

# **HACCP and risk management – translating experiences for water utilities from other business sectors**

S.J.T. Pollard, P. Hamilton, B. MacGillivray, J.E. Strutt  
*Cranfield University, UK*

and

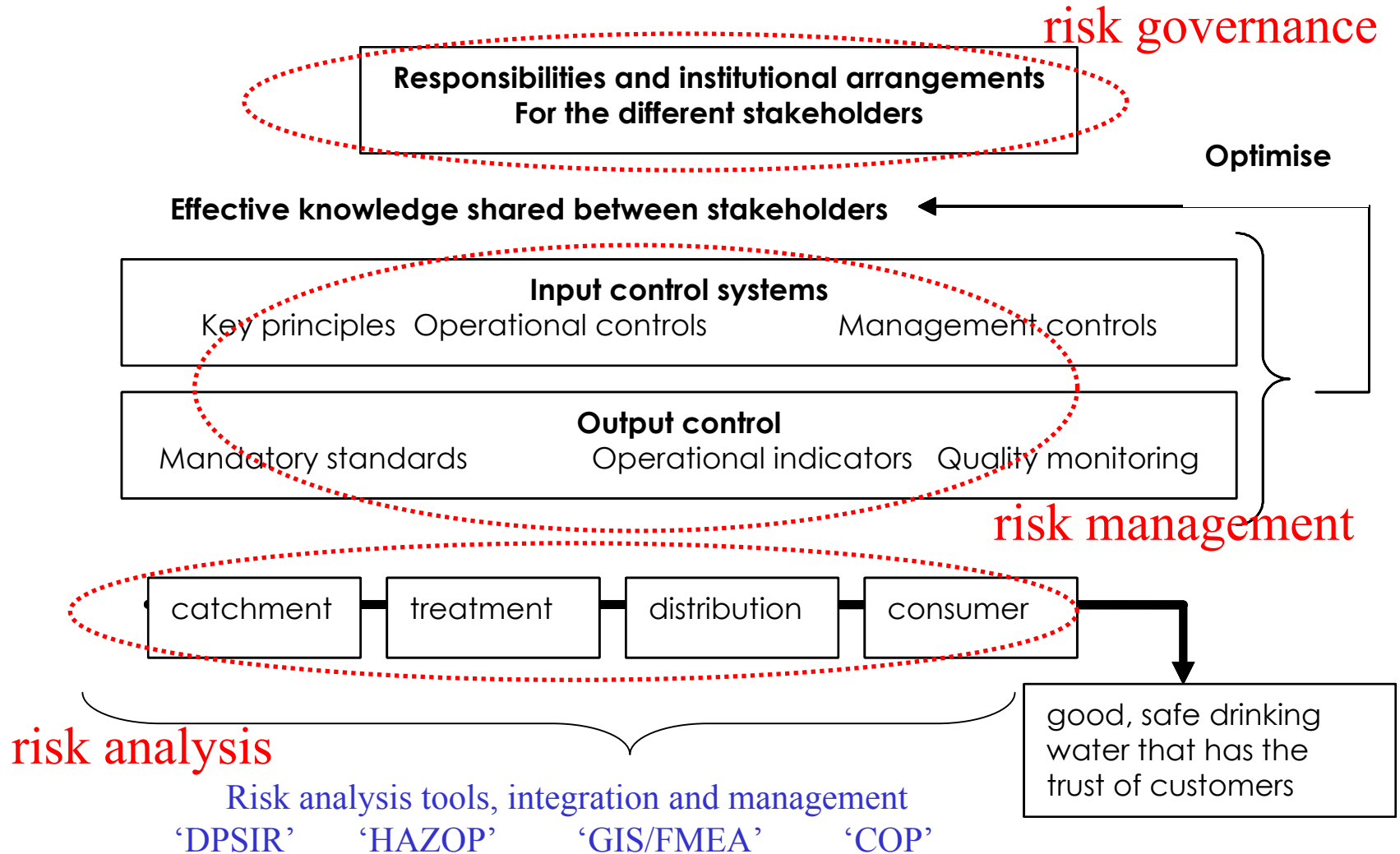
S.E. Hrudey  
*University of Alberta, Canada*

# Presentation structure

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1. Introduction
2. Risk governance
3. Risk management
4. HACCP and risk management
5. Source protection as an example
6. Summary

- Total quality management; HACCP; safety case (plan), **risk governance**
- Risks not hazards – **you can't manage hazards**, they are inherent to substances and situations
- Tools and techniques – ‘horses for courses’ – the danger of ‘**capture**’ and of ‘believing numbers’
- Building **confidence and trust** – through system understanding and an transparency of approach
- Implementation and **risk management maturity**



## 2. Risk and governance

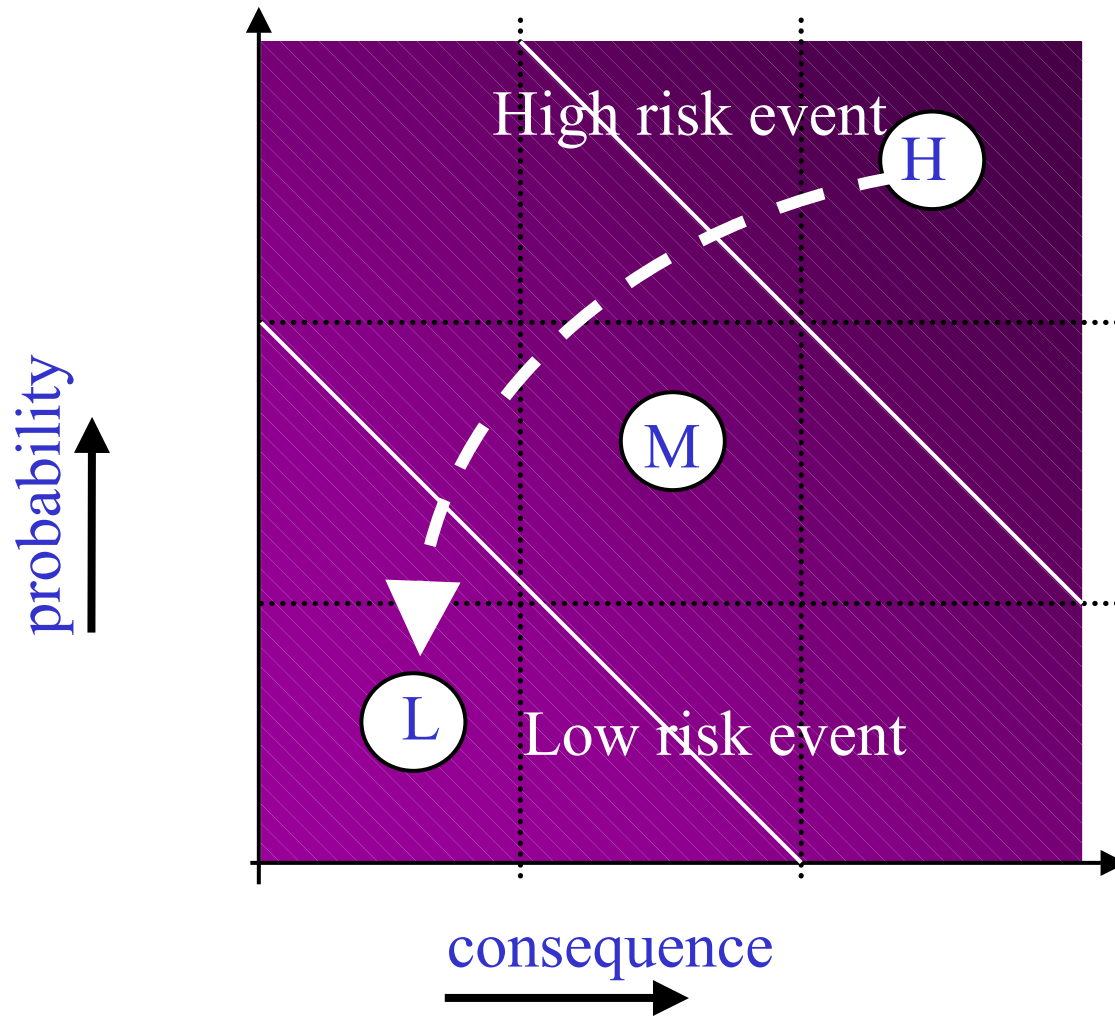
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## Corporate objectives – business risk

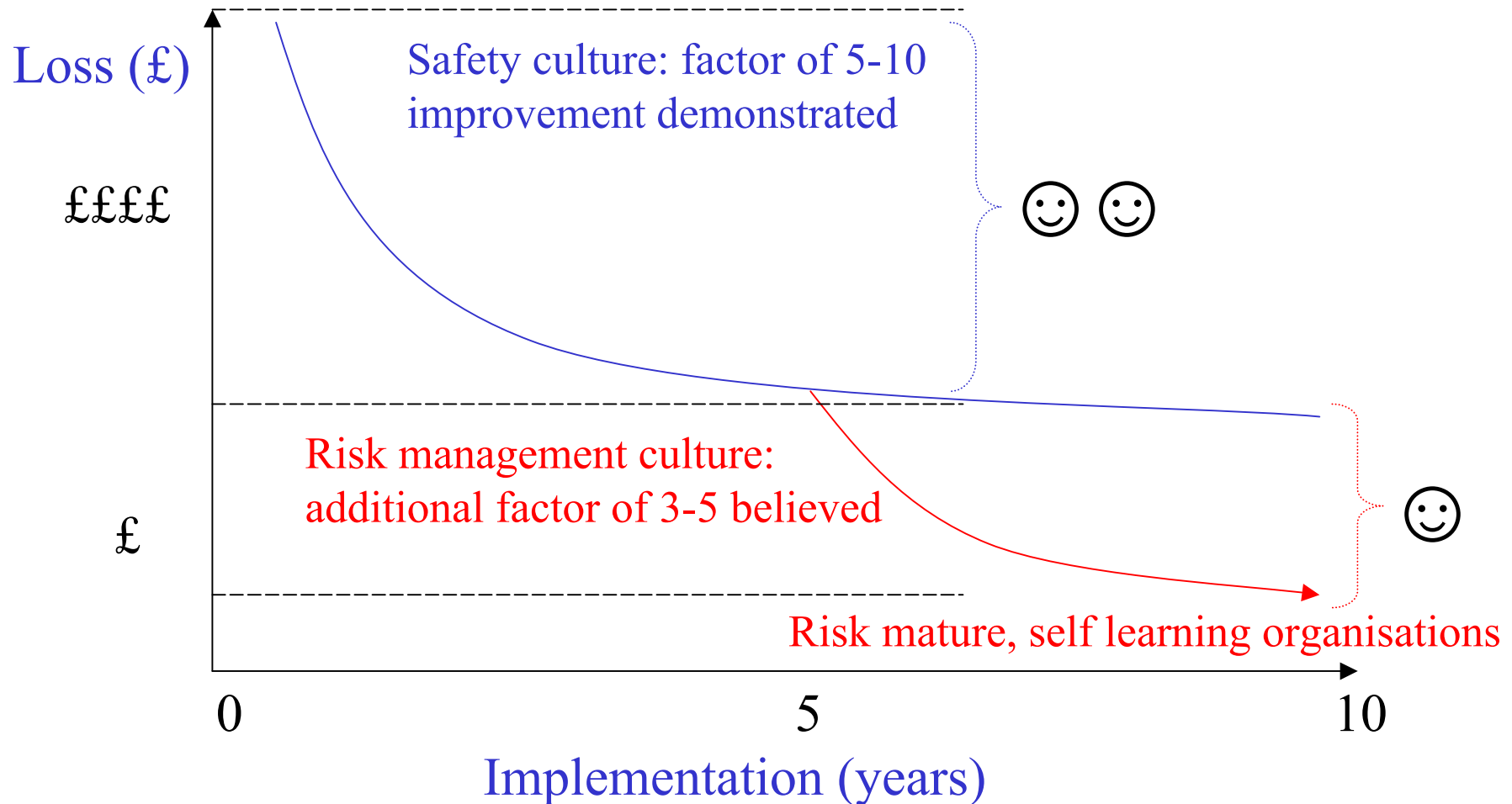


# 3. Risk management

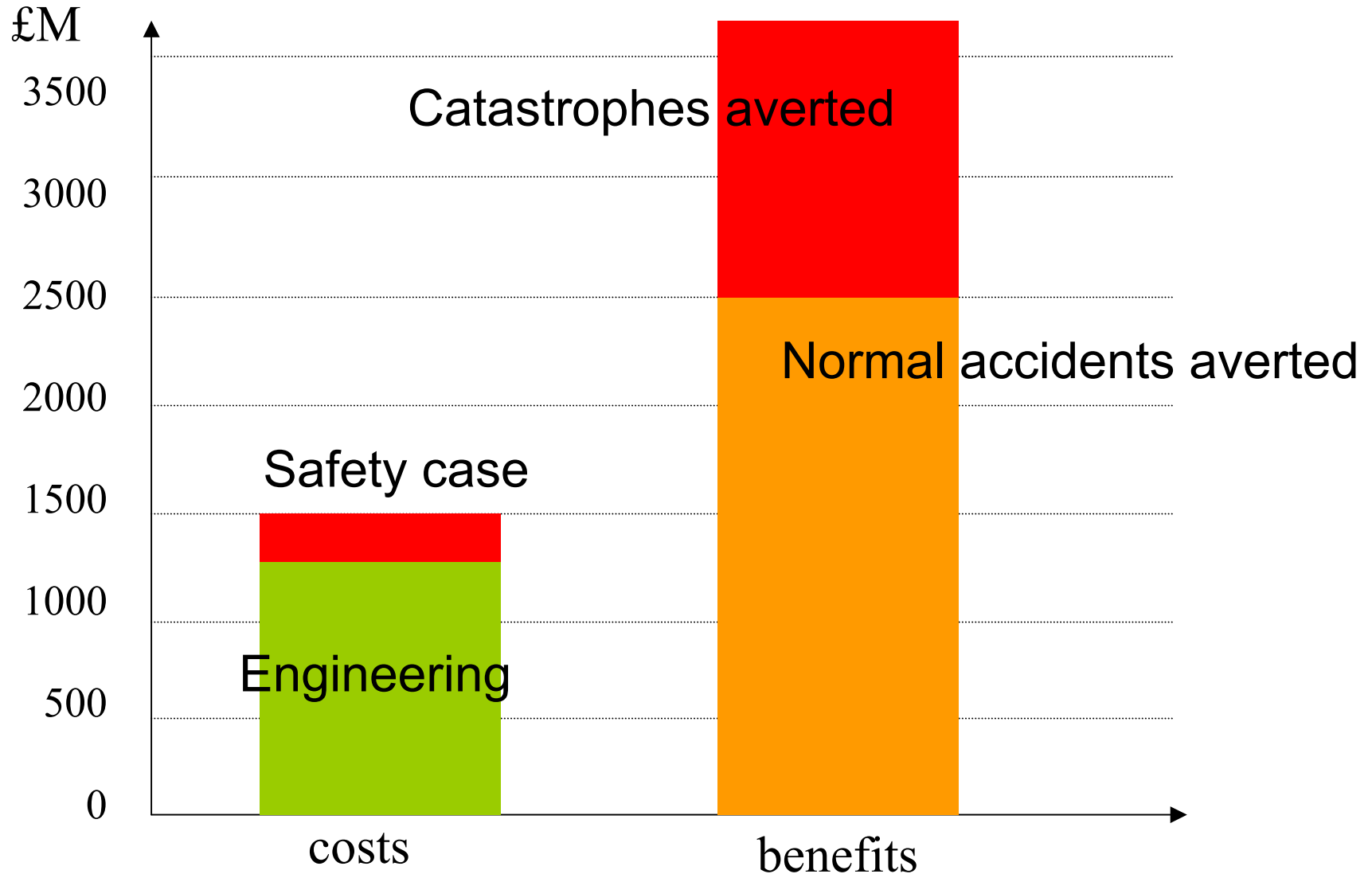


- **prevent** problems rather than cure them afterwards
- **prioritise** efforts – address the worst problems first because resources are often constrained
- **target** decisions effectively on what drives the risk – ‘source’ control (the hazard), addressing ‘pathways’ (the mechanisms) or protecting receptors (what it is you value)
- **use resources wisely** – apply knowledge to the selection of risk management strategies

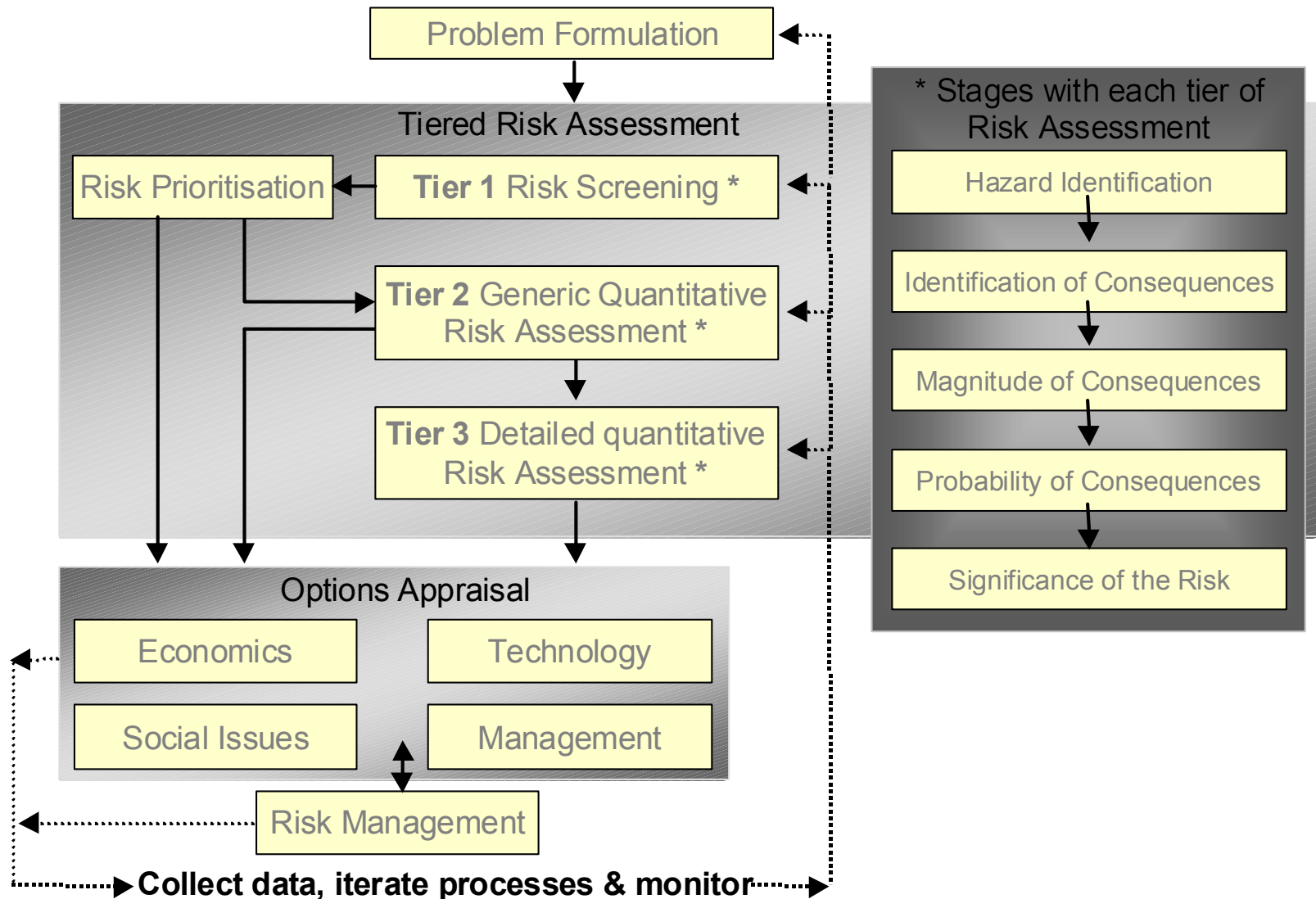
- Prevention of contamination of source waters
- Reduction/removal of contamination by treatment to meet WQ targets
- Prevention of contamination during storage, distribution and handling
- Moving towards a safety case and risk management culture (onshore process, offshore, rail, aerospace, shipping)



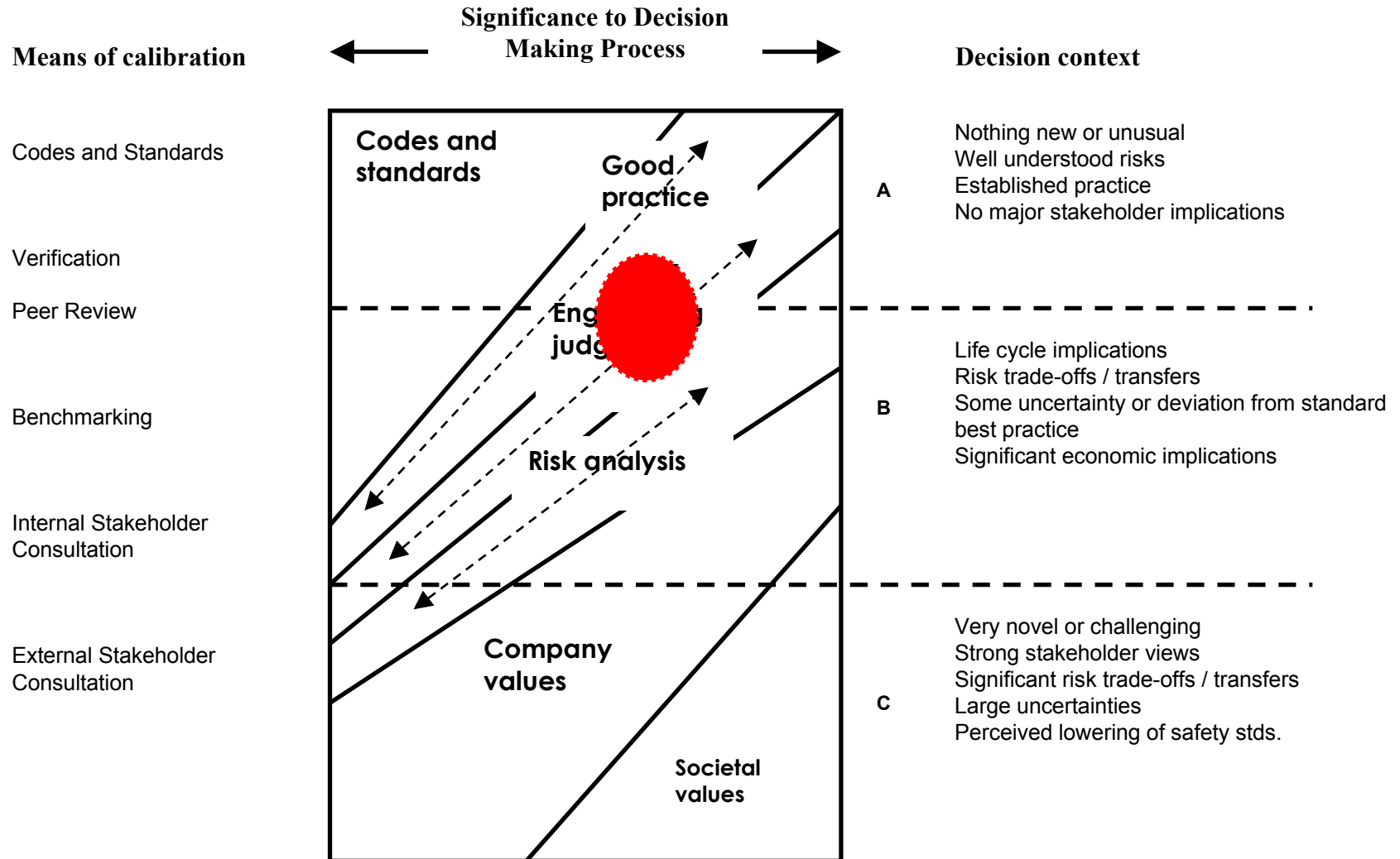
# Benefits for the offshore sector



# Risk management frameworks



# 4. HACCP and risk management

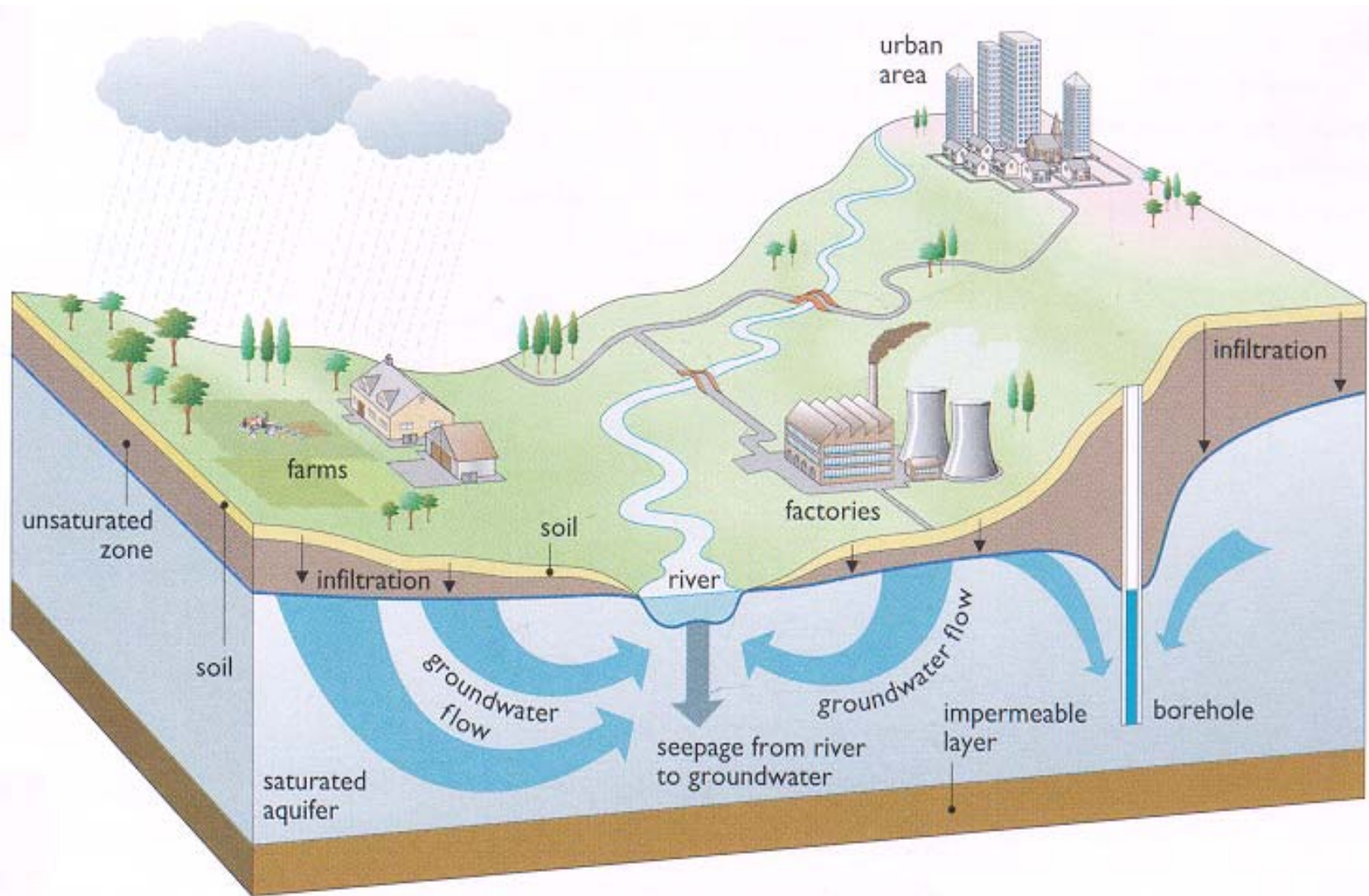


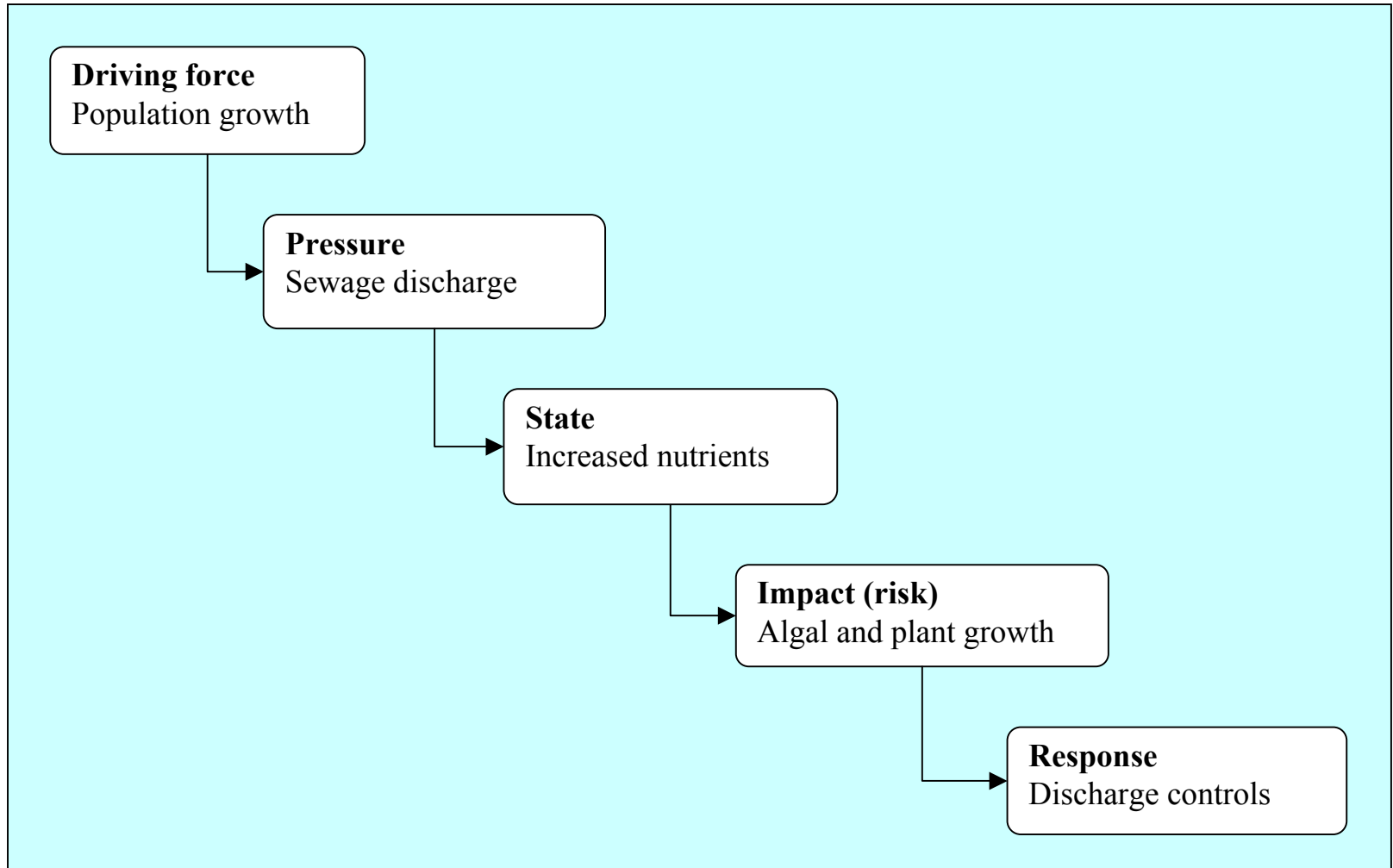
# Terminology matters

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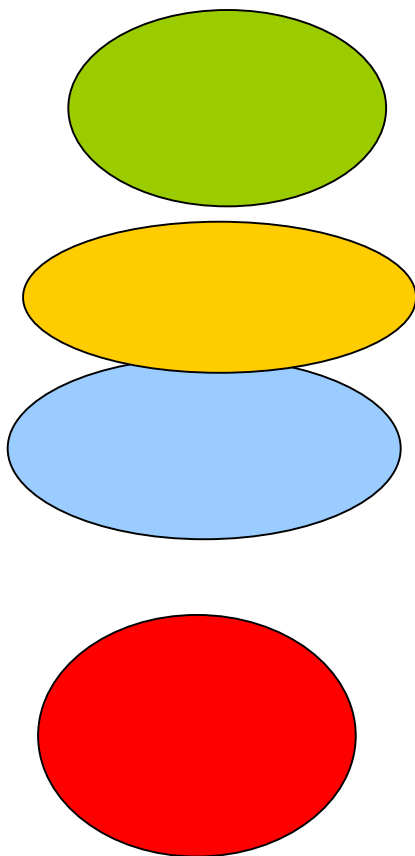
- a **hazard** is a biological, chemical, physical or radiological agent that has the potential to cause harm;
- a **hazardous event** is an incident or situation that can lead to the presence of a hazard (what can happen and how); and
- **risk** is the likelihood of identified hazards causing harm in exposed populations in a specified time frame, including the magnitude of that harm and/or the consequences.

# 5. Source protection - complexity



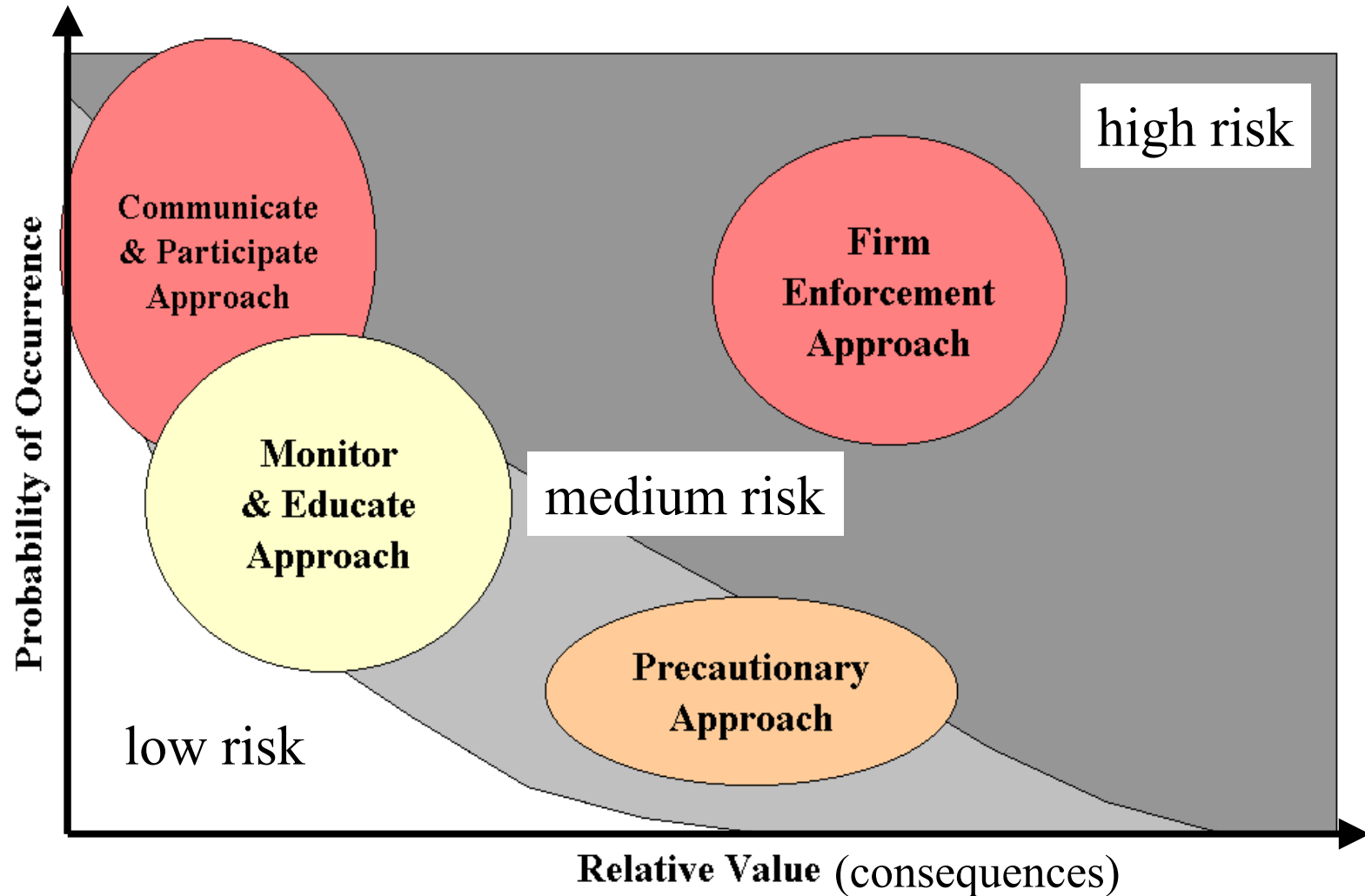


# Risk management strategies .....



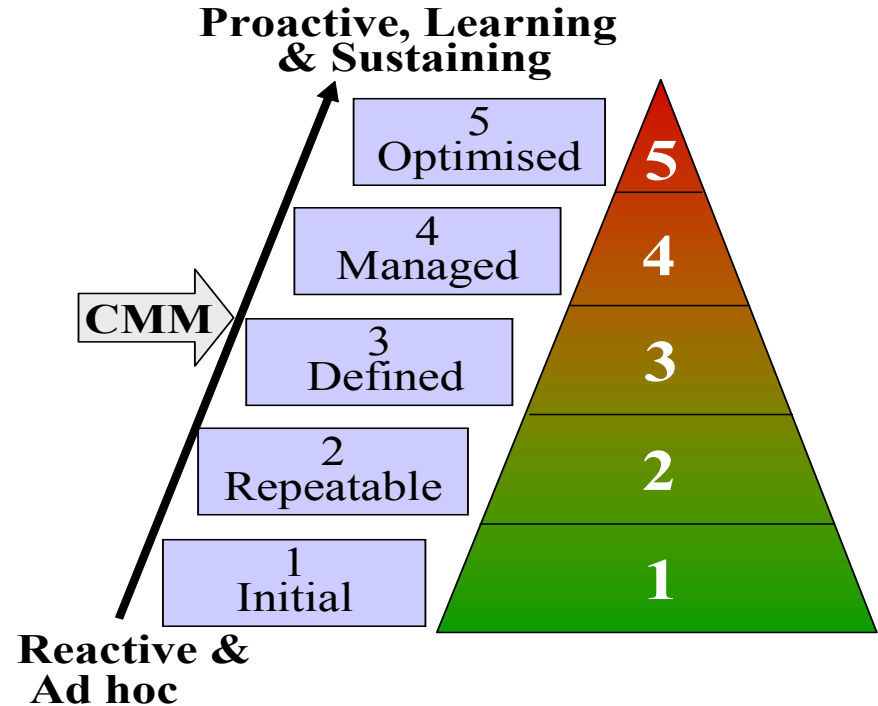
No action	By accountable discretion / informed professional judgement
Inform	General information leaflets, videos, papers
Educate	Discussion, advisory leaflets
Advise	Process guidance, technical guidance, papers
Guide	Licence applications, pre-authorisation discussions
Influence	Green policies, public opinion
Encourage	Green policies, public opinion
Persuade	Environmental permits, fit & proper person, codes of practice
Instruct	Environmental permits, fit & proper person, codes of practice
Direct	Verbal, written warnings
Warn	Verbal, written warnings
Threaten	Licence modifications, EMAS suspension
Sanction	Enforcement notices, licence suspension / withdrawal
Enforce	Prosecution policies (caution / formal warning)
Prosecute	Prosecution policies (caution / formal warning)

..... according to risk



# Risk management maturity

KP	Key Reliability Processes
1	Definition of reliability requirements
2	Design to achieve and improve reliability
3	Reliability Assurance
4	Reliability Verification and Validation
5	Risk and reliability analysis in design
6	Performance tracking and analysis
7	Reliability Qualification testing
8	Project risk management
9	Supply chain Management
10	Management of Change
11	Organisational Learning
12	Education and Training
13	Research and Development



## Required Minimum Capability = 4

N	Level	Characterised by	Approach
5	<b>Optimised</b>	<b>Adaptive processes</b>	pro-active
4	<b>Managed</b>	<b>Influences design</b>	
3	Defined	Measured, Open loop	
2	Repeatable	Prescriptive	
1	Uncontrolled	Ad hoc	re-active

- HACCP is one risk management tool
- The language of risk allows a focus on preventative management strategies
- Incident investigations always conclude on the criticality of implementation – risk management is what counts
- Skills and competencies
- Use structures / accountabilities for business risk management – get ‘air time’ at Board meetings
- Self-learning and ‘risk mature’ organisations

- NSF International, WHO, CPHE
- American Water Works Association Research Foundation (RFP 2939 – Risk analysis strategies for more better and more credible utility decisions)
- The Environment Agency of England and Wales