

FRANCE

Plan stratégique national de développement rural

(National Strategy Plan for Rural Development together with 6 Rural Development Programmes)¹

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Relevant Contact Details

Address:

Ministry of Agriculture and Fishery,
78, rue de Varenne,
75349 Paris 07 SP

Telephone number: +33 (0)1 49554955

Website: <http://agriculture.gouv.fr/sections/thematiques/europe-international/la-programmation-de-developpement-rural-2007-2013>



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Climate Change and Renewable Energy issues in 2007-2013 RDP

Climate change (CC) is fundamental to the context for agriculture and policy making. EU agriculture must play an important role in mitigating this phenomenon by curbing greenhouse gas (GHG) emissions; at the same time it needs to adapt to the expected climatic adversities which will have serious consequences on production processes. Rural development offers a range of possibilities to support farming practices and investments that can contribute to climate change *mitigation* efforts (including the increase of the use of *Renewable Energy* (RE) resources) and additionally effect *adaptation* benefits. Climate change challenges have been well recognized in the baseline analysis of the 2007-2013 EU Rural Development Programmes (RDP) and addressed in their strategies. Following the Health Check (HC) of the Common Agricultural Policy (CAP), the 'new challenges' of the RD policy include 'climate change' and 'renewable energy' for which an additional budget of approximately 1 billion EUR⁽²⁾ have been made available for Member States (MS) to spend on this issues⁽³⁾. As a consequence, the operations related to these newly introduced Community priorities have been further strengthened in the RDPs.

Introduction - overview of French RDP(s)

Rural development in France is implemented through six rural development programmes: the Hexagon RDP which covers the metropolitan territory of France except Corsica, one RDP for Corsica and one RDP for each of the overseas departments (Guyane, Guadeloupe, Martinique and Réunion). France has chosen to implement rural development policy in a decentralised manner. The Hexagon RDP therefore contains a common set of measures applicable to all 21 French regions and regional components whose programming rests with the regional prefects. Each of the 21 French regions has developed a regional document for rural development

⁽¹⁾ The French regions include: Guadeloupe, Guyane, Hexagon, Martinique, Réunion and Corsica.

⁽²⁾ 19,8% of the total additional funds released.

⁽³⁾ The budget allocated to the 'new challenges' includes the funds released by the HC of the CAP (including voluntary modulation and transfers according to Art. 136 of regulation (EC) N. 73/2009) and the European Economic Recovery Package (EERP) .

(RDRD) aiming to contribute to the economic, social and environmental development of rural territories. In mainland France, management of rural development programmes follows the same decentralised pattern, with a Managing Authority (Ministry of Agriculture and Fisheries - central administration) for the Hexagone programme managing the national components/measures of the programme, while regional prefects, as representatives of the Managing Authority, propose rural development programming for their respective territories and ensure implementation and monitoring at regional level through regional Monitoring Committees.

France is one of the most heterogeneous countries in the EU as it is composed of a mainland territory, the Corsica island in the Mediterranean and four overseas departments with very distinct socio-economic and geographic characteristics to the rest of France. The National Strategy Plan provides baseline figures for France in 2005 and these state that:

- a) mainland France has a total surface of 543,126 km² and a population of 60.43 million inhabitants, with 53% of its surface being agricultural land and 28% forests, while 39% of its population lives in rural or peri-urban areas;
- b) Corsica is a very special region in the national context given it is "the closest of the distant islands"⁴, with a surface of 8,707 km² and a population of 265,000 inhabitants, a very important role of agriculture and the agri-food industry in employment and the local economy, a dense hydrographical network and very rich in natural resources, especially forests (the most wooded island in the Mediterranean);
- c) the four overseas departments have a total surface of 89,000 km² (representing 16% of the metropolitan surface) and are characterised by insularity and distance from the mainland, adverse climate conditions (these islands are frequently affected by cyclones, volcanic eruptions and seismic risks), tourism activity and an exceptional biodiversity in relation to mainland France.

The significant socio-economic and environmental differences between French territories (mainland, Corsica and the overseas departments) justify and explain the need for distinct programmes that address climate changes challenges to a different degree according to the specificities of each territory.

One of the main problems confronting rural areas in France is the unequal provision of environmental goods by farming activities, with mainland France facing a reduction in the quality of water and increased levels of greenhouse emissions, Corsica's forests being threatened by recurring forest fires while the overseas territories face a water management challenge. The latter are marked by a contrast between seasons with frequent rainfall and areas with lower rainfall associated with their tropical context.

Given the above context, all three dimensions of climate change (mitigation, adaptation and the potential for renewable energies) are addressed by the **baseline analysis** provided in the French RDPs. These three aspects have been considered and correspondingly tackled in the RDP strategies and within the implemented measures with different intensities according to their regional specificities. Following the CAP HC, French RDPs were revised to give further emphasis on the new challenges stressed by the HC in relation to climate change, biodiversity, water management and renewable energies. These priorities were already addressed in the original RDP strategies, more specifically, water management was mainly addressed under axis 1 and 2, biodiversity and climate change were addressed under axis 2, while renewable energies were addressed in particular under axis 1 in the context of modernisation of agricultural holdings and to some extent also under the diversification and basic services

⁴ National Strategic Plan for Rural Development 2007-2013, 16 April 2007

provision measures of axis 3. However, the revised RDPs place additional emphasis in particular to mitigation of and adaptation to climate change. The table below depicts the climate change issues in the revised RDP strategies. The proportion of the additional funding from the CAP HC is given in brackets, while all the new priorities are shown in order to highlight the relative focus on climate change issues in each RDP. All revised RDPs recognise the need to deal with climate change issues, however, some chose to reinforce also other, non Health Check aspects like support to mountainous and less favoured areas as these were considered also some of their most pressing issues.

Region	Revised RDP (post-Health Check)	Climate change focus
Hexagone	Biodiversity and water management (82%), renewable energies (2%), broadband (3%) and the rest 13% relates to non Health Check changes (CMO wine reform and modulation).	Strong emphasis on mitigation through integrated and organic farming as well as extensification of livestock. Renewable energies through production of biogas from organic waste, transformation of agriculture/forest biomass into renewable energy.
Corse	Biodiversity and water management (33%), renewable energies and risk prevention (28%), and the rest 39% relates to non Health Check changes.	Mitigation through organic farming, extensification of livestock, soil management practices and changes in land use. Improvements in energy efficiency are also stressed with a mitigation objective. Adaptation is focused on risk prevention against forest fires and other natural catastrophes.
Guadeloupe	Biodiversity and water management (48%), renewable energies (47%), and the rest 5% relates to non Health Check changes.	Mitigation through organic farming, extensification of livestock, soil management practices and changes in land use. Adaptation through water management and conservation of genetic resources (especially plants). Renewable energies through replacement of fossil fuels.
Guyane	Biodiversity and water management (21%), renewable energies (71%), and the rest 8% relates to non Health Check changes.	Strong emphasis on renewable energies through biogas from organic waste, transformation of biomass, solar energy. Mitigation through the reduction in the use of phytosanitary products. Adaptation through water management and waste water treatment on farms and conservation of genetic resources (especially threatened animal races).
Martinique	Biodiversity and water management (81%), renewable energies (4%), and the rest 15% relates to non Health Check changes.	Strong emphasis on mitigation organic farming, extensification of livestock, soil management practices and changes in land use. Renewable energies through replacement of fossil fuels.
Réunion	Biodiversity and water management (75%), renewable energies (7%), and the rest 19% relates to non Health Check changes.	Strong emphasis on information and training covering all three climate change components. Adaptation through water management and conservation of genetic resources and awareness raising on the conservation of protected flora and fauna.

One of the main challenges clearly identified by most RDPs relates to **mitigation** of climate change. According to the National Strategic Plan⁵, the agricultural sector contributes 18.6% to GHG emissions, in particular nitrous oxide (78% of national emissions) due to the microbial transformation of nitrogen fertilisers in soils and methane (70% of national emissions) produced mainly from the digestion processes of ruminant animals (enteric fermentation) and from manure handling. The agricultural sector is also responsible for 97% of ammoniac emissions which can have an impact on ecosystems far beyond the territory where emissions originate. At the same time, the quality of soil is affected by erosion, a reduction in the percentages of organic material which reduces soil fertility and mineral and organic pollution. Mitigation activities focus on the adoption of environmentally friendly agricultural practices such as organic

⁵ National Strategic Plan for Rural Development 2007-2013, 16 April 2007.

and integrated farming, crop rotation practices and extensification of livestock, all methods which involve reduced use of fertilisers and phytosanitary products and farm/land management in a way that reduces GHG emissions from agriculture, protects the soil from erosion and preserves natural landscapes. The revised RDPs place further emphasis on such practices with a view to protect and preserve biodiversity, the prime 'new challenge' taken up by the revised strategies. Mitigation actions are implemented mainly through axis 2 actions; in particular through agri-environment measures (they absorb 43.5% of total axis 2 budget in France).

Adaptation to climate change is also strongly supported by RDPs, primarily through water management measures with different aims depending on the region/territory. The main challenge in mainland France is to effectively manage irrigation for agricultural purposes which accounts for 50% of water consumption (80% in summer months) while certain regions alone (Aquitaine, Centre and Midi-Pyrénées) represent 50% of irrigated surfaces⁶. Access to water resources is a very specific problem in the overseas territories whose climatic conditions are responsible for the alternation between very dry and excessively wet periods. The double challenge there therefore is to introduce water saving techniques during dry periods and efficient drainage equipment during wet periods, taking into account the very unequal geographic distribution of demand for water. Efforts to address water management issues are taken made under both axis 1 and 2.

Axis 1 addresses in particular the development of infrastructure for the adaptation of agriculture and forestry (absorbing almost 6% of total axis 1 budget in France) through operations for the improvement of irrigation and drainage systems and the development of water storage capacity. For the reasons mentioned above, these operations are particularly supported in the overseas territories (absorbing between 20% and 37.5% of their axis 1 budgets). Under axis 2, measure 214 includes a specific sub-measure concerning the Water Framework Directive, whilst additional efforts to address adaptation to climate change are made within the axis 2 forestry measures. This includes actions to reduce the effects of forest fires (an acute problem in Corsica, representing the French region most affected by forest fires) and prevent the deterioration of soils from adverse climate conditions and risks (alternation of heavy rainfall and dry periods, in particular in the overseas territories).

The preservation of biodiversity in a country benefiting from rich and varied ecosystems (it contains 4 out of 9 European bio-geographic regions, while 11.8% of the mainland territory and 15% of Corsica are classified as Natura 2000 sites) is another major challenge. The overseas territories in particular are exceptionally rich in ecosystems, including tropical forests (occupying between 35% and 90% of their surface) and a large variety of flora and fauna (98% of France's vertebral fauna and 96% of vascular plants are concentrated in the overseas territories⁷). The protection of biodiversity against climate change impacts and risks is supported principally by the agri-environment and forestry measures of axis 2, while all the revised RDPs stress biodiversity as one of the main new challenges to be addressed by general and specific rural development measures. Together with water management, the preservation of biodiversity is the most important priority endowed with additional funding in the revised RDPs following the CAP Health Check.

In relation to **renewable energies**, France has already undertaken commitments to use biomass for the production of bio-fuels (biomass represented 10% of final energy consumption in 2005, making it the principal renewable energy source in France). The development of renewable energies is an integral part of the National Strategic Plan and the RDP strategies and consistent with the climate change and energy efficiency objectives of a debate initiated in

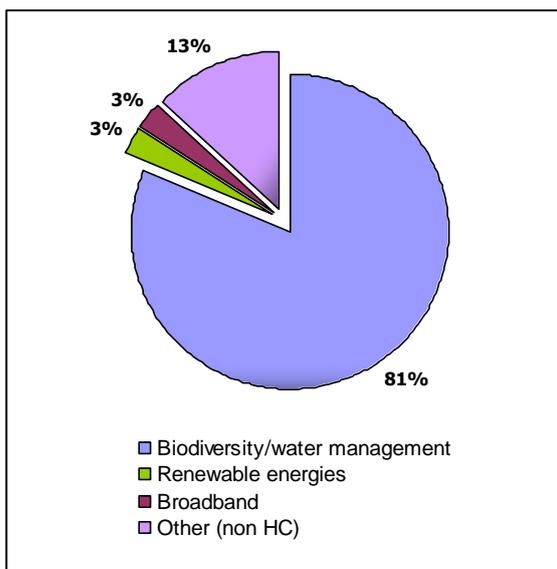
⁶ « Evaluation Environnementale Stratégique du PDRH 2007-2013 », Final report, November 2006.

⁷ National Strategic Plan for Rural Development 2007-2013, 16 April 2007.

France in October 2007 on the environment and long-term sustainable development⁸. The revised RDPs emphasise renewable energies as a key factor in the fight against climate change. They are covered by operations largely under axes 1 and 3: the former mainly through modernisation of agricultural holdings where actions include investments for energy efficiency such as the processing of biomass or agricultural/livestock waste for energy production purposes; the latter mainly through investment support for local energy supply (installations/infrastructure for renewable energy using biomass and other renewable energy sources) through the provision of services to the economy and rural population (absorbing 23% of total axis 3 budget).

France has made significant progress in relation to **awareness-raising** on environmental issues and has undertaken international commitments to reduce GHG emissions in the context of the Kyoto protocol. Increased awareness is reflected in the rising number of contacts between farmers and public institutions for sustainable land management. More than a third of professional holdings have engaged in agri-environment contracts in 2005. Awareness-raising on environmental issues, including the fight against climate change, is further stressed in the revised RDP strategies, some of which have dedicated additional funds to relevant training and information measures.

Graph 1: Allocation of the additional resources per type of priority – FRANCE



The overall budget for France (6 RDPs) in terms of total public expenditure amounts to €13,704,267,609, of which €7,584,497,109 is the EAFRD contribution⁹. This includes an additional allocation of €1,142,532,000 (EAFRD contribution) as a result of the new challenges raised by the CAP HC, the adoption of the European Economic Recovery Plan (EERP), the wine reform and modulation adjustments. Following these changes, additional financial support to RDP objectives relate to biodiversity and water management (+€928.97 million representing 81%, of the new EAFRD funds allocated to the programme) and renewable energies (+€33.01 million, 3%). This new financial support is additional to the initial RDPs which were already addressing climate change and renewable energies.

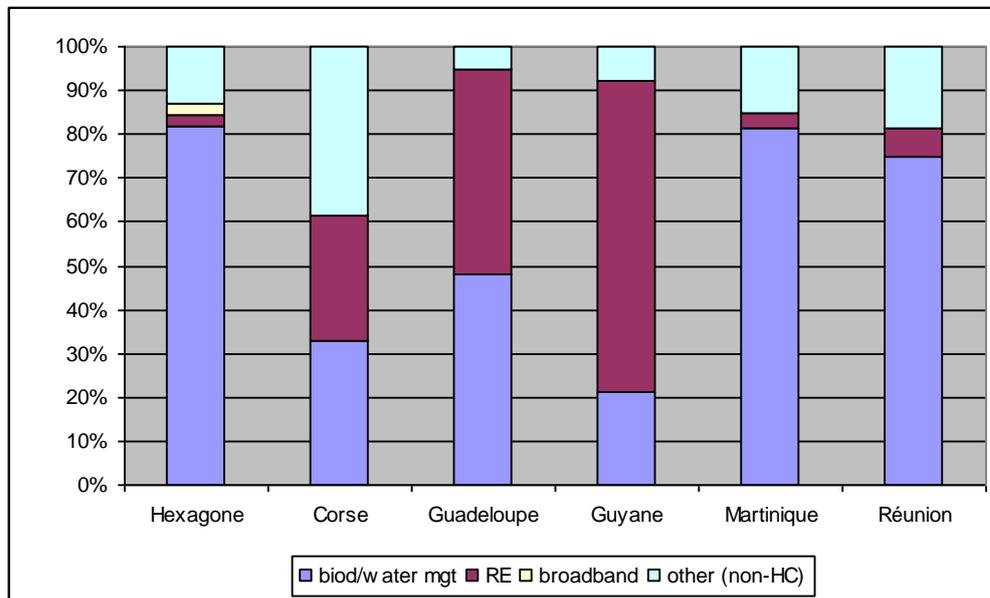
Full details of the overall budget allocations for the French RDPs can be found in the RDP summary fiches that are available at:

http://enrd.ec.europa.eu/rural-development-policy/country-information/rural-development-policy-fiches/en/rural-development-policy-fiches_home_en.cfm

⁸ Known in French as "Grenelle environnement"; references in the RDP Hexagon, version 5, 21 December 2009 and in the EC 2009 working documents on the RDP modifications following the CAP Health Check.

⁹ Financial tables provided by DG AGRI in January 2010.

Graph 2: Regional break-down of the new challenges following the RDP revisions



Source: European Commission – DG AGRI.

Note that 'other (non-HC) challenges' include wine and CMO reform and modulation and additional funding assigned to measures 211 and 212.

The graph depicts that biodiversity and water management are the main challenges addressed by many RDPs, followed by renewable energies. There are significant differences between regions which reflect their different priorities and needs. Targeting investments in support towards more environmentally friendly agricultural production practices (e.g. organic and integrated farming, extensification of livestock, soil conservation techniques, etc.), more efficient water management techniques and the replacement of fossil fuels by renewable energy sources are the most common climate change related actions supported under the enhanced RDP strategies.

Mitigation

Activities aimed at reducing agricultural greenhouse gas emissions

The French RDPs provide comprehensive support for a range of activities which could contribute to reducing agricultural emissions. Following the Health Check revision and the adoption of the European Economic Recovery Plan new strengthened operations have been implemented for environmental protection and sustainable agriculture which enhance the uptake of the priority of climate change mitigation. These are particularly related to the promotion of sustainable farm management practices, livestock and pastures management and soil conservation techniques.

The main measure through which RDPs seek to support efforts to reduce agricultural GHG is **measure 214 - agri-environment payments** although other measures also contribute. Measure 214 is also the one absorbing the majority of axis 2 funds (representing an average of 44% of the axis 2 budget and reaching as much as 67% in Guadeloupe). A considerable number of operations are referred to under this measure which could help to reduce emissions, including:

- support for the introduction or maintenance of organic farming prevails as the most common method for the implementation of environmentally friendly agricultural practices (included in all 6 French RDPs) as it involves the elimination of synthetic fertilisers, the

exclusion of chemical products for the control of plagues and diseases and no cultivation of the same species in other parts of the farm that do not employ organic agriculture methods;

- extensification of livestock through increased grazing in meadows and grasslands (all 6 RDPs);
- extensification of pastures management applicable to grass-based farming systems (5 RDPs), which involve reduced/no fertilisation, reduced use of phytosanitary products, help maintain/increase soil organic levels, protect the soil against erosion and contribute to effective management of grasslands whose role is fundamental for the ecosystem (in particular for biodiversity and water quality);
- integrated farming (4 RDPs) which limits the use of phytosanitary products and stresses the introduction of biological and chemical control methods that are compatible with the environment, including as objectives the conservation and improvement of water resources and the conservation of the soil through maintenance of organic material in the soil. It includes extended crop rotations as well as diversification of rotations in arable crops which involves fertiliser reduction, crop protection against diseases and contributes to improved water quality and protection of biodiversity;
- soil conservation techniques are also promoted (4 RDPs) that help increase the content of organic material in the soil, including mechanical weed control methods and permanent green cover. More specifically, the maintenance of permanent green cover is promoted in regions whose hot and humid climate make it difficult to manage grasslands (namely the overseas territories). The maintenance of a permanent green cover helps mitigate erosive phenomena and the entrance of pollutants (serves the objectives of fight against erosion and water quality) while it constitutes a refuge zone for flora and fauna (serves the objective of biodiversity). Several region or crop specific methods are promoted such as the "green sugarcane harvesting" technique (Guadeloupe, Martinique, Réunion) or the clear cutting technique for trees (Guyane) or the replacement of mechanical tillage by manual intervention in banana plantations (Martinique) which generate significant organic material for the soil as opposed to the more cost-efficient method of burning before harvesting which implies a loss of organic material;
- although fertilisation efficiency is inherent in all measure 214 operations, 3 RDPs explicitly promote fertilisation efficiency through operations that reduce or suppress the use of phytosanitary treatment in herbaceous crops or fruit crops, with a view to ensure sustainable management of herbaceous and fruit production systems. In Réunion for instance the combination of mechanical and chemical weed control in sugar cane plantations is aimed at the reduction of diffused pollution in aquatic environments.

	Organic farming	Integrated production	Soil conservation techniques	Extensification of livestock	Fertilisation efficiency	Soil management (extensive pastures management)
Hexagone	√	√		√		√
Corse	√	√		√		√
Guadeloupe	√	√	√	√		√
Guyane	√		√		√	√
Martinique	√	√	√	√	√	√
Réunion	√		√	√	√	√

Source: most recent version of RDPs published on: <http://agriculture.gouv.fr/sections/thematiques/europe-international/la-programmation-de-developpement-rural-2007-2013>

In the context of measure 214, specific provisions apply to the 21 French mainland regions, to Corsica and the 4 overseas territories for **regionally-focused** agri-environmental measures aiming to preserve or restore the quality of the water and to limit the deterioration of biodiversity. Such measures are targeted to the specificities of each region and allow them to respond to localised threats or preserve high natural value resources in Natura 2000 sites and priority water basins as defined under the Water Framework Directive. They can also be implemented to other areas facing specific challenges such as biodiversity threats outside Natura 2000, soil erosion or prevention against forest fires. Concrete operations focus on organic farming, integrated production (including crop rotations), land management and soil conservation techniques (permanent green cover, reduced tillage), pastures management, etc, involving principally the reduction in the use of phytosanitary products and the protection of waters from pollution of agricultural origin (pesticides and/or nitrates).

This measure is further supported with additional funding following the CAP Health Check in all French RDPs involving support to existing sub-measures in relation to organic and integrated farming, extensive livestock systems, soil management and conservation techniques, extensification of pastures management. Additional funding for these operations is particularly targeted at the reduction in the use of fertilisers and pesticides with a view to mitigate the effects of climate change in terms of GHG emissions, soil erosion, soil and water contamination. In this context it is important to note that measure 214 absorbs almost 81% of the total additional funding available to France following the CAP Health Check. The bulk of agri-environment measures in French RDPs address mitigation objectives, although they also contain operations that contribute to adaptation to climate change.

Again under Axis 2, the afforestation measures (221 to 223) contribute to mitigation through the establishment of forests and their maintenance directly contributing to the uptake of CO₂ emissions. They absorb less than 0.2% of the total axis 2 budget in France and are included in three RDPs.

Further support for activities which could help to mitigate climate change is possible under **measure 121 – modernisation of agricultural holdings**. This measure includes investments for manure treatment and processing with a view to reduce ammoniac and GHG emissions, for instance coverage of pits and manure treatment equipment (Hexagone, Corse, Guyane, Guadeloupe, Réunion). It includes also investments in spreading equipment for better application of fertilisers and thus the achievement of fertilisation efficiency (Guadeloupe, Martinique, Réunion). Energy saving investments are also supported, mainly through the installation of glasshouses or improvements in existing ones (Hexagone, Réunion).

Finally, again under axis 1, **measure 111 – vocational training and information actions** aims to increase knowledge and awareness in relation to sustainable agriculture issues. Mitigation is addressed more explicitly in the Hexagone and Martinique RDPs which support training activities to assist farmers on aspects concretely related to the application of agri-environment measures, such as integrated production, reduction in the use of phytosanitary and fertilisation practices as part of integrated farm management. Following the RDP revisions as a result of the CAP Health Check, the Réunion RDP assigns 55.6% of the additional funding to measure 111, making specific provisions for training in organic and integrated farming applied in specific areas, including information on water saving techniques (serving in this way also adaptation objectives).

Adaptation

Prevention of, and coping with, potential impacts of climate change on agriculture.

In terms of adapting to cope with the potential impacts of climate change the French RDPs focus on three key sets of actions: one relating to the preservation of genetic resources with the overarching objective to protect biodiversity; one relating to water management through

efficiency improvements in irrigation infrastructures and enhancement in the capacity to store water; and one relating to risk management in view of forest fires (in mainland France and Corse) and natural disasters (in the overseas territories). The improvement of water management has, together with biodiversity, benefited in particular from the additional resources released by the CAP Health Check (as seen above, 81% of additional EAFRD funds are allocated to biodiversity and water management).

The main measure through which RDPs seek to support efforts to adapt to climate change is **measure 214** – *agri-environment payments* – which demonstrates synergies between climate change mitigation and adaptation since it includes sub-measures that deal with both aspects of climate change. Measure 214 addresses several types of operations in relation to adaptation:

- Conservation of genetic resources (relevant sub-measures are found in practically all French RDPs). This involves protection of threatened species in order to preserve the diversity of animal farm species as well as preserve plant resources threatened by extinction. For the latter the objective is not only to protect but also re-integrate in the soil traditional plant varieties threatened by genetic erosion. For the conservation of genetic resources of animal breeds, Guadeloupe for instance focuses on the “creole” bovine breed. The conservation of threatened species is also accompanied by the use of apiculture as a means to protect and preserve biodiversity. Increased urbanisation activity and the excessive use of fertilisers and pesticides have led to a reduction in the population of bees. Against this background, agri-environment payments for apiculture are used as a means to protect biodiversity by reducing the application of pesticides and maintaining/restoring diverse natural habitats;
- Risk prevention and management, namely protection of agricultural and pasture landscapes from forest fire (Corsica) and other risks (such as cyclones in the overseas territories). In Corsica for instance, maintaining pastures is a key factor in shaping landscapes and protecting them against environmental risks. Agri-environment payments in this context aim to encourage farmers to continue their livestock activities in areas sensitive to environmental risks by adopting environmentally friendly activities (and reduce the likelihood of farmers being tempted to carry out their livestock breeding activities in easier to maintain and more profitable areas). In Réunion, the plantation of intermediary crops during cyclonic periods constitutes a mechanic protection for the soil against erosion and prevents pollutants from entering the water;
- Integrated pest management. Integrated farming is applied for different purposes adapting thus to regional specificities and problems, for instance, integrated banana production in Guadeloupe and Martinique aims to maintain the banana crop which suffers from a specific pest (the weevil from the “*Curculionidae*” family, known for destroying plants and grain), while in Réunion there is support for the fight against intrusive exotic species.

Measure 214 is further supported with additional funding following the CAP Health Check principally in the overseas territories. Additional funding in the overseas RDPs is provided for the conservation of genetic diversity in Guyane, the improvement of the potential of apiculture in organic farming with a view to protect threatened species in Guadeloupe and the introduction of a new sub-measure in Réunion for the conservation of genetic diversity.

Again under axis 2, **measure 225** - *forest-environment payments* - is only implemented by the Corsica RDP and aims to conserve/reconstitute habitats and preserve biodiversity and rare or threatened animal/plant species. This is justified by the fact that Corsica is the most wooded island in the Mediterranean with a vast ecological diversity and the French region most affected by recurring forest fires (in 2003 alone 27,300 hectares were damaged by fires¹⁰).

¹⁰ National Strategic Plan for Rural Development 2007-2013, 16 April 2007.

Furthermore under axis 2, **measure 226** - *restoring forestry potential and introducing prevention actions* - and **measure 227** - *non-productive investments* – aim to encourage the establishment of preventive measures for natural risks such as forest fires. Measure 226 includes actions for fighting erosion and desertification from natural catastrophes such as forest fires and floods. Measure 227 includes actions such as creation and recovery of open spaces in forests (clearings), elimination of undesirable or intrusive plant species, investments for providing information on the use of forests and other non-productive investments with a view to restore and conserve habitats and species, especially in high natural value areas such as Natura 2000 areas. Although measure 227 represents an overall low proportion of the overall axis 2 budget for France, in some regions it acquires much higher significance (reaching 14% and 37.6% of the axis 2 budget in Réunion and Guyane respectively). The exceptionally rich biodiversity in the overseas territories justifies the choice of a significant allocation of their budget to this measure in order to preserve this asset through the maintenance and restoration of natural ecosystems, soil management and protection of water resources.

Under axis 1, the main measure through which RDPs seek to support efforts to adapt to climate change is **measure 125 C** – *infrastructure related to the agricultural sector* – which covers operations related to water supply and efficiency. This measure absorbs almost 6% of the total axis 1 budget. Under this measure explicit reference is made to supporting investments for the improvement and development of irrigation infrastructures especially in areas characterised by water deficits in mainland France. Examples of supported actions include modernisation of transport and distribution systems, water storage systems, investments in waste water treatment systems. In the overseas territories, water efficiency is promoted through investments in individual or collective dams and water storage facilities for water storage during heavy rainfall periods as well as drainage equipment, while in Corse modernisation of irrigation systems is also supported. Water management (water saving technologies to allow more efficient use and storage of water) under measure 125 is reinforced with additional funding stemming from the CAP Health Check in Réunion (the additional funding for this measure representing almost 10% of total additional funding for the Réunion RDP).

Water management is also addressed by **measure 121** – *modernization of agricultural holdings* – (although this measure has higher significance for the production of renewable energies) including investments for the modernisation of irrigation systems, deposits and drainage and waste water treatment. Measure 121 has been supported with additional funding for water management following the CAP Health Check. More specifically, the Guyane and Corse RDPs target additional funding to production techniques that allow a more rational use of water and to investments in waste water treatment facilities on the farm.

Measure 121 is also relevant for risk management. Following the CAP Health Check the Corsica RDP, has been endowed with additional funding for the modernisation of equipment for the prevention of forest fires and natural catastrophes related to the climate. Furthermore, the limitation of pastures for livestock in situations of adverse climate changes justifies the allocation of further funding to the Corsica RDP for the creation of supplementary grazing surfaces in the farm to cover such needs.

In this view, other measures implemented within the RDP under Axis 1 are likely to create synergies in order to improve the management conditions of farmlands and cope with adaptation to climate change particularly against forest fires and other natural catastrophes (hurricanes, earthquakes, volcanic eruptions). These include **measure 126** - *restoring agricultural production potential* – which finances material and immaterial investments for the restoration of agricultural production potential (replanting of orchards, reconstruction of buildings) especially in territories affected by natural disasters (Guadeloupe, Martinique). However, their overall financial weight in axis 2 and in the programme in general is rather small so as to imply significant impact.

Main RDP measures which contribute to address CC mitigation/adaptation issues

Axis/Measure	Description	Type of operation	Potential effects
Axis 1			
Measure 121 (42% of total axis 1 budget)	Modernisation of agricultural holdings	Manure treatment equipment. Spreading equipment for the application of fertilisers. Modernisation of irrigation systems, deposits and drainage ad waste water treatment. Modernisation of equipment for risk prevention (forest fires, excessive rainfalls). Creation of supplementary grazing surfaces in the farm.	Reduced methane emissions especially in areas with high livestock density. Reduced emission of GHG on farm level and reduced leakage of fertilisers and pesticides. Improved water consumption and water quality. Improved capacity to address environmental risks.
Measure 125 (5.8% of total axis 1 budget)	Infrastructure related to the agricultural sector	Modernisation of transport and distribution systems, water storage systems, investments in waste water treatment systems. Individual or collective dams and water storage facilities for water storage. Drainage equipment.	Improved water management. Water savings / improved water storage capacity.
Measure 111 (3.5% of total axis 1 budget)	Vocational training and information actions.	Training and information actions aiming at the improvement of knowledge on sustainable agriculture practices. Topics include the application of agri-environment measures (especially integrated and organic farming) in the context of integrated farm management.	Improved competitiveness of French agriculture through sustainable agricultural practices. Reduction in the use of phytosanitary and fertilisation practices.
Axis 2			
Measure 214 (44% of total axis 2 budget)	Agri-environment payments	Organic farming. Integrated production. Soil conservation techniques. Extensification of livestock. Extensification of pastures management. Fertilisation efficiency. Conservation of genetic resources. Maintaining pastures and livestock activities in areas sensitive to environmental risks. Integrated pest management.	Reduced use of fertilisers and phytosanitary products. Improvements in environmental protection and restrictions on pollution caused by agriculture. Reduced emissions of CO ₂ . Increased organic material in the soil. Improved soil and water quality. Enhanced protection of biodiversity. Increased adaptation capacity to climate change through preservation of genetic resources.

Axis/Measure	Description	Type of operation	Potential effects
			Improved capacity to address environmental risks.
Measures 226 and 227 (7.5% and 0.7% of total axis 2 budget)	Restoring forestry potential and introducing prevention actions. Non-productive investments	Establishment of preventive measures in order to prevent natural risks, such as forest fires. Actions for fighting erosion and desertification from natural catastrophes. Creation and recovery of open spaces in forests (clearings), elimination of undesirable or intrusive plant species, investments for providing information on the use of forests and other non-productive investments.	Increased capacity to adapt to climate change effects and natural catastrophes. Enhanced capacity to fight erosion processes. Restored forest and agricultural land that has suffered from natural catastrophes or adverse weather conditions. Improved protection of biodiversity and enhanced quality of natural ecosystems.

Renewable energies

Electricity, heating and transport fuels produced from biomass (such as biofuels, biogas) and other renewable sources (solar, wind, geothermal).

The French RDPs integrate several aspects of renewable energy; specifically they encourage energy savings and support improvements in energy efficiency as well as the production of renewable energies under axis 1 and investments in local energy supply from renewable energy sources under axis 3. The fight against climate change through the production of renewable energies is embedded in French national policy and taken up also at regional level. In addition to fiscal incentives and obligations, the French government has also set ambitious targets for renewable energy production, for instance the incorporation of bio-fuels into fuels should reach 10% in terms of energy value by 2015¹¹.

Rural development strategy supports these goals mostly through relevant axis 1 measures that include investments in the production of energy crops and the use of biomass for renewable energy purposes. Axis 3 measures also support on farm renewable energy production and sale at the local level. Renewable energies are further supported in the revised French RDPs with €33,014,000 or 3% of total additional EAFRD funding addressed to the promotion of renewable energies.

The key measure for supporting renewable energies is **measure 121 – modernisation of agricultural holdings** – under axis 1. It supports operations implemented on farms principally at regional level in mainland France concerning energy savings and renewable energies through individual and collective investments in the substitution of fossil fuels, the use of solar photovoltaic or geothermal energy and the reduction of energy costs at farm level. Additional funding for renewable energies following the CAP Health Check is provided in the Hexagone RDP with a view to support existing operations for energy savings, the production of biogas from organic waste and the transformation of agricultural/forest biomass into renewable energy. In the overseas territories and Corsica renewable energies are supported as part of their renewed strategies following the CAP Health Check reaching as much as 71% of total additional funding (Guadeloupe) as depicted in Graph 2 above. Additional support is provided in the context of **existing** measures, such as investments in energy saving equipment (Corsica, Guyane and Martinique), investments in the production of renewable energies (Martinique) and

¹¹ National Strategic Plan for Rural Development 2007-2013, 16 April 2007.

an explicit focus on the production of solar energy in Guyane. Additional funding is also targeted at the development of **new** operations, namely, the production of biogas from organic waste and the transformation of agricultural/forest biomass into renewable energy (Guyane), investments in collective equipment for the production of renewable energy and for boosting the energy autonomy of cooperatives (e.g. equipment for the recovery of rainwater, solar heating, collective equipment of the processing of biomass; Guadeloupe) and elaboration of energy diagnosis followed up by material investments for energy savings (Réunion).

Again under axis 1, **measure 125 C** – *infrastructure related to the agricultural sector* – although it is in the majority of RDPs addressed to water management, it has particular significance for renewable energies in the Hexagone RDP. Under the “support to other infrastructure in the agricultural sector” sub-measure, operations for energy savings, the production of biogas from organic waste and the transformation of agricultural/forest biomass into renewable energy are supported. These are endowed with additional funding following the RDP revisions as a result of the CAP Health Check.

Furthermore under axis 1, **measure 123** – *adding value to agricultural and forestry products* – includes in its objectives for mainland France (Hexagone RDP) the creation of local channels for wood energy supply. This objective is taken up by most of the 21 regional documents for rural development which encourage the creation of local networks and local supply chains for wood energy supply. Energy saving and renewable energy actions are also supported in the Corsica and overseas programmes through for instance investments in buildings and equipment to facilitate energy savings and renewable energy production (e.g. equipment for bio-fuels in Corsica and Guadeloupe), creation of local supply chains for wood energy supply (Corsica, Guadeloupe).

Finally under axis 1, **measure 111** – *vocational training and information actions* – includes environmental awareness amongst its objectives and explicitly proposes training topics in the field of renewable energies (Hexagone, Corsica, Réunion). Additional funding for this measure following the CAP Health Check is provided in the Réunion RDP (55.6% of the additional funding) in order to increase awareness on several environmental topics by expanding training themes to include renewable energies, more specifically the use of biomass from agriculture applying transformation processes such as gasification and combustion.

Measures implemented within the RDP under axis 2 are likely to contribute to the production of renewable energies with a view to address climate change impacts and risks. These include measure 221 - *first afforestation of agricultural land* – and measure 222 - *first establishment of agroforestry systems on agricultural land* – which include in their objectives the development of renewable energies through wood energy. However, these measures are implemented only in a limited number of RDPs (2 RDPs for each measure) while their overall financial weight in axis 2 and in the programme in general is rather small so as to imply significant impact.

Under axis 3, **measure 321** - *basic services for the economy and rural population* – supports the construction and improvements in small infrastructures for energy supply (including amongst others renewable energy) allowing better management of the natural environment and the use of biomass at collective level (e.g. wood heating) and small scale infrastructure for autonomous energy production systems and/or experimentation with renewable energy (regional component of the Hexagone RDP, Guadeloupe RDP). Measure 321 in Guyane has particular significance for the promotion of renewable energy sources. The objective in inland areas is to continue developing autonomous electricity generation units from thermal, solar and hydraulic resources, while in coastal areas to improve co-generation using biomass. This measure in the Guyane RDP has received additional funding following the CAP Health Check for installations / infrastructures for the production of renewable energy (47% of total additional funding for Guyane).

Amongst the other axis 3 measures, measure 313 - *encouragement of tourism activities* – includes the development of innovative tourist accommodation from an environmental point of view (energy savings) in the Hexagone RDP.

Main implemented RDP measures related to the development of RE sources

Axis/Measure	Description	Type of operation	Potential effects
Axis 1			
Measure 121 (42% of total axis 1 budget)	Modernisation of agricultural holdings	Individual and collective investments in the substitution of fossil fuels, the use of solar photovoltaic or geothermal energy and the reduction of energy costs. Production of biogas from organic waste and the transformation of agricultural/forest biomass into renewable energy.	Increased quota of renewable energy derived from RE (bio-energy) from agriculture. Reduced emissions as a result of higher use of renewable energy sources.
Measure 125 C (5.8% of total axis 1 budget)	Infrastructure related to the agricultural sector	Investments in energy savings, the production of biogas from organic waste and the transformation of agricultural/forest biomass into renewable energy.	Reduced emissions as a result of higher use of renewable energy sources.
Measure 123 (24% of total axis 1 budget)	Adding value to agricultural and forestry products	Creation of local networks and local supply chains for wood energy supply. Investments in buildings and equipment to facilitate energy savings and renewable energy production	More efficient local energy supply. Reduced emissions as a result of higher use of renewable energy sources.
Measure 111 (3.5% of total axis 1 budget, 55.6% of additional funding in Réunion)	Vocational training and information actions.	Training and information actions aiming at the improvement of knowledge on sustainable agriculture practices. Topics include the production of renewable energy from biomass.	Improved awareness in relation to renewable energies.
Axis 3			
Measure 321 (23% of total axis 3 budget)	Basic services for the economy and rural population	Construction and improvements in small infrastructures for energy supply. Use of biomass at collective level. Small scale infrastructure for autonomous energy production systems and/or experimentation with renewable energy.	Creation of an attractive quality of life in rural areas through the provision of a local energy supply from renewable sources and the improvement of environmental conditions.