

Leading Engine for Innovation and Entrepreneurship in Sustainable Energy

KIC InnoEnergy

January 2015

Elena Bou
KIC IE Innovation Director



Once upon a time ...

The Challenge

- **Europe** is good at science and inventions but **in comparison lagging behind** the world key players **at innovation**
- **European** people are happy to be **employees** with retirement **security** rather than entrepreneurs with considerable uncertainties

Wanted: a step change to **embrace innovation**



The European Institute of Innovation and Technology (EIT)

Set up in March 2008 by **the European Parliament and Council** with a view of **increasing Europe's innovation impact** and of becoming a key driver of sustainable European growth and competitiveness.

The mission

«To be the **catalyst** for a step change in the European community's **innovation capacity and impact**»



The Instruments

The **Knowledge Innovation Communities (KICs)** designated by the EIT are the ones bringing together the „knowledge triangle“ (business, research, higher education) in thematic partnerships

KICs will:

- Build innovative webs of excellence
- Create new business
- Educate and develop entrepreneurial people
- Have societal impact



What is KIC InnoEnergy?

The leading engine for innovation and entrepreneurship in Sustainable Energy



A world Class alliance of top European players addressing the main European energy challenges

Network of 150+ associate partners

KIC InnoEnergy Partners* 152

Industries	98
R&D Centres	25
Universities	27
Business Schools	2

*Formal partners and associated partners

3 Business Lines, delivering:

1. **Education: Talent - Future Game-Changers**, specialized in the energy field with entrepreneurial spirit.
2. **Research & Technology: Innovative products and services** - Technology with a market impact.
3. **Business Creation: Accelerating** - Start-ups with high growth potential.



INDUSTRIAL COMPANIES

RESEARCH CENTRES

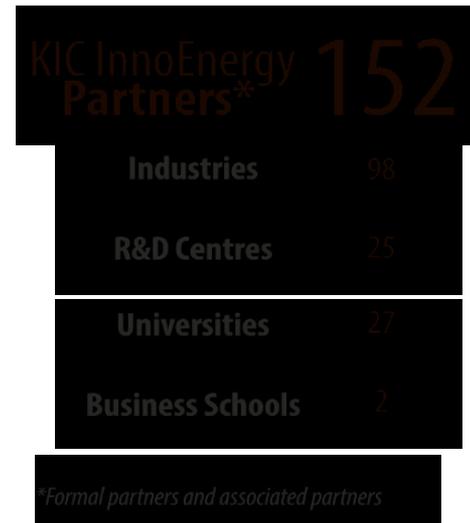
UNIVERSITIES

BUSINESS SCHOOLS

A strong and complementary network of **152 partners** (and increasing) including Industry and Education partners, Research Centers and others, all collaborating at different levels.

Strong presence of Industry partners legitimizes the activities and the objectives of KIC InnoEnergy.

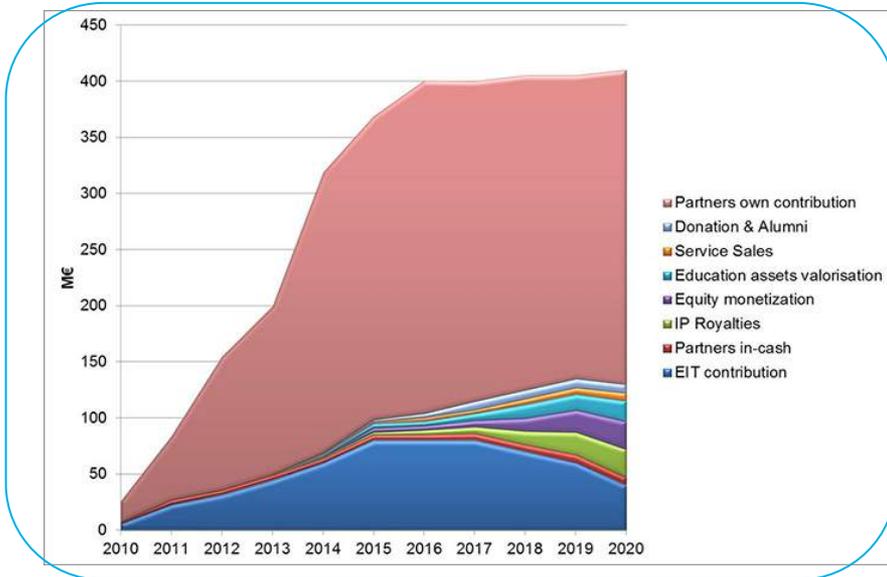
	Formal Partners
Industries	8
Universities	11
Research Centers	6
Business Schools	2
	27



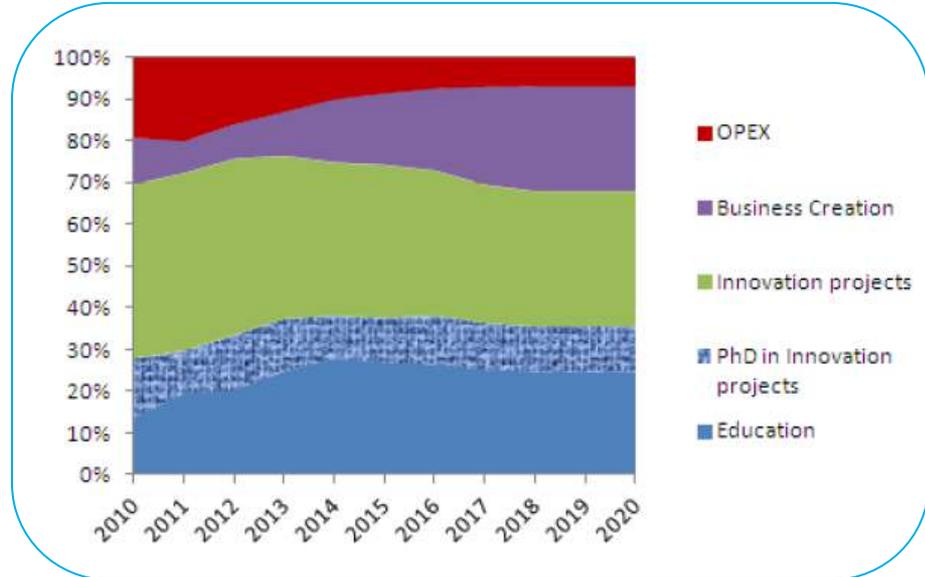
EXAMPLES



**KIC InnoEnergy business plan 2010 – 2020
financing (€m) split by source**



**KIC InnoEnergy business plan 2010-2020
budget (€m) split by business line**



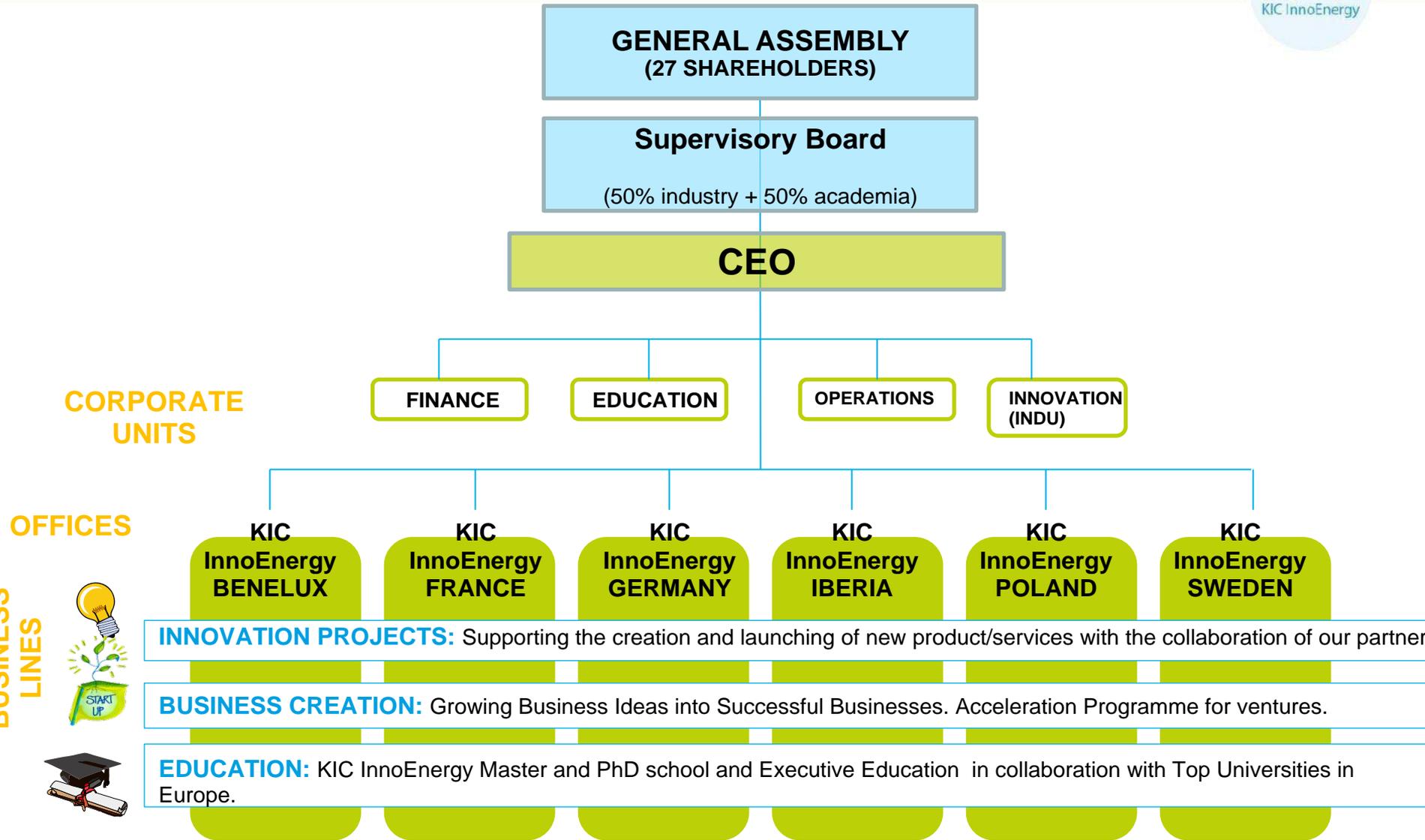
Stanford & MIT took several decades to consolidate

- Long term commitment from partners
- Return on equity of start-ups will become a source of revenues
- Non dividend policy: profits are re-invested in the company
- EIT funding will be reduced progressively

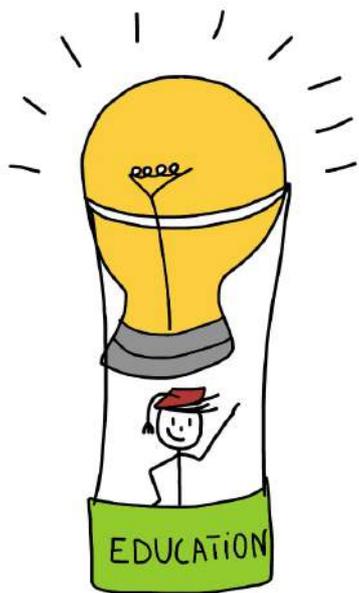
To date, Industry accounts for 31% of resources

- Plan to increase the volume of supported ventures in the upcoming years
- Other business lines are foreseen to feed the Business Creation Area

KIC InnoEnergy: Our structure

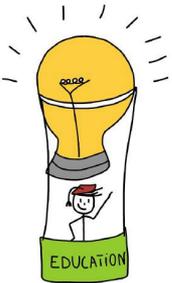


**A young company, but
already results...**



EDUCATION...

*“We, the university, create knowledge, teach students...
and industry will hire them”*



VALUE PROPOSITION

- International Programs – **Mobility**.
- **Quality** of our Programs (top Universities and Business Schools).
- Complementary **training in business and entrepreneurship**.
- Industry involvement.
- **Scholarships** available.



OUR OFFER

- **KIC INNOENERGY MASTER SCHOOL:** *Our seven Master programmes in sustainable energy offer you a rare combination of engineering and entrepreneurship.*
- **PhD School:** *The mission of KIC InnoEnergy PhD School is to foster an innovative and entrepreneurial culture in its graduates that enhances their market value when they become employed. KIC InnoEnergy PhD School focuses on three transitions within the energy sector: i) from the idea to the product, ii) from the lab to the market and iii) from the doctoral candidate to the entrepreneur.*
- **EXECUTIVE EDUCATION AND POST MASTER:** *Our programmes are directed towards a completely new type of education in the energy field, mobilising the innovative and entrepreneurial spirit of the students.*
- **TRANSITION & ALUMNI:** *The Transition and Alumni Office (T&A), helps students and alumni enter into employment in the European Union. The T&A gives continued support and assistance to more than 1000 graduates and 200 PhD students annually.*



Industry Commitment into KIC InnoEnergy Education Programs

		ABB						TOTAL						VATTENFALL						gasNatural fenosa					
		Design	Promotion	Selection	Tuition	Internship	Bus. Case	Design	Promotion	Selection	Tuition	Internship	Bus. Case	Design	Promotion	Selection	Tuition	Internship	Bus. Case	Design	Promotion	Selection	Tuition	Internship	Bus. Case
Master Programs																									
On-going	MSc Nuclear Energy (EMINE) - M1													X	X	X	X	X	X			X	X	X	
	MSc Nuclear Energy (EMINE) - M2													X	X	X		X	X			X	X	X	
	MSc Smart Cities - M1													X	X					X		X	X	X	
	MSc Renewable Energy (RENE) - M1	X					X													X		X	X	X	
	MSc Renewable Energy (RENE) - M2	X					X	X	X	X	X	X	X							X		X	X	X	
	MSc SELECT - M1	X	X			X	X							X	X	X		X						X	X
	MSc SELECT - M2	X	X			X	X												X					X	X
	New	MSc Smart Grids (Sense)	X	X		X	X	X							X	X	X	X	X	X	X		X	X	X
	MSc Clean Coal																								
PhD School																									
On-going	PhD Track - Smart Grids	X	X	X	X	X	X							X	X	X	X	X	X						
	PhD Track - Clean Coal																								
New	PhD Track - Smart Cities																								
	PhD Track - Renewables							X	X	X	X	X	X												
	PhD Track - BioFuels																								
	PhD Track - Nuclear-> Renewables																								



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ACHIEVEMENTS*:

- **8000** applicants.
- **771** students enrolled.
- **87** students in innovation projects and ventures.



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Innovation Projects...

*“We, the university, create knowledge with
“capital” letters...”*

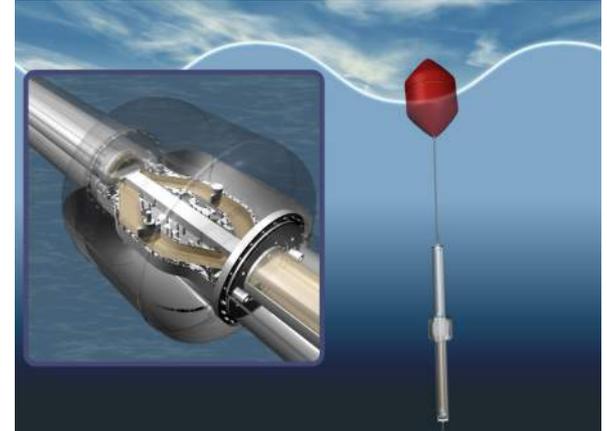
*“We, the industry, need a product and get
ROI”*



KIC InnoEnergy provides support for **finalising** and **commercialising technological innovations** that lead to **new innovative products and services**.

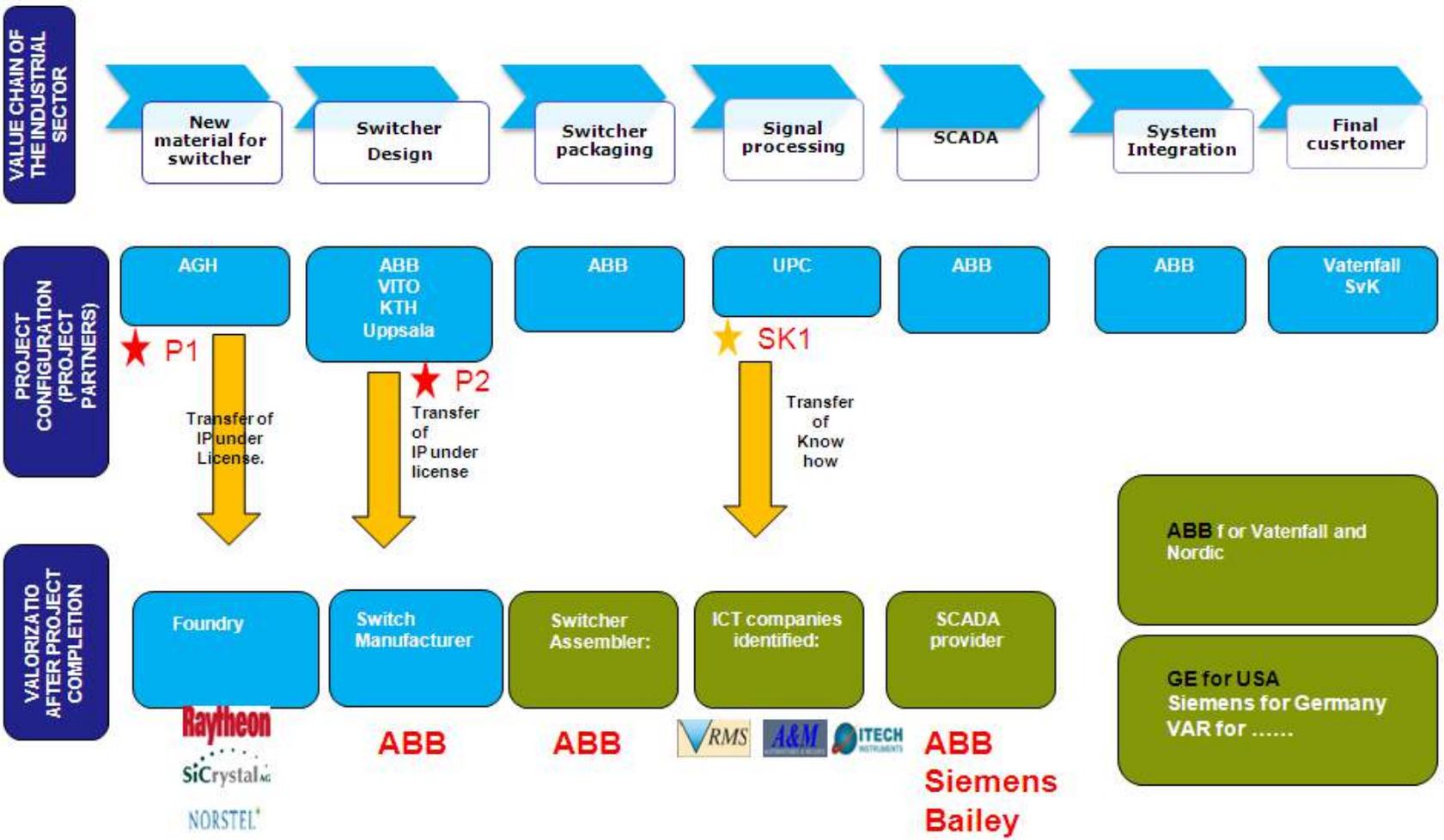
VALUE PROPOSITION

- Effective **collaboration** among excellent actors.
- Complementary in **positioning within value chain** and **background knowledge**.
- Clear **IP ruling**.
- **International** consortia.
- Led by **industry**.



**Data until the end of October 2014.*

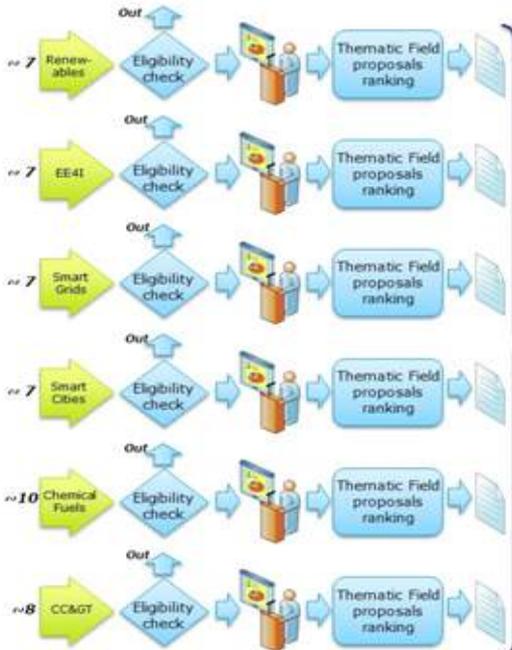
Led by industry...with an identified “TAM”



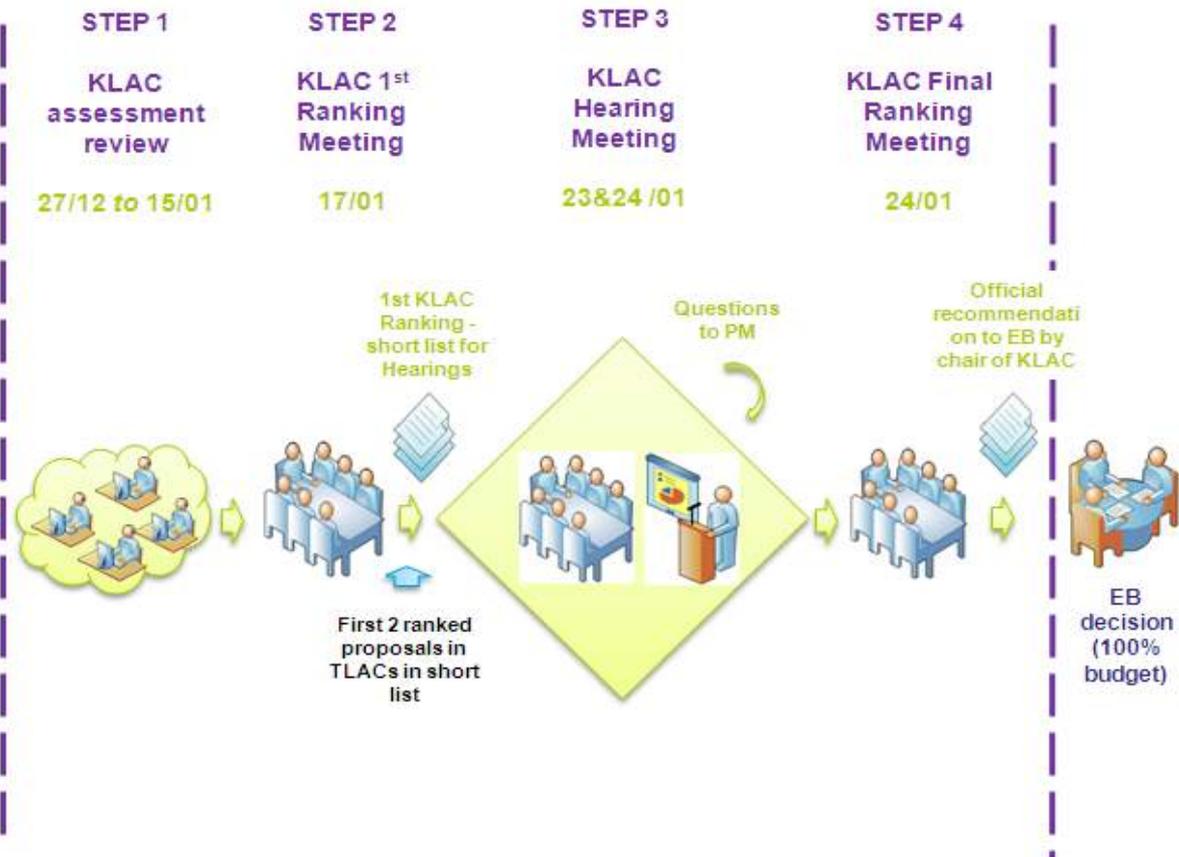
★ Patent ★ Secret Know How

Professionally selected...

Thematic field assessment



6 TLAC ranked lists



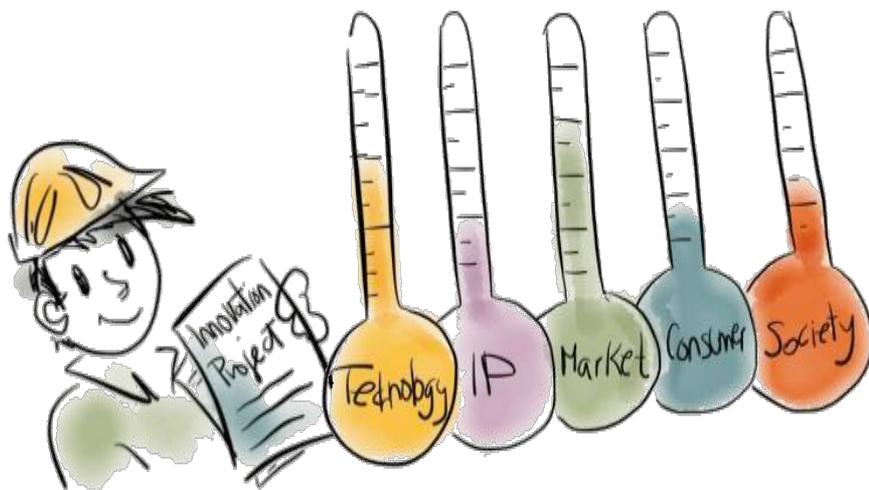
And Professionally managed...

Project	Product	Status / Type of return to KIC
AFOSP	Floating substructures for WT	10% on FG IP related royalties. All IP is FG.
KASTRION	Condition Monitoring System for WT	10% on FG IP related royalties
OWT	SW tool for offshore wind farm layout	Killed
	Consultancy services for offshore wind	Killed
NEPTUNE	eOLOS -Floating LIDAR for wind assessment	2 % on product sales + 20% equity Eolos Co.
	NEPTool SW for resource fore and hindcasting	2% on product sales (under discussion)
LHI-EE	Einstein (EnergyXperts)	Finalized with no return to KIC agreed.
	iEMS for industry	Under discussion. Deadline: Dec 2013
	SW for steel reheating process	10% on FG IP
	SUT Rotary air heaters control system	10% on FG IP
	Service to industry through ORC consulting	Killed
	C-110 Solar Collector - UPC CTTC	1%-3% on total sales
	CCStar Solar Collector - TSC	Finalized with no return to KIC agreed.
	ESCO applied to industry	Killed
TESCONSOL	STE - LTE SW and consulting	3% on product sales (owner UPC)
	DYESOPT, SOLCONTROL SW and consulting	3% on product sales (owner KTH)
	New single tank storage design (IP)	3% on product sales (owner UPC)
EnThiPV	Apparatus for gas barrier measurement	10% on FG IP related royalties
	Barrier films	Killed
	Flexible solar cells	Killed
OCEANKIC	Membranes for Reverse Osmosis Plants	Killed
OTS	Environmental Monitoring system (HW&SW)	15% on royalties
	Robotic arm for submarine elec. connectors	Killed
	SW for O&M in offshore plants	18% on royalties

And Professionally managed...

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Using new tools and methodologies...



Logged in as: **j.m@drac.pl**
 Access level: **Project member** Logout

Innovation Readiness Level Evaluation Tool

Before filling out your answers, please read [IRL Evaluation Tool Guide](#) >>

Projects list > draco > TRL > Fundamental research >

All projects to which you have access are visible below.

Click **«edit answers»** to enter new or edit your previous answers to each level.

Click **«submit for evaluation»** to send your answers to project evaluator. Only do this if you are 100% sure you cannot add anything. Once you've submitted your set of answers, you won't be able to update them. You will be only able to view the answers you've submitted (by clicking **«review answers»** button that will appear after you submit your answers).

draco

TRL: 54 of 54	IPRL: 10 of 10	MIRL: 35 of 41	CRL: 2 of 25
SIRL: 11 of 23			

1	2	3	4	5	6	7	8	9
answers: 0 of 0 evaluation: 0 of 0	answers: 0 of 0 evaluation: 0 of 0	answers: 2 of 2 evaluation: 2 of 2	answers: 4 of 4 evaluation: 4 of 4	answers: 7 of 7 evaluation: 7 of 7	answers: 5 of 5 evaluation: 5 of 5	answers: 10 of 10 evaluation: 10 of 10	answers: 8 of 8 evaluation: 8 of 8	answers: 8 of 8 evaluation: 8 of 8

LEVEL 1: Fundamental research

Q1:
Are the basic principles (physical/chemical/biological/material properties) of the phenomenon under research understood?

ANSWER FROM PROJECT MEMBER Name Surname:
fletassaa

PLEASE RATE THE ANSWER. COMMENTS (IF ANY):

0 1 2 3 4 5

Title:



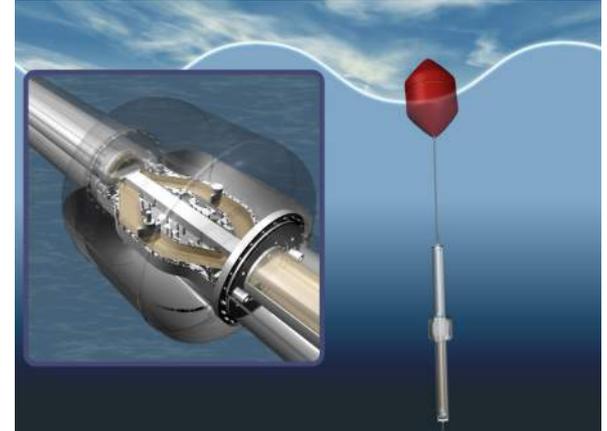
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- Clear **IP ruling**.
- **International** consortia.
- Led by **industry**.

ACHIEVEMENTS*:

- **14** “knowledge” innovations have been transferred or adopted.
- **59** patents filed.
- **38** products or services used by the industry initiating from a KIC IE innovation project, facilitating the construction or expansion of **3** manufacturing facilities, who has resulted in the creation of **28** new jobs.
- More than **160** companies involved in our activities (**80%** being SMEs).
- **65** students involved in those innovation projects as man power resource, securing a “hands on” learning and the integration of the knowledfe triangle.



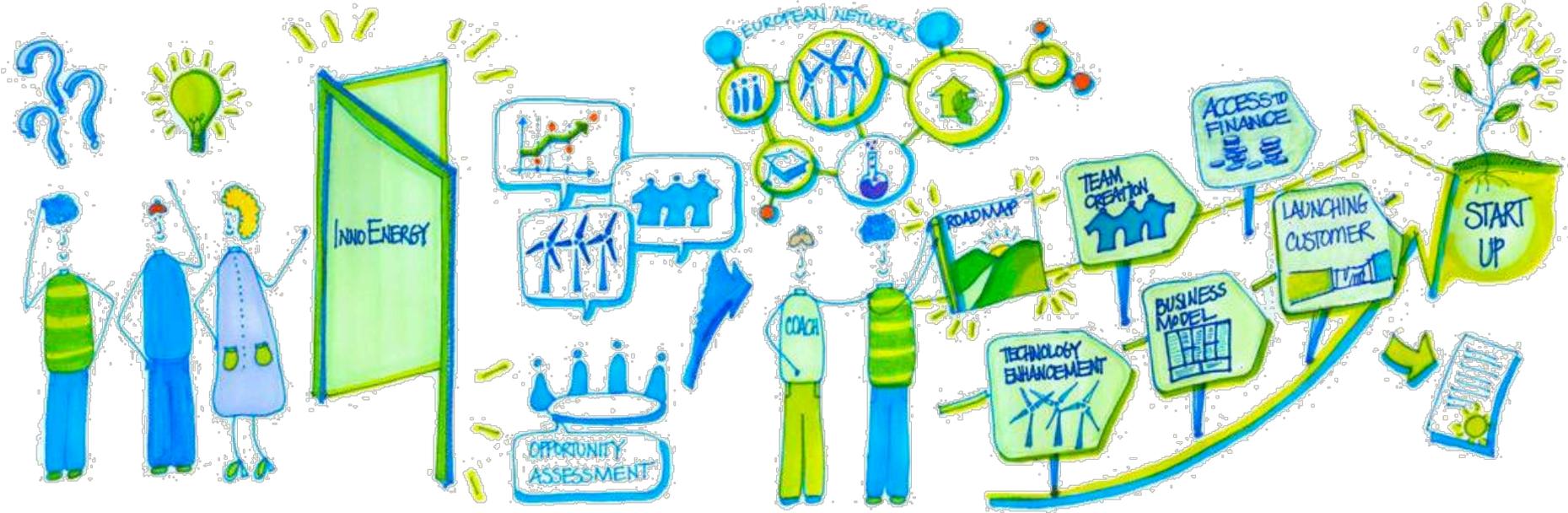
*Data until the end of October 2014.



Business Creation...

*“Everything is already invented here....
Sustainable energy is not a “sexy” field for
entrepreneurship....”*

KIC InnoEnergy Highway™





FOCUS

- Only one focus: specialized in sustainable energy
- Address the European energy challenges through innovation



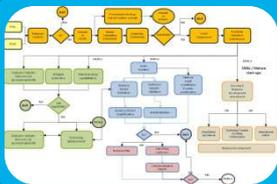
GLOBAL SCOPE

- Access to KIC's European Network and its topnotch players in each discipline (including labs, infrastructure, people)
- One European incubator with 6 entry points
- Endorsement of reference partners in the field of energy



LAUNCHING CUSTOMERS

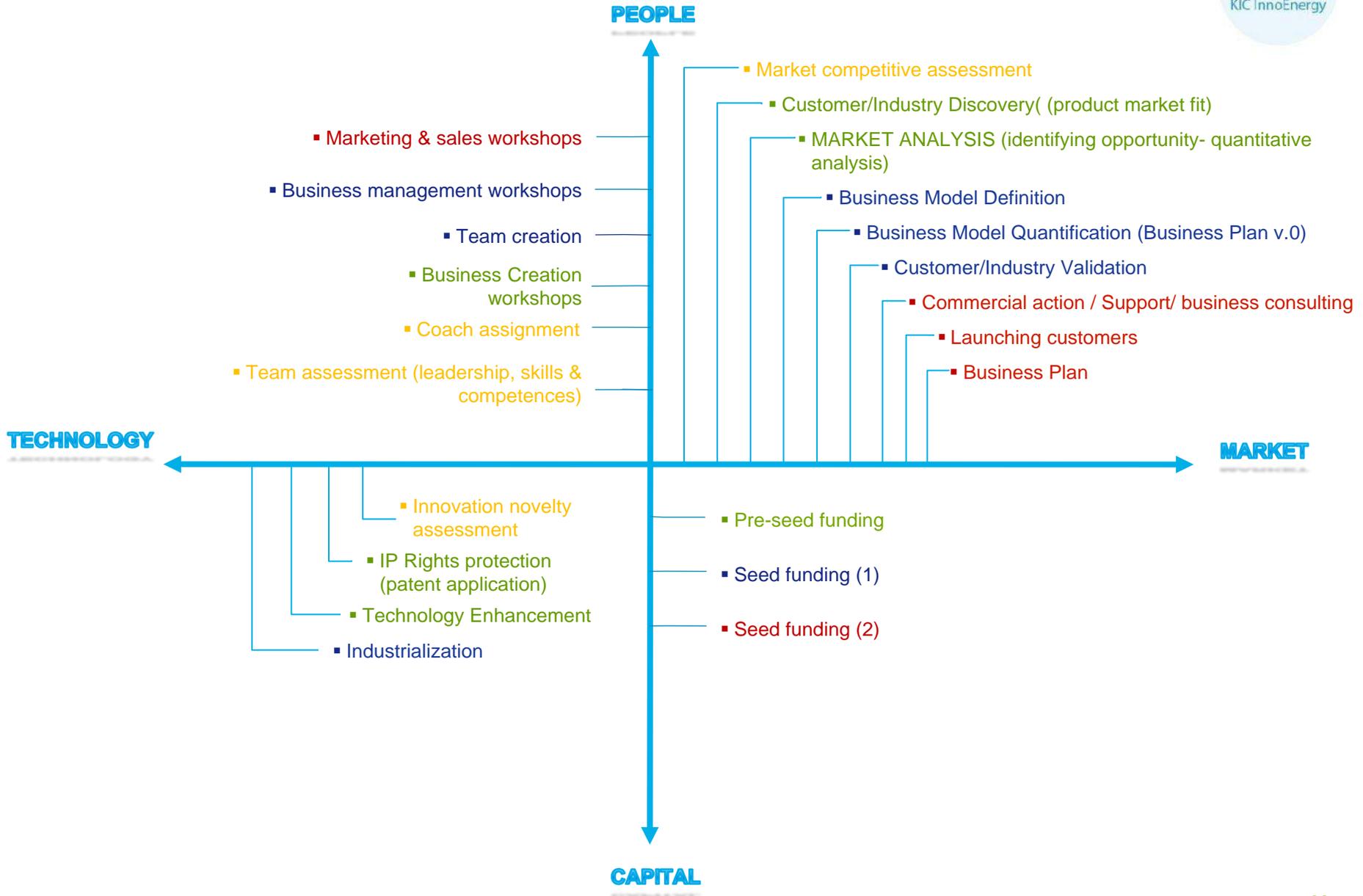
- Commitment to secure the first clients for the entrepreneurs / start-ups



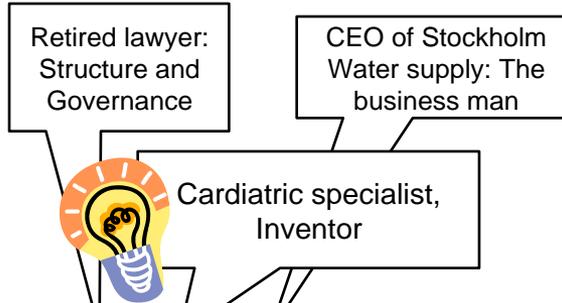
PROCESS

- High added value itinerary, adapted to the entrepreneur
- Market oriented process supported by first class experts

The Highway® provides added value through 4 axes



An example of **Business Creation: CorPower**



Idea owners

Cross innovation

Would you fancy

2c€/kwh, clean?

TANDEM SUN
High-efficiency, low-cost multi-junction solar cells

Watch-E
Web-based monitoring system for energy saving through a system of awareness and reward

Daylight solutions
Controllable blinds to optimize energy use and light in windows

NAWA TECHNOLOGIES
Ultracapacitors for large smart grid storage renewables integration

ngenic
Cloud-based HVAC control system for comfort and energy saving

enOware
Mobile sensor systems for safer and optimal geothermal energy

Open Domo SERVICES
Intelligent monitoring and domotic control solutions for energy efficiency

Sensus Energy
Intelligent electronics for high-performance, low-cost solar systems

gradis
LED management and control systems at high scale

ferroamp Elektronik AB
Distributed energy storage for smart grids and integration of EV



72 VENTURES IN OUR PORTFOLIO

840

APPLICANTS

>150

OPPORTUNITY ASSESSMENTS

79

VENTURES SUPPORTED

43

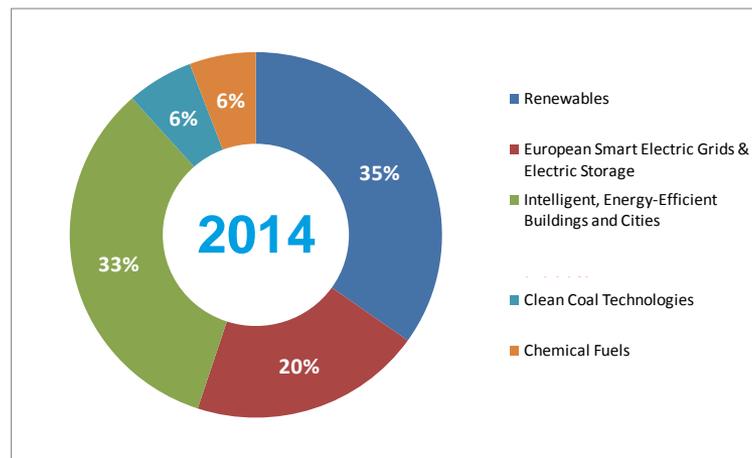
START-UPS* CREATED

*KIC InnoEnergy start-up: once it has passed an internal quality check and the venture has acquired its **first customer** or raised more than 500k€.

EXTERNAL INVESTMENT RAISED (2013-2014):

12,5 M €

50% OF SUPPORTED VENTURES
RAISED EXTERNAL FUNDING



VENTURES PER SECTOR

One of the 15 steering board members of the SET Plan Integrated Roadmap, and leading 7 education subgroups also

Contract with DG ENER for being their advisor for 2014-2017



LUNCH-DEBATE

11 July 2012

**“The European Institute of Innovation and Technology:
achievements and expectations of
the Knowledge & Innovation Community,
KIC InnoEnergy”**

European Parliament (room A1E-1) Altiero Spinelli building, 1st floor

hosted by

**Mr Joseph Daul , Mr Hannes Swoboda
Ms Amalia Sartori , Mr Jerzy Buzek**

In the presence of

Ms Androulla Vassiliou, Commissioner for Education, Culture, Multilingualism and Youth

*Coming together is a beginning,
Keeping together is progress,
Working together is success
(Henry Ford)*



www.kic-innoenergy.com

KIC InnoEnergy receives funding from the European Institute of Innovation and Technology (EIT)

Thank you!!





2010

Barcelona, September 2010- 1st Educational Programme KIC: «From Science to Business»
Pep Sala: Phd student UPC

2011-2012



Barcelona, 2011- Accepted in KIC InnoEnergy Accelerator and supported in 2012.



June, 2012- First finalist of the EcoEmprededorXXI

2012-2013

Call for Proposal
INNOVATION PROJECTS-
Partnership with KIC
partners and industry



**Learn,
(education)**

2010

Barcelona, September 2010- 1st Educational Programme KIC: «From Science to Business»
Pep Sala: Phd student UPC

**& Innovate
(Innovation projects)**

2011-2012

enerbyte
smart energy solutions

Barcelona, 2011- Accepted in KIC InnoEnergy Accelerator and supported in 2012.

**Create,
(Start-up)**

June, 2011
EcoEmprendedorXXI



2012-2013

Call for Proposal
INNOVATION PROJECTS-
Partnership with KIC
partners and industry

... and everything under the umbrella of KIC InnoEnergy

CLEAN COAL TECHNOLOGIES



This thematic field focuses on the area of Clean Coal and Gas Technologies, as well as the New Paradigm for Carbon management. Due to the growing worldwide demand for electricity, both the technological development of heat and electric energy production and the chemicals and liquid fuels derived from coal appear to be unavoidable.

RENEWABLE ENERGIES



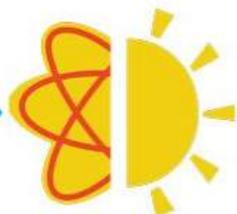
This thematic field focuses on the use of wind, ocean, solar photovoltaic and solar thermal electricity (STE) energy generation technologies. All activities revolve around products, companies and educational programmes that generate substantial improvements in the production and profitability of renewable energy in order to reduce the Levelised Cost of Energy (LCoE), increase the penetration of renewables and decrease energy dependency on fossil resource holders.

ELECTRICITY STORAGE



The general objective of the Electricity Storage technology area is to meet the “20-20-20” targets by providing innovative products and services. Electricity storage should be a vital component in a smart energy system, in which smart cities and energy efficiency will play a major role. The considerable evolution of the way electricity will be generated, distributed and consumed is the driving force behind these innovations.

SUSTAINABLE NUCLEAR AND RENEWABLE CONVERGENCE



Sustainable Nuclear and Renewable Energy Convergence is a wide, multipolar technology area. Its primary goal is to investigate synergies and complementarities between two apparently opposed fields: nuclear energy and renewable energy. Exploiting these synergies and complementarities will contribute to the triple objective of KIC InnoEnergy: decreasing energy costs, increasing the operational reliability of the future energy system, and reducing GHG emissions.

ENERGY FROM CHEMICALS FUELS

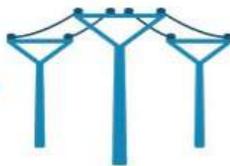
Leader:
Prof. Thomas Kolb



The thematic field 'Energy from Chemical Fuels' is mainly focused on the production, transport, storage and utilisation of chemical energy carriers. These are derived by converting and upgrading processes from fossil resources, such as coal, fuel oil or natural gas, and biogenic energy resources, such as wood, straw or algae.

SMART ELECTRIC GRID

Leader:
Prof. Bo Normark



The Smart Grids technology area aims to meet the "20-20-20" targets with innovative products and services. A vital component in a smart energy system centered on smart cities and energy efficiency, smart grids will play a major role in the development of energy technology.

SMART AND EFFICIENT BUILDINGS AND CITIES



40% of the world's energy is consumed in the built environment and 40% of its materials are also used in the built environment. As a consequence, making buildings and cities smart and energy efficient is key to sustainable development. The ultimate goal of the 'Smart and Efficient Buildings and Cities' field is the creation of energy neutral cities with minimal CO2 emissions. In smart cities, people are actors in an urban context where environmental sustainability plays a central role.

ENERGY EFFICIENCY



Energy efficiency is the most cost effective way to reduce emissions, improve energy security and competitiveness, make energy consumption more affordable for consumers, and create employment. The energy efficiency challenge applies to all sectors of the economy and impacts the entire energy landscape, from energy resource management to daily life for people around the world.

Annex 4: List of KIC InnoEnergy Partners



	Formal	Associate	Project	Total
Industry	<p>ABB AB/Corporate Research Vattenfall AB EnBW Energie Baden-Wuerttemberg AG Eandis C.V.B.A. Gas Natural SDG, S.A. Fundacio ESADE Electricité de France S.A. Areva S.A. Total S.A.</p>	<p>Tauron Wytwarzanie S.A. Fundacion Tecnalia Research & Innovation Iberdrola S.A. EDP Inovacao S.A. Ericsson AB Ecole des Mines de Nantes Grenoble Alpes Innovation et Incubation Schneider Electric Intel G.m.b.H. NXP Semiconductors Netherlands B.V. GDF SUEZ</p>	<p>MTT, Van Looy Group, CG Holdings, EnergyICT, H-tec, Acciona, Cidete, RobCork Engihuset, McPhy, Plastipolis, Raigi, Disatech, Vinci, Energyxperts, Tecnologia, Progression, Triphase, Amcor, AVACO, STRI, SIMO, LV Electronics, Harvard Engineering, EC Systems, METALERG, Valemo, Compower GETT, PollyPower, Scarab, Cofely, efrigeration B.V. GDF SUEZ, AREVA Renewables RHODIA, SOLVAY SA, Outotec, MESC SEFAKO S.A., EPS (Schlumberger), Kymaner FixSus, AGRITHERMIC</p>	73
Universities	<p>AGH University of Science and Technology Silesian University of Technology KTH Royal Institute of Technology Uppsala University Karlsruhe Institute of Technology University of Stuttgart Eindhoven University of Technology Catholic University of Leuven UPC Barcelona Tech Grenoble Institute of Technology Instituto Superior Tecnico</p>	<p>Uniwersytet Jagiellonski Politechnika Wroclawska Institute of Chemical Engineering, Polish Academy of Sciences Universite Paul Cezanne Aix-Marseille III</p>	<p>Cortus, Saint Trofee, Rafako, EKO-GAW, Promont, Syngaz, Kwant, EDF Polska, KHW, Malex, Politechnika Czestochowska Politechnika Krakowska University of Silesia in Katowice University of Corsica Internation Department of the KIT G.m.b.H. University of Ulster The Szewalski Institute of Fluid-Flow Machinery, Polish Academy of Sciences Technische Universitat Dresden Hochschule der Medien Institut National Polytechnique de Toulouse Universitetet i Oslo</p>	27
Research Centers	<p>Institute for Chemical Processing of Coal Central Mining Institute Flemish Institute for Technological Research N.V. Netherlands Organization for Applied Scientific Research Catalonian Institute for Energy Research French Alternative Energies and Atomic Energy Commission</p>	<p>Institut National des Sciences Appliquees de Lyon Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. fur ihr Fraunhofer- Institut fur System- und Innovationsforschung ISI Institut des Sciences et Technologies de Paris Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas</p>	<p>Savoie Technolac Waifer Nederland B.V. Bay Zoltan Nonprofit Ltd. DVGW-Forschungsstelle am Ebi des KIT - Campus Sued Svenska Elforetagens Forsknings- och Utvecklings- Etforsk-Aktiebolag Wave Energy Centre - Centro de Energia das Ondas Eifer Europaeisches Institut fur Energieforschung EDF-KIT Petale Termo Fluids S.L. SCK.CEN (Studiecentrum voor kernenergie) Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR) Technion Israel Institute of Technology DBFZ Deutsches Biomasseforschungszentrum gemeinnuetzige G.m.b.H. SDSIL - Investigaçao e Desenvolvimento de Soluções Solares, Lda ETC Battery and FuelCells Sweden AB Centre Technique des Industries Mecaniques ETC Battery and FuelCells Sweden AB</p>	25
Others		<p>Steinbeis Innovation G GmbH Stockholm Innovation & Growth AB Baden-Wuerttembergische Bank unselbststaendige Anstalt der Landesbank Baden-Wuerttemberg</p>	<p>TTI G.m.b.H, BAM, Boson, E-Flox, LignoGen, Mödinger, Ratfisch Kiemt, Bauer, IDS, HECTOR, TTI, Terra Energy, Ares RTB, BTG World</p>	24

