

Joint Programme FC & H2

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www.eera-set.eu



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<http://setis.ec.europa.eu/>

EERA for Hydrogen and FC

The FC&H2 Joint Programme

MATERIALS

AMPEA
Advanced Materials and Processes for Energy Application

Materials for Nuclear

TECHNOLOGIES

Bioenergy

Fuel Cells and Hydrogen

Geothermal

Wind Energy

Ocean Energy

CSP
Concentrated Solar Power

PV
Photovoltaic Solar Energy

Energy Storage

Carbon Capture and Storage

SYSTEMS

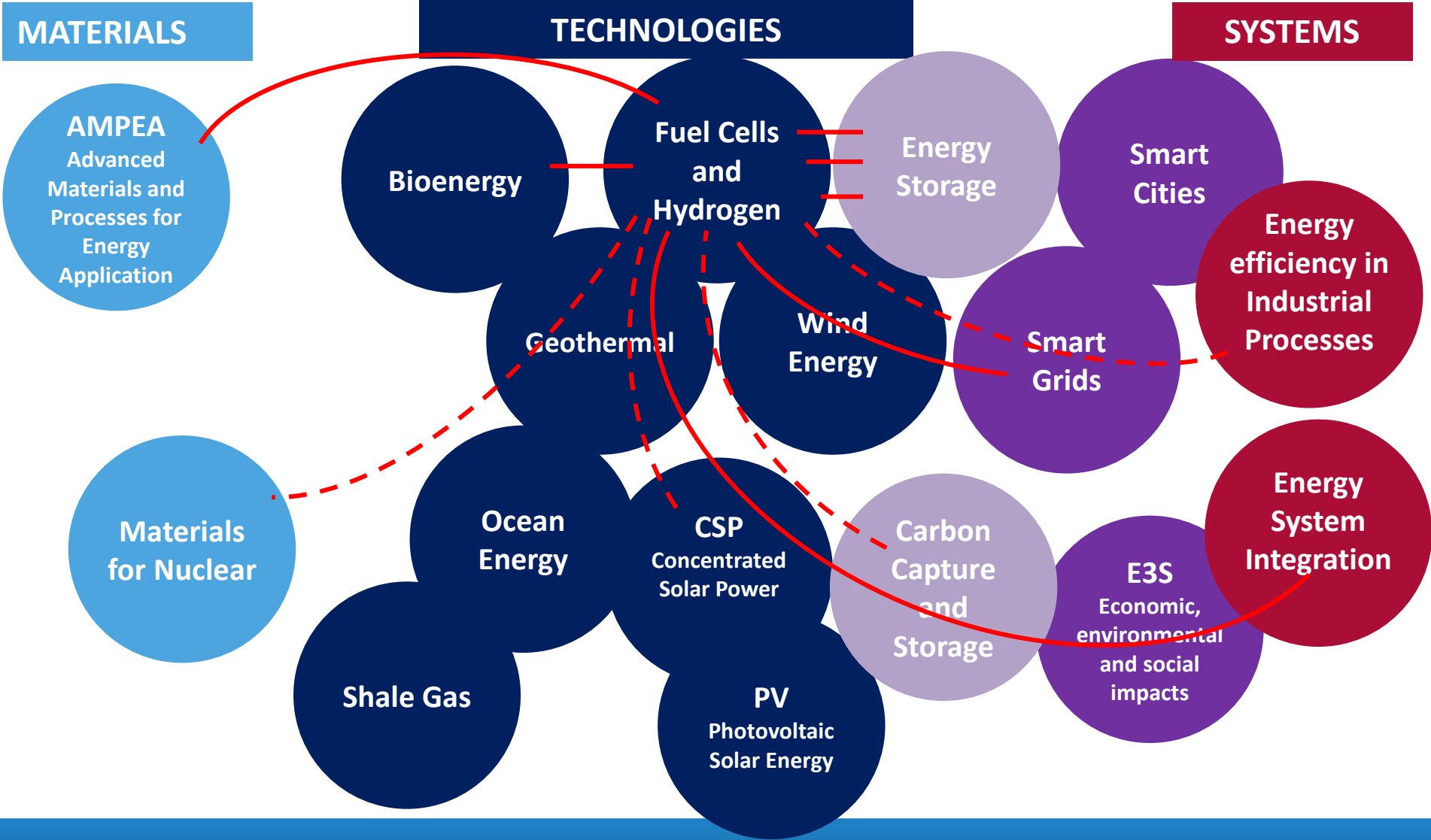
Smart Cities

Smart Grids

E3S
Economic, environmental and social impacts

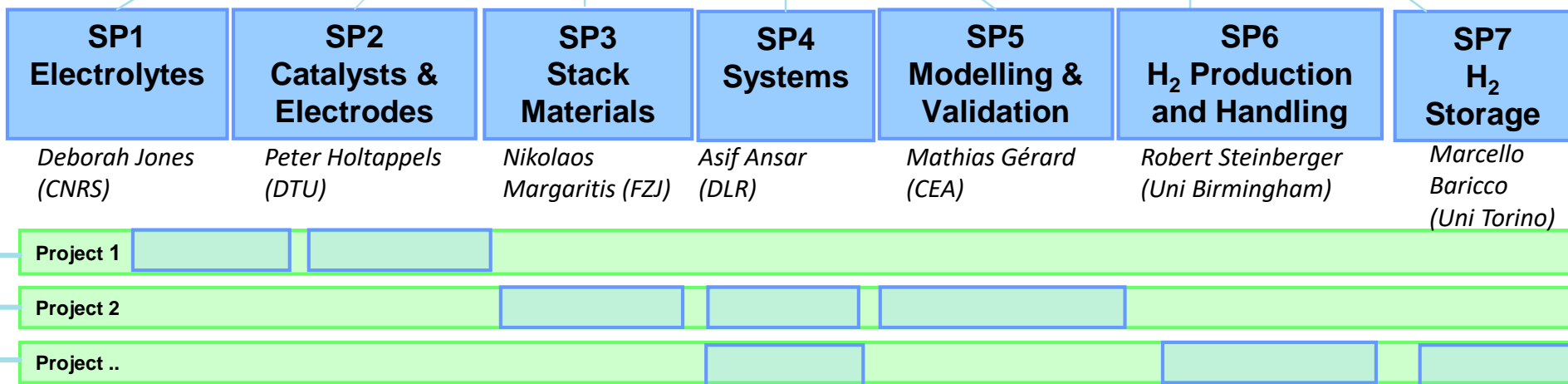
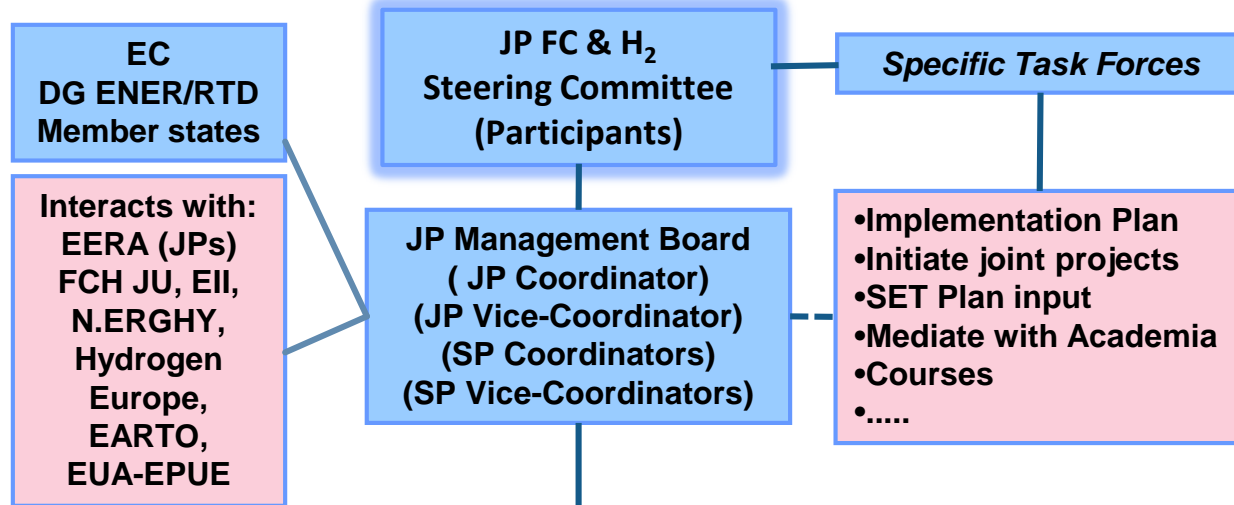
Energy efficiency in Industrial Processes

Energy System Integration



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Participant name	Country	Human resources committed							SP6	SP7
		Total	SP1	SP2	SP3	SP4	SP5			
BAS	Bulgaria	12	5	3.7	1	1	1.3	0	0	
CEA	France	6.1	0.3	0.6	0.5	0.5	4.2	0	0	
CIEMAT	Spain	10	0	4	1	0	0	5	0	
CNR	Italy	13.5	2	5	0.3	1.5	0.7	2.5	1.5	
CNRS	France	32	4.5	4.5	2	2	3	2	14	
CSIC	Spain	6	0.8	1.3	0.8	0.5	0.5	1.3	0.8	
DLR	Germany	6.5	0	1	2.5	0	3	0	0	
DTU	Denmark	8	2	4	0	0	2	0	0	
ENEA	Italy	8	0	1	2	2	1	1	1	
FZ Juelich	Germany	11	0	3	5	3	0	0	0	
Helmholtz Gesellschaft (HZG)	Germany	16.5	0	0	0	0	0	3.5	13	
IEN	Poland	7.17	0.17	1.5	2	2	1.5	0	0	
IFE	Norway	5.5	0	0	0	1	0.5	1.5	2.5	
IK4	Spain	5	0	3	1	0.5	0.5	0	0	
IMPPAN	Poland	1	0	0	0	0	0	1	0	
IREC	Spain	0	0	0	0	0	0	0	0	
JRC	EU	3	0	0	0	0	3	0	0	
NTNU	Norway	5	2	1	1	0	1	0	0	
POLITO	Italy	1.2	0	0	0.4	0.8	0	0	0	
SINTEF	Norway	5	1	3	1	0	0	0	0	
TECNALIA	Spain	6	1	1	1	1	0	1	1	
TU Delft	Netherlands	9	0.5	2	0.5	2	2	1	1	
TUBITAK	Turkey	6.7	0	1.7	1.7	1.7	0.8	0.8	0	
U of Lorraine	France	5	0	0.3	0.5	0.7	3.5	0	0	
UKERC	UK	37.5	10	15.5	3.5	1	0.5	4	3	
University of Bologna	Italy	2	0.17	0	0	0	0.33	0.5	1	
University of Genova	Italy	1.5	0	0	0	0	1.5	0	0	
University Chem & Tech Prague	Czech Republic	11	1.5	3.5	3	1	2	0	0	
Lund University	Sweden	5	1	0	0	0	4	0	0	
University of Torino	Italy	5	0	0.5	0	0.5	0	1	3	
VTT	Finland	5.5	0	0	1	2	2.5	0	0	
Total		256.7	31.94	61.1	31.7	24.7	39.33	26.1	41.8	

31 members

- 26 participants
- 5 associates
- 16 countries

7 Sub Programs

HR commitment
257 py/y

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Success stories

ECRIA Call H2020-LCE-2016-2017

Project awarded: BALANCE

‘Increasing penetration of renewable power, alternative fuels and grid flexibility by cross-vector electrochemical processes’

Scope Accelerate development of a European Reversible Solid Oxide Cell (ReSOC) technology.

Rationale

- Store renewable electricity when it is produced in excess into a CO₂-free transport fuel: very high efficiency compared to competing technologies.
- Key technology to allow the broad penetration of renewable electricity into the European energy system.
- Leverage National actions on energy buffering with a targeted EU project

Participants 1 VTT (Coordinator) (Finland), 2 CEA (France), 3 DTU (Denmark), 4 ENEA (Italy), 5 University of Birmingham (UK), 6 TU Delft (The Netherlands), 7 EPFL (Switzerland), 8 EIN (Poland)

Alliance with the ECRIA project won by the JP Energy Storage (SMILES)

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Success stories

Workshops co-organized

‘Cross-fertilization workshops around modelling and numerical simulation’

Scope Accelerate the diffusion of best practices and skills

Rationale

- Cross-fertilization workshop with AMPEA (28th-29th 2015, Brussels)
- EFC workshop: **New frontiers in fuel cell modelling**: Probabilistic Design and Open Source Platforms. (EFC December 2015, Naples)
- COST proposal (OPENUP: Open numerical simulation platform for fuel cell and electrolyser modeling). Failed but close to the threshold.
- EERA conference: session **Open source platforms for numerical simulation** and model validation of energy technologies (24th-25th November 2016, Birmingham)
- Cross-fertilized workshop: **High Performance Computing (HPC)** and open platforms for energy technology modelling (EFC, Naples, December 2017)

Coupling with IEA (International Energy Agency), Annexe 37, Fuel cell Modeling

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Success stories

Accelerate exchanges *'More discussions with other JP'*

Context EERA conference and special session (Birmingham)

Story

- Presentation of EU project (EoCoE) during the session
- High interest of the approach and topics
- Discussions with
- New collaboration between two CEA lab! On battery (no fuel cell)
- Fruitful collaboration with the development of a new method for the lab (Cahn-Hilliard approach for transition phase in active battery material) → **bridging the gap between atomistic approach and continuum model**

New collaborations are not all the time the one expected!

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Link with the European Commission

Strong collaboration with N.ERGHY (JU)

Context Fuel cell and H₂ have a joint undertaking program (FCH-JU) → N.ERGHY

Story

- Common meetings and share road-map
- **A lot of partners are involved in both program**
- EERA is dedicated to low TRL and more fundamental research. New collaboration (AMPEA,...)
- Participation of the SET plan

Retour personnel

- 2-3 réunions par an
- Workshops (1 par an)
- Retour sur investissement assez long. Dur à quantifier
- Être responsable d'un sous-programme = vue globale et lien fort entre les activités de mon labo et les orientations moyen-long termes
- Visibilité

Thank you

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