

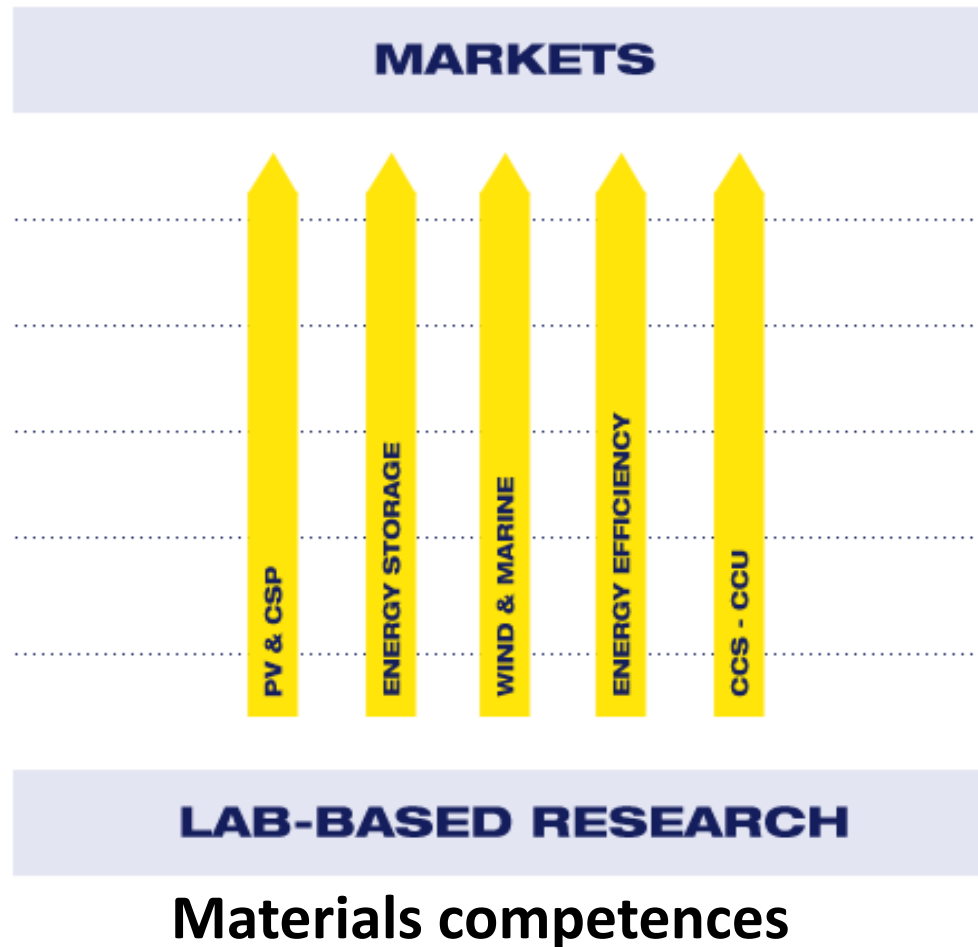
EMIRI

**Industry-supported
Research & Innovation on Advanced Materials for Energy
Harald BOLT – Forschungszentrum Juelich**

EMIRI – Energy Materials Industrial Research Initiative
Dr Fabrice Stassin - Managing Director
fabrice.stassin@emiri.eu
www.emiri.eu

Innovation for low carbon energy relies on new and better materials

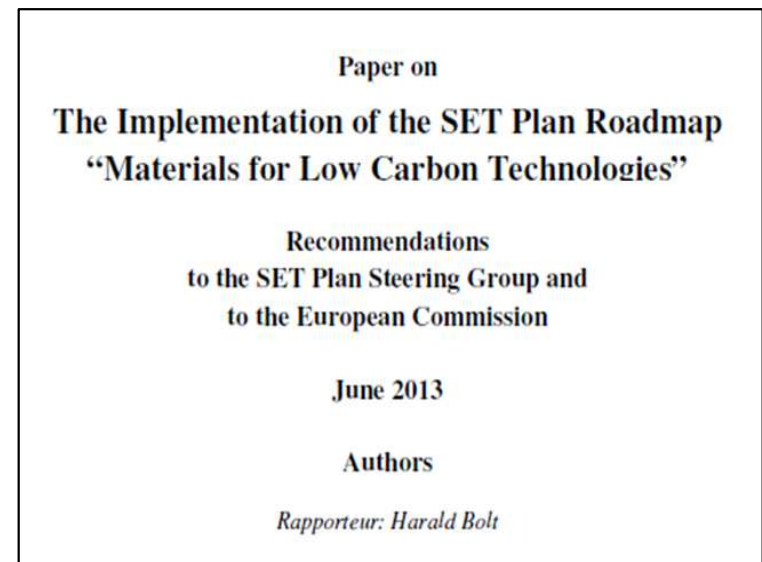
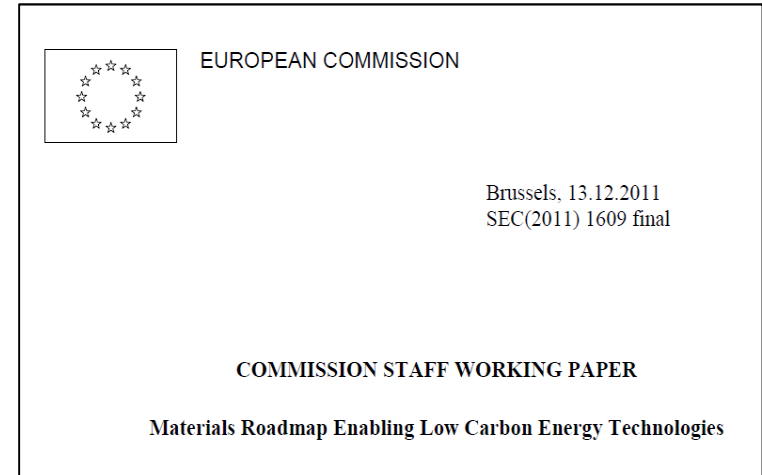
- Advanced Materials are typically **the cross-cutting element enabling energy technologies**
- **Relate materials R&I competences to specific energy applications**



SET Plan Materials Roadmap (2011) led to EMIRI creation (2012) as well as EERA-AMPEA

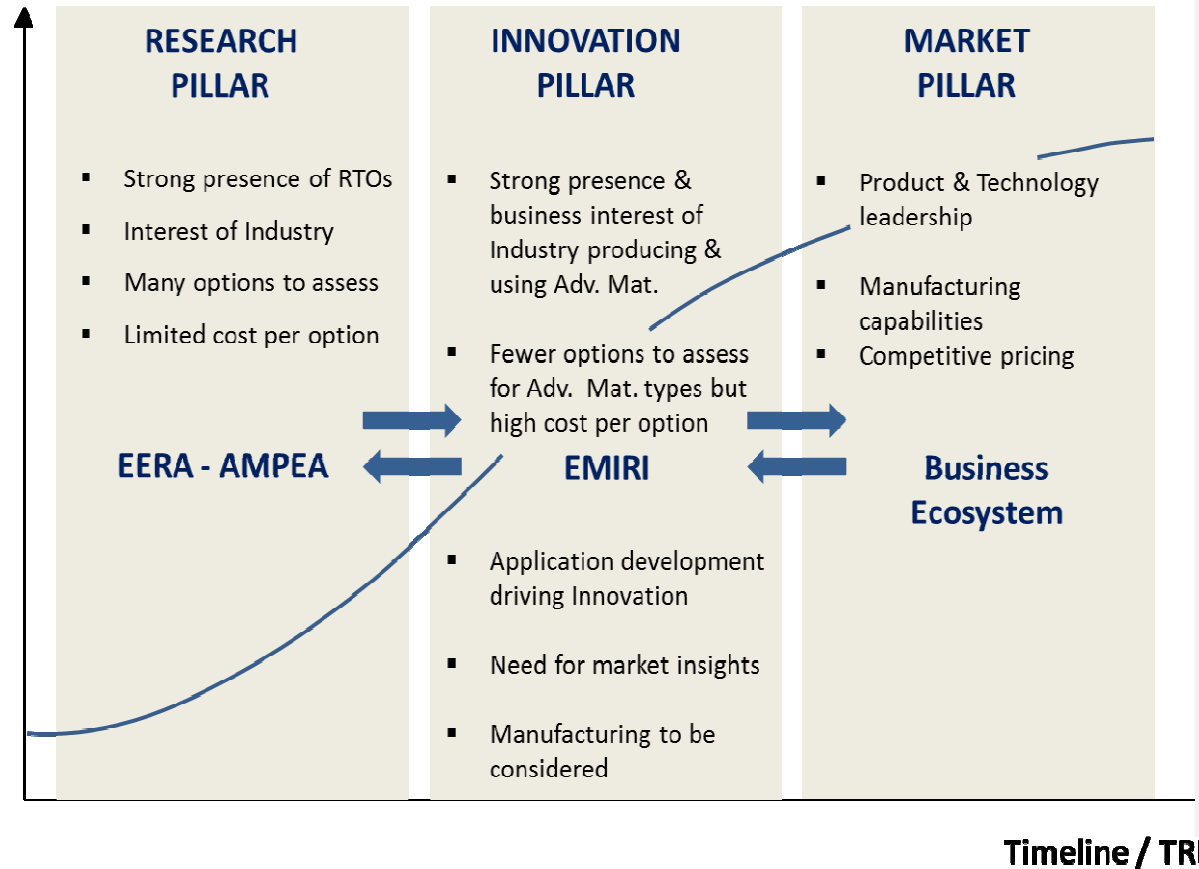


- SET Plan needed to be “translated” into the SET Plan Materials Roadmap
- Strong involvement of key Industrials & Research organizations
- →Formation of EMIRI with a clear scope reinforcing public & private interactions for effective & efficient innovation
- Discussion of implementation options of SET Plan Materials Roadmap in 2013
- Events to form joint industry/RTO community
- Contribution to SET Plan Integrated Roadmap in 2013
- Discussion of R&I priorities in 2013 with regard to Horizon 2020 2014/2015 calls



Integrated European approach from basic science to market

Performance
Indicator



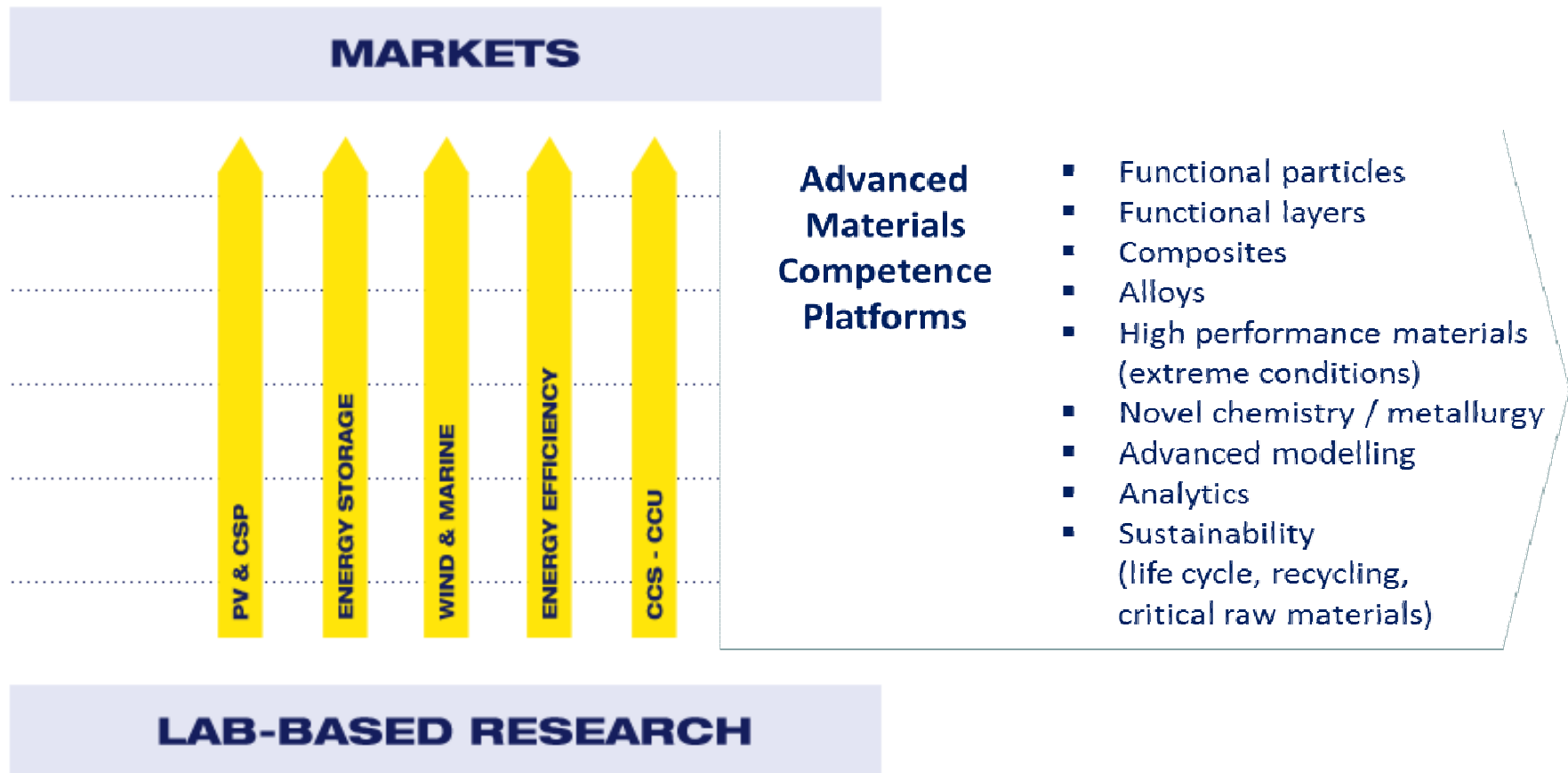
MAIN ACHIEVEMENTS

- Input to the SET Plan I.R.
- 12 Orientations supported by Industry & RTOs
- Elaborated Call proposals (15+) from 12 Orientations
- **Assessing feasibility & building up elements of a PPP on Innovation in Adv. Mat. for low carbon energy**

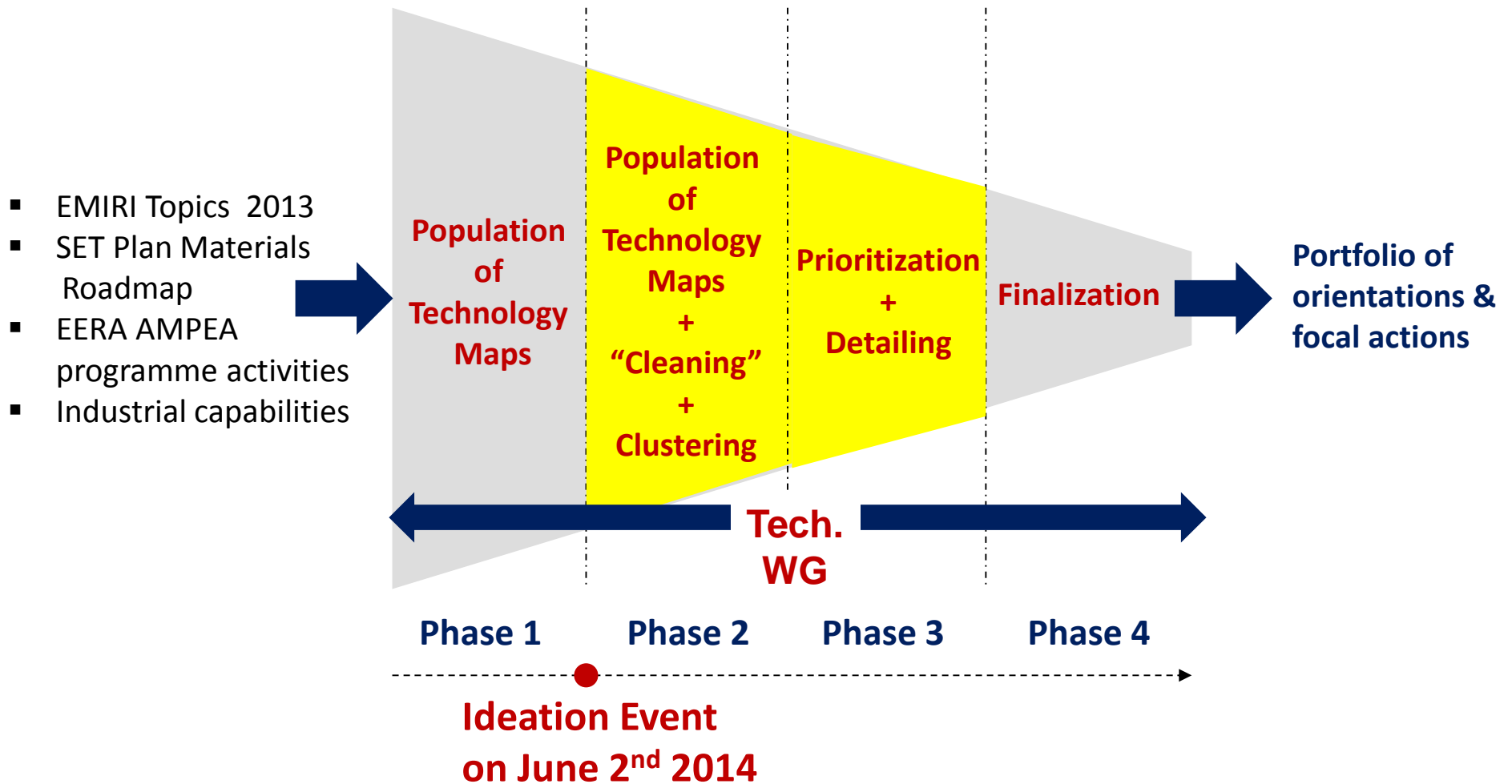
EERA -AMPEA and EMIRI bridge gap from basic materials science towards the market

Innovation in Advanced Materials for low carbon energy relies upon competences

- **Competence platforms as characteristic of EMIRI approach**



The process towards a portfolio of orientations & call topics for 2016-2017 was kicked off mid 2014



EMIRI Ideation Event mid 2014 involved 100+ contributors and led to 75 ideas to be explored



Technology WG	Number of proposals
PV & CSP	12
Energy Storage & Grids	26
Wind & Marine	17
CCS & CCU	9
Energy Efficiency	11
TOTAL	75

The criteria to prioritize the orientations were set with innovation & market uptake in mind and agreed with DG RTD

- Impact / Benefit for Industry in Europe (market size, growth, leadership)
- Strong capabilities in RTOs
- Existing value chain elements
- Existing partnerships
- TRL above 4
- Impact already for 2020

12 orientations defined and supported by Industry & Research

At least 12 “orientations” (innovation tracks) defined by Industry & Research in EMIRI for H2020



Advanced Materials as "key enablers" tackling EU Energy Challenges

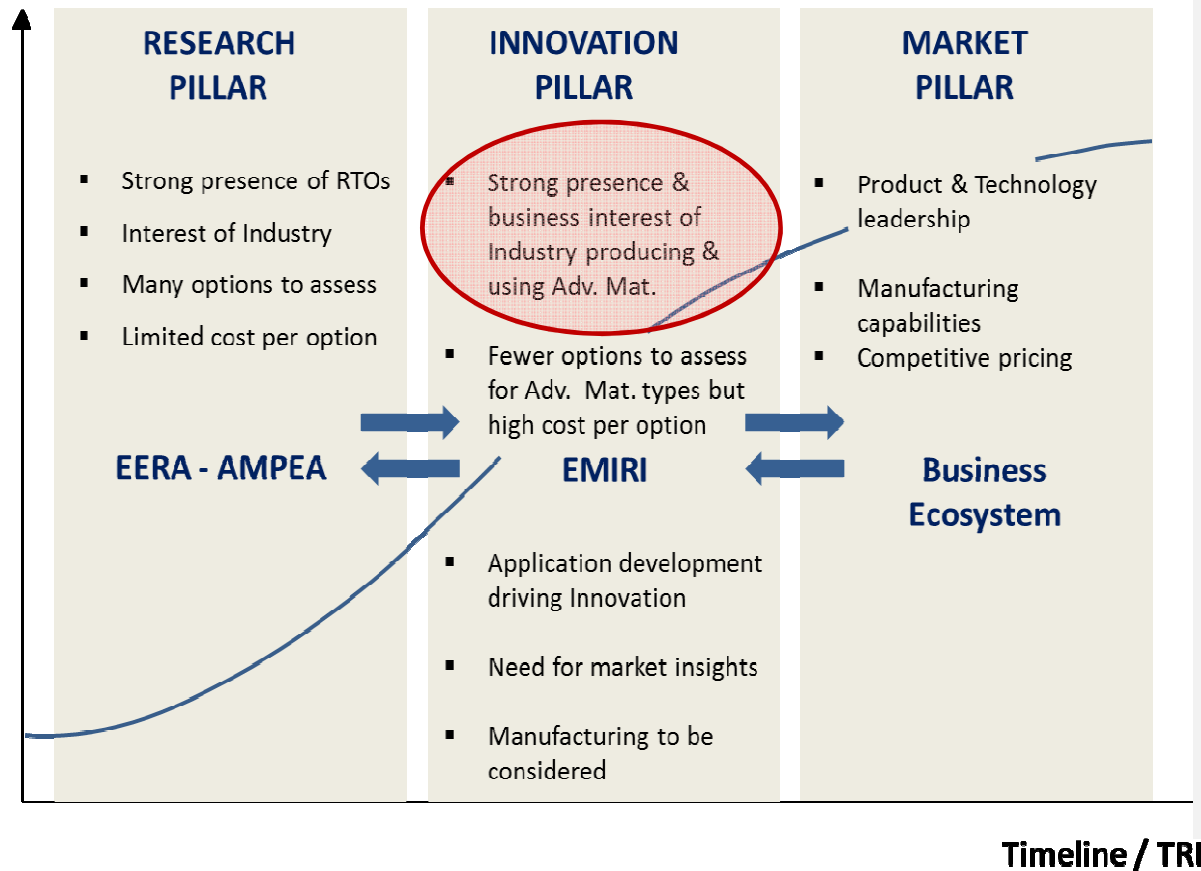
Challenge 1 Advanced Materials for Energy Efficiency	Challenge 2 Advanced Materials for a "competitive, efficient, secure, sustainable & flexible energy system"		
Key Component 1 Advanced Materials to increase the energy performance of buildings	Key Component 2 Advanced Materials to make renewable electricity technologies competitive	Key Component 3 Advanced Materials to enable energy system integration (energy storage, grids)	Key Component 4 Advanced Materials enabling the decarbonisation of power sector

INNOVATION TRACKS (non-exhaustive list)

Advanced Materials for high performance & durable coatings	Advanced Materials for the weight reduction of structural and functional components in wind energy technology	Advanced Materials for lower cost, high safety, long cycle life & environmentally-friendly electrochemical batteries	Advanced Materials for the affordable implementation of carbon capture & storage
Advanced Materials & new deposition processes for building-integrated photovoltaics	Advanced Materials to improve the corrosion resistance of structural and functional components in wind energy technology	Advanced Materials for lower cost storage of energy in the form of hydrogen, methane, other molecules (power to gas / chemicals)	Advanced Materials for the separation & utilization of CO2 (carbon capture and utilization)
Advanced Materials for thermal energy storage	Advanced Materials and processes for high yield, large scale manufacturing of solar energy harvesting systems	Advanced Materials to facilitate the integration of storage technologies in the electrical grid	
	Advanced Materials and processes for high efficiency solar energy harvesting	Challenge-orientation In line with industrial capabilities & needs TRL >=4	

Bridge from basic science to market: stakeholders are ready to engage

Performance Indicator



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- Input to the SET Plan I.R.
- Defined 12 Orientations supported by Industry & RTOs
- Elaborated Call Topics (15+) derived from 12 Orientations
- **Assessing feasibility & building up elements of a PPP on Innovation in Adv. Mat. for low carbon energy**

EERA -AMPEA and EMIRI bridge gap from basic materials science towards the market