

ERA-Net Smart Energy Systems

Ein Programm für Regionen wie das Waldviertel

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- Coordinator ERA-Net Smart Grids Plus
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THE THREE NETWORKS OF 21ST CENTURY ENERGY SYSTEMS



Citizens, Customers, Producers & Consumers, Experts

Sharing, Contributing, Providing, Using,
Exchanging, Cooperating, ...

responsible, aware, self-sufficient, happy, ...

Social Network



Enabler and Facilitator of Services

Connectivity, Data Access, Markets and
Business Models, Platforms, Planning and Operation, ...

secure, privacy protecting, transparent...

Digital Network



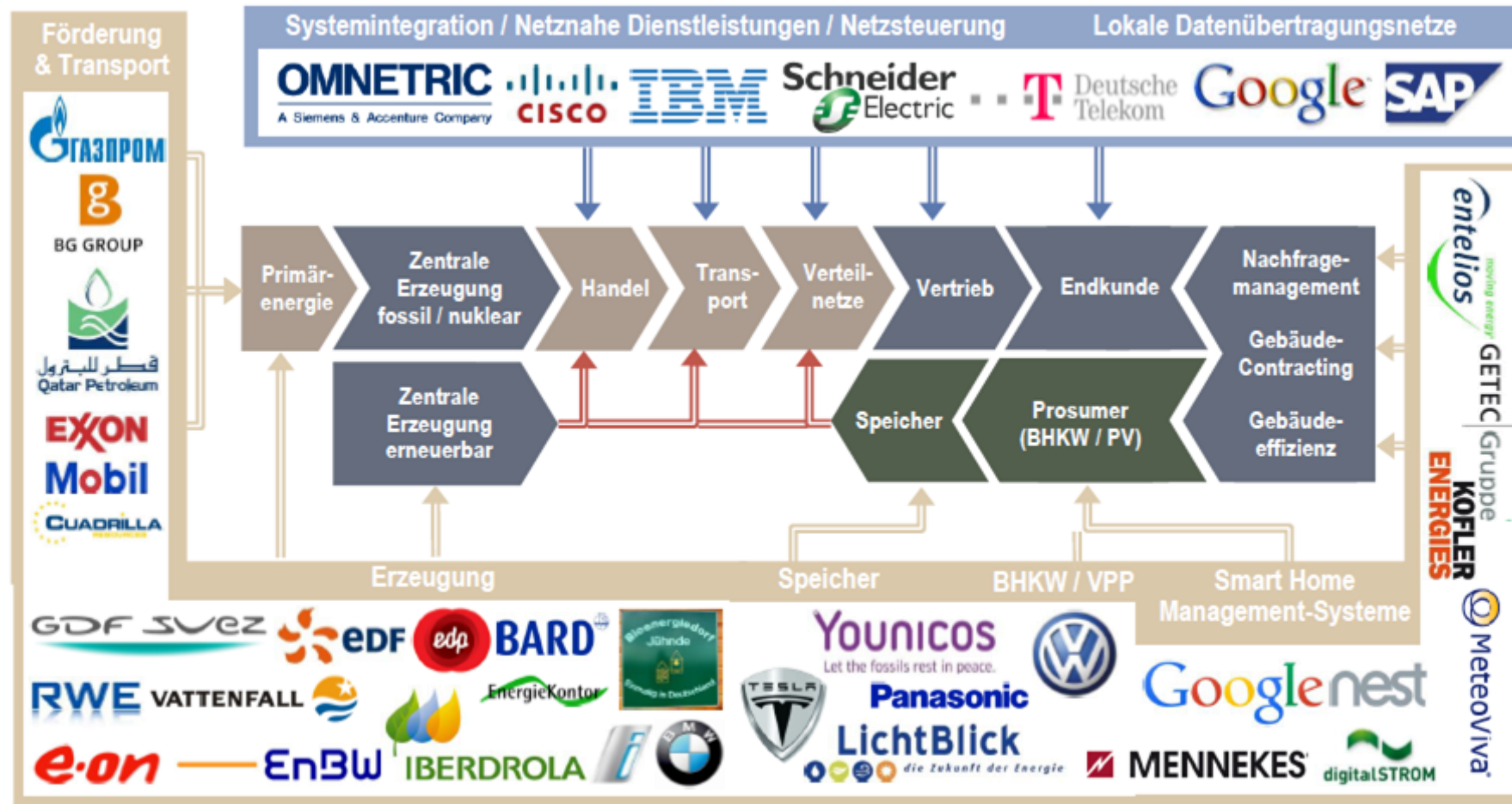
Grids and Infrastructure

Smart Infrastructure, Storage, ...

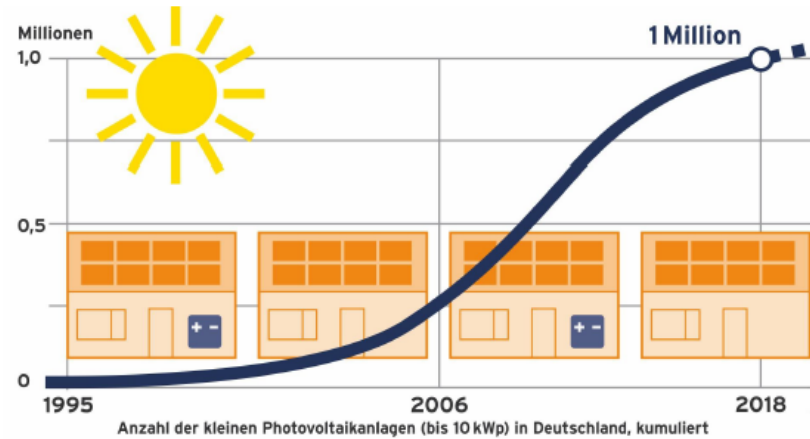
*optimized, flexible, interoperable, resilient,
appropriate to the respective environment ...*

Physical Network

Das „Knabber-Chart“ – neue Player im Energie Business



1-Million-Marke bei kleinen Photovoltaik-Anlagen geknackt



www.solarwirtschaft.de

Quelle: BNetzA, BSW-Solar, Stand: 6/2018

- Solarstrom bereits für gut 10 Cent vom Eigenheim-Dach zu ernten
- Batteriespeicher werden zum Standard (mehr als jeder zweite PV-Käufer bestellt Speicher hinzu)

© BSW-Solar



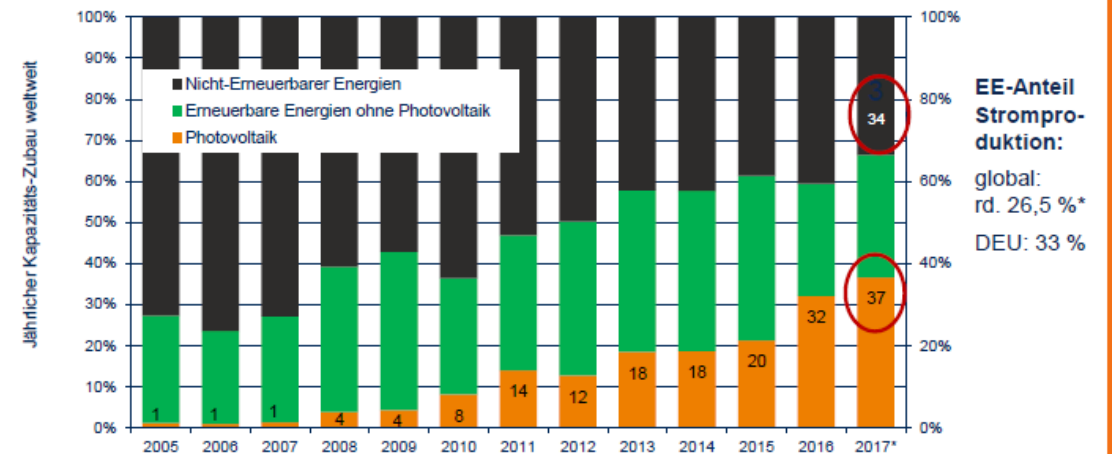
Sonne stellt fossile Energien in den Schatten

37 % neu installierter Stromleistung entfiel 2017 weltweit auf Photovoltaik



PV ist Weltmeister bei globaler Kraftwerksentwicklung

161 Mrd. \$ flossen 2017 in PV, 103 Mrd. \$ in fossile Stromerzeugung



* vorläufig, Schätzung BSW-Solar e.V.
Quellen: IRENA, Stand 5/2018

Entwicklung Kraftwerkskapazität 2017 weltweit: 99 Gigawatt (GW) Photovoltaik (rd. 161 Mrd. Dollar) zum Vergleich: 56 GW Wind (rd. 107 Mrd. \$); rund 90 GW neue Kohle-, Gas- und Atomkraftwerke

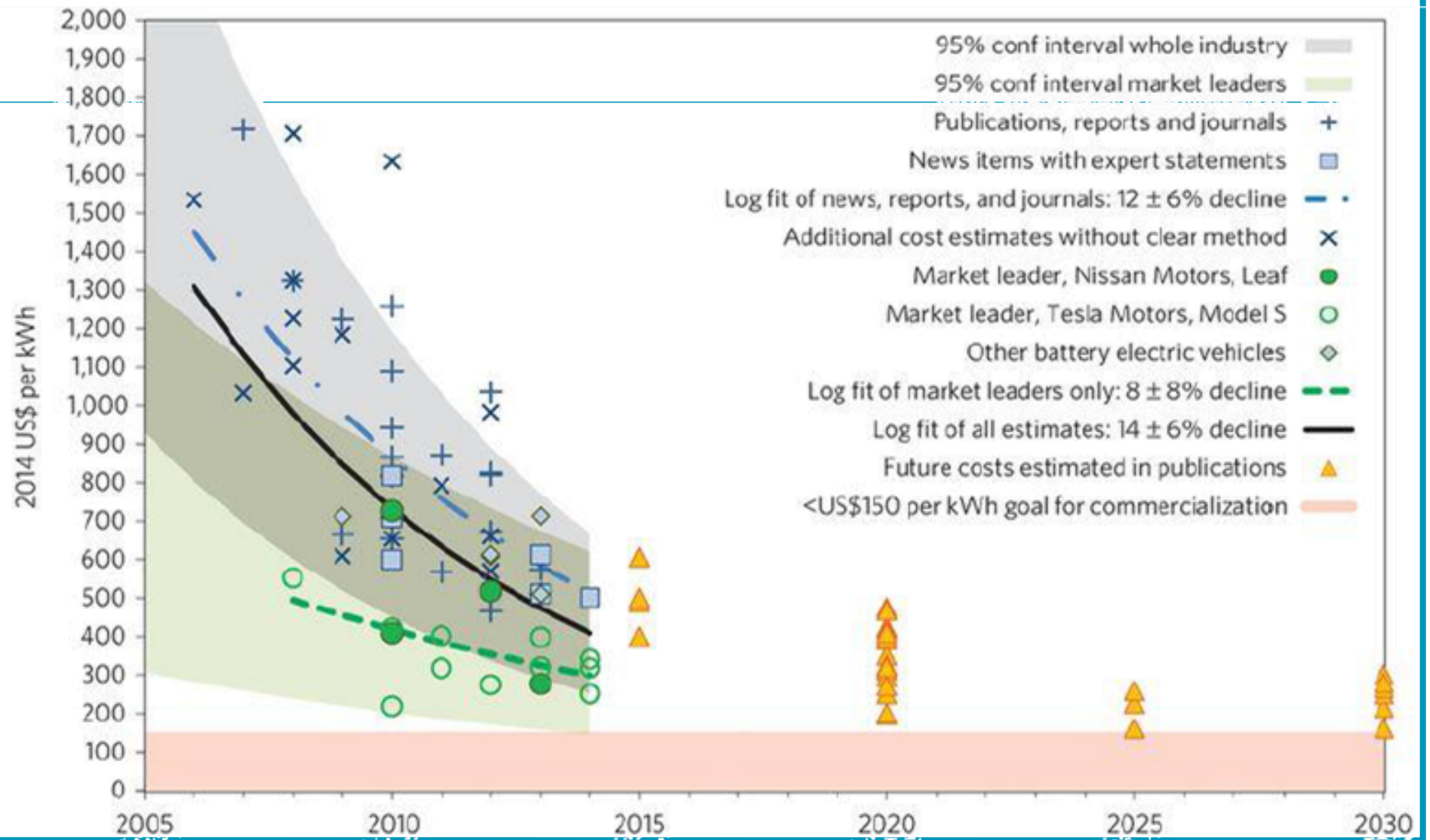
(Quelle: UNEP, Bloomberg)

* Quelle: REN21 inkl. Wasserkraft, Solarenergie: rd. 2 %

Learing Courves for Storage Technologie

Source:
Björn Nykvist & Måns
Nilsson, *Nature
Climate Change* 5,
329–332 (2015)
doi:10.1038/nclimate
2564

M.Merlo. Politechnico
de Milano, ISGAN-
ERA-Net SG+
Workshop, May 2015



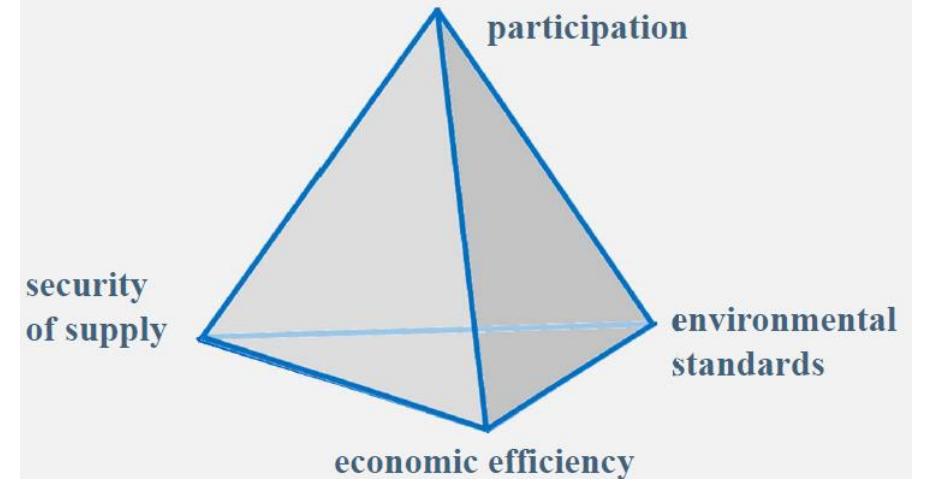
My Family, My Car, My Energy System ?

The Power-Wall: a powerful start into the markets

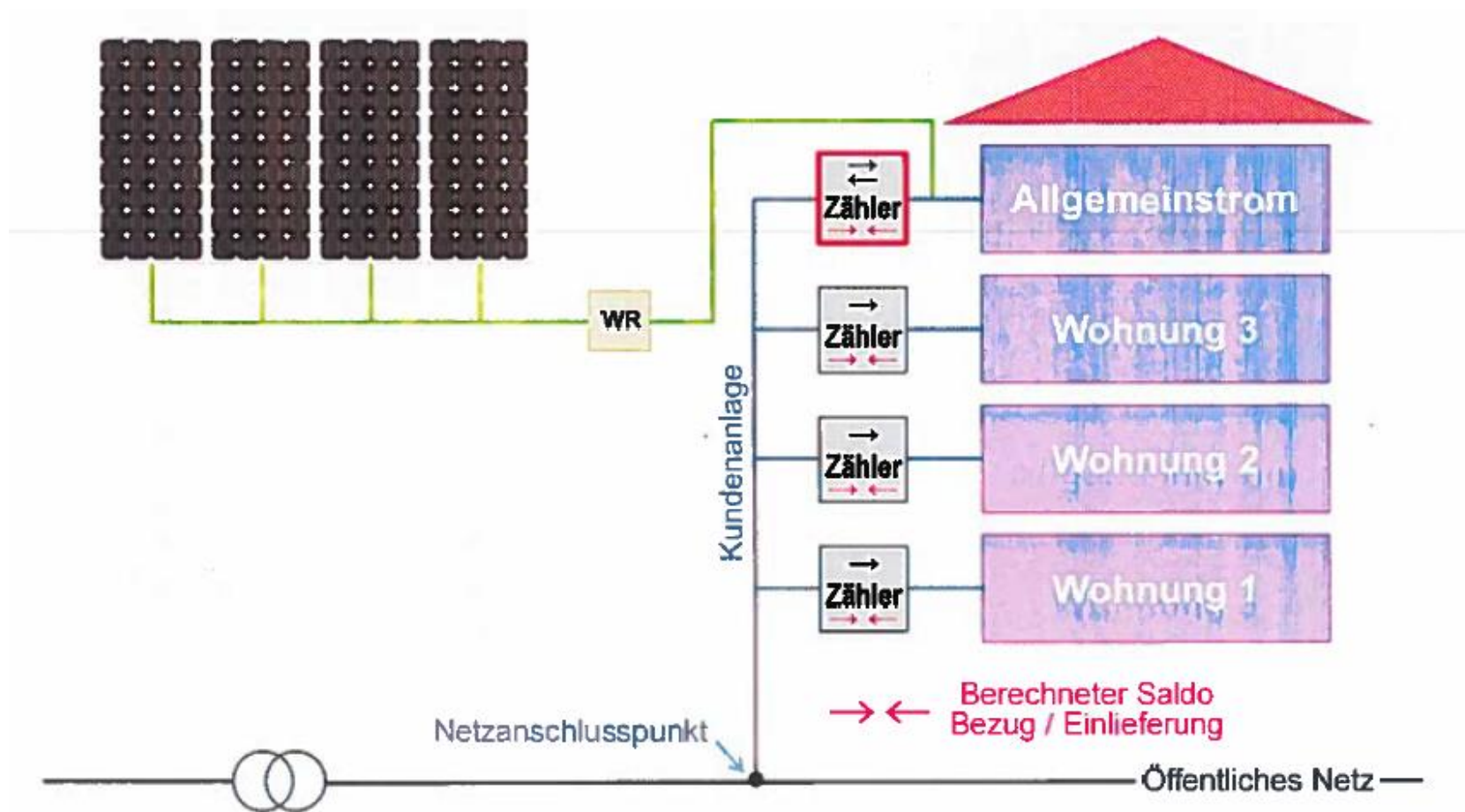


Picture Source: Ludwig Karg, b.a.u.m. consult, IEA Policy Group WS, Oslo 2015

The energy policy tetraeder



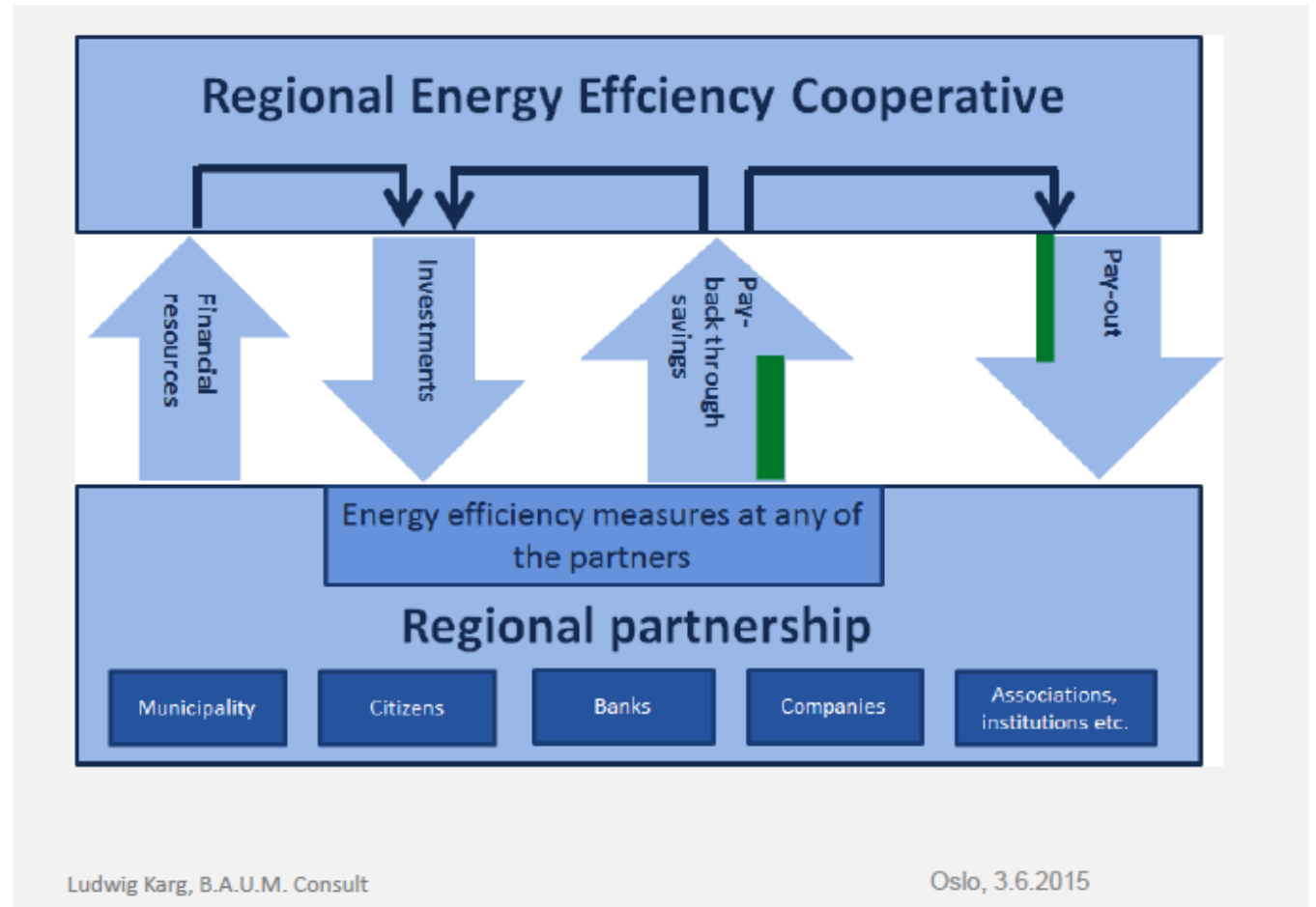
Sharing PV Power With Your Neighbour?



A New Role Model for Communities ?

Lift the „self consumption optimization idea“ to a community level

- Synergies due to communal assets
- System support instead of additional burden
- Participation for all citizens
- Community can lead the way



Distributed Energies



B.A.U.M.

Energy Information System

cellular organism, de-central processing and control, encapsulation of errors

central control, bidirectional communication to generation, storage and consumption

central control, limited ICT with grid components, generation and consumption appliances

Energy Market System

big number of market participants using open market platforms

regulated oligopol, new services, new functions (e. g. flexibility operator)

monopol like market model

Energy Provision System

centralized generation, hierarchical grid

distributed generation, levelled optimization

cellular system with autonomous parts (e. g. micro or nano grids)

Ludwig Karg, Linz, May 10, 2016

Three Dimensions of Integration

cross sectoral integration:

- transport
- industry and trade
- municipal infrastructure
- agriculture
- ...

local and regional development:

- governance
- planning
- innovation system
- SMEs and startups
- transnational knowledge base
- ...

smart energy system:

- renewable energy
- distributed generation
- cross carrier synergies
- automation ...

Regionen und Gemeinden können eine zentrale Rolle spielen

- Technology Providers
- SMEs
- Start-Ups
- Local Utilities
- Customers
- Citizens
-



Picture Source: bmvit, Design Thinking Workshop

- Wer artikuliert die Anliegen und Bedürfnisse der Regionen im Kontext von Technologie- Innovation? (z.B. EU SET-Plan, etc.)
- Wer entwickelt die Technologien und Lösungen für die Regionen? Wer sind die „Technologiepartner“?
- Wie können wir individuelle, maßgeschneiderte Lösungen bauen und trotzdem Skaleneffekte erzielen? (Kosten!)
- Wie können wir gemeinsam Lösungen kaufen / beauftragen / mitentwickeln die es noch nicht fertig zu kaufen gibt? Co-creation, Innovation Procurement, ...

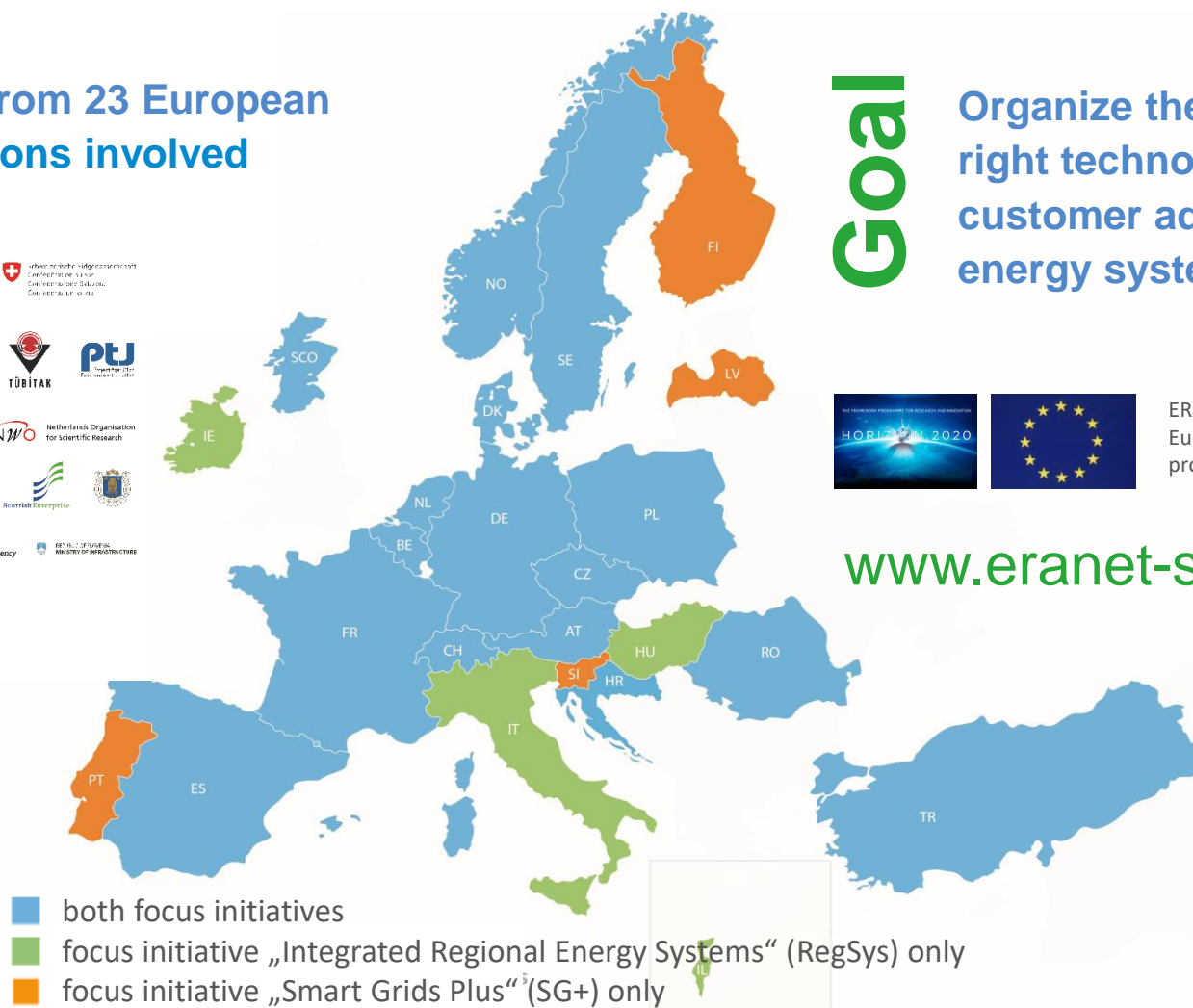
Joint Programming Platform ERA-Net Smart Energy Systems

Joint Programming for Flourishing Innovation from Local and Regional Trials towards a Transnational Knowledge Community

30 funding partners from 23 European countries and regions involved



Austria, Croatia, Denmark, Finland, Flanders, France, Germany, Hungary, Ireland, Israel, Italy, Latvia, Lombardy, Norway, Poland, Portugal, Romania, Scotland, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Turkey, Wallonia



Goal

Organize the learning to enable the right technologies, market designs and customer adoption to achieve the smart energy system vision & goals of Europe



ERA-Net Smart Energy Systems has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement No 64603 and No. 775970.

www.eranet-smartenergysystems.eu



EU SET-Plan Action 4 Implementation Plan (1)

Published Jan 2018

Flagship Initiative 1: Develop an Optimised European Power Grid

Enabling the appropriate level of reliability, resilience and economic efficiency, while integrating variable renewables, such as wind and solar generation by providing increased flexibility thanks to innovative technologies enhancing customer participation, integrating better storage, making the best use of connections with other networks (e.g. heat and cold, transport) and optimising the use of flexible sustainable combined power and heat generation.

Link:

[SET-Plan Action 4
Implementation Plan](#)

Flagship Initiative 2: Develop Integrated Local and Regional Energy Systems

that make it possible to efficiently provide, host and utilise high shares of renewables, up to and beyond 100% in the local or regional supply by 2030, enabling regions and local communities to realise their high sustainable energy ambitions. They shall provide tailor-made solutions that meet the local and regional requirements and demand. At the same time they shall link to a secure and resilient European energy system, enabling the participation in inter-regional exchange of energy as well as in sharing responsibility to maintain the overall system, considering a sustainable use of local and global resources.

ERA-NET SMART ENERGY SYSTEMS



JOINT PROGRAMMING FOR FLOURISHING INNOVATION
FROM LOCAL AND REGIONAL TRIALS TOWARDS A TRANSNATIONAL
KNOWLEDGE COMMUNITY

The joint programming platform of European countries and regions, in the European Strategic Energy Technology Plan (SET-Plan) Key Action 4, "Increasing the resilience and security of the energy system", together with the European Commission.

SUPPORTING TRANSNATIONAL RDI PROJECTS

The funding partners of ERA-Net Smart Energy Systems jointly provide financial support to transnational research, development and innovation (RDI) projects

BUILDING A KNOWLEDGE COMMUNITY

Experts for energy systems of the future meet in workshops, webinars and on experia, a tailor-made digital knowledge platform.

HOSTING FAMILIES OF FUNDED PROJECTS

More than 30 projects with partners from industry, network and infrastructure providers, research and academia as well as regions and cities, dealing with technology, market and adoption have been selected and receive more than 60 MEUR funds.

ESTABLISHING PARTNERSHIP

More than 25 public funding partners from the national and regional level are cooperating in ERA-Net Smart Energy Systems, with support from the European Commission. Together with Associated Partners from regional business and government, the start-up and SME sector, additional financiers and funders as well as ICT providers, we are working on an innovation eco-system, building bridges in the whole innovation chain.

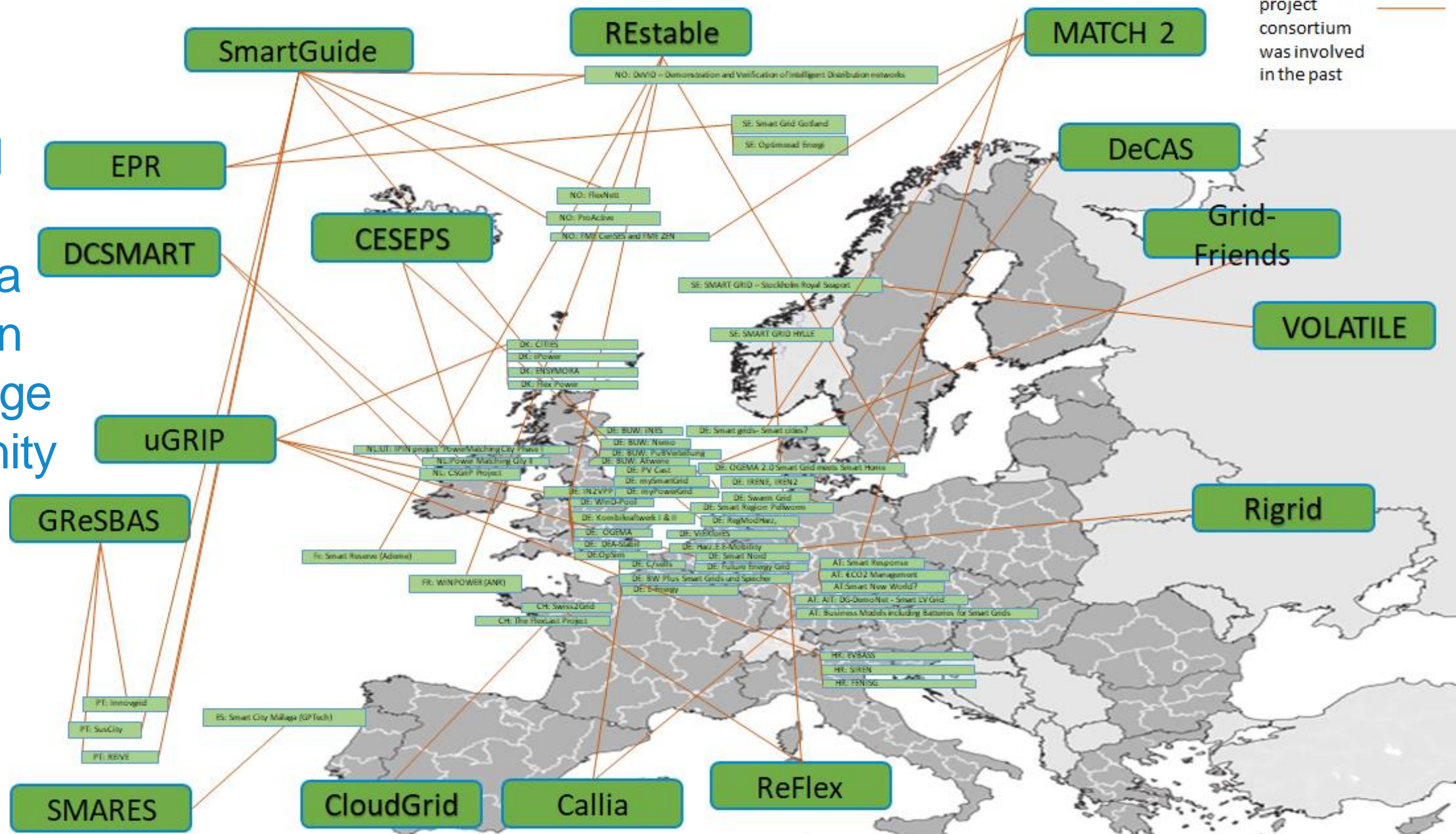
**JOINT CALL FOR RDI-PROJECTS ON INTEGRATED,
REGIONAL ENERGY SYSTEMS STARTING NOW!**

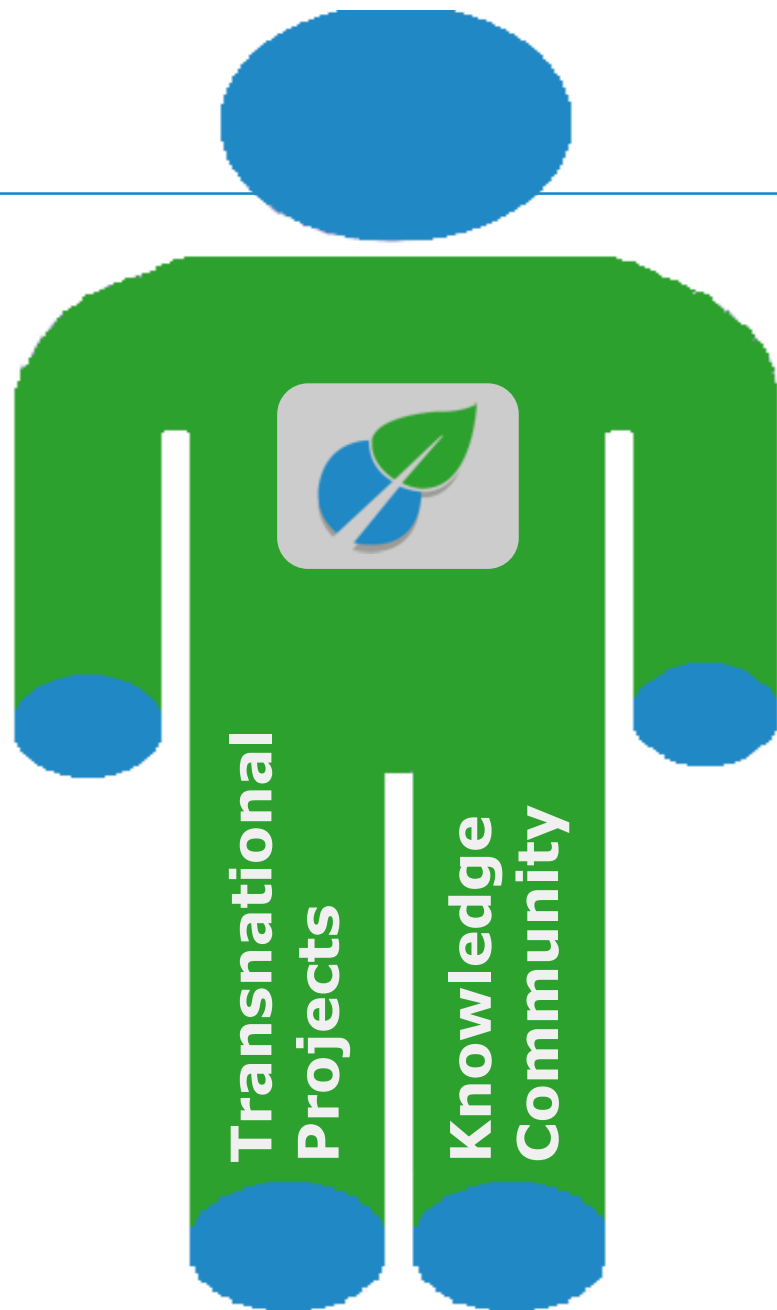
www.eranet-smartenergysystems.eu



From Regional Trials towards a European Knowledge Community

ERA-Net SG+ project consortium was involved in the past





Walking on two legs

- **Transnational Projects**

- selected in ERA-Net SG+ Calls
- national funding with EU top up funds
- supported by Knowledge Community Management

- **Knowledge Community**

- from and for the ERA-Net SG+ projects
- national and international experts
- unique knowledge base for our topic

Joining forces with many kinds of non-funded partners to ...

- jointly foster development of technology and business solutions
- make sure that projects meet real needs of energy efficiency and energy transition processes
- link local and regional level to overall energy system
- connect to business domains way beyond the energy sector
- give RDD consortia confidence that their results will be adopted.

The involvement of stakeholders as Associated Partners will not only improve the quality of the funded RDD projects but increase their overall impact.

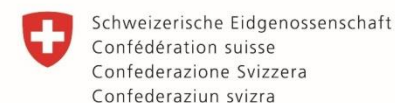
Categories of Associated Partners

- regional development authorities
- utilities and their associations
- energy innovation institutes
- building owners, facility managers and their associations
- technology platforms
- **business development institutions** (chambers, incubators, cluster managements)
- investors
- **(non RDD) funding institutions or programmes**
- **enablers for software solutions (data or service providers)**
- operators of infrastructure
- consumer groups
- focus groups (e.g. environment, mobility)

marked in **blue**: key partners for May 2018 call

www.eranet-smartenergysystems.eu/Partners/Associated_Partners

Funding Partners



ADEME



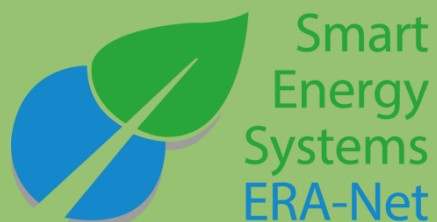
Agence de l'Environnement
et de la Maîtrise de l'Energie



FOND ZA ZAŠTITU OKOLIŠA I
ENERGETSKU UČINKOVITOST



MINISTERO DELL'ISTRUZIONE DELL'UNIVERSITA' E DELLA RICERCA



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