



SUNERGY: bringing the research community together

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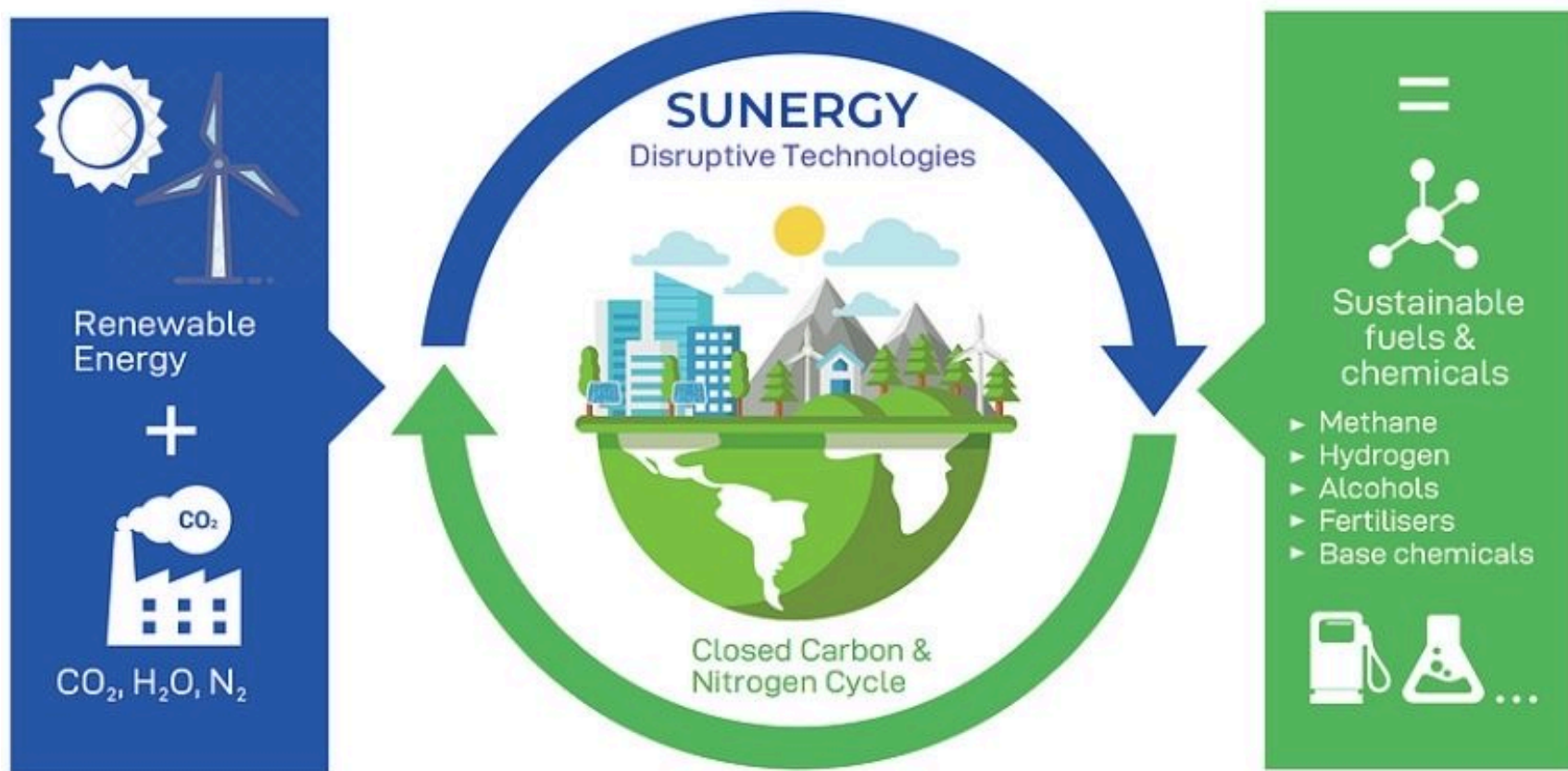
4th June 2021

#EUGreenWeek
2021 PARTNER EVENT



SUNERGY Vision

To enable a **circular economy** by making **fossil free fuels and base chemicals for industry and agriculture**, and developing **negative CO₂ emission technologies** using **resources that are abundant in Europe** (renewable energies + CO₂, H₂O and N₂) and that are converted and **stored as chemical energy**



SUNERGY S&T focus

Two main routes to convert renewable energy (sun, wind) to chemical form:

- **Renewable power conversion to fuels & chemicals:** electrochemical and thermochemical processes
- **Direct conversion of solar energy to fuels & chemicals:** photoelectrochemical approach, biological and bio-hybrid processes

Three key reactions

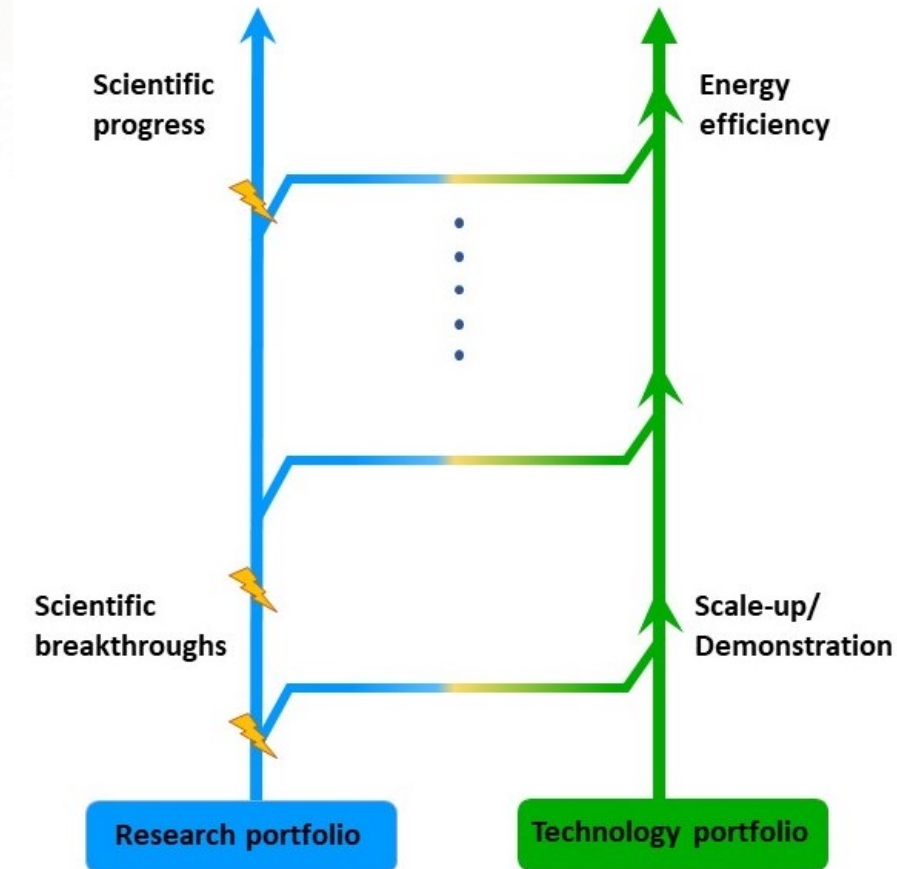
- Water splitting: $\text{H}_2\text{O} + \text{energy} \rightarrow \text{H}_2 + \frac{1}{2} \text{O}_2$
- CO_2 reduction: $\text{CO}_2 + \text{H}_2\text{O} + \text{energy} \rightarrow \text{CH}_x\text{O}_y + \text{O}_2$
- N_2 reduction: $\text{N}_2 + \text{H}_2\text{O} + \text{energy} \rightarrow \text{NH}_3 + \text{O}_2$

- **Science:** more efficient & durable materials based on abundant raw materials; more efficiently engineered bio-molecules and bio-organisms for light conversion; accelerated development of materials with tools of the numerical transition (HPC, AI and machine learning)
- **Scale-up:** efficient academic & industry collaboration and demonstration projects (fossil-free airport, decentralised production of fertilisers)



The need for a large-scale R&I initiative

- Scientific breakthroughs tightly coupled to scale-up
- Multi-pronged attack
 - We need to employ a vast array of scientific tools and approaches
 - We need to couple academia, industry and policy
- Sustainable and coherent framework to support large-scale collaboration along all the value-chain, leading to a **pan-European platform** for sustainable fuels & chemicals, to the benefit of Europe's industry and citizens alike



The path to a large-scale R&I initiative

Prematuration

H2020 CSA projects (Mar. '19 – Feb. '20)



+

ENERGY



SUNERGY

Ramp-up phase:

- Coordination, community building, roadmapping
- Implementing the SUNERGY roadmap:
 - Portfolio of european projects (RIAs, IAs) with a coordination and support action (CSA) ensuring the glue between those projects and with the SUNERGY initiative
 - Coordination with national programmes and link with national alliances
 - International cooperation (e.g. with Mission Innovation)



Preparing for a large-scale R&I initiative (Public private European partnership)

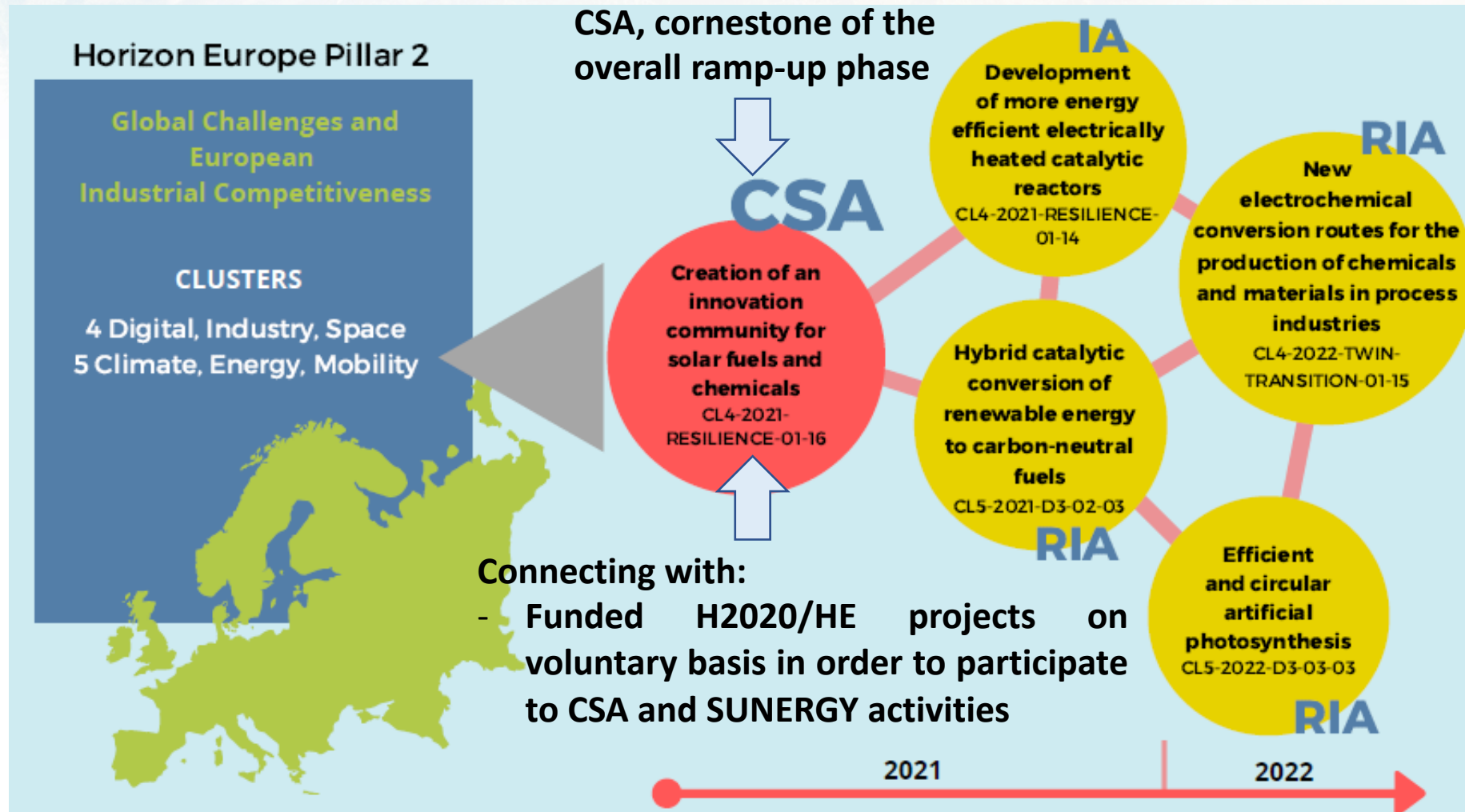
2020

2024

The SUNERGY logo is a circular emblem with a green-to-blue gradient, containing the words "SUN" and "ERGY" stacked vertically in white, bold, sans-serif capital letters.

**SUN
ERGY**

SUNERGY ramp-up phase in practice

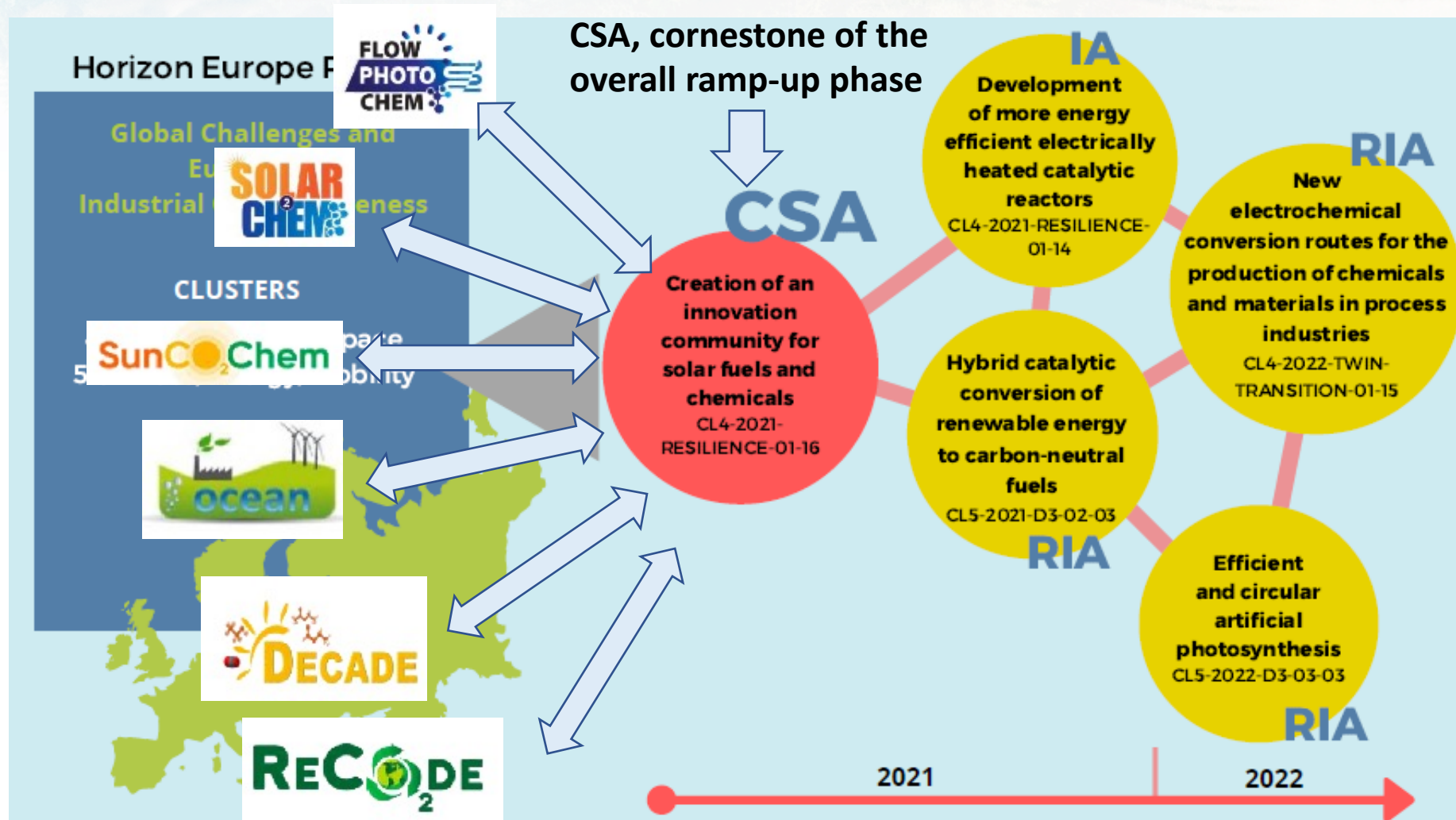


For short videos and more information on these calls:
bit.ly/3i8tVWE

Apply for the SUNERGY label:
www.sunergy-initiative.eu/opportunities



SUNERGY ramp-up phase in practice



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SUNERGY proposal for a CSA

- Coordination and support action (CSA) ‘Creation of an innovation community for solar fuels and chemicals’ is currently under preparation
- Options for engagement:
 - Share your thoughts and ideas through our survey: bit.ly/34yjZgW
 - Join as associate partner
 - Apply to join the advisory board
- One key objective/activity of the CSA will be to establish synergies with ongoing EU research activities that can contribute to the overall initiative (e.g. community building, roadmap, dissemination and communication)



Following ongoing EU research activities

- Mapping and building an EU project portfolio around fossil-free fuels and chemicals
- KPIs to follow the contribution of the EU projects portfolio to the strategy of the overall initiative
- Foster project synergies between the projects via dedicated activities
- Standardization of protocols:
 - Planning of buildup of primary data generation infrastructure
 - Standardized protocols for experimental data
 - Data sharing protocols for secondary data usage between the projects



Concluding

- SUNERGY contributed/contributes to define a strategy at EU level around fossil-free fuels and chemicals (e.g. ramp-up phase and CSA topic, Green Deal topic)
- Options to engage with SUNERGY and be part of the community:
 - Request an endorsement letter for your project proposal: sunergy-initiative.eu/opportunities
 - Become associate partner in CSA and/or apply to join the advisory board: contact@sunergy-initiative.eu
 - Sign up to our newsletter (sunergy-initiative.eu/contact) and follow us on social media (LinkedIn, Twitter, YouTube, Instagram, ResearchGate)
- Opportunities to share your thoughts and ideas with SUNERGY:
 - Survey for your input on the CSA: bit.ly/34yjZgW
 - SUNERGY supporters will be consulted on our SRIA outline so join us: sunergy-initiative.eu/supportletter
 - Participate with your project to the CSA activities



Thank you
for your
attention



Share your questions, ideas and feedback:
contact@sunergy-initiative.eu



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