



**Establishing the Industrial Leadership of
Europe in Advanced Materials for the Energy Union**

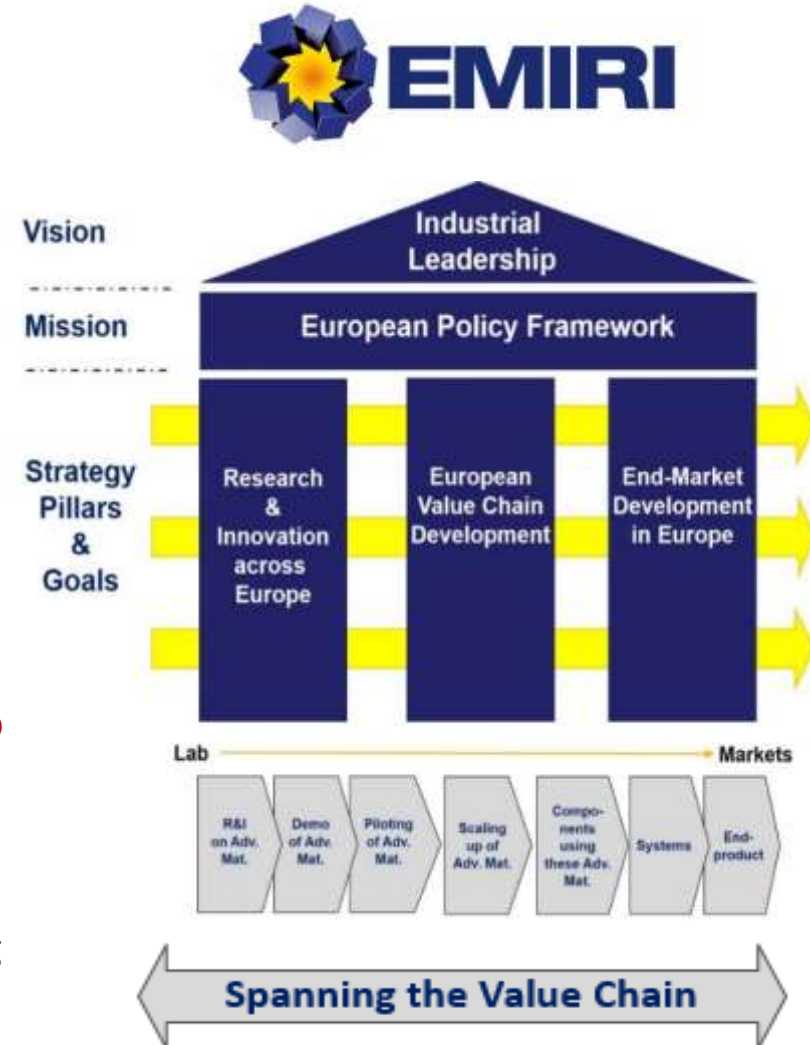
Towards a European Industrial Strategy powered by Innovation

EMIRI – Energy Materials Industrial Research Initiative – www.emiri.eu

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EMIRI Association in a nutshell

- EMIRI is an **industry-driven grouping** of over **60 organizations** (established in 2012)
- With a balance of industry players, research organizations, associations
- Across Europe & across Energy Technologies,
- Aiming to be a key player in shaping & implementing a **EU policy for Advanced Materials**
- To promote a strong and vibrant EU-based sector of **Advanced Materials for clean energy & clean mobility technologies & restore Industrial Leadership**
- Inspired by the **SET Plan** & supporting **Energy Union**
- Focusing on **innovation & bringing to market** Advanced Materials solutions to contribute to tackling Energy & Economic challenges of EU



Join us to help shape the future of Advanced Materials
for clean energy & clean mobility technologies in Europe

**Membership is open to all organizations having operations in Europe with a strong interest
in Advanced Materials ... JOIN US !**

WHY SHOULD YOU BECOME A MEMBER?



Participate in setting long-term priorities.



Be informed about EU and Member State priorities and funding opportunities



Benefit from enhanced visibility towards European and national policymakers

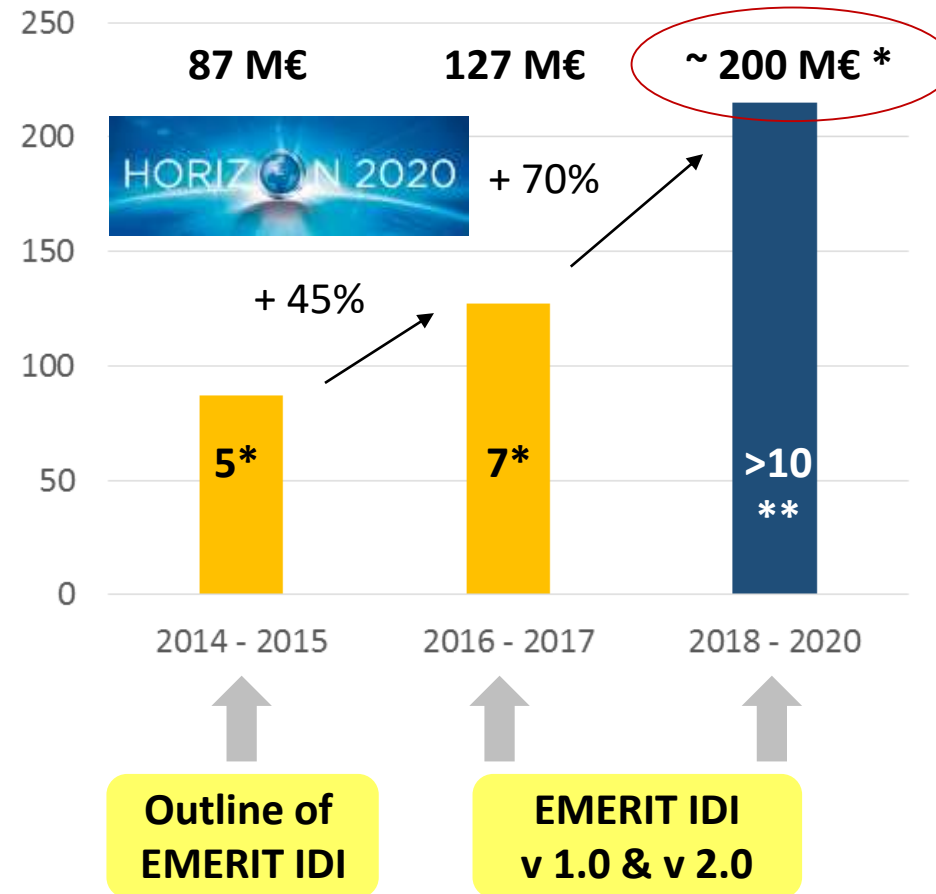


Join a proactive, motivated network of potential future consortium partners



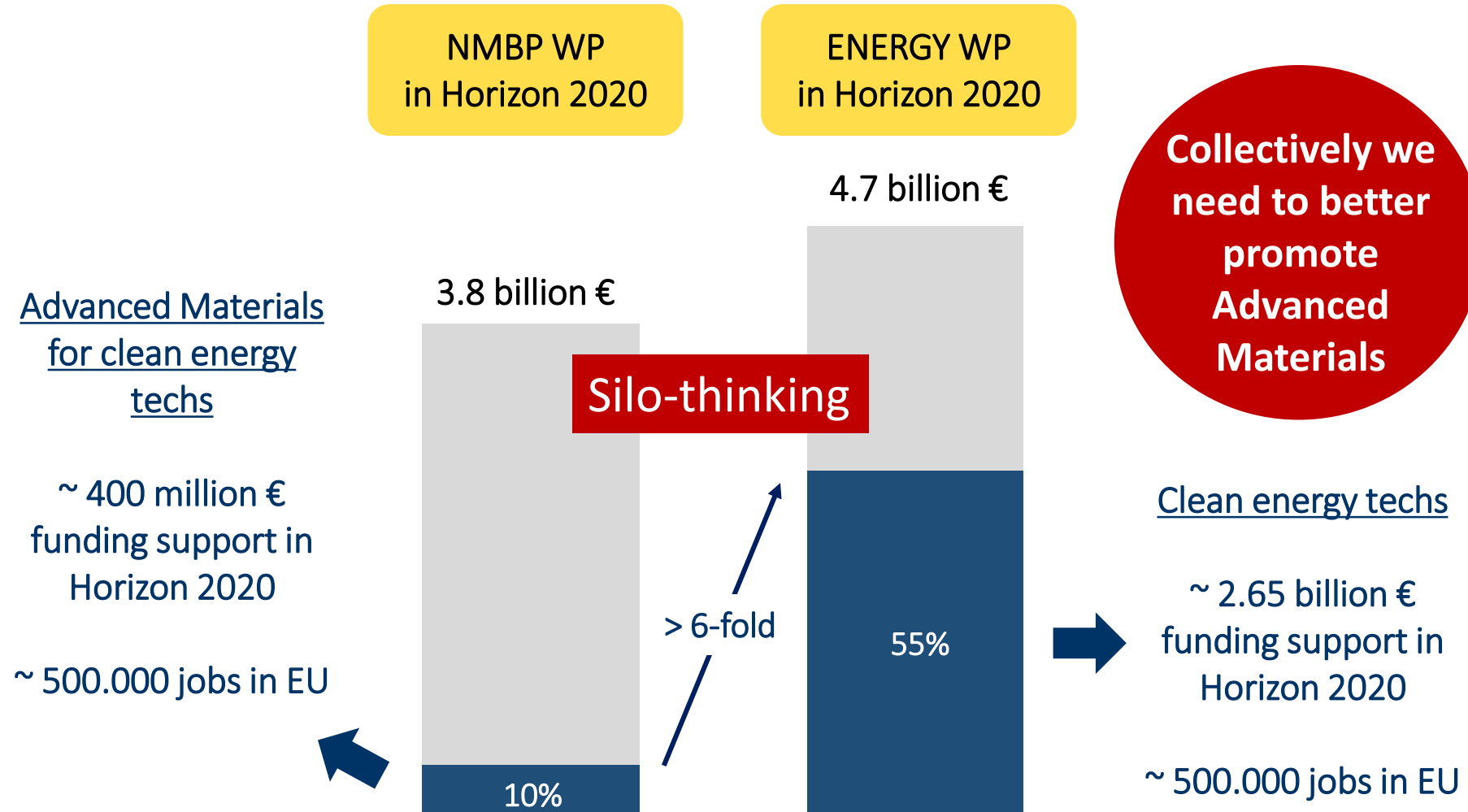
Achievement EMIRI actions contributed to supporting evolution in EU R&I funding on Advanced Materials for clean energy & clean mobility technologies

EU NMBP funding on Advanced Materials for Energy in Horizon 2020



* Based on latest estimates

Issue for future Despite strong progress in EU funding of R&I on Adv. Materials, adjustment needed in FP9



ENERGY WP 2018-2020 (current draft under analysis) is focusing more on technology integration than on technology development

Join us as EMIRI Community Stakeholder !



IF you are not ready to commit resources to becoming full EMIRI Member

BUT you still wish to help shape the EU Innovation Framework and contribute to Industrial Leadership of Europe-based developers, producers and key users of Advanced Materials for low carbon energy (LCE) technologies

THEN join the EMIRI Community !

Becoming EMIRI Community Stakeholder is 'free of charge' and offers numerous benefits:

1. Staying informed on EMIRI's developments regarding R&I on Advanced Materials for LCE technologies
2. Potential access to information on Horizon 2020, Advanced Materials, Integrated SET Plan & LCE technologies
3. Potential access to some EMIRI Events
4. Potential access to Support Letters in frame of Horizon 2020
5. Interfacing with EMIRI Members (Industry, Research, Associations)
6. Access to an EMIRI Community Platform (provided enough stakeholders sign up!)



Join the EMIRI Community by completing the Google Form at <http://bit.ly/2qOdGnd>



INNOVATE WITH EMIRI

Proposal from EMIRI regarding Missions in FP9

“Restoring EU competitiveness in clean energy & clean mobility technologies through accelerated innovation in Advanced Materials”

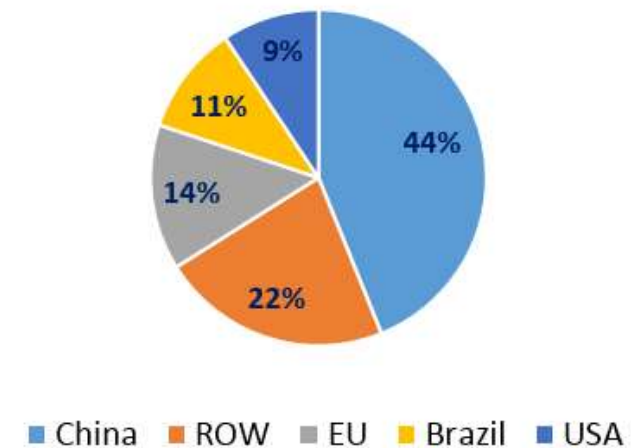
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EU is losing leadership in growing global market of clean energy techs * leading to deindustrialization and job destruction while other Regions do thrive

- Deindustrialization in EU of clean energy value chains is well underway and should be tackled by public and private sectors (EU lost a net 100.000 jobs over the 2013-2016 period)
- Without the presence in EU of a strong and globally exporting advanced materials industry, the job loss would have been worse
- Advanced materials industry created 40-50.000 jobs over that period while the downstream part of the clean energy value chains lost 140-150.000 jobs
- At the same time, a net 150.000 jobs were created in USA and about 1 million in China
- If trend persists without EU action, EU will pass below 1.000.000 jobs in clean energy by 2020
- And its share of globally-existing clean energy jobs would drop to below 10% by 2020
- By 2020, China would represent > 50% of all jobs in clean energy (at ~ 5.6 million jobs) and USA would overtake EU

8.3 million jobs in 2016 globally

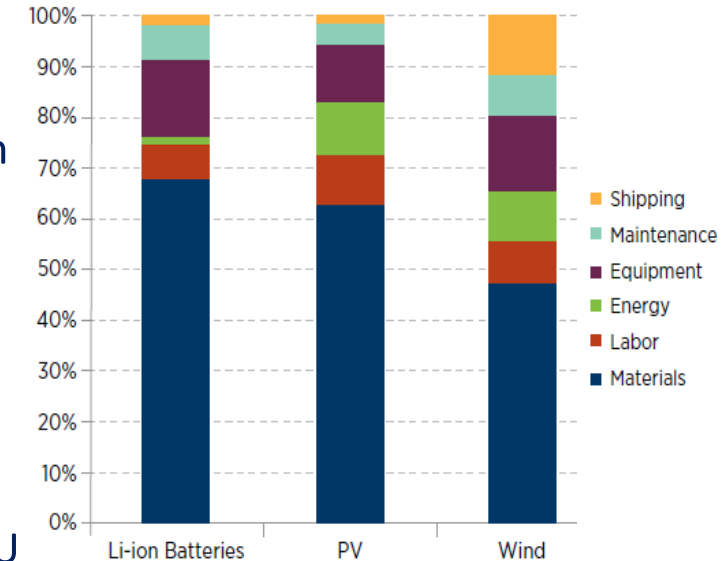


* Techs stand for Technologies

** Calculations based on figures from IRENA, REN21, EMIRI

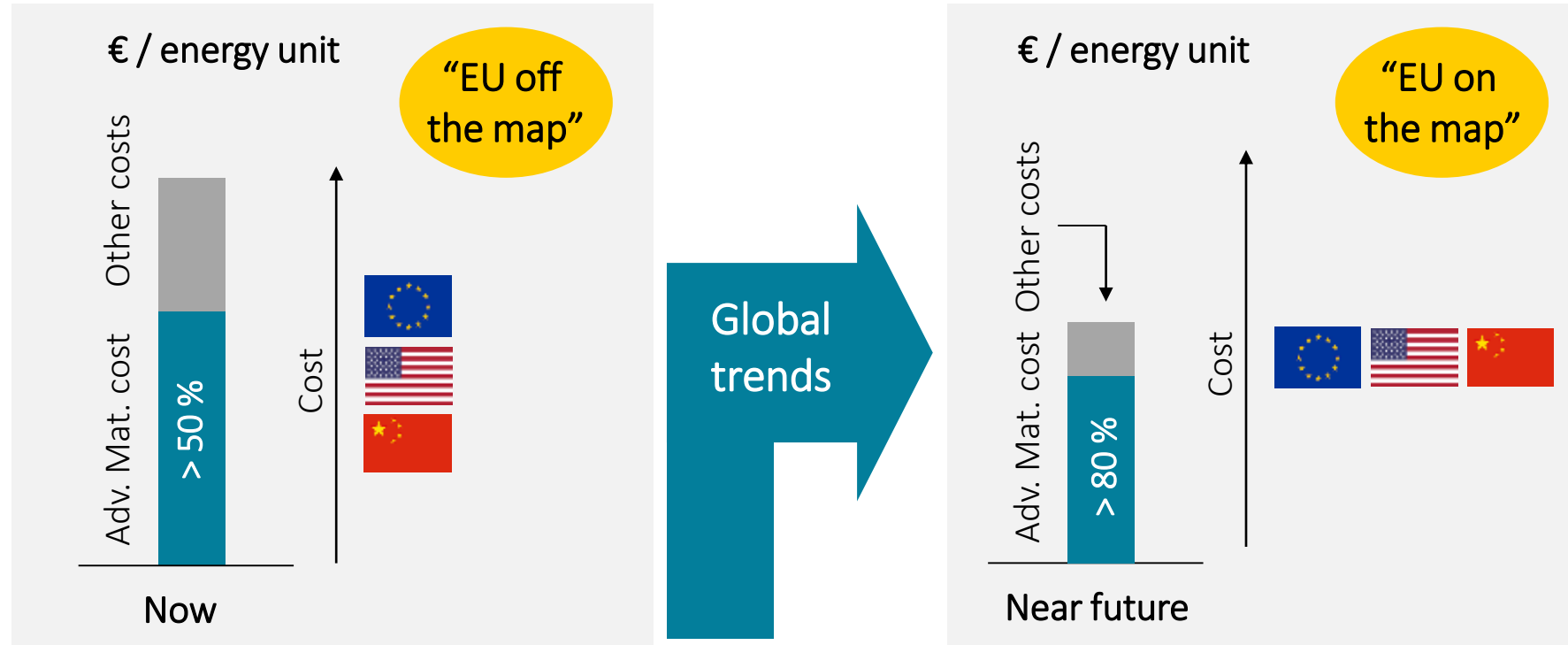
A strong EU-based advanced materials industry is key to reindustrialize EU in clean energy & clean mobility techs

- Advanced materials industry is central to tackling deindustrialization of EU in clean energy value chains while building the clean mobility value chains as well
- EU-based industry of advanced materials for clean energy techs represents more than 30 billion euro yearly revenues, 10 percent is reinvested in R&D and production capacities
- **Our industry employs 500,000 people (direct & indirect) which is half of all European jobs in clean energy value chains** and created about 40 - 50,000 jobs in the period 2013 – 2016 to serve European market as well as global markets
- Advanced materials represent more than 50% of cost structures of these techs and accelerated innovation in advanced materials is key to accelerate innovation in clean energy & clean mobility
- In near future, global trends will impact manufacturing cost structures of clean energy & clean mobility techs (bringing share of advanced materials in cost above 80% and squeezing out labor and energy costs) **and enable manufacturing of clean energy & clean mobility techs in EU to serve EU market (“made in EU for EU”)**



* Extracted from US DOE's CEMAC reports

Global trends will impact manufacturing cost of clean energy & clean mobility techs making it possible to manufacture in EU to serve EU market



1. East Asia's shrinking cost advantage (Eastern Europe on the manufacturing map)
2. Advances in manufacturing technology (Industry 4.0) reducing labour & energy costs
3. More performant clean energy & clean mobility techs (leads to higher share of advanced materials in cost structure)
4. Congested maritime shipping routes and increase in shipping costs and risks

How will EU benefit from these trends? How can we leverage FP9 to accelerate the shift?

- In “EU on the map”, we see decreased cost of clean energy & clean mobility techs, squeezed out labour and energy costs and increased share of Advanced Materials in new cost structures
- Advantage of “made in China for EU” built on low labor costs, lower bill of materials and scale is then much less present in the benefit of “made in EU for EU” thereby restoring presence in EU of an industry manufacturing clean energy & clean mobility techs for EU market
- New decreased cost structures also accelerate the EU market development as well as increase the EU market size for clean energy & clean mobility techs manufactured by European industry
- Presence and development in EU of manufacturing of clean energy & clean mobility techs benefits from a strong EU-based industry of advanced materials which benefits in return from a “close-to-home” customer basis while continuing to develop as well through global exports
- With new cost structures depending strongly on cost (per energy unit and over lifetime) of the advanced materials used in clean energy & clean mobility techs, **competition is on using the best advanced materials (effectiveness lever) & using them the best way (efficiency lever)**
- **Innovation in advanced materials is then to be accelerated in FP9 through strong & focused support of EU funding to share risk with industry and create strong impact in EU-based relevant value chains**
- **EMIRI-promoted “Mission” should be an ambitious program on advanced materials for clean energy & clean mobility delivering short term / mid term impact, building on the existing EMIRI’s Strategic Innovation Agenda (EMERIT) and aligned with 4 strategic priorities of EU’s Integrated SET Plan ***

Impact of EMIRI-promoted “Mission”

Strong alignment with Juncker’s key priorities (1/2)



Innovation in FP9	Impact on clean energy & clean mobility techs and their cost	Impact on EU demand for & EU supply of clean energy & clean mobility techs
<ul style="list-style-type: none"> - Accelerate innovation in advanced materials for clean energy & clean mobility techs - Perform R&I to reduce intrinsic cost of advanced materials (euro/kg), improve their performance (energy unit/kg), increase lifetime and performance stability, facilitate their integration into techs, cover elements of process & resource efficiency plus circular economy - Aligned with and enabling 4 strategic priorities of Integrated SET Plan <ol style="list-style-type: none"> (1) Strengthening EU leadership in renewables, (2) Developing affordable and integrated energy storage solutions, (3) Enabling electro-mobility and a more integrated urban transport system, (4) Decarbonising the EU building stock by 2050 	<ul style="list-style-type: none"> - Improved clean energy & clean mobility techs and new cost structures (amplifying effect of trends) - Reduction in cost of clean energy & clean mobility techs 	Acceleration in development & deployment of clean energy & clean mobility techs as well as increase in size of EU market
		Stepped up competitiveness of manufacturing clean energy & clean mobility techs in EU for EU market
	<ul style="list-style-type: none"> - Squeeze of labour and energy costs - Strong increase of share that advanced materials represent in cost structure of these clean energy & clean mobility techs 	Restoring and development of presence of EU-based manufacturers of clean energy & clean mobility techs
		Accelerated development of EU-based producers of advanced materials serving the EU customer basis and competing on global scale through exports

Impact of EMIRI-promoted “Mission”

Strong alignment with Juncker’s key priorities (2/2)



Alignment with President Juncker EU Commission's Priorities	Rationale
Accelerating transition to a resilient Energy Union (clean energy & clean mobility) with a forward-looking climate change policy	<ul style="list-style-type: none"> - Rolling-out of implementation plans developed in frame of Integrated SET Plan and enabled by accelerated innovation in Advanced Materials - Integrating elements of process & resource efficiency as well as circular economy
A new boost for jobs, growth and investment	<ul style="list-style-type: none"> - Contributing to reindustrialization in EU (towards 20% GDP from manufacturing) in field of clean energy & clean mobility - Business impact will be progressive, possibly leading in collaboration with other initiatives to creating up to 700,000 jobs (direct & indirect) in less than 10 years (50% through jobs in EU-based industry of advanced materials and 50% through jobs in EU-based industry of manufacturing of clean energy & clean mobility techs) - Adding to that, annual re-investments by industry in EU into R&D and CAPEX could easily reach 6 - 7 billion euro
A stronger global actor	<ul style="list-style-type: none"> - EU leading in fighting climate change with world-class innovated-in-EU techs - Leveraging and further reinforcing a strong EU-wide innovation ecosystem of research organizations, universities, start ups & SMEs, industrial players - Collaborating on global scene with other leading nations (e.g. "Mission Innovation")

EMIRI-promoted “Mission” on “Restoring EU competitiveness in clean energy & clean mobility technologies through accelerated innovation in Advanced Materials”

The challenge faced by Europe

- **EU losing leadership in clean energy techs leading to deindustrialization and job destruction (net loss of 100.000 jobs in 2013-2016)**
- Without presence in EU of a globally exporting advanced materials industry, the job loss would have been worse (advanced materials industry created 40-50.000 jobs in that period while downstream part of clean energy value chains lost 140-150.000 jobs)
- Without EU action, EU will pass below 1.000.000 jobs in clean energy by 2020 while China and US keep growing in the field

The opportunity for Europe

- EU can leverage a strong advanced materials industry (500,000 direct & indirect jobs - about 50% of EU jobs in clean energy) to reindustrialize EU in clean energy & clean mobility techs
- Today advanced materials represent more than 50% of cost structures of these techs and accelerated innovation in advanced materials is already key to accelerate innovation in clean energy and clean mobility techs and stimulate EU market growth
- **In near future, global trends will impact manufacturing cost structures of clean energy & clean mobility techs (lower cost, share of advanced materials in cost above 80% and squeezing out of labor and energy costs) and enable manufacturing of clean energy & clean mobility techs in EU to serve EU market (“made in EU for EU” vs “made in China for EU”)**
- **Development in EU of manufacturing of clean energy & clean mobility techs will benefit from a strong EU-based industry of advanced materials benefiting in return from a “close-to-home” customer basis and continuing to develop through global exports**
- **In near future competition is therefore on using the best advanced materials (effectiveness lever) & using them the best way (efficiency lever) prompting the need in FP9 to accelerate innovation in advanced materials to create strong impact**

The R&I needs

- Perform R&I to reduce intrinsic cost of advanced materials (euro/kg), improve their performance (energy unit/kg), increase lifetime and stability, facilitate their integration into techs, cover elements of process & resource efficiency plus circular economy
- **Leveraging existing EMIRI’s Strategic Innovation Agenda (EMERIT) and aligning with / enabling the 4 strategic priorities of EU’s Integrated SET Plan** ((1) Strengthening EU leadership in renewables, (2) Developing affordable and integrated energy storage solutions, (3) Enabling electro-mobility and a more integrated urban transport system, (4) Decarbonising EU building stock by 2050)

The impact

- **Accelerating transition to a resilient Energy Union** (clean energy & clean mobility) with world-class innovated-in-EU techs
- **Contributing to reindustrialization in EU** (towards 20% GDP from manufacturing) **in field of clean energy & clean mobility**
- **Business impact will be progressive, possibly leading to creation of up to 700,000 jobs (direct & indirect) in less than 10 years** (50% through jobs in EU-based industry of advanced materials and 50% through jobs in EU-based industry of manufacturing of clean energy & clean mobility techs) and **annual re-investments by industry in EU into R&D and CAPEX could easily reach 6 - 7 billion euro**