Introduction to Detailed Work Plan

As a project, REGACE is fairly complex involving different kinds of tasks that require somewhat different project management methodologies to achieve the results specified in the REGACE grant agreement. The overall approach outlined in this work plan is to consider the merits of various project management methodologies, and to choose which elements of the various work packages are best suited to selected methodologies.

The classic waterfall project management methodology has clarity of structure and ease of control but it is not really suited to collaborative enterprises of this kind, especially since in this project has a high level of interdependency between several work packages. As such, one or several of the many variants of agile project management seem most suitable, even though the time frames of several of the elements in this consortia's project are longer than in most agile methodologies.

One of the principles of agile planning used in this overall work plan stems from the nature of all Horizon consortia and of this consortium in particular. The basic fact is that are partners are experts in their fields and have knowledge and insights that are not necessarily shared by other partners. As such, each of the partners played a part in translating the elements of their tasks and work packages into the action items and schedules that constitute a work plan. Another principle of agile planning is the need for cross team collaboration which is an essential part for the project both in the planning stages, the execution and the analysis of results.

As a result of the insights and discussions during the REGACE kickoff meeting it became clear that even those that seemed to be ostensibly separate from the rest and thus suitable for waterfall-style project management were also iterative and consultative. This became clear when WP 6 leader Prof. Andrea Volteranni introduced the concept of co-development in which farmers would help define the kind of installation in each location. This made sense in terms of lessons learned in a pre-kickoff tour of the FCS. We had originally conceived of WP 6 as a standalone WP which would influence final outcomes, but not the operative work packages. This was not a satisfactory approach, and as such we found that we needed to change our planning methodology. The interaction between the partners in the kickoff meeting required this change and we must anticipate further changes ahead and choose the project management methodologies best suited to such changes.

In this detailed presentation of each work package will be preceded with a brief analysis in which we consider several interlocking factors:

a) To what extent is the content of the work package iterative, what actions require repetition and whether the repeating actions are identical or change according to local and other circumstances

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b) To what extent are all or part of the tasks dependent of the completion of other tasks in this work package or in other work packages?
c) Is this dependency static or flexible? Or in other words does a delay is task A cause an equal delay in task B (flexible) or is task B not movable (like an important deliverable)
d) What kind of information the work package will generate and will this information be used in other work packages? If it will be used is the information flow flexible or static in terms of times?

The project is using the Monday project management software because of its flexibility, third party applications and ability to communicate from and to the platform with users who are not subscribers.

The process of developing this work plan involved four stages:

1. Entering the various tasks outlined in the DoA annex of the Grant Agreement into the Monday application
2. Work by the coordinator, AZS, to expand these tasks into subtasks and other items with timelines and deadlines
3. A process of dialogue between the coordinator and each of the partners to hear their comments and suggestions about both the tasks in which they are directly involved and tasks that have impact or dependency with their tasks
4. Entering the results of this dialogue into the Monday application.

Presentation

Besides satisfying the required contractual obligation this work plan is intended to serve as a tool for all participants, first so that each partner will have an overall picture of the entire project and second, through the Monday application, as a day to day management tool. As such the basic format is of screenshots from the Monday application followed by Gantt charts for each work package. A Gantt chart of the entire project is too large and cumbersome to use.

This plan is based on the DOA. During the work on the plan the coordinator and various partners realized that there were several obvious mistakes in the plan and that the required changes need require amendments to the Grant Agreement. This plan is based on the original DOA without amendments since these changes have not been approved and will be changed after the amendments have been approved.

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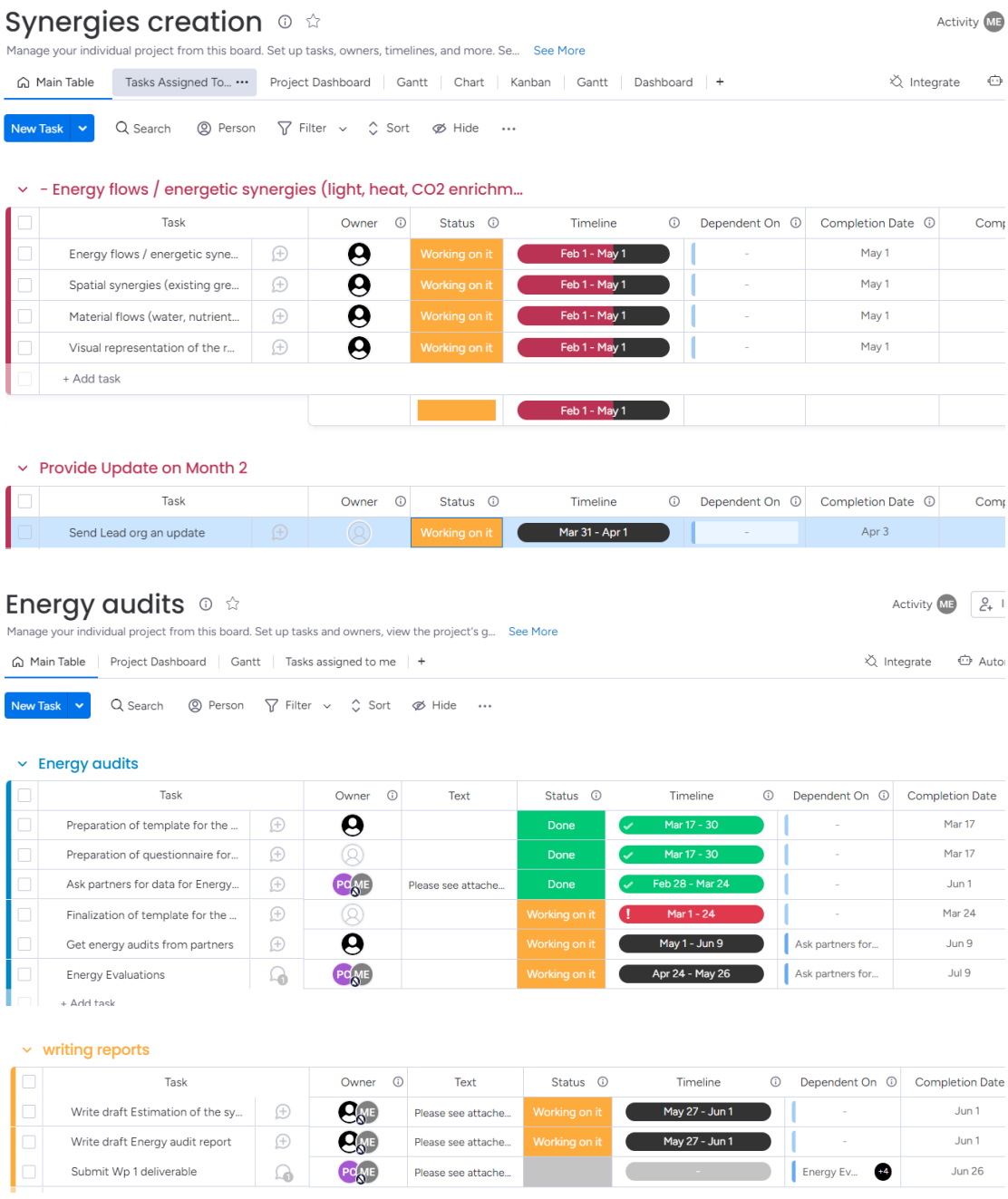
WP 1 Potentials of the synergies of innovative and intelligent agrivoltaic systems

Task leader University of the Thessaly M1-M6

WP 1 is a relatively simple work package. It main vulnerability is on the dependence on data from all ;partners in the energy audits section



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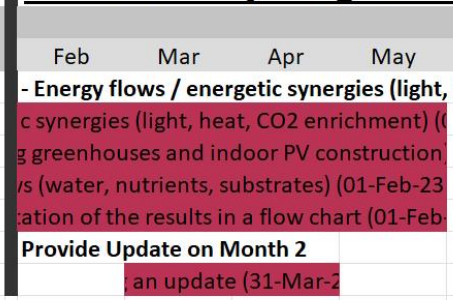
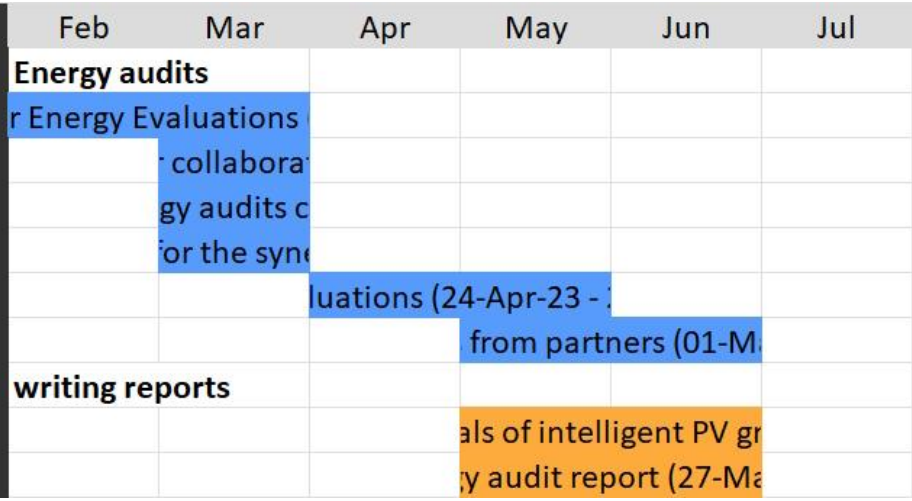
Boards - Synergies creation (by quarters)

	Start	End
- Energy flows / energetic synergies		
Energy flows / energetic synergies (li	01-Feb-2023	01-May-2023
Spatial synergies (existing greenhous	01-Feb-2023	01-May-2023
Material flows (water, nutrients, sub	01-Feb-2023	01-May-2023
Visual representation of the results i	01-Feb-2023	01-May-2023
Provide Update on Month 2		
Send Lead org an update	31-Mar-2023	01-Apr-2023



	Start	End
Energy audits		
Ask partners for data for Energy Eval	28-Feb-2023	24-Mar-2023
Finalization of template for the ener	01-Mar-2023	24-Mar-2023
Preparation of template for the ener	17-Mar-2023	30-Mar-2023
Preparation of questionnaire for the	17-Mar-2023	30-Mar-2023
Energy Evaluations	24-Apr-2023	26-May-2023
Get energy audits from partners	01-May-2023	09-Jun-2023
writing reports		
Write draft Estimation of the synerg	27-May-2023	01-Jun-2023
Write draft Energy audit report	27-May-2023	01-Jun-2023



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WP 2 Implementation

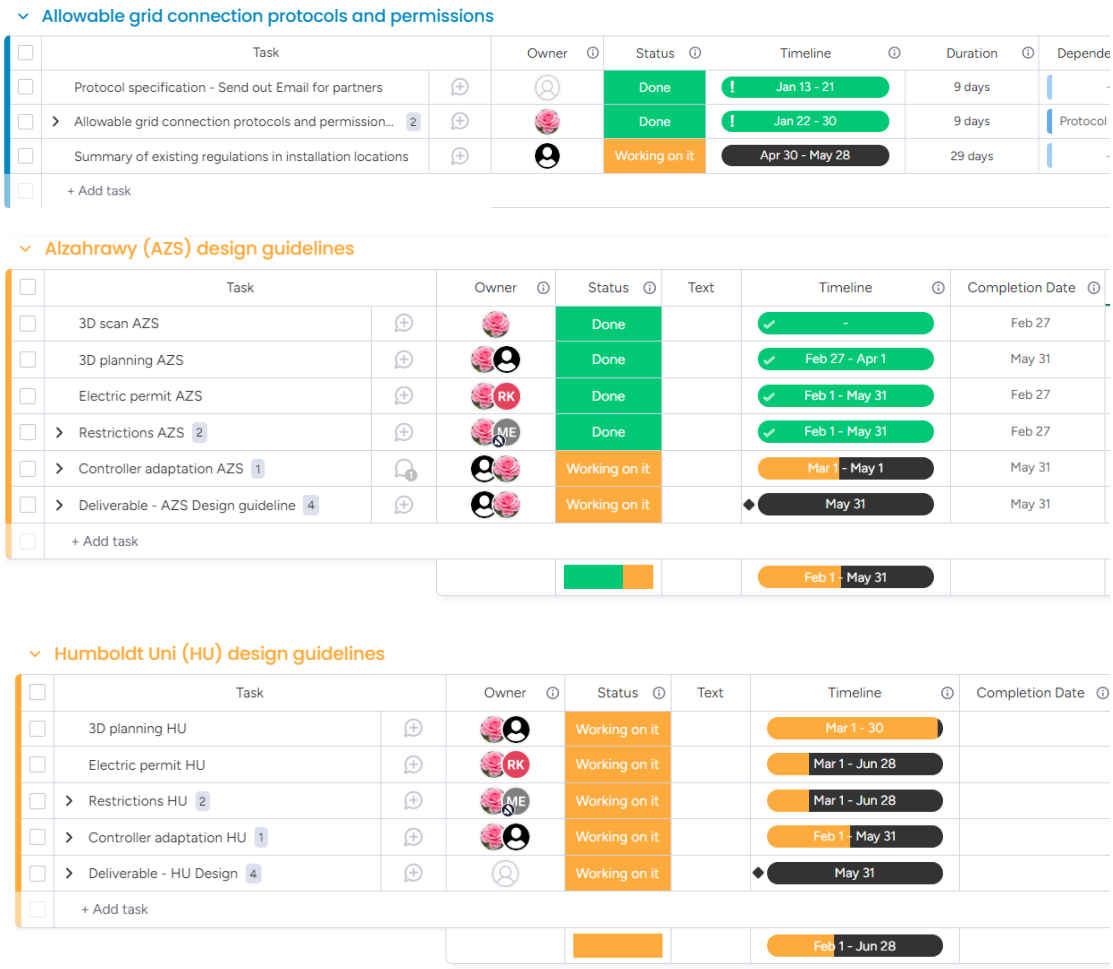
Lead Partner: TriSolar M1-M36

One of the most complex work packages, that requires constant oversight and ability to change plans

Main vulnerabilities:

1. Supply chain issues in delivery of panels and other equipment
2. Regulatory issues in grid-connected installations
3. Design delays
4. Locating qualified installers available at the right time frames

Task 2.1 Design adaptation, construction, installation and maintenance of the crop responsive PV tracking system in different locations



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BOKU Design guideline

Task	Owner	Status	Text	Timeline	Completion Date
3D planning BOKU		Working on it		Mar 1 - 31	
Electric permit BOKU	ME	Working on it	fix	Mar 1 - Jun 28	
Restrictions BOKU 2		Working on it		Feb 1 - May 31	
Controller adaptation BOKU 1		Working on it		Feb 1 - May 31	
Deliverable - BOKU Design 4		Working on it		May 31	
+ Add task					
				Feb 1 - Jun 28	

Bio Watzkendorf BW Design guideline

Task	Owner	Status	Text	Timeline	Complet
3D planning BW				Mar 1 - 31	
Electric permit BW	RK		fix	Mar 1 - Jun 28	
Restrictions BW 2	ME			Feb 1 - May 31	
Controller adaptation BW 1				Feb 1 - May 31	
Deliverable - BW Design 4				May 31	
+ Add task					
				Feb 1 - Jun 28	

Thessaly Uni (UTH) Design guideline

Task	Owner	Status	Text	Timeline	Completion Date
3D planning UTH				Mar 1 - 31	
Electric permit UTH	RK		fix	Mar 1 - Jun 28	
Restrictions UTH 2	ME			Feb 1 - May 31	
Controller adaptation UTH 1				Feb 1 - May 31	
Deliverable - UTH Design 4				May 31	
+ Add task					

FSC guideline

Task	Owner	Status	Text	Timeline	Completion Date	De
Design shading for greens in summer FSC		Working on it		-		
3D planning FSC				Mar 1 - 31		
Electric permit FSC	RK		fix	Mar 1 - Jun 28		
Restrictions FSC 2	ME			Feb 1 - May 31		
Controller adaptation FSC 1				Feb 1 - May 31		
Deliverable - FSC Design 4				May 31		
+ Add task						

Task 2.1.2 Adapted tracker manufacture

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Adapted tracker manufacture Group

Task	Owner	Status	Timeline	Text	Completion Date	Dependent On
List of component for each locat... 6	+2	Working on it	May 1 - 15		May 15	-

Subitem	Owner	Status	Timeline	Due Date	Dependency
AZS List of Components		Working on it	May 1 - 15	Jul 31	Deliverable - AZS Design gui...
FSC Italy list of components		Working on it	May 1 - 15	Jul 31	Deliverable - FSC Design
UTH List of Components		Working on it	May 1 - 15	Jul 31	Deliverable - UTH Design
BOKU List of Components		Working on it	May 1 - 15	Jul 31	Deliverable - BOKU Design
BW List of Components		Working on it	May 1 - 15	Jul 31	Deliverable - BW Design
HU List of Components		Working on it	May 1 - 15	Jul 31	Deliverable - HU Design
+ Add subitem					

Order the parts	RK	Working on it	May 15 - 19		May 28	-
certifications for parts	RK	Working on it	-			-
+ Add task						
			May 1 - 19			

Task 2.1.3 Tracker installation guideline for different ty...

Task	Owner	Status	Timeline
Guideline for different types of greenhouse		Working on it	May 31 - Sep 29
compile design and installation guidelines 6			Jun 1 - Sep 30

Subitem	Owner	Status	Due Date	Timeline
Tracker installation guideline - BOKU		Future action		Jun 1 - Sep 30
Tracker installation guideline - AZS		Future action		Jun 1 - Sep 30
Tracker installation guideline - UTH		Future action		Jun 1 - Sep 30
Tracker installation guideline - FSC		Future action		Jun 1 - Sep 30
Tracker installation guideline - BW		Future action		Jun 1 - Sep 30
Tracker installation guideline - HU		Future action		Jun 1 - Sep 30
+ Add subitem				

Task 2.1.4 Tracker installation

AZS Tracker installation

Task	Owner	Status	Timeline	Dependent On
Tracker Installation AZS		Future steps	Jul 1	-
Controller tuning AZS		Working on it	Aug 1	Tracker Installati...
sample testing and validatio...		Future steps	May 1 - 31	-
+ Add task				
			May 1 - Aug 1	

BOKU Tracker installation

Task	Owner	Status	Timeline	Dependent On
Arrange installation visit BOK...		Future steps	Jun 1 - 30	-
Tracker Installation BOKU		Future steps	Jul 31	-
Controller tuning BOKU		Future steps	Aug 1	Tracker Installati...
+ Add task				
			Jun 1 - Aug 1	

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BW tracker installation

Task	Owner	Status	Timeline	Dependent On
Arrange installation visit BW		Future steps	Jun 1 - 30	-
Tracker installation Germany ...		Future steps	Jul 31	-
Controller tuning BW		Future steps	Aug 1	Tracker installati...
+ Add task				
			Jun 1 - Aug 1	

HU tracker installation

Task	Owner	Status	Timeline	Dependent On
Arrange installation visit HU		Future steps	Jun 1 - 30	-
Tracker installation HU		Future steps	Jul 31	-
Controller tuning HU		Future steps	Aug 1	Tracker installati...
+ Add task				
			Jun 1 - Aug 1	

UTH tracker installation

Task	Owner	Status	Timeline	Dependent On
Arrange installation visit UTH		Future steps	Jun 1 - 30	-
Tracker installation UTH		Future steps	Jul 31	-
Controller tuning UTH		Future steps	Aug 1	Tracker installati...
+ Add task				
			Jun 1 - Aug 1	

FSC Tracker Installation

Task	Owner	Status	Timeline	Dependent On
Arrange Visit FSC		Future steps	Jun 1 - 30	-
Tracker Installation FSC		Future steps	Jul 31	-
Controller tuning FSC		Future steps	Aug 1	Tracker Installati...
+ Add task				
			Jun 1 - Aug 1	

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Task 2.1.5 Tracker maintenance

Manage your individual project from this board. Set up tasks and owners, view the project's g... See More

Main Table | Project Dashboard | Gantt | Tasks assigned to me | +

New Task | Search | Person | Filter | Sort | Hide

Systems Checks

Task	Owner	Status	Timeline	Dependent On	Comple
Data monitoring in all locations to identify problems			Jul 31, '23 - Aug 1, '25	-	
Tracker maintenance and system checks at all locations 6			Jul 31, '23 - Aug 1, '25	-	
O&M by subcontractor for all locations			Jul 31, '23 - Aug 1, '25	-	
+ Add task					
			Jul 31, '23 - Aug 1, '25		

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	Start	End	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Allowable grid connection protocols			**Allowable grid connection protocols and permissions**								
Protocol specification - Send out Em	13-Jan-2023	21-Jan-2023				t Email for					
Allowable grid connection protocols	22-Jan-2023	30-Jan-2023				lations rela					
send email to partners	31-Oct-2022	31-Oct-2022	tners (31-C								
Summary of existing regulations in ir	30-Apr-2023	28-May-2023							ns in installation loca		

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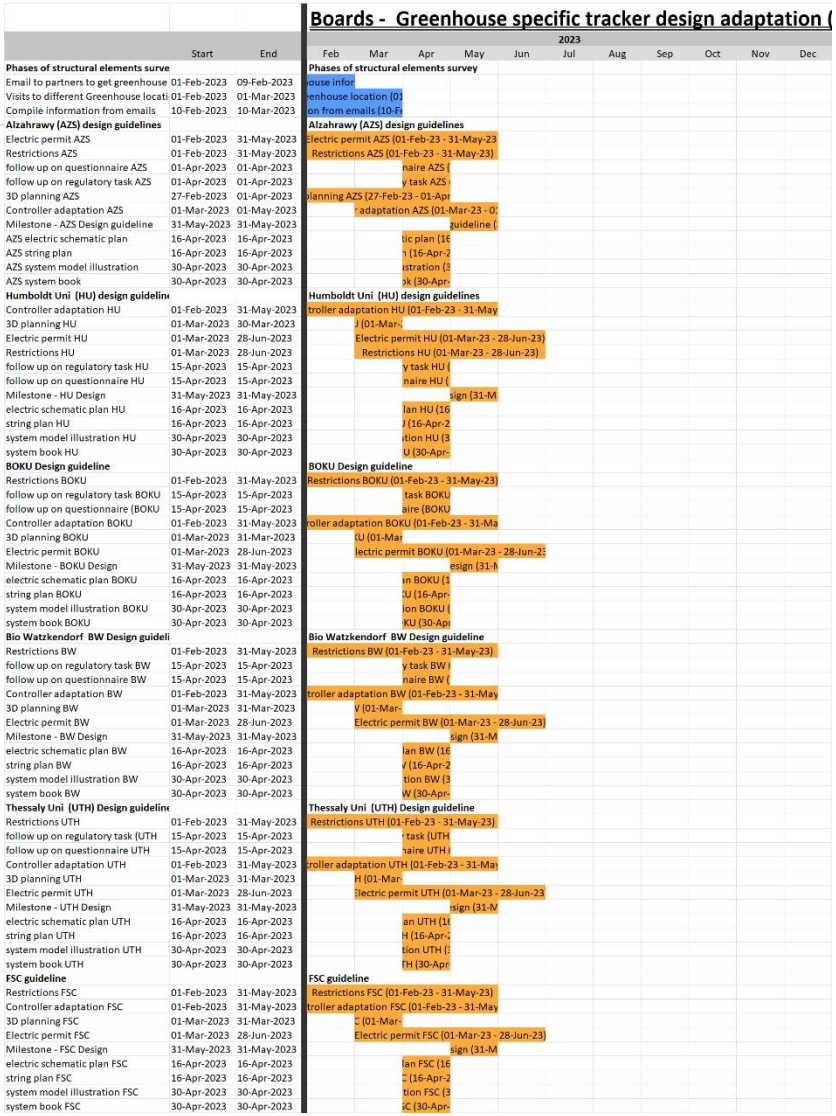

	Start	End
Phases of structural elements surve		
Email to partners to get greenhouse	01-Feb-2023	09-Feb-2023
Visits to different Greenhouse locati	01-Feb-2023	01-Mar-2023
Compile information from emails	10-Feb-2023	10-Mar-2023
Alzahrawy (AZS) design guidelines		
Electric permit AZS	01-Feb-2023	31-May-2023
Restrictions AZS	01-Feb-2023	31-May-2023
follow up on questionnaire AZS	01-Apr-2023	01-Apr-2023
follow up on regulatory task AZS	01-Apr-2023	01-Apr-2023
3D planning AZS	27-Feb-2023	01-Apr-2023
Controller adaptation AZS	01-Mar-2023	01-May-2023
Milestone - AZS Design guideline	31-May-2023	31-May-2023
AZS electric schematic plan	16-Apr-2023	16-Apr-2023
AZS string plan	16-Apr-2023	16-Apr-2023
AZS system model illustration	30-Apr-2023	30-Apr-2023
AZS system book	30-Apr-2023	30-Apr-2023
Humboldt Uni (HU) design guidelin		
Controller adaptation HU	01-Feb-2023	31-May-2023
3D planning HU	01-Mar-2023	30-Mar-2023
Electric permit HU	01-Mar-2023	28-Jun-2023
Restrictions HU	01-Mar-2023	28-Jun-2023
follow up on regulatory task HU	15-Apr-2023	15-Apr-2023
follow up on questionnaire HU	15-Apr-2023	15-Apr-2023
Milestone - HU Design	31-May-2023	31-May-2023
electric schematic plan HU	16-Apr-2023	16-Apr-2023
string plan HU	16-Apr-2023	16-Apr-2023
system model illustration HU	30-Apr-2023	30-Apr-2023
system book HU	30-Apr-2023	30-Apr-2023
BOKU Design guideline		
Restrictions BOKU	01-Feb-2023	31-May-2023
follow up on regulatory task BOKU	15-Apr-2023	15-Apr-2023
follow up on questionnaire (BOKU	15-Apr-2023	15-Apr-2023
Controller adaptation BOKU	01-Feb-2023	31-May-2023
3D planning BOKU	01-Mar-2023	31-Mar-2023
Electric permit BOKU	01-Mar-2023	28-Jun-2023
Milestone - BOKU Design	31-May-2023	31-May-2023
electric schematic plan BOKU	16-Apr-2023	16-Apr-2023
string plan BOKU	16-Apr-2023	16-Apr-2023
system model illustration BOKU	30-Apr-2023	30-Apr-2023
system book BOKU	30-Apr-2023	30-Apr-2023
Bio Watzkendorf BW Design guideli		
Restrictions BW	01-Feb-2023	31-May-2023
follow up on regulatory task BW	15-Apr-2023	15-Apr-2023
follow up on questionnaire BW	15-Apr-2023	15-Apr-2023
Controller adaptation BW	01-Feb-2023	31-May-2023
3D planning BW	01-Mar-2023	31-Mar-2023
Electric permit BW	01-Mar-2023	28-Jun-2023
Milestone - BW Design	31-May-2023	31-May-2023
electric schematic plan BW	16-Apr-2023	16-Apr-2023
string plan BW	16-Apr-2023	16-Apr-2023
system model illustration BW	30-Apr-2023	30-Apr-2023
system book BW	30-Apr-2023	30-Apr-2023
Thessaly Uni (UTH) Design guidelin		
Restrictions UTH	01-Feb-2023	31-May-2023
follow up on regulatory task (UTH	15-Apr-2023	15-Apr-2023
follow up on questionnaire UTH	15-Apr-2023	15-Apr-2023
Controller adaptation UTH	01-Feb-2023	31-May-2023
3D planning UTH	01-Mar-2023	31-Mar-2023
Electric permit UTH	01-Mar-2023	28-Jun-2023
Milestone - UTH Design	31-May-2023	31-May-2023
electric schematic plan UTH	16-Apr-2023	16-Apr-2023
string plan UTH	16-Apr-2023	16-Apr-2023
system model illustration UTH	30-Apr-2023	30-Apr-2023
system book UTH	30-Apr-2023	30-Apr-2023
FSC guideline		
Restrictions FSC	01-Feb-2023	31-May-2023
Controller adaptation FSC	01-Feb-2023	31-May-2023
3D planning FSC	01-Mar-2023	31-Mar-2023
Electric permit FSC	01-Mar-2023	28-Jun-2023
Milestone - FSC Design	31-May-2023	31-May-2023
electric schematic plan FSC	16-Apr-2023	16-Apr-2023
string plan FSC	16-Apr-2023	16-Apr-2023
system model illustration FSC	30-Apr-2023	30-Apr-2023
system book FSC	30-Apr-2023	30-Apr-2023

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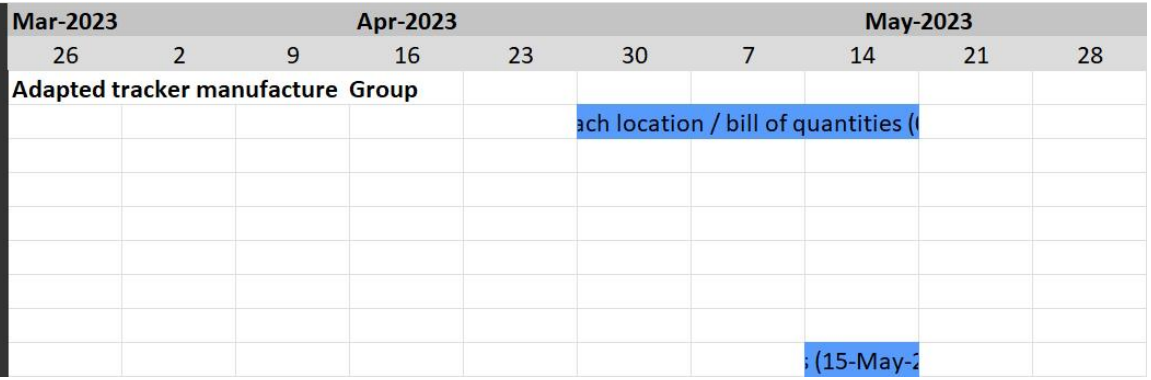
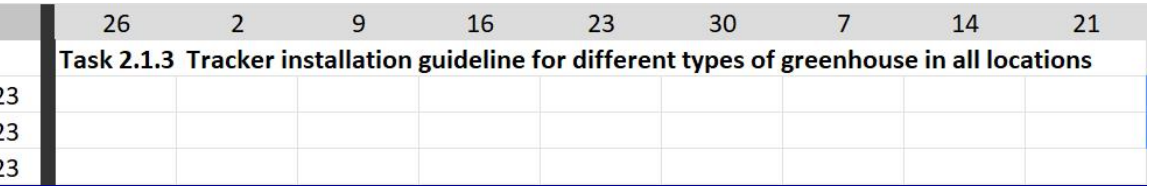
Adapted tracker manufacture Group

	Start	End
Adapted tracker manufacture Grou		
List of component for each location ,	01-May-2023	15-May-2023
AZS List of Components	31-Jul-2023	31-Jul-2023
FSC Italy list of components	31-Jul-2023	31-Jul-2023
UTH List of Components	31-Jul-2023	31-Jul-2023
BOKU List of Components	31-Jul-2023	31-Jul-2023
BW List of Components	31-Jul-2023	31-Jul-2023
HU List of Components	31-Jul-2023	31-Jul-2023
Order the parts	15-May-2023	19-May-2023



Develop tracker installation guidelines for different greenhouse types

	Start	End
Task 2.1.3 Tracker installation guid		
Guideline for different types of greer	31-May-2023	29-Sep-2023
compile design and installation guid	01-Jun-2023	30-Sep-2023
Deliverable D2.1 - Report	30-Sep-2023	30-Sep-2023



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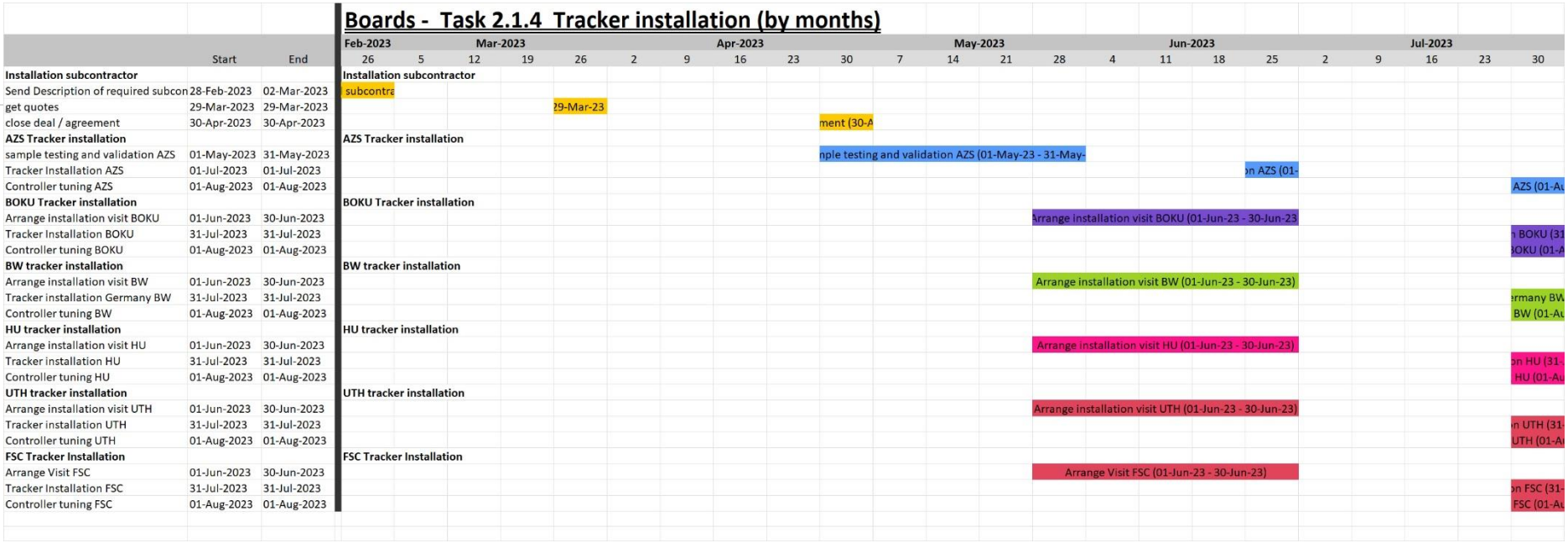
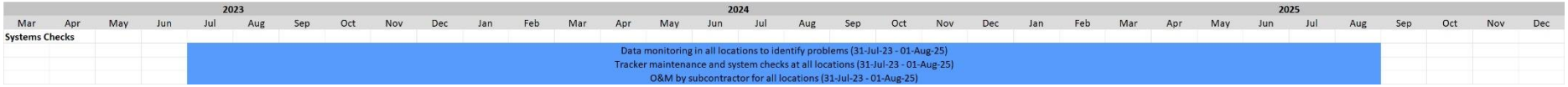
Boards - Task 2.1.4 Tracker installation (by months)

	Start	End
Installation subcontractor		
Send Description of required subcon	28-Feb-2023	02-Mar-2023
get quotes	29-Mar-2023	29-Mar-2023
close deal / agreement	30-Apr-2023	30-Apr-2023
AZS Tracker installation		
sample testing and validation AZS	01-May-2023	31-May-2023
Tracker Installation AZS	01-Jul-2023	01-Jul-2023
Controller tuning AZS	01-Aug-2023	01-Aug-2023
BOKU Tracker installation		
Arrange installation visit BOKU	01-Jun-2023	30-Jun-2023
Tracker Installation BOKU	31-Jul-2023	31-Jul-2023
Controller tuning BOKU	01-Aug-2023	01-Aug-2023
BW tracker installation		
Arrange installation visit BW	01-Jun-2023	30-Jun-2023
Tracker installation Germany BW	31-Jul-2023	31-Jul-2023
Controller tuning BW	01-Aug-2023	01-Aug-2023
HU tracker installation		
Arrange installation visit HU	01-Jun-2023	30-Jun-2023
Tracker installation HU	31-Jul-2023	31-Jul-2023
Controller tuning HU	01-Aug-2023	01-Aug-2023
UTH tracker installation		
Arrange installation visit UTH	01-Jun-2023	30-Jun-2023
Tracker installation UTH	31-Jul-2023	31-Jul-2023
Controller tuning UTH	01-Aug-2023	01-Aug-2023
FSC Tracker Installation		
Arrange Visit FSC	01-Jun-2023	30-Jun-2023
Tracker Installation FSC	31-Jul-2023	31-Jul-2023
Controller tuning FSC	01-Aug-2023	01-Aug-2023



Task 2.1.5 Tracker maintenance



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2.2.1 Planning CO2 enrichment systems in greenhouses at different locations

HU: Use of technical CO2 from bottles

Task	Owner	Status	Timeline	Dependent On	Completion Date	Comple
Co2 enrichment planning of the syste...		Future steps	Jun 1 - Jul 1	-		
+ Add task						
			Jun 1 - Jul 1			

AZS: organic materials in soil cultures

Task	Owner	Status	Timeline	Dependent On	Completion Date	Comple
Organic materials in soil cultures AZS		Future steps	Jun 1 - Aug 1	-		
+ Add task						
			Jun 1 - Aug 1			

BW: CO2 enrichment with organic materials

Task	Owner	Status	Timeline	Dependent On	Completion Date
CO2 enrichment with organic materials...		Future steps	Aug 1, '23 - Mar 29, '24	-	Jan 12, 2022
+ Add task					
			Aug 1, '23 - Mar 29, '24		

BOKU: Use of CO2 bags

Task	Owner	Status	Timeline	Dependent On	Completion Date
Use of CO2 bags BOKU		Future steps	Oct 20, '23 - Jun 1, '25	-	
+ Add task					
			Oct 20, '23 - Jun 1, '25		

FSC: Organic materials in soil cultures

Task	Owner	Status	Timeline	Dependent On
Organic materials in soil cultures FSC			Sep 1, '23 - Dec 1, '25	-
+ Add task				
			Sep 1, '23 - Dec 1, '25	

UTH: use of technical CO2 from bottles

Task	Owner	Status	Timeline	Dependent On
Use of technical CO2 from bottles UTH		Future steps	Sep 1, '23 - Sep 1, '25	-
+ Add task				
			Sep 1, '23 - Sep 1, '25	

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2.2.2Studies on horizontal and vertical CO2 distribution in dif...

Activity

Manage your individual project from this board. Set up tasks and owners, view the project's g... See More

Main Table | Project Dashboard | Gantt | Tasks assigned to me | +

Integrate

New Task | Search | Person | Filter | Sort | Hide | ...

Studies on horizontal and vertical CO2 distribution in di...

Task	Owner	Status	Timeline	Dependent On	Completion Date
Studies on horizontal and vertical CO2 distri... 1		Future steps	Aug 31, '22 - Feb 26, '23	-	
+ Add task					
			Aug 31, '22 - Feb 26, '23		

Studies on optimization of CO2 enrichment systems

Task	Owner	Status	Timeline	Dependent On	Completion Date
optimization of CO2 enrichment systems		Future steps	Aug 31, '22 - Feb 26, '23	-	
+ Add task					
			Aug 31, '22 - Feb 26, '23		

Add new group

2.2.3 Integration of CO2 measurement and control systems i...

Activity

Manage your individual project from this board. Set up tasks and owners, view the project's g... See More

Main Table | Project Dashboard | Gantt | Tasks assigned to me | +

Integrate

New Task | Search | Person | Filter | Sort | Hide | ...

Integration of CO2 measurement and control systems...

Task	Owner	Status	Timeline	Duration	Dependent On
Integration of CO2 measurement and contr...			Mar 1 - Sep 30	214 days	-
Preparing for data collection 1			Mar 1 - Oct 28	242 days	-
Deliverable- Report on CO2 enrichment sys...	ME		Nov 30	0 days	-
+ Add task					
			Mar 1 - Nov 30	456 days sum	

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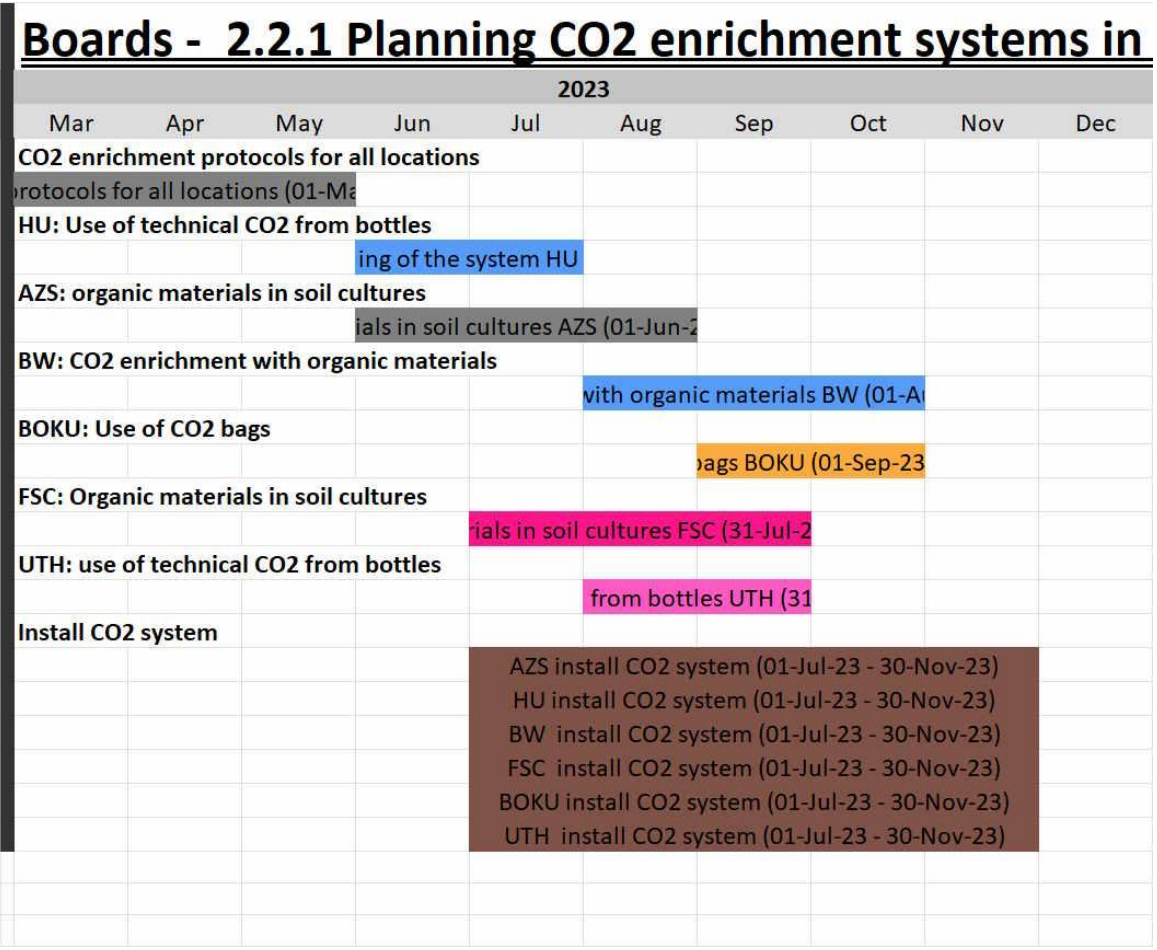
2.2.1 Planning CO2 enrichment systems in greenhouses at different locations (by years)

	Start	End
CO2 enrichment protocols for all loc		
CO2 enrichment protocols for all loc	01-Mar-2023	01-May-2023
HU: Use of technical CO2 from bottl		
Co2 enrichment planning of the syst	01-Jun-2023	01-Jul-2023
AZS: organic materials in soil culture		
Organic materials in soil cultures AZS	01-Jun-2023	01-Aug-2023
BW: CO2 enrichment with organic m		
CO2 enrichment with organic materi	01-Aug-2023	31-Oct-2023
BOKU: Use of CO2 bags		
Use of CO2 bags BOKU	01-Sep-2023	31-Oct-2023
FSC: Organic materials in soil culture		
Organic materials in soil cultures FSC	31-Jul-2023	30-Sep-2023
UTH: use of technical CO2 from bott		
Use of technical CO2 from bottles UT	31-Aug-2023	30-Sep-2023
Install CO2 system		
AZS install CO2 system	01-Jul-2023	30-Nov-2023
HU install CO2 system	01-Jul-2023	30-Nov-2023
BW install CO2 system	01-Jul-2023	30-Nov-2023
FSC install CO2 system	01-Jul-2023	30-Nov-2023
BOKU install CO2 system	01-Jul-2023	30-Nov-2023
UTH install CO2 system	01-Jul-2023	30-Nov-2023



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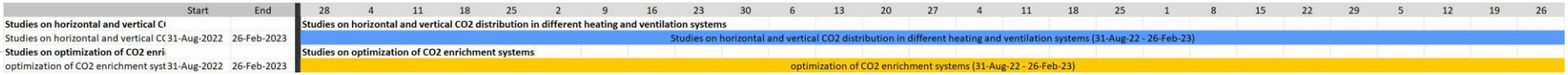
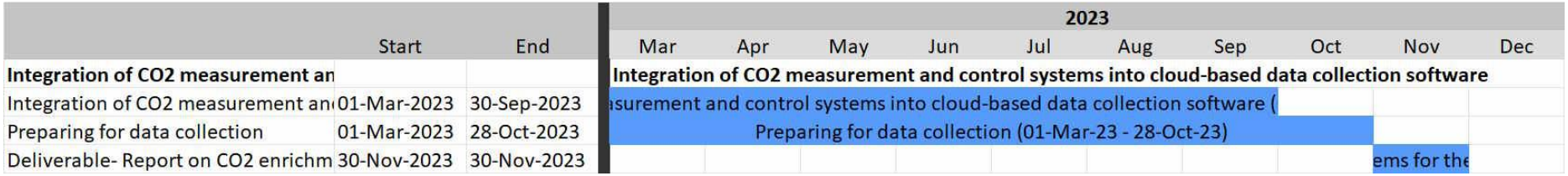
2.2.2 Studies on horizontal and vertical CO2 distribution in different heating and ventilation systems, optimization of CO2 enrichment systems



2.2.3 Integration of CO2 measurement and control systems into cloud-based data collection software (by quarters)



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WP 3 Testing

Lead Partner BOKU

The main challenge in this relatively complex work package is in coordinating scientific input and creating common standards for the data generated by the entire project

3.2 PV electrical monitoring in greenhouses

Task 3.2. Modeling of the PV modules performance.

Task	Owner	Status	Timeline	Dependent On	WP8: Disser
3.1.1: Set up of the measurement site in Tor Vergata Univ...		Working on it	Mar 1 - Sep 30	-	-
3.1.2: Acquisition of the PV panels and installation on the ...		Future steps	Jun 1, '23 - Jul 31, '24	-	-
3.1.3: Measurement of IV Curve, Bifaciality, BIFI, Tempera...		Future steps	Jul 1, '24 - Sep 30, '24	-	-
3.1.4: Monitoring Performance of bifacial modules (long-t...		Future steps	Jul 1, '24 - Dec 31, '25	-	-
3.1.5: Data Analysis		Future steps	Jul 1, '24 - Dec 31, '25	-	-
+ Add task					
			Mar 1, '23 - Dec 31, '25		

3.2.1 electrical performance testing and data collection protocol for the PV

Task	Owner	Status	Timeline	Dependent On	WP8: Disser
testing and data collection protocol		Working on it	Feb 1 - Jul 31	-	-
Deliverable- electrical part of test protocol			Oct 1, '25	-	-
+ Add task					
			Feb 1, '23 - Oct 1, '25		

3.2.2 Training of the researchers

Task	Owner	Status	Timeline	Dependent On	WP8: Diss
Training of the researchers		Future steps	Aug 1 - Oct 31	-	-
+ Add task					
			Aug 1 - Oct 31		

3.2.3 Data collection in all test locations

Task	Owner	Status	Timeline	Dependent On	WP8: Diss
Installation of monitoring equipment		Future steps	Aug 1 - Oct 1	-	-
Data collection cloud		Future steps	Aug 1 - Oct 1	-	-
Data collection		Future steps	Nov 1, '23 - Nov 1, '25	-	-
Deliverable- Testing report part		Future steps	Oct 1, '25	-	-
+ Add task					
			Aug 1, '23 - Nov 1, '25		

3.2.4 The ageing behaviour of the PVs in greenhouse environments

Task	Owner	Status	Timeline	Dependent On	WP8: Dissemi...	Connect b
Initial Characterization for aging test		Future steps	Jul 1 - 31	-	-	
Weekly photographic and thermal energy record		Future steps	Nov 1, '23 - Nov 10, '25	-	-	
Indoor accelerating aging test		Future steps	Feb 1, '24 - Apr 30, '24	-	-	
Final Characterization for aging test		Future steps	Jul 1, '25 - Aug 31, '25	-	-	
Deliverable- Testing report part		Future steps	Oct 1, '25	-	-	
+ Add task						
			Jul 1, '23 - Nov 10, '25			

+ Add new group

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3.3: Greenhouse microclimate measurements inside the greenhouses

3.3.1: Develop a data collection strategy and microclimate monitoring prot...

Task	Owner	Status	Timeline	Dependent On	Complet
Develop a data collection strategy and microclimate monitorin...		Future steps	Apr 1 - Sep 30	-	
Deliverable- Testing report part			Oct 1, '25	-	
+ Add task					
			Apr 1, '23 - Oct 1, '25		

3.3.2: Training of the researchers from each growing site to ensure the repro...

Task	Owner	Status	Timeline	Dependent On	Complet
Training of the researchers from each growing site to ensure th...	ME	Future steps	Jun 1 - Oct 31	-	
+ Add task					
			Jun 1 - Oct 31		

3.3.3: Micro-climate data collection

Task	Owner	Status	Timeline	Dependent On	Completion Date
Micro-climate data collection 1		Future steps	Nov 1, '23 - Jul 1, '25	-	Jan 18, 2022
Deliverable- Testing report part		Future steps	Jul 1, '25 - Oct 1, '25	-	Feb 4, 2022
+ Add task					
			Nov 1, '23 - Oct 1, '25		

3.2.4 The ageing behaviour of the PVs in greenhouse environments

Task	Owner	Status	Timeline	Dependent On	Completion Date
The ageing behaviour of the PVs in greenhouse environments			Nov 1, '23 - Dec 31, '25	-	
+ Add task					
			Nov 1, '23 - Dec 31, '25		

3.5 Greenhouse Water Efficiency

3.5.1 Determination of water use efficiency for fully closed recirculating irrig...

Task	Owner	Status	Timeline	Dependent On	Completion Date	Com
Instruction by Thorston to Partners			May 1 - Jun 1	-		
Set equipment type needed for this me...			May 1 - Jun 1	-		
Determination of water use efficiency f...			Oct 1, '23 - Dec 1, '25	-	Jan 18, 2022	
+ Add task						
			May 1, '23 - Dec 1, '25			

3.5.2 BOKU Determination of water consumption per yield unit depending ...

Task	Owner	Status	Timeline	Dependent On	Completion Date	Com
Determination of water consumption p...			Nov 1, '23 - Jun 1, '25	-		
Milestone- Testing report part			Oct 1, '25	-		
+ Add task						
			Nov 1, '23 - Oct 1, '25			

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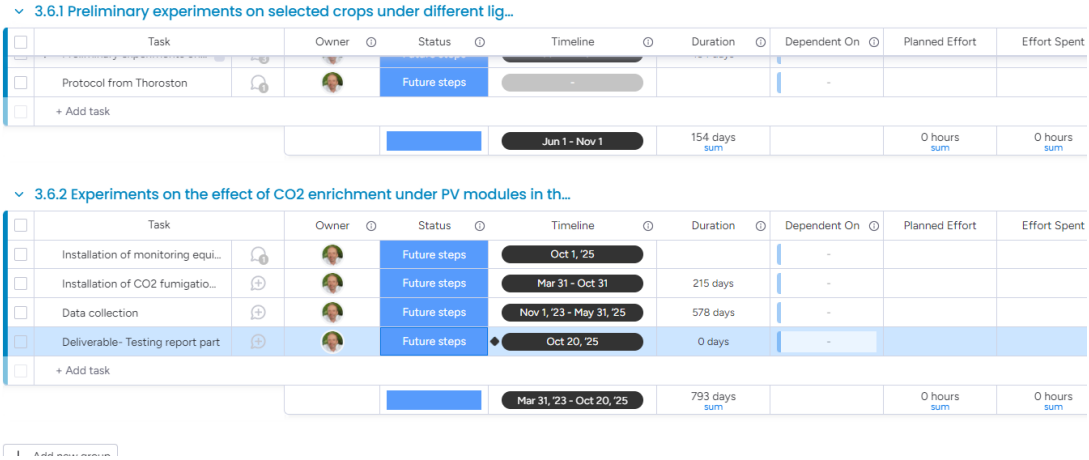
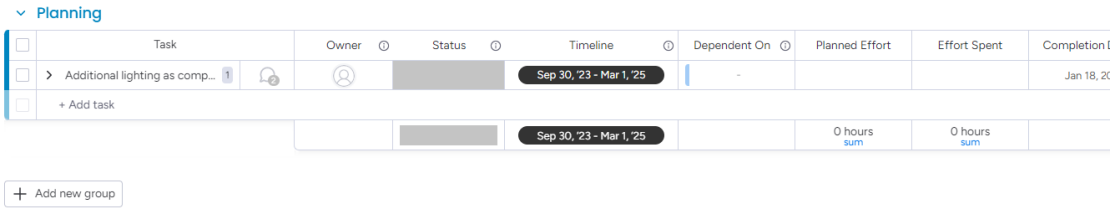
3.6 CO2 enrichment as compensation possibility



3.7 Additional lighting as compensation possibility



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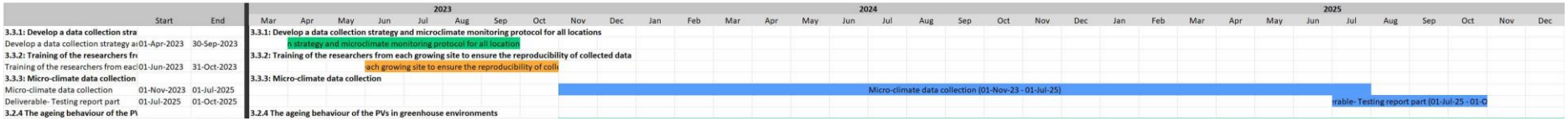
3.2. Modeling of the PV modules performance.

3.3: Greenhouse microclimate measurements inside the greenhouses



3.4 Crop monitoring inside the greenhouses

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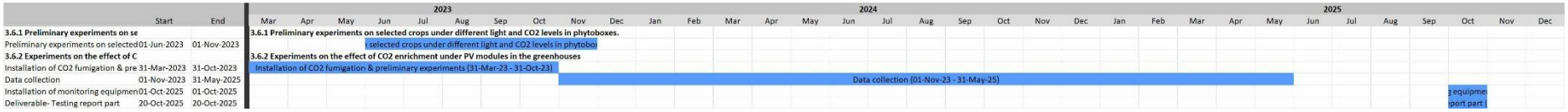
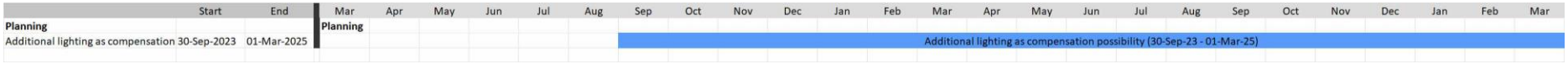
3.5 Greenhouse Water Efficiency

3.6 CO2 enrichment as compensation possibility



3.7 Additional lighting as compensation possibility



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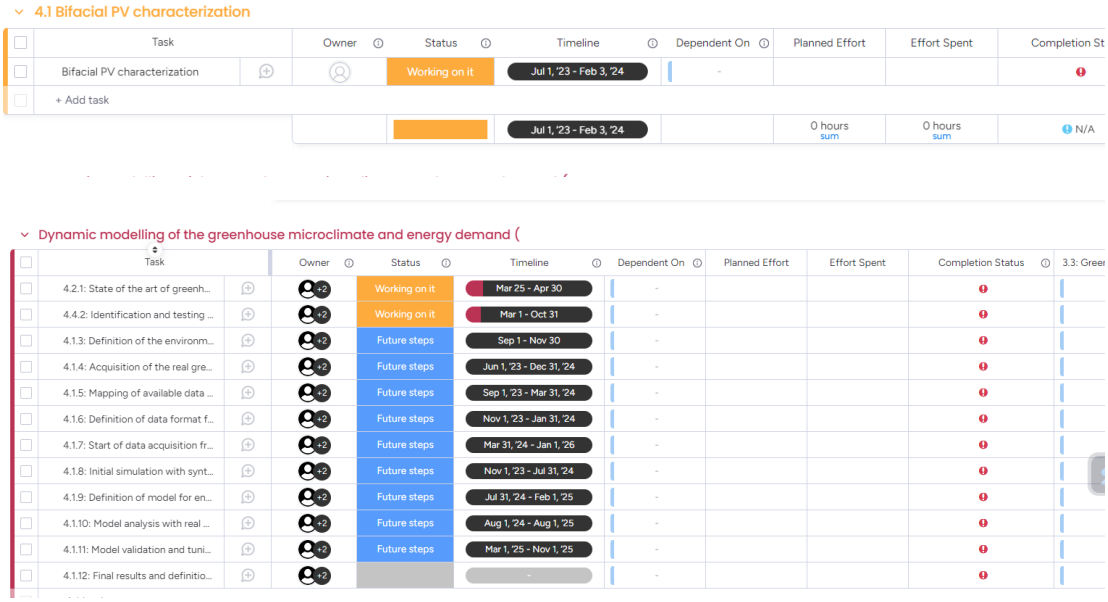
WP 4 Modelling and Digital Twins

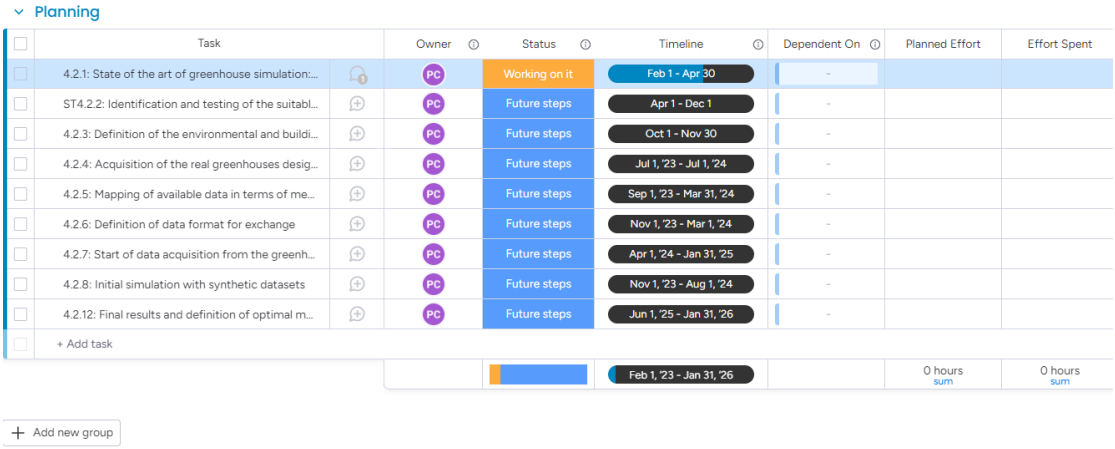
Lead partner Tor Vergata

This work package has specific challenges in the unity and applicability of data leading up to the digital twins which aims to provide a predictive framework for future application on the technology in diverse conditions

4.2 Dynamic modelling of the greenhouse microclimate and energy demand



4.3 CFD modelling of the greenhouse microclimate



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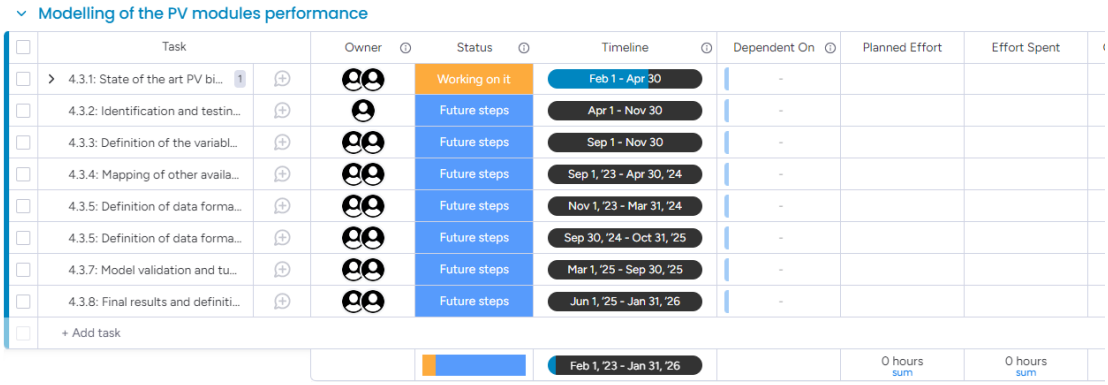
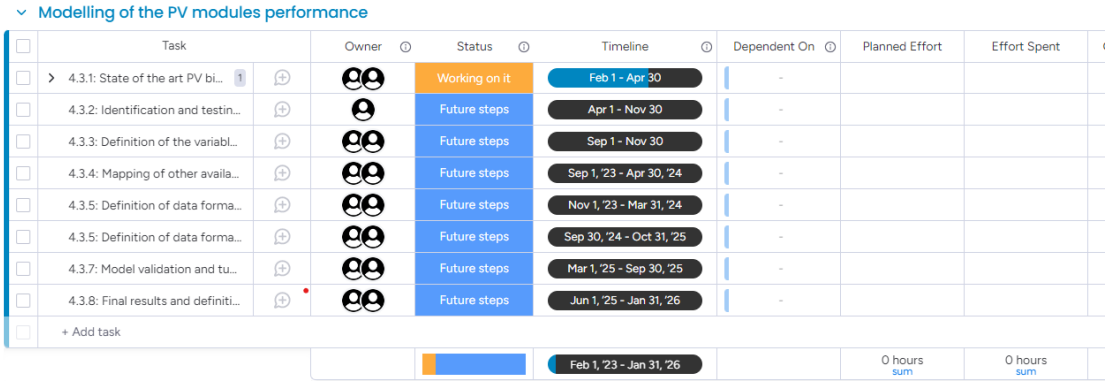
4.4 Modelling of the PV modules performance



Modelling of the PV modules performance

Task	Owner	Status	Timeline	Dependent On	Planned Effort	Effort Spent
4.3.1: State of the art PV bi... 1		Working on it	Feb 1 - Apr 30	-		
4.3.2: Identification and testin...		Future steps	Apr 1 - Nov 30	-		
4.3.3: Definition of the variabl...		Future steps	Sep 1 - Nov 30	-		
4.3.4: Mapping of other availa...		Future steps	Sep 1, '23 - Apr 30, '24	-		
4.3.5: Definition of data forma...		Future steps	Nov 1, '23 - Mar 31, '24	-		
4.3.5: Definition of data forma...		Future steps	Sep 30, '24 - Oct 31, '25	-		
4.3.7: Model validation and tu...		Future steps	Mar 1, '25 - Sep 30, '25	-		
4.3.8: Final results and definiti...		Future steps	Jun 1, '25 - Jan 31, '26	-		
+ Add task						
			Feb 1, '23 - Jan 31, '26		0 hours sum	0 hours sum

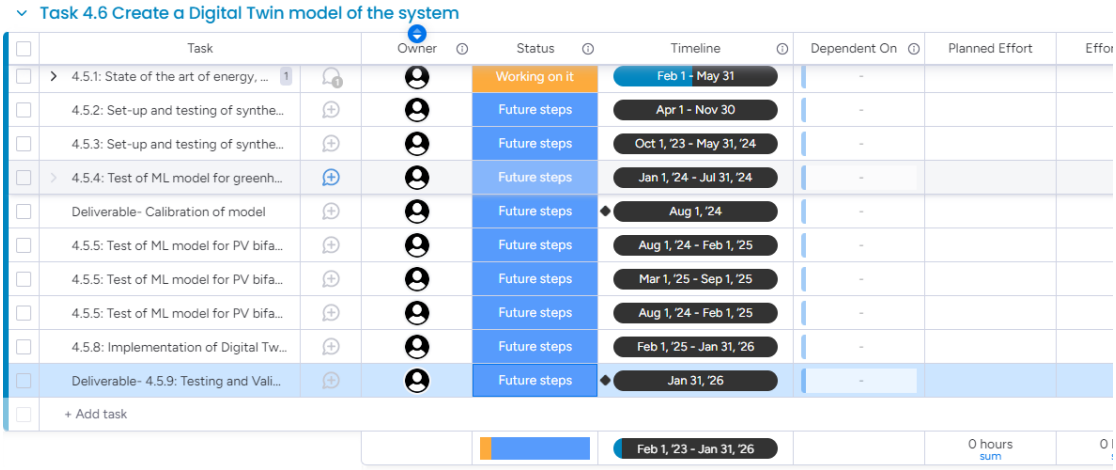
4.5 Water efficiency modelling



Modelling of the PV modules performance

Task	Owner	Status	Timeline	Dependent On	Planned Effort	Effort Spent
4.3.1: State of the art PV bi... 1		Working on it	Feb 1 - Apr 30	-		
4.3.2: Identification and testin...		Future steps	Apr 1 - Nov 30	-		
4.3.3: Definition of the variabl...		Future steps	Sep 1 - Nov 30	-		
4.3.4: Mapping of other availa...		Future steps	Sep 1, '23 - Apr 30, '24	-		
4.3.5: Definition of data forma...		Future steps	Nov 1, '23 - Mar 31, '24	-		
4.3.5: Definition of data forma...		Future steps	Sep 30, '24 - Oct 31, '25	-		
4.3.7: Model validation and tu...		Future steps	Mar 1, '25 - Sep 30, '25	-		
4.3.8: Final results and definiti...		Future steps	Jun 1, '25 - Jan 31, '26	-		
+ Add task						
			Feb 1, '23 - Jan 31, '26		0 hours sum	0 hours sum

4.6 Digital Twins



Task 4.6 Create a Digital Twin model of the system

Task	Owner	Status	Timeline	Dependent On	Planned Effort	Effor
4.5.1: State of the art of energy, ... 1		Working on it	Feb 1 - May 31	-		
4.5.2: Set-up and testing of synthe...		Future steps	Apr 1 - Nov 30	-		
4.5.3: Set-up and testing of synthe...		Future steps	Oct 1, '23 - May 31, '24	-		
4.5.4: Test of ML model for greenh...		Future steps	Jan 1, '24 - Jul 31, '24	-		
Deliverable- Calibration of model		Future steps	Aug 1, '24	-		
4.5.5: Test of ML model for PV bifa...		Future steps	Aug 1, '24 - Feb 1, '25	-		
4.5.5: Test of ML model for PV bifa...		Future steps	Mar 1, '25 - Sep 1, '25	-		
4.5.5: Test of ML model for PV bifa...		Future steps	Aug 1, '24 - Feb 1, '25	-		
4.5.8: Implementation of Digital Tw...		Future steps	Feb 1, '25 - Jan 31, '26	-		
Deliverable- 4.5.9: Testing and Vali...		Future steps	Jan 31, '26	-		
+ Add task						
			Feb 1, '23 - Jan 31, '26		0 hours sum	0

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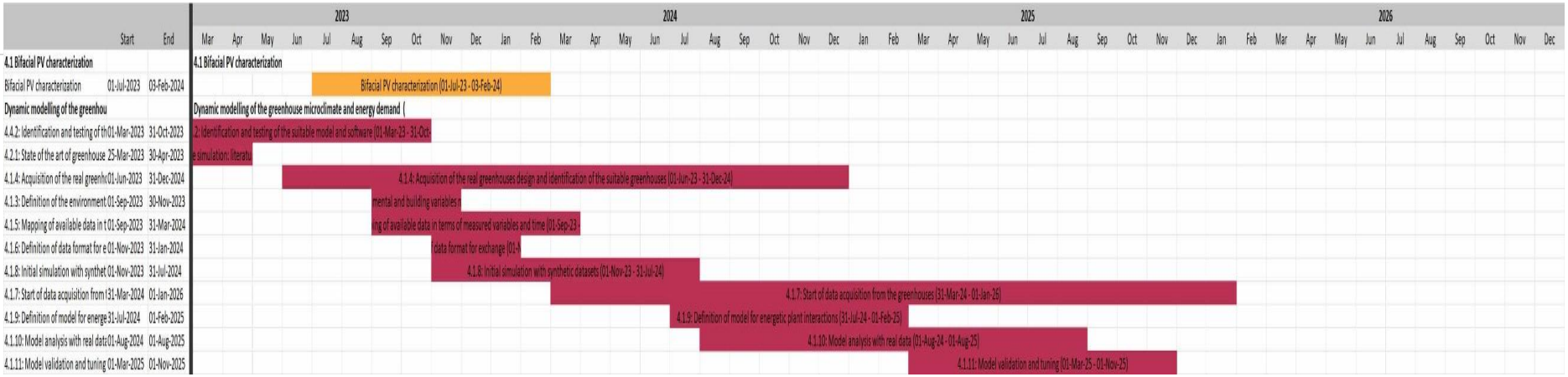
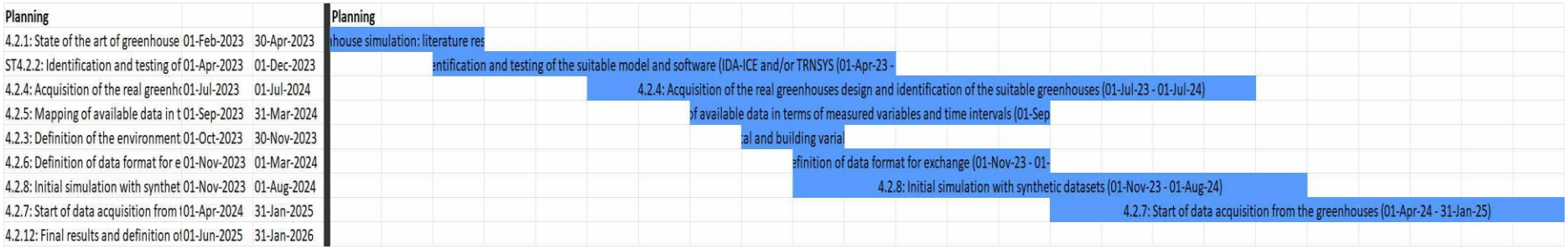
4.2 Dynamic modelling of the greenhouse microclimate and energy demand



4.3 CFD modelling of the greenhouse microclimate



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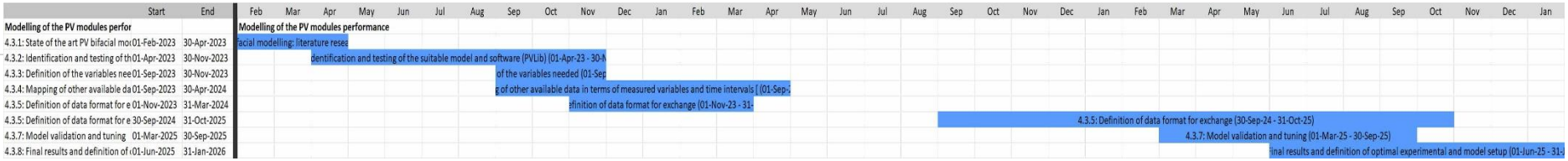
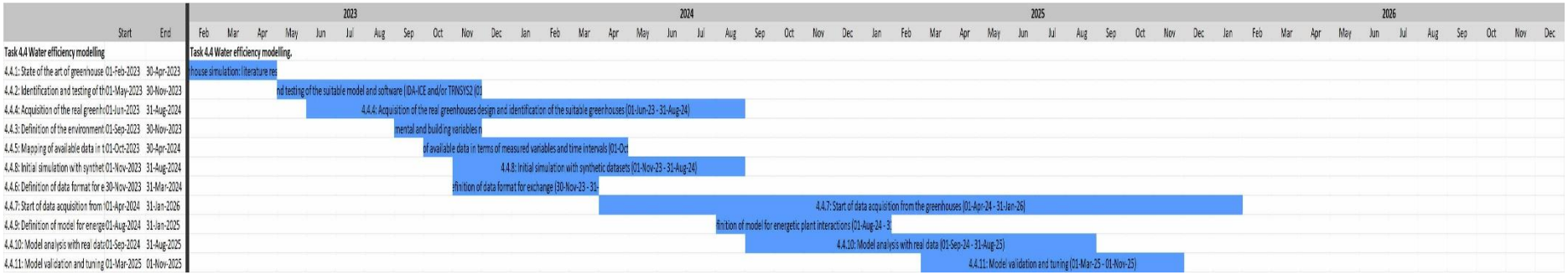
4.4 Modelling of the PV modules performance



4.5 Water efficiency modelling



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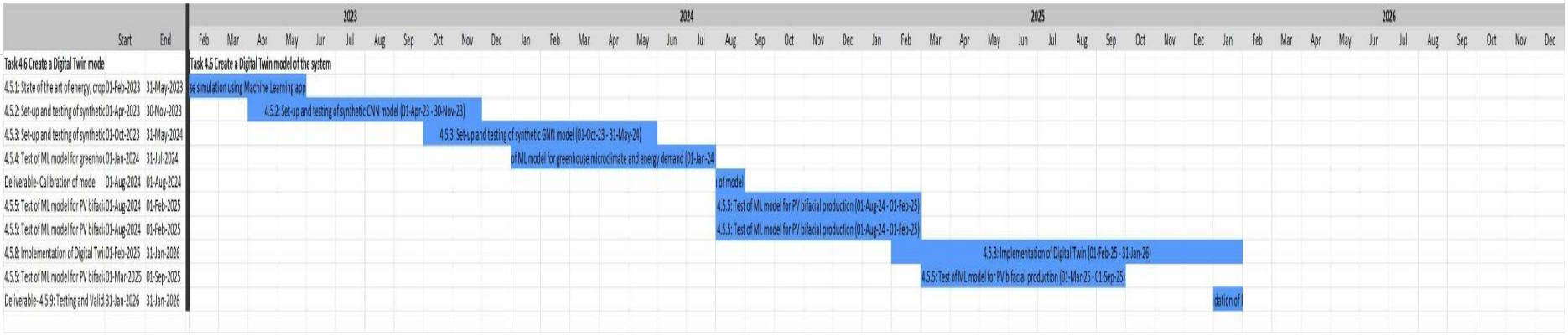
4.6 Digital Twins



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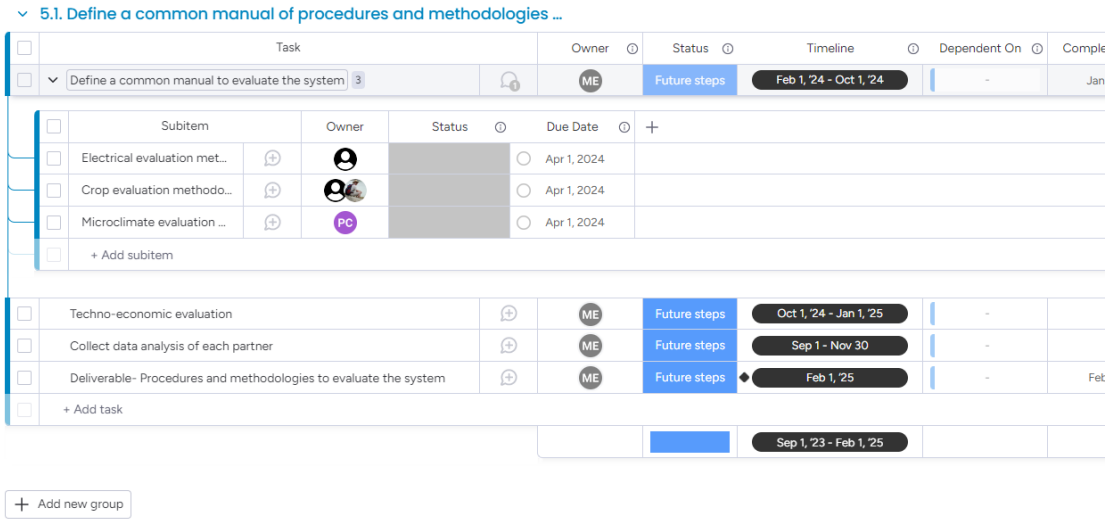
WP 5 Validation

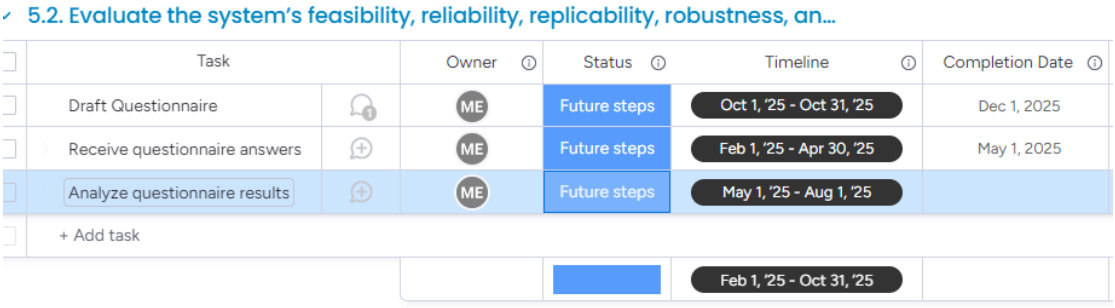
Lead Partner Alzahrawy

The main vulnerability in this work package is its dependence on data d=generated in WP 2, 3, and 4

5.1. Define a common manual of procedures and methodologies to evaluate the system



5.2. Evaluate the system's feasibility, reliability, replicability, robustness, and ease of maintenance from an end user perspective



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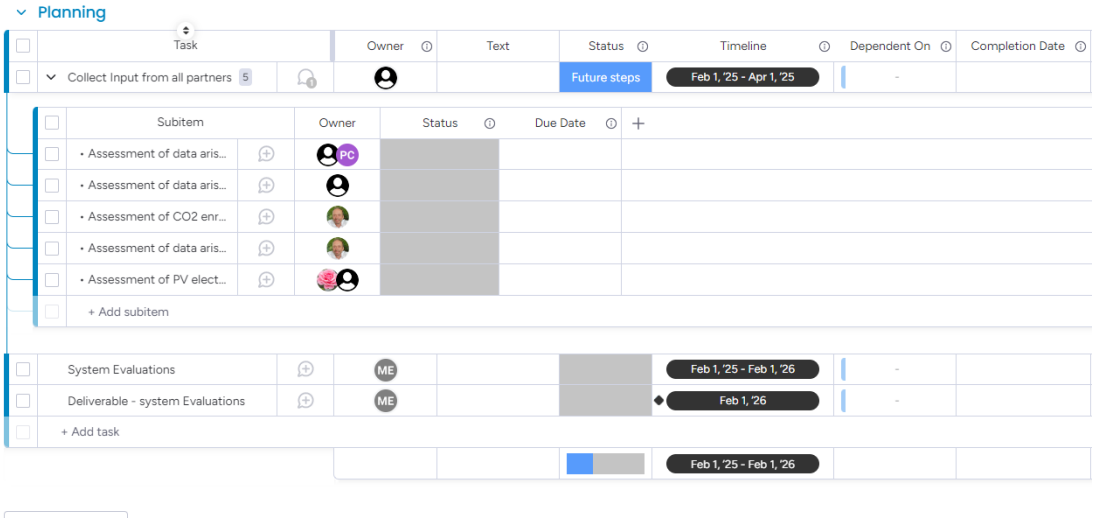
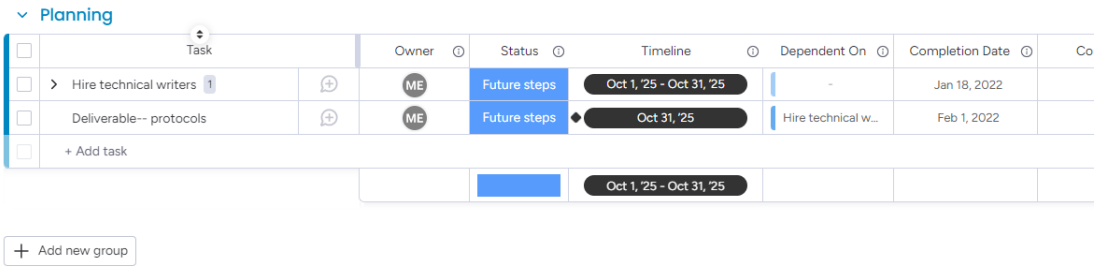
5.3 Evaluate the system using the following KPIs: PV ground coverage ratio, electric yields, crop yields and water consumption



5.4 Develop technical protocols that will allow introduction of the system (PV tracker and CO2 enrichment technologies) in low, medium and medium high insolation environments



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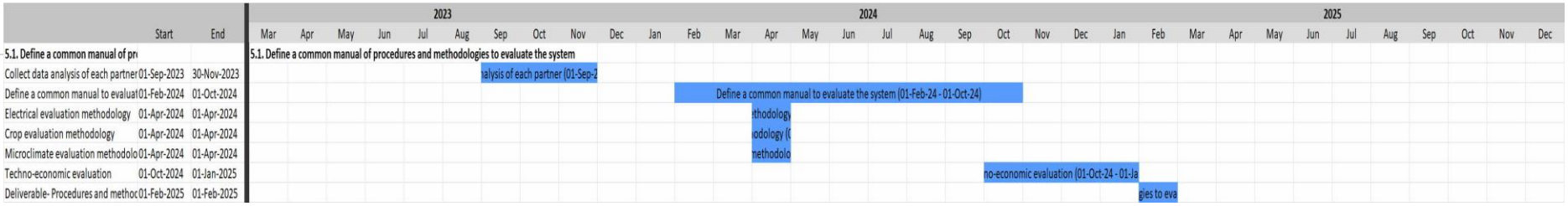
5.1. Define a common manual of procedures and methodologies to evaluate the system



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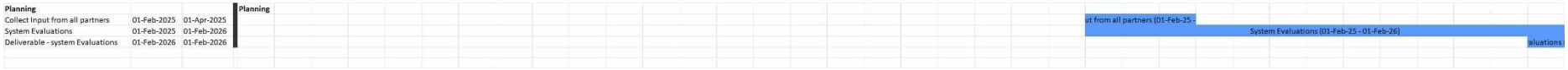

5.4 Develop technical protocols that will allow introduction of the system (PV tracker and CO2 enrichment technologies) in low, medium and medium high insolation environments

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WP6: Sustainability (Environmental, economic and social)

This work package has two sections, the social aspect that deal with farmers and the second in environmental assessment. The challenge in the first section in mainly organizational. In the second in its dependency on data negated by experimental partners

6.1 Researcher training

Researcher training

Task	Owner	Status	Timeline	Dependent On	Completion Date	Completion Status
Researcher training	AV		Mar 23 - Jul 1	-	Jul 1, 2022	
UTOV: definition of trainers' p...	AV	Done	Feb 1 - Mar 1	-	Mar 1	Done On Time
In each country: 2 trainers are...	AV	Done	Mar 1 - Apr 30	-	Apr 30	Done On Time
Design of the training progra...	AV	Working on it	Mar 1 - Apr 30	-	Apr 30	
Organisation/logistics of the t...	AV	Future steps	Apr 1 - 30	-	Apr 30	
Training session: (onsite + hy...	AV	Future steps	May 1 - 31	-	May 31	
Follow-up to the training sess...	AV	Future steps	Jun 1 - Jul 31	-	Jul 31	
Follow-up to the training sess...	AV	Future steps	Jun 1 - Jul 31	-	Jul 31	
+ Add task						
			Feb 1 - Jul 31			0 sum

+ Add new group

6.2 Analysis of farmers' mental and social representations of technology and

Analysis of the mental and social representations of farmers in ge...

Task	Owner	Status	Timeline	Dependent On	Completion Date
10 non-standard qualitative interviews 1			Aug 1, '23 - Oct 1, '25	-	Jan 18, 2022
3 focus groups in each country			Oct 2, '25 - Dec 3, '27	10 non-standar...	Jan 20, 2022
+ Add task					
			Aug 1, '23 - Dec 3, '27		

Selection of a group of 10 farmers for each partner country for:

Task	Owner	Status	Timeline	Dependent On	Completion Date
Selection of a group of 10 farmers for eac...			Aug 1, '23 - Oct 1, '25	-	
+ Add task					
			Aug 1, '23 - Oct 1, '25		

Sentiment analysis on a body of text identified in the groups present on far...

Task	Owner	Status	Timeline	Dependent On
Sentiment analysis on a body of text ident...			Aug 1, '23 - Oct 1, '25	-
+ Add task				
			Aug 1, '23 - Oct 1, '25	

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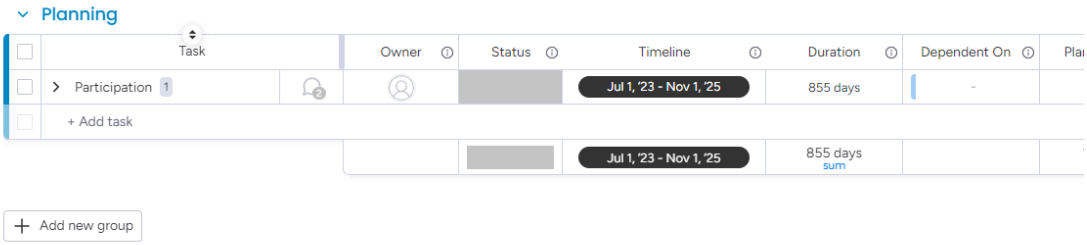
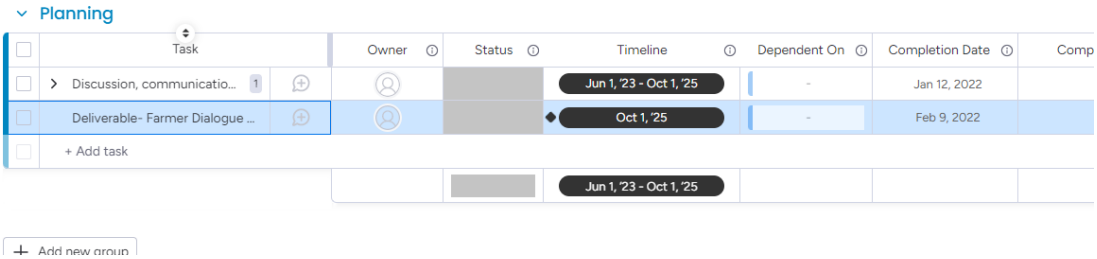
6.3 Participation

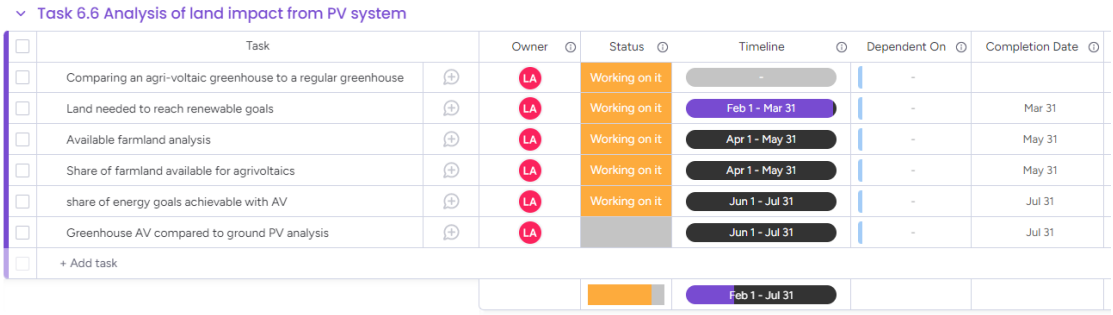


6.4 Discussion, communication and dissemination of results

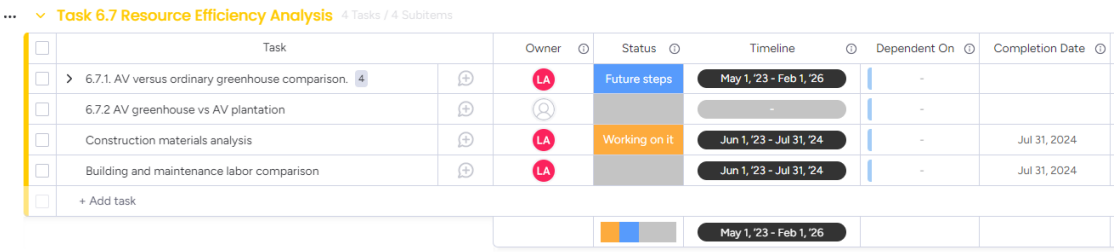


Environmental analysis

Task 6.6 Analysis of land impact from PV system



Task 6.7 Resource Efficiency Analysis



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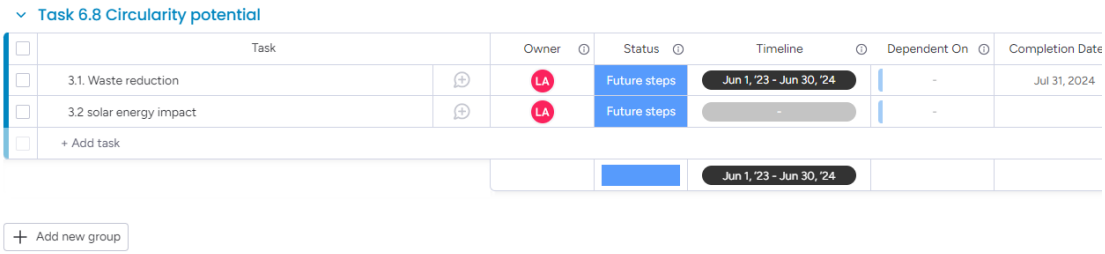
Task 6.8 Circularity potential



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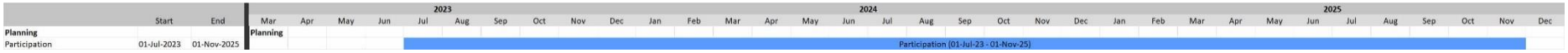
6.1 Researcher training

6.2 Analysis of farmers' mental and social representations of technology

6.3 Participation



6.4 Discussion, communication and dissemination of results

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6.5 Evaluation of change in mental and social representations with Environmental tasks

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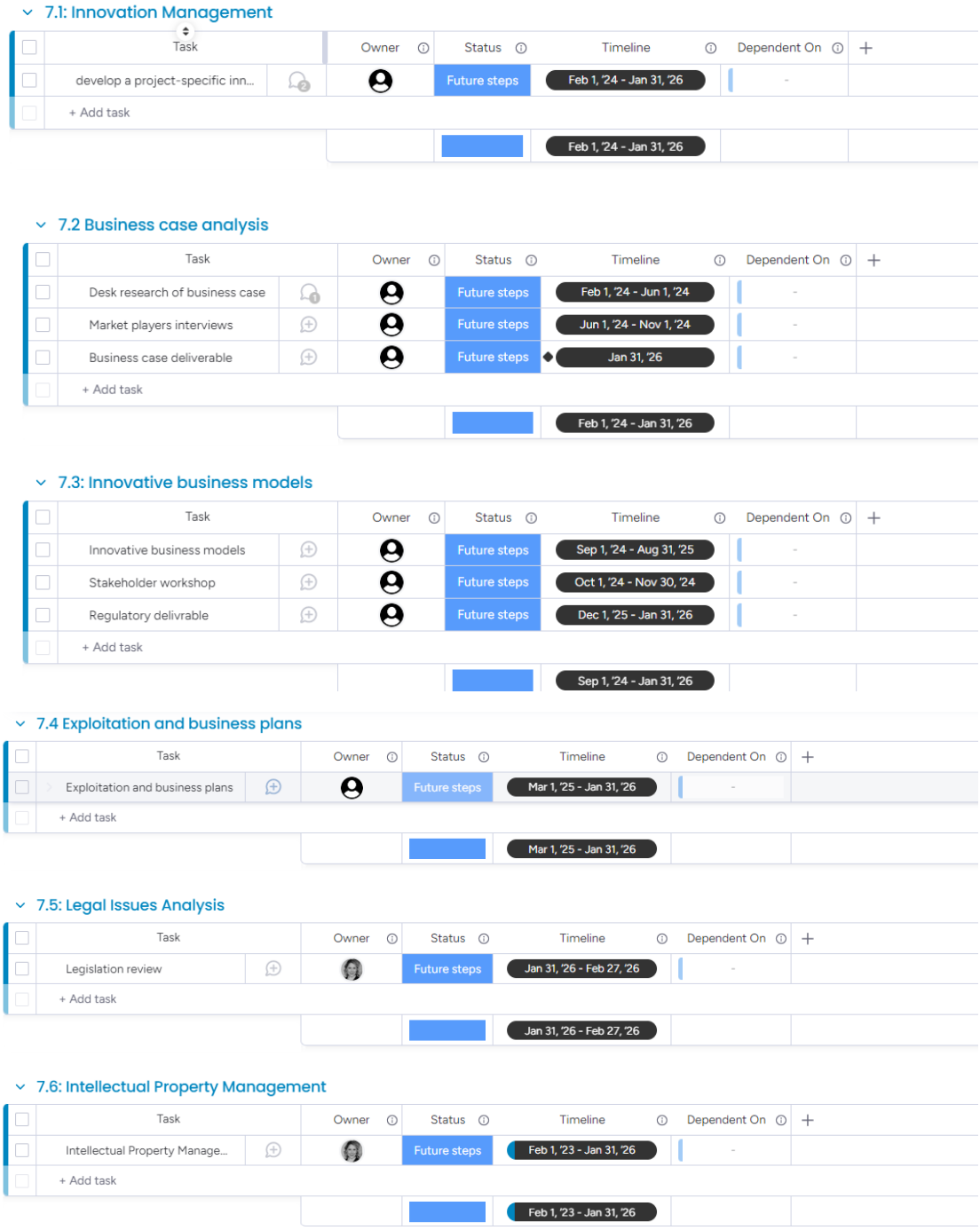
WP 7 Innovation Management

WP leader Interteam

The main challenge in this work package is in adapting the business plan to different regulatory and business conditions in different locations

7.1: Innovation Management



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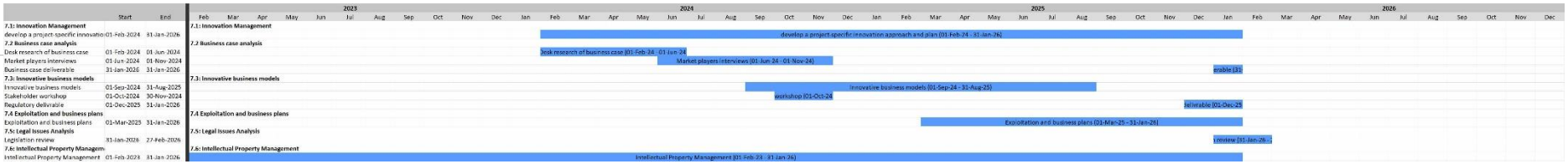
WP 7 Innovation Management



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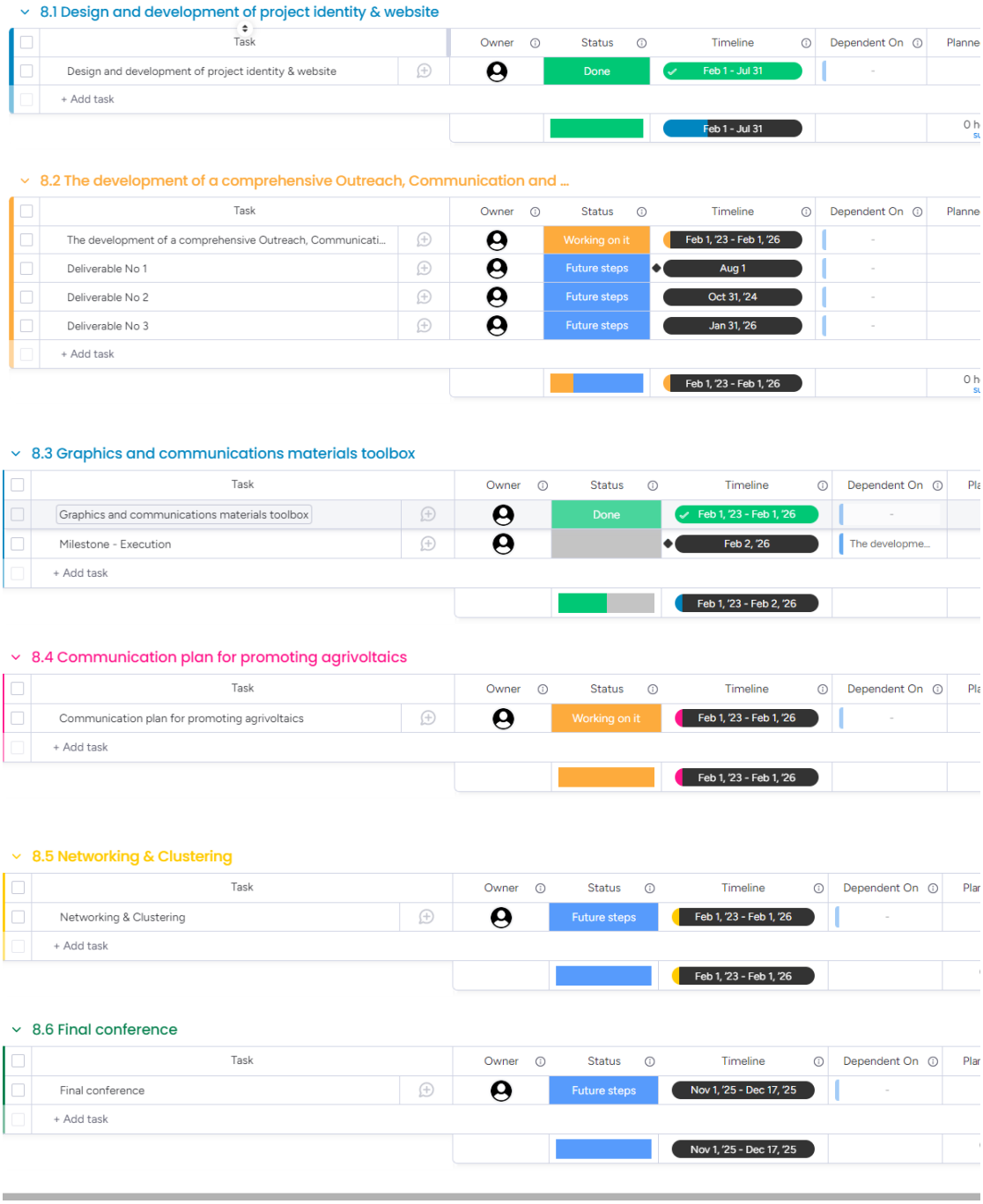
WP8: Dissemination & Visibility

WP leader Interteam

Judging from the good start made in this WP there are not many challenges in ut\



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WP8: Dissemination & Visibility

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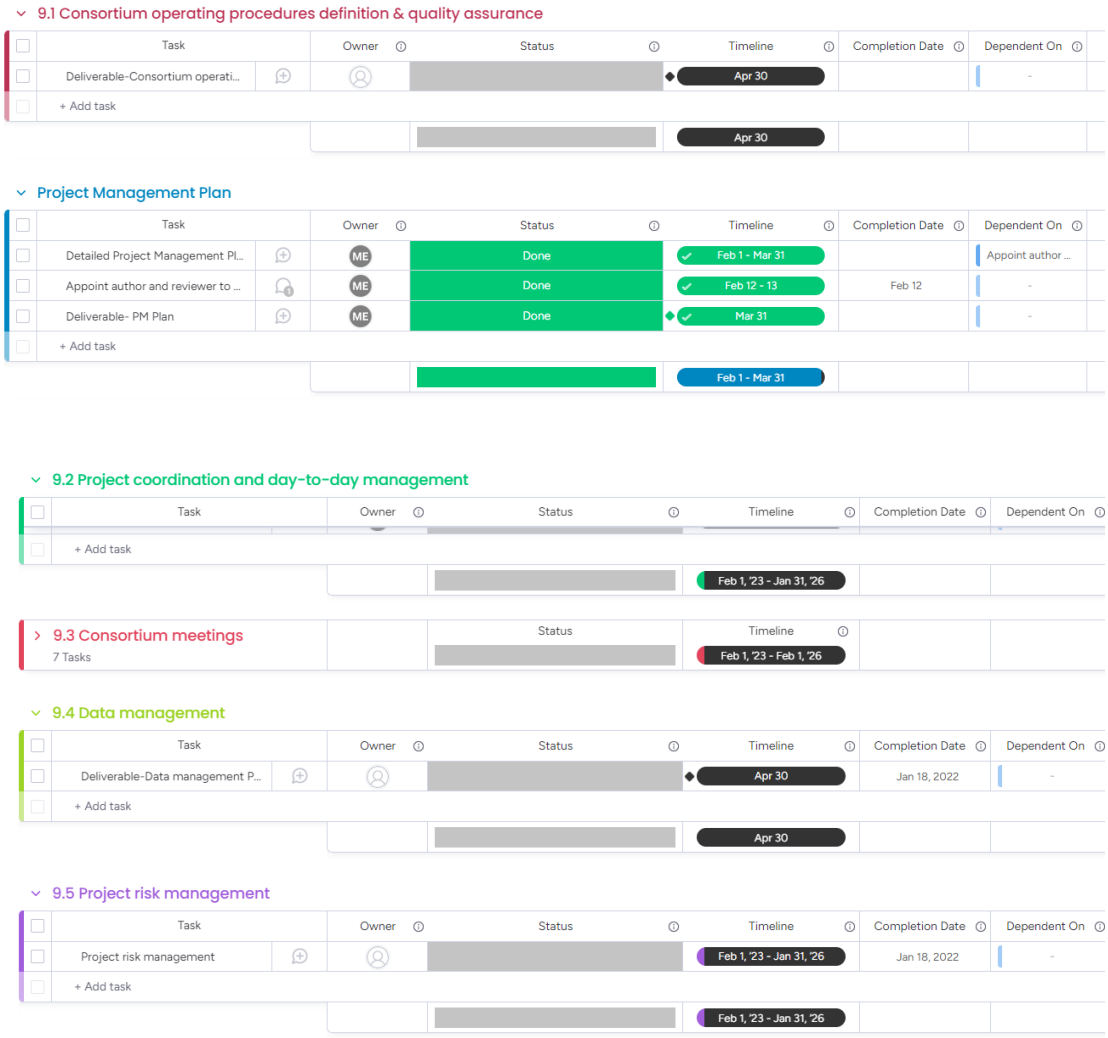
WP9: Project Management

WP leader Alzahrawy

The main challenge in this work package in maintaining consistently proficient management throughout the entire three years



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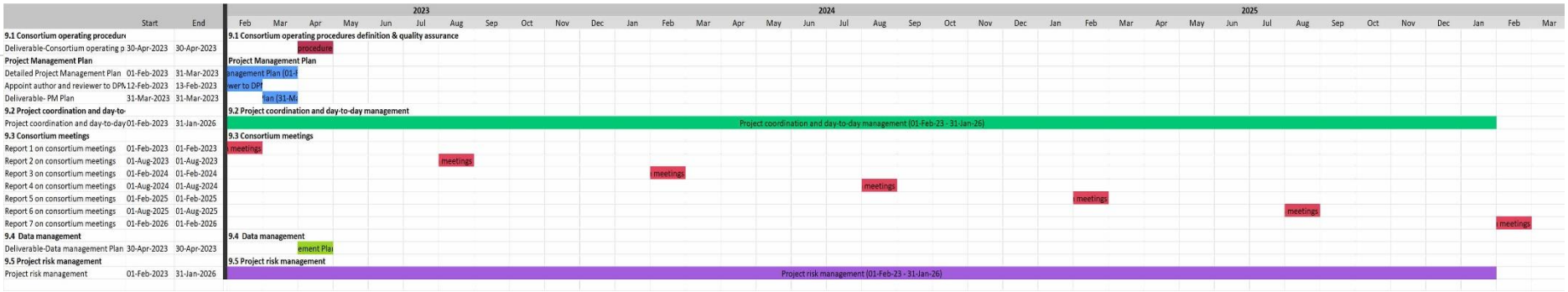
WP9: Project Management



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