



## K4I Forum Dinner debate (April 25<sup>th</sup> 2018) : Where is Industry in FP9?

### The case for advanced materials for clean energy & clean mobility

Ladies & Gentlemen, members of the European Parliament, members of the European Commission, key stakeholders, I have the pleasure tonight to share with you EMIRI’s call for action in FP9 on advanced materials for clean energy & clean mobility.

Let me first start by setting the scene with 2 elements of which you may not be aware :

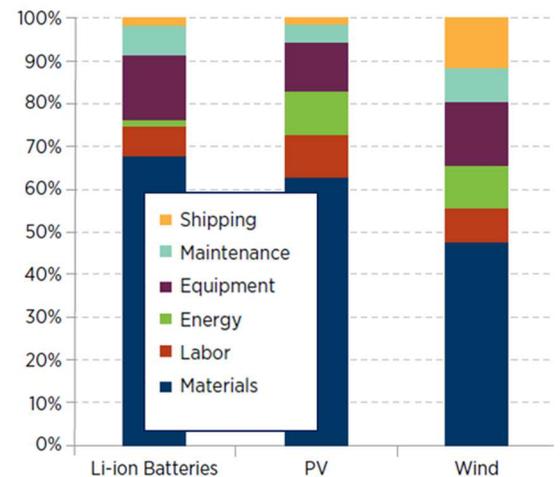
1. First element is that advanced materials (plastics, non ferrous metals, steel, glass, ceramics ...) represent today beyond 50% of the cost structure of clean energy & clean mobility technologies. Moreover trends like Industry 4.0 will squeeze out labor and energy costs possibly bringing the share of advanced materials in the cost structure up to 80% – For instance, advanced materials represent today more than 60% of the cost structure of Li-ion battery cells which are key for Europe’s transition to clean mobility.

Therefore, reducing further the cost of clean energy & clean mobility techs to enable their deployment and uptake and make the Energy Union a reality depends strongly on innovation in advanced materials (cheaper, more performant, more sustainable).

***Advanced materials are the heart of clean techs !***



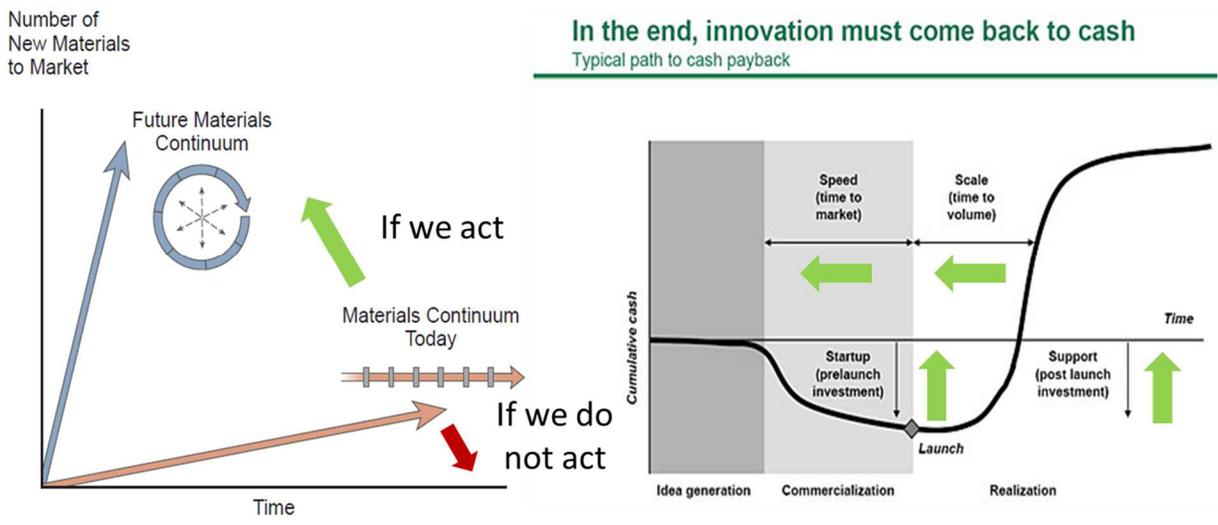
\* Processed Materials = Advanced Materials (US DOE's CEMAC reports)



2. Second element is that the EU-based industry of advanced materials for clean energy & clean mobility contributes to our economy with more than 500.000 jobs (that is about half of all European jobs in clean energy), generates more than 30 billion euro revenues (close to GDP of Bulgaria) and 10% of these revenues are reinvested annually into R&D and manufacturing facilities.

Moreover the markets for advanced materials for clean energy & clean mobility show massive growth potential and Europe cannot afford to waste such opportunities. For instance, it is estimated by the European Battery Alliance launched by VP Sefcovic that the global market for Li-ion batteries could reach 250 billion euro by 2040, with about 80 billion euro for the advanced materials contribution (more than the GDP of Slovakia)... In the future, about 10% of the value of an electric car could be the advanced materials.

*All of this looks great but we have also to keep in mind that advanced materials show a long, risky and capital-intensive development cycle to go from the lab to the factory to the market ... Thereby our industry welcomes risk-sharing policies & instruments at EU, member state and regional levels.*



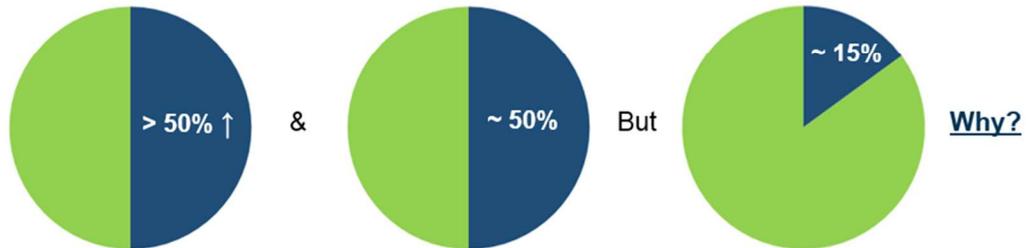
Over Horizon 2020, EMIRI had an excellent collaboration with DG R&I Directorate “Industrial Technologies” as well as with key Member States. This led to the industry-supported priorities proposed by EMIRI strategic innovation roadmap to be well considered, finding their way into the NMBP work programmes (and others) and being more generously supported than in the past.

We estimate that beyond 400 million euro of EU funding were mobilized in Horizon 2020 to support the development of advanced materials for clean energy & clean mobility technologies.

With all that progress in mind, the share of support to advanced materials in EU Horizon 2020 funding for clean energy remains low at about 15% while advanced materials represent more than 50% of the

cost structure of clean energy & clean mobility technologies and about 50% of all EU jobs in the field... This situation is difficult to understand for industry as you can all imagine.

**EU innovation support remains moderate in Horizon 2020 despite the key role of Advanced Materials and their contribution to EU economy**



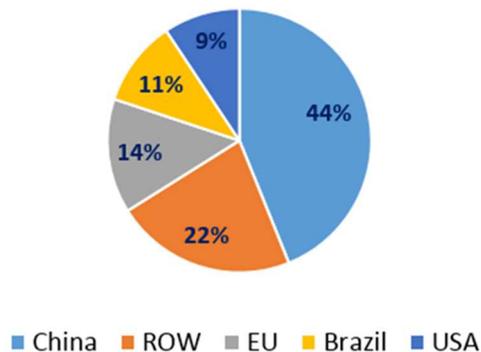
Moreover, developments regarding EU Commission’s forthcoming FP9 (Horizon Europe) could affect negatively EU support to advanced materials (both in terms of funding envelope and in terms of calls becoming too generic with expectingly a low success rate). Moreover, locating R&I on advanced materials under the global challenge of “digitizing industry” seems very odd and not very relevant.

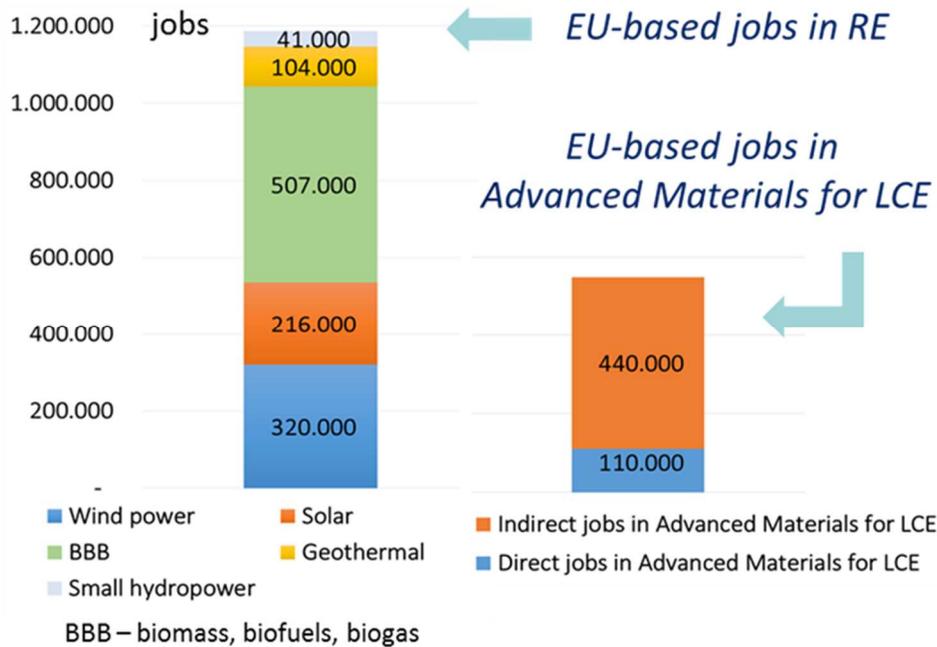
A drop in EU support would contribute to slowing down innovation, weakening European industrial leadership and EU not delivering on its Energy Union promises:

1. We fear indeed that Europe will further lose industrial leadership and will not generate the much-needed economic growth & jobs for citizens (who strongly support European transition to clean energy & clean mobility technologies)

*Over 2013 to 2016, EU already lost a net 100.000 jobs in the field while China created a net 1 million jobs. EU represented less than 15% of jobs in the field in 2016 while China already represented about 45% and the trend is clear. Without ambitious actions, EU will pass below 1.000.000 jobs in clean energy by 2020 (10% of global jobs in the field).*

8.3 million jobs in 2016 globally



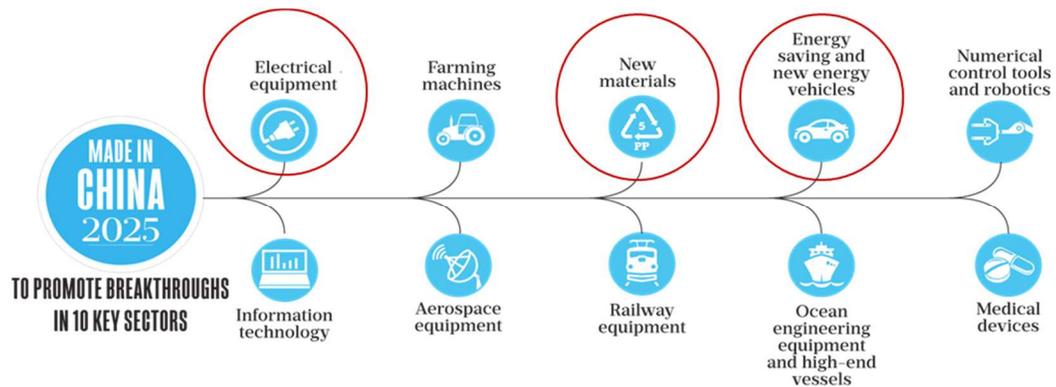


RE – renewable energy

LCE – low carbon energy (renewable energy & energy efficiency)

- We also fear that Europe will weaken its innovation ecosystem in technologies critical to climate change mitigation

With China spending more and more annually on R&I in clean energy & clean mobility technologies, EU is now challenged and could become a follower. The situation is worsened by fragmentation, unclarity and instability of European R&I support. In China, advanced materials are among the 10 priorities of “China Manufacturing 2025” ... This is not the case in Europe and we regret it.



- Last but not least we fear that Europe will replace its dependence on fossil fuels from outside EU by dependence on imported clean energy & clean mobility technologies

Today more than 50% of industrial players in top 10 of manufacturers of wind turbines, solar modules, batteries, ... are Asian. While EU developed over the years its markets for clean energy & clean mobility, a lot remains to be done to develop a globally competitive European supply basis which can serve these markets.

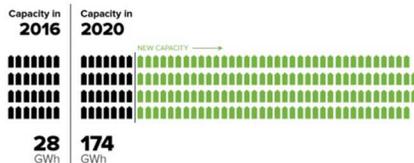
TOP 5 Solar Panel Manufacturers [Ranked by shipment guidance (GW)]			
●	1. Sharp	🇨🇳	1. Trina Solar
🇺🇸	2. First Solar	🇨🇳	2. Yngli Green Energy
🇨🇳	3. Yngli Green Energy	🇨🇳	3. Canadian Solar
●	4. Kyocera	🇨🇳	4. Hanwha SolarOne
🇨🇳	5. Trina Solar	🇨🇳	5. Jinko Solar
2008		2015	

TOP 10 Wind Turbine Manufacturers (Ranked by Global Market Share)							
🇪🇺	1. Vestas	🇮🇳	6. Sulzon	🇨🇳	1. Goldwind	🇪🇺	6. Enercon
🇺🇸	2. GE	🇨🇳	7. Sinovel	🇪🇺	2. Vestas	🇨🇳	7. Guodian
🇪🇺	3. Gamesa	🇨🇳	8. Goldwin	🇺🇸	3. GE	🇨🇳	8. Ming Yang
🇪🇺	4. Enercon	🇨🇳	9. Dongfang	🇪🇺	4. Siemens	🇨🇳	9. Envision
🇪🇺	5. Siemens	🇪🇺	10. Nordex	🇪🇺	5. Gamesa	🇨🇳	10. CSIC
2008					2015		

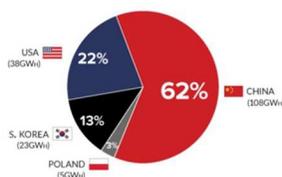
### CHINA IS LEADING THE CHARGE

Lithium-ion megafactories in China to grow capacity 6X by 2020

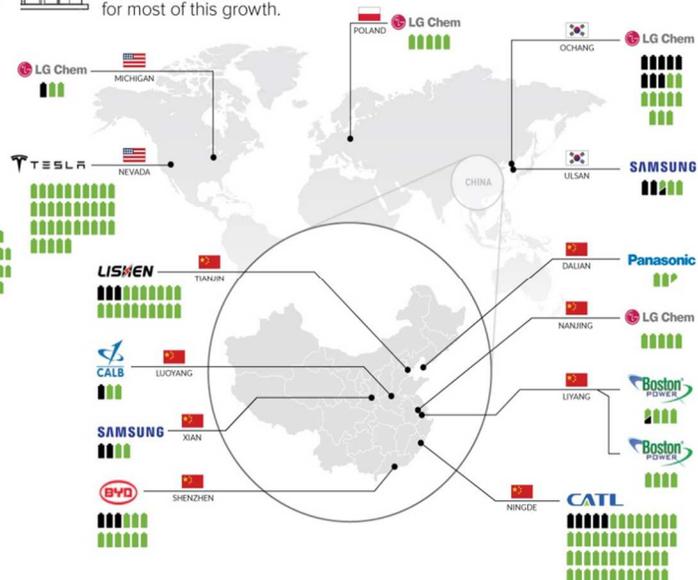
Global lithium-ion battery production capacity will increase by **521%** between 2016 and 2020.



By 2020, mass production of lithium-ion batteries will still be concentrated in just **four** countries.



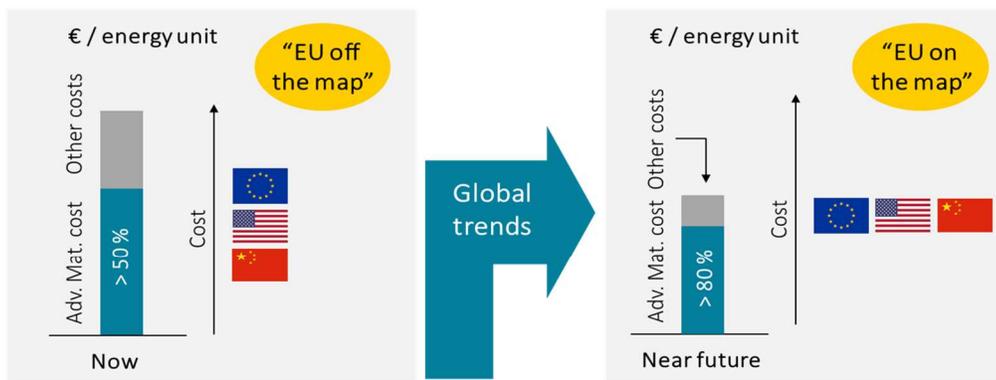
China's battery sector continues to be a hub for most of this growth.



*So what is our vision for industry in FP9 and its impact in capturing market opportunities to re-industrialize Europe? ... Let us call it “made in EU for EU”!*

1. In near future, global trends will impact manufacturing cost structures of clean energy & clean mobility techs enabling their competitive manufacturing in EU for the EU market at least – vs. made in China for EU today) – For instance, we see first moves in Europe in production of Li-ion battery cells by Asian companies in Eastern Europe. Similar moves happen in the USA.

**Global trends will positively 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 leading to increase in shipping costs and risks

2. In such a scenario, advanced materials could represent an even higher share of the cost structure and the global competition will then be on using the best innovative advanced materials (effectiveness lever) & integrating these innovative advanced materials the best way into competitive technologies (efficiency lever) ... Innovation in advanced materials is then crucial to accelerate shift to clean energy & clean mobility techs, with a higher fraction of world-class “innovated in EU / made in EU” technologies
3. To reindustrialize EU in clean energy & clean mobility techs, EU can successfully leverage a strong advanced materials industry. In return the EU-based industry of advanced materials will benefit from a “close-to-home” customer basis while also developing through global exports
4. Business impact could lead to creation of up to 700,000 jobs by 2030+ (50% in advanced materials and 50% in manufacturing of clean energy & clean mobility techs) and annual re-investments by industry in EU into R&D and CAPEX could easily reach 7 billion euro

To enable that Vision to re-industrialize EU in clean energy & clean mobility technologies, our recommendations for support to our industry in FP9 are 3-fold

### Recommendation 1 – Realistic funding

- More resources need to be allocated to development of clean energy & clean mobility technologies
- Funding of R&I on advanced materials for clean energy & clean mobility technologies should show a step change in FP9 if we are serious about supporting our industry (size typical of a cPPP would be right way to go)

### Recommendation 2 – Effective funding

- EU Commission should make funding choices in line with R&I priorities supported by industry
- And industry should be more involved in the decision-making process
- End of day, industry will foot the bill to bring technology developments to the market ... We might as well start from a healthy basis

### Recommendation 3 – Efficient funding

- R&I efforts addressing a same challenge (e.g. battery-enabled mobility) should not be fragmented across various EU Commission silos and work programmes or should be better coordinated with a more transparent and open governance
- Why not consider that in FP9 the best place for advanced materials is in the respective “global challenges” which they enable (value-chain approach) and where it makes more sense (e.g. Does it make sense to develop advanced materials for batteries in one work programme and the rest in another workprogramme?)
- To ensure most efficient use of public resources, FP9 should also move towards a “portfolio” approach rather than a long compilation of “projects” ... The portfolio should have clear KPIs to guide innovation, incorporate stage gating (badly performing projects should be stopped or frozen to free up resources for best performing projects and their continuation) and also have a proper monitoring system

***Now is time for action ... Climate change is a challenge but it is also a huge business opportunity which we must seize for industry and for citizens.***

Thank you very much for your kind attention.

## **About EMIRI**

*EMIRI, the Energy Materials Industrial Research Initiative, represents more than 50 organizations (industry, research, associations) active in advanced materials & nanotech for clean energy & clean mobility technologies. The association contributes to industrial leadership of developers, producers and key users of advanced materials & nanotech by shaping an appropriate innovation, manufacturing and energy policy framework at European level. In frame of Horizon 2020, EMIRI collaborates with European Commission to develop the Innovation Pillar on advanced Materials & nanotech for clean energy & clean mobility technologies proposed in the EMERIT Industry-Driven Initiative.*

*For more information, contact Dr Fabrice STASSIN (Managing Director) at [fabrice.stassin@emiri.eu](mailto:fabrice.stassin@emiri.eu)*

## **About Fabrice Stassin**

*Dr Fabrice Stassin is Managing Director of the Energy Materials Industrial Research Initiative (EMIRI) Association based in Brussels. He holds a Ph.D. in Chemistry & Materials Science as well as a Master in Management & Entrepreneurship from the University of Liège in Belgium. He worked a few years as Managing Director of a Belgium-based RTO (research & technology organization) active in white biotech and later as Strategy Consultant at Accenture advising clients from chemical, oil, pharma industries in the Netherlands, Belgium and USA in the fields of innovation, sustainability, and value creation through mergers and acquisitions. In 2008, he joined Umicore (an industrial leader in advanced materials and recycling) as innovation manager covering clean technologies. Since 2012, he has been part of the Brussels-based team of Umicore Government Affairs focusing on energy materials. Fabrice Stassin was instrumental in the development of the EMIRI Association, which he has managed since 2014 (on secondment from Umicore). EMIRI represents more than 50 organizations (industry, research, and associations) active in advanced materials for clean energy & clean mobility technologies. The association contributes to industrial leadership of developers, producers and users of advanced materials for clean energy & clean mobility by shaping an appropriate innovation, manufacturing / industrial and energy policy framework at the European level.*