“Horizon2020 – State of play – will Europe benefit?“

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Dr. Gernot Klotz
Gernot.klotz@gkl-consulting.com
Societal challenges

- Employment
- Climate change
- Health and ageing
- Use of natural resources
- Energy security
- Clean transport
- ....

- Powerful drivers of change in economy and society
- Major global market opportunities
- Requiring cooperation along the value chain
- From research to solutions
- Needs EU critical mass
Industrial Value Chains as value for Europe

**Raw Materials**

**Process Industry:**
Chemical, biochemical, and physical transformation and formulation of raw materials using continuous and batch processes into Materials with new properties and functionalities

**Discrete Manufacturing:**
Disconnection between patents share and manufacturing share
Case Study: Li-ion battery production

Li-ion battery cell production share in 2008

Advanced Material Patent Share

USA
30%
31%
0%
0%
94%
87% in 2008
35%
30%
31%
35%
6,5%
4%
Others*


Sources: European Competitiveness Report 2010, European Competitiveness in Key Enabling Technologies (TNO/ZEW), Avicenne, The Worldwide rechargeable Battery Market 2012 – 2025, March 2012, * others correspond to manufacturers of Li-ion battery cell which market share is lower than 2%
From knowledge to invention to innovation
What to do?
5 EU Strengths

• Excellent research landscape

• Functioning eco-system of large and Small-Medium sized enterprises

• Geographic proximity of value chains

• Experience to deal with complex processes and products

• Mature common markets

Unity in diversity
New approach - Integration and cooperation

Combining several key enabling technologies for advanced products

Energy

Societal Challenge

Electric vehicle

Advanced materials

Microelectronics

Nanotechnologies

Photonics

Biotechnologies
Success and challenges for Horizon2020

Success

- Inclusion of innovation related activities, while keeping a strong research basis
- "Increased" budget in basic research and societal challenges
- Simplification of procedures
- Increased focus on impact
- Recognition of continuous and discrete manufacturing

Challenges

- Innovation as a priority of impact for Europe (still FP7 plus in many areas)
- To serve too many different policies
- Attractiveness to industries (higher TRL)
- Synergies in program to create added value
- Positioning in emerging overall EU innovation landscape
Emerging EU Innovation landscape
- more and more …

- Horizon2020
- Structural/regional funds
- Link with SME instruments
- Member states funding
- “Juncker Investment Package”
- Important projects of common European interest (IPCEI)
- European Investment Bank (EIB)
- Combined funding
- ………

A lot of good will, however…
(engage and commit “customers”
Priority setting and speed
Priority setting and focus

Horizon2020
Research Innovation

Structural funds
Research infrastructure
demo/pilots

Structural funds
European Investment Bank
Private investors
Gain critical mass in dynamic system
Horizon 2020 – different drivers
“Attractiveness for industrial side”

Research
• Mostly public funding
• Create knowledge and move to next project
• Timeline depending on funding timeline
• Acceptance of quite low success rate
• Transparency and international cooperation
• Major target is publications and patents

Innovation
• High investment (including private)
• High up-front investments in planning of projects
• Visibility to company hierarchy
• Need for high success rate
• EU impact and added value for sustainable follow-up
• Global competition
Europe 2020

Flagship Initiatives
- Youth on the move
- A digital agenda for Europe
- Resource efficient Europe
- Innovation Union
- An industrial policy for the globalisation era
- An agenda for new skills and jobs
- European platform against poverty

Horizon 2020
- «excellence»
- «industrial leadership»
- «societal challenges»

1 + 1 = 3
Change our approach
Criteria for selection of topics requesting public and private funding

**EU added value**
- Target sustainable European value chains
- EU technological building blocks for global solutions
- Likelihood of market uptake
- Strengthen eco-system of SME and big companies

**Readiness**
- Push towards higher TRL (5-6)
- Market pull to supply as required in other EU Innovation Initiatives
- Impact on economy in 1-2 years after project completion
- Significant “real” industry engagement in topic framing and implementation
Actions to improve calls

Proposals for Formulation of Calls

- Robust “business-potential assessment” and implementation plan as visible part of demand and evaluation
- Dedicated Work Package as part of each project focussed on active leverage of results into innovative EU value chains
- Re-balance in consortia formation focus on “knowledge/expertise“ with ability to provide uptake in innovation chain
- More defined calls on priorities to ensure higher success rate and impact
- More than 70 % of pilot lines in industrial setting – accept less number of applicants
Breakthrough innovation requires interlink between program areas
Breakthrough Innovation
IPCEI “Phoenix – CO2 Valorization”

- **CO₂**: the only C resource available in abundance in Europe
- Best companies, best research, best infrastructure, value chains, skills

\[ \text{CO}_2 + \text{Water} \xrightarrow{T \text{echnologies}} \text{sunlight} \rightarrow \text{chemicals & fuels & storage of renewable energies} \]

- **Resource efficiency challenge**: the utilization of CO₂ as an alternative C resource can contribute to:
  - reduce use of fossil feedstock, reduce EU’s dependence on imports of fossil resources, improve security of supply of carbon feedstock
  - reduce pressure on biomass, land use
  - develop a circular economy

- **Energy challenge**:
  - renewable energy storage (Power to X)
  - new alternative fuels for transport

- **Breakthrough**: Direct photoconversion of CO₂ (longer-term option)
Work on CO₂ valorization across Europe

Coherent and coordinated approach across Europe essential to compete with other global regions
"I cannot say whether things will get better if we change; what I can say is they must change if they are to get better."

Georg Christoph Lichtenberg
German physicist 1742 - 1799
Good program but other regions are also running high speed…

**Toward mid-term evaluation**

- Market pull balanced with technology push (bridge technology innovation with societal challenge innovation)
- Improved structured dialogue/cooperation between strategic areas in Horizon2020 with focus on priorities and timelines
- “Sharpen” priority setting and positioning in “crossing the valley of death”
- Establish critical mass through improved cross-border cooperation
- Increase speed of decisions (accept failure as part of innovation)
- Check activities against global benchmarks
- Adding parameters in implementation of evaluation criteria must be accompanied by removing others to maximise impact
- Use Mid-term evaluation to “Re-balance budget allocation” to allow continuum along Horizon2020 areas
- Develop concept to link Horizon2020 and other innovation funding programs
Global race for sustainable growth and jobs

Innovation is about changing the way we do things

The winner takes it all