

ITALY

Piano Strategico Nazionale per lo Sviluppo Rurale (National Strategy Plan for Rural Development together with 21 Rural Development Programmes)¹

(The text of this summary sheet
was finalised in August 2010 in
accordance with the versions of
the National Strategy Plan and
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Italian national/regional rural development policy:

http://ec.europa.eu/agriculture/rurdev/countries/it/index_en.htm

Italian NRN:

http://enrd.ec.europa.eu/national-rural-networks/nrn-information/italy/en/italy_home_en.cfm

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. 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⁽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.

⁽¹⁾ The Italian regions include: Abruzzo (ABR), Basilicata (BAS), Bolzano (BOL), Calabria (CAL), Campania (CAM), Emilia-Romagna (EMR), Friuli-Venezia Giulia (FVG), Lazio (LAZ), Liguria (LIG), Lombardy (LOM), Marche (MAR), Molise (MOL), Piedmont (PIE), Apulia (PUG), Sardinia (SAR), Sicily (SIC), Tuscany (TOS), Trento (TRE), Umbria (UMB), Aosta Valley (VDA) and Veneto (VEN).

⁽²⁾ 19.8% of 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) No. 73/2009) and the European Economic Recovery Package (EERP).

Introduction - overview of the Italian Strategy

Italy has 20 regions of which five have further autonomy (Aosta Valley, Friuli-Venezia Giulia, Sardinia, Sicily and Trentino-Alto Adige). However, there are 21 RDPs for Italy, all implemented at regional level, as Trentino-Alto Adige is divided into two autonomous provinces (Bolzano and Trento). With a total surface of 301,338 km² and a population of approximately 60 million inhabitants (2007)⁴, Italy is a greatly diverse EU Member State in terms of geography and climatic conditions, natural resources and socio-economic situation. Consequently, it experiences immense variations with regards to climate change and renewable energy-related challenges and priorities between its regions.

All three dimensions of climate change (mitigation, adaptation and the potential for renewable energies) are addressed by the baseline analysis provided in the Italian National Strategy Plan (NSP).

Although there is heterogeneity between the Italian regions, some national trends in terms of natural resources and the environment can be noted. The northern regions suffer more from problems related to water quality, whereas the central-southern regions experience issues with regards to water scarcity. In particular, Southern Italy, especially Apulia and Sardinia, is in danger of desertification as a consequence of climate change. The most critical national issues is however, that of deep water resources, in terms of both quantity and quality. Surface water resources on the other hand, appear to be sufficient.

Adaptation to climate change is strongly supported by the Italian RDPs, primarily through water management measures that aim to achieve water savings and improve the efficiency of irrigation systems. Efforts to address water management issues are mainly taken on by axis 1, in particular the modernisation of farms and the development of infrastructure for the adaptation of agriculture and forestry. Further efforts to address adaptation to climate change are undertaken by forestry measures of axis 2, in order to reduce the effects of forest fires and prevent the deterioration of soils from adverse climate conditions and risks (irregular rainfalls, combined with periods of drought). Landscape management actions, mainly for restoring forestry potential and introducing preventive actions also contribute to adaptation to climate change. Water management is the second most important priority endowed with additional funding in the revised RDPs following the CAP HC.

In response to climate change **mitigation**, the baseline analysis identifies more environmentally-friendly methods in both agriculture and forestry to play a key role in increasing carbon sinks in soils. Emphasis is put on proper management of meadows and permanent pastures in this context as agriculture is the main source of methane and nitrogen emissions. Activities related to animal husbandry attribute to the emissions of the former, whereas activities related to the fertilisation and management of livestock effluents contribute to the latter.

Italy is experiencing a decreasing rate of rainfall with more intense rainfalls and severe droughts registered in the past decades. To respond to the intense rainfalls particularly mitigating actions against the negative effects of climate change are needed in the agricultural and forestry sectors. More precisely, activities targeting prevention and restoration of erosions and water disasters are needed. Furthermore, Italy needs to address issues concerning water consumption, shrinking areas with species-specific cultivations and the introduction of new cultivations and productions in response to new climatic conditions.

In the past years Italy has seen a strong increase in the use, although limited, of forestry biomass as a **renewable energy** source. Limiting factors include fragmentation of land

⁴ Information taken from the DG AGRI website: http://ec.europa.eu/agriculture/rurdev/countries/it/index_en.htm.

ownership and transportation, which limit an expansion of the market. The establishment of local markets and shorter distribution chains could favour the great potential of increasing biomass use in both the agricultural and forestry sectors. In fact, in 2004 renewable energy from biomass accounted for 20% of total renewable energy produced in Italy. However, this corresponds to a mere 2.5% of the national energy demand and places Italy below the EU average of 3.5%. The Italian forestry sector contributes with 65% of its national wood production designated for energy use.

In Italy renewable energy is based on forestry biomass, waste and residues from agriculture, forestry, wood processing, agro- and food industries, organic refuse and livestock effluent and energy cultivations as well as on other renewable energy sources (solar, wind and water power). However, there is a further scope for both the agricultural and forestry sectors to favour the use of by-products for energy production and hence expand this market. Furthermore, there is also a need to provide professional training in relation to the production of renewable energies, in particular with regards to the development of products and services connected to renewable energy sources.

There are numerous initiatives in Italy that provide various instruments to support the development of bio-energy (e.g. production incentives, green certificates, facilitated loans for investments etc). A further incentive to produce renewable energy was reinforced in 2008 when a financial law was passed that makes the use of bio-energies compulsory with regards to certain tax regulations.

The Italian Strategy

In accordance with the objectives laid down in EC Reg. nr. 1698/2005, the Italian National Strategy Plan (NSP) identifies three general objectives, namely: improving the competitiveness of the agricultural and forestry sector; improving the environment and the countryside; and, improving quality of life in rural areas and promote diversification of the rural economy. These three objectives together with the Leader approach, which is supported through particularly axes 1 and 3, form the axes of the programme. In relation to climate change and based on these general objectives and the baseline analysis, the programme strategy has identified an increasing need to protect and improve natural resources with regards to the climate.

The NSP also highlights that one of the priority objectives of axis 2, is the reduction of GHG emissions. The adapted NSP strategy indicates that climate change in Italy can be mostly addressed through axis 2, followed by axis 1, whereas the development of renewable energy is concentrated under axes 1 and 3.

Under axis 1, activities to support the development of bio-energies have been strengthened. In particular, holdings that invest in developing the use and production of biomass as well as solar, wind and micro hydro-electric installations are prioritised. Furthermore, investments that promote innovation of technologies and organisation that lead to the reduction of GHG emissions with a direct mitigating effect are also priorities under the revised strategy. With regards to improving professional skills, actions that improve human capital and are related to CC and RE, e.g. advisory and training services, are also prioritised.

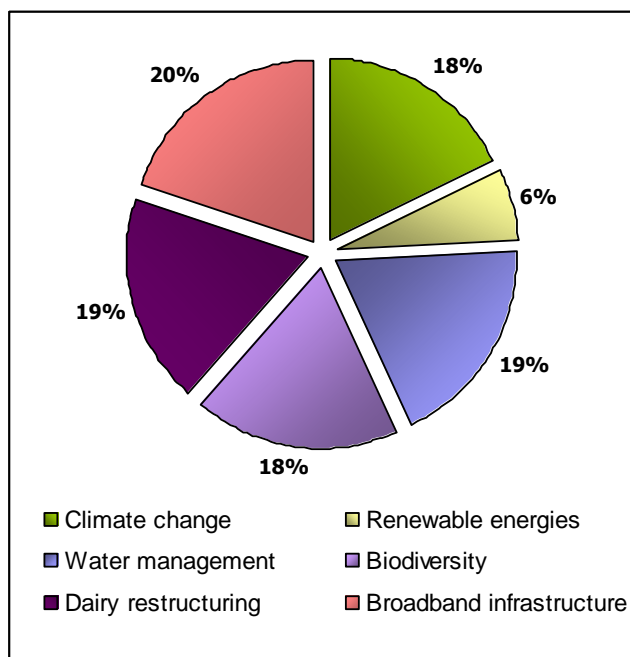
One of the main axis 2 objectives is the protection of water resources and hence is strongly linked with CC, and water management in general. Another axis 2 priority is that of soil management and in particular afforestation, which also affects CC mitigation and adaptation. Finally, the most evident CC mitigation objective (reducing GHG emissions), targets improved soil management practices and land use changes (conversion of arable land to pastures), the increase of organic matter in soils as well as improved forestry management practices.

Finally, axis 3 addresses both CC and RE challenges, mainly through the promotion of installations and infrastructures for renewable energy using biomass and other renewable energy sources (solar, wind and water) and activities targeting training and dissemination of information. In particular and together with axes 1 and 2, activities aiming at diversifying the rural economy by developing renewable energy are prioritised through further support for agricultural holdings and micro-enterprises to produce and sell energy from renewable sources and buy and install proper equipment. Basic services and infrastructures for renewable energy in rural areas are also prioritised.

As a consequence of the CAP HC, the NSP has revised and increased its expected result and impact indicators with respect to climate change and renewable energy. In an attempt to reduce GHG emissions the designated area to mitigate against such climate change effects and work as carbon sinks has been increased to 1,942,492 ha (previously 1,856,917 ha). Similarly, the production of renewable energy is expected to be 1,060,774 kton (previously 898,961 kton) at the end of the programming period.

The table on the next page summarises the strategic objectives of individual regional RDPs regarding climate change and renewable energy and the emphasis put on the “new challenges” following the CAP HC.

Allocation of the additional resources per type of priority - ITALY



The overall budget for Italy (including 21 RDPs) in terms of total public expenditure amounts to €17,559,723,482, of which €8,944,322,000 is EAFRD contribution. This includes an additional EAFRD allocation of €465,484,000 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 amendments, the additional financial support to the RDP objectives relate to broadband (+€93 million representing 20% of the additional EAFRD contribution), water management (+€88 million, 19%), dairy restructuring (+€87 million, 19%), biodiversity (+€86 million, 18%), climate change (+€83 million, 18%)

and renewable energies (+€29 million, 6%). The new financial support is additional to the initial RDP contributions, which were already addressing climate change and renewable energies.

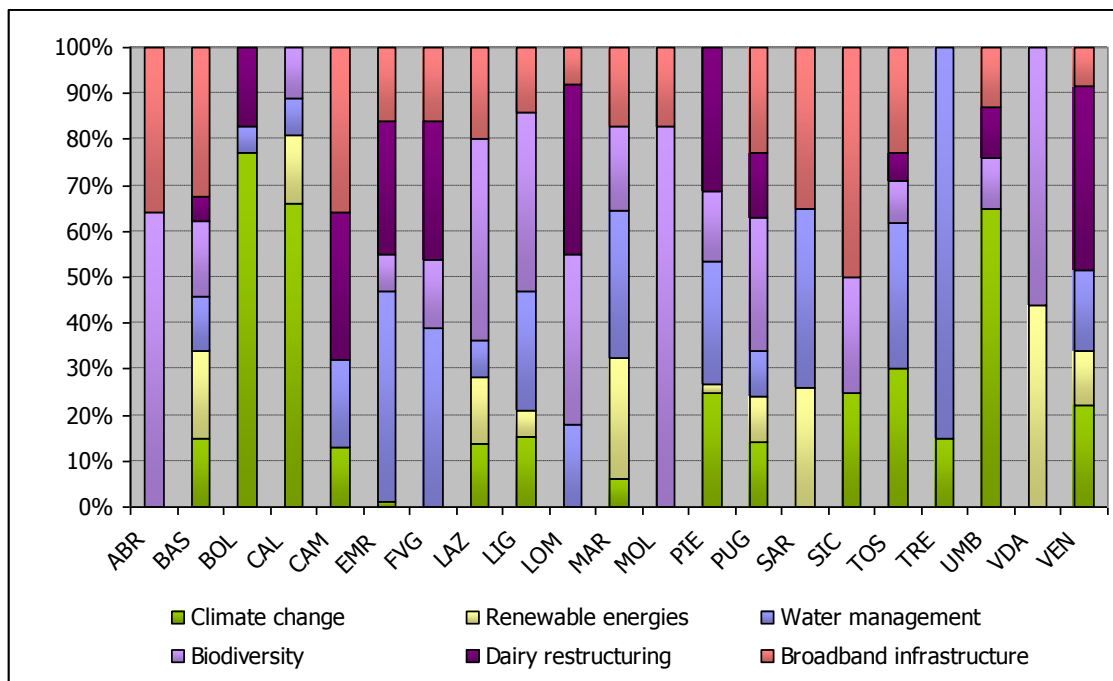
A breakdown of the total RDP budget per type of ‘new challenge’ it is not available. However, further details of the regional RDP budget allocations can be found in the regional RDP fiches for Italy that are available at:

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

Summary of the strategic objectives of individual regional RDPs in Italy and the emphasis put on the “new challenges” following the CAP Health Check

Region	RDP Strategy	Revised RDP
ABR	Technical solutions to rationalising soil and water use and general agronomy practices; favour the production and use of RE; and, support the reduction of GHG emissions in order to tackle extreme weather events.	Biodiversity (64%) and broadband (36%).
BAS	Reduction of GHG emissions to mitigate against CC effects, in particular addressing desertification dangers in the region.	Broadband (32.3%), renewable energies (19.4%), biodiversity (16.4%), climate change (14.7%), water management (11.8%) and dairy restructuring (5.4%).
BOL	CC mitigation actions including afforestation initiatives to reduce the effects of GHG emissions and protect against adverse weather events as a result of CC; and, improved water management.	Climate change (77%), dairy restructuring (17%) and water management (6%).
CAL	Organic and integrated farming; preventive actions against forest fires; reduction of GHG emissions through afforestation; and, support the development of RE.	Climate change (66%), renewable energy (15%), biodiversity (11%) and water management (8%).
CAM	Introduction of new processes and products to decrease damaging impacts on the environment and hence soften the effects of CC, including switching to RE; training and awareness raising activities on both CC & RE; reduction of GHG emissions including promotion of the use of bio-energies.	Broadband (35.84%), dairy restructuring (32.08%), water management (19.25%), climate change (12.83%).
EMR	Water management; CC mitigation by promoting especially the development of biomass and biogas for RE and reducing GHG emissions.	Water management (46%), dairy restructuring (29%), broadband (16%), biodiversity (8%) and climate change (1%).
FVG	Support to increase the carbon sinks and reduce GHG emissions; and, investment in RE.	Water management (39%), dairy restructuring (30%), broadband (16%) and biodiversity (15%).
LAZ	Support the declining trend of GHG emissions by developing agricultural and forestry activities that increase the carbon sinks; and, develop the production of bioenergies.	Biodiversity (43.93%), broadband (19.84%), renewable energies (14.25%), climate change (13.89%) and water management (8.09%).
LIG	Support the development of forestry biomass.	Biodiversity (38.78%), water management (26.01%), climate change (15.43%), broadband (14.24%) and renewable energies (5.54%).
LOM	Promotion of training and advisory services on both CC and RE; activities targeting the reduction of GHG emissions; improved forestry sector, including increasing the production of wooden biomass; support to preventive actions against extreme weather events.	Biodiversity (37%), dairy restructuring (37%), water management (18%) and broadband (8%).
MAR	Reduction of GHG emissions; and, support for new technologies to provide wood and biomass as RE.	Water management (32%), renewable energies (26%), biodiversity (18%), broadband (17%) and climate change (6%).
MOL	Preventive actions against extreme weather events; better water management; reduction of GHG emissions through increasing the forestry areas; and, development of RE.	Biodiversity (83%) and broadband (17%).
PIE	Training in CC adaptation and mitigation; reduction of GHG emissions; and the development of RE.	Dairy restructuring (30.1%), water management (25.6%), climate change (24%), biodiversity (14.8%) and renewable energies (1.6%).
PUG	Support to CC mitigation; and, the development of RE.	Biodiversity (29%), broadband (23%), climate change (14%), dairy restructuring (14%), water management (10%) and renewable energies (10%).
SAR	Support to CC mitigation; and, investments in RE.	Water management (39%), broadband (35%) and renewable energies (26%).
SIC	Actions to increase the production of bio-energies, especially biomass; promote the plantation of cultivations for energy end-use; and, favour CC mitigation actions.	Broadband (50%), climate change (25%) and biodiversity (25%).
TOS	Actions to reduce the impacts of CC, e.g. preventive measures against extreme weather events; CC mitigation; RE; and, decreasing the use of chemical fertilisers.	Water management (32%), climate change (30%), broadband (23%), biodiversity (9%) and dairy restructuring (6%).
TRE	CC mitigation actions; need for structural changes in livestock breeding to respond to CC; and, water management.	Water management (85%) and climate change (15%).
UMB	Activities aimed at the containment of CC effects, including soil management; afforestation to absorb GHG emissions; preventive actions against extreme weather events; and, re-modelling of technologies to develop RE.	Climate change (65%), broadband (13%), biodiversity (11%) and dairy restructuring (11%).
VDA	Support the development of biomass through innovation; actions targeting the reduction and preventions of extreme weather events; investing in multi-functional forests.	Biodiversity (56%) and renewable energies (44%).
VEN	Water management; CC adaptation and mitigation activities, especially by strengthening forestry activities to respond to CC effects; reduction of GHG emissions; and further development of RE.	Dairy restructuring (40.24%), climate change (22.03%), water management (17.50%), renewable energies (11.94%) and broadband (8.29%).

Allocation of the additional resources per type of priority – RDP detail



The above graph shows that most Italian regions (between 71% and 76%) address water management, biodiversity and climate change as their main rural development challenges. Due to the geographic and socio-economic differences between regions in Italy, individual regional priorities vary greatly. Moreover, nearly 50% of all regions also target investments in support for the development of renewable energy sources and/or production methods.

Mitigation

Activities aimed at reducing agricultural greenhouse gases emissions

The Italian RDPs provide extensive support for a range of activities that could contribute to the reduction of greenhouse gas (GHG) emissions. Following the CAP HC revision and the adoption of the EERP, new strengthened operations have been implemented for environmental protection and sustainable agriculture that enhance the uptake of the priority of climate change mitigation. These are particularly related to the promotion of sustainable agricultural and forestry management practices; followed by investments in new environmental technologies in agricultural holdings, e.g. soil erosion, water contamination, manure management, energy saving and training and advice on climate change mitigation.

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 to climate change mitigation. Measure 214 is also the one absorbing the majority of axis 2 funds (in most RDPs around 50% or more of the axis 2 budget reaching as high as 78%). A considerable number of operations are referenced under this measure which could help to reduce emissions. For example:

- support for the introduction of organic farming is the most common method for the implementation of environmentally friendly agricultural practices (included in 20 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 agricultural methods;

- integrated farming (12 RDPs) 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;
- soil conservation techniques are also promoted (11 RDPs) that help increase the content of organic material in the soil, including crop rotation techniques, maintaining fallow land and eliminating the use of phytosanitary products, cultivation of vines in terraces, conservation of meadows, planting of a green cover, amongst others;
- conservation agriculture (9 RDPs) such as the establishment of green zones in slopes or direct sowing which has as an environmental objective to reduce the consumption of fossil fuels through the reduction of labouring;
- extensification of pastures management (9 RDPs) which involve reduced/no fertilisation and practices to maintain/increase soil organic levels such as diversification of grass species.

Region	Organic farming	Integrated production	Soil conservation techniques	Extensification of pasture management	Conservation agriculture
ABR	x	x	x	x	
BAS	x		x		
BOL	x			x	
CAL	x	x			x
CAM	x	x	x	x	x
EMR	x	x	x	x	x
FVG	x				
LAZ	x	x	x		x
LIG	x	x		x	
LOM	x	x			x
MAR		x			
MOL	x	x			
PIE	x	x	x	x	x
PUG	x				
SAR	x		x		
SIC	x		x		
TOS	x	x	x		x
TRE	x			x	
UMB	x	x	x	x	x
VDA	x				
VEN	x		x	x	x

This measure is further supported with additional funding following the CAP HC in the vast majority of RDPs (Abruzzo, Basilicata, Bolzano, Calabria, Emilia Romagna, Friuli-Venezia Giulia, Latium, Lombardy, Marche, Molise, Piedmont, Apulia, Sicily, Tuscany, Umbria, Veneto), in many cases involving the inclusion of new sub-measures in relation to improved soil management, further extensification of agriculture/livestock and other actions that contribute to mitigating the effects of climate change in terms of GHG emissions, soil erosion and water contamination.

Further support for activities which could help to mitigate climate change is possible under **measure 121 – modernisation of agricultural holdings**. This measure absorbs 38% of the total axis 1 budget in Italy and is included in 19 RDPs with direct reference to CC. Under this measure explicit reference is made to supporting investments in new processes and technologies which aim at addressing environmental and climate change challenges. In particular, measure 121 aims at encouraging energy saving investments and reducing GHG emissions from livestock production through investments in manure storage and treatment facilities.

Measure 123 – *adding value to agricultural and forestry products* also contributes to mitigating climate change effect. It is activated in 17 RDPs with explicit reference to climate change and absorbs 19% of the total axis 1 national budget. The measure contributes to reducing GHG by targeting energy saving investments, including energy efficient buildings, installations, glasshouses and use of new materials.

Again under axis 2, **measure 221** – *first afforestation of agricultural land* supports the establishment of forests and their maintenance, directly contributing to the uptake of CO₂ emissions. This measure absorbs 11% of the total axis 2 budget in Italy and is included in 17 RDPs. Actions include afforestation to catch pollutants and keep surface waters clean.

Measure 226 - *restoring forestry potential and introducing prevention actions* – contributes more to the adaptation of climate change than to mitigation; however, through its reconstruction of damaged forests it contributes to the reduction of atmospheric GHG.

Other actions that indirectly contribute to climate change mitigation are measures relating to training, advice and information, **measure 111** – *vocation training and information actions* and **measure 114** – *use of advisory services*. They represent a small share of the national axis 1 budget (approximately 0.3% each); however, they are included in most of the RDPs (12 and 8 respectively) with direct mentioning of climate change and play an important role in enabling farmers to increase their knowledge and awareness in relation to sustainable agriculture issues. Topics covered take into account to greater extent environmental and climatic effects, with particular reference to the protection of biodiversity and the reduction of GHG emissions.

Adaptation

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

In responding to climate change and adapting to it, the Italian RDPs focus mainly on activities targeting water management through efficiency improvements in irrigation infrastructures and enhancement in the capacity to store water, conservation of plant and animal species and preventive actions against extreme weather events.

The main measure through which RDPs seek to support efforts to adapt to climate change is **measure 125** – *infrastructure related to the development and adaptation of agriculture and forestry* – which covers operations related to water supply and efficiency. This is an important measure as it is implemented in 12 RDPs although the proportion of the national total axis 1 budget is average (13%). Under this measure explicit reference is made to supporting investments in irrigation infrastructures for better management and sustainable use of water resources in agriculture. Examples of supported actions include improvement of hydraulic structures to reduce water losses, modification of pumping, transport and distribution systems, installation of water consumption meters, communication technology to improve information on irrigation and energy networks, investments in waste water treatment systems and improvement of electric installations for irrigation. Water management (improvement and development of irrigation infrastructures) under measure 125 is reinforced with additional funding stemming from the CAP HC in 11 RDPs (Bolzano, Calabria, Emilia Romagna, Latium, Liguria, Lombardy, Marche, Apulia, Sardinia, Tuscany and Trento).

Measure 214 – *agri environment payments* – demonstrates synergies between climate change mitigation and adaptation since it includes sub-measures that deal with both aspects of climate change.

It includes integrated pest management and water saving production techniques, such as diversification of crop rotations, introduction of new crops and irrigation systems. However, the main objective of measure 214 remains to mitigate climate change by replacing traditional

agricultural practices with those that reduce emissions stemming from agriculture and increase the organic content of soils (organic farming and integrated production, soil conservation techniques, extensification of livestock and pastures, etc.)

Activities that could support adaptation to climate change include those under **measure 121 – modernisation of agricultural holdings**. Specific reference to climate change adaptation is more limited in comparison to climate change mitigation under this measure; however, in some cases explicit reference is made to supporting investments in new processes and technologies which aim at addressing environmental and climate change challenges. In particular, measure 121 targets investments that promote preventive actions against extreme weather events caused by climate change.

Under axis 2, **measure 226 - restoring forestry potential and introducing prevention actions -** and **measure 227 - non-productive investments** target preventive actions in order to avert 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 hydro-forest restoration to address adverse effects of heavy rainfalls in some areas, restoration of green cover and activities of re-plantation, construction of structures like ditches, fences and bays, and restoration of forest lanes when there is a need to deter erosive processes. Both measures are found in the majority of RDPs (15 and 14 respectively) and represent 7% and 4% of the total axis 2 budget.

Again under axis 1, **measure 124 – cooperation for development of new products, processes and technologies in the agriculture and food sector and the forestry sector** also makes reference in 9 RDPs to supporting initiatives that promote innovative technologies, products and processes with respect to better water management. This measure was further reinforced in three regions (Basilicata, Campania and Veneto) following the CAP HC.

Other actions that indirectly also contribute to climate change adaptation are measures relating to training, advice and information, **measure 111 – vocation training and information actions** and **measure 114 – use of advisory services**. They represent a small share of the national axis 1 budget (approximately 0.3% each); however, they are included in most of the RDPs (12 and 8 respectively) and play an important role in enabling farmers to increase their knowledge and awareness in relation to sustainable agriculture issues. Topics covered take into account to greater extent environmental and climatic effects, with particular reference to preventive actions with regards to adverse weather effects, including flooding, improved water efficiency and landscape management.

Finally, **measure 216 – non-productive investments** is activated in relation to climate change in 7 RDPs and supports measure 214. It contributes to climate change adaptation by supporting actions aiming at improving soil quality and preventing erosion, and improving surface and deep waters.

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

Axis/Measure	Description	Type of operation	Potential effects
Axis 1			
Measures 111 and 114	Vocational training and information actions Use of advisory services	Training and use of farm advisory services in relation to climate change	Provision of training and advice to farmers to reduce greenhouse gases and to adapt to climate change
Measure 121	Modernisation of agricultural holdings	Improvement of energy efficiency Manure storage and treatment facilities Preventive mechanisms against adverse effects of climate-related extreme events	Reduction of carbon dioxide (CO ₂) emissions by saving energy Reduction of negative effects from extreme weather events on agricultural production potential
Measure 123	Restoring agricultural production potential damaged by natural disasters and introducing appropriate prevention actions	Improvement of energy efficiency	Reduction of carbon dioxide (CO ₂) emissions by saving energy
Measure 124	Cooperation for development of new products, processes and technologies in the agriculture and food sector and the forestry sector	Development of new products, processes and technologies	Improved water management
Measure 125	Infrastructure related to the development and adaptation of agriculture and forestry	Water saving technologies (e.g. efficient irrigation systems) Water storage (including water overflow areas)	Improvement of the capacity to use water more efficiently
Axis 2			
Measure 214	Agri-environment payments	Soil management practices (catch crops, organic farming, conversion of arable land into permanent pasture) Soil management practices (tillage methods, catch crops, diversified crop rotations) Land use change	Contributing to the reduction of losses of different compounds to water, including phosphorus Reduction of nitrous oxide, and carbon sequestration

Axis/Measure	Description	Type of operation	Potential effects
		Improve efficiency of nitrogen fertiliser use	
Measure 216	Non-productive investments	Construction of preventive dry walls	Improved soil quality and impedes erosion, and improved quality surface and deep waters
Measure 221	First afforestation of agricultural land	Afforestation, establishment of agro-forestry system	Reduction of N ₂ O emission, carbon sequestration
Measure 226 and 227	Restoring forestry potential and introducing prevention actions Non-productive investments	Prevention actions against forest fires and climate-related natural disasters Reconstruction of damaged forests	Carbon sequestration in forests and avoidance of carbon dioxide (CO ₂) emissions, reduction of negative effects of climate change on forests Increase the stress resistance of forests generated by CC to improve their ecological stability

Renewable energies

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

In Italy, with regards to the promotion and production of renewable energy, emphasis is put on measures that target diversification of the rural economy into non-agricultural activities, promotion of new technologies and installation of equipment, and building infrastructural networks for the recovery and use of biomass and organic waste in renewable energy production. Renewable energies are further supported in the revised Italian RDPs with €29 million or 6% of total additional EAFRD.

The most frequently implemented measure in Italy to support activities for the development of renewable energies is **measure 311** - *diversification into non-agricultural activities*. This measure is activated in 19 regions and absorbs approximately 37% of the total national axis 3 budget. In these RDPs it makes explicit reference to renewable energy with emphasis on promoting activities that develop the production of renewable energies. Investments particularly support instalments of equipment aimed at renewable energy production. Measure 311 with regards to renewable energies was further reinforced in 8 Italian RDPs following the CAP HC.

Measure 121 – *modernisation of agricultural holdings* - supports several actions related to all aspects of climate change (mitigation, adaptation and renewable energies). In relation to renewable energies, this measure supports the introduction of new technologies in agriculture and livestock production, the introduction of renewable energy sources (especially biomass, wind and solar) destined to agrarian activity in the farm itself in 17 Italian RDPs. Renewable energies under measure 121 are further supported with additional funding from the CAP HC and EERP in 6 regions.

Again under axis 3, **measure 321** - *Basic services for the economy and rural* supports actions to install equipment for the production of thermal energy and cogeneration from biomass, as well as machines and equipment for biomass harvesting and transportation.

Measure 312 - *Business creation and development* supports the creation of micro-enterprises and especially those that produce renewable energy. The measure aims at providing technical advice and targets investments related to equipment for the production of renewable energies. In Italy, the measure has been activated with regards to renewable energies in 10 regions.

Again under axis 1, **measure 124** – *cooperation for development of new products, processes and technologies in the agriculture and food sector and the forestry sector* also makes reference in 9 RDPs to supporting initiatives that promote innovative technologies, products and processes with respect to developing bio-energies.

Finally under axis 1, **measure 125** – *infrastructure related to the development and adaptation of agriculture and forestry* – is in the majority of the Italian RDPs and addresses climate change adaptation, it also, to a lesser extent, addresses renewable energy. The measure objectives include support to infrastructures and networks for the distribution of bio-energy.

Main implemented RDP measures related to the development of RE sources

Axis/Measure	Description	Type of operation	Potential effects
Axis 1			
Measure 121	Modernisation of agricultural holdings	Processing of agriculture/forest biomass for renewable energy Production of biogas from organic waste	Substitution of fossils fuels
Measure 124	Cooperation for development of new products, processes and technologies in the agriculture and food sector and the forestry sector	Cooperation for processing of agricultural/forest biomass for renewable energy	Substitution of fossil-fuels and reduction of GHG emissions
Measure 125	Infrastructure related to the development and adaptation of agriculture and forestry	Investments in bio-energy distribution channel networks	Developed renewable energy infrastructure distribution networks Promotion of renewable energies
Axis 3			
Measure 311	Diversification into non-agricultural activities	Biogas production using organic waste Processing of agricultural/forest biomass for renewable energy Installations/infrastructure	Substitution of fossil fuels. reduction of methane (CH ₄)

Axis/Measure	Description	Type of operation	Potential effects
		for renewable energy using biomass and other renewable energy sources (solar and wind power. geothermal)	
Measure 312	Business creation and development	Acquisition of equipment and advise for micro-enterprises	Production of renewable energies
Measure 321	Basic services for the economy and rural population	<p>Processing of agricultural/forest biomass for renewable energy</p> <p>Installations/infrastructure for renewable energy using biomass and other renewable energy sources (solar and wind power. geothermal)</p> <p>Small networks for distributing energy produced from renewable sources</p>	Substitution of fossil fuels