

H2020-SC5-01-2017



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

Report on the Summer training event no.2 (Deliverable 6.21)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776467.

DOCUMENT STATUS SHEET

Title	Report on the Summer training event no.2 (Deliverable 6.21)	
Brief Description	This report provides a description of the activities and outcomes of the MED-GOLD Living Lab 2021, including an account of the feedback from the participants.	
WP number		WP 6
Lead Beneficiary		
Contributors	<i>Alessandro Dell'Aquila, Marta Bruno Soares, Massimiliano Pasqui, Sandro Calmanti, Luigi Ponti, Michael Sanderson</i>	
Creation Date	01/07/2021	
Version Number	1.2	
Version Date	09/07/2021	
Deliverable Due Date	31/07/2021	
Actual Delivery Date	31/07/2021	
Nature of the Deliverable	O	<i>R - Report P - Prototype D - Demonstrator O - Other</i>
Dissemination Level/ Audience	PU	<i>PU - Public PP - Restricted to other programme participants, including the Commission services RE - Restricted to a group specified by the consortium, including the Commission services CO - Confidential, only for members of the consortium, including the Commission services</i>





REVISION HISTORY LOG

Version	Date	Created / Modified by	Pages	Comments
1.0	03-07-2021	Alessandro Dell'Aquila		Initial Draft
1.1				
1.2				

All partners involved in the production/implementation of the deliverable should comment and report (if needed) in the above table. The above table should support the decisions made for the specific deliverable in order to include the agreement of all involved parties for the final version of the document.

Finally, after the peer review process, the deliverable should be modified according to the comments and the reflections to the comments should be reported in the above table.

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TABLE OF CONTENTS

Executive Summary	4
1. Objectives	6
2. Impact	6
3. Living Lab contents	7
3.1 From Living Lab 2020 to Living Lab 2021	7
3.2 Advertising the Living Lab	8
3.3 Managing the Living Lab	8
3.4 Participation	10
3.5 General Structure	11
3.5.1 Preliminary Material	11
3.5.2 Problem-holders	11
3.5.3 Sessions	12
3.5.4 Team work	18
3.5.5.Award	18
3.6 Feedback from participants	19
4. Conclusions	19
ANNEX A.	21





LIST OF TABLES AND FIGURES

Figure 3-1 The program for the MED-GOLD Living Lab 2021	8
Figure 3-2 A screenshot for the Amazon Chime Living Lab workspace	9
Figure 3-3 Methodological framework presented and discussed during the MED-GOLD Living Lab	12
Figure 3-4 A screenshot for the Amazon Chime Living Lab first session	13
Figure 3-5 Detailed program for the Session#1, 27 May 2021	14
Figure 3-6 Detailed program for the Session#2, 03 June 2021	15
Figure 3-7 Detailed program for the Session#3, 10 June 2021	16
Figure 3-8 Detailed program for the Session#4, 17 June 2021	17
Figure 3-9 Detailed program for the Session#5, 24 June 2021	18
Table 3-1 List of confirmed participants and their participation in each sessions	10





EXECUTIVE SUMMARY

The report includes the main features of the MED-GOLD Living Lab 2021. Originally planned as a traditional Summer School, similarly to what happened for the 2020 edition, it was converted into a remotely based training event called the MED-GOLD Living Lab "Turning climate information into value for traditional Mediterranean agri-food systems".

The Living Lab 2021 was conducted as an on-line event for five weeks, from May 27 to June 24, with 5 weekly interactive webinars by speakers across different disciplines and 4 on-line working breakout sessions with multidisciplinary teams, supported by scientists from the MED-GOLD experts as mentors.



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	
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	
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

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 minimising risk	
2	Enhancing the potential for market uptake of climate services demonstrated by addressing the added value	
3	Ensuring the replicability of the methodological frameworks for value added climate services in potential end-user markets	
4	To implement a comprehensive communication and commercialization plan for MED-GOLD climate services to enhance market uptake	Work in the hands-on sessions and presentations explicitly devoted on the commercial viability of climate services
5	To build better informed and connected end-user communities for the global olive oil, wine, and pasta food systems and related policy making	Create a community of early career scientists and professionals where the novel approach for ce-designing and co-developing Climate services is presented and discussed

3. LIVING LAB CONTENTS

3.1 FROM LIVING LAB 2020 TO LIVING LAB 2021

After the first successful edition in 2020, the MED-GOLD project has launched its Living Lab 2021.

The MED-GOLD Living Lab 2021 was dedicated to early career scientists and professionals in the areas of climate science, agriculture, business strategy, social sciences and communication.

This living lab was divided into 9 sessions – 5 plenary and 4 hands-on sessions – over five weeks. There have been periodic activities delivered by speakers across different disciplines relevant to the development and implementation of climate services for the agriculture sector, including climate modelling, agriculture and user engagement.

In addition, participants were divided into multidisciplinary teams supported by scientists from the MED-GOLD project as mentors. For the practical work, participants were challenged by real users of climate information to propose and develop ideas for climate services development in the agrifood sector, building on the knowledge and skills gained during the living lab. In these practical sessions, activities have been focused on some of the main climate service components, such as user engagement, data processing and route to market.

Early career scientists and professionals with a wide range of individual profiles were encouraged to apply and join the multidisciplinary teams: climate scientists, agronomists, software developers (R, Python), social scientists and communication experts.

The Living Lab 2021 learning objectives were:

- To understand the basic steps for co-developing a climate service with end-users
- To understand the type of methods used in the co-development of a service
- Up to date knowledge on where to obtain climate data, from the tailored datasets created by MED-GOLD to those developed in the framework of the Copernicus Climate Data Store (CDS).

The first edition of the Living Lab in 2020 was more focused on the theoretical and methodological aspect of the process of the co-development of climate services. The second edition was more focused on the outcomes of the MED-GOLD projects in terms of tools (e.g. MED-GOLD Dashboard, R Package CLISAGRI) and in terms of the specific solutions adopted (Business plan, surveys...) that have been presented in a devoted hand-on session by the MED-GOLD Partners.



3.2 ADVERTISING THE LIVING LAB

The Living Lab was advertised with a dedicate page in the Event section of the MED-GOLD website:

<https://www.med-gold.eu/event/en-living-lab-2021/>

Similar to what was already done for the first edition, the event was advertised on Twitter, by mailing list and on the web-site.

Fig.3-1 shows the general program published in the web-site.

Figure 3-1 The program for the MED-GOLD Living Lab 2021.



MED-GOLD LIVING LAB 2021
Turning climate information into value for traditional Mediterranean agri-food systems
27 May - 24 June 2021 Programme

Plenary Session #1	Hand-on session #1:	Plenary session #2:	Hand-on session #2:	Plenary session #3:	Hand-on session #3:	Plenary session #4:	Hand-on session #4:	Plenary session #5:
Thursday 27 May 11.00-13.30 CEST	Monday 31 May 14.00-15.30CEST	Thursday 03 June 11.00-13.30 CEST	Monday 07 June 14.00-15.30CEST	Thursday 10 June 11.00-13.00 CEST	Monday 14 June 14.00-15.30 CEST	Thursday 17 June 11.00-13.30 CEST	Monday 21 June 14.00-15.30CEST	Thursday 24 June 11.00-13.30 CEST
Getting to know you		Step 1 - Assessing		Step 2- Developing		Step 3 - Testing		Step 4- Implementing & upscaling
Welcome and introduction to the living lab	Presentation from problem holders	Key-note speaker on engaging and assessing users' needs: M Bruno Soares (U Leeds)	Parallel sessions with key experts for groups to ask questions	Key-note speakers on the development of climate services for agriculture: F Matteoli (FAO) and G Nobre (WFP)	Team work & technical support session, guided by mentors	Keynote Speaker on Visualising Climate services: I Jiménez (BSC)	Team work & technical support session, guided by mentors	Keynote Speaker on commercial exploitation of climate services F.Larosa (CMCC)
Who is who in the room	Discussion of teams with their mentors, identification of the problem of interest	Approach to ASSESS the Med-gold pilot services	Team work & technical support session, guided by mentors	MED-GOLD Pilot Services - DEVELOP data flow to meet user needs		Approach to TEST the Med-Gold Pilot Services		Intermediate sprint presentation by the students teams of the work planned/done feedback from experts
Structure of the living lab, ground rules for the event,		Q&A from groups with the problem-holders		Presentation of group ideas to the problem holders and feedback	Wrap up and goodbyes			
Key-note speakers on climate services: C Hewitt (MetOffice) and S. Dessai (U Leeds)								



3.3 MANAGING THE LIVING LAB

The platform adopted for the event was the same already chosen for the first edition and for the general communications within the MED-GOLD Consortium: Amazon Chime



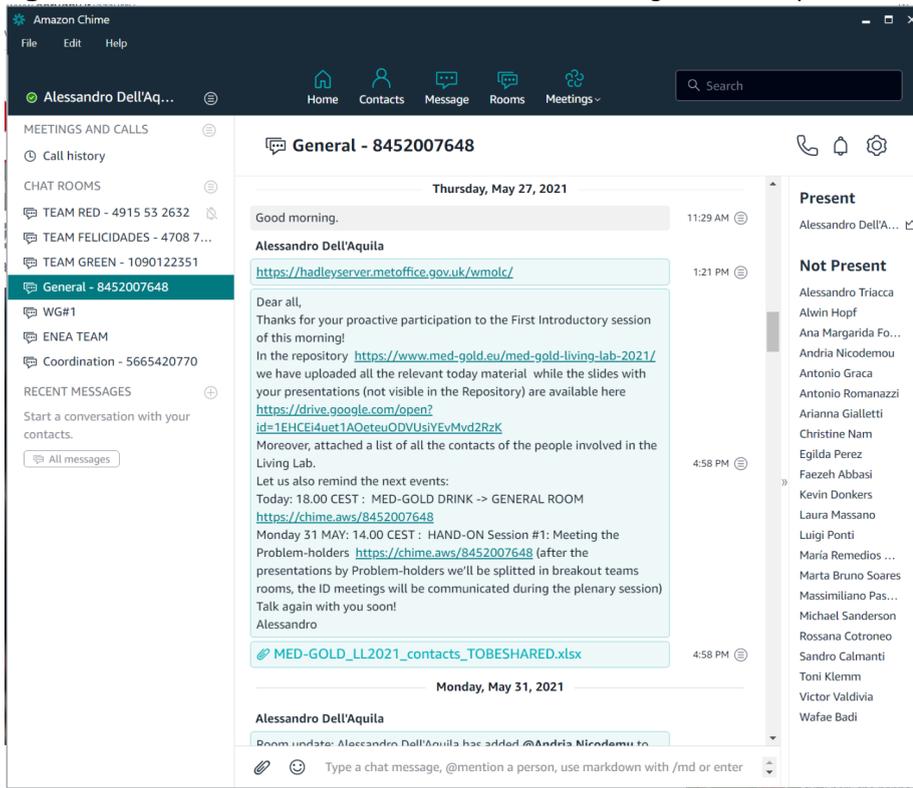
(a screenshot of the landing page of Living Lab workspace is reported in Fig.3-2), with the technical support provided by Lutech-BeeToBit.

It fulfills the technical needs already identified for the first edition:

- Stable connection
- Possibility of having parallel on-line sessions under the same environment
- A single place also to exchange quick messages (i.e Whatsapp, Slack, etc...)
- Possibility to record the sessions (to be included in the MED-GOLD youtube channel

https://www.youtube.com/channel/UCnplS45u9oh0uWksH_WCDCw/videos)

Figure 3-2 A screenshot for the Amazon Chime Living Lab workspace



This platform uses particularly stable distributed connections and allows a smooth management of different channels (for the organizers, for plenary sessions and for the participants teams) with related rooms dedicated to parallel break-out meetings.

All the material of the Living Lab, including presentations and videos are available in the Living Lab repository: <https://www.med-gold.eu/med-gold-living-lab-2021/>



3.4 PARTICIPATION

The registration for the Living Lab was closed by the 14th of May 2021 with a total of **22 registrations**.

After the deadline, a final request of confirming interest to participate in the event was sent to the people registered and finally **16 people (5 M, 11 F)** confirmed their attendance (see Table 3-1). During the events, for unexpected commitments, two other people (1 M, 1 F) decided to leave the course.

The participants were divided into three teams, balanced in terms of gender, nationality and background.

More than 70% of the registered participants attended all of the Plenary sessions (5 in total) and 4 Hands-on sessions of the Living Lab and participated actively in the team work.

Table 3-1 List of confirmed participants and their participation in each sessions

	Surname	Name	Plen. Ses #1	Hand Ses#1	Plen. Ses#2	Hand Ses#2	Plen Ses #3	Hand Ses#3	Plen Ses #4	Hand Ses#4	Plen Ses #5
1	Christine	Nam	1	1	1	1	1	1	1	1	1
2	Kevin	Donkers	1	1		1	1				1
3	Rossana	Cotroneo	1	1	1	1		1	1	1	1
4	Ana Margarida	Fortes	1	1	1		1	1	1		1
5	Laura	Massano	1	1	1	1	1	1	1	1	1
6	Egilda	Perez			1	1	1		1		1
7	María Remedios	Romero-Aranda	1	1	1	1	1	1	1	1	
8	Andria	Nicodemou	1	1	1		1	1	1	1	
9	Victor	Valdivia	1	1	1	1	1	1	1	1	1
10	Toni	Klemm	1	1	1	1	1	1	1	1	1
11	Alwin	Hopf	1		1	1	1	1	1	1	1
12	Arianna	Gialletti	1	1	1	1		1	1	1	1
13	Wafae	Badi	1			1	1	1	1		1
14	Alessandro	Triacca	1	1		1	1	1	1	1	1
			13	11	11	12	12	11	13	10	12
			93%	79%	79%	86%	86%	79%	93%	71%	86%

3.5 General Structure

3.5.1 Preliminary Material

Before the event, some preliminary material was sent to the students in order to have a common background for all participants:

1) Three modules of the Copernicus User Learning Service (ULS), considered as a common background for all participants.

Introduction to the Copernicus Climate Change Service :

https://uls.climate.copernicus.eu/c/portal/learn-portlet/open_package?plid=638303&oid=1247

Seasonal Forecasting:

https://uls.climate.copernicus.eu/c/portal/learn-portlet/open_package?plid=638303&oid=1381

Climate Projections:

https://uls.climate.copernicus.eu/c/portal/learn-portlet/open_package?plid=638303&oid=1670

2) Recommended readings:

Seasonal forecasts for sectoral impacts:

https://uls.climate.copernicus.eu/c/portal/learn-portlet/open_package?plid=638303&oid=1387

Sectoral Application for Agriculture :

https://uls.climate.copernicus.eu/c/portal/learn-portlet/open_package?plid=638303&oid=1330

3) Other Recommended readings on climate services, particularly for the agricultural sector.

4) Additional MED-GOLD resources such as the MED-GOLD infosheets and deliverables and other material. In particular, the Methodological Framework adopted in MED-GOLD.

5) Insights: Other possibly inspiring readings with some ideas that can be useful in the hand-on sessions.

All the material is available in the Living Lab 2021 Repository

<https://www.med-gold.eu/med-gold-living-lab-2021/>

3.5.2 Problem-holders

Three Problem-holders, directly involved in the MED-GOLD Consortium, were invited to present a specific problem of their sector: namely V Manstretta and M Ruggeri, Horta, Italy (Durum wheat/Pasta sector); António Graça, Sogrape Vinhos, Portugal (Grape/Wine Sector) and J Lopez, DCOOP, Spain (Olives/olive oil sector).



The problem-holders briefly presented their specific problems in the first Hands-on session, with a question time planned in the Plenary Session #2 and provided some feedbacks to the students in the Plenary session #4. During the weeks of the course, the students could interact with the problem-holders by Amazon Chime (by messages or in self-organized meetings) and by email.

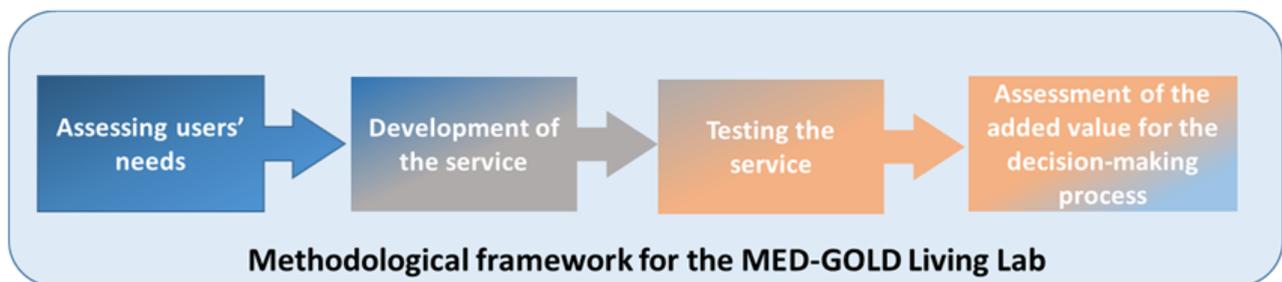
Finally, in the last session, Thursday 24 June, the problem-holders evaluated the work completed by the students.

3.5.3 Sessions

The general program of the Living Lab included five plenary sessions plus 4 Hands-on Sessions led by three mentors from the MED-GOLD Consortium: Marta Bruno Soares (Univ Leeds), Alessandro Dell'Aquila (ENEA) and Massimiliano Pasqui (CNR).

After the first introductory session, the others were focused on the four main steps of the methodological framework already adopted in MED-GOLD to co-design and co-develop prototypes of climate services (Fig. 3-3).

Figure 3-3 Methodological framework presented and discussed during the MED-GOLD Living Lab.



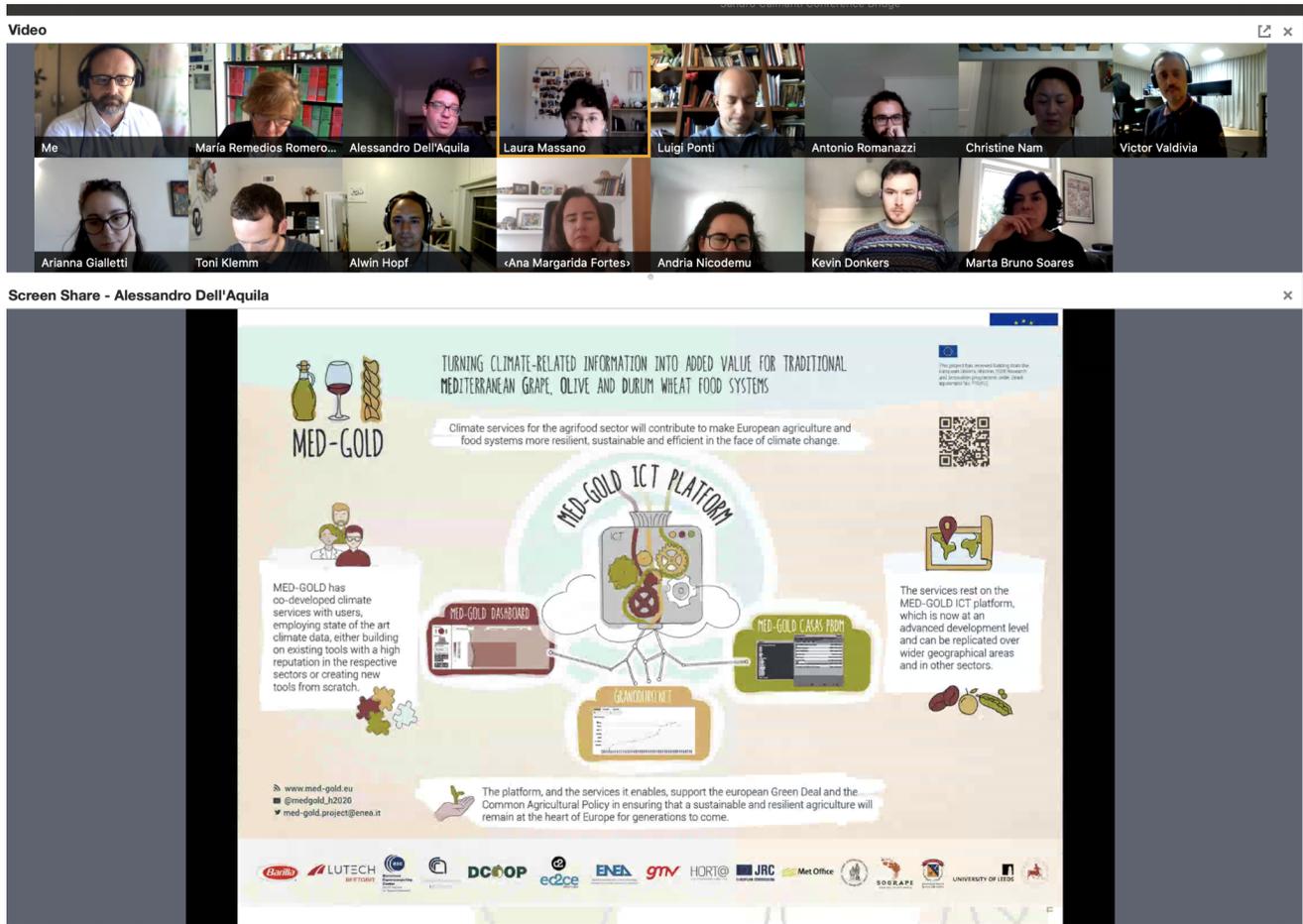
Session #0:

A first preliminary technical session to test the system was organized for Tuesday 25th May open to participants and speakers as well.

Plenary Session #1:



Figure 3-4 A screenshot for the Amazon Chime Living Lab first session



In this session (See Fig 3-4) the project MED-GOLD was briefly presented along with the Living Lab and its main learning objectives by Alessandro Dell'Aquila (ENEA) and the rest of the MED-GOLD Living Lab Organization Team. Afterwards, a very concise presentation was made by each student, including their background and a key question they would like to answer during the event.

The key-note talks on the Landscape of Climate Services were presented by Suraje Dessai (Univ of Leeds) and Chris Hewitt (UK Met Office).

Figure 3-5 Detailed program for the Session#1, 27 May 2021.

Introduction	Speaker
Welcome and introduction to MED-GOLD	Alessandro Dell'Aquila (ENEA)
Who is who in the room plus questions from the students - virtual social event	Marta Bruno Soares (Univ Leeds)
Structure of the living lab (learning objectives included), ground rules for this online event, allocation of mentors to groups, objectives of the groups	Alessandro Dell'Aquila (ENEA)
Comfort break	N/A
Keynote on climate services: IPCC	Suraje Dessai (Univ Leeds)
Keynote on climate services	Chris Hewitt (UK Met Office)

Social event:

In the late afternoon of Thursday, 27 May an online ice-breaker social event took place. Participants were asked to bring with themselves a drink and a snack to be presented to the other participant (possibly related to the MED-GOLD main agri-food system: durum wheat/pasta; olives/olive oil; grape/wine).

Hands-on Session #1:

In the First Hands-on session (Monday 31st of May), the teams of the students have been presented and the three problem holders (namely V Manstretta & M Ruggeri, Horta, Italy; Antonio Graca, Sogrape Vinhos, Portugal and J Lopez, DCOOP Spain) have presented specific problems for their sectors. After the three presentations and a question time the participants were divided into the three teams according to the specific problem (Durum wheat/pasta; grape/wine; olives(olive oil) they would like to focus on during the Living Lab.



Plenary Session #2:

The Second plenary session (Thursday 03 June, see Fig.3-6) focused on the first step of the MED-GOLD methodological framework: the assessment of users' needs in the co-development of climate services (including the MED-GOLD specific experience). At the end of the frontal lectures by Marta Bruno Soares (Univ Leeds) space has been devoted to the questions from teams to Problem-holders in the breakout parallel groups, supported by mentors.

Figure 3-6 Detailed program for the Plenary Session#2, 03 June 2021.

Step 1 - Assessing	Speaker
Introduction and re-cap of previous sessions	Alessandro Dell'Aquila, ENEA
Co-producing climate services and assessing users'needs	Marta Bruno Soares, University of Leeds
Co-producing & assessing needs in the Med-Gold pilot services	Marta Bruno Soares, University of Leeds
Comfort break	N/A
Q&A from groups with the problem-holders	All

Hands-on Session #2:

In the second Hands-on session (Monday 7th June), some outcomes from MED-GOLD project have been presented in two parallel paths:

- 1) Path 1 more related to climate Science with presentations on MED-GOLD Dashboard (ENEA) and R Package CLISAGRI (JRC).
- 2) Path 2 on the socio-economic aspects of Climate Services with presentations on Commercial Exploitation (GMV) and user interaction (Univ of Leeds).

Plenary Session #3:

The third plenary session (Thursday 10th June, see Fig.3-7) focused on the second step of the MED-GOLD methodological framework: co-development of climate services. F Matteoli (FAO) presented on the CLimate Smart Agriculture and the role of political



choice while the presentation of G Nobre (WFP) was more focused on the operational framework of the climate service for agriculture and food security. Afterwards, some examples from the MED-GOLD specific experience has been shown by the MED-GOLD partners from the the three sectoral WPs on the MED-GOLD pilot services development (C Giannakopoulos, (NOA) R Marcos (BSC), M Pasqui(CNR)).

Figure 3-7 Detailed program for the Session#3, 10 June 2021.

Step 2- Developing	Presenter
Introduction and re-cap of previous sessions	Alessandro Dell'Aquila, ENEA
Climate Smart Agriculture Services to protect biodiversity and environment: role of political choices	F. Matteoli (FAO)
Developing climate services for agriculture:	Gabriela Nobre (WFP)
Comfort break	N/A
Development of the Med-Gold pilot services	C Giannakopoulos, (NOA) R Marcos (BSC), M Pasqui(CNR)

Hands-on Session #3:

The third Hands-on session (Monday 14th June) has been fully devoted to the teams' work supported by mentors.

Plenary Session #4:

The fourth plenary session (Thursday 17th June, see Fig.3-8) focused on the third step of the MED-GOLD methodological framework: the testing and validation phase. I Jimenez (BSC) presented some relevant examples on how to visualise and communicate uncertainty in the front-end of climate service. Afterwards, some examples on testing and quality assessment from the MED-GOLD specific experience has been shown by A Dell'Aquila (ENEA) and M Bruno Soares (Univ Leeds). At the end of the frontal lectures a space has been given to the teams to present their preliminary

work so far done in replying to the problems presented by users in the earlier stages of the event.

Figure 3-8 Detailed program for the Session#4, 17 June 2021

Step 3 - Testing	Presenter
introduce the session, Re-cap of previous sessions	Alessandro Dell'Aquila; ENEA
Communication and visualisation of uncertainty in climate services	Isadora Jiménez; BSC
On conflicting notions of skill and reliability of seasonal forecasts	Alessandro Dell'Aquila; ENEA
Testing the value of the Med-Gold Pilot Services with users	Marta Bruno Soares; Univ Leeds
Comfort break	N/A
Intermediate sprint presentation by the students teams of the work planned/done feedback from problem holders	All groups

Hands-on Session #4:

The fourth Hands-on session (Monday 21st of June) was fully devoted to the finalisation of the teams works in view of the final presentations to problem-holders.

Session #5:

The fifth and final plenary session (Thursday 24 June, see Fig.3-9) focused on the fourth step of the MED-GOLD methodological framework: the implementation, the assessment of added value and upscaling of climate services. F Larosa (CMCC) gave some suggestions, based on worldwide experience, on the commercial viability of climate services. Afterwards, the MED-GOLD specific experience in the technical implementation of pilot services, and their related costes, has been presented by Federico Caboni (Lutech-BeeToBit). At the end of the frontal lectures the three teams presented their work to the problem-holders.



Figure 3-9 Detailed program for the Session#5, 24 June 2021.

Step 4 - Implementing	Presenter
introduce the session, Re-cap of previous sessions	Alessandro Dell'Aquila; ENEA
Exploitation: from Climate Services to Climtech businesses	Francesca Larosa; CMCC
Implementing a climate service	Federico Caboni; LUTECH
Feedback +Comfort break	N/A
Final presentations by the students teams of the work done + feedback from problem holders	All groups
Wrap-up and Goodbye	

3.5.4 Team work

The students have worked in three teams groups during the five weeks of course with the aim of producing one or more of the following outputs:

- Design of workshop/interview/survey to interact with users
- Develop an application/code to do some analysis
- Develop a commercial exploitation strategy for the company (Business plan)

3.5.5.Award

Due to the overall high quality of the work done by participants during the Living Lab, it has been agreed by the organization team that MED-GOLD Project would support



publications on this experience, as already proposed at the end of first edition of the Living Lab in 2020.

More in detail, MED-GOLD will offer open access fee for up to three peer-reviewed papers based on:

- direct output from the work the students developed here, or
- a paper that has been developed from the network established during the Living Lab

Rules:

- Max amount: 1000EUR per publication
- At least 75% of authors must be LivingLab 2021 participants
- Deadline for publication May 2022.

This award has been presented in the last session.

3.6 FEEDBACK FROM PARTICIPANTS

An online feedback form was distributed to participants during the final day of the living lab. The feedback form was developed using SurveyMonkey and aimed at capturing feedback from participants on different aspects such as the content, design, and delivery of the living lab. A total of 10 participants responded to the feedback form.

Overall, the feedback received was very positive with all respondents stating that they would recommend this living lab to others. The majority of respondents were positive about the overall content, design and delivery of the living lab (see summary from link provided below). However, the interactive aspects of the living lab could be further improved especially in the team work where some participants gave only a limited contribution.

The majority enjoyed the opportunity to engage with real-problems and stakeholders, working in multidisciplinary teams and engaging with experts in climate services.

A summary of the feedback collected from the participants is available in ANNEX A.

4. CONCLUSIONS

In this report, the second MED-GOLD training event has been described.

The Living Lab 2021 was conducted as an on-line event for five weeks, from May 27 to June 24, with weekly interactive webinars by speakers across different disciplines and on-line working groups with multidisciplinary teams, supported by scientists from the MED-GOLD consortium as mentors. Moreover, there have been weekly hands-on sessions for teamwork with the presentation of some practical examples of useful resources from the MED-GOLD experience.





Participants were challenged by real users of climate information, which we referred to as *problem holders* during the training, to develop prototype climate services for the agri-food sector, building on the knowledge and skills shared during the event.

After the two editions 2020 and 2021, the MED-GOLD Living Lab could be considered like a successful experiment that could be also replicated (and further ameliorated) in future activities.





ANNEX A.

A summary of the feedback collected from the participants at the end of the living lab is available here:

https://www.med-gold.eu/wp-content/uploads/docs/living-lab-2021/Feedback_without_personal_data.pdf





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