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The use of TRL scale in RIS3 implementation? the case of energy technologies

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European Commission

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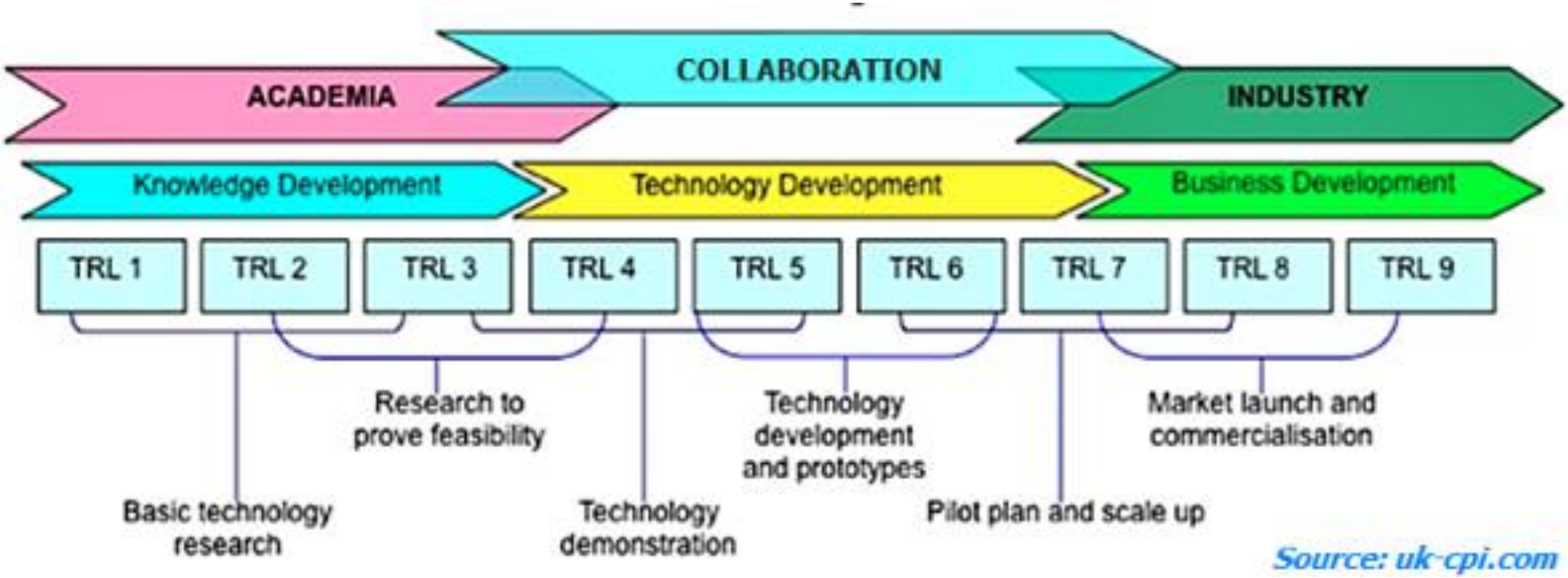
Outline

1. Conceptual framework
2. Motivations
3. Case study: the use of TRL scale in Energy field
4. Discussion

1. Conceptual Framework (1)

What is TRL (Technological readiness level)?

- Created in the 70's by the National Aeronautics and Space Administration (NASA) to assess the maturity of new technologies (Mankind, 1995).
- Currently used in some H2020 calls, KICs, ERA nets



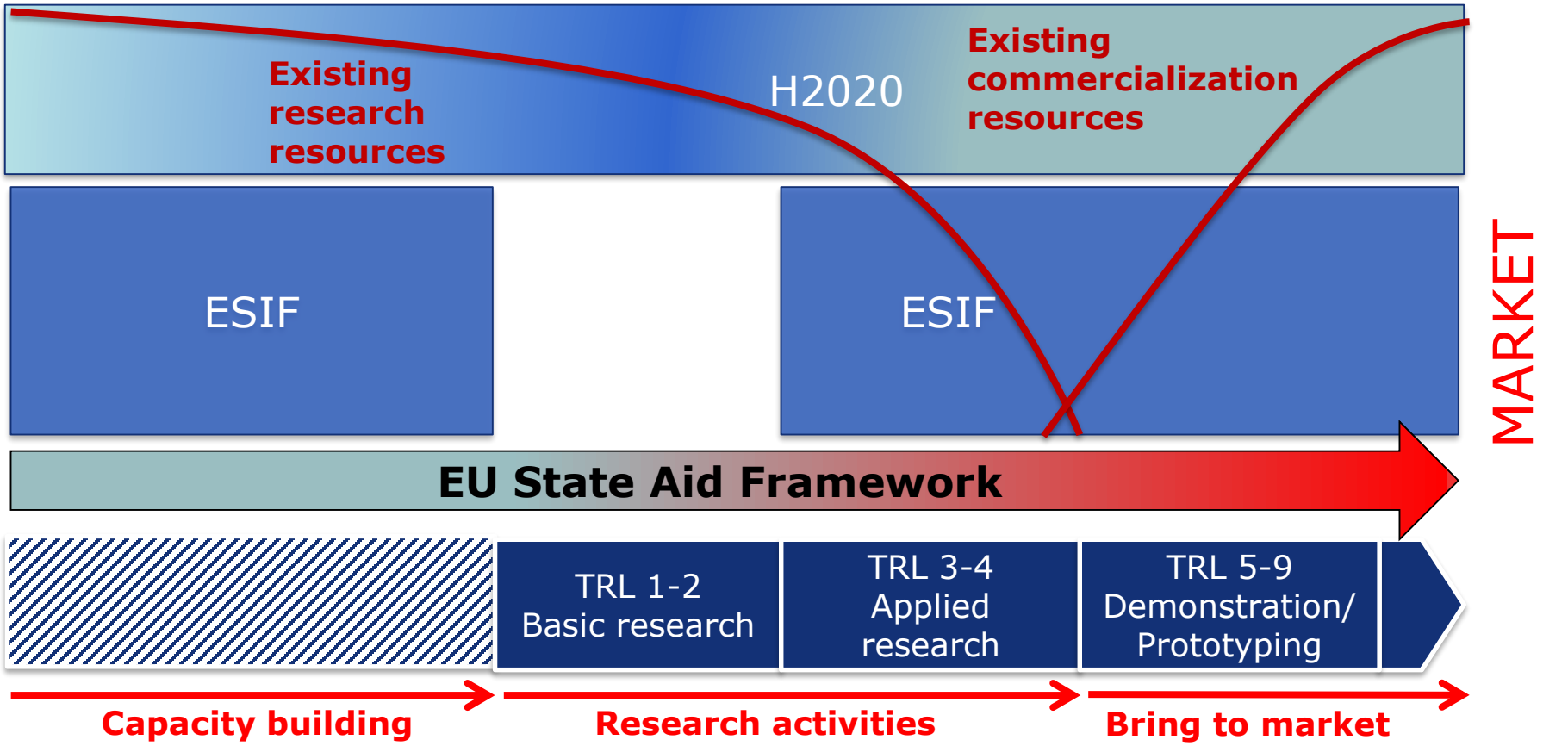
1. Conceptual Framework (2)
Smart Specialisation is based on 4Cs (European Commission, 2010)

Key concepts related to the use of TRL scale are Highlighted

- **Competitive advantage**: match R&I with business and develop links (related variety); adoption of (generic/new) technologies for diversification/modernisation of sectors + explore emerging areas
- **Policy Choices** (tough ones): select a limited number of priorities based on specialisation & integration in international value chains
- **Critical mass** of resources & talent: cooperation between regions by avoiding duplication and fragmentation
- **Collaborative Leadership**: involve stakeholders from academia, businesses, public administrations and civil society (i.e. quadruple helix) & synergies between funding instruments (EU, national, regional)

1. Conceptual framework (3)

- Implementation of RIS3 strategies through the synergy of Funding
- TRL scale is introduced along the funding chain leading to the market
- State aid framework plays an increasing funding constraint as the market is close



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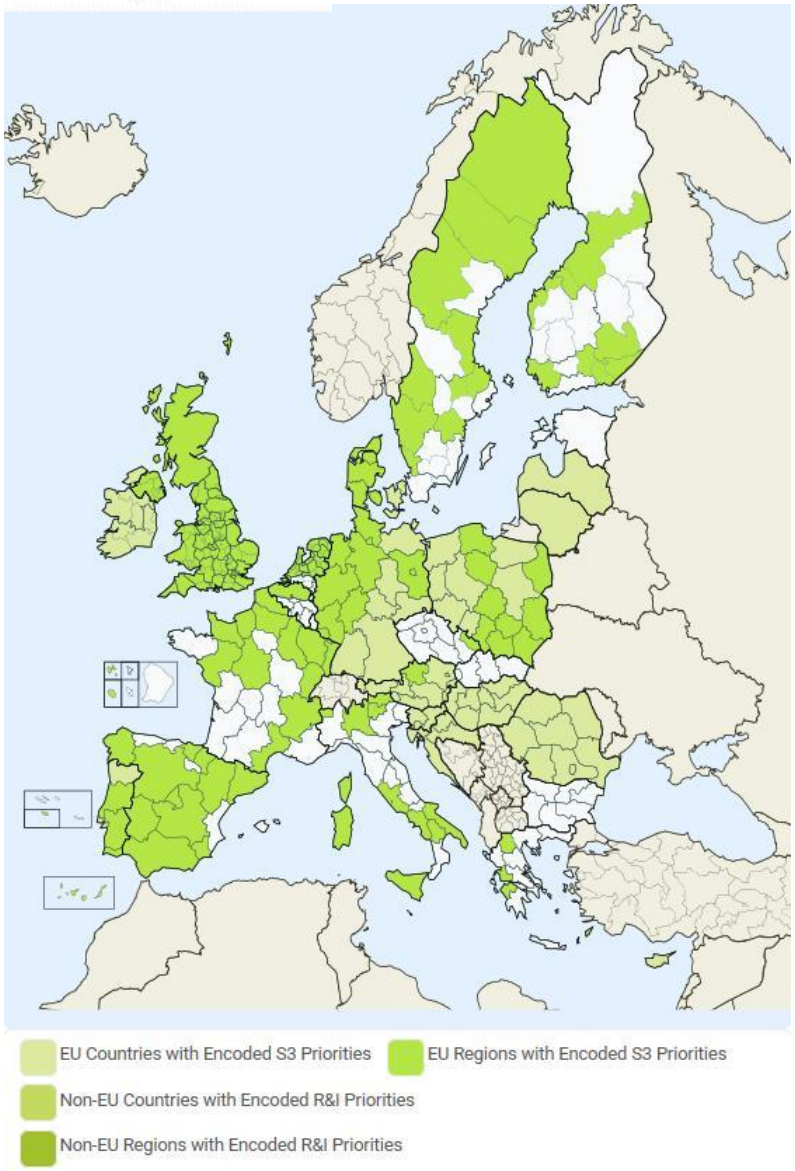
2. Motivations

- Specialisation Areas are often too **generic** to reveal the real capability of a territory in a given technology (i.e. 21% of Areas chosen are KETs) (European Commission, 2015)
  - Can TRL scale provide a **new** dimension to better define specialisation areas ?

- As TRL scale is more and more used by Programme managers and research stakeholders, from the RIS3 implementation perspective:
  - Can TRL scale help Policy makers to better target support measures along the **value/funding chain**?
  - Can TRL scale help **trans-regional cooperation** in improving readability of RIS3 from outside (e.g. macro region, Vanguard initiative)?
  - Can TRL scale be introduced along each step of a **value chain** to better target Public resources?

3. Case study: the use of TRL scale in Energy



RIS3 Definition phase:

- 130 regions have identified Energy in their RIS3 priorities
- Several KET priorities will fund energy

RIS3 Implementation phase:

- Few regions have introduced TRL in actions/programmes under their OP (Noord Nederlan, Catalonia, Slovenia)

SET Plan: for each Energy System Challenge R&I actions are organised by TRL

H2020 programme use of TRL

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3. Why choosing KIC InnoEnergy as entry point of our case study

Long-term partnership in the Knowledge Triangle to finalise and commercialise technological innovations that lead to new products and services.

Territory-based approach grounded on the geographical proximity of the knowledge triangle actors.

Long-term partnership of EU key players in energy technologies with a business model that will require complementarity of funding

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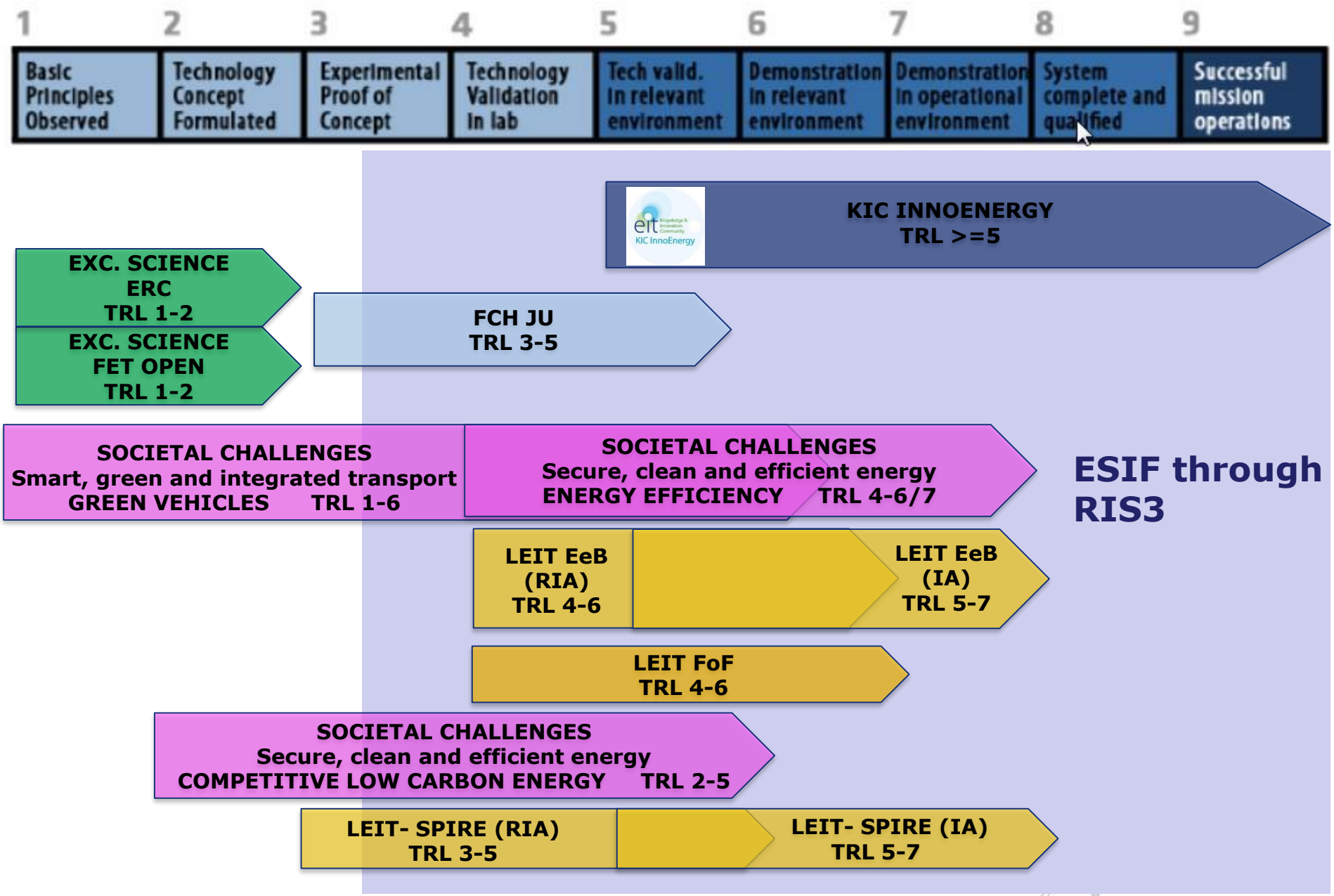

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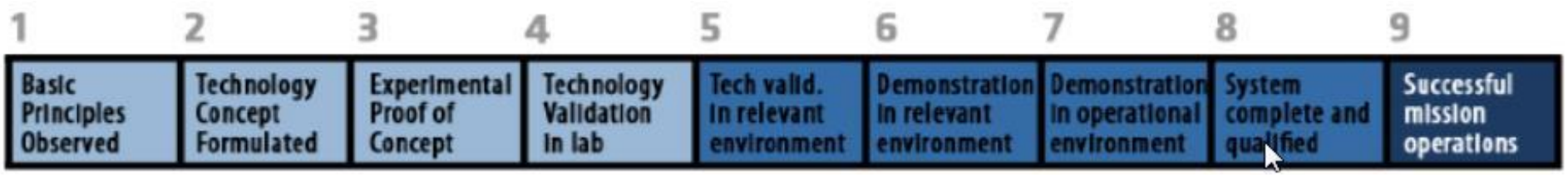

DEMOWIND ERA.NET
TRL 6-8

SOLAR ERA.NET
TRL 1-9

M.ERA.NET
TRL 1-7

GEOTHERMICA ERA.NET
(Still being launched) Demo projects

ERA.NET BIOENERGY
TRL 2-5

BIONENERGY SUSTAINING THE FUTURE (BESTF)
TRL 6-8

ERA.NET SMART GRIDS
TRL 5-7

OCEAN ERA.NET
TRL 1-8

ELECTRIC MOBILITY EUROPE
TRL > 5/6

ACT
TRL 4-6

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KIC InnoEnergy Categories of intervention Energy infrastructures	
9: RENEWABLE ENERGY: WIND	6 REGIONS (DE, ES,PT, PL) involved in KIC InnoEnergy
10: RENEWABLE: ENERGY SOLAR	7 REGIONS (DE, ES, FR,PT, PL) involved in KIC InnoEnergy
11: RENEWABLE ENERGY: BIOMASS	8 REGIONS (DE, ES,FR-IDF,PT,PL, SE) involved in KIC InnoEnergy
12: Other renewable energy (including hydroelectric, geothermal and marine energy	ALL REGIONS involved in KIC InnoEnergy

KIC InnoEnergy Innovation Readiness Level (IRL tool®)

The **Technology Readiness Level** measures the maturity of a given technology.

The **IP Readiness Level** measures the "*freedom to operate*" of a given product/service.

The **Market Readiness Level** measures the maturity of a given need in the market.

The **Consumer Readiness Level** identifies the level of knowledge about the consumer and to what extend affects the product/service to this consumer.

The **Society Readiness Level** identifies the level of knowledge about the stakeholders' interests and concerns and to what extend affects the product/service to the society.

4. Discussion

- Can TRL scale be a useful tool for RIS3 implementation?
  - ✓ Exploit EU /national funding complementarity
  - ✓ Contribution to RIS3 multi-level governance
  - ✓ Macro-regional and cross-thematic coordination
  - ✓ Support RIS3 monitoring and evaluation
  - ✓ Contribute to address "death valley" through support measures

- Methodology:

  - ✓ To explore the relevance of TRL in the RIS3 implementation we plan to focus on value chains of one or several energy areas (wind, solar, geothermal,..) and assess the TRL level in each of the components of the value chain.
  - ✓ Questionnaire and interviews to RIS3 managers in charge of energy field and Companies at the step of the TRL scale to test relevance of the use of TRL for RIS3 implementation.

Thank you

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