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Turning climate-related information into added value for traditional **MED**iterranean **G**rape, **O**Live and **D**urum wheat food systems

Deliverable 6.18

Science-based knowledge relevant for Climate related Policies n.3



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EXECUTIVE SUMMARY

This document presents an update step, based on the elements identified among MED-GOLD activities during the fourth year of activities (M36 to M48).

COVID-19 pandemia, grown across Europe since Spring 2020, still continues to produce a series of changes on MED-GOLD planned activities in 2021. These changes were mainly on the front-end activities of MED-GOLD such as: training, events for 'external' stakeholders, i.e. not directly involved so far in the development and validation of the tools, agricultural sector at large, general audience.

To cope with this ongoing limitation it was decided:

1. a specific on-line side event dedicated to policy makers was carried out on 2nd December 2020, joining the efforts of the European Commission and VISCA H2020 Project Consortium;
2. MED-GOLD took part in the public discussion on Farm to Fork European Commission strategy;
3. MED-GOLD took part in a series of international initiatives where the policy makers community was represented;
4. to focus the efforts on producing videos, policy briefs, and special events.

A plan of future action for exploiting results in the last period of the MED-GOLD project is also provided.



1. OBJECTIVES

With this deliverable, the project has contributed to the achievement of the following objectives (DOA, PartB Table 1.1):

No.	Objective	Yes
1	To co-design, co-develop, test, and assess the added value of proof-of-concept climate services for olive, grape, and durum wheat	X
2	To refine, validate, and upscale the three pilot services with the wider European and global user communities for olive, grape, and durum wheat	
3	To ensure replicability of MED-GOLD climate services in other crops/climates (e.g., coffee) and to establish links to policy making globally	X
4	To implement a comprehensive communication and commercialization plan for MED-GOLD climate services to enhance market uptake	X
5	To build better informed and connected end-user communities for the global olive oil, wine, and pasta food systems and related policy making	X

Since the MED-GOLD project aims to turn climate-related information into value-added through a robust and progressive 2-way interaction between science knowledge and food system stakeholders, it has a potential capacity to identify and highlight relevant science perspectives for policy makers. Thus, in principle MED-GOLD is suitable to help them to design effective interventions, to support economic growth and agronomic practice shifts, their vulnerabilities in the framework of climate change impacts. The project has been flagged by the European Commission as one of the Horizon 2020 Research and Innovation contributors in shaping the newly adopted EU Climate Adaptation Strategy adopted on 24 February 2021. The project was selected on the basis of working for a sustainable and resilient agricultural production by developing a climate service prototype that can be extended to additional crops. Additional information can be found as a [news item](#) on the project website and in the document [Research & Innovation – Key contributor to the new EU Climate Adaptation Strategy](#).

2. IMPACT

No.	Expected impact	Yes
1	Providing added-value for the decision-making process addressed by the project, in terms of effectiveness, value creation, optimised opportunities and minimise risk	It describes and updates the process of identifying policy-makers relevant science topics and mechanisms for sustaining a salient dialogue.
2	Enhancing the potential for market uptake of climate services demonstrated by addressing the added value	It reports the successful stories relevant for a wider exploitation and adoption of climate services in a growing number of decision making processes.
3	Ensuring the replicability of the methodological frameworks for value added climate services in potential end-user markets	It reports the pathways followed during the MED-GOLD project of adopting and providing tailored information to different decision maker environments and sectoral policy makers.
4	To implement a comprehensive communication and commercialization plan for MED-GOLD climate services to enhance market uptake	It reports the roadmap followed to complete the target users spectra in producing salient climate information.
5	To build better informed and connected end-user communities for the global olive oil, wine, and pasta food systems and related policy making	It describes the initiative of completing the process of informing all the acting agents who play roles in the decision making sector and disputes management.



3. DETAILED REPORT

3.1. STATE OF THE ART

The science-based knowledge relevant for climate related Policies brings together global scientific knowledge and local evidence to improve salience, relevance and legitimacy of policy dialogues and deliberations everywhere an action should be taken in the agriculture sector coping with climate change. This is the case of the MED-GOLD project where there is a complex process of turning climate – related information into value for the three traditional Mediterranean food systems. This document presents an update step, based on the elements identified among MED-GOLD activities during the fourth year of activities (M36 to M48).

3.2 METHODS

COVID-19 pandemia, grown across Europe since Spring 2020, produces a series of changes on MED-GOLD planned activities, including a Deliverable re-schedule plan. As already detailed in D6.17, the face-to-face meetings suffered more due the social distancing and limitations on travels, and some of them were re-designed completely as remote events, achieving excellent results, such as for example with the Summer School transformed into MED-GOLD Living Lab 2020 and 2021 editions (DEL.6.16). A series of planned activities were carried out and others were designed for the final period of MED-GOLD life:

1) A specific on-line event dedicated to policy makers was designed and carried out on 2 December 2020, joining the efforts of the European Commission and VISCA H2020 Project Consortium.

As already mentioned, the COVID-19 pandemia canceled the planned sectoral meetings, limiting the chance of showcasing MED-GOLD activities and results to policy makers as happened during the previous project's years. Thus we focused on producing scientific knowledge to be disseminated both with online events (such as in [webinars](#)) and written materials, as [info sheets](#) and policy briefs (in section 3.5, below). 2) A policy brief entitled '*Sectoral climate services for a sustainable adaptation in agriculture*' is under preparation. A series of MED-GOLD showcase events have been carried out during 2021; 3a) In October 2021, the MED-GOLD dashboard was showcased by the project champion for the wine sector at a meeting of experts of the International Organisation of Vine and Wine (OIV); 3b) In November 2021, the dashboard was showcased by the project coordination team at a meeting of the Copa-Cogeca Working Party on Olives and Olive Oil.

3.3 JOINT POLICY MAKERS EVENT

On the 2nd December 2020, the European Commission organised an event on 'Climate services for a climate-resilient Europe'. In this event, the MED-GOLD and VISCA projects hosted the session '[How can climate services support adaptation to climate change in agriculture?](#)'

Climate services can deliver climate information and knowledge to a wide audience, including business, policy-makers and the general public. Therefore, they are expected to play a crucial role in achieving the ambitions of the European Green Deal for a carbon-neutral economy and a more informed and resilient society.

MED-GOLD hosted an online session on climate adaptation in agriculture as part of the full-day event organised by the European Commission, EASME Executive Agency and the Climateurope project, '*Climate services for a climate-resilient Europe: Success stories, lessons learnt and remaining challenges*'. The event, attended by 190 participants, built on the results of a portfolio of Horizon 2020 projects, which contribute to the implementation for the **European Research and Innovation Roadmap on Climate Services**.





More than 60 attendants joined the agriculture session, whose objectives included (i) showcasing the added value of climate services in agriculture, with a focus on the wine, olive oil and pasta industries, (ii) identifying barriers for the full deployment of climate services and ways to overcome them, and (iii) sharing lessons learnt and good practices.

The session was split in two parts, starting with a series of talks about the experiences from both projects, which was followed by a round table discussion with climate service providers, users and policy-makers, on challenges, gaps and opportunities for the exploitation and replication of climate services.

The gap between weather forecasts and longer-term climate projections was highlighted during the session, thus stressing the importance of having climate forecasts for the next months, seasons and years to adapt the agriculture sector to climate change.

The need to present climate services as a long-term investment to farmers was one of the topics that raised interest. In this sense, assessing the economic value of forecasts was key to make agriculture stakeholders aware of their relevance.

The MED-GOLD Dashboard, a web-based tool providing past climate data as well as seasonal forecasts for the next months and future climate long-term projections, was presented in the Adaptation Playground session through a short **video illustrating various use cases**. See the final agenda of the session [here](#).



3.4 MED-GOLD SECTORAL INDICATORS TO SUPPORT THE CLIMATE POLICY BRIEF: “SECTORAL CLIMATE SERVICES FOR A SUSTAINABLE ADAPTATION IN AGRICULTURE”



Sectoral climate services for a sustainable adaptation in agriculture

MED-GOLD has developed, implemented and tested co-designed climate services to support sustainable adaptation in agriculture

MED-GOLD services address the need of a broad range of end-users, from farmers to regional, national, and European stakeholders

MED-GOLD services contribute to enhance climate resilience and offer tools to address the climate ambition of the new Common Agricultural Policy

MED-GOLD tools are essential to achieve the targets set by the Green Deal, the Farm to Fork Strategy, and the forthcoming Climate Law

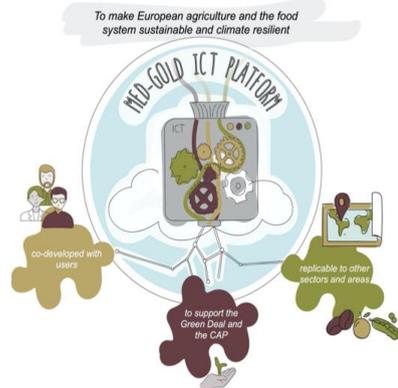


Figure 1 - Schematic representation of MED-GOLD.

The socio-economic challenges posed by climate change require actions and tools for a dynamic sustainable adaptation contributing to the 2050 mitigation targets and the 2030 sustainable development goals. In this context, sectoral climate services play a key role by offering tailored climate information. An effective climate service supports decisions and actions to adapt, reduce the risks, increase resilience, and whenever possible it turns climate change into an opportunity. An effective climate service covers different time scales, from the coming weeks to the coming decades, and addresses the needs of different users acting at the local, national, and regional scales. However, such a climate service did not exist five years ago and the EU-H2020 MED-GOLD project was financed to contribute to filling this gap and develop prototypes for the

agricultural sector. MED-GOLD invested in three key agricultural sectors (durum wheat, grape, and olive production) and focused on the Mediterranean region. However, all its prototypes have been developed by ensuring broader applicability to other regions and other sectors. By breaking silos and reaching out to a broader community of end-users (composed of farmers, breeders, regional stakeholders, food companies), MED-GOLD has achieved its challenging goals.

Involved from the very beginning in the design of the services, end-users contributed to defining the specific needs, followed the development of the services by providing continuous feedback, and tested their effectiveness and usability. Each pilot service was co-developed with specific users and with a specific technical team in MED-GOLD by adopting a common methodological approach across the three climate service pilots. Thanks to this co-design approach, the MED-GOLD services address the needs (by providing targeted climate information) of farmers, breeders, regional stakeholders, and national and European policymakers.

MED-GOLD services build on and take advantage of existing initiatives as well as data and infrastructure facilities. The Copernicus Climate Data Store represents a cornerstone of climate services and has offered the possibility to transform existing data into sectoral information through the development and the implementation of a dedicated platform and open-source tools that are freely available. This approach made possible the integration of MED-GOLD services into existing decision supporting systems already in use in hundreds of farms.

The tools developed contribute to decision-making during the agricultural season, as well as to its long-term planning. They provide crop-specific information supporting optimal agro-management decisions and actions from sowing to harvesting. A dynamic, continuous flow of information is provided by integrating observations, as long as they are made available, with seasonal predictions reaching at any point in the season the crop-dependent maturity. Crop-specific climate risks deriving from unfavourable conditions and/or extreme events (e.g. drought, heat stress at flowering) are evaluated at any update of the information provided to offer farmers the possibility to act and minimise the impacts. MED-GOLD services do not only aim to get higher and more stable crop yields but also to grow crops sustainably. Key decisions on fertilisation rate, timing, and the number of applications are supported by the information offered. Such support will be crucial to successfully initiate and complete the transition to a sustainable food system as foreseen by the Farm to Fork strategy, e.g. to reduce by 20% the use of fertilisers by 2030. MED-GOLD services also contribute to enhancing the climate performance and resilience of farms, thus addressing the climate ambition of the new Common Agricultural Policy. The services also represent concrete tools that may be used by the Member States to offer voluntary (for farmers) climate and agro-environmental schemes in their Strategic Plans. The co-developed services also support long-term investments (e.g. on infrastructure) to cope with and

adapt to climate change, to assist farmers in maintaining their socio-economic well-being and contribution to European competitiveness.

MED-GOLD services support **breeders** in assessing future climate risks, by providing projected conditions under which crop genotypes will be exposed and, thus identifying optimal ones. The services can be also used to test a broad range of ideotypes, sampling different key traits, to better orient current breeding programmes. Looking at the longer time scales, covering the next decades, MED-GOLD offers crop specific evaluation of climate suitability by applying innovative machine learning approaches. Information on changes in suitability support **regional, national, and European stakeholders** in early planning and in developing adequate policy measures to counteract the impacts of climate change, balance the internal market, and in some cases act on adapting the entire supply chain. The offered service on projected crop yield, under different assumptions and scenarios, complements the support to all levels of stakeholders.

The tools developed can also support the **European Commission's** agricultural activities, such as the short and medium-term agricultural outlook. For instance, part of the MED-GOLD durum wheat prototype has been already implemented into the crop yield monitoring and forecasting system of the European Commission Joint Research Centre in support of the short-term agricultural outlook.

The changing climate poses challenges in the decision-making processes of olive growers and olive oil producers too, who need to adapt their irrigation, fertilisation and

pesticide application strategies. It also modifies the occurrence of crop diseases, along with their potential damage, and can favour the development of new pests. Thus, anticipating future climate conditions is key for the adaptation of the olive sector, and climate services can help in this process. Furthermore, for wine producers, the changing climate poses new challenges such as in defining long-term strategies, and in viticulture, oenological and stock management. Climate services, particularly predictions of climate variables and bioclimatic indices, can help in these decisions.

To these goals, MED-GOLD creates a visualisation tool, the dashboard, which provides easy-to-use access to information on past climate and predictions of future climate at different time scales. The tool has been co-developed with users to ensure that it addresses their needs and expectations. Anyone can access the dashboard via the MED-GOLD website, or by visiting: <https://dashboard.med-gold.eu>.

The unique link that has been created (**connecting scientists, practitioners, farmers, stakeholders, and food companies**) within MED-GOLD paves the way to the future synergies that will be needed to address the challenges posed by climate change, ensure food quality, stability, sustainability, and competitiveness. The project has demonstrated the benefits of involving all key actors of the food systems in building services for a climate-resilient and sustainable agricultural sector. These services will be essential to reach the targets set by the Green Deal and the forthcoming Climate Law while contributing to the 2030 Sustainable Development Goals.

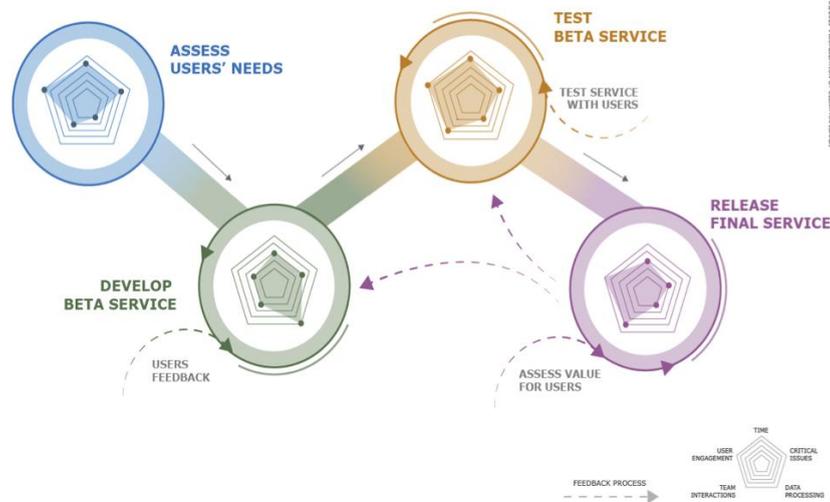


Figure 2 - The co-producing Med-GOLD pilot services approach scheme.

MED-GOLD has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant agreement No. 776467. For more information visit www.med-gold.eu and follow @medgold_h2020 on Twitter





3.5 PROMOTIONAL VIDEOS

A series of promo videos have been prepared to disseminate the climate services tools developed and used in the project and to build capacity among the users' community and maintain such a sustained process during the COVID19 pandemic. The idea of showing the tool's application for decision making in a video format originated during the preparations for the policy event on 'Climate services for a climate-resilient Europe' described above. The [original video about the MED-GOLD dashboard](#) shown at the event received a lot of attention, providing us with ideas to use the strategy to convey the developed tool's functionalities.



MED-GOLD video shown at the "[Climate services for a climate-resilient Europe](#)" Adaptation Playground session event.

Professional videos were then developed to present the different climate services tools to a wide range of users, including the MED-GOLD dashboard for the [wine sector](#) and the [olive sector](#), the [Olivia platform](#) and the [Granoduro.net decision support tool](#). Four videos lasting about 6-7 minutes each were recorded, with video scripts following a hands-on format (more details can be found in section 6.8 of DEL6.16). Videos were prepared in English with subtitles in different languages covered in the project (EN, FR, IT, ES, PT and GR). The videos can be accessed on the project [YouTube channel](#) (under the climate services – use cases list) as well as on the project website.



Examples of videos



3.6 PARTICIPATION TO INTERNATIONAL INITIATIVES

3.6.1 ECCA 2021 - CLIMATE ADAPTATION SOLUTIONS

From May to June, 2021, the 5th European Climate Change Adaptation Conference took place virtually. The title of the 2021 editions was: "Bringing adaptation solutions to life: Inspiring climate adaptation action today for a resilient future". As stated in the conference rationale: "*The Conference will turn the spotlight on the pressing need to accelerate the transfer of knowledge from R&I to policies and practices, including societal transformation and behavioural change, in order to increase resilience in Europe and beyond, in the context of rising climate risks*".

ECCA 2021 was designed to receive attention from a large community of interested people: "... participants will include researchers and adaptation experts, policy-makers, local authorities, practitioners in climate risks management, the private sector with a focus on businesses already engaged with and taking action on climate risk, investors, NGOs, citizens organisations, youth and education organisations, community groups engaged in adaptation, communicators and all interested individuals".

Among other ECCA initiatives, the MED-GOLD project had the opportunity to showcase its main pillars and activities goals in a [short video](#) among the Climate Adaptation solutions from a series of climate adaptation related projects.

3.6.2 MACSUR SciPOL KF - SCIENCE-POLICY KNOWLEDGE FORUM ITALY

The [MACSUR SciPol KF](#) is a pilot exercise initiated by the Joint Programming Initiative for Agriculture, Food Security and Climate Change (FACCE-JPI) to bring science and policy actors together for the strategic design of responses to climate change adaptation and mitigation challenges in the agri-food sector in Europe. The Italian forum coordination is managed by the University of Florence (Prof. Marco Bindi) and organized (14 Oct 2021) the first national meeting. Among other goals SciPol aims to create a coordinated network of European researchers (from countries adhering to FACCE JPI) for starting studies and analyzes aimed at strategic planning and dialogue between science and policy makers; identifying effective responses to the challenges related to the mitigation of and adaptation to climate change. SciPol promotes the sharing of methodologies and tools, which allow a larger community to work with the same standards and has been proposed to organize a future meeting where sharing specific key results achieved with the MED-GOLD activities on climate services as essential tools for managing the transition towards a more resilient agriculture in Europe.

3.6.3 MED-GOLD SPECIAL ISSUE ON THE [CLIMATE SERVICES](#) ELSEVIER JOURNAL

In this Special Issue, we plan to present results obtained by the MED-GOLD project in the context of climate service development for the agricultural sector. Developing a capacity for climate services that can inform decision-making in agriculture is a priority both in Europe and worldwide, as agriculture, and hence our food, is directly affected by climate variability and change. The aim of this MED-GOLD special issue is to provide evidence of the added value in co-developing pilot climate services for the agricultural sector, starting from the three world-heritage staple crops of the Mediterranean food system: grape, olive and durum wheat. The invitation date is set to 01/12/2021, this is the date on which author invitations will be sent; the Manuscript Submission Deadline is set to 31/05/2022, this is the date by which all the manuscripts should be submitted to the Guest Editors for evaluation; finally the Editorial Acceptance Deadline is set to 30/09/2022, this is the date by which all the manuscripts should be fully reviewed, and all the final decisions should be made.

Climate Services journal introduced a new series in the research article type. The research article contains a classical scientific part as well as a section with easily understandable [practical implications for policy makers and practitioners](#). Thus this Special Issue will be an additional effort to convey relevant knowledge to the policy makers communities.



3.6.4 THE MED-GOLD DASHBOARD, SHOWCASED AT EXPERTS OF THE INTERNATIONAL ORGANISATION OF VINE AND WINE (OIV)

António Graça, head of R&D of SOGRAPE, the Portuguese winery participating in the MED-GOLD project, presented the MED-GOLD dashboard in the last meeting of the Sustainable Development and Climate Change (ENVIRO) expert group of the International Organisation of Vine and Wine (OIV, www.oiv.int), held online on October 15th 2021.

A large number of specialists from 48 countries around the world attended the meeting and voted at the OIV General Assembly to advance ongoing works that will enhance international collaboration within the vine and wine sector, er-states. The dashboard was very well received with several experts demonstrating openly their surprise at the tool's usability and eagerness to try it for their own needs. Prof. Hans-Reiner Schultz, President of the expert group, observed: "The prospect to extend MED-GOLD coverage seems like a large asset in further developing a global perspective on climate developments and the interactive use of this information for grape and wine users anywhere." OIV specialists agree that the next challenge of the interactive tool developed in the MED-GOLD project is to cover all global viticultural areas to allow users around the world to make climate-smart decisions.

A pitch was launched to the OIV General-Director, Pau Roca, to help transform this prototype pilot, currently only providing data for wine regions in the Iberian Peninsula, into a publicly accessible tool bearing the promise to allow users in all wine regions of the world to make climate-smart decisions.

"Data, and in this case climate data, is there. Using it in the most appropriate way, and for useful purposes is a challenge. MED-GOLD has partly covered this challenge by doing the necessary research, and we see it is useful and applicable for vitiviculture, at different ranges of analysis. The next challenge is to cover all the viticultural areas of the globe, but we are certain that it works. Going from a prototype to a tool in serial production is the next step," declared Roca.



Online meeting snapshot



4. EXPLOITATION OF RESULTS

As COVID19 pandemic is still placing a burden on our activities, several planned MED-GOLD activities are producing appropriate material for catching policy makers' attention when face-to-face meetings are limited. Online events, videos, infosheets and policy briefs would also allow a more effective dissemination of knowledge materials and lessons learnt during the project.

For the final period of MED-GOLD we plan to maintain contact with several producers' associations which are known to be authoritative reference points for national and international governmental bodies to convey MED-GOLD salient information in a more effective way. Indeed, sectoral bodies, such as [COPA-COGECA](#) and Comité Européen des Entreprises Vins ([CEEV](#)), have already established contact channels with institutional bodies at national and international levels.

A specific event is planned in the framework of the final showcasing MED-GOLD event targeting policy makers and international producers' associations with the aim of further disseminating relevant scientific knowledge developed during the project.

It is still active in an action for consolidating the policy-makers and institutional contacts database which have been collected during MED-GOLD activities, even including those bilateral meetings attended by MED-GOLD single partners. That database will represent, in the following months, a valuable platform to effectively disseminate MED-GOLD results among a tailored audience.

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