The Earth: human population most valuable good to be protected

Position paper on rural system in Italy
in the context of International climate policies

This document has been drawn up by the National Rural Network working group on climate change and the related draft was presented during the meeting held in Rome on October 29th, 2009 on "Agriculture, forests and climate change – the rural system contribution in view of the following Copenhagen Protocol on the important role agri-forestry sector can play in the post Kyoto".

The document has been subject to a public consultation on the Rural Network website forum www.reterurale.it. Thanks to this consultation, observations from all interested private and public stakeholders were collected and included in the present document.

The Italian position

In Italy, during 2007, greenhouse gas emissions have reached 553 million tons of equivalent CO2[1], as reported by the United Nations in the National Inventory Report (NIR) of 2009.

The agricultural sector emission value, as defined in the National Emission Inventory, is equal to **37 Mt CO2e,** that is about **6,7%** of the total amount of emissions. In Europe, the greenhouse gas emission average coming from agricultural sector is equal to 9% of the related total amount. This kind of assessment turns out to be significant if related to the whole agri-food supply chain, including not only production, but also transport, processing, packaging and distribution processes of agri-food products, as well as fertilizers and agrochemical products. In this case as well, the emission total amount of agri-food supply chain is lower compared to other economic sectors, as energy production (159 Mt CO2e), manufacturing industry (81 Mt CO2e) and the transport sector (129 Mt CO2e) but, in the same time, it has a much higher reduction potential, considering, in particular, the more limited production costs.

The forestry sector and land-use changes represent a greenhouse gas emission removal source where, the related contribution is, on a national scale, equal to nearly **71 Mt CO2e.**

On the whole, the agri-forestry sector can be considered as an essential aspect of the Country System facing climate change, as it reaches a **CO2** negative value (removal units) equal to **34 Mt.**

The Kyoto Protocol current commitments (2008-2012)

Italy shall reduce its collective greenhouse gas emissions by 6,5% from the 1990 level.

From 1990 on, the greenhouse gas emissions have actually increased; this is the reason why, at present, the reduction target is equal to nearly 13,5% compared to the emissions produced in 1990, with a corresponding value of about 70 Mt CO2e per year during the 2008-2012 period. Therefore, in order to achieve the above mentioned target, the agri-forestry sector appears to play an essential role.

[1] Equivalent CO2 (CO2e) describes the mixture of all greenhouse gases compared to the Global Warming Potential (GWP) of CO2. Methane (CH4) has a GWP over 21 times higher and Nitrous oxide (N2O) has a GWP over 310 times higher than that of CO2.

According to Kyoto Protocol current commitments, the agri-forestry sector contribution can grow out of two possible actions:
1. carbon capture and sequestration through reforestation and forest management activities;
2. emission reductions from agriculture

As for action 1, according to Marrakech Accords and the decision taken at the Nairobi Conference of the Parties held in 2007, in Italy, the current emission reductions amount coming from forest management is equal to 10,3 Mt CO2e/per year. Thanks to the reforestation process, Italy can reach an amount of emission reductions of 3-10 Mt CO2e/per year and its related final value is still to be assessed. In this context, it is important to implement the *National registry of carbon sink* (Registro Nazionale dei Serbatoi di Carbonio) together with the Ministry of Environment and the Ministry of Agricultural Policies.

Italy decided not to account carbon removals coming from agricultural land and pastures management activities, even if such optional activity is currently provided for by the Kyoto Protocol.

As for action 2, the emission reductions of the agricultural sector give a significant contribution to climate change mitigation potential. Improvements in production efficiency of farmed animals and a correct management of feeding activities, farmed animal sewage and agricultural practices producing foodstuffs for animals can considerably contribute to the related agricultural sector emission reductions. Moreover, the new technologies are leading today to a significant reduction of fertilizers used in agriculture and to an optimization of new energy systems, which meet agricultural holding requirements. A relevant contribution can grow out of the development of sustainable farming practices and out of a conservative soil management, such as those practices based on minimum tillage systems.

The Common Agricultural Policy and, in particular, the Rural development programs have been supporting for some years activities contributing to climate change mitigation, thanks to agricultural practices which reduce emissions and foster a higher carbon removal and thanks to a direct investment in energy saving and agri-energy development. In order to support this policy, a new program called CAP Health Check has been defined. It aimed at strengthening the interventions for climate change mitigation and adaptation thanks to a financial envelope, in addition to the ordinary ones, specifically focused on the "new climate change challenge". According to a Rural Network research still based on provisional data, it seems that this envelope will be equal to nearly EUR 140 million to be used by 2013.

In this context, it is important to make concrete and precise assessments on current actions and policies carried out in the rural development sector. For instance, according to some researches conducted by the Ministry of Agricultural Policies, the potential emission reductions rate coming from previous agri-environment measures, could reach almost the same rate of that defined by forest management.

The Copenhagen meeting and the role played by the rural system in post 2012 climate policies framework

The role played by the agricultural and forest sectors can be considered as essential in reaching the post-Kyoto ambitious objectives (a reduction of emissions from 25% to 40% by 2020 and from 80% to 95% by 2050).

The negotiate is still in progress and it keeps focusing on some basic issues, such as the way of including agri-forestry sector within the emission reductions commitments. In particular, the unclear decisions are related to the mandatory or voluntary way of including soil carbon storage, the emission reductions measures resulting from tropical deforestation, wood-based products and forest management with the related mandatory certification.

The rural system projects in Italy in view of the Copenhagen meeting

The rural system as an important element in the climate change challenge.

The agricultural activities, apart from producing greenhouse gas emissions, can also lead to the removal of a soil and agri-forestry biomass carbon relevant amount. This function has been included in the Kyoto Protocol actions through the so-called *Land Use Land Use Change and Forestry* activities (LULUCF). The Protocol provides for accounting the agricultural activities as an optional choice. Italy decided not to account such activities during the commitment period expiring in 2012.

The accounting of soil carbon removal is considered as an essential activity by the rural system in Italy for the post 2012 period. This allows to reach a much higher and a more precise control of the greenhouse gas emissions amount coming from the related sector and from rural areas, considering these data as a balance between emissions and removals rate.

Even if the international meeting decides to keep the accounting of the LULUCF activities as an optional choice, our country should make a decision on how to use this option for the following commitment period.

The specific features of Mediterranean areas

By defining future climate policies and the accounting processes of agricultural emissions and carbon removals, it is important to duly consider geographic, climate and socio-economic specific features of Mediterranean rural areas, compared to those in the Continental and Northern Europe countries. In particular, the specific features of Mediterranean areas are related to poor soil organic matter availability and soil degradation events due to erosion, which lead to improvement actions and biological carbon capture. Moreover, Mediterranean areas can be considered as climate change-sensitive, thus it is clear the need of an adaptation policy-making of the related agriculture.

The rural system effort in supporting climate change policies

The Common Agricultural Policy and the agricultural sector national policies shall be reviewed for the post 2012 period as to be consistent with climate change international commitments and supporting sustainable agriculture policies.

In particular, the CAP shall support the rural system contribution to climate change mitigation and adaptation strategies. In this context, it is important to clearly consider the agricultural sector and rural areas as real stakeholders, providing for specific environmental public goods.

Besides the EU interventions, a specific national financial instrument, aiming at supporting agricultural sector emission reductions should be introduced.

Support to agriculture and Italian rural areas facing with the unavoidable impacts of climate change

The agricultural sector and rural areas are particularly subject to climate change negative consequences.

Facing with the ever increasing extreme weather events (fires, storms, floods and droughts) and other weather anomalies (early and late frosts, a major seasonal variability, alterations of intra-seasonal and intra-annual precipitations, new plant and animal diseases), the rural system gets more and more vulnerable, thus leading to a much higher income loss risk and a lower production quality,

as well as to a constant need for changing business choices and the related socio-economic conditions of Italian agri-food holdings .

According to the above mentioned proposals and together with the stakeholders involved, it is necessary to set up the following:

Rural development system national strategy related to climate change mitigation and adaptation

1.Foster energy saving and renewable energy production in agriculture

Agriculture can support the initiative in question by producing biomass as a renewable energy source. Italy is a big annual producer of crop deposits which could easily be recycled to generate heat and electricity. As a result, there are very interesting and innovating technological solutions.

Furthermore, it is possible to reduce farm energy consumption by fostering energy generating systems from renewable sources (small wind turbines, photovoltaics, small hydraulic generators, low-enthalpy geothermal energy and solar thermal energy). These are very interesting measures but their related potential impact cannot be assessed at the moment.

A higher biogas energy consumption coming from organic manure could have significant effects on climate-alterning gas emission reductions and a considerable energy production.

2. Support rural development practices, promote fertilizer input reduction and a definite soil organic matter increase.

It is important to keep focusing on low-impact rural practices.
For example, minimum tillage can significantly reduce CO2 net emissions by reducing energy consumption coming from agricultural machineries and soil organic matter oxidation, consequently increasing soil carbon sequestration capacity. This kind of activities could turn out to be extremely useful for agricultural sector if they are applied on compact soil.

In any case, it is worth promoting, even in conventional rural activities, latest technology solutions and related machineries in terms of higher energy efficiency, chemical input use and water supply application.

Italy is a leader in the use of biological-based crops with more than 1.000.000 ha. Organic methods can undoubtedly reduce emissions thanks to synthesized fertilizers and agrochemical products banning, to a general external input reduction and to the increase in soil carbon removal capacity coming from organic matter production.

3. Set up specific adaptation policies for National agriculture

Italian agriculture is seriously affected by climate change as to two particular aspects: agricultural product quality, since our rural development system is based on high quality local productions (the ones who are largely affected by climate change) and intensive agriculture with a high energy consumption. Climate change impacts affect productions from both a quality and quantity point of view, modifying phenological cycles, plant pathology systems, tillage and water basic needs, crop suitability, changing species distribution systems and so on… One of the most important aspects is climate variability. The Mediterranean countries and, consequently Italy, are the “hot spots” of climate change.

It is essential, for our rural development system, to set up prevention and adaptation strategies in view of **water supply reduction, extreme weather events, seasonal changes in production** with the consequent change in the species distribution cycle and uncountable impacts on our social and economic systems. Therefore, a financial support is essential, compared to the past few years, for information and new technologies research in agriculture. In this kind of context with climate changes affecting Mediterranean countries for the most part, it is necessary to plan adaptation measures and response strategies for **quality and local food protection**

It is also required to pay more attention and to focus on the real causes of the above mentioned questions in order to deal with them and set up safety measures for rural development system, thanks to early warning systems, precision farming technologies, support to farms and individual stakeholders, risk protection systems, water supply development measures and biotechnology innovation, thus trying to tackle and overcome extreme weather events. In addition, it is essential to establish good agricultural practices, which are able to reduce emissions and foster agriculture adaptation through soil organic matter protection and biodiversity conservation criteria.

4. Identify a forestry policy, aimed at increasing the value of forests in post-Kyoto emission reductions.

For the first commitment period, a specific upper limit for forest removal capacity has been assigned to industrialized countries, aside from their management policies and the related production development incentives.

It is worth remembering the need of an accounting system which includes active policies for forest development by identifying both a threshold for forestry stocks and carbon credits generated by definite improved management practices related to the above mentioned threshold. Italy is full of biodiversity-poor forests and it is clear that specific measures could undoubtedly support forest sustainable management practices and a better national forest heritage. Currently, this is an option to be taken into account by those in charge of the related activities.

Furthermore, it is necessary to include wood products into the accounting of carbon credits. At present, forest use and the corresponding wood collection systems are considered as net emissions in the emission Registry, without considering the wood products related process in the following different processing chains. According to the new regulation, indeed, wood products are considered as real products capable of retaining carbon in the long period (i.e. for construction wood products) or replacing fossil fuels (i.e. for bioenergy).

It is necessary to relaunch a reforestation policy, particularly focusing on vulnerable areas which live with hydrogeological risks. These activities could lead to a potential of carbon sequestration, increasing the value of deteriorated territories by improving the related employment sector in vulnerable areas.

There are additional aspects for a better forestry sector national strategy, such as the quantification of **reforestation areas due to wood encroachment**, which represents, only for Italy, a maximum potential of **10 Mt CO2e per year** and the fight against **forest fires,** which, in turn, produce emissions up to nearly **4-8 Mt CO2e per year.**

5. Foster the sustainable agri-food supply chain

The accounting system of agricultural sector emissions has to be based on a wider approach that takes into account the whole agri-food supply chain.

The agricultural production is the first aspect contributing to the total emission assessment of the national agri-food sector, followed by transport and livestock activities. The packaging activity within the less relevant processing industry, is the third component contributing to the emissions production. Therefore, in Italy, the amount of emissions produced by consumers of agri-food products is equal to **1778 Kg CO2e/per year**.

Whereas the agricultural production is the first factor contributing to the total emission assessment, emissions from the agri-food supply chain have a higher and better estimated mitigation potential in terms of costs.

In order to reduce the agri-food supply chain emissions, it is necessary to improve process efficiency, as well as promote an healthy eating of natural and seasonal products.

6. Improve urban and peri-urban green areas and prevent agricultural land consumption

Today, the urban and peri-urban areas subject to the ever increasing building sector need to be upgraded in terms of parks and gardens, in order to increase their related mitigation potential and reduce the consequent emissions. Urban and peri-urban green areas directly contribute to carbon removal, while their indirect contribution comes from buildings energy consumption reduction thanks to plant thermoregulation effects. Nowadays, however, a precise estimation of urban green areas on the national territory, as well as the role these areas can play in climate change mitigation, is still to be assessed (a preliminary assessment reports a total area of 43000 ha).

Thanks to initiatives concerning certification issuing systems and enforcement guidelines, this sector could actually support different fields, such as climate change mitigation, urban pollution reduction and sustainable urban development.

Land consumption aiming at developing urban areas shall be prevented.

Therefore, urban sprawl is preventing soil from carrying out its natural functions, such as carbon capture and storage activity.

In order to guarantee a future food requirement and prevent climate change effects, fertile lands for sustainable agricultural production shall be protected.

7. Ensure financial aids for rural development system in climate change mitigation

From 2012 on, the CAP shall support the rural system contribution to climate change mitigation. In this context, within the EU financial framework decisions, it is necessary that financial aid to the CAP continue to be granted.

Moreover, specific financial incentives on national level shall be carried out through a specific section within the national balance sheet (Kyoto Agriculture), available for public and private stakeholders, with the possibility of supporting agriculture certified carbon sequestration and emission reductions to be accounted in the related *national registry* (Registro Nazionale delle Emissioni). This system shall be able to grant agri-forestry holdings a real added value in terms of emission reductions.

8. Support scientific research

Technological innovation efforts shall be fostered, along with scientific researches for a sustainable agricultural production, related to both climate change mitigation (biochar, bioenergy, biogas, genetic improvement, low emission processing technologies etc.) and adaptation (efficient and sustainable management of water resources, soil protection, precision farming, genetic

improvement programs etc.). Research activities in the field of renewable energy from agricultural sector shall also be fostered.

Conclusions

The rural system along with agri-processing chain contribution to greenhouse gas emission reductions turns out to be an important aspect for national purposes positive results within the current Kyoto Protocol activities and the future meetings to be held in Copenhagen. It is important to consider not only the contribution to the emission reductions but also the significant opportunity for the agricultural sector economy to be relaunched, thanks to public and private stakeholders commitment throughout technological innovation, rural development upgrading and the implementation of financial instruments, allowing rural holdings to participate in carbon emissions trading.