

# **THE PAST AND FUTURE OF RISK ASSESSMENT**

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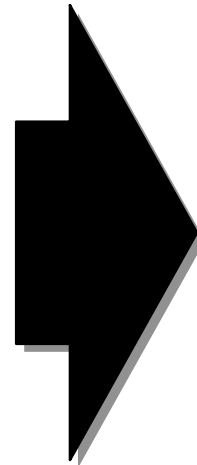
## From Past to Future

**Risk assessment is rapidly broadening out from its narrow technical origins.**

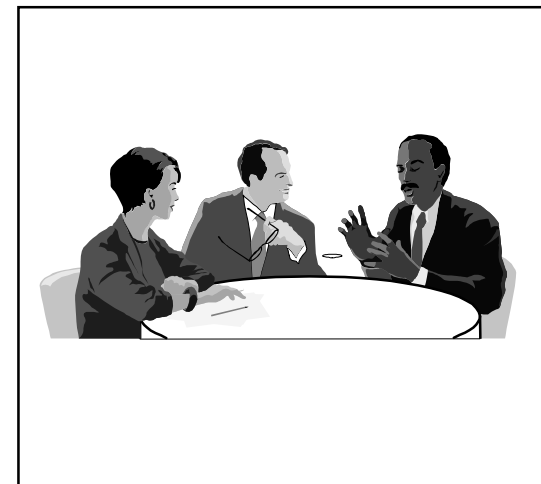
*Past*



- Technical focus
- Operator perspective
- Regulatory-driven
- Deterministic
- Emphasis on safety losses
- Base decision on numerical results



*Future*



- Socio/political focus
- Stakeholder perspective
- Business risk-driven
- Relative
- Emphasis on overall loss of company value
- Base decision on judgement

## Future New Approaches

**Risk assessment will increasingly require new tools and approaches that reflect its broader role. We mention two such approaches in this paper.**

### Some New Approaches

1

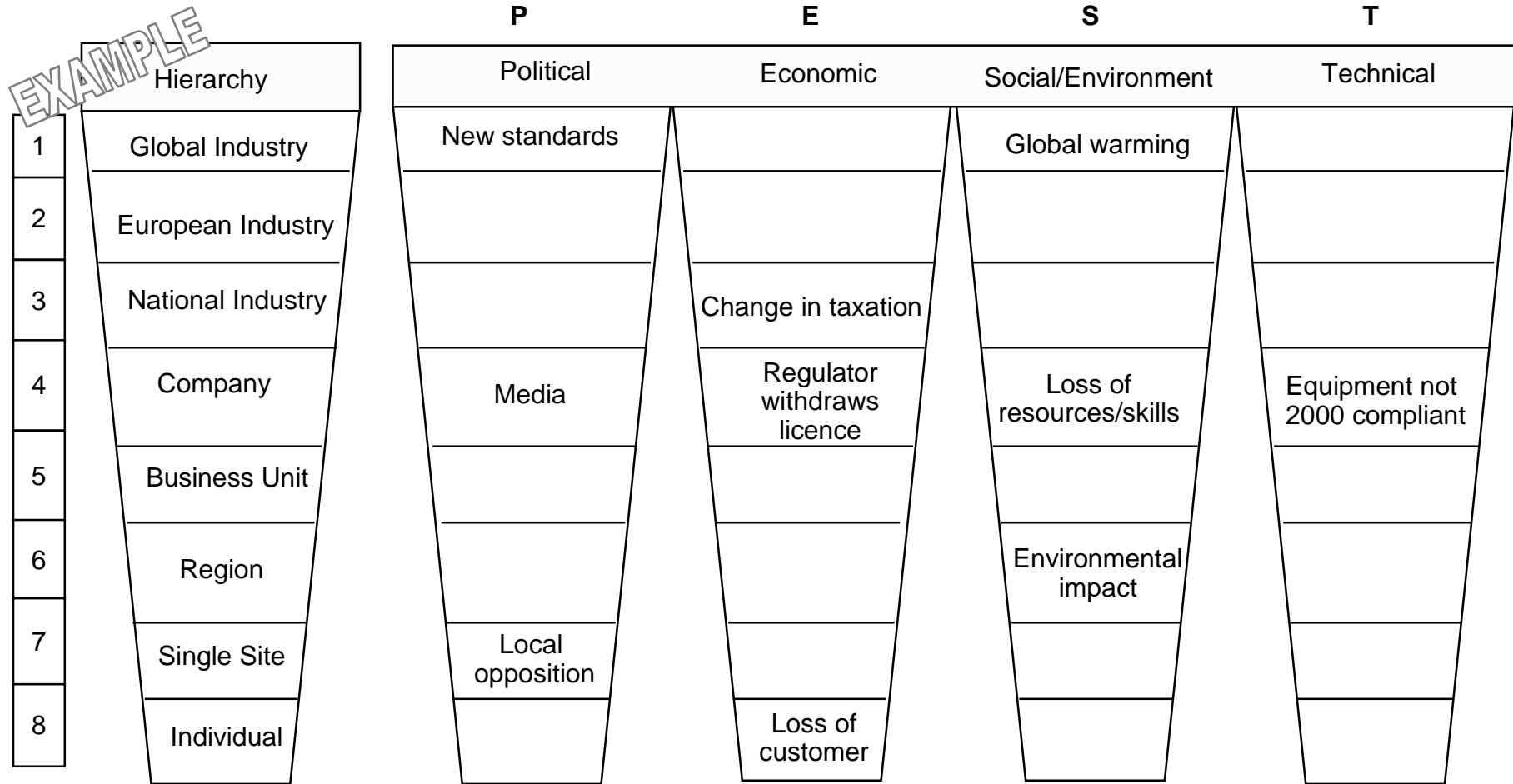
The PEST framework and Loss Profiling.

2

HAZIMP: Combining Hazard Identification and Performance Improvement.

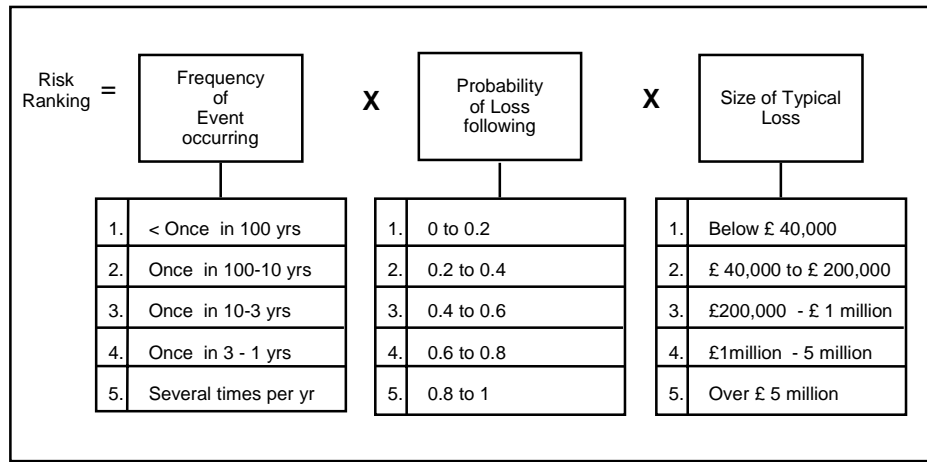
## The PEST Framework & Loss Profiling

**Establishing a PEST Framework can help to ensure that business risks are identified comprehensively at all levels from global to individual.**



# The PEST Framework & Loss Profiling

Judgement-based risk assessment by teams can be cross-checked against plant or industry loss profiles to test validity.

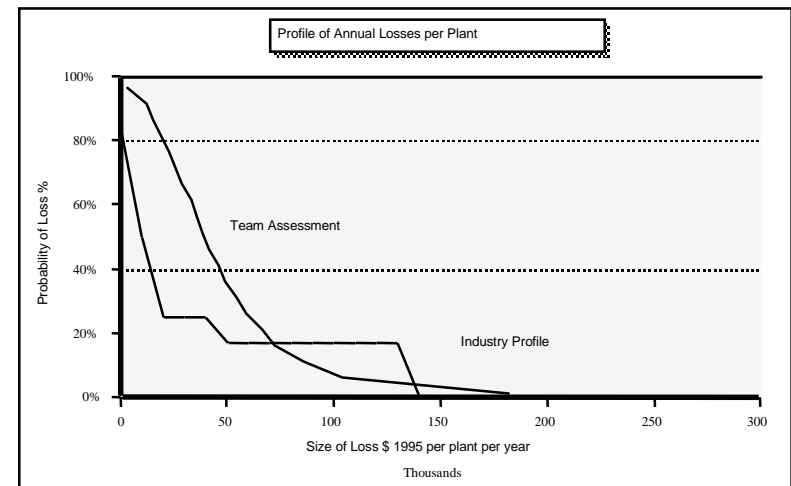


*Generating loss-profiles and comparing these with insurance-based industry data is a good way to demonstrate validity*

## Results compared to Industry Loss Profiles to Demonstrate Validity

### Team-based Assessment of Business Risks

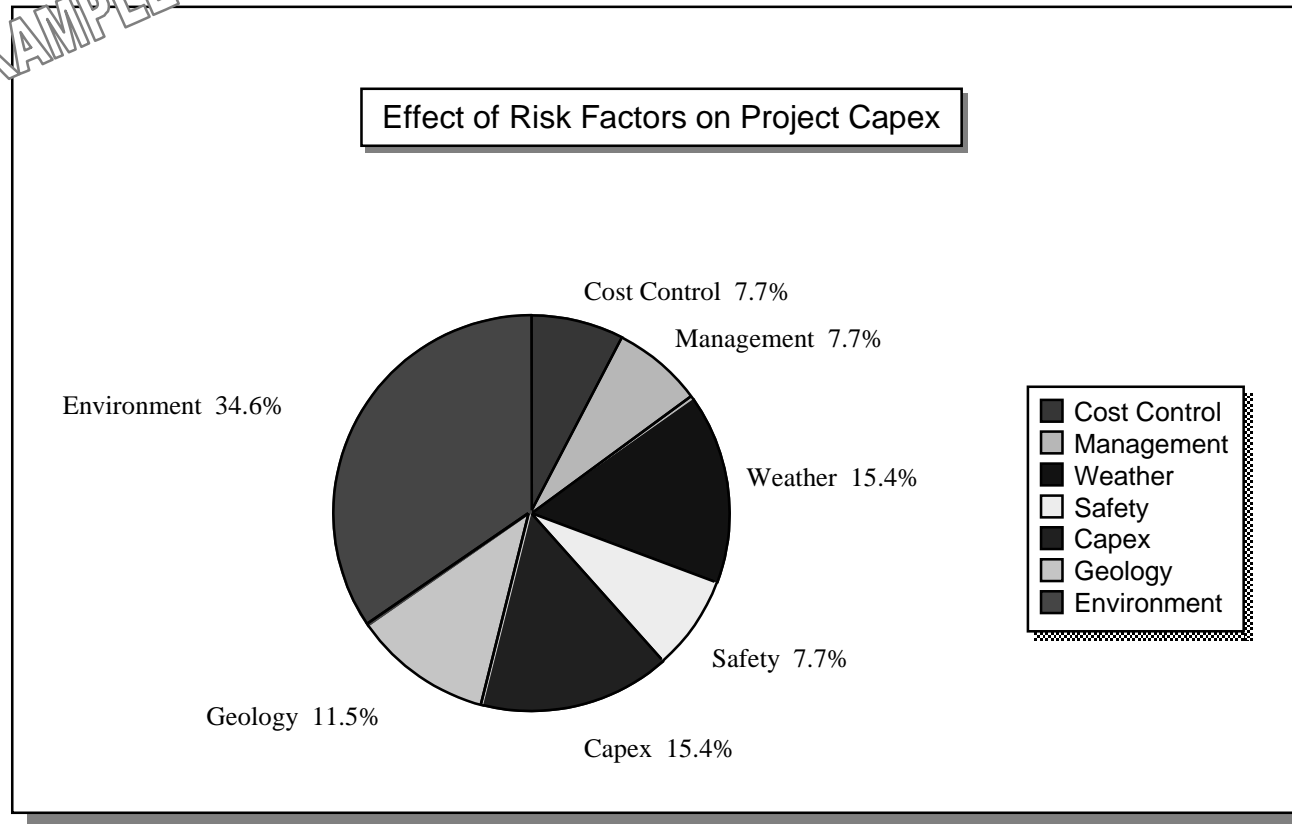
*One of the problems of team-based risk ranking methods is establishing whether the results are meaningful*



## The PEST Framework & Loss Profiling

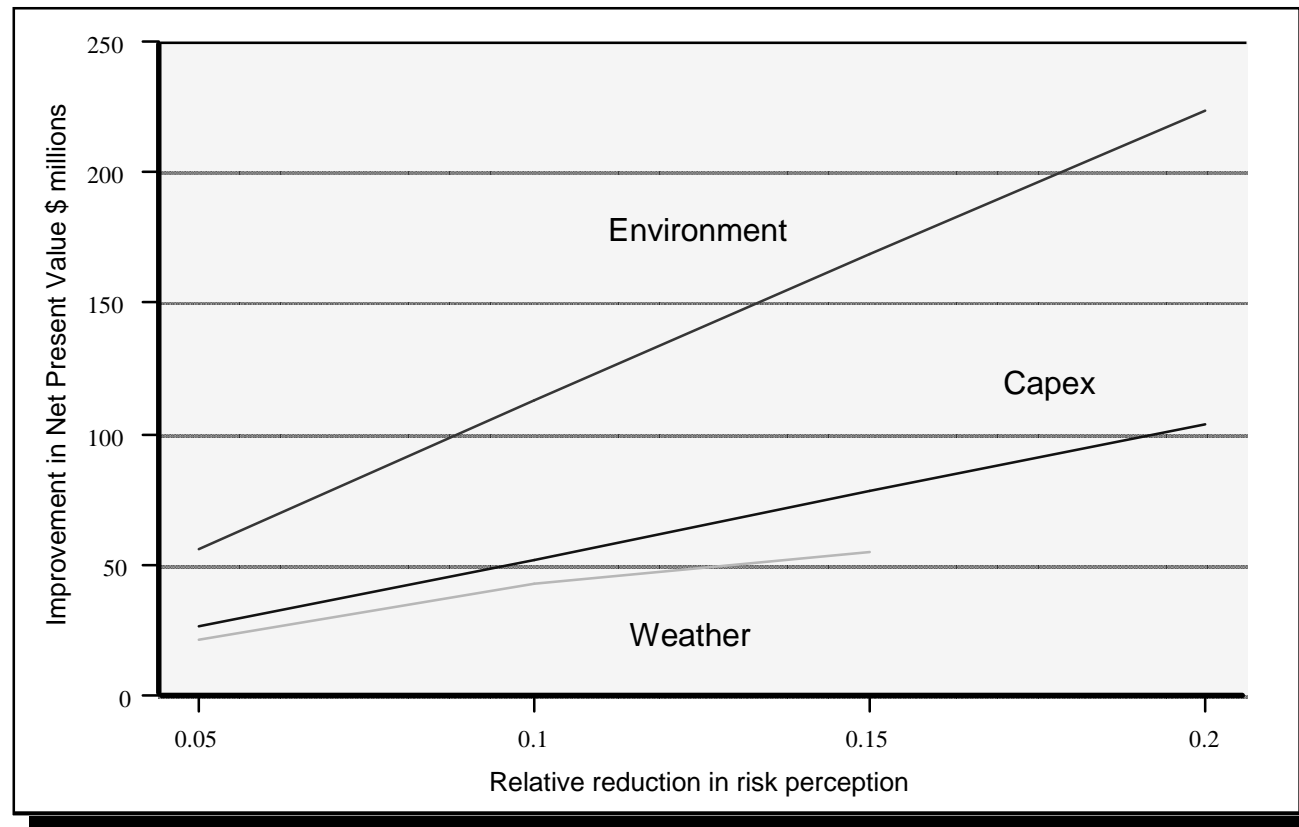
The relative effect of different types of risks can be incorporated into the assessment.

EXAMPLE

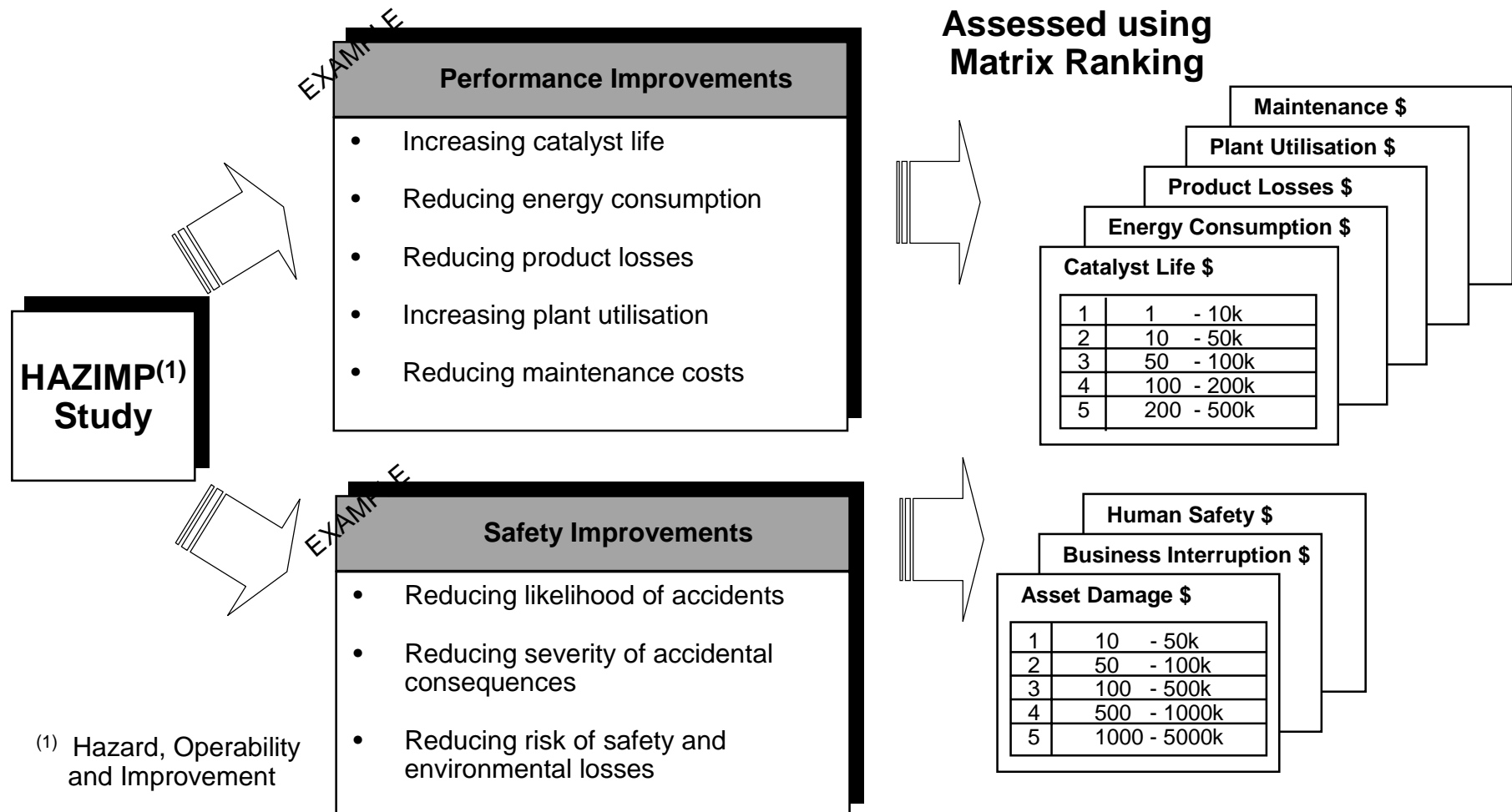


## The PEST Framework & Loss Profiling

The sensitivity of the risk assessment to changes in judgement or perception can also be reviewed.



By broadening the scope of HAZOP to include *performance improvement* the value obtained from a conventional HAZOP can be greatly increased.





**HAZIMP can provide major returns to plant operations.**

**Benefits**

- Typical savings are in the range of \$100k - \$500k per year.
  - A Hydrotreater study showed \$380,00 annual savings
  - Recent Platformer study showed savings of \$ 234,000 per year.

and these are assessments jointly with the client and accepted as a basis for investment planning.
- Leverages the full potential of expert, team-based plant review.
- Usually pays back the cost of the original study many times over.

## The Past and Future of Risk Assessment

**As risk assessment becomes broader, its potential value to companies increases - but further development is needed, especially for social and environmental risks.**

### Conclusions

- Techniques such as PEST and Loss Profiling can help companies validate judgement-based business risk assessments.
- HAZIMP can leverage the value of HAZOP to produce significant cost savings.
- Further work is needed especially to model more realistically the risks of social and environmental issues.