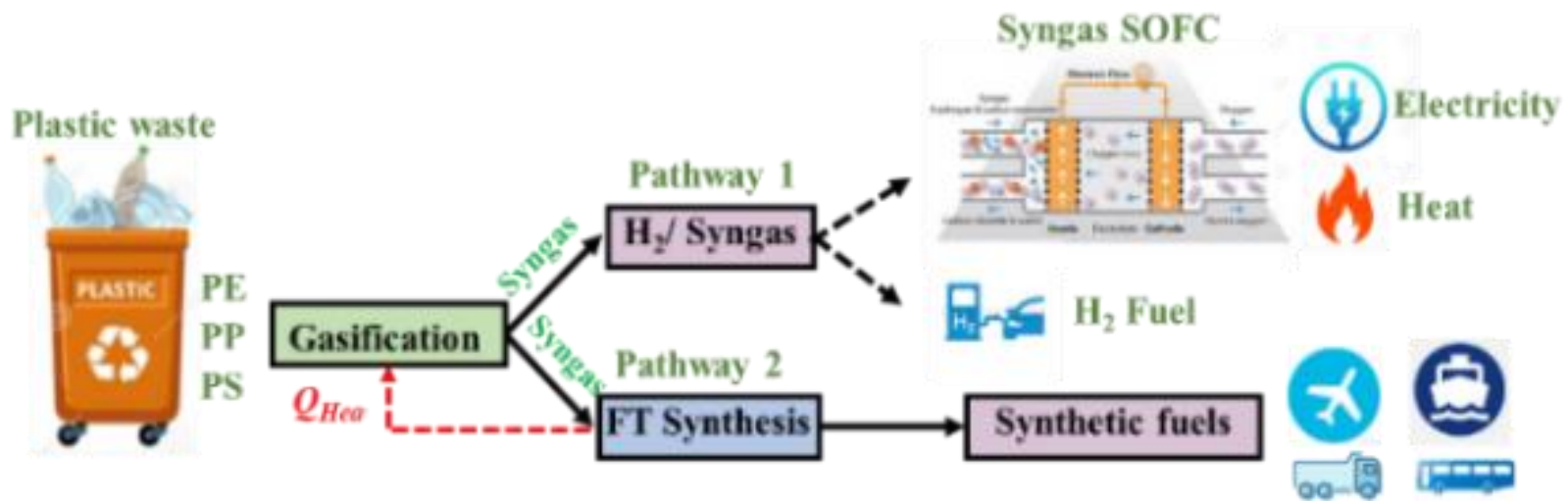


A Sustainable integrated Route to convert waste PLAStics to H₂ and low carbon liquid fuels

Overall aim: Utilisation of plastic waste to generate low carbon H₂ and liquid fuels to decarbonize the stationary power generation and transport sectors



SURPLAS concept and potential applications

Call: HORIZON-MSCA-2021-PF-01

Maximum grant amount: 169,326.71 EUR

Project duration: 24 months

SURPLAS

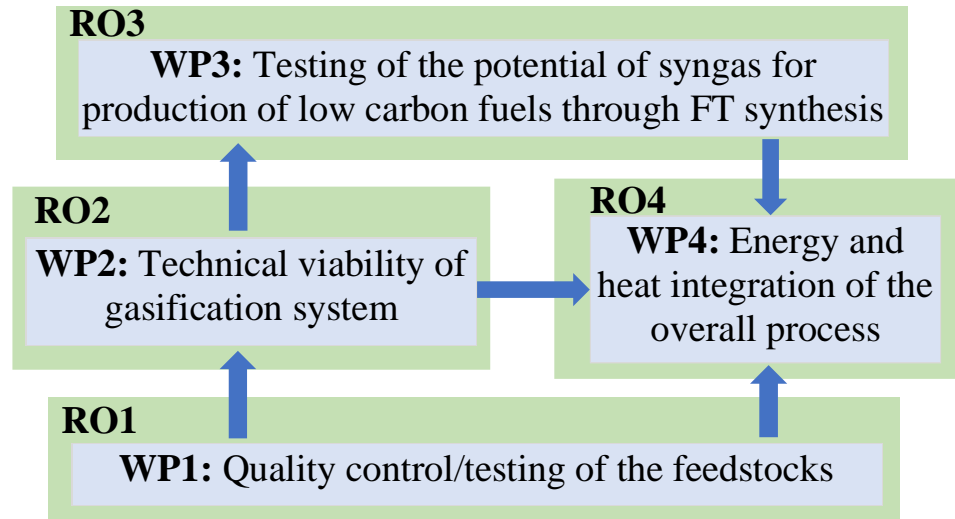
Research and Innovation Objectives (ROs)

RO1 - Validate plastic waste feedstock for the production of H₂/syngas and synthetic fuels through an integrated gasification/FT synthesis process.

RO2 - Identify optimum operating conditions for the catalyst-aided gasification technology.

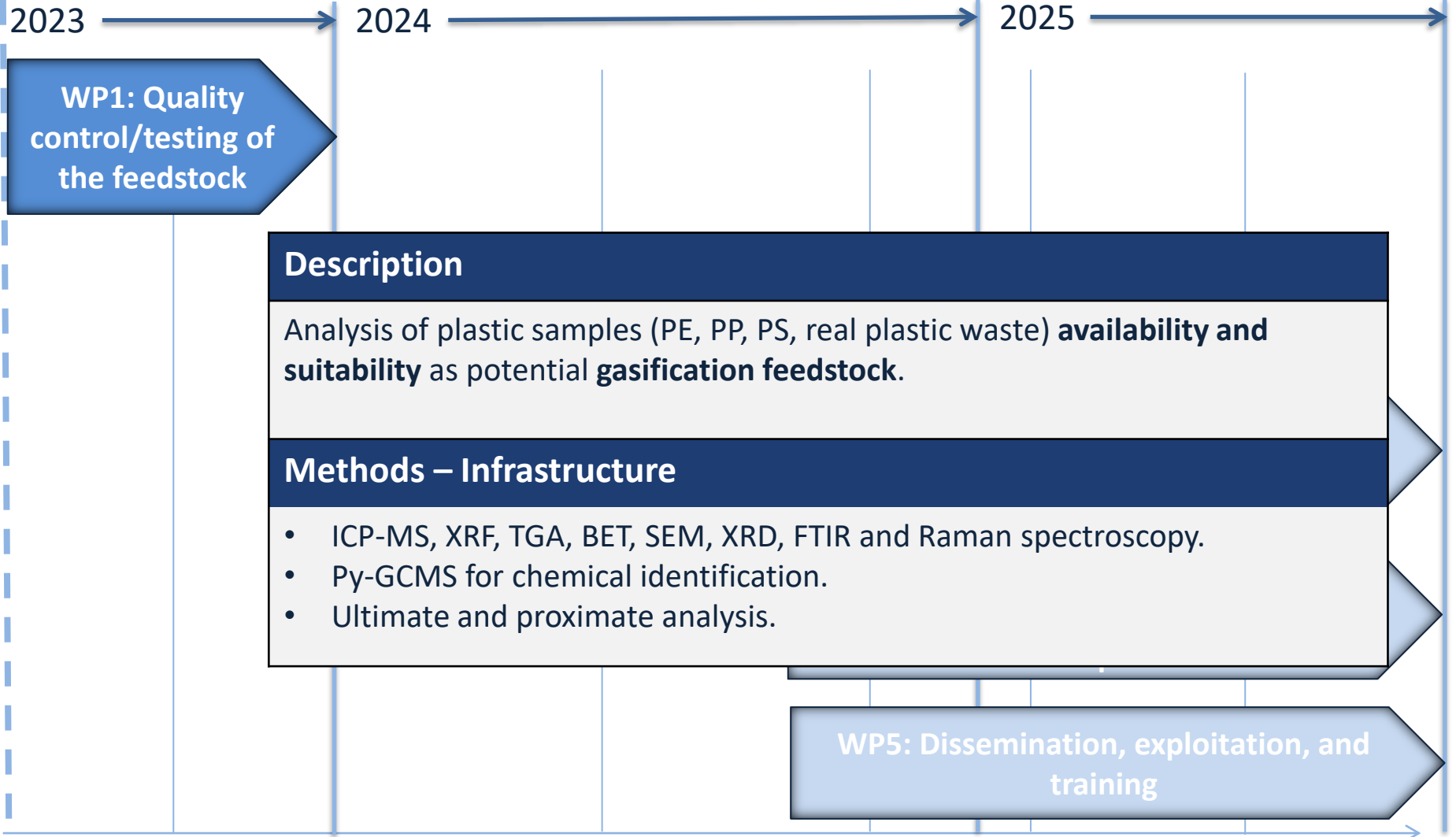
RO3 - Convert syngas mixtures toward Fischer-Tropsch (FT) liquid synthetic fuels using advanced nanocatalysts.

RO4 – Design (mass-energy balances, sizing) and economical/environmental assessment of the integrated process design for large-scale practical applications.

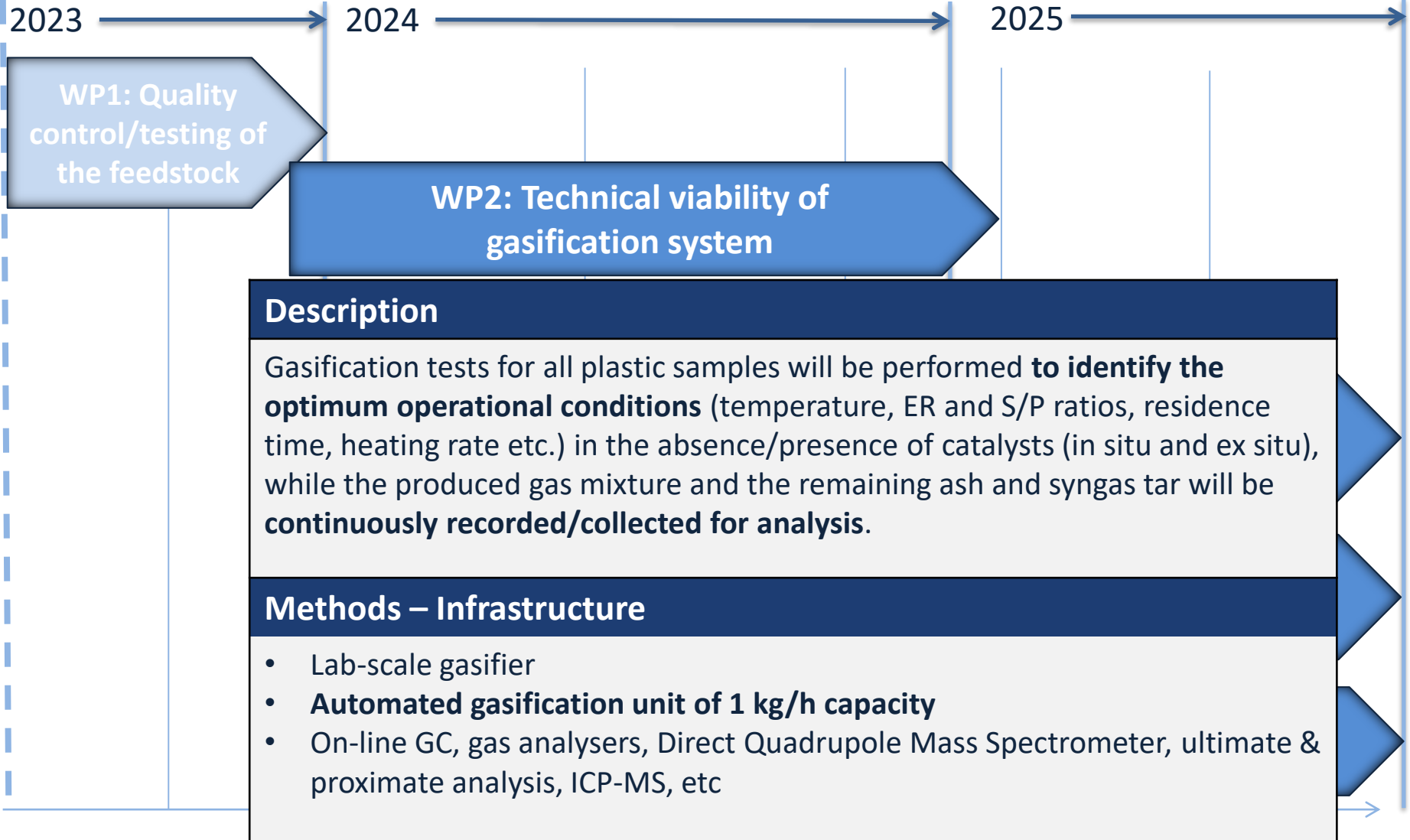


WP5: Dissemination, exploitation, and training

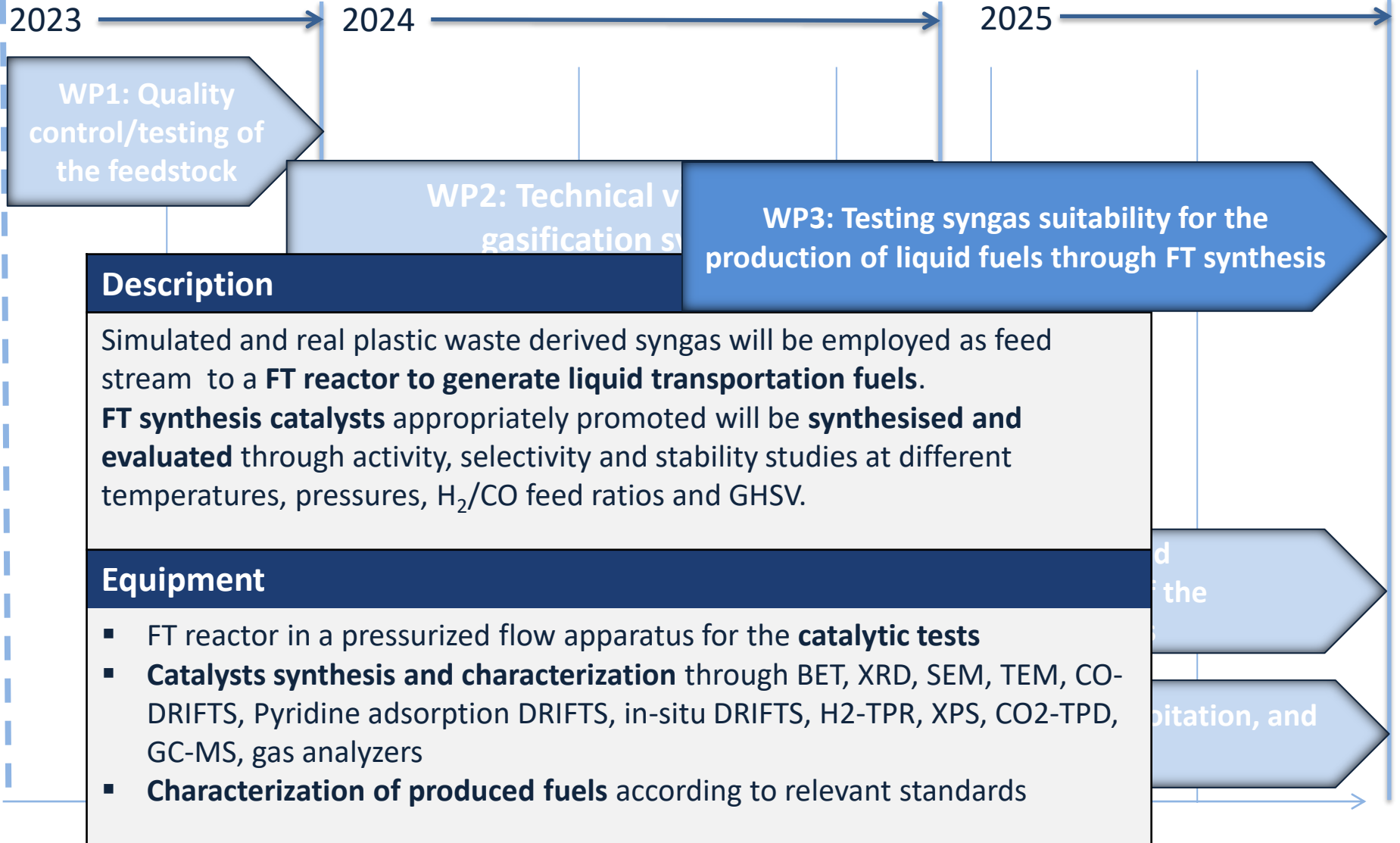
SURPLAS Methodology



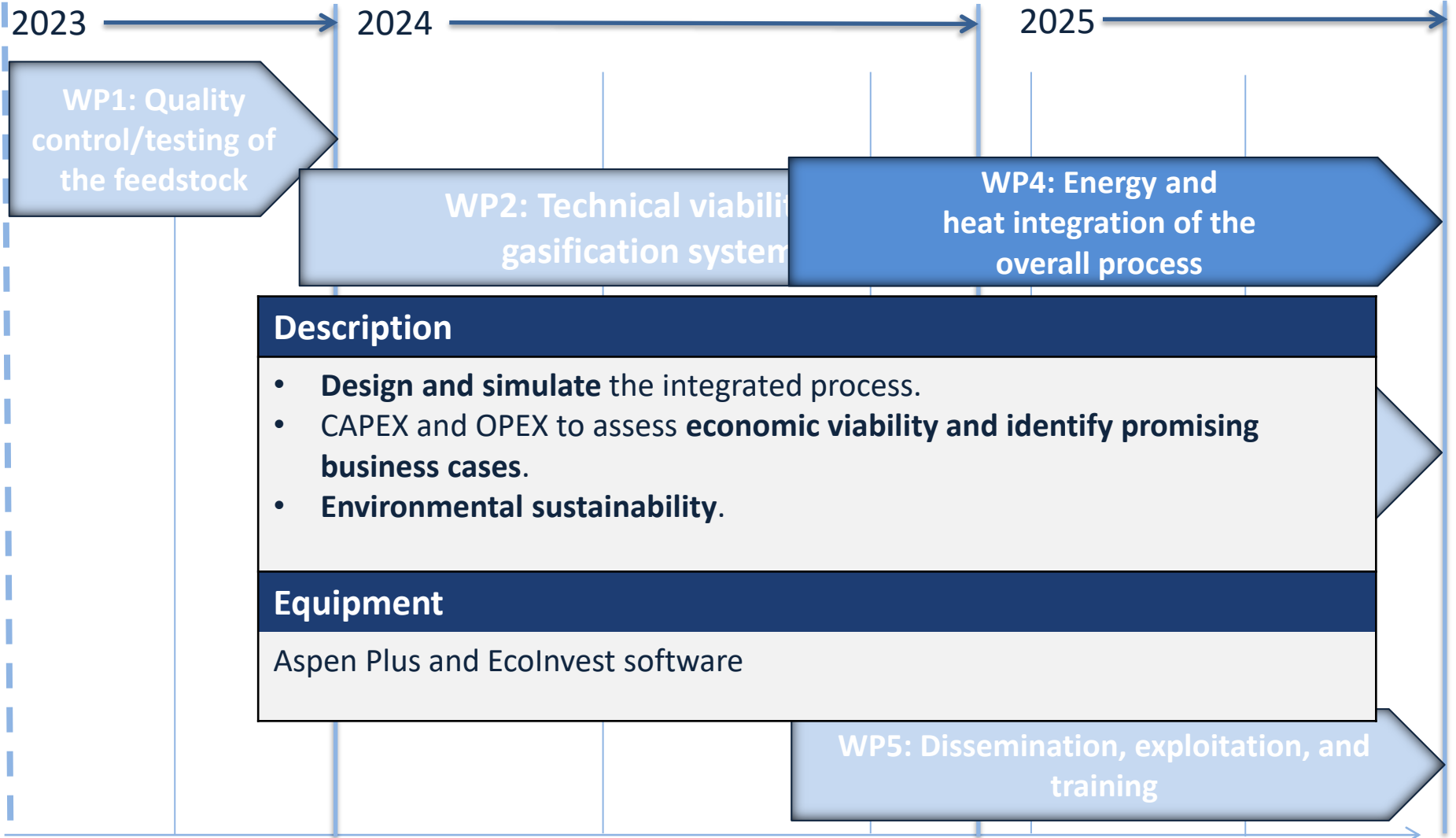
SURPLAS Methodology



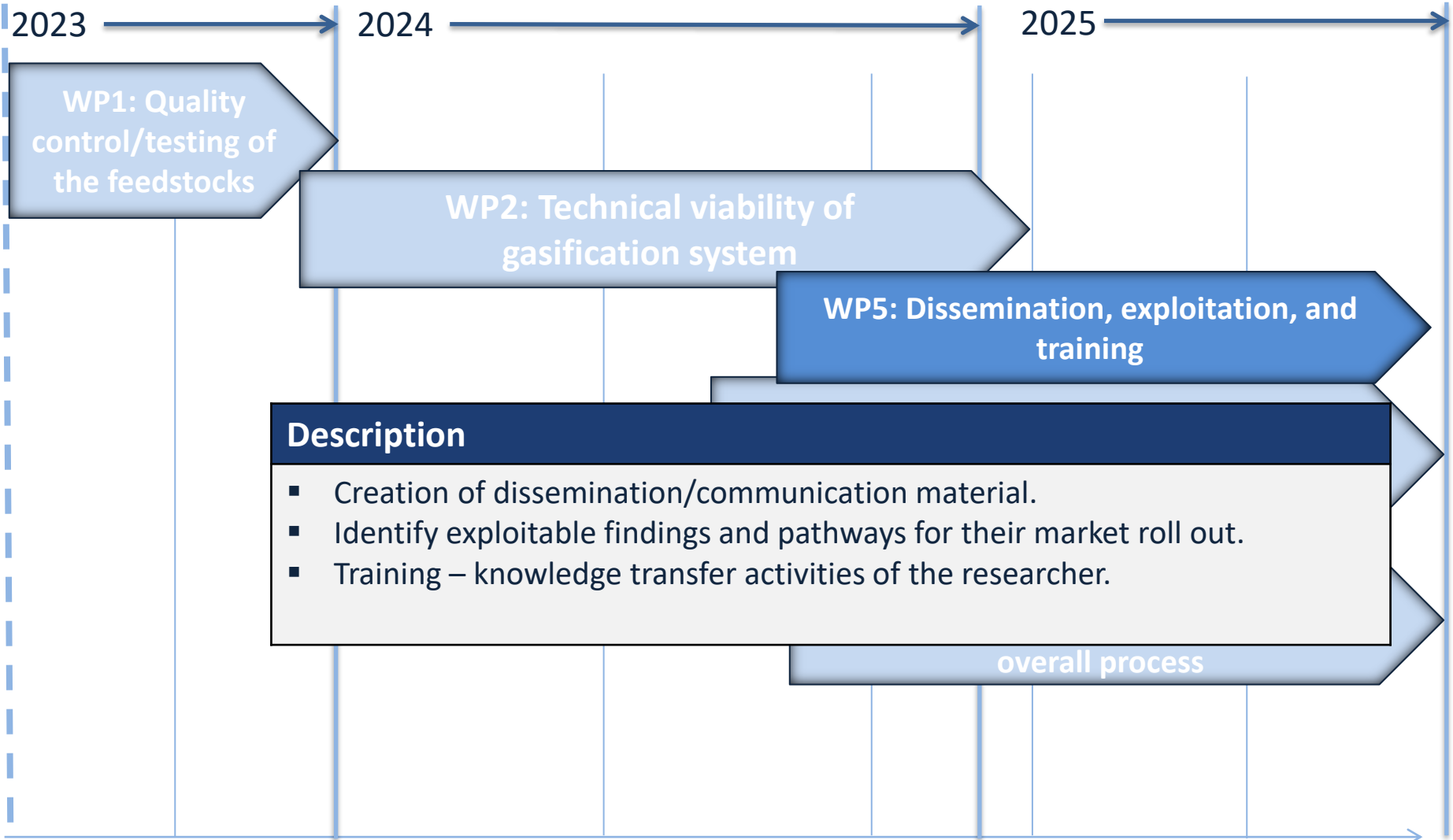
SURPLAS Methodology



SURPLAS Methodology



SURPLAS Methodology



Structure of SURPLAS

Criterion 1 - Excellence

Scientific Element

- Bottom-up approach
- Clearly presented ROs
- Connect WPs to ROs
- Highlight novelties/breakthroughs in relation to the ROs
- Include gender aspects, multidisciplinary, Open science practices, research data management plan

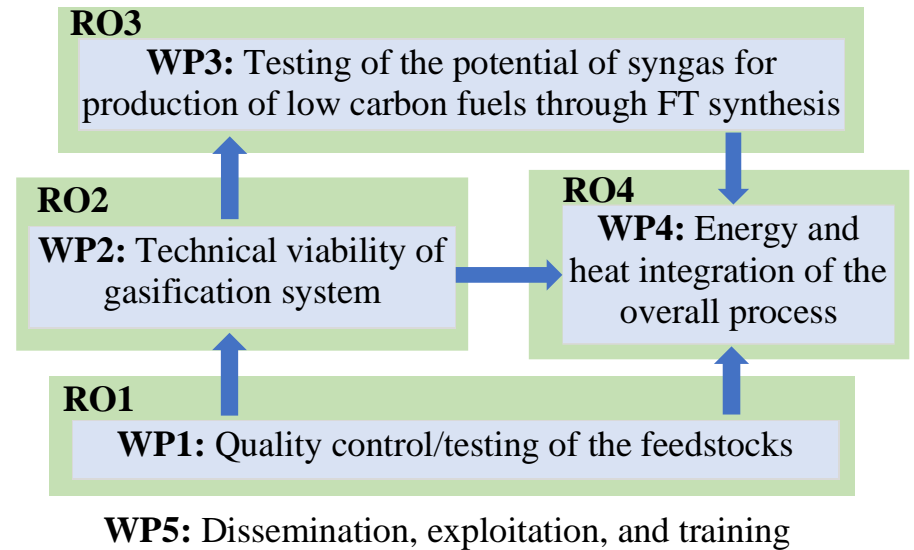


Table 1. Novelties/breakthroughs of SURPLAS in relation to the Research and Innovation objectives

RO1	Fundamental understanding of the relationship between plastic composition and H ₂ /syngas and FT synthesis liquids generation.
RO1-RO2	Gasification of 'real' plastic waste advances beyond the current SoA in energy conversion technologies.
RO3	Suitability of plastic waste derived syngas as feedstock for FT synthesis liquid fuels is breakthrough.
RO4	Establishment of a sustainable and viable concept to simultaneously generate energy and manage waste for real scale applications.

Structure of SURPLAS

Criterion 1 - Excellence

The Researcher

- *Should demonstrate a diverse set of skills particularly relevant in the proposal*
- *Potential to reach professional maturity after the fellowship*
- *Capable to transfer knowledge*

Training

- *Well defined TOs*
- *Develop the competences of the Researcher*
- *Include engagement with all levels of the Host institute (e.g. research team, departments, etc.)*

Two-way transfer of knowledge

Researcher

Host

Skill1



Skill2

Structure of SURPLAS

Criterion 2 - Impact

Dissemination and Communication plan

- Broad range of target audiences;
- Social media;
- Engagement with the public;
- Connect with Gantt Chart

Dissemination/Communication channel/strategy	Target Audience
Emerging conclusions document in a publishable format for relevant platforms/networks	Academic/Industry/Policy makers/ Energy, petrochemical and waste companies
Project logo, brochure and website	Academic/Industry/Policy makers
Open access publications in journals (3) and confs' proceedings (2)	Academia
Engagement with media and employ social media tools (e.g., Twitter)	Academic/Industry/Policy makers/Public
Laboratory tours and presentations to students.	General public
Raise public awareness of science; through formal lectures, workshops or seminars (min. 2 during the project's lifetime)	General public
Attend/present at industry/public events (min. 3 participations)	Industry/Policy makers
Releases on local and national press	General public /Industry
A video explaining the SURPLAS concept	Energy, petrochemical, waste companies
Participation in open days and in the Night for Researchers events	General public

Feedback by the Experts

- *The planned communication and public engagement activities (their objectives, main messages, tools and channels are credibly described and articulated.*
- *The goals for scientific publications and communications are adequate, taking into account the potential market valorisation of the results.*

Structure of SURPLAS

Criterion 2 - Impact

Further comments we received in relation to Criterion 2

Career progression of the researcher

- *The proposal convincingly explains **how the fellowship will strengthen the scientific and communication competencies of the researcher.***
- *The project activities and results will contribute to **broaden the research employment perspectives,** in particular at the academic level.*

Management of intellectual property, foreseen protection measures

- *Adequate **plans to protect the intellectual property** that may be generated in the project are given in the proposal, including not only patent protection but also the potential creation of a spin-off company based on the results.*

Project Impact

- *The scale and importance of the expected scientific, societal and economic impacts are high as they are outlined in the proposal.*
- *The results are expected to have a **long term impact beyond the immediate scope and duration of the proposal** not only in plastic waste processing but also in other areas, such as biomass processing for fuel processing, thus contributing to a more circular economy.*

Structure of SURPLAS

Criterion 3 – Quality & efficiency of implementation

Gantt chart

Table 4. Gantt chart.

Work Tasks Months	Year 1												Year 2											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Settlement																								
WP1	1.1-1.2		1.3																					
WP2				2.1	2.2						2.3													
WP3										3.1	3.2							3.3						
WP4											4.1									4.2				
WP5	5.1		5.2										5.3											
Deliverables (D)	D5.1 D5.5		D1.1			D5.8					D5.2 D5.5	D5.3 D5.4 D5.6		D2.1				D3.1 D5.2			D5.4		D5.3	D3.2 D4.1 D4.2 D5.2 D5.7
Milestones (M)	M1, M11		M2			M3					M4	M5, M7							M6	M8	M9			M10
Communication	Continuous																							
Internal Meetings	Weekly Meetings																							
TOs	TO1		TO2			TO4	TO7	TO6	TO7	TO8	TO5	TO3	TO4					TO8				TO6	TO7	
KTOs	Continuous																							
Advisory panel																								
Bibliographic update	Continuous																							
Deliverables:	D1.1 Report on results from feedstock availability and characterization [M3] D2.1 Report on results of plastic waste gasification [M14] D3.1 Synthesis protocol and characterization of FT catalysts [M18] D3.2 Report on results of FT synthesis process [M24] D4.1 Report on the energetic and feasibility assessment of SURPLAS process [M24] D4.2 Exploitation road map and market roll out prospects of SURPLAS process [M24] D5.1 Website [M2]; D5.2 Publications in journal articles [M11, M18, M24] D5.3 Participation in conferences [M12, M23] D5.4 Report on training activities [M12, M21] D5.5 Review and update of dissemination/exploitation plan [M2, M11] D5.6 Midterm report [M12]; D5.7 Final report [M24]; D5.8 Delivery of DMP [M6]												Milestones M1 Plastic samples available (M2) M2 Gasification testing facilities ready [M3] M3 Successful completion of initial gasification tests [M6] M4 FT synthesis reactor set up ready [M11] M5 First FT catalysts synthesized [M12] M6 Completion of initial FT tests [M19] M7 Midterm evaluation – GO/NO GO decision [M12] M8 First analytical data set from the gasification and FT tests [M10] M9 Selection of sensitive model parameters for optimisation [M21] M10 Project final technical and management report [M24] M11 Website launched [M2]											

Feedback by the Experts ...

- The number of deliverables and milestones is adequate, and they are well distributed throughout the project timeline.
- An effective and comprehensive description of the activities and the inter-connections among the work packages is provided.

Structure of SURPLAS

Criterion 3 – Quality & efficiency of implementation

Further comments we received in relation to Criterion 3

- An effective and comprehensive **description of the activities and the inter-connections among the work packages** is provided.
- A good **risk and mitigation plan**, including the potential risks associated with the research plan.
- Facilities and infrastructure at the **host institution are appropriate**. In particular, well-equipped modern laboratories housing a wide range of specialised analytical equipment, lab-scale reactors and software tools will be made available.
- The **hosting arrangements** are very good.

Why is your host institution the perfect location for the proposed work ?

Suggestions from our own experience

- Have a look at previous successful MSCA proposals, if available;
- Pick a breakthrough idea and start writing on time and in the correct structure;
- Make a lot of cross-references throughout the overall proposal
 - ❖ Connect WPs to ROs all the way down to individual tasks and TOs.
 - ❖ Connect novelties/breakthroughs to ROs and overall aim.
- Use tables/images, but make sure that info is included in the text, as applicable;
- Convincingly explain how
 - ❖ the fellowship will strengthen the scientific/communication competencies of the researcher;
 - ❖ the host institution is the perfect environment for the researcher;
- Convincingly show the two-way researcher-institution transfer of knowledge

The Scholar Dr. Angela Fivga



Questions ?



Pleasure to assist you:
Prof. George Marnellos (gmarnellos@uowm.gr)
Dr. Fivga (angelifivga@gmail.com)