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Overview of the use of economic analysis to set priorities for SPS capacity-building

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Structure

- Context
- Role and nature of economic analysis
- Approaches to economic analysis
- Decisions on the basis of multiple criteria
- Conclusions

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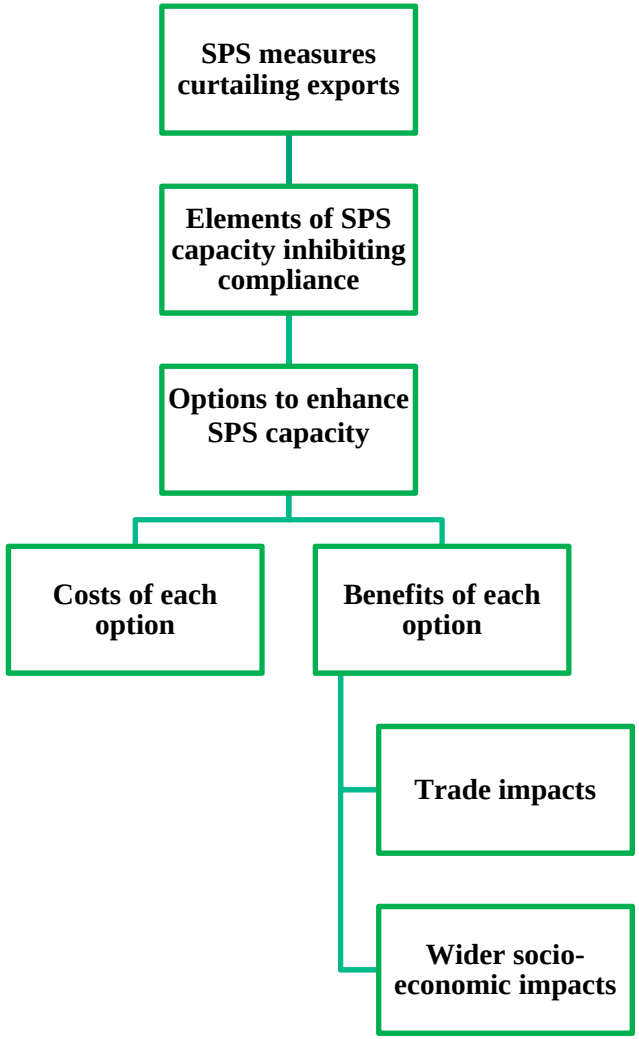
Context

- Significant weaknesses in SPS capacity in developing countries
- Limited resources:
  - Domestic
  - Donors
- Evidence of inefficiencies in technical cooperation:
  - Supply-led
  - Lack of priority-setting
  - Overlaps versus gaps across donors
- Thrust towards enhanced aid effectiveness:
  - Information sharing
  - Coordination
  - Economic analysis
- Little evidence of systematic use of economic analysis in practice

Analysis of trade-related SPS capacity-building



Role of economic analysis

- 'Sift out' projects with net cost
- Identify priorities within capacity-building needs:
  - Weaknesses in SPS capacity
  - Products
- Identify efficient approaches to capacity development:
  - Alternative solutions
  - Points of intervention

Benefits of economic analysis

- Economic efficiency
- Objectivity
- Transparency & accountability
- Inclusiveness
- Appreciation of risk & uncertainty

Challenges in undertaking economic analysis

- Costs and benefits can be wide-ranging and difficult to identify
- Costs and benefits can be difficult to measure
- Costs and benefits can be difficult to attribute
- Spill-over effects may be significant
- Data is almost always an issue:
  - Availability
  - Quality
- Changes *nature* of decision-making processes:
  - How decisions made
  - Cost and time intensity of decision-making processes
  - Influence & power structures
- Risk that open up a ‘can or worms’

Economic analysis methods

- Cost-benefit analysis:
  - Which options yield net benefit?
  - Which option yields greatest net benefit?
- Cost-effectiveness analysis:
  - Which option most cost-effective way of achieving given objective?
- Multi-criteria decision analysis :
  - Which option best way of achieving outcome with multiple objectives?
  - What is impact of changing priorities across multiple objectives?

Cost-benefit analysis

- Compute and compare flow of costs and benefits over time
- Costs and benefits expressed in monetary units
- Comparison to baseline - usually the status quo
- Focus:
  - Narrow versus wider impacts
  - Partial versus general equilibrium effects
- Cost estimation:
  - Engineering approach
  - Econometric approach
  - Accounting approach
- Benefit estimation:
  - Quantification
  - Monetization

Cost-benefit analysis

- Most widely applied approach to economic analysis of SPS controls
- Relatively few applications in developing countries, especially in area of food safety
- Applied to *ex ante* and *ex post* analysis
- Wide variation in approaches – simple accounting frameworks to econometric models
- Often appreciable data problems
- Applications tend to be highly context-specific
- Some evidence of more routine use:
  - Project preparation/appraisal
  - Regulatory impact analysis

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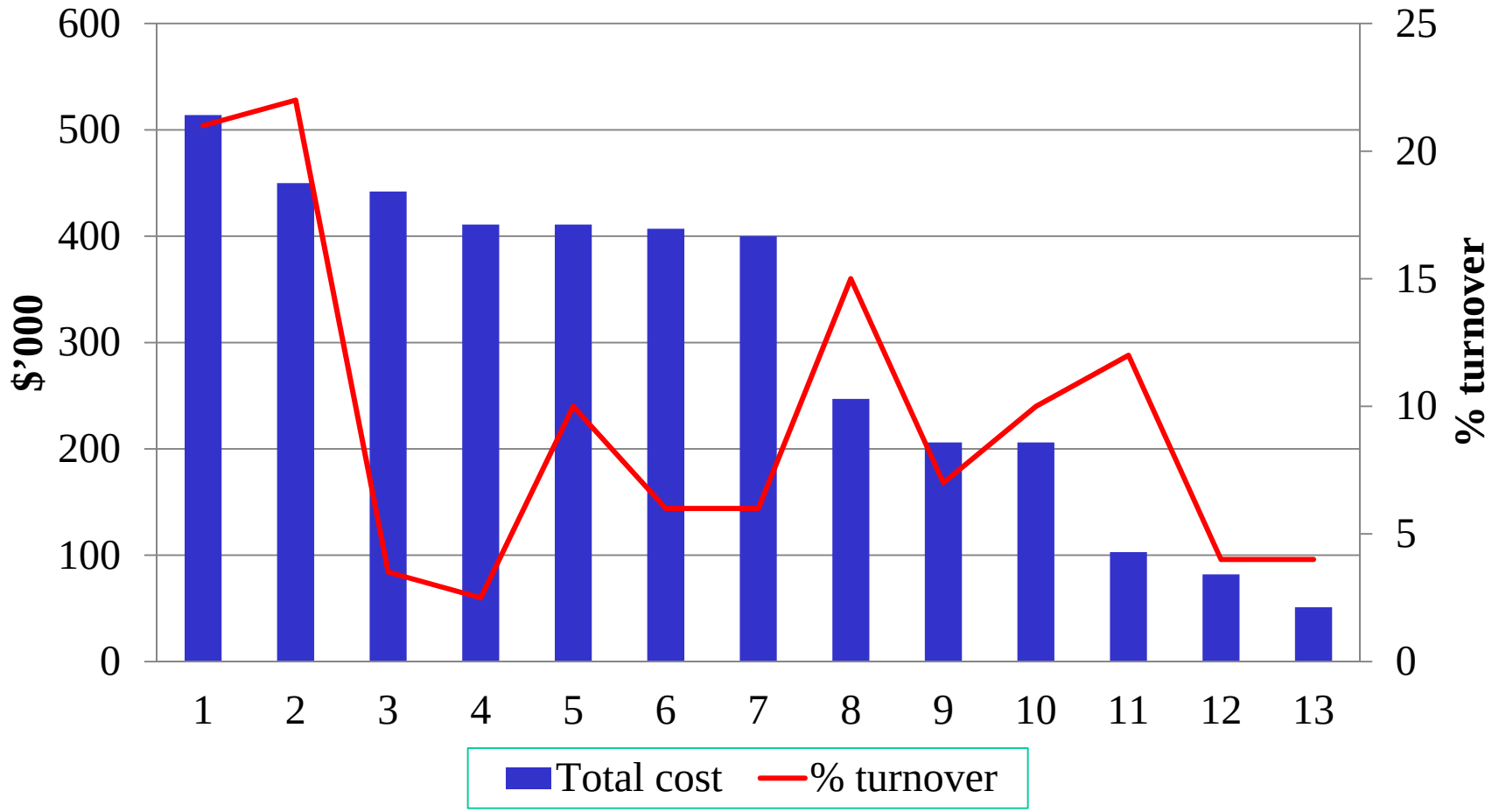
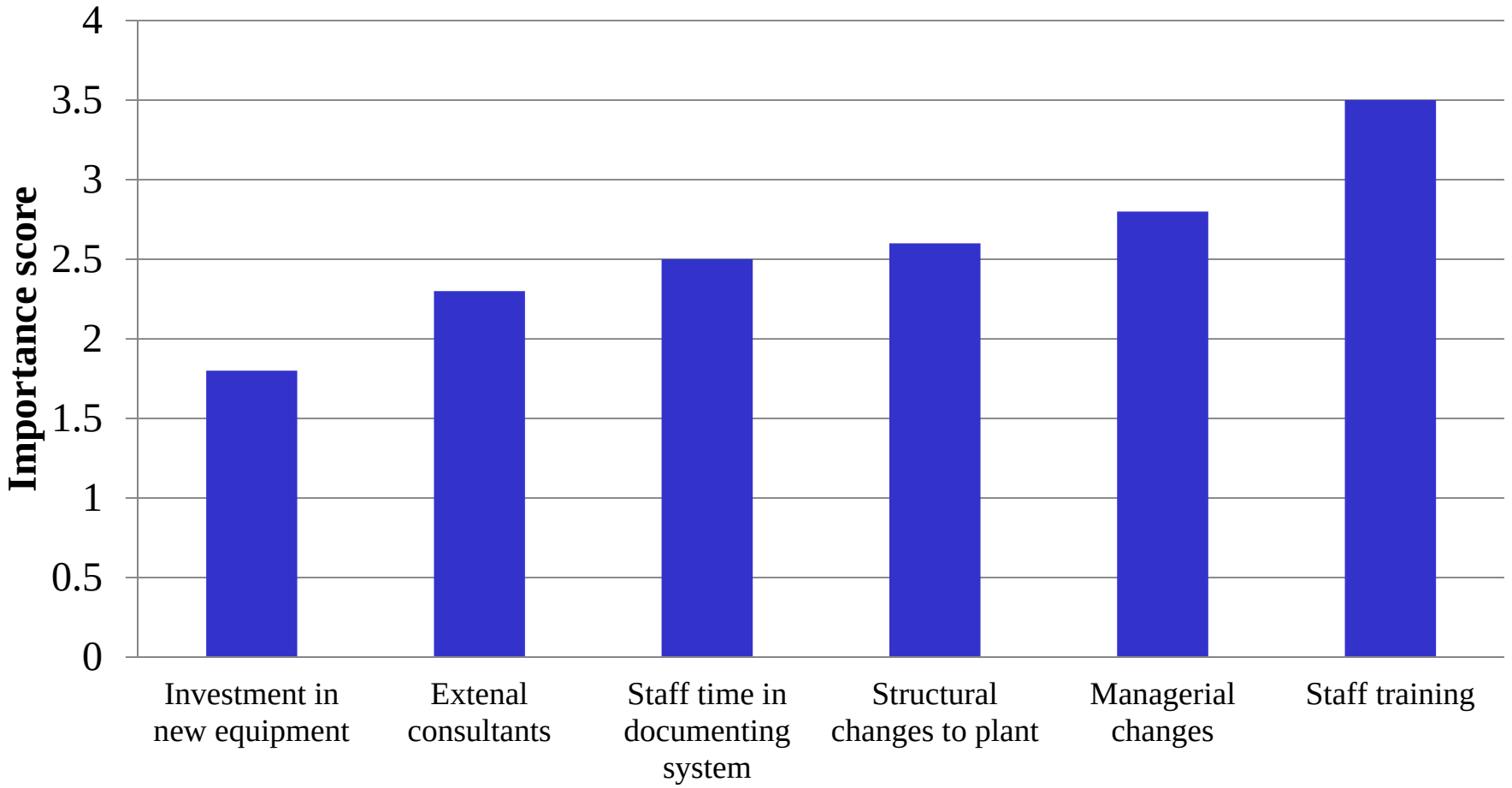
Costs of upgrading hygiene controls to EU standards in Keralan fish processing plants



Cost of implementing HACCP in Mexican meat processing sector



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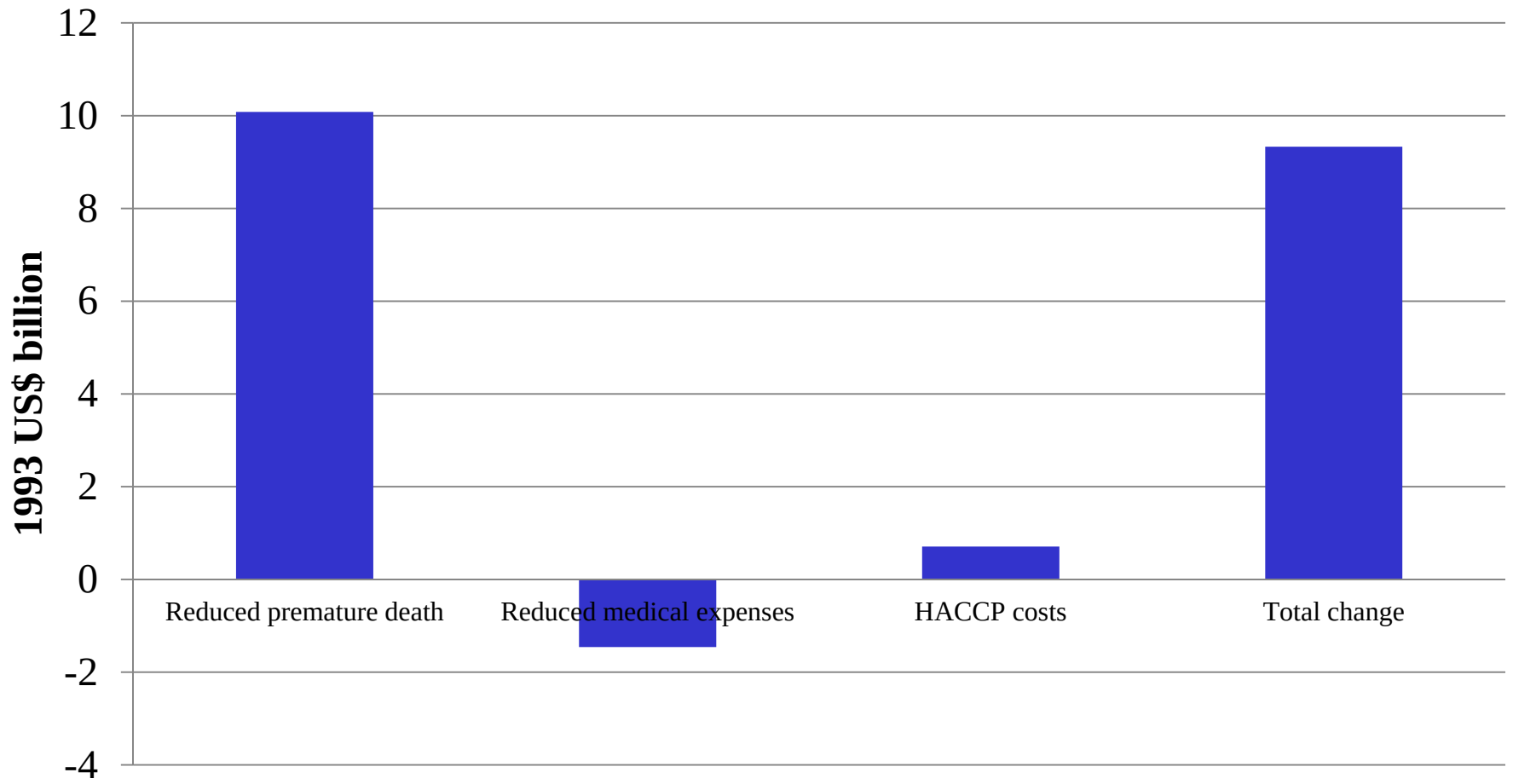
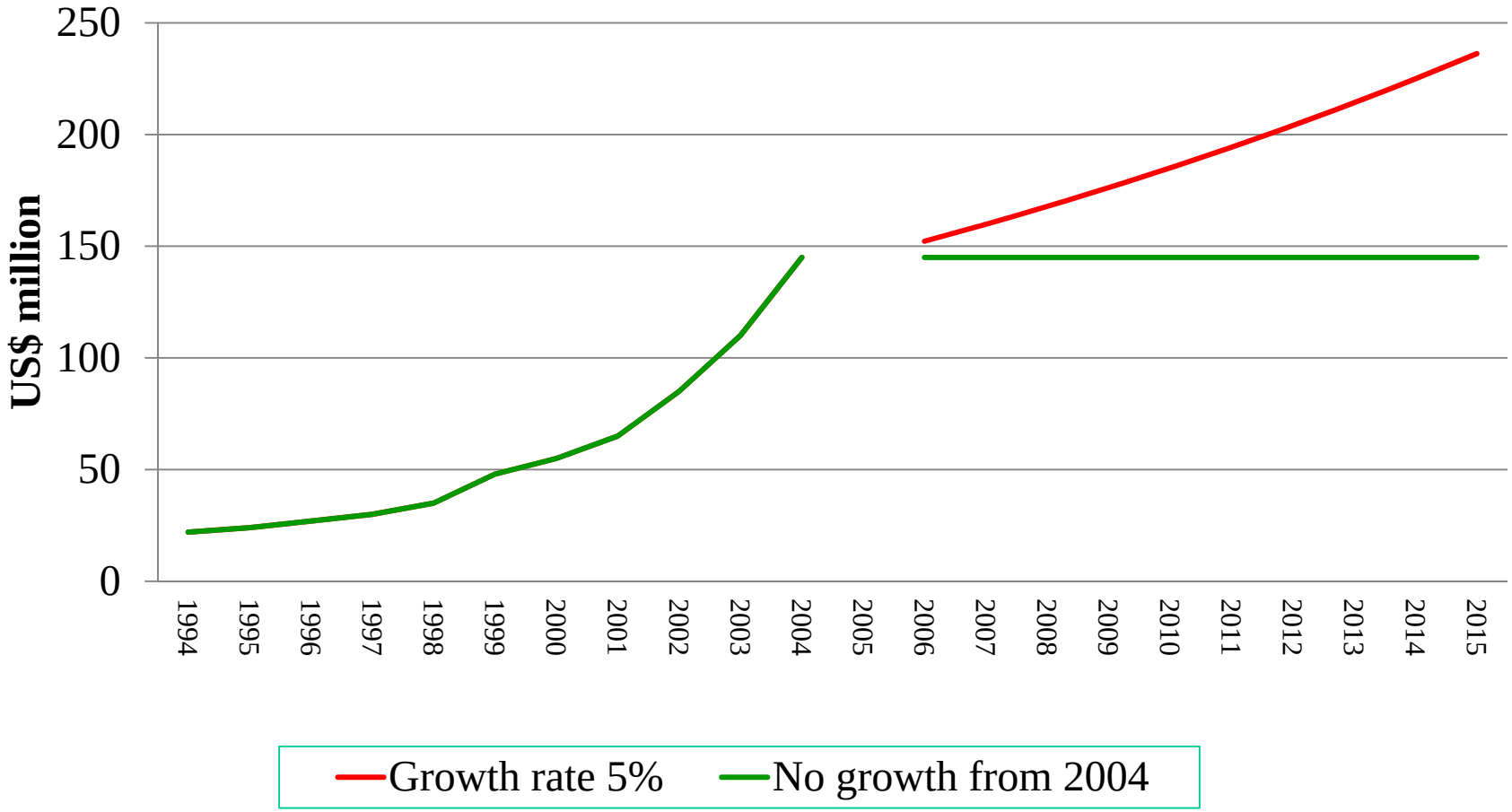
Estimated costs and benefits of HACCP in the US meat and poultry sector

Benefit Scenarios	Benefits		Costs	
	Low	High	Low	High
Low-range	1.9	9.3	2.3	2.3
Mid-range I	4.7	23.4	1.1	1.3
Mid-range II	26.2	95.4	1.1	1.3
High-range	47.2	171.8	1.1	1.3

Sector-wide economic impacts of HACCP in US meat and poultry processing sector



Predicted growth in Peruvian exports of fresh asparagus from enhanced hygiene controls



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Impact of enhancement in food safety controls on Peruvian exports of asparagus

Costs/Benefits 2006-15	Minimum	Maximum
Costs of food safety upgrades	$14.14 million	$42.43 million
Expected export flows	$1,958.7 million	$2,461.9 million
Returns per $ investments in food safety capacity	46	174

Cost-effectiveness analysis

- Monetary costs of alternative options compared with (common) physical benefits
- Options ranked in terms of cost per physical benefit
- Option with greatest cost-effectiveness acts as baseline
- Will not determine if options produce a net benefit
- Most widely applied approach to assessment of medical interventions
- Limited applications to food safety and animal health controls
- Applications focus on alternative controls in very specific contexts
- Little or no application in developing countries

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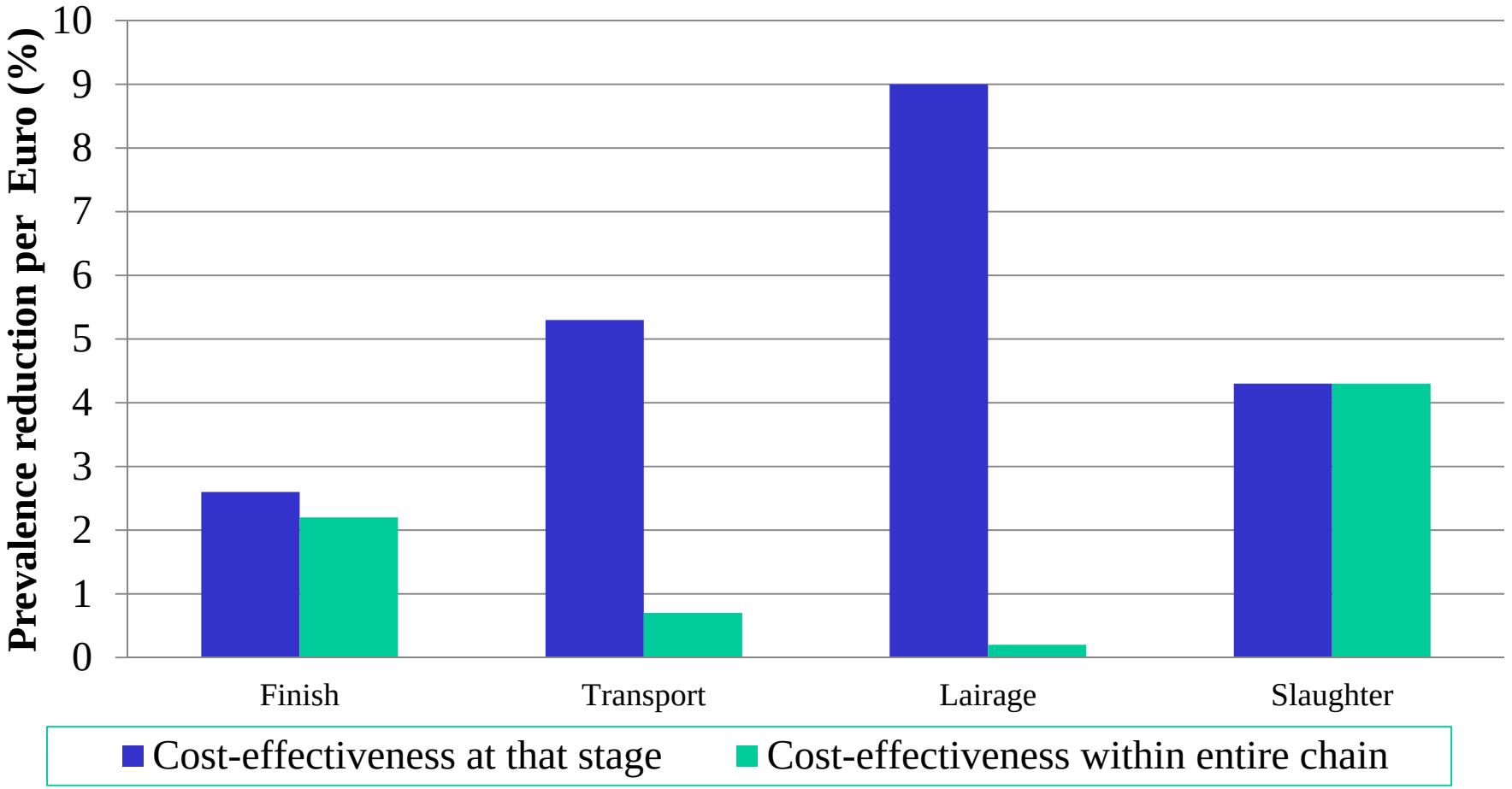
Cost effectiveness of interventions at various stages of Dutch pork supply chain



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Cost-utility ratios for food safety interventions in Dutch chicken supply chain

Intervention	Risk Reduction (%)	Reduction in Gastroenteritis ('000case/year)	Direct Cost (€ million/year)	Cost-Utility Ratio (€ '000 /DALY)
Improved farm hygiene (Substantial effect)	94	10	8-63	48-560
Phage therapy	63	6.7	4	35
Carcase decontamination - Dipping	77	9.2	5	28
Carcase decontamination - Dipping & spraying	92	11	26	190
Scheduled treatment - Dipping	77	9.2	5	28
Consumer information on kitchen hygiene	3	0.5	1	190

Multiple-Criteria decision analysis

- Choice between options in terms of multiple criteria
- Can be applied to relatively large numbers of options that vary in the associated costs and benefits
- Costs and benefits do not need to be measured in common monetary or non-monetary units
- Highly flexible in terms of data requirements
- Wide range of methods that differ in how distinguish between options
- Widely applied in natural resource management, engineering….
- Little application to SPS controls….but some recognition could be of significant utility

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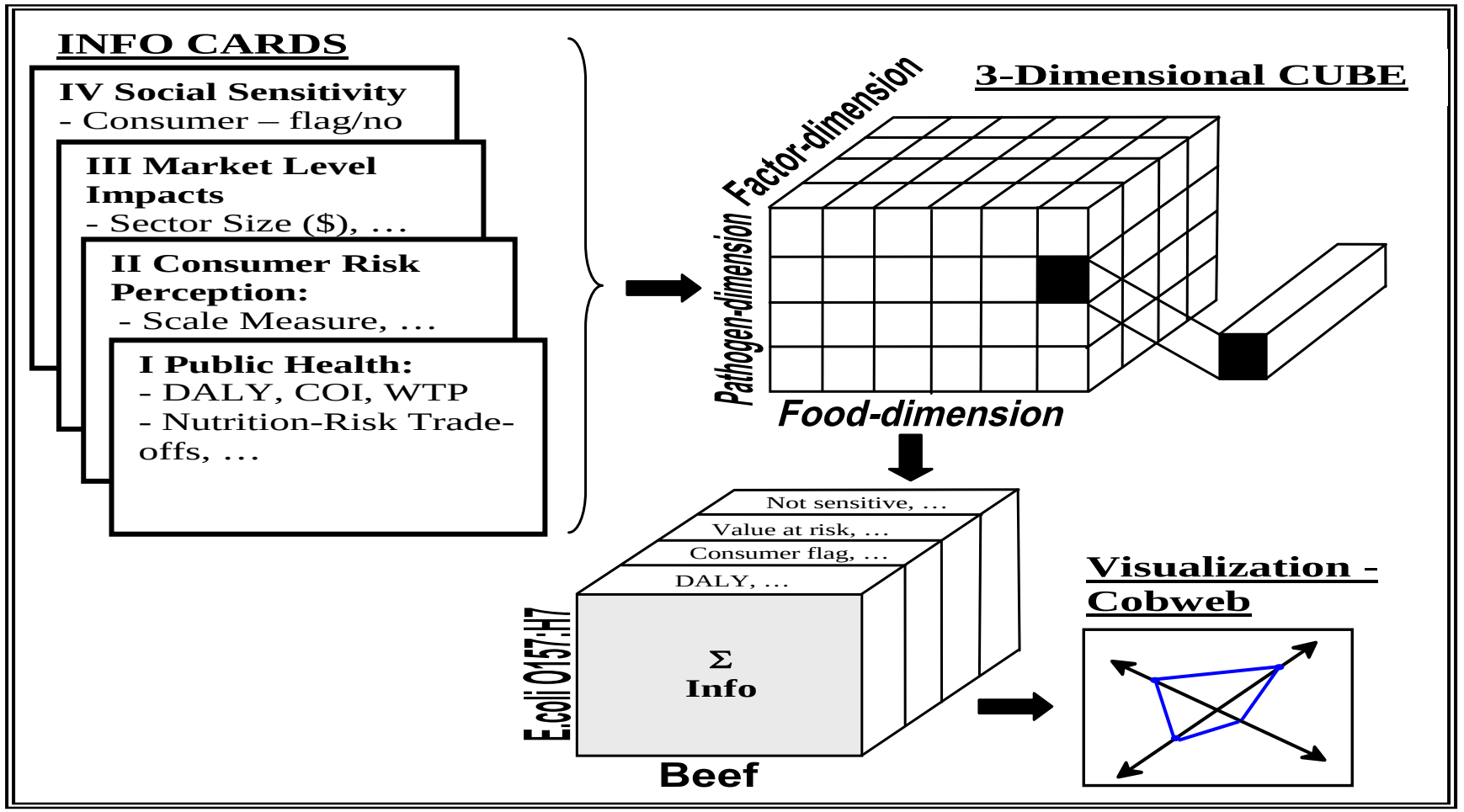
Multi-factorial risk prioritisation framework for food-borne pathogens



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Prioritisation of six food-pathogen combinations in Canada

Pathogen-Food Combination	Decision Criteria		
	Public health Market impact Consumer acceptance Social sensitivity	Public health Market impact Consumer acceptance	Public health
E. Coli O157 in beef	1	2	3
L. Monocytogenes in ready-to-eat meats	2	4	4
Campylobacter spp in chicken	3	1	1
Salmonella spp in chicken	4	3	2
E. Coli O157 in spinach	5	5	5
Salmonella spp in spinach	6	6	6

Driving principles

- What questions need answering?
  - Number/range of options
  - Range/diversity of impacts
- What is feasible?
  - Data
  - Time
  - Resources
  - Skills/experience
- What compromise is acceptable in terms of rigour and/or completeness?
- Is there buy-in at key levels of the decision process?

Analytical contexts

- *Ex post* analysis of existing capacity-building efforts
- Analysis of large-scale capacity interventions
- 'Demonstration' analysis of controls on SPS risks and/or enhancements in capacity
- Choices between multiple capacity-building options/design of actions plans for capacity enhancement

Conclusions

- Strong case for use of economic analysis:
  - Theoretical basis
  - Previous applications
- However, are potentially considerable challenges
- Need a flexible approach that can be applied to make broad-based comparisons of capacity-building options
- Multi-criteria decision analysis potentially a valuable tool
- Whichever approach is employed, needs to be operationalised in a broader structured framework
- Use for supporting versus making decisions