



Programme Review Days 2016

Panel 5: Hydrogen production, distribution and storage: research and validation

Moderator: Nikolaos LYMPEROPOULOS, FCH JU Project Officer
Co-moderator: Robert STEINBERGER-WILCKENS, Uni. Birmingham

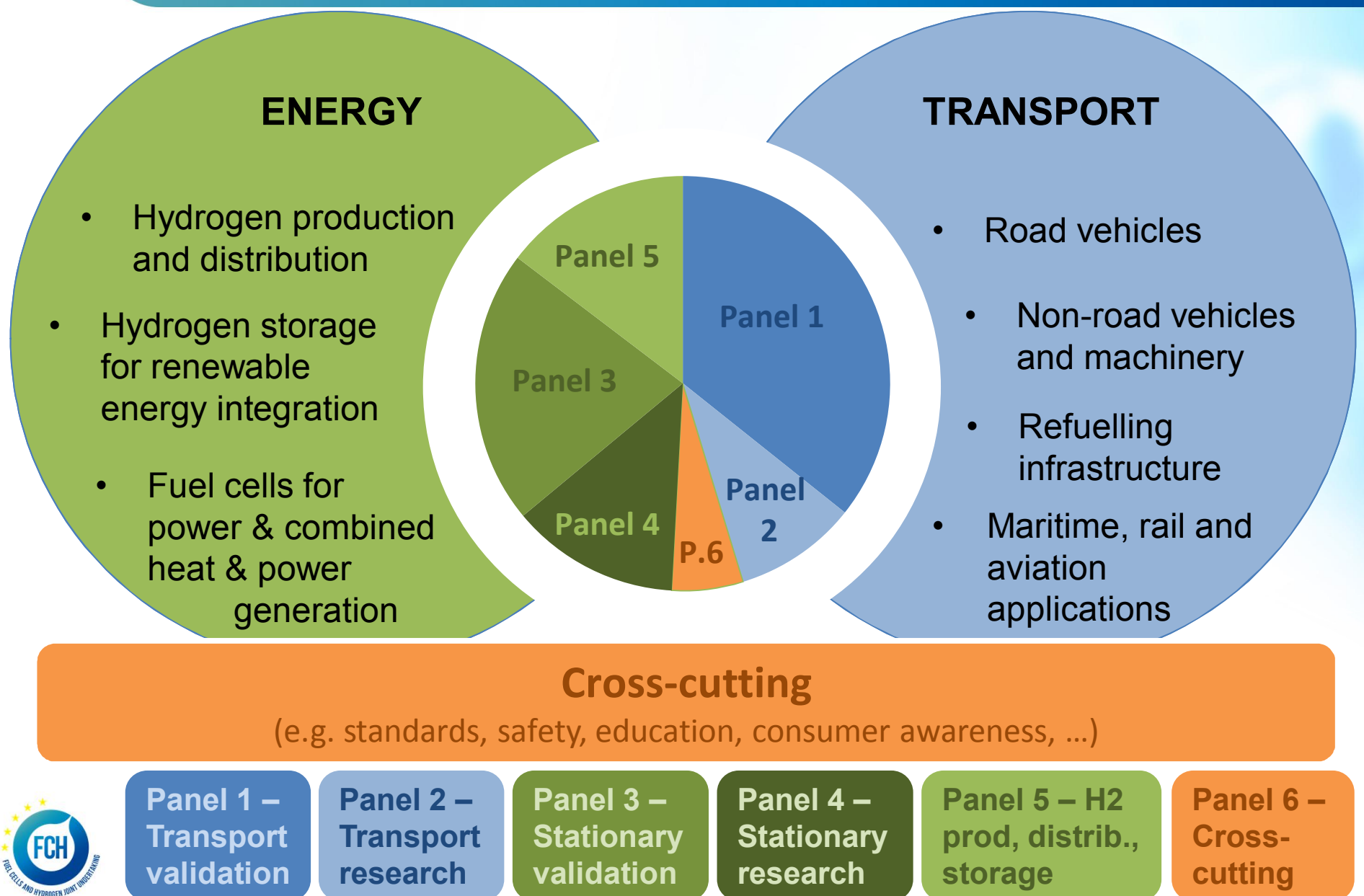


<http://www.fch.europa.eu/>

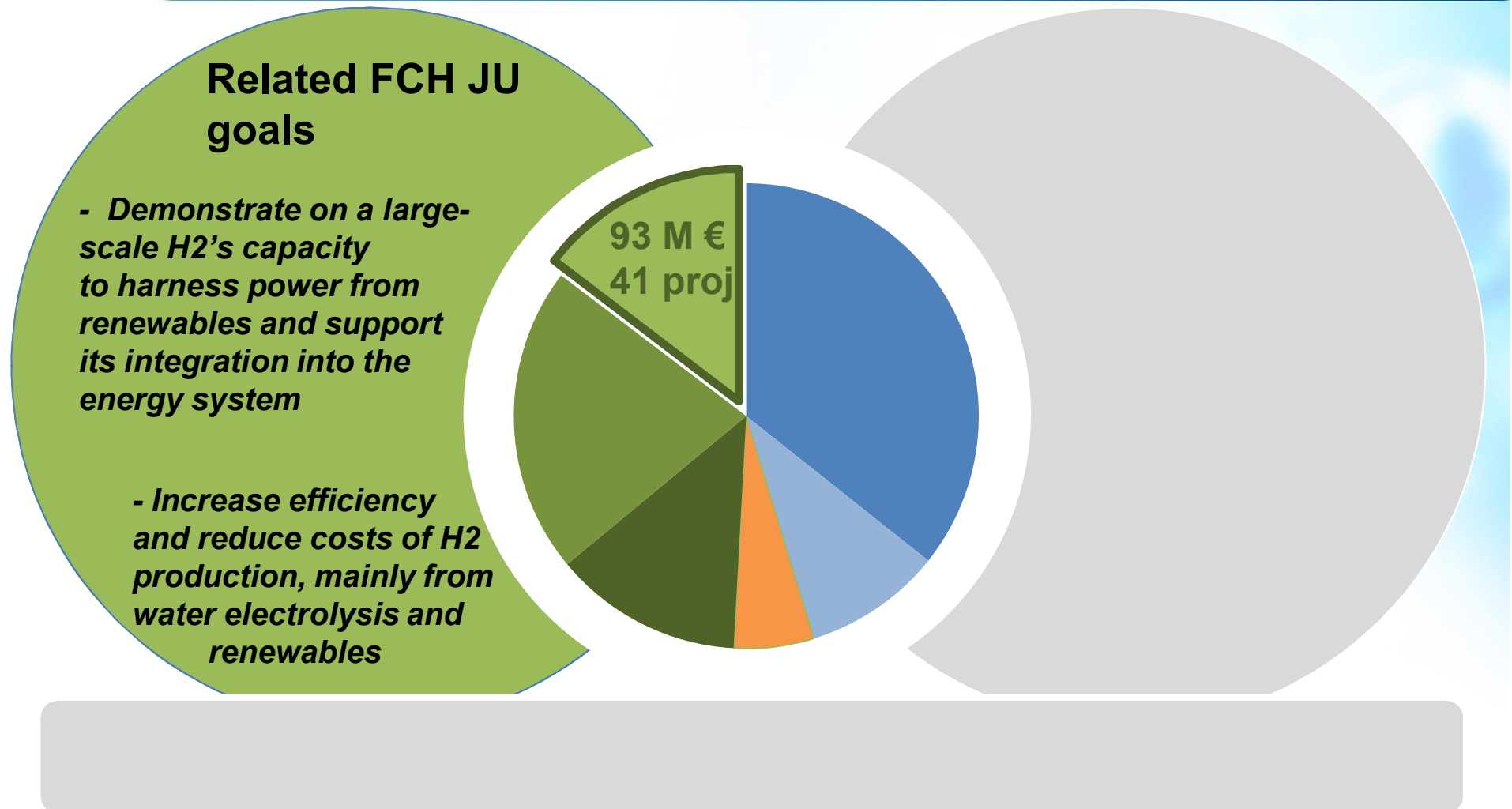
In the agenda

15:40	17:45	Hydrogen production, distribution and storage: research and validation (Panel 5) Moderated by Nikos LYMPEROPOULOS and Robert STEINBERGER-WILCKENS
15:40	15:50	Portfolio presentation
15:50	16:10	NOVEL/MEGASTACK
16:10	16:25	SOL2HY2
16:25	16:40	HELMETH
16:40	16:50	Q&A
16:50	17:05	BIOROBUR
17:05	17:20	COMETHY
17:20	17:35	PECDEMO
17:35	17:45	Q&A

FCH JU portfolio 2008-2015: 185 projects, 638 M€



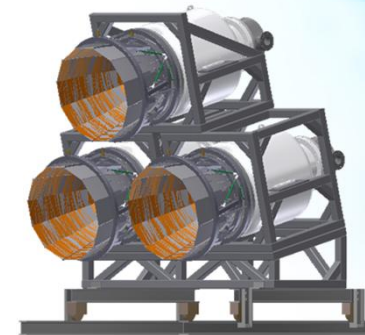
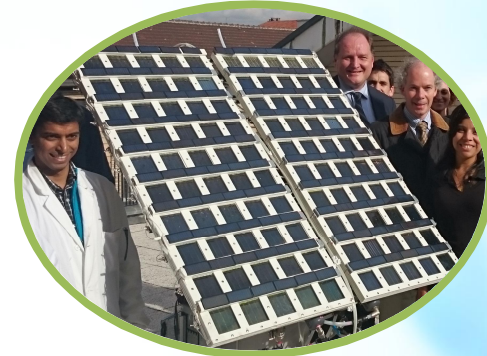
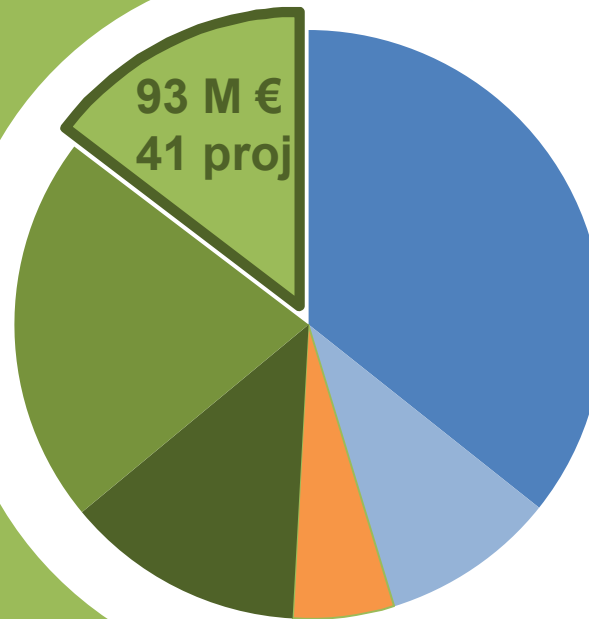
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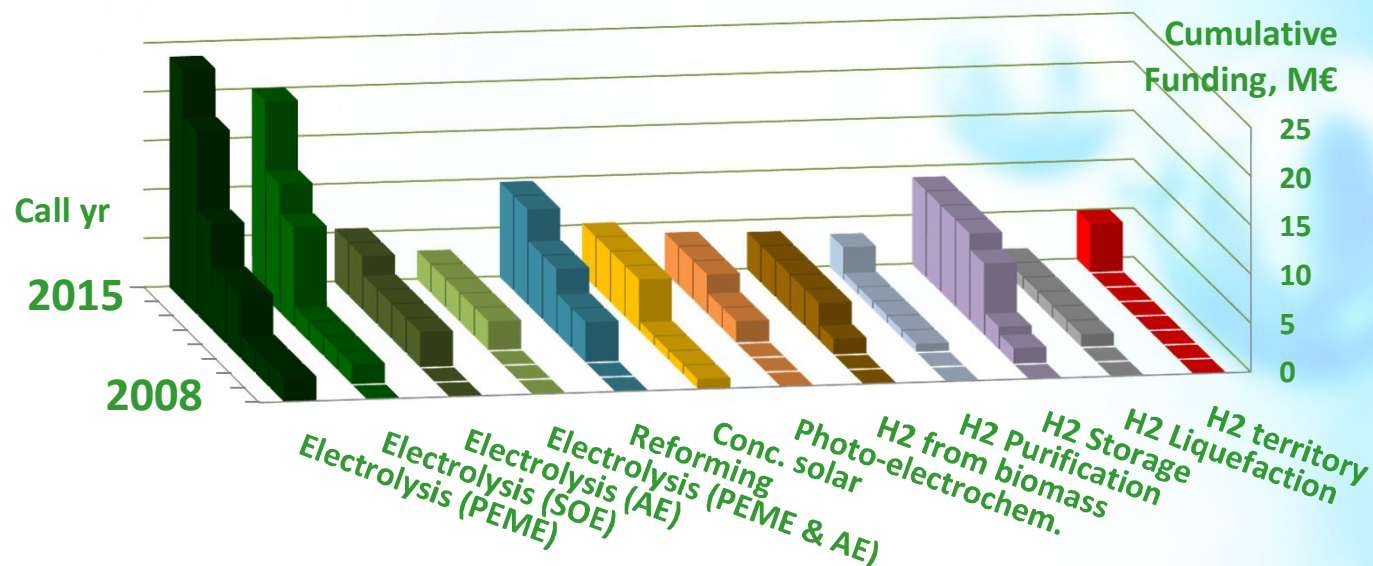
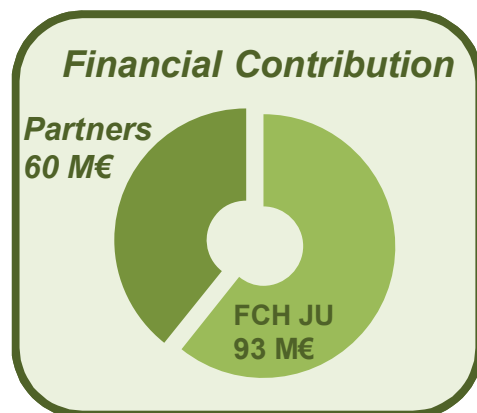
Related FCH JU goals

- Demonstrate on a large-scale H₂'s capacity to harness power from renewables and support its integration into the energy system
- Increase efficiency and reduce costs of H₂ production, mainly from water electrolysis and renewables



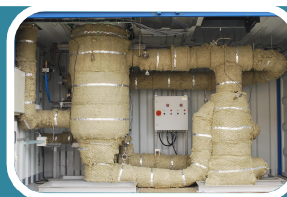
97% of FCH JU support towards green H2

41 projects
93 M€



**Electrolysers at the core of green H₂ prod.:
support cost reduction for all technologies**

**Renewable fuels for diversifying green
hydrogen production**



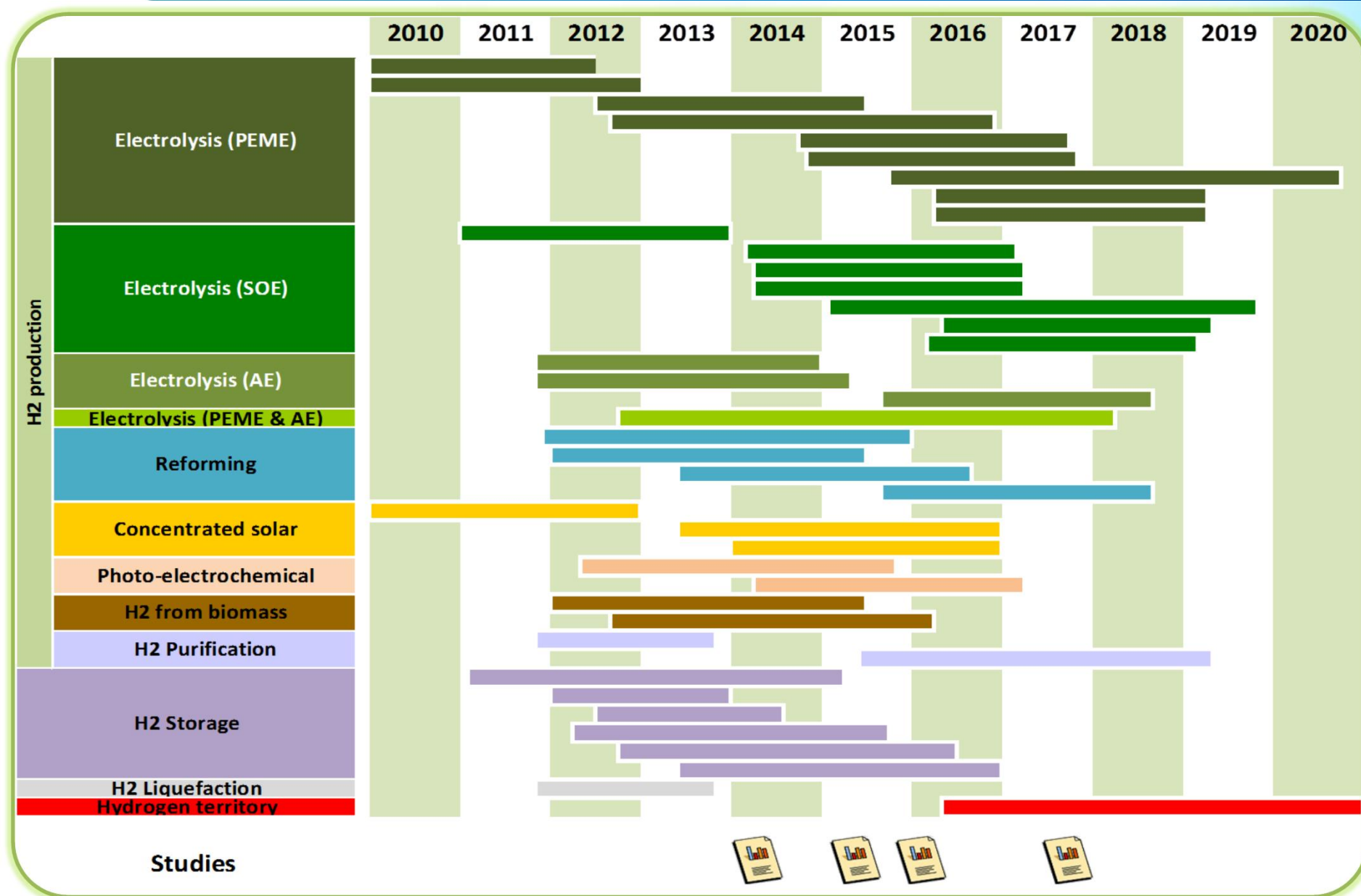
**Concentrated solar and photoelectrochemical
routes: from lab to field**



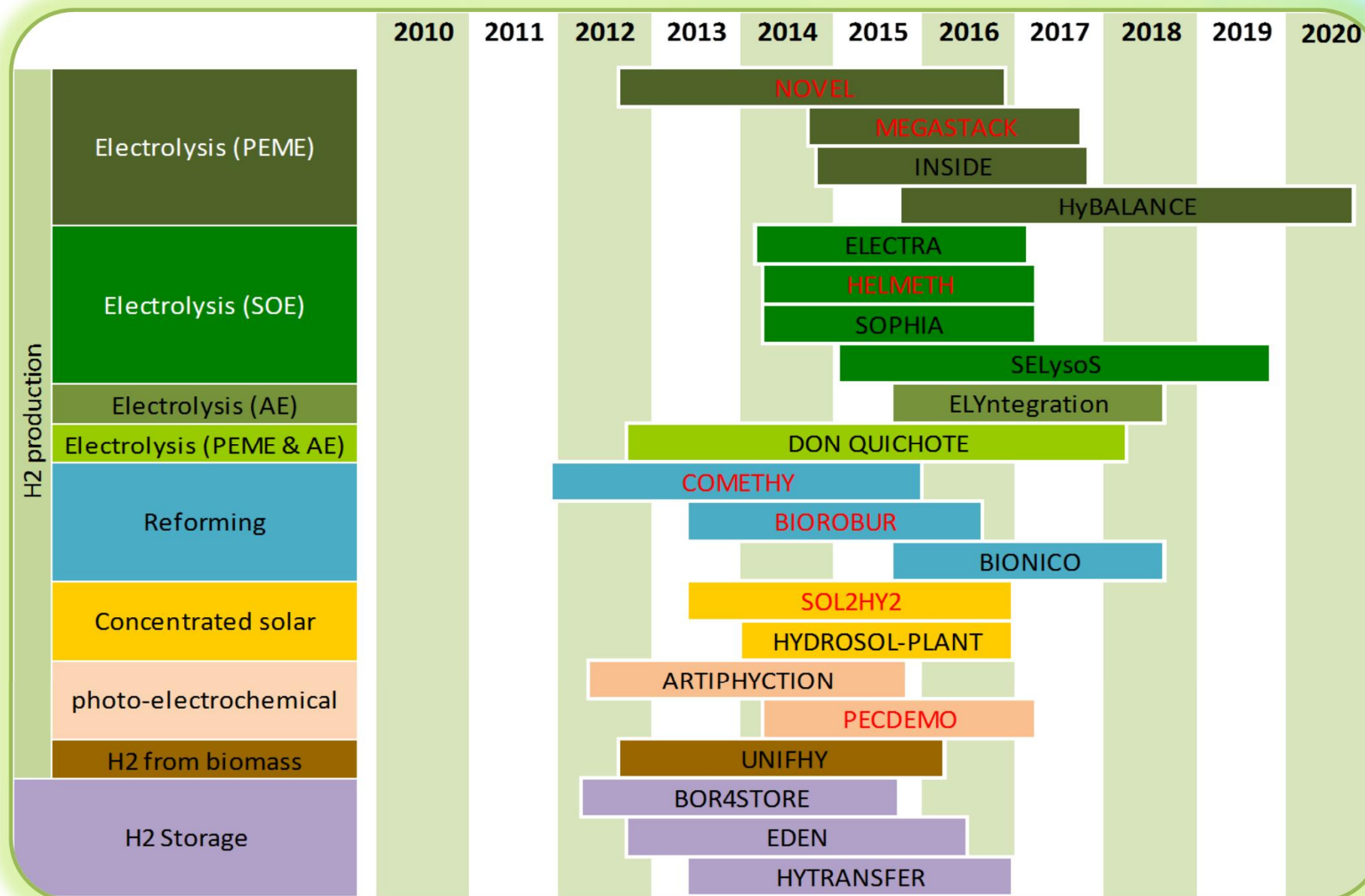
**Metal hydride for
stationary & transport
applications**

Continuous support to diverse pathways

41 projects
93 M€















21 projects/55 MEUR in the 2016 programme review



On track to reach our 2017 performance targets

- 8 electrolyzers installed
- 100 tons of H₂ produced
- >93% availability

Alkaline (AE) and PEM electrolyzers: 2015 data vs 2017 MAWP targets

	FCH JU project results 2015		MAWP target		non-European SoA
	PEME	AE		2017	
CAPEX, M€/t/d			<	3.7	1.7-3.5 @ 1 MW / 500 kg/d
Energy consumption, kWh/kg			<	55	65
Efficiency degradation, %/y			<	2	1.1
Min load, % of nominal capa.		-	<	5	0
Max load, % of nominal capa.		-	>	150	100
Hot start, seconds			<	10	10
Cold start, seconds			<	120	300



Based on 2015 project data gathered in the FCHJU 2016 data collection exercise

Summary



Electrolysers: ensuring European leadership



Diversification: supporting green-fuel reformers along with biomass gasifiers/ reactors



On the way to *demo* for concentrated or direct solar technologies



Metal Hydride H2 storage: demonstrated at small-scale



Thank you for your attention

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Further info :

- FCH JU : <http://www.fch.europa.eu/>
- HYDROGEN EUROPE : <http://hydrogeneurope.eu/>
- N.ERGHY : <http://www.nerghy.eu>

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