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Joint Research Centre

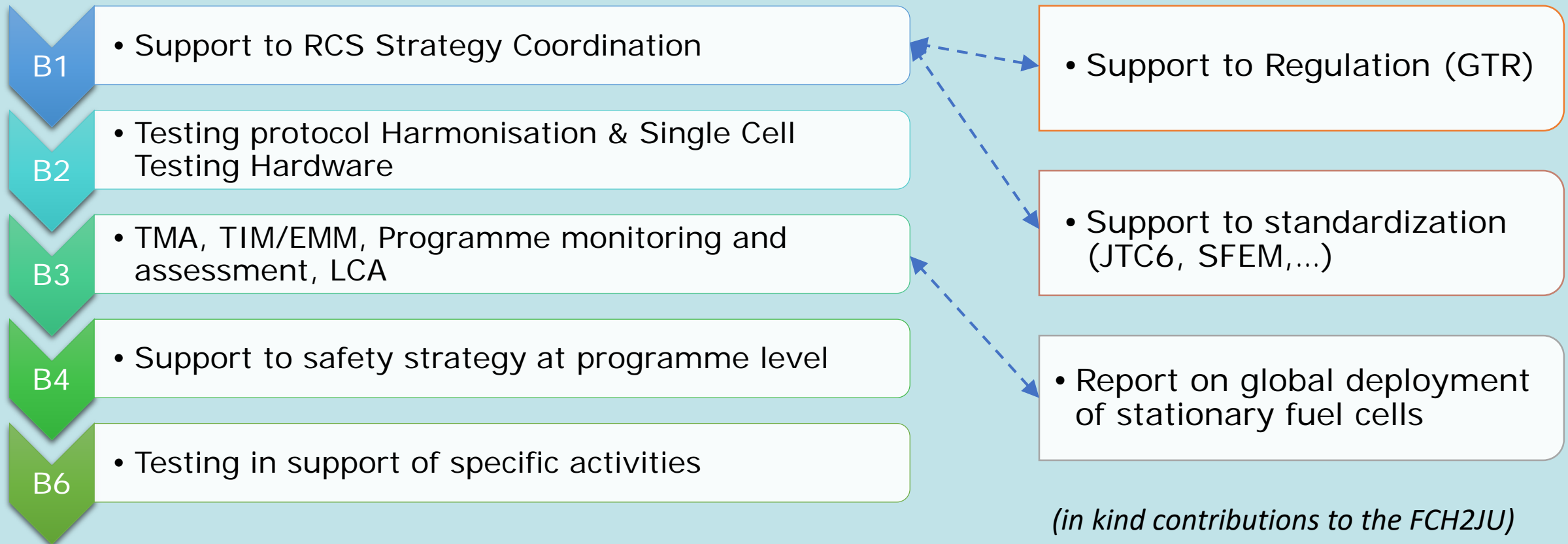


JRC hydrogen activities

Paul Hodson

FCH JU Programme Review Days 20. 11. 2019

Rolling Plan 2019 Deliverables and other JRC activities



RCS Strategy Coordination Group

Activities 2019

- JRC supporting group in coordination role (secretariat FCH JU)
- Gap analysis PNR projects → input to AWP 2020 provided
- Workshop held in June for sharing of field experiences of demonstration projects
 - Attended by 20+ participants, involvement of EHSP
 - Report under preparation



WORKSHOP ON REGULATIONS, CODES AND STANDARDS (RCS):
SHARING FIELD EXPERIENCES

FCH 2 JU, Brussels, 25 June 2019

White Paper: Common Meeting Room 1
Rue de la Woluwe 62, 1200 Brussels

Time	Topic	Facilitator
09:00 - 09:30	Registration, coffee	
09:30 - 09:45	EU/Commission Opening	FCH 2 JU
09:45 - 10:15	Agenda, objectives and organisational matters	JRC
10:15 - 10:30	FCH 2 JU activities on RCS and safety	FCH 2 JU
10:30 - 10:45	RCS Strategy coordination groups of the FCH JU	RCS SCG
10:45 - 11:00	WPLAT Project and Online Database	WPLAT
11:00 - 11:15	Model Technical Regulation for T12T	JRC
11:15 - 11:30	Regulatory safety aspects in infrastructure, FCE vehicles and materials handling	Projects
11:30 - 11:45	Project presentation and discussion: SCHOEDL, WPELOUCH, ETAMANDU, BELVE, MURT-EUROPE	Projects
11:45 - 12:00	Lunch break	
12:00 - 12:15	Regulatory safety aspects in railway fuel cells	Projects
12:15 - 12:30	Project presentation and discussion: HANCOCK, SCHNEIDER, EISENBERGER, RACE, GRIEDER	Projects
12:30 - 12:45	European Hydrogen Safety Panel (EHSP) Update at project level	EHSP
12:45 - 13:00	Collaboration with JRC	JRC
13:00 - 13:15	Highway Safety Standards	JRC
13:15 - 13:30	Summary of main challenges, lessons learned, responsibilities	JRC
13:30 - 13:45	Final Q&A, closing remarks, next steps	FCH 2 JU
13:45 - 14:00	End of the meeting	

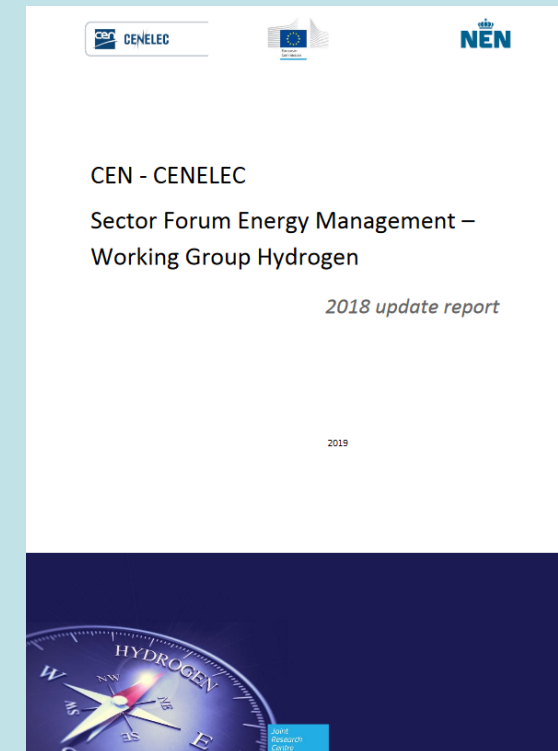
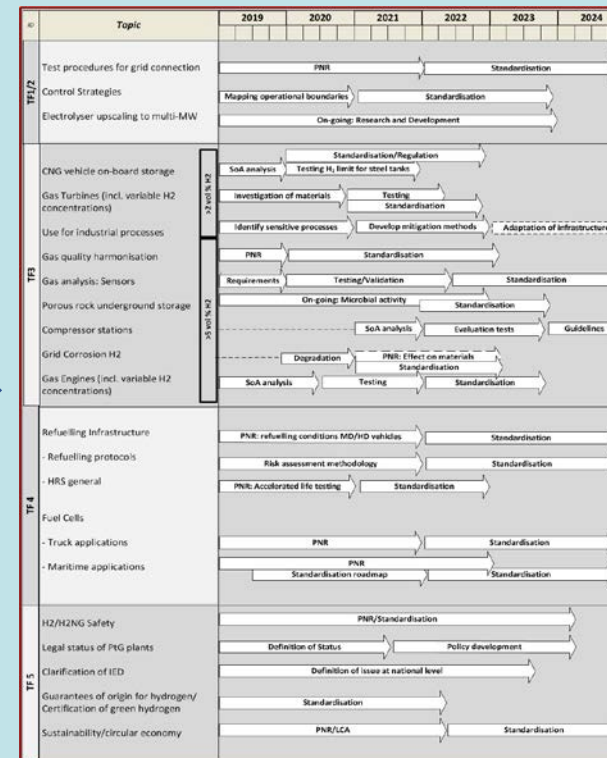


Public report will be available

Sector Forum Energy Management Working Group Hydrogen

- Objective to provide gap analysis on main research and standardisation barriers for use of hydrogen in the energy system.
- 80+ experts from more than 60 European companies and organisations
- JRC co-convener from 2015 – 2019.
- Roadmap of key near term actions
- JRC role in CEN/CENELEC JTC 6, founded on recommendation of first SFEM WG H2 report
- Outcome used on follow-up standardisation activities and for RCS SCG

(in kind contribution to the FCH2JU)



<https://ec.europa.eu/jrc/en/publication/cen-cenelec-sector-forum-energy-management-working-group-hydrogen-2018-update-report>

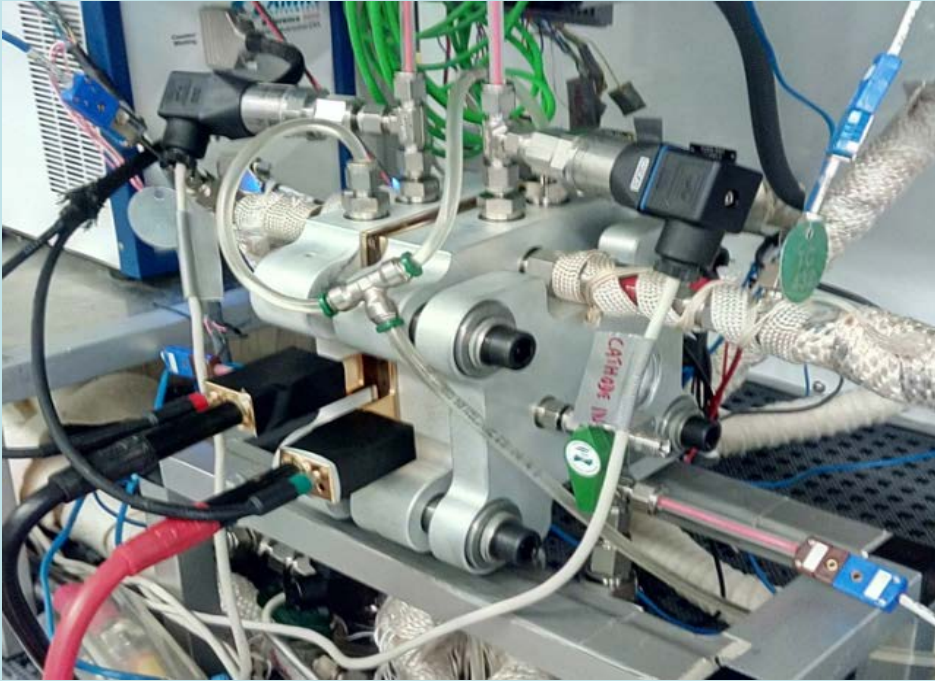
GTR13 for HFCV - *Phase 2*

Phase 2 [2017 – 2020]: focussing on HDV and buses, vehicle receptacle, on-board storage tests, Fire tests, material compatibility.

The results of several FCH2JU PNR projects contribute to Phase 2

JRC is supporting DG GROW in this work and reporting back to the FCH2JU RCSSC group (*in kind contribution to the FCH2JU*).

Single Cell Testing Hardware JRC ZEROVCELL

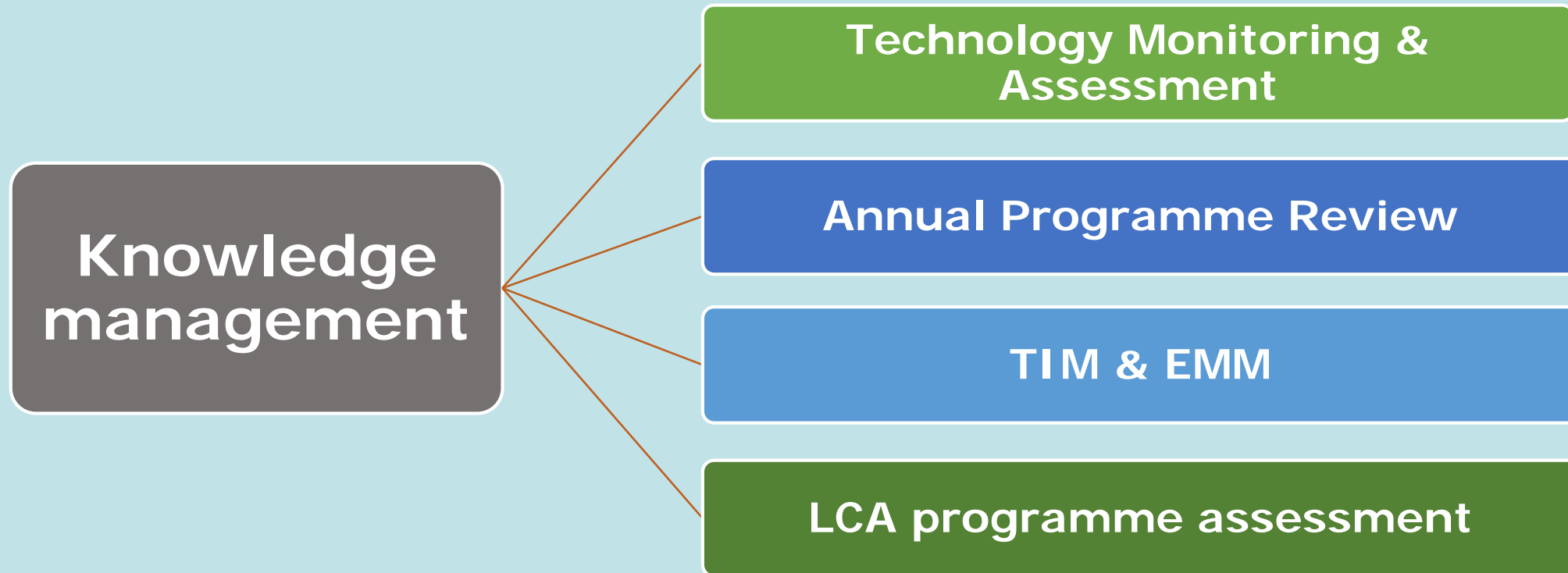


- Final JRC ZEROVCELL single cell test hardware with 10 cm² active area
- For use in MEA testing by partners of FCH 2 JU funded projects following NDA signature
- Blueprints (drawings) shared with IDFAST project partners (CEA, POLIMI, DLR, Fh-ISE, ZSW) following NDA signature
- Possible interest expressed by IRD, CIEMAT, TU Chemnitz, CNRS, PSI, TU Graz, Univ. Birmingham, VTT, SINTEF, JMFC, NedStack

Testing protocols

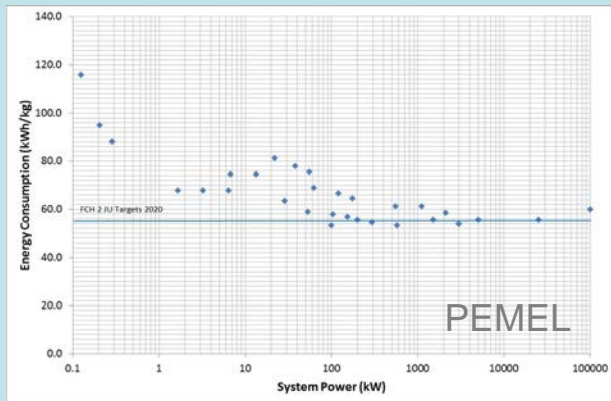
- Low-temperature water electrolysis (LTWE) testing protocols harmonisation – final report soon to be sent to expert group
- High temperature electrolysis (HTE) terminology document – expert group decided on work programme for 2020 with first draft in Q1 and final report in Q4
- Outcome will be utilised for standardisation activities (IEC and ISO)
- Outlook:
 - support to FCH community on use of JRC ZERO∇CELL single cell test hardware
 - MEA testing upon request
 - Public reports

Programme monitoring & assessment



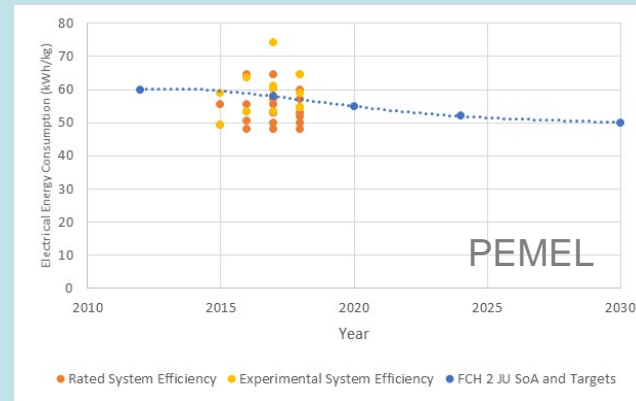
Technology Monitoring & Assessment

- Historical Analysis reports:
 - Electrolysers and Stationary Fuel Cells
 - Reporting on KPI achievement and SoA
 - 100+ projects covered



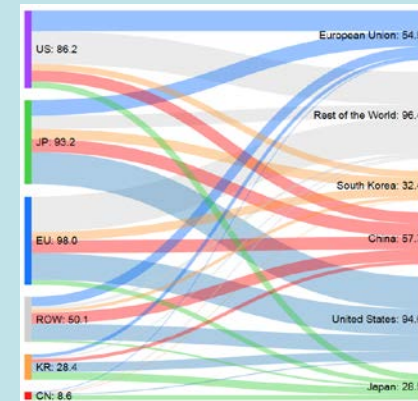
SoA data

Data source: JRC based on Commercial Data



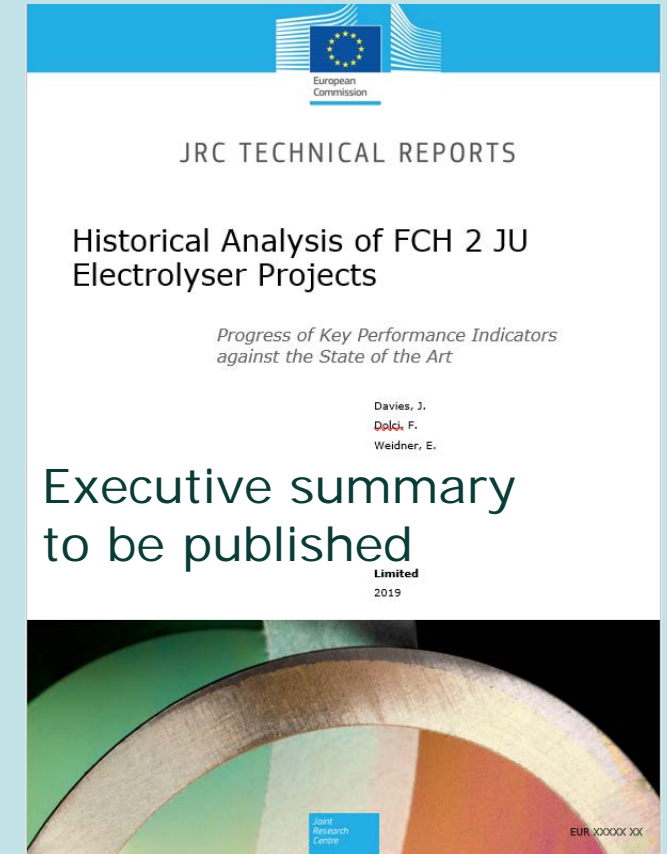
KPI analysis

JRC based on FCH JU TRUST database



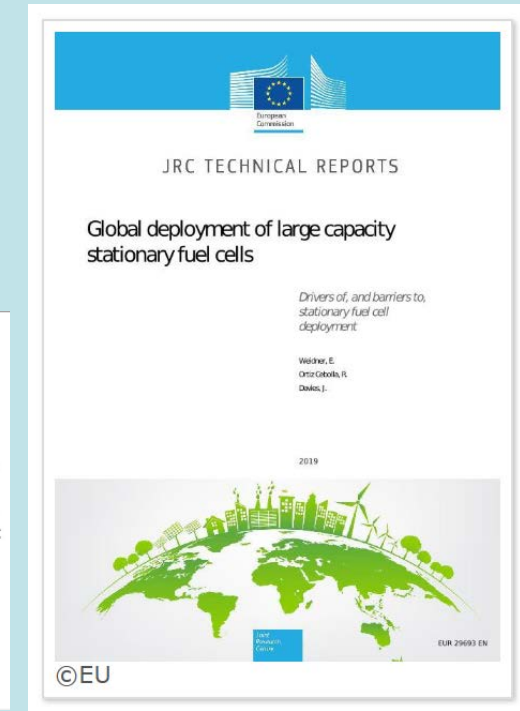
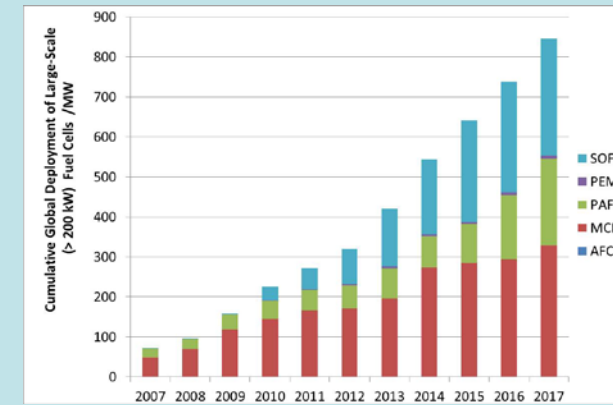
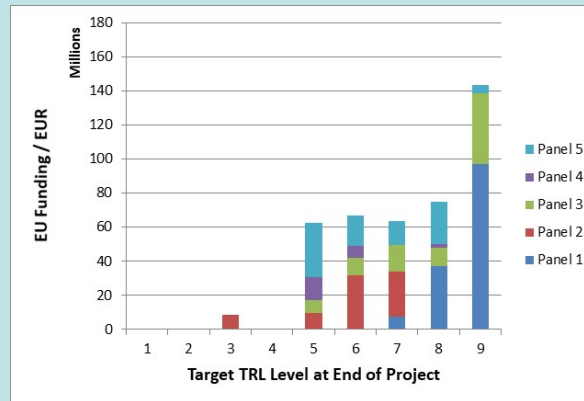
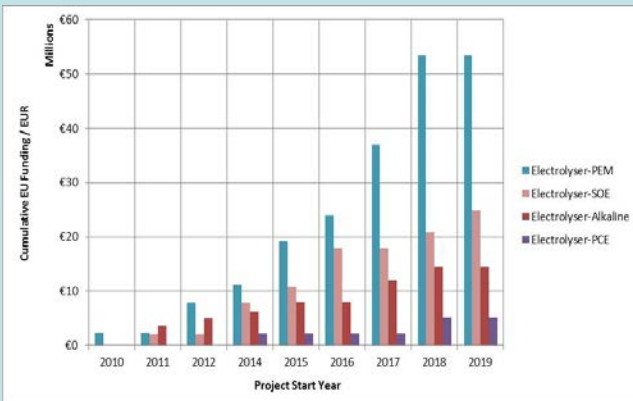
Patent analysis

JRC based on EPO PATSTAT database



Technology Monitoring & Assessment

- *Not part of B3: Global Deployment of Large Capacity Stationary Fuel Cells*
 - *Database created of installations over 200 kW, shared with FCH observatory*
- Public version planned: Keyword Analysis of FCH JU Projects
- TRL Analysis



TRL Analysis

Data source: JRC based on Public Data

Keyword Analysis

JRC based on CORDIS Data

FC Deployment

JRC based on Public Data

(<https://ec.europa.eu/jrc/en/publication/global-deployment-large-capacity-stationary-fuel-cells>)

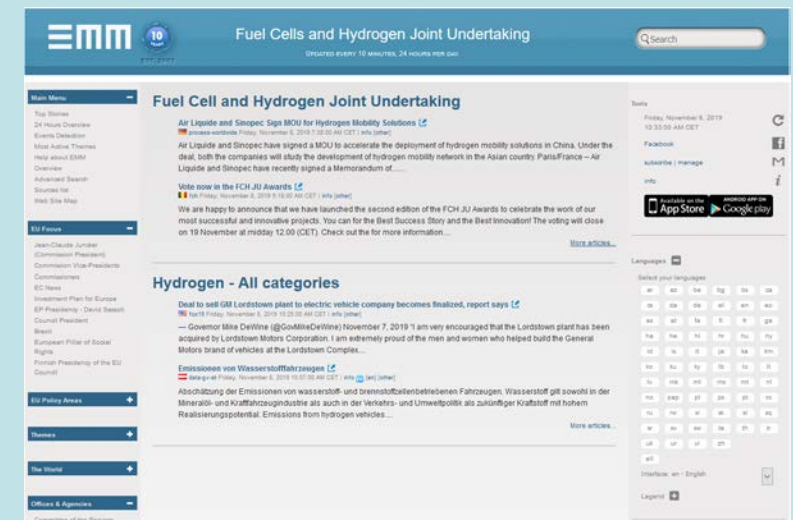
TIM

- System is set up and running
- "H₂ production methods" technology field delivered
All other fields revised from scratch
- Latest projects and FCH-funded publications/patents tagged inside the system



EMM

- Further developments and customisations
- Access to helpdesk (email support, problem tracking)
- Daily monitoring of FCH media and technology monitoring systems.



Annual Programme Review

- Individual projects are reviewed to evaluate overall programme status
- Review of contribution of projects to overarching objectives
- Information on budget distribution and participation

Sources for Review

TRUST

EU SURVEY

TIM

Projects
DeliverablesProjects
Web-Pages

JRC with input from FCHJU

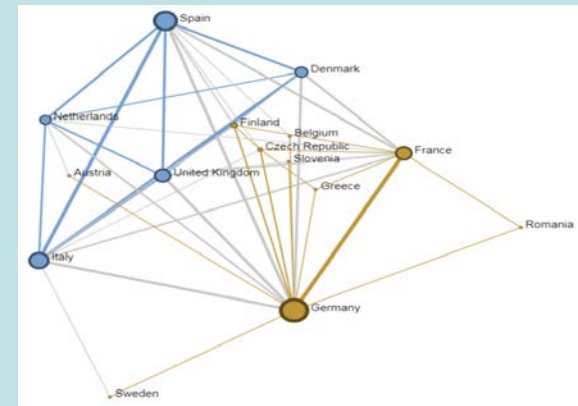
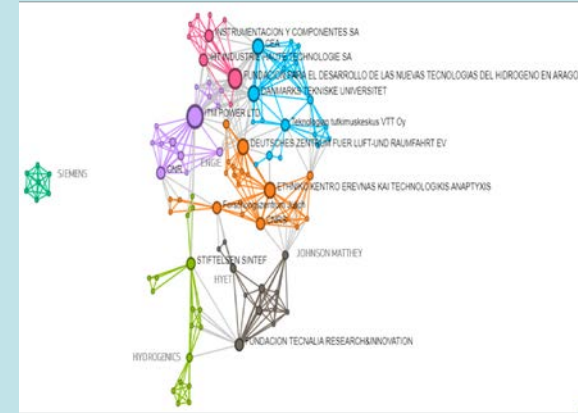
FCH JU



Limited version

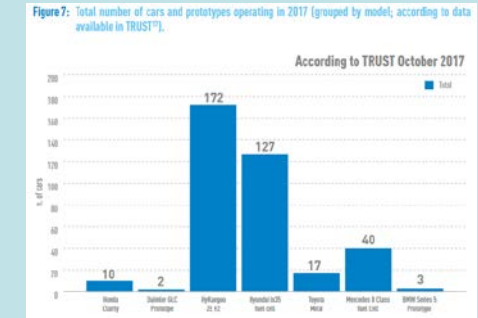
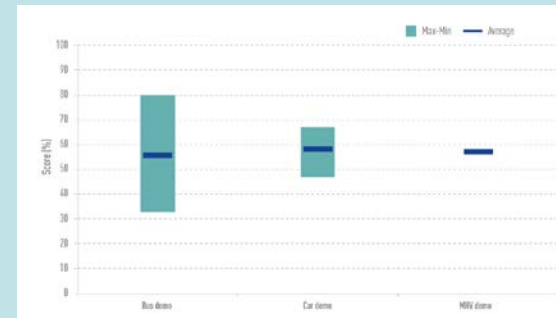
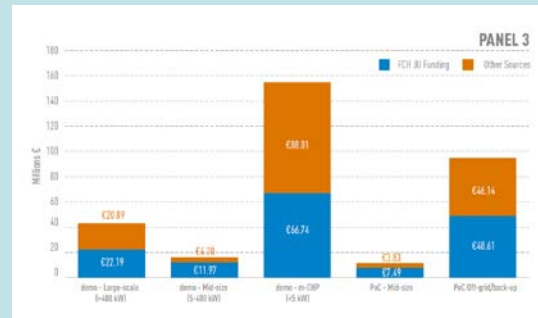
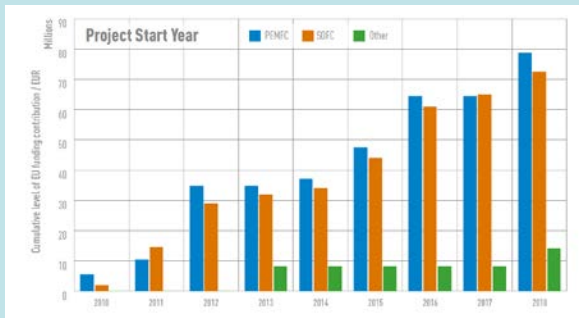


Public version



Public Report 2018

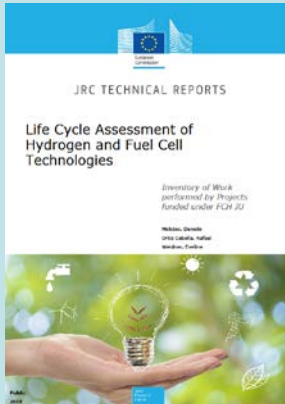
- Overview of policy relevant events of the year
- Summary of projects achievements and status per panel
- Identification of strengths and where additional focus is needed
- Distribution of budget
- Public KPI data
- Summary scoring per focus area





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- JRC TECHNICAL REPORTS
- Workshop on the field of LCA
on Fuel Cells and H₂ Technologies
- Summary of the main
outcomes*
- Madelon, Dorothea
Lefter, Catalina, Vangel
Madelon, Dorothea

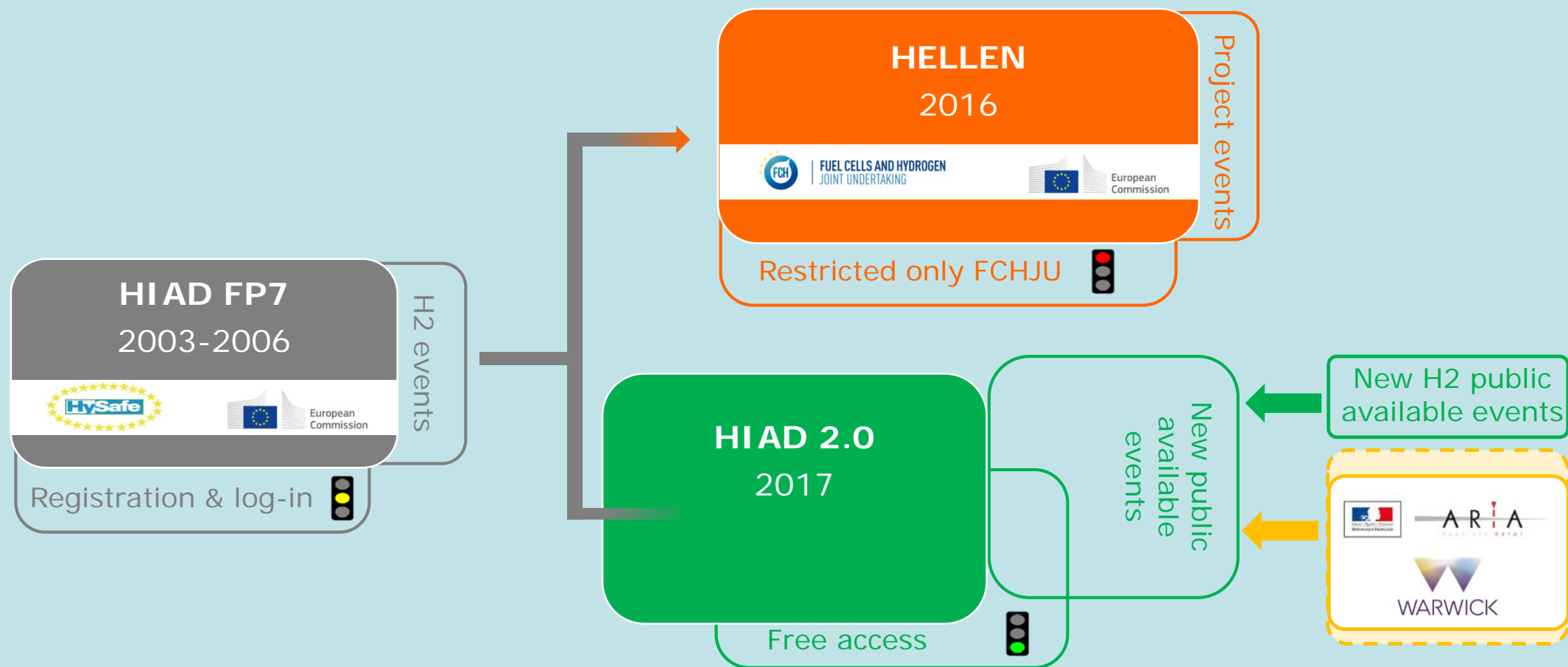
To be published
November 2019



Limited distribution

Public version
Available from JRC
science hub and
FCH JU website

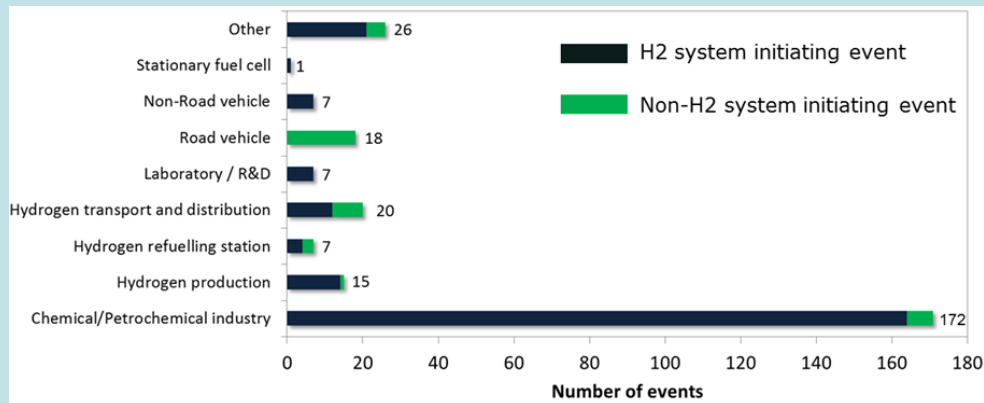
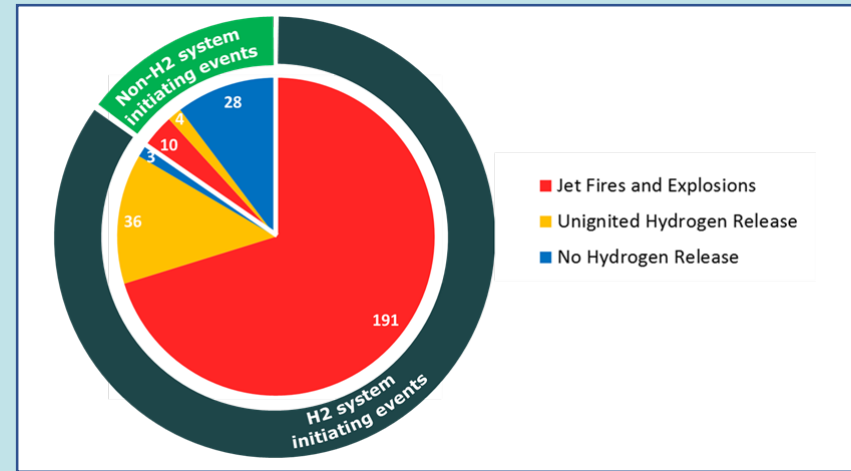
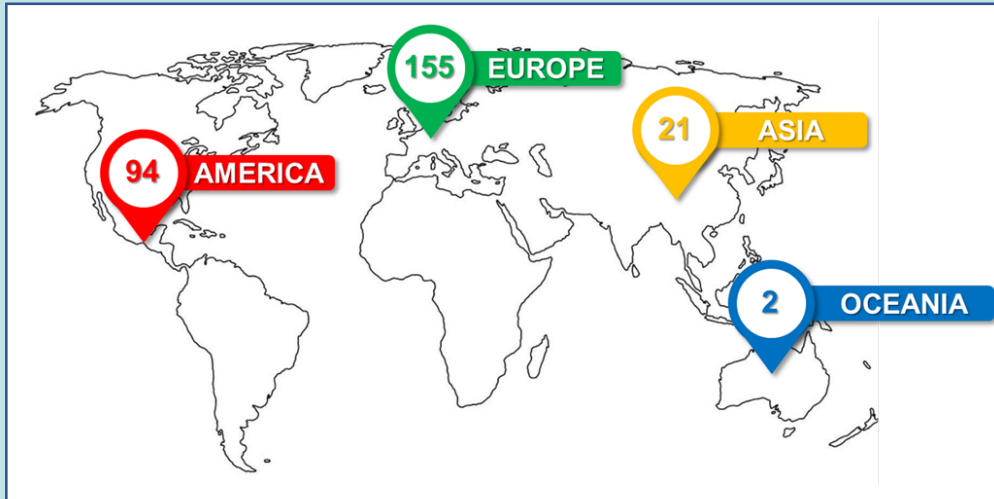
Support to safety strategy



Number of events: 272 (2019)

Number of events: ~650 (2020)

Support to safety strategy



HIAD 2.0 data analysis

EHSP and JRC are working on lessons learned as basis for better safety guidelines

JRC interaction with FCH 2 JU projects

Under H2020 there are two options:

1. JRC Open Access Initiative

OPEN ACCESS TO JRC RESEARCH INFRASTRUCTURES accessible at <https://ec.europa.eu/jrc/en/research-facility/open-access>

2. JRC – Project agreement via the FWC Contract with the FCH 2 JU

JRC is providing testing services by means of JRC reference facilities and reference hardware, to support testing harmonisation

In the previous three years this deliverable was not activated, however, 2020 year testing activities are foreseen, following requests from projects (i.e. AD ASTRA).



Any questions?

Contact us at Paul.Hodson@ec.europa.eu or Eveline.Weidner@ec.europa.eu



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