



The challenges of catching up: Spreading Excellence and Widening participation

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About this talk

- The issues with catching-up economies
- Globalisation and the Knowledge-economy challenges
- A New Growth Proposition based on Knowledge and Innovation
- The Answer of Horizon 2020 and Synergies with the European Structural and Investment Funds
- Spreading Excellence and Widening Participation in Horizon 2020: a new set of tools for the Low-Performers in RTDI in the EU



The issues with catching-up economies

- **Moris Abramovitz has summarised some issues as follows:**
 - *Countries that are technologically backward have a potentiality for generating growth more rapid than that of more advanced countries, provided their social capabilities are sufficiently developed to permit successful exploitation of technologies already employed by the technological leaders.*
 - *The pace at which potential for catch-up is actually realized in a particular period depends on factors limiting the diffusion of knowledge, the rate of structural change, the accumulation of capital and the expansion of demand.*
 - *The process of catching up tends to be self-limiting, but the strength of the tendency may be weakened or overcome, at least for limited periods, by advantages connected with the convergence of production patterns as followers advance towards leaders or by endogenous enlargement of social capabilities”*
 - *Catching Up, Forging Ahead and Falling Behind, The Journal of Economic History, Vol. 46, No 2, The Tasks of Economic History (Jun.1986), pp. 385-406*

The issues with catching-up economies (II)

Jan Fagerberg and Manuel Mira Godinho point to a subsequent series of issues:

- *“.....a preliminary classification of catch- up strategies. The type described by Veblen assumes that technology is easily available/transferable, not very demanding in terms of skills or infrastructure and that market forces are able to take care of the necessary coordination without large-scale involvement of external “change agents”.*
- *In contrast there is the Gerschenkronian case in which technology transfer is so demanding in terms of skills/infrastructure that market forces, if left alone, are considered unlikely to lead to success, and some degree of active intervention in markets by outsiders, being private organisations or parts of government, is consequently deemed necessary.”*



The issues with catching-up economies (III)

- “....Arguably, to avoid being stuck along an inferior path and never catch up, “institutional instruments” may be needed to compensate for some of these “latecomer disadvantages”, to use a Gerschenkronian term. In particular what the developing country firm may need are “institutional instruments” that improve:
 - **links with the technology frontier,**
 - **links with markets (and sophisticated users),**
 - **supply of needed skills, services and other inputs,**
 - **the local innovation system/network...”.**
 - *Jan Fagerberg and Manuel Mira Godinho in Paper presented at the Workshop “The Many Guises of Innovation: What we have learnt and where we are heading”, Ottawa, October 23-24.2003, organized by Statistics Canada.*



The issues with catching-up economies (IV)

Can we fight path-dependency ?

- *“.....Path-dependency points to cases of ‘locked-in’ development (J.Fagerberg, B.Arthur). “....It could mean that some industrialisation locations got ‘selected’ early on and, by appropriating the available agglomeration economies, exercised some ‘competitive exclusion’ on other locations. Indeed, and as also illustrated in Arthur’s chapter, it is the increasing returns associated with industrialisation and development which make the conditions of development so paradoxical. **Previous capital is needed to produce new capital, previous knowledge is needed to absorb new knowledge, skills must be available to acquire new skills, and a certain level of development is required to create the infrastructure and the agglomeration economies that make development possible. In summary, it is within the logic of the dynamics of the system that the rich get richer and the gap remains and widens for those left behind.....”***
 - **Carlota Perez (UNIDO – Ministry of Industry, Caracas and SPRU, University of Sussex, Brighton), Luc Soete (MERIT, Faculty of Economics, State University of Limburg, Maastricht) Catching up in technology: entry barriers and windows of opportunity**

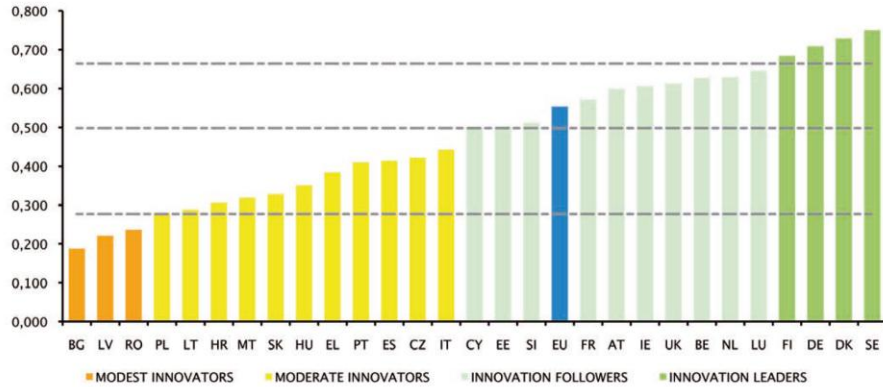


Setting the scene

- The knowledge economy is here – with a price
- Globalisation has pushed the boundaries and has changed traditional ways for dealing with regional development
- Global value chains have redrawn the map of conceiving and producing products and services
- Countries / regions that are not able to adapt will see their economies being marginalised
- Global positioning necessary
- Need for a new growth proposition based on knowledge assets



Figure 3: EU Member States' innovation performance



Note: Average performance is measured using a composite indicator building on data for 25 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. Average performance reflects performance in 2011/2012 due to a lag in data availability.

Innovation performance (2014)



R&D expenditure in the business sector as % of GDP (2011)



R&D expenditure in the business sector as % of GDP

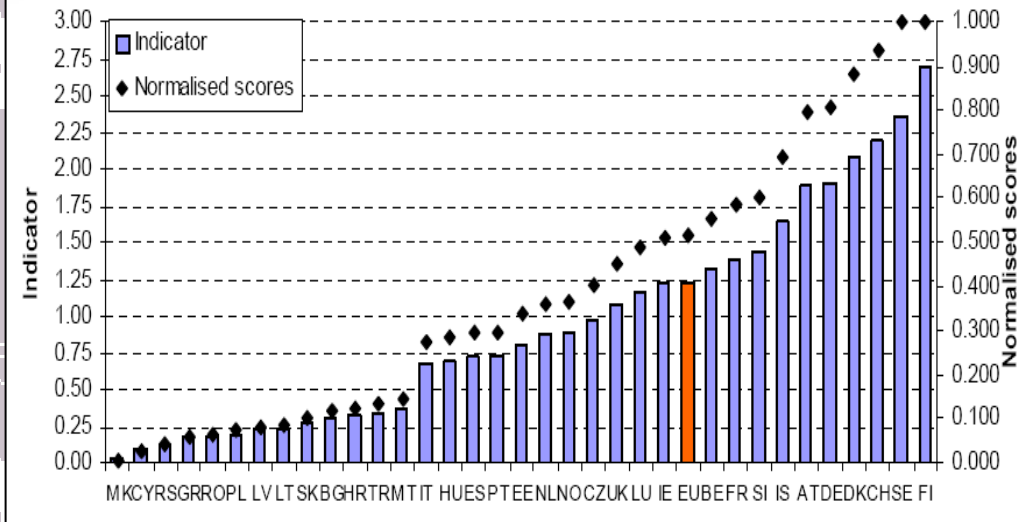
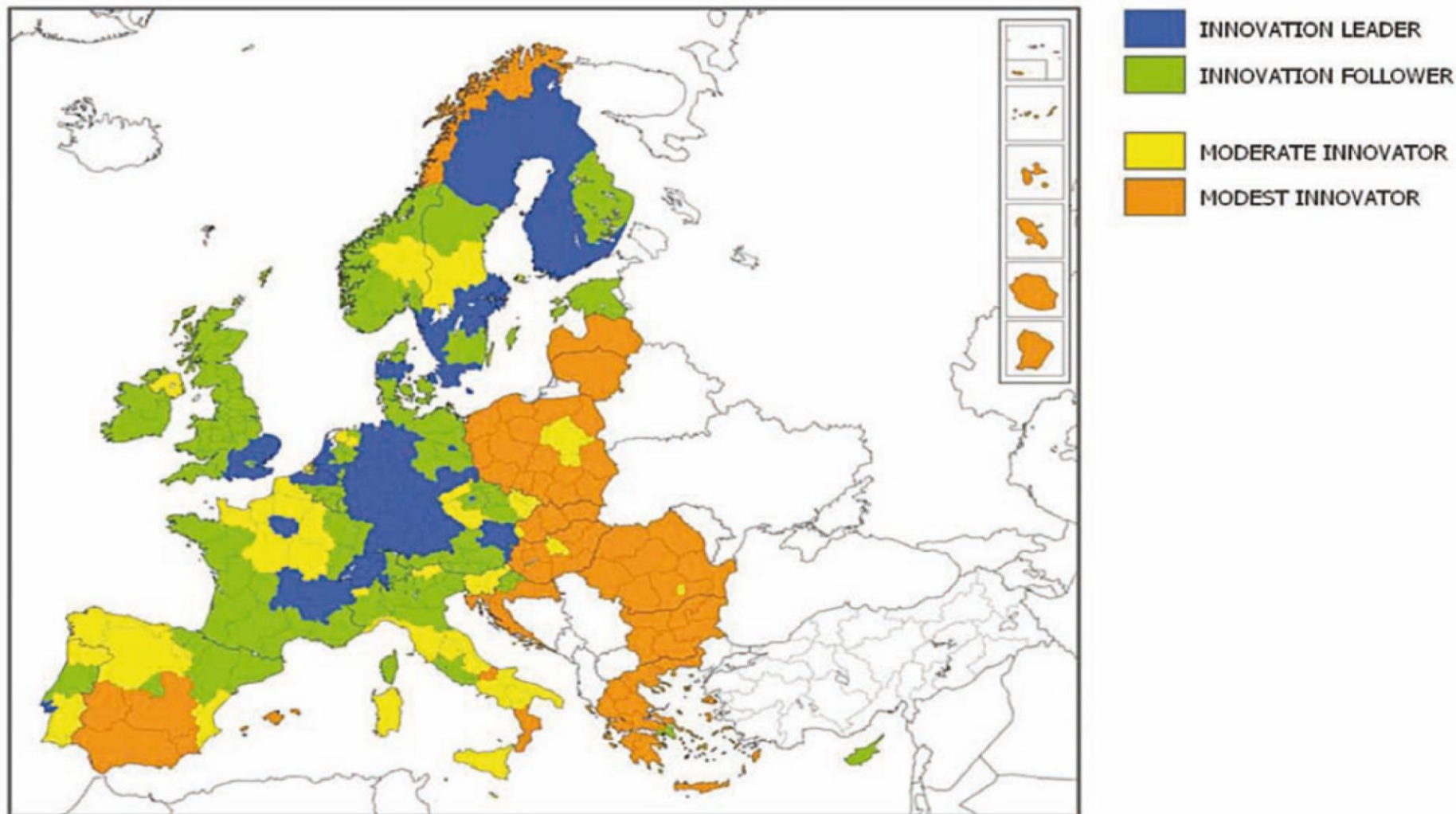


Figure 23: Regional performance groups



The EU Member States Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta are not included in the RIS analysis. Group membership shown is that of the IUS. Map created with Region Map Generator.



Europe's innovation divide undermines competitiveness

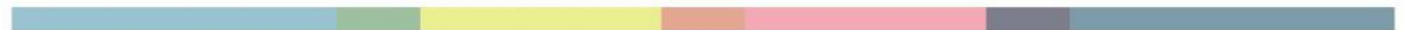
- Large parts of the EU out of 'sync'
- Modest and Moderate Innovators holding back the EU as a whole
- Grand policy designs at risk without a sound and functioning base
- Identification of priorities and strategies of crucial importance – yet still, among the major bottlenecks





How European regions invest in R&D

- Out of a total of 266 regions in the EU, only 35 had in 2009 an R&D intensity (R&D investment as a % of their GDP) above 3%
- Taken together these 35 regions accounted for 45% of all R&D expenditure in the EU
- 10 of the most R&D intensive regions in 2009 were located in the Nordic member States, totalising 9,3% of total R&D expenditure in the EU (source EUROSTAT regional yearbook 2012)



The promise of Horizon 2020

- A core part of Europe 2020, Innovation Union & European Research Area:
 - **Responding to the economic crisis** to invest in future jobs and growth >
Addressing people's concerns about their livelihoods, safety and environment
> **Strengthening the EU's global position** in research, innovation and technology

Novelties

- A single programme bringing together three separate programmes/initiatives
- Coupling research to innovation – from research to retail, all forms of innovation
- Focus on societal challenges facing EU society, e.g. health, clean energy and transport
- Continuation of investment in frontier research
- Simplified access, for all companies, universities, institutes in all EU countries and beyond.

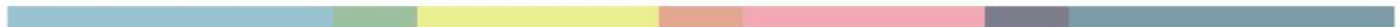


Horizon 2020 marks a departure in terms of support to regional innovation

- ❑ Focus is on institutions, companies and people, not on regions

However:

- ❑ Novelties such as new financial engineering instruments, the new SME instrument and the Fast Track to innovation pilot may have a strong and lasting effect at regional level



The Synergies Path

- ❑ *Horizon 2020 will be implemented through transnational research and innovation actions, focusing on specific societal and technological challenges, irrespective of location*
- ❑ *ESIF actions in support of research and innovation will be place-based, geared towards growth and jobs, in a context of smart specialisation. However, capacity building for scientific excellence will not be excluded, insofar that it is integrated in an overall RIS3 Strategy*



The Synergies and Smart Specialisation Matrix

	STRUCTURAL FUNDS THEMATIC OBJECTIVE NO 1 ON STRENGTHENING RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION	
HORIZON 2020 TOP DOWN RESEARCH AND INNOVATION PRIORITIES INFLUENCING NATIONAL AND REGIONAL PRIORITIES	THEMATIC CONCENTRATION FOR MOST ADVANCED AND TRANSITION REGIONS FOR ALLOCATING 80% OF THE ERDF MONEY FOR 4 OBJECTIVES: R&I, ICT, SME COMPETITIVENESS AND LOW CARBON ECONOMY	THEMATIC CONCENTRATION FOR LESS ADVANCED REGIONS FOR ALLOCATING 50% OF THE ERDF MONEY FOR 4 OBJECTIVES: R&I, ICT, SME COMPETITIVENESS AND LOW CARBON ECONOMY
EXCELLENCE	SMART SPECIALISATION EX-ANTE CONDITIONALITY <i>based on a SWOT analysis to concentrate resources on a limited set of research and innovation priorities in compliance with the NRP; measures to stimulate private RTD investment; a monitoring and review system; a framework outlining available budgetary resources for research and innovation; a multi-annual plan for budgeting and prioritisation of investments linked to EU research infrastructure priorities (European Strategy Forum on Research Infrastructures -ESFRI)</i>	
INDUSTRIAL LEADERSHIP		
SOCIETAL CHALLENGES		





Spreading Excellence and Widening Participation Background

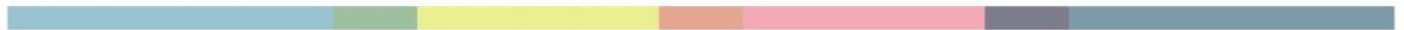
- Currently national / regional disparities in research excellence and innovation performance, hamper competitiveness, business growth and employment creation. Simultaneously, a number of countries are experiencing low participation in the EU FP; Wide political debate during Horizon 2020 negotiation process.
- **Disparities due to structural issues, such as:** insufficient national RTDI investment, insufficient capacities and reduced access to international networks.
- **Problems need to be primarily addressed at national and regional level** and through other instruments, **such as Cohesion Policy funding.**
- **However Horizon 2020 will also take relevant action under the separate specific objective "Spreading Excellence and Widening Participation" (WIDESPREAD)**





Spreading excellence and widening participation through Horizon 2020

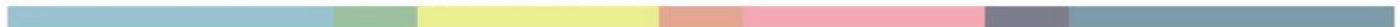
- New **Part III-a** in Horizon 2020 (budget circa EUR 800M)
- Main actions on **Teaming** (Centres of Excellence), **Twinning** (institutional networking), **ERA Chairs** (bringing excellence to institutions); also **Policy Support Facility** and a special action from **COST on Widening actions**





Teaming for excellence

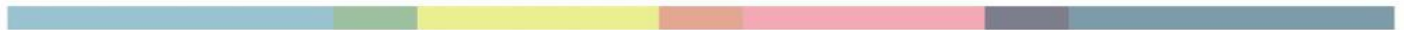
- ❑ **Teaming of excellent research institutions and low performing RDI regions:** Teaming aims at the creation of new (or significant upgrade of existing) **centres of excellence in low performing RDI Member States and regions.**
- ❑ It will focus on the preparatory phase for setting up or upgrading and modernising such an institution facilitated by a teaming process with a leading counterpart in Europe, including supporting the development of a business plan.
- ❑ Proposals have to fit with the overall Smart Specialisation Strategy of the host
- ❑ A commitment of the recipient region or Member State (e.g. support via Cohesion Policy Funds) is expected. Subject to the quality of the business plan, the Commission may provide further seed financial support for the first steps of implementation of the centre.
- ❑ Building links with innovative clusters and recognising excellence in low performing RDI Member States and regions, including through peer reviews and awarding labels of excellence to those institutions that meet international standards, will be considered.





Twining

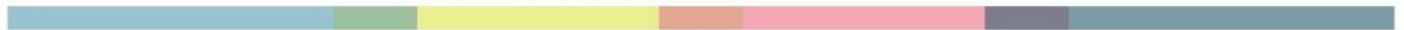
- ❑ **Twining of research institutions:** Twining aims at significantly strengthening a defined field of research in an emerging institution through links with at least two internationally-leading institutions in a defined field. A comprehensive set of measures underpinning this linkage would be supported (e.g. staff exchanges, expert visits, short-term on-site or virtual trainings, workshops; conference attendance; organisation of joint summer school type activities; dissemination and outreach activities).
- ❑ Twining proposals are also encouraged to explain their links with the Smart Specialisation Strategy of the host location of the applicant institution





ERA Chairs

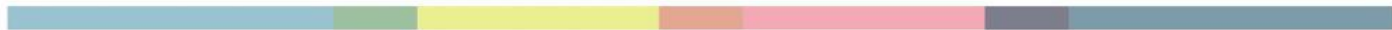
- Establishing 'ERA Chairs' to attract outstanding academics to institutions with a clear potential for research excellence, in order to help these institutions fully unlock this potential and hereby create a level playing field for research and innovation in the European Research Area.
 - *This will include institutional support for creating a competitive research environment and the framework conditions necessary for attracting, retaining and developing top research talent within these institutions.*





Establishing a Policy Support Facility

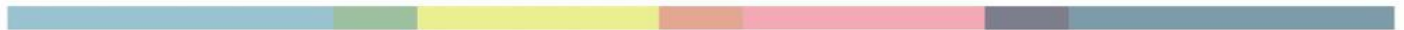
- **Policy Support Facility (PSF)** : This will aim to improve the design, implementation and evaluation of **national/regional research and innovation policies**. It will offer **expert advice to public authorities at national or regional level** on a voluntary basis, covering the needs to access the relevant body of knowledge, to benefit from the insight of international experts, to use state of the art methodologies and tools, to receive tailor-made advice.





Stimulating cross-border science networks

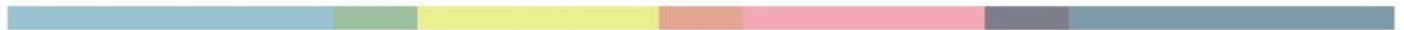
- COST, a bottom-up, open networking mechanism, encourages international exchanges and co-operation of researchers within Europe and beyond. Joint activities such as conferences, short-term scientific exchanges and publications are supported.
- Within Horizon 2020, COST should further bring together "pockets of excellence" and play a mobilising role not only for the less participating countries but also for the enlargement countries and the European neighbourhood policy countries.
- COST could make a significant contribution to the development of a 'staircase to excellence' for research organisations across Europe.





Measures to improve information, communication and support

- Improving information networks on European research and innovation would greatly facilitate further participation in the Framework Programme.
- Improving information on the Framework Programme needs, will aim to significantly improve and monitor NCP performance in qualitative and quantitative terms, including training efforts and enhanced access to electronic information.





Criteria retained for Widening actions



- The Composite Indicator of Research Excellence

Why this indicator?

- ✓ Excellence is a key factor for performance for the whole R&I system
- ✓ Only indicator that can measure excellence embedding several dimensions
- ✓ Parameters normalised to eliminate size and population biases
- ✓ Innovation taken into account also through the patent applications variable
- ✓ Strong correlation between the Excellence indicator and the FP7 Budget share per country





Composite Research Excellence Indicator at National level

Origin: Developed by DG RTD & JRC, part of the IU progress at country level 2013 publication & will be included in the ***IU Competitiveness Report 2013*** to be published in November.

Definition: "A composite indicator developed to measure the research excellence in Europe, meaning the effects of the European and national policies on the modernisation of research institutions, the vitality of the research environment and the quality of research outputs in both basic and applied research."

Methodology:

Composite indicator of four variables:

1. Highly cited **publications** of a country as a share of the top 10% most cited publications normalised by GDP
2. Number of world class **universities** and public research institutes in a country normalised by population in the world top 250 universities and research institutes
3. **Patent** applications per million population
4. Total value of **ERC grants** received divided by public R&D performed by the higher education and government sectors

Threshold: MS below 70% of the EU average

Resulting eligible MS: Latvia, Croatia, Lithuania, Malta, Slovakia, Romania, Luxembourg, Poland, Bulgaria, Estonia, Portugal, Slovenia, Cyprus, Czech Republic and Hungary

	Composite indicator of research excellence 2010
EU27 average	47,9
EU27 70% threshold	33,5
Member States below 70% of the EU27 value	
Latvia	11,5
Croatia	12,2
Lithuania	13,9
Malta	17,5
Slovakia	17,7
Romania	17,8
Luxembourg	19,8
Poland	20,5
Bulgaria	24,7
Estonia	25,9
Portugal	26,5
Slovenia	27,5
Cyprus	27,8
Czech Republic	29,9
Hungary	31,9
Member States above 70% of the EU27 value	
Greece	35,3
Spain	36,6
Ireland	38,1
Italy	43,1
France	48,2
Austria	50,5
United Kingdom	56,1
Belgium	59,9
Germany	62,8
Finland	62,9
Sweden	77,2
Denmark	77,7
Netherlands	78,9

Source: DG Research and Innovation - Economic Analysis Unit

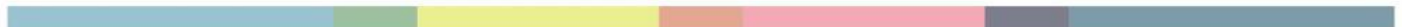
Data: Eurostat, DG JRC - ISPRA





Bottom Line:

- A significant effort for knowledge transfer
- Not a cohesion but a performance oriented approach
- Focus is on institution building
- Marked importance of Smart Specialisation!
- ESIF actions can be coupled to Teaming and Twinning initiatives
- Big expectations – big risks; but maybe also huge gains





Learn more:

http://ec.europa.eu/research/horizon2020/index_en.cfm

http://ec.europa.eu/regional_policy/what/future/index_en.cfm



**Thanks a lot for
your attention**

