



**FARMING
FOR
FUTURE**

**10 ACTIONS
TO FARM THE
FUTURE.**



Executive Summary

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EXECUTIVE SUMMARY

Farming for Future is the proposal of farmers, industries and experts of CIB - Consorzio Italiano Biogas - for the agroecological conversion of Italian agriculture, stimulated by the diffusion of agricultural biogas, in accordance with the objectives of the Green Deal and the related sector strategies ("from producer to consumer" - Farm to Fork - and 2030 Biodiversity Strategy).

The proposal is articulated in 10 actions, 8 of which are closely related to agriculture and its investments, while 2 concern the industry, primarily the gas industry.

Through the production of 6.5 billion cubic metres of biomethane according to the principles of Biogasdoneright® and the adoption of the solutions and techniques that make up the various actions, by 2030 Italian agriculture will be able to:

- go from a total emission amount of about 38,400kt of CO₂eq in 2018 to 26,000kt, reducing its total impact of 12,400kt, i.e. 32%. This reduction derives both from mitigation actions and from CO₂ soil sequestration;
- contribute to the reduction of total national emissions of about 19,000kt of CO₂eq per year, thanks to the non-use of fossil energy sources; this represents a 6% reduction of Italian emissions from fossil energy sources.

Thanks to the investments made by farmers, the combined effect of reducing direct emissions in the agriculture and mitigating those in the energy sector will lead to a total

amount of saved emissions equal to 31,400kt of CO₂eq per year, i. e. the amount of carbon dioxide produced by about 18.5 million cars.

The 10 actions proposed are based on the following principles:

- Centrality and soil fertility

The soil is the focus of many of the planned actions. It is the natural resource to be preserved and protected, because it is the basis of food production and the habitat of a quarter of the planet's biodiversity.

- Diffusion of anaerobic digestion in animal husbandry

Transforming livestock manure (up to 65% of the total produced today) into biogas, together with residues and by-products, is the optimal solution for the reduction of methane and ammonia emissions generated by animal husbandry.

- Diffusion of organic fertilisation

Thanks to the organic fertilisation with digestate, carbon in the soil is sequestered steadily, resulting in increased soil fertility.

Digestate has a good supply of nutrients, that are easily assimilated by crops and a stable organic substance, which is particularly effective for increasing the organic carbon content of soil.

A higher availability of digestate, characterised by better fertilising properties compared to manure, will allow to increase organic fertilisation in partial or total replacement of chemical one, on a larger area of cultivated land (up to 40% more than the use of animal

manure alone). By 2030, in addition to animal manure, the use of double crops (which otherwise would not have been grown) and residues and by-products to produce biogas and biomethane will generate "additional digestate", thus making it possible to favour organic fertilisation even where animal husbandry is not widespread.

- Promotion of technological innovation

The dissemination of advanced techniques and technologies already available today (Agriculture 4.0, Livestock 4.0) to reduce and optimise the use of resources (water, feed, fertilisers, herbicides, pesticides, seeds, energy including the fuels used to operate agricultural machinery) aims to reduce all inputs per unit of product.

In particular, the use of advanced low emitting and high efficiency technologies for organic fertilisation with digestate will lead to an increasing efficiency of distributed nutrients (nitrogen first and foremost, but not only) with a consequent reduction in the use of urea and other chemical fertilisers, and the related emissions of ammonia and nitrous oxide.

- Spread of sequential cropping and agroforestry (inclusion of tree in arable land)

In addition to preserving and increasing biodiversity and countering all the negative effects linked to bare soil (erosion, runoff, leaching), These practices contribute significantly to the additional capture of CO₂ from the atmosphere, thanks to photosynthesis, and its sequestration in a stable form in the soil ("soil carbon sequestration").

The positive effects generated by the implementation of actions pertaining to

agriculture together with the development of agricultural biomethane have been estimated taking into account the current state of scientific knowledge and according to the calculation standards defined by the Joint Research Centre (JRC).

The results of the estimate in terms of effects on GHG emissions, calculated with a precautionary approach, are intended as a preliminary analysis of the real potential of the Italian agriculture to reduce its impact.

In fact, the objective of this project is to highlight how it is possible for agriculture to significantly reduce emissions without compromising the production of high-quality food, that characterises our country.

This will be possible thanks to the integration, according to the strategy and actions of Farming for Future, of energy production from biogas and biomethane with traditional agricultural activities.

A further positive effect of the project is the restoration of soil fertility, thanks to the increase in the supply of stable organic matter, which is essential to counter desertification and neglect of rural areas.

Anaerobic digestion for biogas and biomethane production is therefore the tool available to support the agroecological transformation of Italian agriculture, to make it more competitive and appreciated by consumers.

In this way, farmers can continue to produce food and fodder, taking care of soil and climate.

1.

RENEWABLE ENERGY IN AGRICULTURE

REPLACE FOSSIL FUELS WITH RENEWABLE ENERGY SOURCES TO REDUCE POLLUTION AND EMISSIONS

2.

FARM 4.0

ADOPT ADVANCED AGRICULTURAL AND ANIMAL FARMING TECHNOLOGY TO CALIBRATE THE NECESSARY RESOURCES FOR CROPS AND ANIMAL FARMS

3.

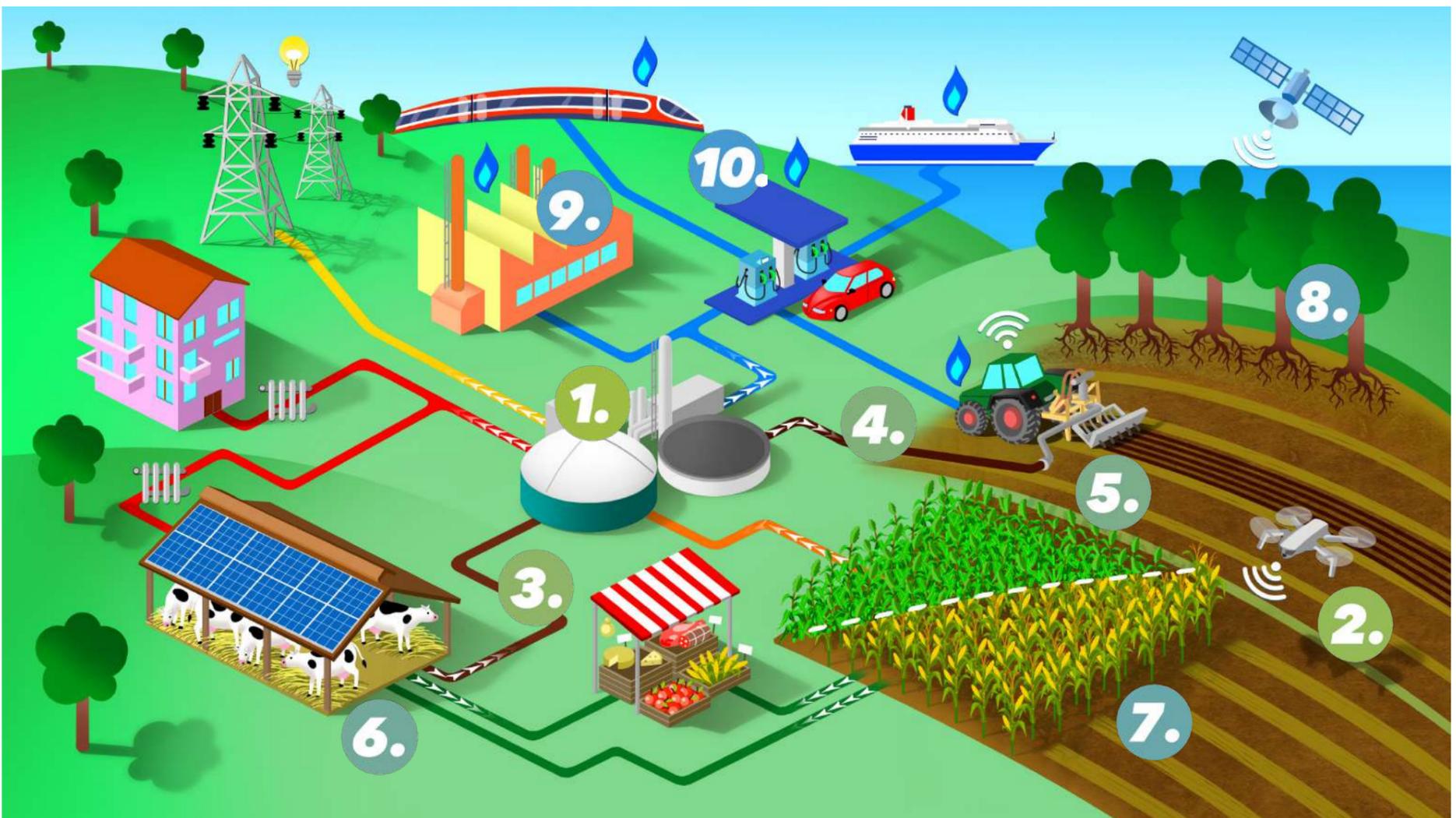
MANAGEMENT OF ANIMAL MANURE

USE ANIMAL MANURE AND AGRICULTURAL BYPRODUCTS IN ANAEROBIC DIGESTION TO REDUCE EMISSIONS AND PRODUCE RENEWABLE BIOENERGY

4.

ORGANIC FERTILISATION

USE ORGANIC FERTILISER (DIGESTATE) TO RETURN NUTRIENTS TO THE SOIL AND REDUCE THE USE OF CHEMICAL FERTILISERS



5.

INNOVATIVE FARMING PROCESSES

ADOPT ADVANCED SOIL TILLAGE AND ORGANIC FERTILISATION TECHNIQUES TO REDUCE EMISSIONS FROM SOILS

6.

ANIMAL QUALITY AND WELFARE

IMPLEMENT ADVANCED AGRICULTURAL AND ZOOTECNICAL TECHNIQUES TO IMPROVE THE QUALITY AND WELFARE OF LIVESTOCK FARMS

10.

BIOGAS AND OTHER RENEWABLE GASES

PRODUCE METHANE AND HYDROGEN RENEWABLE FROM AGRICULTURAL BIOGAS

9.

PRODUCTION AND USE OF BIOMATERIALS

DEVELOP AND USE ORGANIC, NATURAL AND RENEWABLE MATERIALS

8.

AGROFORESTRY

INTEGRATE TREES IN CULTIVATED FIELDS TO INCREASE PHOTOSYNTHESIS AND ORGANIC MATTER IN SOILS

7.

INCREASED SOIL FERTILITY

ADOPT DOUBLE CROPS TO INCREASE CO₂ CAPTURE AND SOIL FERTILITY



"Essentially, all life depends upon the soil.
There can be no life without soil and no soil without
life; they have evolved together."

Charles E. Kellogg