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LIFE12 ENV/ES/000536

MEDACC

Adapting the Mediterranean to climate change


# After LIFE MEDACC Communication Plan

JUNE 2018

COORDINATION

Oficina Catalana del Canvi Climàtic

PARTICIPANTS

CREAF

IRTA RECERCA I TECNOLOGIA AGROALIMENTÀRIES

IPE INSTITUTO PIRENAICO DE ECOLOGÍA CSIC

# 1. PROJECT DATA

## PROJECT DATA

Project location: Catalonia (Muga, Ter and Segre watersheds)
Project start date: 01/07/2013
Project end date: 30/06/2018
Total project duration (in months): 60
Total cost: 2,548,841 €
EC contribution: 1,266,208 €
Project website http://medacc-life.eu/

## COORDINATOR DATA:

Catalan Office for Climate Change (OCCC, Catalan Government)
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## BENEFICIARIES' DATA:

Centre for Ecological Research and Forestry Applications (CREAF)
http://www.creaf.cat/
Contact person: Eduard Pla

Pyrenean Ecology Institute (IPE-CSIC)
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Contact person: Sergio M. Vicente-Serrano

Food and Agriculture Research and Technology Institute (IRTA).
http://www.irta.cat/es-es/paginas/default.aspx
Contact person: Robert Savé

The LIFE MEDACC project (2013-2018) was supported by the LIFE program of the European Commission.

# 2. PROJECT DESCRIPTION

LIFE MEDACC aims at testing innovative solutions in order to adapt agro-forest and urban systems to climate change in the Mediterranean basin. Thus, LIFE MEDACC contributes to the design and implementation of adaptive strategies and policies which are being developed at national and regional level in the Euro-Mediterranean area.

In order to achieve these objectives, LIFE MEDACC has implemented pilot actions to test adaptation measures in the agriculture, forestry and water management sectors. These measures have been designed and assessed by local stakeholders. The monitoring of the pilot actions has contributed to quantify how adaptation measures can reduce the vulnerability of natural systems and human activities to climate change.

The project focuses on three specific watersheds in Catalonia (Muga, Ter and Segre), chosen to represent the Mediterranean diversity at a local scale. In addition, LIFE MEDACC provides a methodological approach transferable to other Mediterranean watersheds.

MEDACC project (LIFE12 ENV/ES/000536 Demonstration and validation of innovative methodology for regional climate change adaptation in the Mediterranean area) is a 5-year multi-actor project (2013-2018) supported by the EU LIFE+- Environmental Policy & Governance programme. The project budget amounts to 2,548,841 € being the European Commission contribution of 1,266,208 €.

## 2.1. CONSORTIUM

LIFE MEDACC project has been coordinated by the Catalan Office for Climate Change (OCCC, Catalan Government) and developed jointly with the following entities: Centre for Ecological Research and Forestry Applications (CREAF), Pyrenean Ecology Institute (IPE-CSIC) and Food and Agriculture Research and Technology Institute (IRTA).

## 2.2. PROJECT ACTIONS

- ***Action A1*** *– - Involvement of stakeholders through a monitoring and management panel.* Involvement of local stakeholders, contributing with their knowledge and experience to the development of the project.

- ***Action B1*** *- Definition of new climate change adaptation measures based on the assessment of climate change impacts and vulnerabilities and the diagnosis of existent adaptation measures.* Subdivided in three sub-actions: 1) The assessment of the main impacts of climate change and territorial vulnerabilities of three watersheds in Catalonia; 2) the diagnosis of previous adaptation measures applied in the watersheds; and 3) the definition of new adaptation measures to be applied.

- ***Action B2*** *- Implementation of demonstrative adaptation measures through pilot experiences.* Implementation of pilot actions to test some adaptation measures in the three watersheds

(agriculture, forestry and alternatives for water management)

- ***Action B3*** *- Creation and update of a platform to integrate the information of the project.* Creation of a platform that integrates all the information and results generated in the project to make it accessible to stakeholders and general public.

- ***Action C1*** *- Monitoring of the effects of the demonstrative activities in the watersheds.* Monitoring of the effects of the pilot actions in the three watersheds.

- ***Action C2*** *- Monitoring of the socio-economic impact on the local economy and population.* Monitoring the effects of the project on the local economy and population of the studied watersheds.

- ***Action D*** *- Communication and dissemination actions:* Result dissemination using different platforms and networks, through the following actions: 1) creation and update of a project Website; 2) design and display of at least 10 LIFE+ Information boards; 3) production of a Layman's report to present the project to a non-specialist audience; 4) 10 guided visits to the pilot experiments in order to present the whole demonstrative activities to stakeholders and public audience, with a view to fostering its implementation on other sites; 5) organisation of a Workshop on challenges and adaptation strategies to climate change in Mediterranean watersheds; 6) performance of 3 focus groups meetings to facilitate local stakeholder's participation in the development of the action plans; and 7) complementary actions for dissemination, such as the creation of brochures and posters, scientific publications, communication to the media, and participation at conferences, seminaries and fairs.

- ***Action E*** *- Project management and monitoring of the project progress.* Different actions dedicated to ensure a smooth and efficient management of the project and the creation of a network for transfer knowledge and information exchange with professionals and stakeholders.

## 2.3. KEY RESULTS

The results of the project have led to the quantification of how adaptation can reduce the vulnerability of natural systems and socioeconomic activities to the impacts of climate change, as well as the economic and environmental costs associated with the application of a series of adaptation measures.

The evaluation of the impacts of climate change on the water cycle shows overall reductions in flows for the three watersheds during the first half of the 21st century. In 2050, reductions in flows of between 9.5 and 32.0% are expected at the headwaters, and 12.3-36.0% in lower courses, as compared to the 2002-2011 period. The Ter basin will have the most significant reductions in flows, both at the headwaters and river mouth. Notable reductions are also foreseen for the mouth of the Muga. The basin of the Segre river has a different hydrologic behavior, with more severe reductions foreseen at the headwaters than at the mouth. The reductions of the flows at the headwaters of the basins over the past few decades and the estimations of estimated future water availability mean that water management policies will be key for meeting demands and simultaneously complying with environmental flows established for each watershed. In this sense, impacts can be reduced by implementing measures that favour the rational use of water resources and, in coastal zones, the use of desalinisation and regenerated water.

In the case of forests, there is evidence that forest management can help make forests more robust against future climatic conditions. It is for that reason that a series of forestry management actions have been designed and executed, reducing the vulnerability of the main forest typologies of the three basins; all this has been carried out using the principles of adaptive management. These actions have been carried out in potentially vulnerable forests, either because of previous episodes of decline or because they have an elevated risk of wildfire.

In the case of agriculture, with global warming, many crops have increased water requirements, and the period of irrigation also needs to be expanded in order to maintain the same levels of production. According to climate change projections, this trend will only increase with time. Along the same lines, expected changes in phenology will lead to earlier seasonal development of vegetation and a reduction in the time required to complete the life cycle. While risk of frosts could be reduced, it is expected that the number of extremely hot days could increase, causing damages to crops due to heat waves. Modifying the life cycle of crops could help avoid such impacts. LIFE MEDACC project has tested different technical agronomic solutions which can promote crop adaptation (mulching, crop reallocation and advanced irrigation systems).

In addition, LIFE MEDACC has conducted an analysis of whether or not the three study basins (the Muga, Segre and Ter) are adapting to the impacts of climate change based on the use of indicators for assessing and monitoring the adaptation measures.

Finally, the LIFE MEDACC Project Management and Monitoring Committee (composed by key stakeholders of the three river basins) proposes a series of recommendations aimed at promoting changes in the development and implementation of policies, which are summarised in the Layman's Report and the project's web.

## 2.4. RELEVANCE TO THE EUROPEAN CLIMATE POLICY AND LEGISLATION

The project has contributed to the European climate objectives as it promotes an innovative methodology for climate change adaptation which leads to a sustainable human and natural system development. LIFE MEDACC has fully contributed to the development, implementation and enforcement of the EU Strategy on adaptation to climate change (EUSACC) and as well as other related Union policy on climate change adaptation. More concretely, LIFE MEDACC has favoured turn EUSACC relevant policy priorities into action at watershed level, by:

- Promoting adaptation in key vulnerable sectors such as agriculture, forestry and water management through the development of three action plans with a set of adaptation measures at watershed level (EUSACC Action 1).

- Promoting concrete action towards facing the impacts of climate change locally through the development and demonstration of innovative climate change adaptation experiences in forest and agricultural sectors (EUSACC Action 6)

- Creating a Monitoring and Management Panel of stakeholders to sustain the pilot experiences implementation (EUSACC Action 6)

- Promoting better informed decision-making by addressing gaps in knowledge about adaptation built on experience based knowledge (EUSACC Action 4).

- Providing tools and methodologies to overcome knowledge gaps and develop an integrated vulnerability assessment of the Mediterranean watersheds through different case study watersheds (EUSACC Action 4).

- Climate proofing different agriculture and forestry management practices at local level (EUSACC Action 6)

In this framework, the project also contributes to the Spanish National Climate Change Adaptation Plan (PNACC, 2006) as well as the Catalan strategy for adapting to climate change (ESCACC, 2012) supported by the Catalan Climate Change Act (2017).

# 3. THE COMMUNICATION AND DISSEMINATION STRATEGY

A wide range of communication and dissemination activities have been undertaken to communicate project results and their social and environmental benefits at the local, regional and European level. We have made the following dissemination activities along the project duration:

- Development of dissemination materials: web, LIFE information boards, flyers and posters, video, desktop and wall calendars, merchandising...
- Organisation of a Workshop on challenges and adaptation strategies to climate change.
- Participation in dissemination events: conferences, seminars, exhibitions and fairs.
- Guided visits to the pilot experiences.
- Focus group meetings.
- Publication of scientific and technical articles.
- Press releases in media.

## 3.1. TARGET AUDIENCES AND KEY STAKEHOLDERS

The main stakeholders targeted through the communication and dissemination activities are:

- Public authorities at European, national, regional and local level.
- Private sector: farmers, forest owners, SMEs and large companies (technology industry, energy companies, water management agencies, water companies, tourism)...
- Private sector clients.
- Environmental NGOs.
- Academics, scientific researchers and university students.
- Citizens.

## 3.2. WHAT HAS BEEN REALISED BY DISSEMINATION ACTIVITIES?

- Until May 2018, 10,500 distinct users of the LIFE MEDACC project website.
- More than 150 entries in the website.
- More than 90 items (data and cartography) uploaded in the project data platform.
- More than 800 twitter followers.
- 5 annual meeting of the Monitoring and Management Panel with a total assistance of 110 people representing 49 institutions or departments (21 public authorities, 15 private sector, 4 NGOs and 9 research institutions or departments).
- 13 LIFE information boards describing the project produced. Nine of them are in the pilot experiences, visited by at least the 79 participants of the guided visits. The Boards are permanent in the pilot experiments and are visible to all population.
- 2 Information Panels at the Global Eco Forum in Barcelona (Hospital de Sant Pau, October 2015), visited by about 300,000 people.
- 8 guided visits to the pilot experiences with 79 different attendants. One of the visits was specifically designed for journalists to update their knowledge about climate change adaptation, with the participation of the Catalan Minister of Territory and Sustainability Santi Vila (11 attendants for 9 different means).
- 1 Workshop on challenges and adaptation strategies to climate change, hold in Barcelona in April 2018. 123 attendants.
- 7 focus group meetings with 58 participants.
- 1,000 flyers distributed in three languages.
- 4 technical articles published in scientific journals (Journal of Hydrology, CATENA).

- More than 30 press releases. Some of them in the TV (TV Girona, TV3 – Espai Terra) and some others at relevant national and regional press (ARA, ABC, El Punt Avui, El Pais, La Vanguardia, Diari de Girona) and at more local media (Osona.com, Setmanari de l'Alt Empordà, Món Rural Magazine, Segre Journal).
- More than 30 national and international events (conferences and seminars) in which the project has been presented. Some of the conferences were: XV World Water Congress (Edinburgh, UK 2015), 26th International Union of Geodesy and Geophysics General Assembly (Prague, Czech Republic 2015), International Scientific Conference Our common future under Climate Change (Paris, France 2015), World Symposium on Climate Change Adaptation and the 3rd World Climate Teach-In Day (Manchester, UK 2015), VIII International Symposium on Irrigation of Horticultural Crops (Lleida, Spain 2015), ClimeWine Symposium (Bordeaux, France 2016), IX Iberian Congress on Water Management and Planning (Valencia, Spain 2016), Climate Changing Agriculture International Conference (Chania, Greece 2017), 2nd Agriculture and Climate Change Conference (Sitges, Spain 2017), VIII Iberian Congress on Horticultural Sciences (Coimbra, Portugal 2017), Remedia Network Workshop (Spain, editions 2015, 2017 and 2018).
- 6 technical seminars organised by the project, with a total participation of 200 people. Some of the titles were: "The relationship between agriculture and climate change, causes and effects"; "Influence of the climate change on the agriculture of Muga watershed"; "Adaptation strategies in the Mediterranean agro-forest sector to face climate change".
- 3 agriculture fairs. An information stand was held and communication materials were disseminated among the public.
- 2 project films, available on the project website and on YouTube (Why do the rivers carry water when there is not rain? https://www.youtube.com/watch?v=yoGej-9EPtA&t=64s / Forest pilot experiences at Requesens https://www.youtube.com/watch?v=ar9axAkiNZE&t=6s).
- 550 copies of the Layman's report
- 900 annual desktop and wall calendars.
- 250 Desktop weather stations.
- 175 Umbrellas.

## 3.3. EFFECTS OF THE COMMUNICATION AND DISSEMINATION ACTIVITIES IN RAISING AWARENESS

The effects of the communication and dissemination activities in raising awareness were assessed through two focus group with stakeholders. The first focus group was performed at the beginning of the project (in 2014) and repeated at the end of the project (in 2018). The objective was to assess how the discourse on adaptation to climate change evolves along the project duration. The changes of attitudes of the stakeholders were quantified by comparing the answers formulated.

25 forms answered by local stakeholders have been analysed. They represent the same different sectors of the three watersheds (Administration, Agriculture, Forestry, Irrigation infrastructure, Environmental NGO, Protected Areas manager, Touristic sector, Research, Water user). Main results could be summarized as follows:

- The overall project result interest was scored on 4,24 over 5
- Communication has increased the level of knowledge on climate change adaptation of 3,88 over 5 according to the stakeholder perception.
- Communication has raised awareness on climate change adaptation of 4,27 over 5.
- Stakeholders assess the project usefulness on climate change adaptation on 3,96 over 5.
- Stakeholders assess the project impact on their own entity/sector on 3,76 over 5.

These results suggest that communication is efficient in raising awareness when the target audience is clearly identified.

# 4. FUTURE COMMUNICATION AND DISSEMINATION ACTIVITIES

LIFE MEDACC beneficiaries will continue to undertake communication and dissemination activities to publicize the results of the project. These actions will not only support the further dissemination of project methodologies, results and resources to raise awareness of the project, but will also support its transferability to other similar watersheds along the Mediterranean Basin. All the beneficiaries will use their own dissemination channels, websites, data bases, seminars, newsletters..., to ensure project dissemination and promotion.

## 4.1. MAINTENANCE OF THE PROJECT WEBSITE

The LIFE MEDACC website is the central communication tool which disseminates information on project actions and results in three languages (Catalan, Spanish and English). The website will be available for at least 5 years after the project ends. The website will be maintained and updated by the OCCC, although all beneficiaries will contribute.

The website will allow to access all project information, related to the project description, the actions, the pilot experiences, the dissemination materials, the links to media coverages, the participation in workshops, seminars and fairs and the deliverables generated in the project (including Layman's report and other dissemination materials). Special emphasis will be put on updating the data and cartography available in the project platform generated after the end of the project.

Responsible: OCCC.
Sources: Own funds.

## 4.2. DISSEMINATION OF PROJECT MATERIALS

Publications and materials produced as part of the project, as for example the Layman's report, flyers and posters, will continue to be disseminated at every possible opportunity, via the following channels:

- Project website.
- Beneficiaries websites.
- Presentations at workshops, seminars and fairs.
- Beneficiaries' social media coverage.
- Internal and external networks.

Responsible: All beneficiaries.
Sources: Not needed.

## 4.3. DISSEMINATION AT WORKSHOPS, SEMINARS AND FAIRS

All beneficiaries will continue to identify opportunities for dissemination at regional, national and international levels, presenting the project results at workshops, seminars and fairs. Upcoming events where the project will be presented are:

- X Iberian Congress on Water Management and Planning. Coimbra, Portugal, 6-8 September 2018.

- XIV International Symposium Spanish-Portuguese on Plant hydric relations. Madrid, Spain, 3-5 October 2018.
- CONAMA 2018 (National Congress of Environment). Madrid, Spain, 26-29 November 2018.
- European Geosciences Union General Assembly. Vienna, Austria, April 2019.
- Annual Meetings of the GECCC (Catalan Group of Experts on Climate Change).

Responsible: All beneficiaries.
Sources: Not needed. The assistance to the conferences and the fees will be covered by each beneficiary own funds.

## 4.4. ORGANISATION OF TECHNICAL SEMINARS

IRTA will organize at least 5 more technical seminars where the main results of the LIFE MEDACC project will be presented. The four-hour seminars will tackle some of the topics and geographical areas of the project and will count with different presentations made by project beneficiaries and experts on the topic.

Responsible: IRTA.
Sources: Not needed. The technical seminars will be funded by the Annual Plan of Technological Transference of the Catalan Government.

## 4.5. SCIENTIFIC PUBLICATIONS

New scientific publications will be developed after the project ends to give relevance to the project results. The following publications are currently ongoing and will end after the project conclusion:

- The influence of climate and land-cover scenarios on dam management strategies in a high water pressure catchment in North-east Spain. *Water*.
- Analysis of the monitoring results of forest management pilot experiences. *Forest Ecology and Management.*
- Impacts of climate change impacts on the phenology and net irrigation requirements in Muga, Ter and Segre watersheds. *Journal of Agricultural Water Management.*
- Defining indexes of adaptation to climate change in forest, agriculture and water management in Mediterranean areas. E*nvironmental Science & Policy.*
- Almond blooming: estimating cultivar-specific chill and heat requirements by a statistical approach. *International Journal of Biometeorology.*

Responsible: All beneficiaries.
Sources: Own funds.

## 4.6. GUIDED VISITS

The guided visits to the pilot experiences have been a successful channel to disseminate, share and discuss with key stakeholders the treatment's design and the observed results. The results of the pilot experiences will be visible and presumably the monitoring will be maintained some years after the end of the project, giving the opportunity to organize new guided visits for different target audience. Special emphasis will be given to provide with sufficient information and technical support to attendants to favour future replication in other areas. Upcoming guided visits that have been confirmed after the end of the project are:

- Once a year, at least one guided visit will be organized in one of the agricultural and forest demonstrative sites.

Responsible: CREAF, IRTA
Sources: Not needed. The costs of the guided visits will be covered by each beneficiary own funds.

## 4.7. DISSEMINATION IN PRESS AND MEDIA

All beneficiaries, especially the project coordinator, will continue to work with the media at local, regional and national levels to secure wide-ranging coverage for the project, particularly in terms of the results and impact. Upcoming news that have been secured after the end of the project are:

- Publish several notes at website level (IRTA and MEDACC) related to adaptation strategies to climate change developed in Catalonia, as a source of new options to adapt crops.

Responsible: All beneficiaries.
Sources: Not needed.

## 4.8. FOLLOW-UP THE MONITORING AND MANAGEMENT PANEL OF STAKEHOLDERS

The Monitoring and Management Panel has allowed, within the framework of the project, to create certain relationships between the beneficiaries and some of the stakeholders that are expected to have continuity in the following initiatives:

- In the Muga watershed, some of the stakeholders are part of the CUAPLM (Water Community Users of the coastal plain of the Muga), whose objective is to agree on and implement measures that reverse the salinization of the aquifer.
- In the Segre watershed, a collaboration has been established between the Economic Promotion Area of the Diputació de Lleida and the Catalan Office for Climate Change to transmit the message of adaptation as an opportunity in the agricultural sector.
- In the Ter watershed, some of the stakeholders will participate in the implementation of the Gavarres 2025 Plan, whose objective is to make this massif more resilient to climate change.

Responsible: OCCC.
Sources: Own funds.

## 4.9. MONITORING EXTENSION

Thanks to own funding, the monitoring of the forest and agriculture pilot experiences will continue across the three watersheds for three years after the project ends. There is the intention to maintain monitoring a longer period but the funds are not still secured. This extension will allow to quantify the impact of the different forest management treatments and agronomic practices to reduce the forest and crop vulnerability to climate change.

The results of this extra monitoring will be made available via the project website, and disseminated via local, regional and international press, as well as at events and conferences where the project will be presented.

- CREAF will continue field monitoring three times around summer period (late spring, summer and early autumn).
- IRTA will make a survey in 2020 and another in 2023 about the measures of adaptation to climate change that are being developed and their relationship with MEDACC.
- IRTA will continue with the GIROREG program, advising irrigation schedules and doses to growers.

Responsible: CREAF, IRTA.
Sources: Own funds.

## 4.10. PROJECT CONTINUATION

Even though the LIFE MEDACC project has ended, the methodology and approached developed at the different awareness, information and communication actions will be used as lessons learnt and good practices in other projects that the Consortium as a whole or each individual beneficiary develop.

These are the drawn proposals:

- Test the validity of different indicators of climate change adaptation developed in MEDACC in 2023.
- MIDMACC *Mid-mountain adaptation to climate change* Project Proposal (LIFE 2018 Call), with the participation of CREAF, IRTA, IPE-CSIC, OCCC and other entities in order to apply MEDACC main outcomes in the adaptation process of the Mediterranean mountain regions.

Responsible: All beneficiaries.
Sources: Not needed.

## 4.11. AUDIENCE TARGETED BY THE AFTER LIFE MEDACC COMMUNICATION PLAN

| ACTIONS | Public authorities | Private sector | Environmental NGOs | Research | Citizens |
|---|---|---|---|---|---|
| Maintenance of the project website | X | X | X | X | X |
| Dissemination of project materials | X | X | | X | |
| Dissemination at workshops, seminars and fairs | | | | X | |
| Organisation of technical seminars | X | X | X | X | |
| Scientific publications | | | | X | |
| Guided visits | X | X | X | X | X |
| Dissemination in press and media | X | X | X | X | X |
| Follow-up the Monitoring and Management Panel of stakeholders | X | X | X | X | X |
| Monitoring extension | X | X | X | X | X |
| Project continuation | X | X | X | X | X |

## 4.12. ESTIMATED BUDGET FOR THE AFTER LIFE PERIOD (2018-2023)

| ACTIONS | Cost (€) | Beneficiary in charge / Funds |
|---|---|---|
| Maintenance of the project website<br>- Hosting<br>- Minor modification of website structure | 2,500 | OCCC / Own funds |
| Dissemination of project materials<br>- Reprinting of dissemination materials | 500 | OCCC / Own funds |
| Dissemination at workshops, seminars and fairs<br>- Travel and subsistence (5 events)<br>- Conference fees (5 events) | 2,500<br>1,000 | All beneficiaries / Own funds |
| Organisation of technical seminars<br>- Catering services (5 seminars)<br>- Trips (5 seminars) | 2,500<br>500 | IRTA / Annual Plan of Technological Transference of the Catalan Government |
| Guided visits<br>- Catering services (5 visits)<br>- Trips (5 visits) | 2,500<br>500 | CREAF – IRTA / Own funds |
| Follow-up the Monitoring and Management Panel of stakeholders<br>- Catering services (5 annual meetings)<br>- Trips (5 meetings) | 2,500<br>500 | OCCC / Own funds |
| Monitoring extension<br>- Field material<br>- Trips (12 annual field visits*3 watersheds) | 500<br>2,000 | CREAF – IRTA / Own funds |
| **TOTAL** | **18,000** | |

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Project website: http://medacc-life.eu/
Twitter account: @LifeMedacc

**COORDINATION**

Oficina Catalana del Canvi Climàtic

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