of the consumers.**



## Apo Conerpo

one of the largest fruit and vegetable European Associations, gathers **45 agricultural cooperatives**

with a fruit and vegetable production surface equal to about **33 thousand hectares**

## Granarolo

the group, includes about **1,000 milk producers**. It plays a

leading role in the **fresh milk and dairy products** sector.

## Barilla

has **36 production sites, 9 mills** and exports in more than 100 countries.

It supplies about **2,5 million tons** of food products.

## Coop Italia

is the largest sale and distribution chain of food and non food products with more

than **8 million members**.

## Unipeg

the first cooperative in Italy in the beef industry, has **more than 740 beef cattle**

**breeders** of which one third is in Emilia-Romagna.

## CSO

Centro Servizi Ortofrutticoli is a cooperative that gathers companies working in the

**entire fruit and vegetable supply chain**.

## Parmareggio

a leader in the Parmigiano Reggiano cheese production, includes cheese factories and livestock-raising farms.

Altogether they produce **5000 tons of milk per year**.

## Partner scientifici

**ARPA Emilia-Romagna**  
Regional Agency for Prevention and Environment

## CRPV

Crop Production Research Centre

## CRPA

Research Centre on Animal Production

## Parmigiano Reggiano

the consortium of Parmigiano Reggiano,


is a **sponsor** of the project.





# Great expectations for the Climate changeE-R project





Emilia-Romagna wants to tangibly reduce Green House Gasses in line with the Europe 2020 Strategy. The European Union needs to rapidly move to a form of agriculture with a low carbon footprint in order to restrain climate change and limit global warming to not more than 2°C with respect to preindustrial temperature.

Emilia-Romagna's agriculture is already committed to this goal and the widespread use of organic and integrated productions are just an example.

However, it is still possible to significantly reduce the emissions and this is what the project's activities are meant for.

Green House Gasses of agricultural origin are decreasing and Climate change-R's goal is to further reduce the CO<sub>2</sub> equivalent by 200,000 tons in three years with respect to the trend.

This objective will be met by adopting efficacious production techniques capable of reducing methane emissions of zootechnical origin in the atmosphere and the release of nitrous oxide from the soil and animal manure as well as being able to increase soil carbon capture.

Financial support provided for the Emilia Romagna regional administration by the new **Programme of Rural Development 2014-2020** will have therefore to be allocated to the adoption of Climate change-R Best Practices for a low impact agriculture.

## From production to purchase: a fully aware path

Communication is fundamental for achieving Climate change-R's important goals. To this end results and best practices will be shared with all farms in the territory.

Thorough and widespread information on agriculture climate change issues, project results and related events will be provided to stakeholders.

Educational activities for schools and general information for citizens will be provided, also in order to increase consumers' understanding of climate changes issues and awareness when purchasing.

To this end, together with COOP Italia, the design of an App for smartphones is underway. The App will allow for the calculation of the "carbon shopping" and the consumer will be able to measure the carbon footprint of the products he has bought, thus improving his environmental sustainability.



# A five fingers project

Creation of a database containing all information gathered during the project's life coming from all partners and their related farms. This database will be made available to people interested in developing LCA analysis (experts, researchers and companies)

Development of a LCA (Life Cycle Assessment) methodology for the calculation of the carbon footprint (from cradle to gate) based on the main agricultural systems of Emilia-Romagna and its territory.

Drafting of the Climate changeE-R Good Practice in terms of reduction in climate-altering gasses, related cost and the cost-benefit ratio.

Organization of field visits to sample farms aimed at farmers and experts in order to promote the adoption of a sustainable agriculture for the containment of climate change effects.

Making environmental sustainability the pivot of a common responsibility Project dissemination and promotion actions will be aimed at both producers and consumers in order to foster a joint awareness on climate change issues. The project also includes educational activities meant for High School and Agricultural oriented University students: our future experts.



For more information and to subscribe to our newsletter:

<http://agricoltura.regione.emilia-romagna.it/climatechanger>

[climatechanger@regione.emilia-romagna.it](mailto:climatechanger@regione.emilia-romagna.it)

