Investing in Climate Action, investing in LIFE

Project examples

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Agenda

- *An overview of the CARBONMARK LIFE07 ENV/IT/000388 project – Climate change mitigation*
- *An overview of the TRUST LIFE07 ENV/IT/000475 project – climate change adaptation*
- *An overview of the EcoPest LIFE07 ENV/GR/000266 project – Lessons for CCM/CCA*

Introduction to the projects

- The LIFE Best Environment Awards 2012 illustrate the demonstration value of the LIFE programme and the importance of replicable project results.
- These three projects have been chosen for presentation at this workshop as they demonstrate some of the **critical qualities** that will be important in the new LIFE Climate sub-programme.
- They are also illustrative of **relevant topic areas** for funding.

CARBONMARK LIFE07 ENV/IT/000388 - Top marks for local carbon trading scheme

- LIFE CARBOMARK successfully promoted voluntary carbon markets to reduce GHGs in two Italian regions. This local initiative is designed to be easily replicated.
- As well as being an instrument for strengthening EU policies related to the Kyoto agreement, the markets would also aid implementation of the 'EU Forest Action Plan' under the Sixth Environment Action Programme.
- These goals were achieved by setting up a model for a local market for carbon credits that would help reduce and compensate for GHG emissions (the two participating regions were Veneto and Friuli-Venezia Giulia, both in north-east Italy).

CARBOMARK promoted voluntary local-scale carbon markets

Objectives…

- Consolidate the knowledge base for supporting EU policy and legislation related to voluntary local carbon markets (trading carbon quotas) as a tool for reducing GHG emissions within the Kyoto Protocol framework;
- Facilitate the implementation of strategies for mitigating GHG at local and regional level that are consistent with Community environmental policies;
- Establish the legislative and technical background necessary to support and improve the dissemination of regional carbon markets at national and European level;
- Recognise the role of sustainable soil management strategies as a temporary but important measure for absorbing CO2 from the atmosphere;
- Involve SMEs in contributing to the survival of the forest economy, also in more marginal lands;
- Improve the awareness of stakeholders, particularly forest owners and SMEs, about the need to adopt initiatives for the mitigation of GHG emissions into the atmosphere.

Project number: LIFE07 ENV/IT/000388
Title: CARBOMARK - Improvement of policies toward local voluntary carbon markets for climate change mitigation
Beneficiary: Veneto Region department of forest planning &research
Contact: Maurizio Dissegna
Email: maurizio.dissegna@regione.veneto.it
Website: http://www.carbomark.org
Period: 01-Jan-2009 to 31-Dec-2011
Total budget: 1 088 000
LIFE contribution: 544 000

Defining the market…

- The research work led to the definition of three main principles of local carbon markets and helped establish activities that can be considered as sources of carbon credits:
  - **Permanence** refers to stable CO2 sequestration achieved by project activities. Carbon stocking is a 'temporary' measure whose effects on climate change mitigation directly depends on its remaining in an unaltered condition in the wood mass for a significant time. This concept is important e.g. in the case of forest management, when considering possible losses caused by disturbances (such as fires, plant pathologies and falling trees) that can turn the ecosystem from an absorber into a carbon emitter;
  - **Additionality** means that projects are only eligible for carbon credits if the resulting emission reductions are 'additional' to any that would occur in the absence of the certified project activity. It is a mitigation activity that determines additional carbon sequestration compared with the 'baseline";
  - **Baseline** represents the scenario that would have been, if no initiative had been undertaken. In forest activities, for example, the baseline scenario is represented by the existing carbon stocks and sequestration before the project was implemented.

Market implementation…

- The results of the preliminary studies were adopted and integrated into the CARBOMARK Manual to aid the implementation of local carbon markets in the two regions targeted.
- It defines the method for calculating carbon shares, taking into account the three basic principles.
- The document considers three types of carbon stocking: forest management, wood products and urban forest. A fourth stocking opportunity, currently considered as 'experimental', is biochar (charcoal created by pyrolysis of biomass).
- Two "Observatories" were established by the project, which are local offices, set up by the regional governments to provide advice and monitor the regularity of carbon market transactions.
- A project website was also created to regulate transactions of carbon credits between buyers and sellers. During the project three public auctions for selling carbon credits were held.

Some final results…

- At the end of the project, 21 private companies – including small, medium-sized and large enterprises - and 27 public forest owners had joined the CARBOMARK initiative and three buying contracts had been signed.
- 250 tonnes of carbon will be stocked and the companies will reduce their emissions by adopting policies that will improve their environmental performance.
- The effectiveness of the strategy proposed was confirmed at the World Climate Summit held in Durban, South Africa on 3-4 December 2011.
- Finally, CARBOMARK's achievements are included in a Forest Trends ecosystem marketplace report (March 2012) "Bringing it home: Taking stock of government engagement with the voluntary carbon market"1. It is highlighted as one of 13 government initiatives globally to establish voluntary carbon markets of which, only three are in Europe.

TRUST LIFE07 ENV/IT/000475 - Safeguarding stressed groundwater supplies

- The TRUST project has succeeded in building the capacity for river-basin governance of stressed groundwater supplies.
- It has improved understanding of the likely impacts of future climate change and land-use on groundwater resources and investigated the most cost-effective measures for improving aquifer recharge.

Project number: LIFE07 ENV/IT/000475
Title: TRUST - Tool for regional scale assessment of groundwater storage improvement in adaptation to climate change
Beneficiary: Authority of the Isonzo, Tagliamento, Livenza, Piave and Brenta-Bacchiglione River Basins
Contact: Francesco Baruffi
Email: segreteria@adbve.i
Website: www.lifetrust.it
Period: 01-Jan-2009 to 31-Dec-2011
Total budget: 1 838 000
LIFE contribution: 898 000

The problem…

- Some EU localities already experience situations of water stress when extraction of groundwater resources outstrips natural replenishment.
- Many Mediterranean cities and tourist destinations face particular risks, which will increase with climate change.
- The EU's Water Framework Directive requires Member States to design River Basin Management Plans to improve management of essential water resources. These should include monitoring, assessment and protection of groundwater supplies with the aim to achieve a "good status" by 2015. The main challenge is to achieve a balance between water abstraction and recharge of the aquifers.

The solution…

- This challenge led the Italian Authority of the Northern Adriatic river basins to develop the LIFE project TRUST for the river basins of the Veneto and Friuli high plain – Isonzo, Tagliamento, Livenza, Piave and Brenta-Bacchiglione.
- The project sought to bring stakeholders together to improve understanding of the current causes of water imbalance and the best means to overcome them.
- An engineer at project partner SGI Studio Galli, highlights: *"We wanted to investigate the likely future effects of climate change and land-use on the availability of groundwater to include these aspects in successful water management planning."*

Gathering the data

- The project established a Technical Board that included all the key stakeholders concerned with groundwater management and exploitation.
- Stakeholders' participation proved fundamental for guaranteeing the consistency of the project activities and achieving the project goals and long term sustainability of the project results.

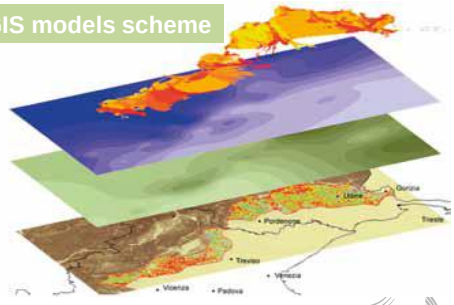
"The amount of data that we received was much higher thanks to working together through the project than if we had simply asked stakeholders as part of our daily institutional functions."

- A Web GIS database was implemented with all the data used and produced in the project. The database is accessible from the project website (www.lifetrust.it) and contains hydrological and hydro-geological information, and modelling results.
- Following the end of TRUST, the project coordinating beneficiary and the stakeholders will use the database for the planning and management of water resources of the Veneto and Friuli regions.

Modelling future hydrology

- The project performed simulations of climate change scenarios using the CMCC climate models.
- This modelling exercise found that in the study area, during the twenty-first century the land temperature could increase by approximately 5°C, especially during the summer season, accompanied by a reduction in rainfall (about ~ 0.5 mm/day towards the end of the century).
- The forecasted climate change scenarios were used to quantify the water deficits until the end of the twenty-first century for irrigation of summer crops based on remote sensing and GIS-based modelling techniques.

GIS models scheme



Modelling future hydrology II

- The project then developed an innovative hydrological model to estimate the flows of the rivers that feed the aquifer in the study area and the variations of river flows induced by future climate scenarios.
- It found that the river flows will increase in the winter and will decrease in the summer, spring and autumn seasons. A groundwater model was developed to analyse the variations in the hydrogeological balance.
- Additionally the effectiveness of Managed Aquifer Recharge (MAR) techniques was tested at demonstration sites to verify the effect of different land cover, lithology and irrigation techniques. The modelling simulations showed that by the end of the twenty-first century the annual aquifer recharge could be reduced by 7% in Veneto and by 11% in Friuli.

Regional risk assessment and assessing aquifer recharge techniques

- A Regional Risk Assessment was conducted to determine the areas affected by the risks of water deficit for irrigation and nitrate pollution of groundwater.
- The tool showed that the impact in water availability for irrigation can be significant: 50% of the agricultural areas at risk fell into the High to Very High risk, mainly concentrated in the Friuli region.
- The MAR demonstrations showed the effectiveness of MAR for restoring the aquifer.
- The application of MAR on an area of 100 hectares could recharge the aquifer with approximately 50 million cubic meters of water and, simultaneously, provide €60 000 from the sale of fast growing plants cultivated in the MAR sites

Artificial irrigation channels on agricultural land were filled with water enabling it to seep into the ground and recharge the aquifer

New synergies, new enthusiasm

- TRUST has established a solid basis for enhancing the management of groundwater resources in the river basins of the Veneto and Friuli plains:

"We are entering a new planning period and the results of the TRUST project will translate themselves perfectly in the programming tools."

- The online GIS database and modelling tools are already being used by planners and managers of water resources.

"Concrete measures to improve the water balance identified by the project will be included in revised river basin management plans from 2015."

- Another of the main strengths of the project was in successfully engaging stakeholders.

"Getting planners, managers and users to participate together proved fundamental for guaranteeing the consistency of the project activities and achieving the project goals and long-term sustainability of the project results."

- The project has created new synergies and enthusiasm for improved water management in the area.

EcoPest LIFE07 ENV/GR/000266 - Pioneering strategies for sustainable use of pesticides

- The EcoPest project developed best strategies for implementing the 'Sustainable use of pesticides Directive' (2009/128/EC) through pilot activities carried out in a vulnerable ecosystem north of Athens.
- The target area of the project is one of the most productive basins in Greece, home to intensive agricultural activities. Due to its potential for high groundwater and its proximity to Attika, it has become an emergency source of water for Yliki Lake, which supplies drinking water to the greater Athens area.

Objectives

- The EcoPest project aimed to:
  - Develop and implement a low-input agricultural strategy for hazard and risk minimisation with special focus on water protection;
  - Map the targeted area and carry out environmental monitoring;
  - Define appropriate risk indicators for the estimation of pesticide impact on aquatic systems;
  - Train local stakeholders;
  - Develop a national certification scheme for spraying equipment and accessories for the professional user of pesticides, distributors and advisors;
  - Incorporate the project deliverables into national environmental policy and legislation and into the national standards for crop management;
  - Disseminate a crop protection system that focuses on EU environmental policy and the thematic strategy for the sustainable use of pesticides.

The challenge and the solution

- Intensive agriculture is important to the economy of the region. However, it has to comply with European safety standards for human health and the environment.

  "The challenge was to protect the aquatic ecosystems and soils from the impacts of high concentrations of potentially toxic substances due to excessive use of pesticides and fertilisers," Project manager Dr Kiki Machera.

- To meet this challenge and achieve the end result of strategies for sustainable use of pesticides, the project developed a 'Low Input Crop Management' (LCM) system and agroenvironmental safety principles for human health and the environment.

- This system was applied on a pilot scale on 900 ha of agricultural land (cotton maize and plum tomatoes at Viotikos Kiffissos river basin adjacent to lake Yliki

Project number: LIFE07 ENV/GR/000266
Title: EcoPest - 'Strategic plan for the adaptation and application of
the principles for the sustainable use of pesticides in a vulnerable ecosystem'
Beneficiary: Benaki Phytopathological Institute
Contact: Kiki Machera
Email: K.Machera@bpi.gr
Website: http://www.ecopest.gr/
Period: 01-Jan-2009 to 31-Mar-2012
Total budget: □1 645 000
LIFE contribution: □823 000

Monitoring and sampling…

- The Ecopest project established a basis for environmental monitoring and defined appropriate risk indicators.
- Before the pilot measures could be carried out, the project needed to first identify the baseline for carrying out monitoring activities and defining risk indicators and indicators for sustainable implementation.
- Subsequent monitoring activities included:
  - the identification of point sources of pollution and pest occurrence;
  - the compilation of data on the level of pollutants and priority substances for drinking water quality standards; and
  - the compilation of data on the hazardous potential to non-target organisms
- These activities enabled the project to develop and implement low-input crop management systems.

Steps towards sustainability…

- In order to achieve the reductions, the project applied a range of innovative technologies to minimise contamination from agriculture.
- The project rationalised the use of pesticides and fertilisers, replacing them, with non-chemical and alternative methods of controlling weeds, pests and diseases.
- It was found that by only applying chemicals in the corridors between rows of plants (band application) herbicide use was reduced by 60%.
- Further reductions were possible using the 'weed seeker', a sensor placed on the tractor that locates weeds and allows the targeted use of herbicides.

Band application of chemicals reduced herbicide use by 60%

Steps towards sustainability II…

- The project established a process for disposing of empty pesticide containers.
- Training was also organised to encourage farmers to rinse the pesticide containers in order to effectively eliminate any residues they might still have contained.
- The project team set up a liquid pesticide collection system called 'Heliosec' in two locations, thus offering a possible solution for the management of the liquid waste that derives from the remnants of the spraying solution.
- A strategy to minimise 'spray drift', the unplanned exposure of people and the environment to drifting pesticides, was developed, involving the use of low drift nozzles as well as the calibration and maintenance of spraying equipment.
- The project demonstrated that drift can be reduced from 1.62% of the application rate to 0-0.18% at a distance of more than 2m.

A positive impact…

- Results showed that the project innovations helped achieve a 30% reduction in the amount of pesticide needed to produce the crops cultivated in the pilot area.
- The frequency index treatment (how often the pesticides are applied) was reduced by 67%, which translated to a 70% reduction of pesticide concentration in well water and a reduction in the toxicity of the environmental samples on the indicator organisms.
- Around 220 farmers (63% of those present on the pilot site) were trained to apply LCM systems on cotton, maize and plum tomatoes. They also received training in spraying techniques, safe use of pesticides and fertilisers, personal protection (e.g. wearing gloves and overalls), the disposal of empty pesticide containers and the safe storage of pesticides and fertilisers.
- Overall, the project made a considerable contribution to the strengthening of Greek environmental legislation. A national certification scheme for spraying equipment and the professional use of pesticides, distributors and advisors is now close to becoming a reality.

Opportunity for Q&A