Cost benefit analysis for the establishment of a coastal ocean observing research infrastructure

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Joint European Research Infrastructure of Coastal Observatories (JERICO).

- Nationally funding observing platforms – e.g. coastal gliders, and cabled observatories

- High quality marine data, expertise and infrastructures for Europe's coastal seas
- Its vision is to improve the cooperation in coastal observatories by implementing the coastal aspect of European Ocean Observing System
- Cost benefit analysis on establishment of JERICO as a permanent research infrastructure (RI)

Outline of Approach

1. Review of secondary literature
   - Existing ocean observing CBAs
2. Options for the legal framework of the RI
3. Survey of JERICO partners
4. Quantitative analysis
   - Assess balance of costs and benefits
   - Estimate Net Present Value (NPV)
     - ∑ PV (B) - ∑ PV (C)
5. Assessment of qualitative benefits
6. Sensitivity analysis
7. Results and Conclusions

Legal Forms Considered

- European Research Infrastructure Consortium (ERIC)

- International non profit association under Belgian Law (AISBL)

- Counterfactual Scenario: Discontinue JERICO

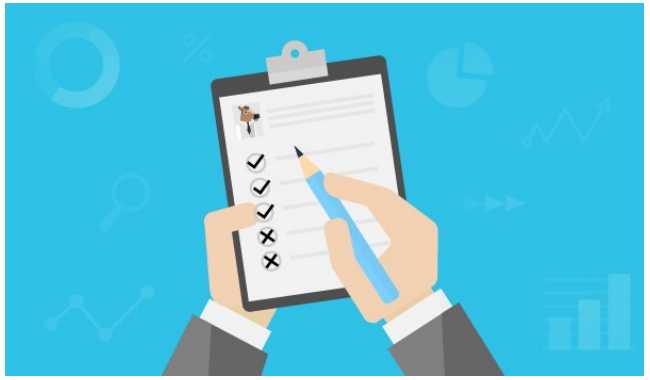
JERICO Partner Surveys

- A survey of all JERICO partners and several Work Package (WP) leaders was undertaken

- JERICO Partner surveys posed 37 questions on multiple issues including:
  - Institutional budgets
  - Data collection and data distribution activity
  - Fees from technical trials
  - Transnational Access (TNA) programme activity
  - Virtual Access (VA) programme activity

JERICO Partner Surveys

- Total of 31 surveys were distributed to appropriate JERICO partners
  - ➢27 to individual JERICO partners
  - ➢4 to key WP leaders
- 23 surveys were returned
  - ➢19 from JERICO partners
  - ➢4 from WP leaders
  - ➢response rate of 74%



Quantitative Analysis - Costs

- Expenditure of existing marine environmental ERICs and AISBLs
- Indicative expected costs if JERICO were to be established in these same organisational forms.
- The total projected budgets under the ERIC and AISBL scenarios are broadly comparable
  - ➢ the precise structure of funding allocations are distinct in each case.

Annual operational expenditure

	ERIC	AISBL
Annual Personnel Costs	€404,910	€500,000
Other running costs	€229,485	€100,000
TNA Programme Budget (Average)	€252,917	€247,958
Total Annual Running Costs	**€887,312**	**€847,958**

Quantifiable Benefits

- Reduced transactional costs and redundant expenditure
  - Data collection cost savings
- Discounted pricing through a system of centralised procurement
  - Purchase of equipment
  - Equipment repair and maintenance
  - Vessel charter costs
- User community cost savings resulting from the JERICO TNA Programme
- Additional commercial access service revenues

Data collection cost savings

$$S^{P} = \sum_{i=1,N} \left(\alpha_i^P \cdot \beta_i^P + \left(1 - \alpha_i^P\right) \gamma_i^P \right) \cdot \theta_i^P \cdot C^P$$

C^P The total data costs of the JERICO Partners, including the cost of collecting new data, processing existing data, data management, data interpretation and data publication

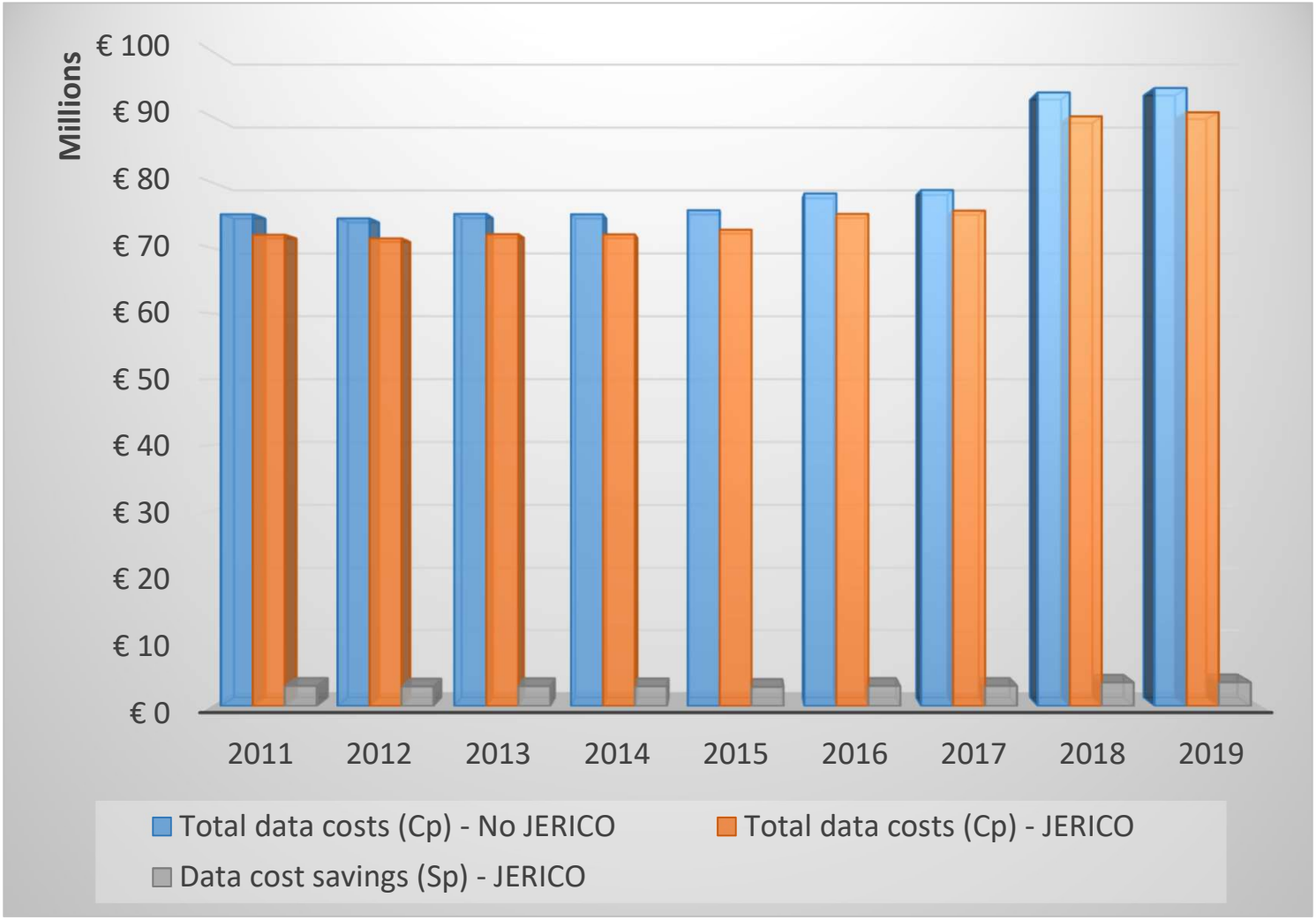
θ_i^P The fractional contribution to total data costs of particular data types

α_i^P The proportion of the cost of data collection that is due to data that cannot be found and needs to be collected

β_i^P The proportion of required data that is accessible via the joint research infrastructure

γ_i^P The cost savings in processing data because data is accessible, catalogued and standardised, expressed as a proportion of the total cost of data collection for the Partners

Data collection costs and savings



Total value of benefits – 2020-2028 (undiscounted values)

	ERIC	AISBL
Total Data Cost Savings	€30,358,904	€24,285,239
Public Procurement - Equipment Cost, Maintenance Savings	€3,895,370	€3,193,566
TNA Programme – Equipment Costs and Ship Time Savings	€1,980,340	€1,941,510
Additional Commercial Access Service Revenues	€2,276,253	€2,231,620

Results of net present value (PV) and benefit cost ratio (BCR) analyses (2020-2028)

	PV of Costs	PV of Benefits	Dscnt Rate	NPV	BCR
ERIC	€6,886,283	€31,294,668	4%	€24,408,385	4.54
AISBL	€6,582,067	€25,354,935		€18,772,869	3.85

Results

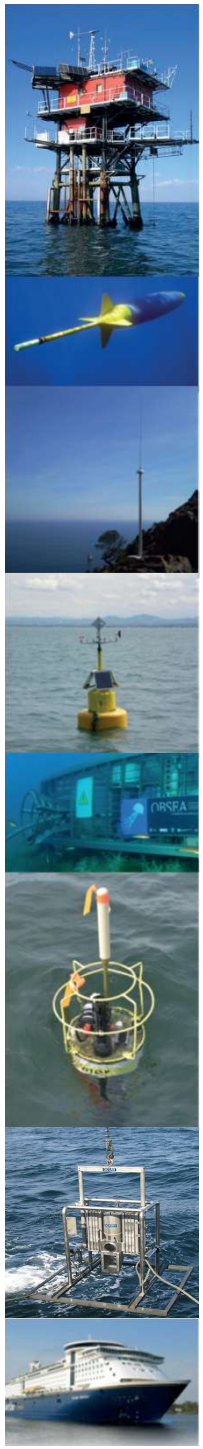
- Higher NPV for JERICO ERIC due to:
  - higher data cost savings
  - higher public procurement cost savings
  - more commercial access service activity

- Largest contributing factor to the strong NPV results in both the ERIC and AISBL scenarios is **substantial data cost savings**
  - ➢ due to data standardisation and data sharing practices

Conclusions

- The permanent establishment of JERICO as an ERIC is the most favourable investment option.
- The outputs of this study are underpinning the strategic planning for the future implementation of a sustainable JERICO-RI.
- The CBA informed the decision of the JERICO-RI to apply for the European Strategy Forum for Research Infrastructures roadmap.

Thank you for your time and attention



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