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2DPLOY

2DPLOY Final Event
22 October 2026



Picture: Evonik Industries AG

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AGENDA

WELCOME & INTRODUCTION

16:10 – 16:15

Edoardo Paganelli, A.SPIRE (2DPLOY Consortium Partner)

THE 2DPLOY PROJECT: FROM R&I RESULTS TO INNOVATION FUND DEPLOYMENT

16:15 – 16:30

Kristian Aas, SINTEF – 2DPLOY Coordinator
- Overview of the 2DPLOY project and its objectives
- The 2DPLOY innovation pipeline and methodology
- From project screening and qualification to Innovation Fund proposal preparation
- Key achievements and results of the project
- Outlook: how the 2DPLOY approach can support future deployment projects

FROM CAPACITY BUILDING TO PROPOSAL READINESS: LESSONS FROM THE 2DPLOY COACHING AND TRAINING SUPPORT

16:30 – 16:45

Miet Van Dael, VITO (2DPLOY Consortium Partner)
- The role of Masterclasses and individual coaching in the 2DPLOY pipeline
- Key topics, guidance and resources from the Advanced Masterclasses
- Lessons from reviewing three Innovation Fund pilot applications
- Key recommendations for applicants and future proposal support

FROM QUALIFICATION TO DEPLOYMENT: LESSONS LEARNED FROM THE 2DPLOY METHODOLOGY

16:45 – 17:00

Simona Pace, RINA-CSM (2DPLOY Consortium Partner)
- Lessons learned from applying the 2DPLOY methodology
- Experience from project qualification and validation
- Key gaps and challenges identified through the process
- How lessons learned have contributed to refining the methodology for future projects

FROM R&I TO INDUSTRIAL DEPLOYMENT: THE CEMENT INDUSTRY PERSPECTIVE

17:00 – 17:15

Nikos Nikolakakos, CEMENT EUROPE
- Challenges in moving decarbonisation technologies from R&I to industrial-scale deployment
- Technical and investment readiness, scalability and business case
- Infrastructure and the role of funding instruments such as the Innovation Fund

Q&A DISCUSSION : WHAT CAN WE LEARN FROM 2DPLOY FOR FUTURE INDUSTRIAL DEPLOYMENT?

17:15 – 17:30

Edoardo Paganelli, A.SPIRE (2DPLOY Consortium Partner)

WELCOME & INTRODUCTION

Welcome to the 2DPLOY Final Event within A.SPIRE Industrial Innovation Days 2026

Our mission:	Bridging the gap between industrial R&I results and deployment
The 2DPLOY journey:	From project qualification to investment and proposal readiness
Today's focus:	Key results, lessons learned and the industrial perspective
Looking ahead:	How can we accelerate the deployment of industrial innovation?

The 2DPLOY Project: From R&I Results to Innovation Fund Development

Kristian Aas, SINTEF, 2DPLOY Project Coordinator

16h15 – 16h30

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2DPLOY: Development of an innovation pipeline to facilitate and promote funding proposals for deployment of low carbon technologies



Partners

- A.SPIRE
- CEINNMAT
- EVONIK
- OLEON GmbH
- OLEON NV
- RINA
- SINTEF
- VITO - The Flemish institute for technological research

2DPLOY has set four main objectives

- Objective 1: **Establish a continuous innovation pipeline** for low-carbon technologies within EIIs
- Objective 2: **Develop best practices and support pilot IF proposals**
- Objective 3: **Feed 2DPLOY innovation pipeline & share learnings** with priority stakeholders
- Objective 4: **Fostering open collaboration and creating synergies**

2DPLOY is one out of 5 CSA projects

→ aiming to develop a better set of tools maturing R&D projects for IF

within:

- **Low Carbon Technologies in the Energy Intensive Industries (EII)** — **- 2DPLOY**
- Hydrogen and Energy Storage — - H2IF
- Renewable Energy — - REALIZE
  - Diamonds4IF
- Carbon Capture Utilization and Storage (CCUS) — - LEADS

Collaboration between the CSAs to:

- Understand the gap between H2020/HE -projects and how they are “fit for deployment”
- Exchange experiences for better development of the tools and selection of projects
- Increase the number of projects that reach industrialization

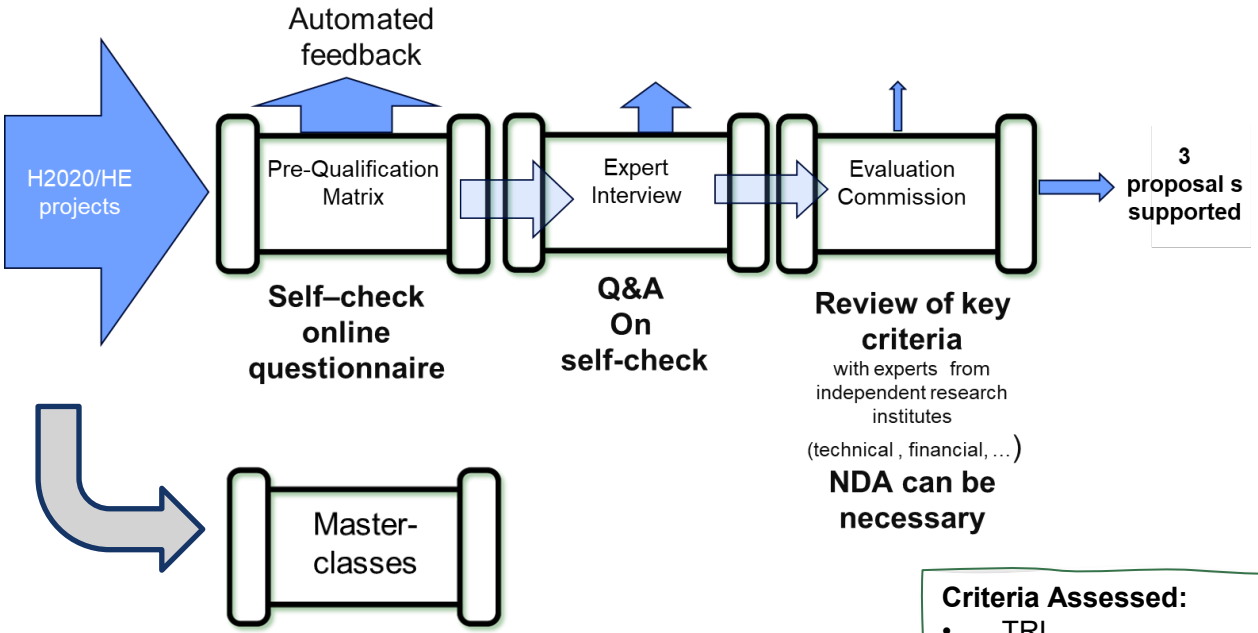
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The 2DPLOY Innovation Pipeline methodology

Pipeline approach that guides project owners from early concept screening to a structured, multidisciplinary assessment of draft IF proposals.

1. **Pre-Qualification (online)**
   Early IF readiness check
2. **Expert Interview**
   Quick feasibility and clarity check
3. **IPEC Evaluation**
   Independent review of draft IF proposal
4. **Masterclasses (open)**
   Learn IF rules and expectations



Selection of projects based on maturity →

Criteria Assessed:

- TRL
- Degree of Innovation
- GHG reduction potential
- Financial , technical and operational maturity
- Replicability

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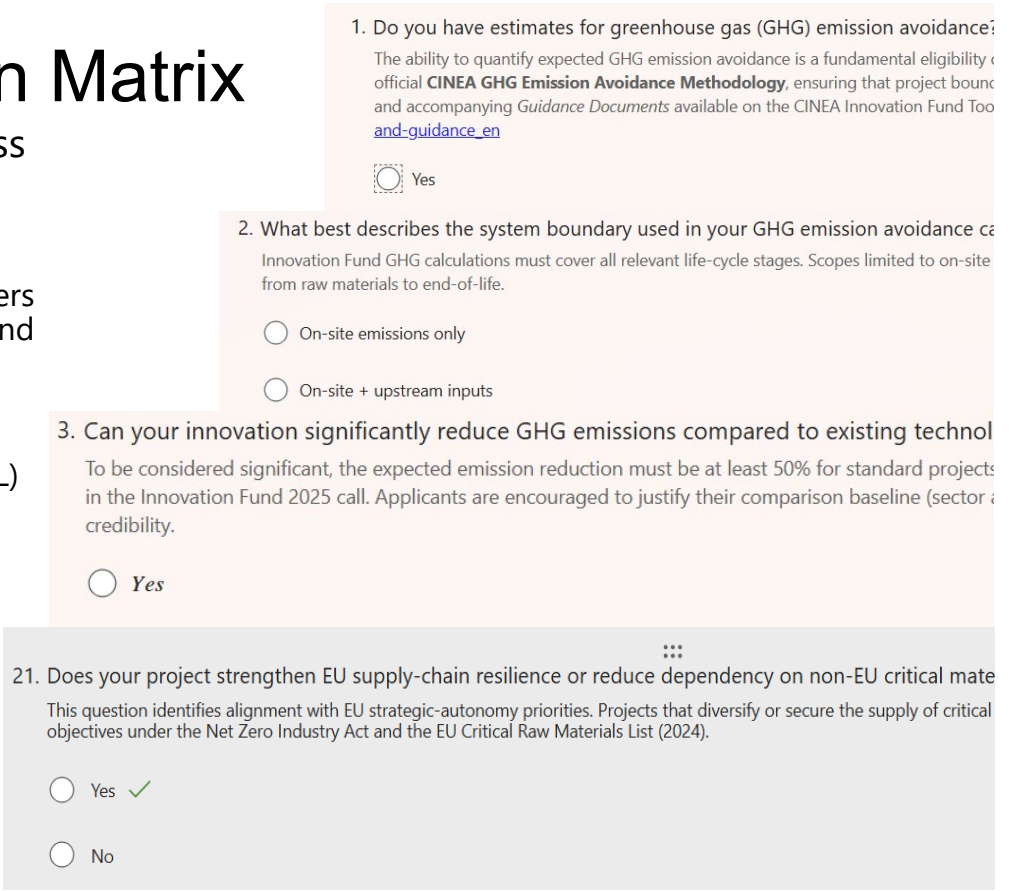
2DPLOY Pre-Qualification Matrix

Understand and assess Innovation fund readiness before investing in proposal development.

An open, self-assessment tool helping project owners evaluate early alignment with Innovation Fund requirements, including.

- Degree of innovation and Technology Readiness Level (TRL)
- Estimated greenhouse gas (GHG) emission avoidance
- Replicability and scalability potential
- Indicative time to entry into operation
- Initial business and financial maturity

Available as Microsoft Forms for testing with 24 questions with automated feedback



→ Supports early decision making on whether Innovation Fund is the appropriate funding pathway.

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2DPLOY Pre-Qualification Matrix

- 2DPLOY Pre-Qualification Questionnaire - Version 3 - INNOVFUND-2025-NZT – Fyll ut skjema
- You get automated answers.
- Form controlled by Kristian Aas in SINTEF



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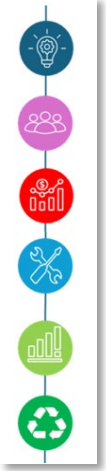
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2DPLOY Open Masterclasses (online)

Through six focused lectures the most common weaknesses observed by ETS IF evaluators are addressed and offers practical, hands-on guidance to help applicants avoid typical pitfalls and meet the programme's expectations with confidence.

- Equip participants with the knowledge and skills needed to prepare a strong and competitive ETS Innovation Fund (IF) proposal.

- Intended for participants who are actively working on an EU IF proposal and already possesses a basic level of prior knowledge.



Follow the links to see the presentation videos

Degree of Innovation

Social impacts in the Operational Maturity & Replicability

Financial Maturity – Business case validation

Technical Maturity – Proven scalable systems

GHG calculations – Data requirements

GHG calculations - End-of-life

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Bottlenecks, barriers and lessons learnt

- Through supporting 3 projects, we have seen some common challenges among applicants. We have also seen that those applicants who have applied for IF with their project previously without success are significantly better prepared than those who are submitting their application for the first time. This illustrates the complexity of such an application and that sufficient time and resources must be allocated.

- In the following, we focus on the challenges we found in the actual development of the proposals, and how applicants should tell their story in a credible and documented way.

- We are not focusing here on the general challenges that the industry faces due to global competition or the geopolitical situation.

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Bottlenecks and barriers found
(in supporting projects developing their application)

- **Weak evidence chains for key claims**
  - The description of the innovation is not always supported by sufficient documentation and the statements about the benefits of the innovation are too confident without being fully supported by objective measurements or surveys.
  - Reference to state of the art can be missing
- **Incomplete feasibility studies, especially in later sections**
  - The quality of the feasibility study often becomes weaker in the sections about supply chain, implementation planning, detailed costs, and risk management
- **Visual and technical communication**
  - Illustrations and diagrams with poor readability or that do not support the text and claims.
  - Imprecise use of terms and definitions.
- **Internal inconsistencies across the application**
  - There are differences between the technical design, the conclusions of the feasibility study, the market description, and the arguments for scalability and replicability.

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Lessons learnt –

- **Build a transparent, traceable evidence chain**
  - Connect each main claim clearly to metrics, methods, data sources, assumptions, and show where these are used in calculations or annexes.
  - The storytelling should be conservative and credible.
- **Strengthen the feasibility studies**
  - Develop the sections on supply chain readiness, procurement strategy, costs, risks, implementation planning, and outputs to show that the project is ready for deployment.
- **Communicate with precision and clarity**
  - Use visuals supporting the claims, clear engineering terms, clear separation of objectives and requirements, and concrete plans for sharing knowledge and working with the value chain.
- **Ensure full internal coherence of the proposal**
  - Make sure that technical description, feasibility results, market arguments, scalability assumptions, and implementation plans all fit together in a clear story

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Summary

- **2DPLOY have established a methodology (Innovation pipline) that assist promising projects improving their applications to the IF**
  - The methodology can be adopted e.g. by the National Contact Points as an extra supporting tool.
- **2DPLOY have tested the methodology by assisting 3 projects in their application phase.**
  - This enabled also improvement of the methodology
- **Collaboration with stakeholders like CINEA, DG Clima, NCPs and the other 4 CSA projects have been important for the outcome and learnings have been shared in reports and through conferences**
  - Contributing to improved quality of applications to the IF

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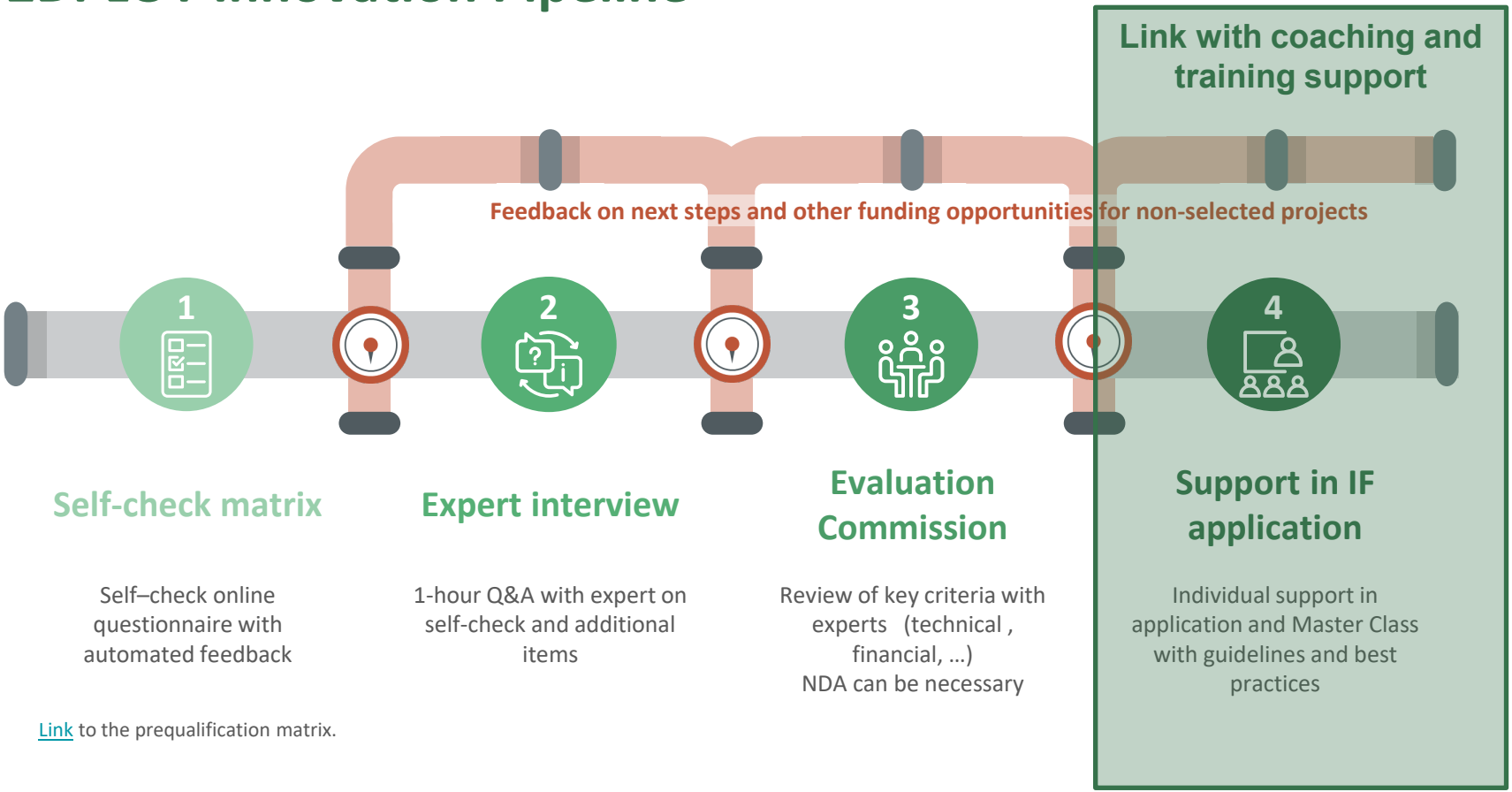
From Capacity Building to Proposal Readiness: Lessons from the 2DPLOY Coaching and Training Support

Miet Van Dael, VITO (2DPLOY Consortium Partner)
Gwen Willeghems, VITO
16h30 – 16h45

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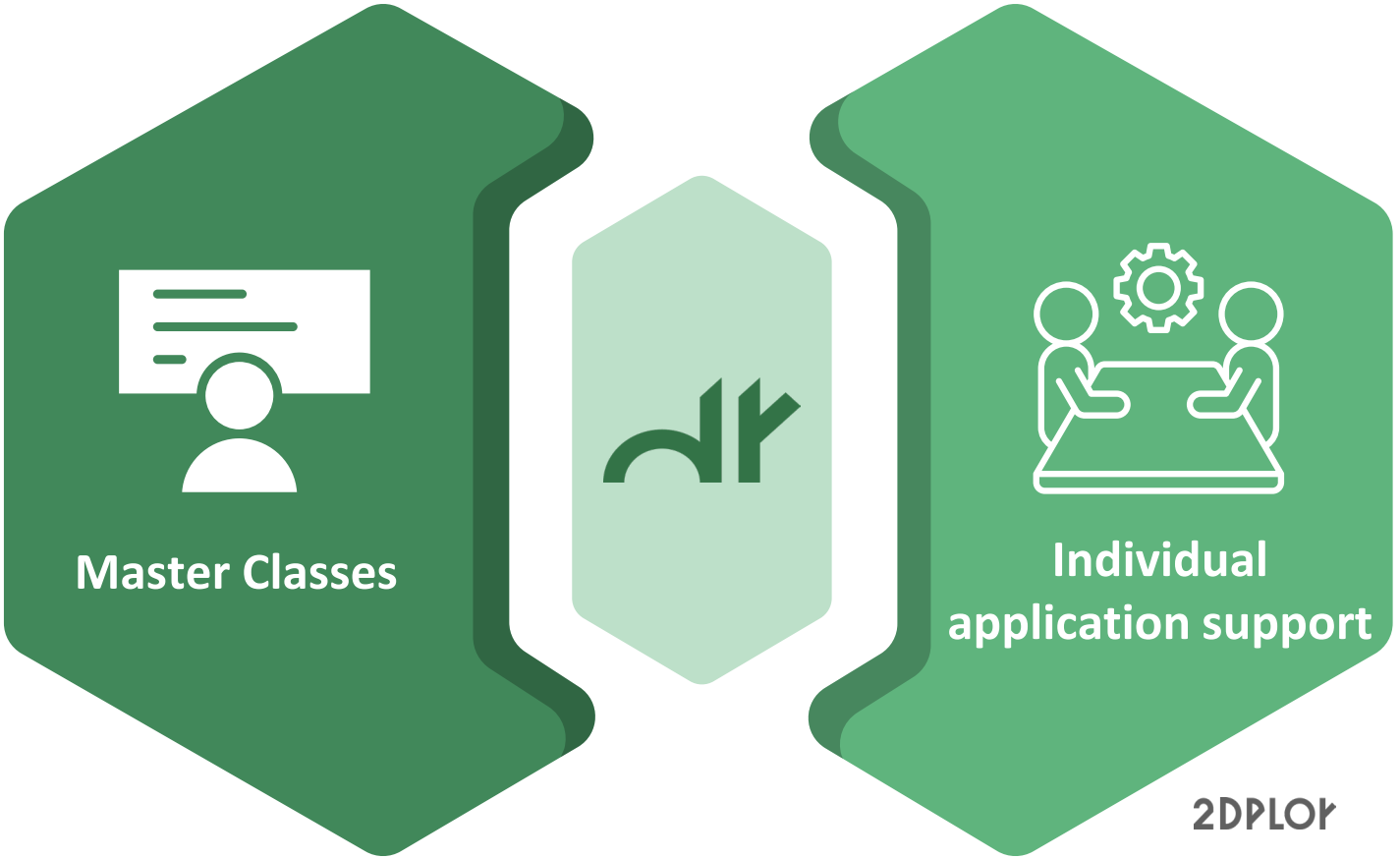
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2DPLOY Innovation Pipeline



Link to the prequalification matrix.

Support in IF application



Support in IF application



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Set-up of advanced master classes



Goal: Targeted support for IF proposals

- Six lectures linked to the award criteria of the Innovation Fund
- Each session tackled **common weaknesses** identified by ETS IF evaluators **or challenges** indicated by applicants.
- **Practical guidance** was provided to help applicants meet the requirements with more confidence.
- Focus on the **material that is available from CINEA** to make sure it is used more effectively

Advanced Master Class overview



Title	First session	Second session
Lecture on **Degree of Innovation & TRL**	9/10/25	22/01/26
Lecture on **Social impacts** in the Operational Maturity & Replicability	16/10/25	28/01/26
Lecture on **Financial Maturity** & Cost efficiency	23/10/25	05/02/26
Lecture on **Technical Maturity**	6/11/25	12/02/26
Lecture on **GHG Calculations – Data** Requirements	13/11/25	26/02/26
Lecture on **GHG Calculations – End-of-Life**	20/11/25	05/03/26

All material available on the A.SPIRE website
https://www.aspire2050.eu/2dploy

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Master Class setup





Evaluated the material from CINEA that was already available



Analysed the lessons learned from previous calls shared by CINEA and the European Commission



Interviewed several stakeholders (large companies, SMEs, partnership, NCP, consultants and evaluator)

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Additional material developed by 2DPLOY

- Additional glossary financial maturity
- Available material from CINEA for the financial maturity
- Checklist degree of innovation



Additional material developed by 2DPLOY

Strategy checklist to demonstrate innovatic

How to convincingly demonstrate the innovative character of your within a proposal.

'Degree of Innovation' Checklist

Framing and context

- ☐ Description of context and need
- ☐ Consistent use of Innovation Fund terminology
- ☐ Definition of degree of innovation and innovation ty

Evidence and data

- ☐ Differentiate benchmark against state-of-the-art
- ☐ Assess technical maturity and TRL
- ☐ Quantify the impact using data

Positioning and partnerships

- ☐ Position the innovation within broader strategies
- ☐ Reference relevant projects and partners
- ☐ Address replicability

System value and due diligence

- ☐ Show integration opportunities and system-level val
- ☐ Ensure data consistency in due diligence

This is a non-exhausted checklist. that serves as an additional check next to the expectations for the Degree of Inno already outlined in the call document and other CINEA materials.

This project has received funding from the EUs Horizon Europe research and innovation program under grant agreem

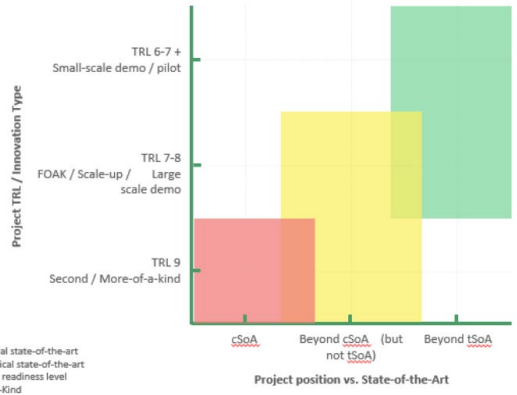
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Additional glossary for the Relevant Costs Methodology document

Term	Meaning
(Un)discounted, discount rate	**Discounted** means that the value of future flows is adjusted to their present value (how mu is worth today) using a discount rate. The **discount rate** is the rate at which future flows are adjusted to their present value. Thi typically the company's cost of capital.
Net Present Value (NPV)	The NPV is the difference between the present v (PV) of cash inflows and present value of outflows registered over a certain period, discou with a specific discount rate. The NPV assessment serves to estimate whethe project will generate added value to the company looking at the investment required to initiate project and the future cash inflows and outflows (taxes), discounted to their present value. NPV < 0 means value destruction NPV > 0 means value creation, it is beneficial fo company to proceed with the project
Weighted Average Cost of Capital (WACC)	The WACC is a vital metric for assessin company's financing costs by averaging the afte cost of all capital sources like equity and deb higher WACC indicates riskier investme demanding greater returns. WACC is applied to discount future revenue income and cost streams over the project lifetime to make them comparable. Innovation Fund applicants should calculate a project WACC based on the project's cost of equity and cost of debt. They should not use their corporate WACC.

This project has received funding from the EUs Horizon Europe research and innovation program under grant agreement no 101137732.

Link SoA, TRL and Degree of Innovation

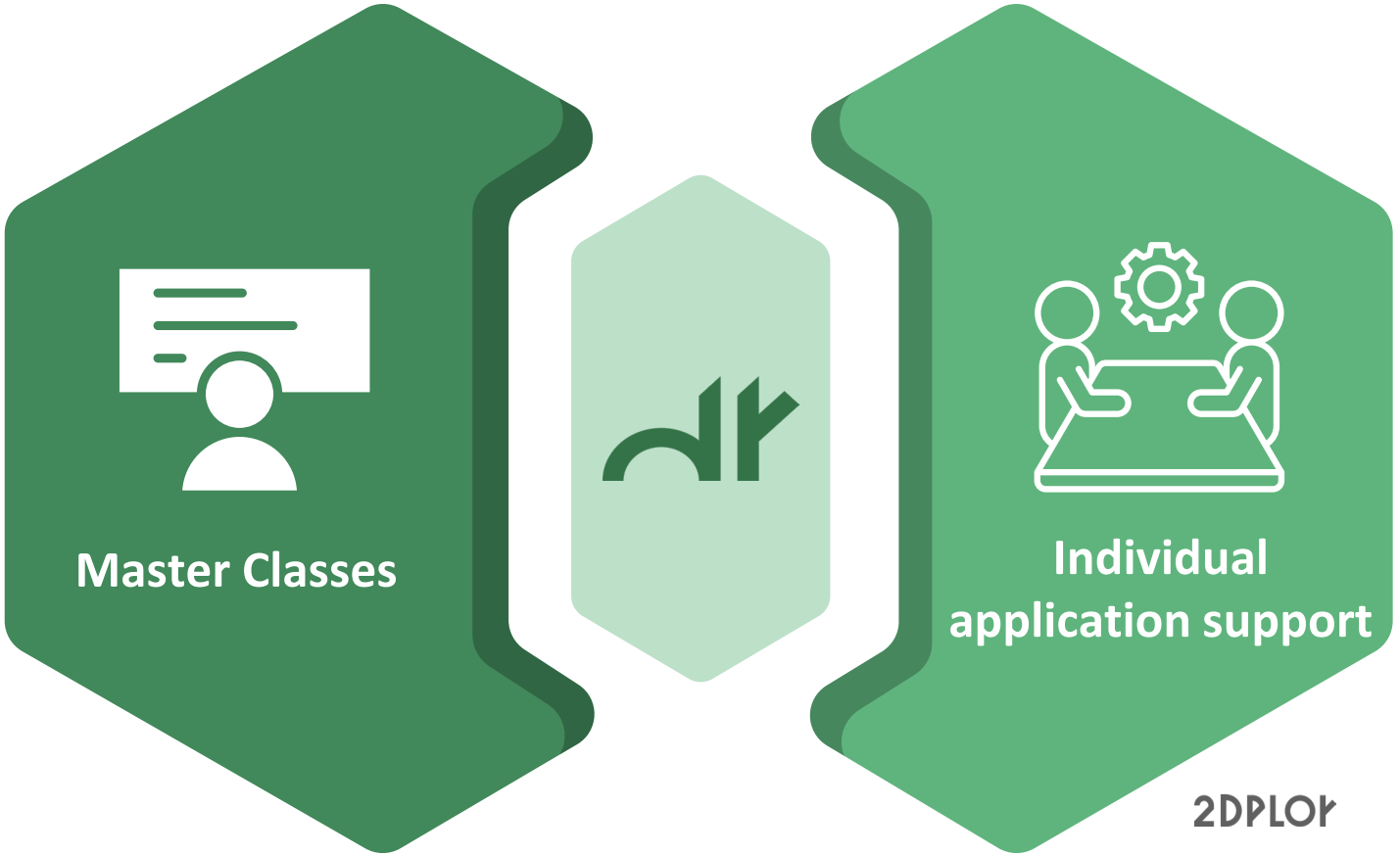


cSoA: commercial state-of-the-art
tSoA: technological state-of-the-art
TRL: technology readiness level
FOAK: First-of-a-Kind

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Support in IF application



Support in IF application



Support of 3 selected IF proposal before submission

- Focus on **key evaluation criteria identified as common weaknesses** in previous IF calls:
  - GHG emissions avoidance
  - Degree of innovation and scalability
  - Technical maturity
- Provide **tailored coaching and expert feedback**, complementing the master classes
- Organise **iterative feedback rounds** based on draft proposals and supporting documentation shared under NDAs

Disclaimer: the reviews were performed on working drafts, sometimes close to submission deadlines. Consequently, the observations reflect the proposals at the time of review and should not automatically be interpreted as weaknesses in the final submitted applications.

Recommendations for GHG emission avoidance

Transparent assumptions

Document and justify all key inputs, emission factors and assumptions

Defensible reference scenario

Ensure a realistic and directly comparable baseline

End-of-Life considerations

Account for carbon fate, recycling and disposal consistently

Methodological consistency

Verify boundaries, accounting rules, allocation and calculations



Credible GHG avoidance starts with a defensible reference scenario and transparent assumptions

Recommendations for degree of innovation

State of the art benchmarking

Identify relevant alternatives and quantify improvements beyond existing solutions

Evidence and consistency

Substantiate key claims with data and ensure consistency across proposal documents

Industrial scalability

Validate throughput, scale-up factors, operating conditions and production assumptions

Practical replicability

Demonstrate realistic deployment pathways, considering constraints



Innovation must be demonstrated against the state of the art, while scalability and replicability require credible evidence and realistic deployment pathways

Recommendations for technical maturity

TRL justification

Clearly distinguish laboratory validation, pilot demonstration and industrial-scale operation

Integrated system maturity

Demonstrate reliable operation of the integrated process

Evidence and consistency

Substantiate technical claims with documented and consistent data

Industrial deployment readiness

Address scale-up challenges, operational risks, and supply chain readiness



Technical maturity is not simply a TRL number: it must be demonstrated through validated performance, integrated operation and a credible industrial scale-up plan

Lessons learned from the review process

1. Preparation

- Align review and submission timelines
- Ensure early access to proposal drafts



2. Review

- Agree on minimum document readiness
- Use a standard review framework



3. Follow-up

- Plan structured feedback rounds
- Maintain close collaboration



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Thank you!

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Miet Van Dael – miet.vandael@vito.be

From Qualification to Deployment: Lessons Learned from the 2DPLOY Methodology

Simona Pace, RINA-CSM (2DPLOY Consortium Partner)

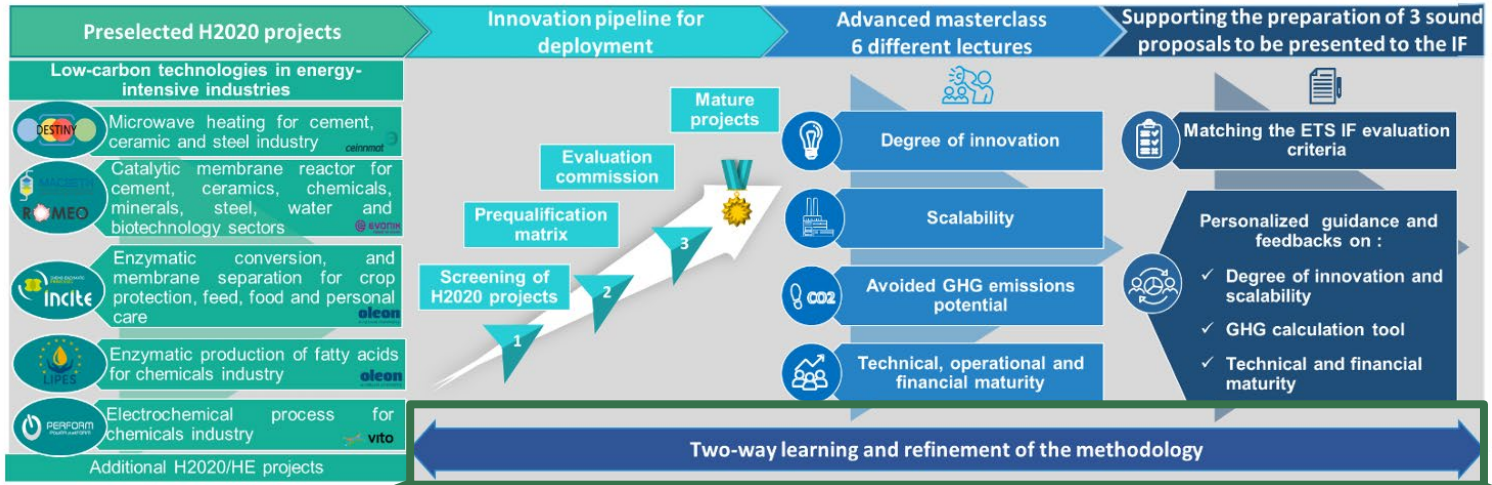
16h45 – 17h00

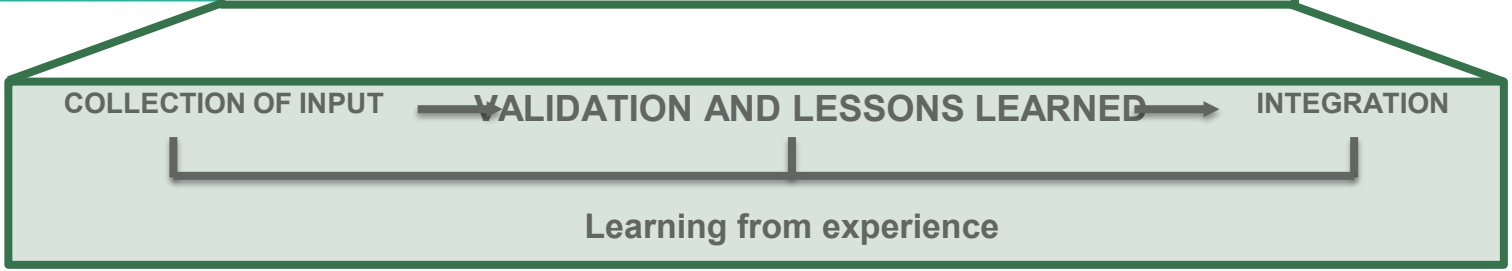
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WP4 – From project experience to methodology improvement

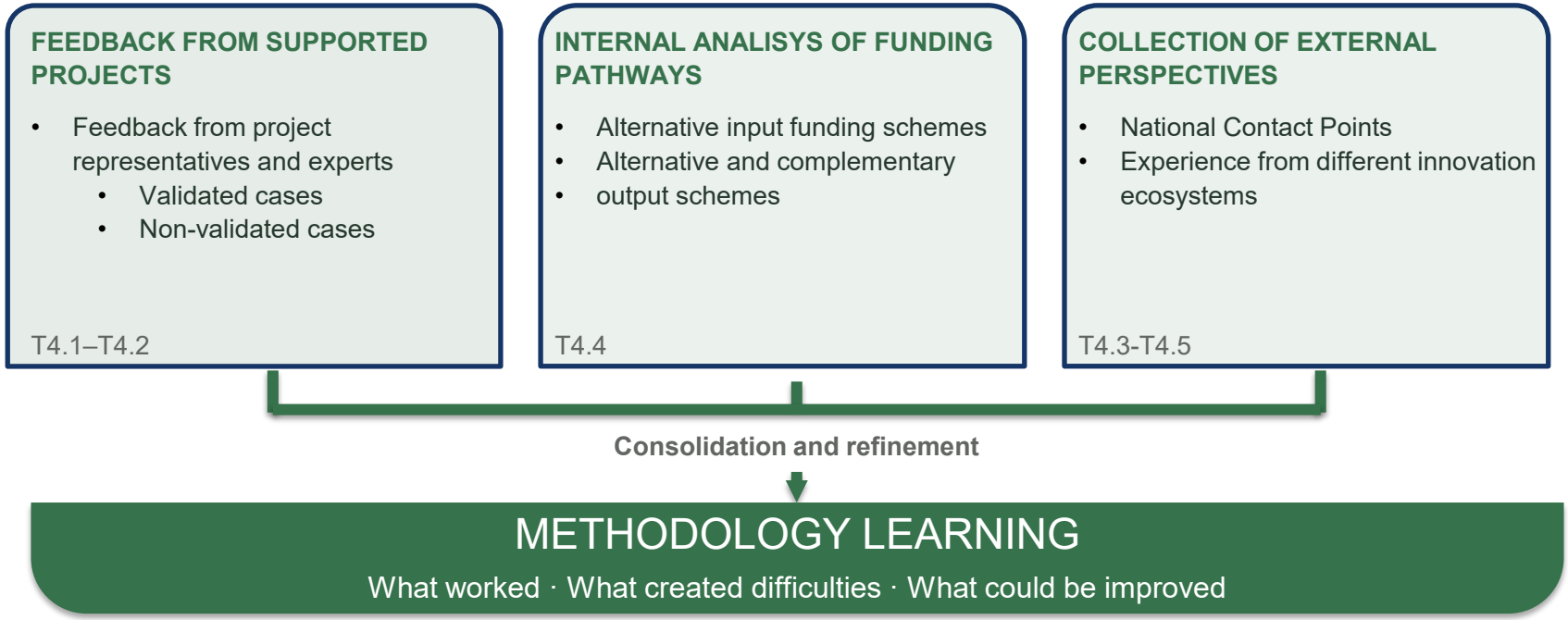
- What we learn from applying the 2DPLOY methodology to real project cases
- How to strengthen its future application





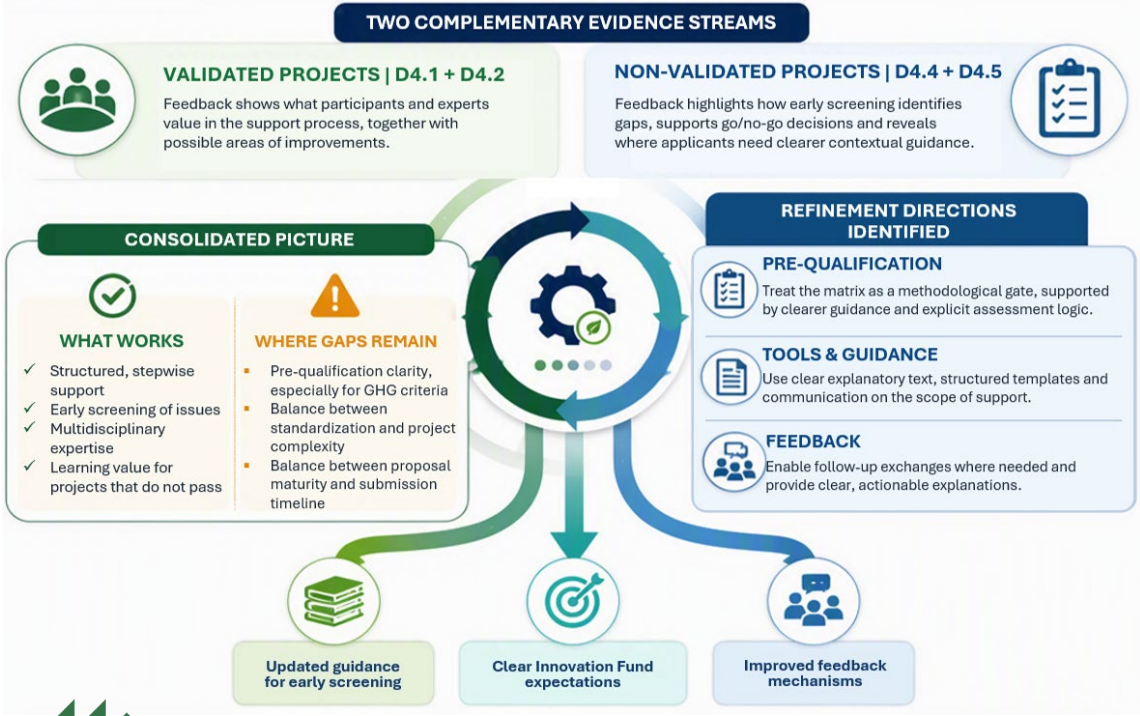
How WP4 turned experience into learning

Three complementary evidence streams supported the assessment and refinement of the methodology.



What did we learn from applying the methodology?

Project experience confirmed the value of the approach while highlighting the conditions that influence its effectiveness.



A STRUCTURED APPROACH ADDS VALUE

Clear process steps, multidisciplinary evaluation and targeted expert feedback to understand requirements, weaknesses and improve proposal quality.

TIMING IS CRITICAL

Useful feedback requires sufficiently mature project information, but projects also need enough time to act on the recommendations received.

EARLY SCREENING SAVES RESOURCES

Identifying eligibility or readiness gaps before full proposal development supports more informed go/no-go decisions.

FEEDBACK WORKS BEST AS A PROCESS

Continuous interaction, live exchanges and structured follow-up can make feedback clearer, more actionable.

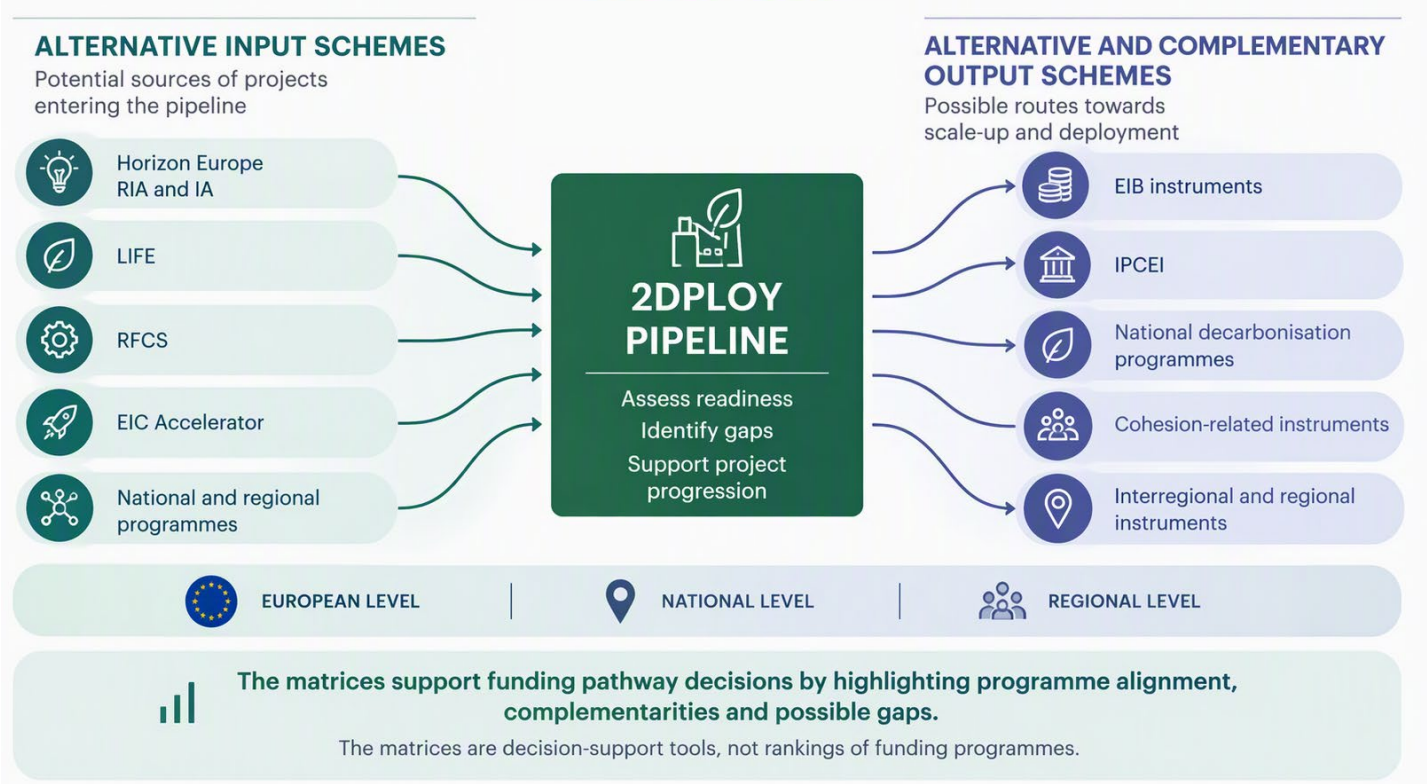
From lessons learned to methodology refinement

Evidence from project application identified four priority areas for strengthening future use of the methodology.

WHAT WE OBSERVED		REFINEMENT DIRECTION
TIMING **Proposal maturity** and **evaluation timing** need to be balanced.	→	Introduce **more flexible and iterative feedback cycles** aligned with the progressive maturity of the proposal.
GUIDANCE Critical Innovation Fund requirements may be misunderstood during early screening.	→	**Strengthen pre-qualification guidance**, particularly on critical requirements such as GHG avoidance and value-chain boundaries.
INTERACTION The value of support depends on the **quality and continuity** of interaction.	→	Strengthen feedback loops through more **live exchanges and structured follow-up** where appropriate.
INPUT EFFECTIVNESS Effective expert assessment depends on sufficiently project **mature information** and **coordinated contributions**.	→	Improve input and **evaluation structure through progressively mature documentation** and clearer consolidation of expert feedback through the support.

Beyond a single pathway from R&I to deployment

The funding scheme analysis broadened both the possible entry points to the 2DPLOY pipeline and the possible routes towards deployment.



Funding scheme analysis (input)

Based on these criteria, 2DPLOY has analysed 12 input Funding Schemes at European, National and Regional level to assess their alignment as input alternatives within the pipeline:

Input matrix – European Level

Characteristic	Horizon Europe (RIA)	Horizon Europe (IA)	LIFE	RFCS (RPJ)	RFCS (P&D)	EIC ACC
1. GHG emission reduction and quantification	🟡	🟡	🟡	🟡	🟡	🟡
2. Medium TRL (6–7)	🟡	🟢	🟢	🟡	🟢	🟢
3. Preliminary business plan drafted	🔴	🟢	🟢	🔴	🟢	🟢
4. High level of innovativeness	🟢	🟢	🟢	🟢	🟢	🟢
5. Replicability in other sectors	🟢	🟢	🟢	🟡	🟡	🟡
6. Commercialization plan drafted	🔴	🟡	🟡	🔴	🟡	🟢
7. Significant CAPEX expenditures preliminary estimated	🔴	🟢	🟢	🔴	🟢	🟢

- *Well Aligned*
- *Partially aligned*
- *Not aligned*

Summary table:

Characteristic	Response
1. GHG emission reduction and quantification	🟡 Emission reduction requested but quantification method may vary
2. Medium TRL (6–7)	🟡 Typical TRL 3–6
3. Preliminary business plan drafted	🔴 Preliminary exploitation plan is only required

Funding scheme analysis (output)

Based on these criteria, 2DPLOY has analysed 11 output Funding Schemes at European, National and Regional level to assess their alignment as output alternatives for IF:

Characteristic	EIB	EIC ACCELERATOR	COHESION FUND	BIG TICKET FOR STEEL	IPCEI
Supporting first-of-a-kind commercialisation (FOAK)	🟢	🟢	🔴	🟢	🟢
Large-scale commercial size demonstration (TRL 7→8-9)	🟡	🟡	🟡	🟢	🟢
Commercialization where high residual costs prohibit market entry without support	🟢	🟢	🟡	🟡	🟢
GHG avoidance long-term evaluation (10 years)	🟡	🟡	🟡	🟡	🟡
GHG absolute total avoidance of 4–20 Mt CO_2e	🔴	🔴	🟡	🔴	🟡
Demonstration of feasibility at TRL 7-8 with scale-up plan to TRL 9	🟡	🟢	🔴	🟢	🟢
Visibility/accountability to attract additional funders	🟢	🟢	🟡	🟡	🟢
Prospect of reaching financial close within a predefined period after award	🟢	🔴	🟢	🟢	🟡

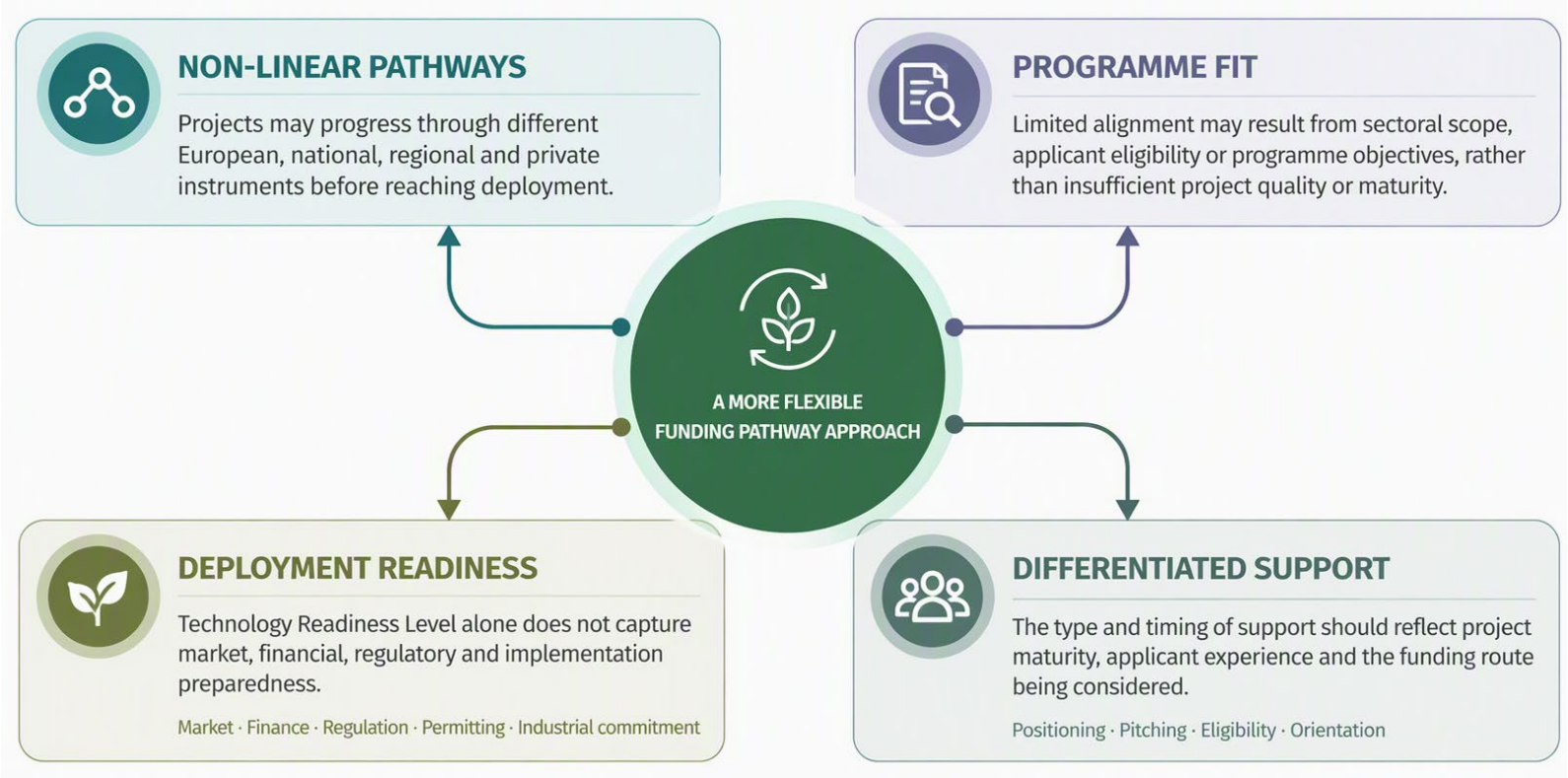
- 🟢 *Well Aligned*
- 🟡 *Partially aligned*
- 🔴 *Not aligned*

Summary table:

Characteristic	Response
Supporting first-of-a-kind commercialisation (FOAK)	🟢 IPCEI strongly supports FOAK projects that are strategically important and fill technology gaps in the EU; this is a core IPCEI objective.
Large-scale commercial size demonstration (TRL 7→8-9)	🟢 IPCEI is designed for large-scale, near-to-market industrial deployments (TRL 7-9) where technology readiness is being proven at scale.
Commercialization where high residual costs prohibit market entry without support	🟢 IPCEI directly addresses commercialisation barriers through targeted public support.

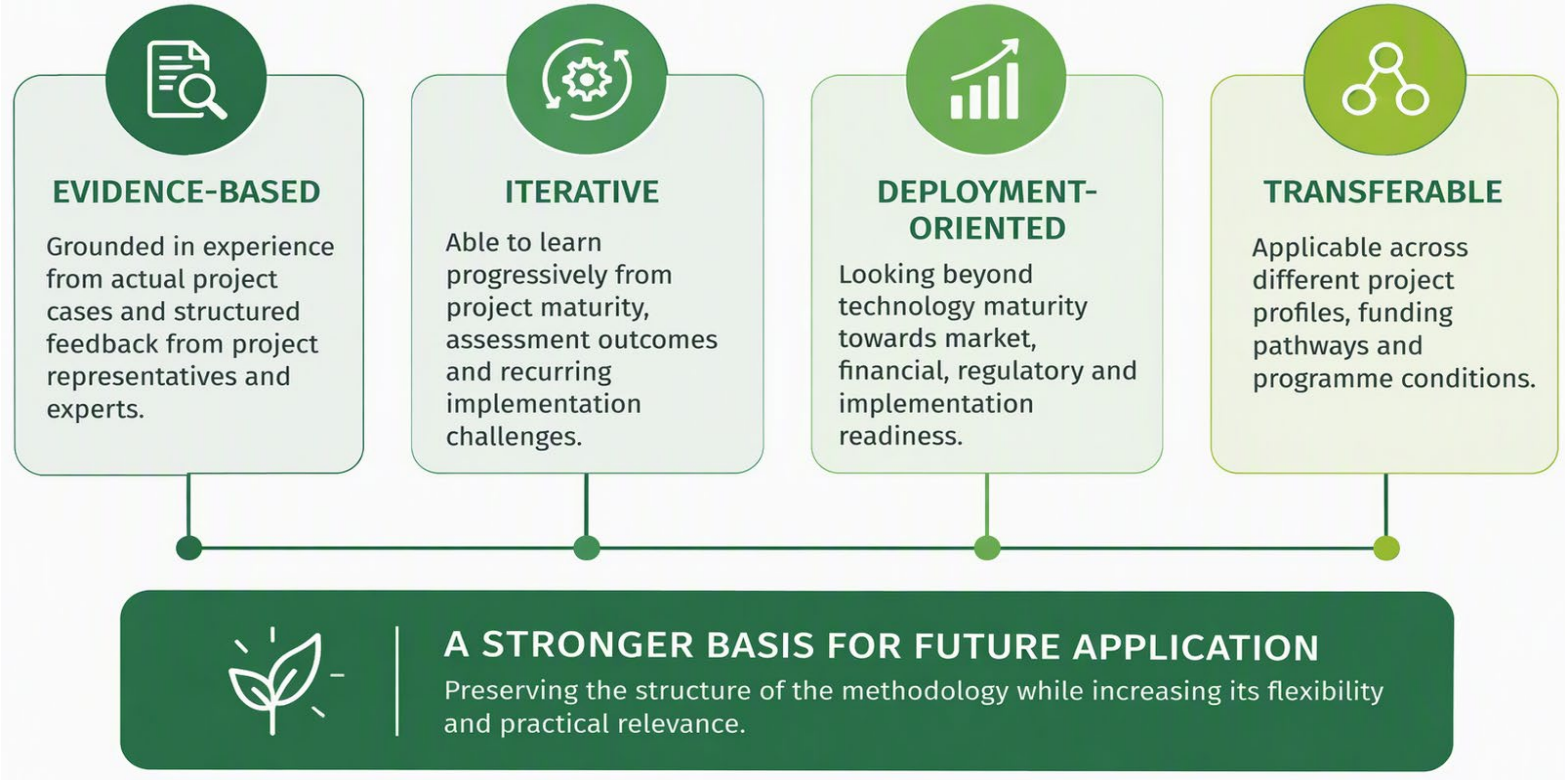
External feedback: from funding schemes to funding pathways

The mapping approach was broadly confirmed, while stakeholders recommended a more flexible interpretation of project pathways, programme fit and deployment readiness.



What WP4 added to the 2DPLOY methodology

WP4 connected project experience, methodology learning and the wider funding ecosystem.



WP4 results and key messages

- **Bottom-up approach:** WP4 based its methodology on project experience and stakeholder feedback.
- **Learning from experience:** Identified what worked and addressing difficulties helped refine a transferable methodology for industrial deployment.
- **Value of project assessment:** Structured assessment helps applicants identify strengths and gaps, improve proposals and decide whether and how to proceed.
- **Timing of support:** Effective support balances project maturity with enough time for applicants to act on feedback.
- **Iterative approach:** An iterative methodology combines early screening, progressively detailed assessment and follow-up while preserving its core structure.
- **Flexible funding pathways:** Funding matrices guide flexible pathway choices based on readiness, programme scope and eligibility, including alternative and complementary opportunities.,

Q&A Discussion : What Can We Lea from 2DPLOY for Future Industrial Deployment?

17h00 – 17h20

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