JASPERS & Structural Funds for RDI projects

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ELIXIR - EXCELERATE structural funds workshop

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Structure of the presentation

I JASPERS: Who are we?

II JASPERS: What do we do?

III How to prepare a project for structural fund financing?

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I JASPERS: Who are we?

JASPERS: **J**oint **A**ssistance to **S**upport **P**rojects in **E**uropean **R**egions

- Technical assistance partnership between:
  - European Commission (DG REGIO),
  - European Investment Bank (EIB),
  - European Bank for Reconstruction and Development (EBRD).
- For adminstrative purposes, JASPERS is a Unit within the EIB.
- Main mandate: assist the Member States in the preparation of major projects.
- Main objectives: quicker approval and better quality of applications.
- JASPERS assistance is voluntary for the Member States and free of charge.

I JASPERS: Who are we?

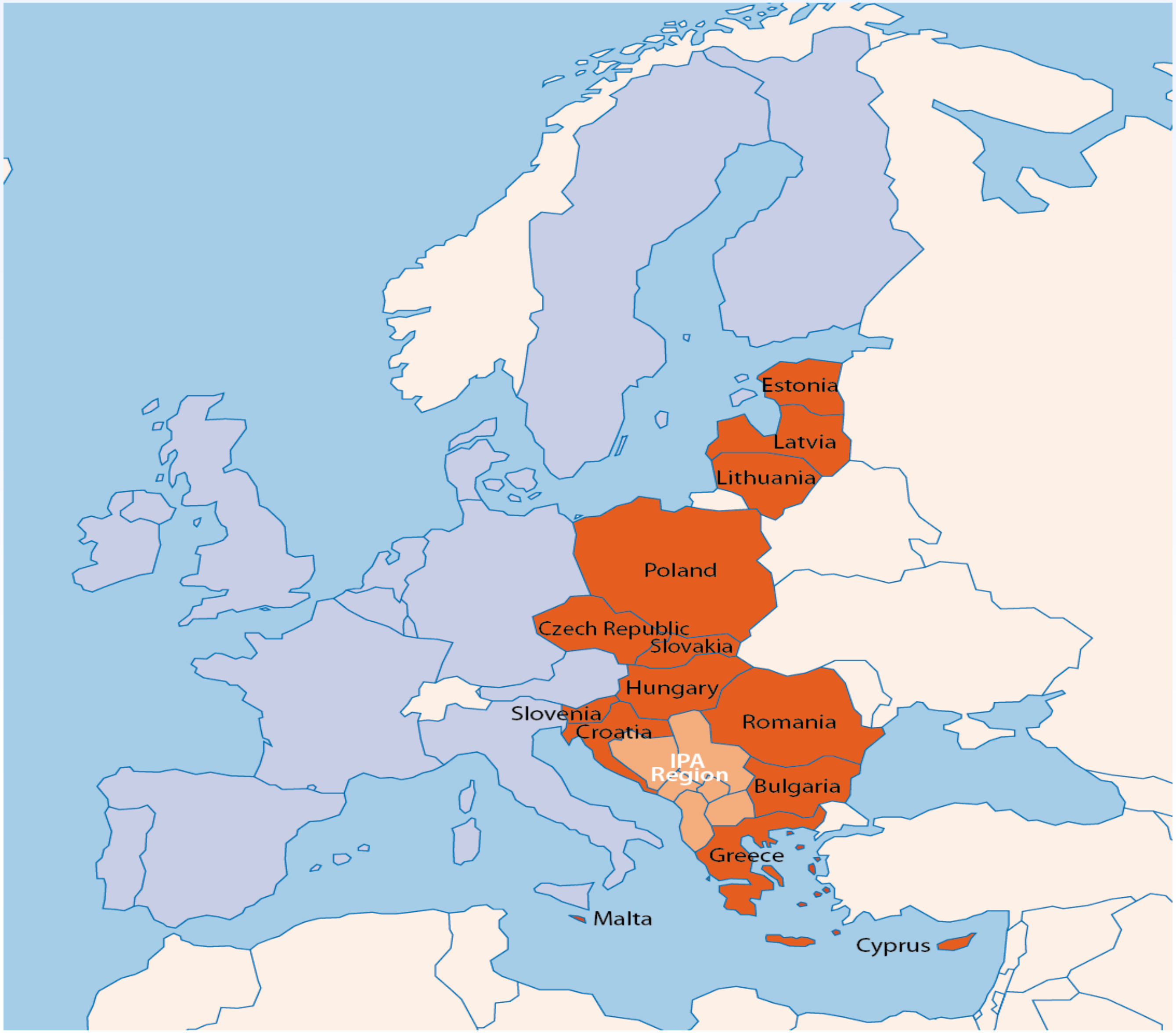
Luxembourg Headquarters
- *Management and coordination*
- *Staff: 20*

Warsaw Office
- *Estonia, Latvia, Lithuania, Poland*
- *Staff: 24*

Vienna Office
- *Croatia, Czech Rep., Hungary, Malta, Slovakia, Slovenia*
- *Staff: 22*

Bucharest Office
- *Bulgaria, Cyprus, Romania,* ***Greece, Western Balkans***
- *Staff: 24*

Brussels Office
- *IQR*
- *Staff: 6*



I JASPERS: Who are we?

- **Sectors:**
  - Roads,
  - Rail and Public Transport,
  - Water and Waste Water Treatment,
  - Energy and Solid Waste,
  - Smart Development (Research & Development, ICT, Health, Education, Urban Development and Multi-sector projects)
- Since 2006 more than **930 completed JASPERS assignments** (of which 480 major project submissions)
- **441 JASPERS-supported applications have been approved** by the EC so far (as of September 2015).

I JASPERS: Who are we?

- **Smart Development Division established early 2015**
- **10 experts (engineers, economists, environmental expert) in the following area:**
  - Research, Development, Innovation,
  - Information and Communication Technology (ICT),
  - Health,
  - Education,
  - Urban Development (in the broad sense),
  - Integrated or multi-sectoral projects (SMART CITIES and others)
- **Broadened area of assistance:** besides major projects, assistance also for non-major projects and horizontal projects

Structure of the presentation

I JASPERS: Who are we?

II JASPERS: What do we do?

III How to prepare a project for structural fund financing?

II JASPERS: What do we do?

1) Assistance to Major Projects

- Major projects in ICT & RDI: total eligible costs **> EUR 50m** (eligible expenses = eligible investment costs - net revenues)

- Support to project preparation means continuous quality check during the project cycle, with **Completion Note** at the end with summary of conclusions, with focus on
  - Technical feasibility
  - Option analysis
  - Demand analysis
  - Financial analysis, economic CBA and risk assessment
  - Analysis of Environmental soundness
  - State Aid

II JASPERS: What do we do?

2) Assistance to Non-Major Projects

- Assistance in the preparation of evaluation criteria,
- Assistance in the screening of projects
- Work on selected non-major projects, close to the threshold, where the MA want to take more control,
- Appraisal of a pilot project, similar to appraisal of major project
- Appraisal of grouped projects (investment programs, funding schemes etc.).

Structure of the presentation

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7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context
2. Definition of objectives
3. Project identification
4. Technical feasibility & Environmental sustainability
5. Financial analysis
6. Economic analysis
7. Risk assessment

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7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context

2. Definition of objectives
- **Needs assessment**
- **Project relevance**
- **Link to indicators defined in the OP**

3. Project identification

4. Technical feasibility & Environmental sustainability

5. Financial analysis

6. Economic analysis

7. Risk assessment

Project Objectives

- **Linking CBA outputs to Objectives**

No.	Indicator	Without Investment	After investment (2014)	5 yrs after completed investment (2019)	After reference period (2028)
1	Number of articles	188	241 (+53)	312 (+124)	474 (+286)
2	Number of citations'	1.332	1.430 (+98)	1.830 (+498)	2.840 (+1508)
3	Number of patents28	0	0	1 (+1)	2 (+2)
4	Number of Spin-Offs	0	0	4 (+4)	4 (+4)
5	Number of young researchers for employment in business	34	35 (+1)	37 (+3)	45 (+11)
6	Number of researchers	20529	208 (+3)	238 (+33)	273 (+68)
7	Number of teachers	201	201	209 (+8)	223 (+22)
8	Number of technical staff	46	46	43 (-3)	39 (-7)
9	Number of national researchers (in FTE)	41	41	42 (+1)	47 (+6)

7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context
2. Definition of objectives
3. **Project identification**
   - **Project activities**
   - **Body responsible for project implementation**
   - **Who has standing**
4. Technical feasibility & Environmental sustainability
5. Financial analysis
6. Economic analysis
7. Risk assessment

7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context

2. Definition of objectives

3. Project identification

4. Technical feasibility & Environmental sustainability

- **Demand analysis**
- **Option analysis**
- **Technical design, cost estimates and implementation schedule**
- **Environmental considerations, including EIA and climate change**

5. Financial analysis

6. Economic analysis

7. Risk assessment

Feasibility Analysis: Demand analysis

- Market analysis: analysis of supply / existing & planned competing alternatives is as important as analysis of demand
- Ensure optimal scale and utilisation of project
- Risk of oversizing the project

Feasibility Analysis: Options analysis

Two-step approach:

- 1) comparison of strategic/generic options, normally based on "multi-criteria analysis" (MCA, i.e. scoring), for the selection of e.g.
  - the systemic solution best suited to meet the identified objectives of the project
  - a short list of feasible technological options capable of delivering the desired solution
  - the location for its implementation
- 2) comparison of the short-listed options at the technological level, based on quantitative methods (least cost, creation of economic value – the so-called "ENPV", for economic net present value).

Feasibility Analysis
Technical Design - Cost estimation

- **Capital expenditure (CAPEX) estimation:**
  - Comparison with recently procured projects in the same sector/country (benchmarking)
  - Thorough analysis of current market supply/demand, both for equipment/civil works
- **Operational expenditure (OPEX) estimation:**
  - Thorough research to establish unit cost forecasts for most important consumables (e.g. energy), but also for sale/disposal of outputs, incl. transport cost
  - Benchmarking exercises, in particular for staff and asset maintenance requirements

Feasibility Analysis
Technical Design - Cost estimation

- **Reinvestment cost estimation:**
  - Clear separation of periodic asset replacement cost from running maintenance/repair cost (~~>OPEX!)
  - Consideration of closure/decommissioning/dismantling costs for assets at the end of useful lifetime, where relevant

7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context
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4. Technical feasibility & Environmental sustainability
5. **Financial analysis**
   - **Cash-flows for project costs and revenues, incl. residual value**
   - **Tariff and affordability analysis (where relevant)**
   - **Sources of financing**
   - **Financial profitability & sustainability**
6. Economic analysis
7. Risk assessment

Financial analysis

- Main questions: Does the project *need* EU funding? Is the project financially sustainable?
- Rationale (FNPV = financial net present value):

FNPV (before EU contribution) <0 → **EU grant** ← **FNPV (after EU contribution) >0**

↓ **FNPV/C** | ↓ **Financial sustainability** | ↓ **FNPV/K**

- Important: Thorough identification of cash-flows (costs, revenues and other financing sources).

→ What commitments?

7 Steps of Project Development

1. Presentation of the socio-economic, institutional and political context

2. Definition of objectives

3. Project identification

4. Technical feasibility & Environmental sustainability

5. Financial analysis

6. Economic analysis
- **Fiscal corrections**
- **From market to shadow prices**
- **Evaluation of non-market impacts**
- **Economic profitability**

7. Risk assessment

Economic CBA

- Key question: Is the project *worth* EU funding?
- Rationale: The project is desirable from an economic point of view if ENPV >0, Economic Rate of Return > discount rate and Benefit/Cost ratio > 1.
- Economic benefits:

Benefits to businesses
Establishment of spin-offs and start-ups
Development of new/improved products and processes
Knowledge spillovers
Benefits to researchers and students
"New research"
Human capital formation
Social capital development
Benefits to the general public
Reduction of environmental risks
Reduction of health risks
Cultural effects for visitors

Example from case study (old methodology!): Higher Education facility

- Results of economic analysis:
- ERR: 12.9%
- Cost-benefit ratio: 1.81
- The new approach is focused on outputs!

Indicator	Unit	Value in EUR per year per unit	Average benefit per year in EUR
Direct benefits on individual level – benefit 1			
No. of first cycle graduates	1 graduate	4.584,96	421.816,32
No. of second cycle graduates	1 graduate	6.310,08	318.264,66
No. of doctors of science	1 doctor of science	8.038,08	143.680,68
Higher degree of inclusion in R&D (in FTE) – benefit 2			
National research	1 FTE	48.200	111.311,87
Research with business	1 FTE	48.200	284.621,00
International research	1 FTE	48.200	86.398,50
Direct increase in the number of employments – benefit 3			
Researchers	No. of additional employees	29.723,66	1.133.215,30
Teachers	No.of additional employees	29.723,66	310.240,91
Contributions to economy – benefit 4 (4)			
No. of national applications for patents	Patent	49.080	61.350,00
No. of spin-offs/start-ups	Firm	90.000	315.000,00

Possible new approach

Benefits to researchers and students			
"New research"	Benefit to society of new scientific publications of researchers that are users of the facility	Marginal production costs (remuneration of authors)	[Average gross annual salary of scientist] * [%of average time researcher spends on research] / [average number of publications per scientists per year]
Human capital formation	Benefit to society of educated labour force	Market value as proxy for WTP	Per year: [Number of graduates in year t] * [Present value in year t of incremental salary over average number of years of working career ahead of graduates]

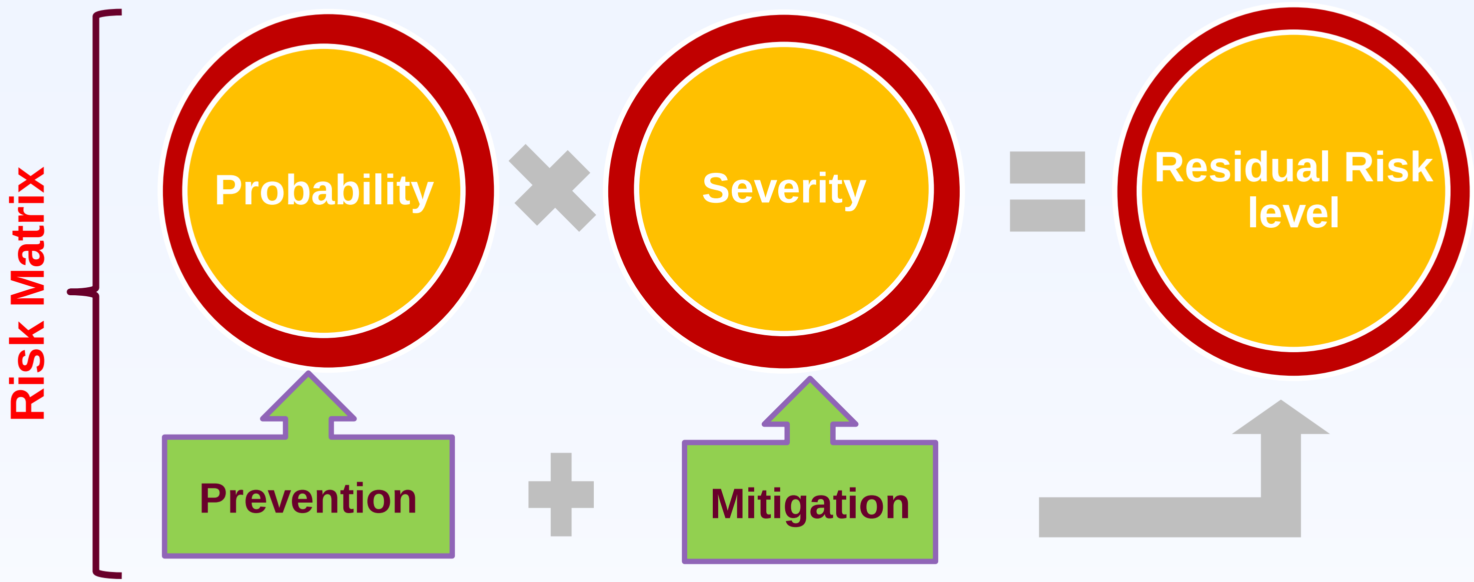
7 Steps of Project Appraisal

1. Presentation of the socio-economic, institutional and political context
2. Definition of objectives
3. Project identification
4. Technical feasibility & Environmental sustainability
5. Financial analysis
6. Economic analysis

7. Risk assessment

- **Sensitivity analysis**
- **Qualitative risk analysis**
- **Probabilistic risk analysis**

Risk Analysis
Qualitative (+ Quantitative)



- A **probabilistic risk analysis** is necessary “where the residual risk exposure is still significant”:
  - Probability distributions for critical variables
  - Monte Carlo simulation, → probability indicators for financial and economic performance

Example from case study – Nanotech science park

Risk description	Probability*	Impact*	Risk management measures/actions
Scheduling of procurement	Medium	High	The preparation of the tender documentation and planning of the procurement has been undertaken by skilled procurement experts. The procurement Schedule has been designed to incorporate a minimum of 6 months provided for each procurement procedure.
Shortage of qualified staff	Low	Medium	Research staff and general staff have already been identified, and the
Shortage of tenants	Low	High	If a shortage of tenants occurs, the park will consider loosening the park's entrance criteria.
Scheduling of implementation	Medium	Medium	The scheduling of the implementation of the project has been designed with an additional 30% of contingency time.
Reduction of political will and national funding	Low	High	Government commitment for the project and national financial contribution.

*Evaluation scale: low / medium / high

Thank you!

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