Climate Change and Renewable Energy issues in 2007-2013 RDP

Climate change (CC) is a fundamentally important issue in the current 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. CC 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\(^1\) have been made available for Member States (MS) to spend on this issues\(^2\). As a consequence, the operations related to these newly introduced Community priorities have been further strengthened in the RDPs.

Introduction - overview of Member State RDP

All three dimensions of climate change (mitigation, adaptation and the potential for renewable energies) are addressed by the baseline analysis provided in the Latvian RDP, each with a different emphasis. The relative importance of each of these three aspects has been considered and correspondingly addressed in the RDP strategy and within the implemented measures under axes 1, 2 and 3.

The priorities of the European Economic Recovery Plan (EERP) of climate change, renewable energy, water management and biological diversity were addressed and implemented under the original RDP, therefore the modifications to the programme as a result of the EERP allocate the entire additional funding to the restructuring of the dairy sector.

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1. 19.8% of the total additional funds released.
2. 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) No. 73/2009) and the European Economic Recovery Package (EERP).
One of the main challenges clearly identified by the RDP relates to climate change mitigation in order to address the adverse effects of agricultural processes on emissions, in particular from manure handling and treatment. Another key challenge is the conservation of biological diversity through the preservation of genetic resources in agriculture. A third important challenge is to increase the production of biogas, a source of renewable energy particularly promoted by the Ministry of Environment Development Programme in Latvia.

Rural areas are home to one third of the population in Latvia and, despite decreasing employment trends in agriculture, it still remains the main source of economic activity in rural areas. Agricultural land covers 38% of the Latvian territory and it is relatively unpolluted, while the country is rich in forests (45% of the territory). However, agriculture accounts for 18% of total GHG emissions. Improvement of the environment through environmentally-friendly infrastructure and agriculture-environment measures is a major issue given the climate change challenges.

According to the baseline analysis, sulphur and ammonia emissions have tended to drop since 1990. Increased levels of emissions depend on the intensification of agricultural activities, particularly in livestock production. Agriculture is still the second major source of total emissions in Latvia. The GHG emission projections show that by implementing the existing policy of climate change mitigation in the largest GHG producing sectors, like energy, transport, agriculture and waste management, Latvia will be able to fulfil the emission reduction commitment of the Kyoto Protocol for 2012. In order to address the issue of emissions, the RDP strategy puts emphasis upon ‘manure management’ and ‘fertilisation efficiency’ under axis 1 and on ‘organic and integrated production’ and ‘extensification of livestock’ under axis 2.

The degradation of soils is one of the main environmental problems resulting from agriculture in Latvia. The baseline analysis stresses a number of soil degradation processes in Latvia promoted by soil acidification, decrease of organic matter, plant nutrients in soil, erosion and other processes. The issue of reducing nitrate pollution from agricultural sources is also very important and is addressed in the RDP strategy through ‘soil conservation techniques’ and ‘soil management’ measures.

The RDP strategy addresses climate change mitigation through the direct impact of land use change upon carbon balance, notably the afforestation of lands unsuitable or unnecessary for agriculture. As indicated in the baseline analysis, in 2005 about 14% of agricultural lands were not used for agricultural purposes including large areas of abandoned land. These lands are now targeted by the ‘afforestation measures’ of axis 2.

In relation to water management, about 90% of land in Latvia suffers from excess moisture. About 60% of the total territory is drained, however no new drainage systems have been constructed since 1993 and most drainage systems were built 20-30 years ago and are in need of reconstruction. The RDP strategy addresses the need for better water management in order to address the issue of excess moisture through the ‘adaptation of agriculture and forestry’ actions under axis 1.

Renewable energies are covered in the baseline analysis with particular reference to energy crops, which are considered a key factor for the reduction of GHG emissions. Latvia has the potential to obtain transport fuel from energy crops and agricultural by-products, plus heat energy and power energy from agricultural by-products, energy crops and wood pulp. The rapid rise of energy prices in recent years has made biogas an attractive alternative and this has led the Ministry of Environment elaborating a Development Programme for Biogas Production for 2007-2011. The most important source for biogas production in Latvia is manure from cattle, pigs and poultry. There is also a high potential for electricity and heat generation from forest biomass. The RDP strategy targets renewable energies mainly through the ‘production of energy from biomass of agricultural or forestry origin’ under axis 3 and the ‘production of bio-energy for farm consumption’ under axis 1.
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Allocation of the additional resources per type of priority

The overall budget of the Latvian RDP in terms of total public expenditure amounts to €1,369,155,578 of which €1,054,373,504 is the EAFRD contribution. This includes an additional allocation of €13,260,000 (EAFRD contribution) for the restructuring of the dairy sector as a result of the adoption of the European Economic Recovery Package (EERP). The original RDP already addressed the challenges related to climate change hence no additional allocation has been assigned to these. What the revised programme has done is to reinforce agri-environment measures by transferring part of the existing financing of the programme to these measures and thereby effectively intensify the effort to address the new challenges in the areas of climate change, water management and biodiversity.

Further details of the overall RDP budget allocation for Latvia are available at:


Mitigation
Activities aimed at reducing agricultural greenhouse gases emissions

The Latvian RDP provides comprehensive support for a range of activities which could contribute to reducing agricultural emissions, in particular through the promotion of organic and integrated farming practices; the modernisation of manure collection systems, and; the afforestation of agricultural land.

The main measure through which the RDP seeks to support efforts to reduce agricultural GHG is measure 214 - agri-environment payments - although other measures also contribute. A considerable number of operations are referred to under this measure which could help to reduce emissions, including: organic farming and integrated horticulture production which comprise payments for reduced fertiliser use and improved management; maintenance of grasslands cultivated on the utilised agricultural land in an environmentally-friendly manner by extensive grazing or late mowing of grassland; preservation of post-harvest residues or stubble in winter period in order to facilitate soil cover protection against soil degradation processes and to preserve organic matter in soils. More than 40% of the total financing for axis 2 is allocated to measure 214 to support the above activities and contribute towards the reduction of emissions.

Again under Axis 2, measure 223 – first afforestation of non-agricultural land - supports the activities of afforestation of non-agricultural land and the maintenance, plus additional planting, of self-established forest stands. The measure addresses the issues of non-utilised or abandoned land which totalled almost 340,400 hectares in 2004. All activities under this measure contribute directly to the uptake of CO₂ emissions. The measure also contributes to the maintenance of biodiversity, retention of the global carbon cycle, water protection, and prevention of erosion, flooding and climate change.

Another key measure is found under axis 1, measure 121 – modernisation of agricultural holdings – which deals with manure management and fertilisation efficiency through operations such as the modernisation of manure storage/management systems, including the purchase of more precise manure and fertiliser spreading equipment. Long-term investments are particularly encouraged in
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for helping to reduce the environmental impact of agricultural activities.

Again under axis 1, **measure 122 – improvement of the economic value of forests** – aims at increasing the productivity and quality of forests. With this measure, the number of trees and composition of tree species is achieved securing high value forest stands in conformity with the forest site type and the management goals of the forest. The improvement of the economic value of forests contributes to their maintenance and their preservation as an important sink for the storage of carbon dioxide.

Further support for activities which could help to mitigate climate change is possible under **measure 111 – vocational training and information actions**. Under this measure explicit reference is made to understanding the environmental aspects of agriculture and ensuring the improvement of environment-friendly agricultural practices and the application of management methods that facilitate sustainable management of forest resources.

**Adaptation**

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

In terms of preventing and coping with the potential impacts of climate change a number of actions are supported, specifically: a) investments in water management in order to reduce the excess moisture of soils and b) actions for the maintenance of biodiversity.

One of the main measures through which the RDP addresses adaptation to climate change is **measure 214 – agri-environment payments**. This supports a range of operations such as: integrated pest and disease management in horticulture (including preventive actions to protect biodiversity); and, management of natural grasslands (e.g. late mowing and extensive grazing) to promote preservation of biodiversity.

Furthermore under Axis 2, **measure 223 – first afforestation of non-agricultural land** - afforestation contributes to the preservation of biodiversity by creating forest ecosystem corridors. It also contributes to flood prevention by addressing climate risks such as excessive rainfall. **Measure 226 - restoring forestry potential and introducing prevention actions** – aims at the sustainable use of forest land and supports operations such as the restoration of forestry potential in the areas affected by fire and/or natural disasters and the introduction of forest fire-safety prevention measures.

Another important measure is found under axis 1, namely, **measure 125 - infrastructure related to the development and adaptation of agriculture and forestry**. This measure supports investments in construction, reconstruction and upgrading of drainage systems in agricultural lands and the reconstruction and renovation of drainage systems in forest lands. In this way better water management is achieved in order to reduce the excess moisture of soils.

Under axis 1, **measure 121 – modernisation of agricultural holdings** – supports amongst other things, investments in water supply and sewerage, wastewater treatment equipment and machinery. These actions contribute to the objectives of both the RDP and the Water Framework Directive.

In addition to mitigation, **measure 111 – vocational training and information actions** – promotes adaptation through an emphasis upon environmentally-friendly agricultural practices and on management methods that facilitate sustainable management of forest resources.
### Main RDP measures which contribute to CC mitigation/adaptation issues

<table>
<thead>
<tr>
<th>Axis/ Measure</th>
<th>Description</th>
<th>Type of operation</th>
<th>Potential effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Axis 1</strong></td>
<td></td>
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<tr>
<td>Measure 121</td>
<td>Modernisation of agricultural holdings</td>
<td>Modernisation of manure collection systems. Investments in equipment for better application of manure and mineral fertilisers. Investments in water supply and sewerage.</td>
<td>Reduced GHG emissions. Mitigation of environmental impact of agricultural businesses. Improved water management.</td>
</tr>
<tr>
<td>Measure 125</td>
<td>Infrastructure related to the development and adaptation of agriculture and forestry</td>
<td>Construction, reconstruction and renovation of drainage systems in agricultural and forest lands.</td>
<td>Reduce excess moisture of soils. Improved water efficiency.</td>
</tr>
<tr>
<td>Measure 122</td>
<td>Improvement of the economic value of forests</td>
<td>Pre-commercial thinning. Replacement of low value forest stands and replacement of unproductive forest stands with productive stands.</td>
<td>Increased carbon dioxide retention.</td>
</tr>
<tr>
<td>Measure 111</td>
<td>Vocational training and information actions</td>
<td>Informative measures and implementation of training to improve professional skills and competences in the fields of environmental protection technologies and sustainable management of natural resources.</td>
<td>Improved awareness of farmers on aspects that contribute to climate mitigation and adaptation.</td>
</tr>
<tr>
<td>Measure 114</td>
<td>Use of advisory services</td>
<td>Provision of advisory services that promote sustainable management of natural resources, including sustainable management of private forests.</td>
<td>Improved awareness of farmers on aspects that contribute to climate mitigation and adaptation.</td>
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<tr>
<td><strong>Axis 2</strong></td>
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<tr>
<td>Measure 214</td>
<td>Agri-environment payments</td>
<td>Organic farming. Integrated horticulture. Maintaining biodiversity in grasslands. Maintaining stubble fields during the winter period.</td>
<td>Reduced use of fertilisers and phytosanitary products, improvements in environmental protection and restrictions on pollution caused by agriculture. Reduced GHG emissions. Successful land management of 365,728 hectares that contributes to biodiversity, soil and water quality.</td>
</tr>
<tr>
<td>Measure 223</td>
<td>First afforestation of non-agricultural land</td>
<td>Afforestation of non-agricultural land. Maintenance of and additional planting in self-established forest stands.</td>
<td>Counteracting climate change through the uptake of CO$_2$. Flood prevention.</td>
</tr>
<tr>
<td>Measure 226</td>
<td>Restoring forestry potential and introducing preventive actions</td>
<td>Restoration of forestry potential in the areas affected by fire and/or natural disasters. Introduction of forest fire-safety prevention measures</td>
<td>Carbon retention from forests and reduction of (CO$_2$) emissions, mitigation of climate change impact to forests, better adaptation to natural disasters.</td>
</tr>
</tbody>
</table>

*Note: Measures are presented by axis and by order of importance in terms of their contribution to climate change mitigation/adaptation.*
**Renewable energies**

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

The Latvian RDP targets renewable energy production from biomass of agricultural and forestry origins. A total investment of €45 million is foreseen. There are also additional possibilities for support of renewable energies in the farm modernisation measures.

The main measure that promotes renewable energies is found under axis 3, **measure 312 - support for creation and development of microenterprises (including diversification into non-agricultural activities)** – which includes a specific sub-measure for the production of energy from biomass of agricultural or forestry origin. By supporting several EU and UN Directives and Conventions, Latvia has undertaken commitments with regard to environmental protection and the production of bioenergy. Within the framework of this sub-measure, investments are foreseen for the purchase and construction of new equipment to ensure energy production from agricultural or forestry biomass and transfer into thermal energy or electricity. A key target of this sub-measure is to produce 600,000 tonnes of processed biomass in supported holdings. Also under measure 312, the other two sub-measures (development of micro-enterprises and diversification into non-agricultural activities of agricultural enterprises) support activities for the production of fuel derived from agricultural and forestry products in an existing enterprise (except production of biogas and its transformation into thermal energy).

Under axis 1, a key measure is **measure 121 – modernisation of agricultural holdings** – which includes investments in energy equipment and machinery (also for the production of bio-energy, predominantly for farmers’ own consumption), including heating and ventilation equipment and machinery.

The use of wood as a source of renewable energy is also mentioned under other measures of axis 1 and 2:

- Under axis 1, **measure 122 – improvement of the economic value of forests** – stresses that support will secure formation of higher quality and more productive forest stands, increasing in the future the acquisition of aggregate amounts of wood – a renewable natural resource;
- Under axis 2, **measure 223 – first afforestation of non-agricultural land** - would increase the use of wood as a renewable resource for energy production.

**Main implemented RDP measures related to the development of RE sources**

<table>
<thead>
<tr>
<th>Axis/Measure</th>
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<tr>
<td><strong>Axis 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure 121</td>
<td>Modernisation of agricultural holdings</td>
<td>Investments in equipment and machinery, including for the production of bio-energy for farm use.</td>
<td>Increased use of bio-energy to reduce GHG emissions.</td>
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<tr>
<td><strong>Axis 3</strong></td>
<td></td>
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</tr>
<tr>
<td>Measure 312</td>
<td>Support for business creation and development</td>
<td>Purchase and construction of new equipment to ensure energy production from agricultural or forestry biomass and transfer into thermal energy or electricity. Production of fuel derived from agricultural and forestry products in an existing enterprise.</td>
<td>Increased use of renewable energies to reduce GHG emissions. 200,000 tonnes of processed biomass in supported holdings.</td>
</tr>
</tbody>
</table>

*Note: Measures are presented by axis and by order of importance in terms of their contribution to renewable energies.*