Review of Safety Management Strategies and Practices

Study group Report WOC4.1

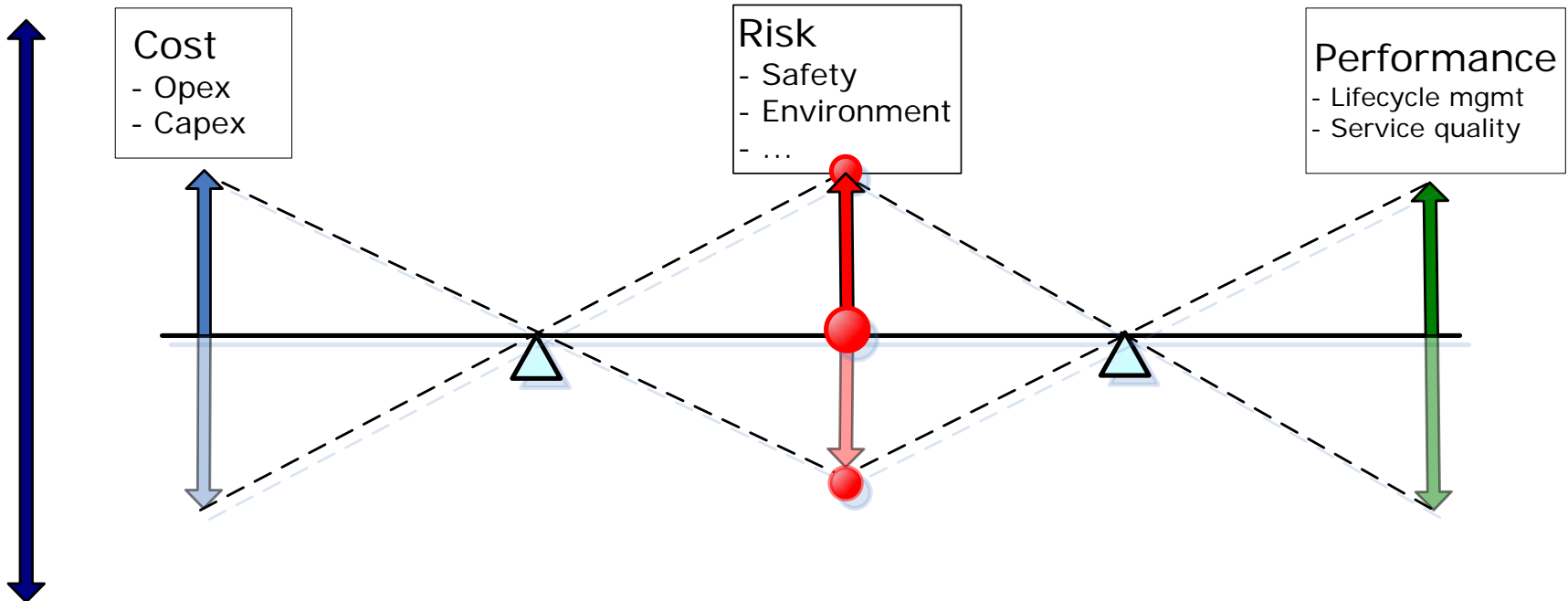Ben Lambregts, The Netherlands

Tuesday 5th June

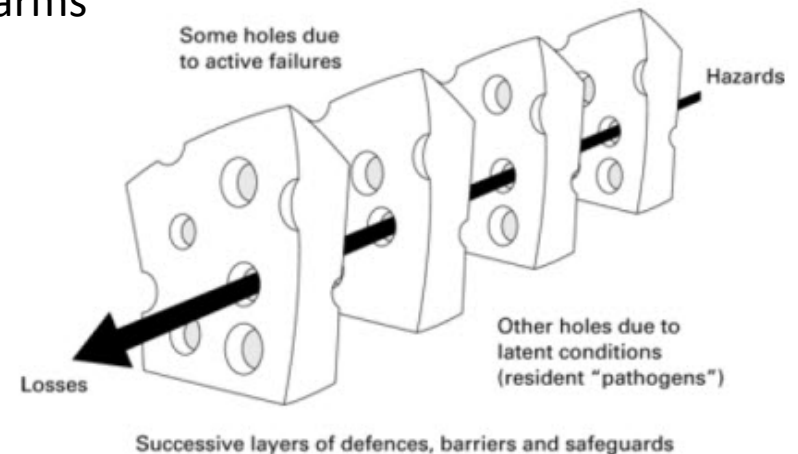Patron   Host   Host Sponsor

- Increasing interest from society
- Balancing Risks , Cost and Performance

Process Safety

- **Process safety leadership**
- Design and modifications
- Operating procedures
- **Workforce competence**
- **Human factors**
- **Emergency arrangements**
- Protective devices, instrumentation and alarms
- **Inspection and maintenance**
- Permit to work
- Asset records and data quality
- Third party activities
- **Audit, review**

Some holes due to active failures

Hazards

Other holes due to latent conditions (resident "pathogens")

Losses

Successive layers of defences, barriers and safeguards

Swiss cheese model by James Reason published in 2000.

Questions

- Major actors and the supporting organisation
- Level and way of communication
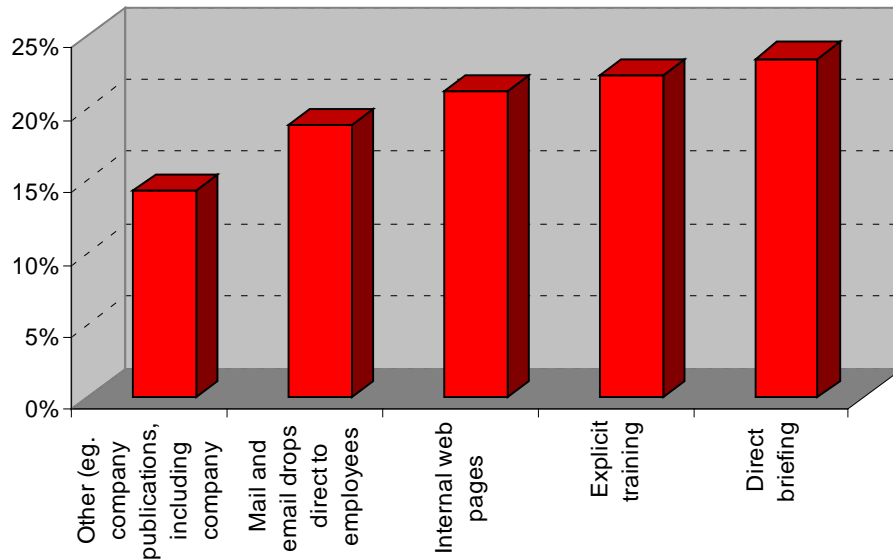- Most important KPI's

Safety as a Priority

- 75% of all companies sign off and approve the approach to Process Safety at the most senior levels

- Over 80% has a separate Safety Department

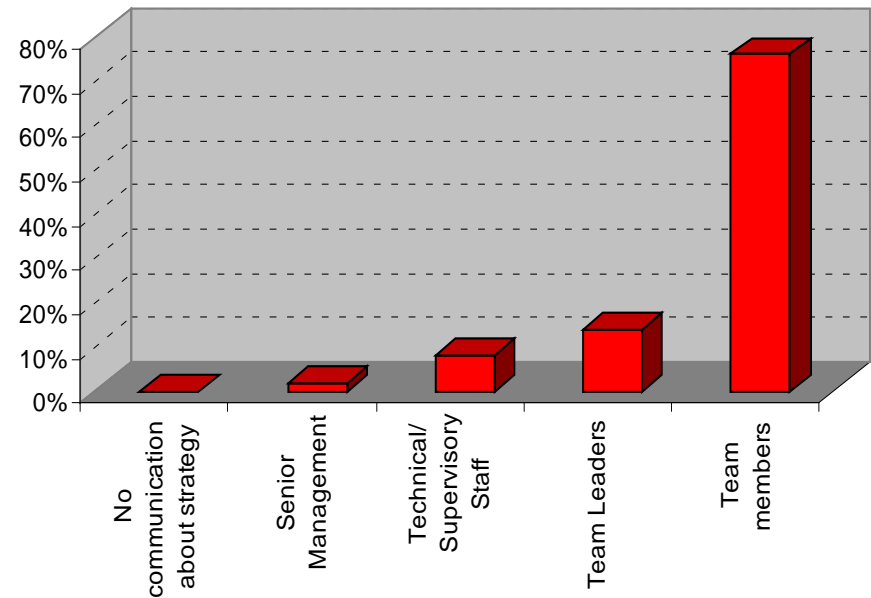**If yes, where is this department situated?**
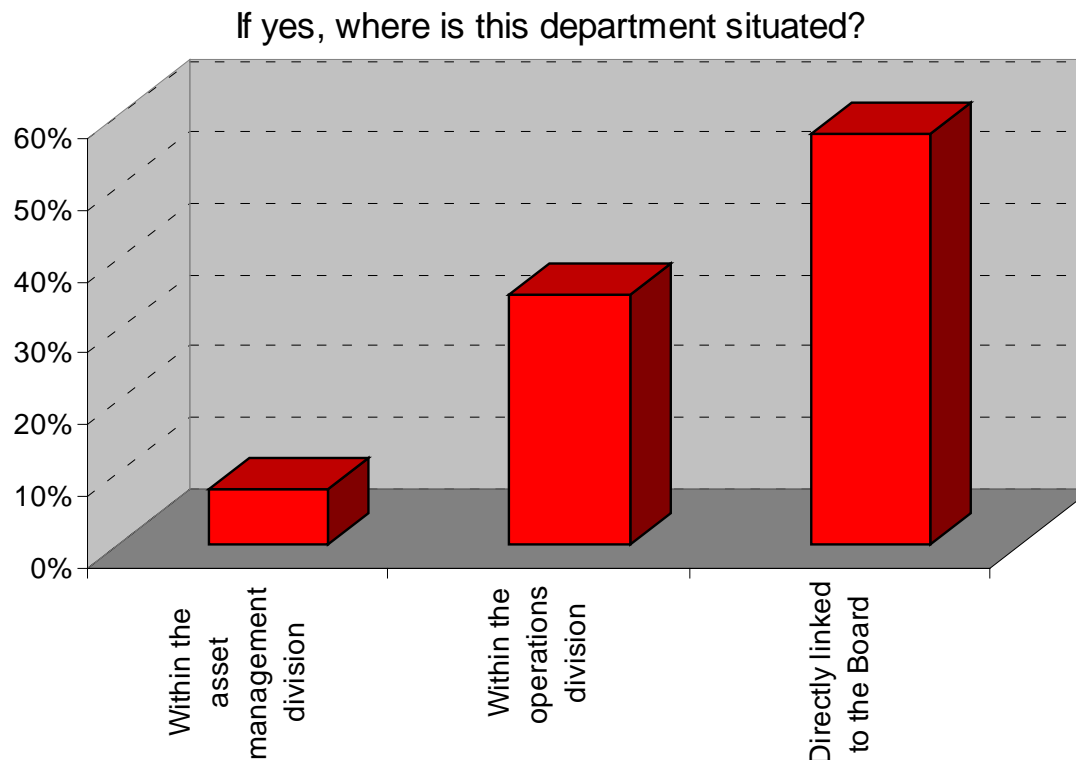
Safety Communication

- 86% of all contractors and sub-contractors are included in communication

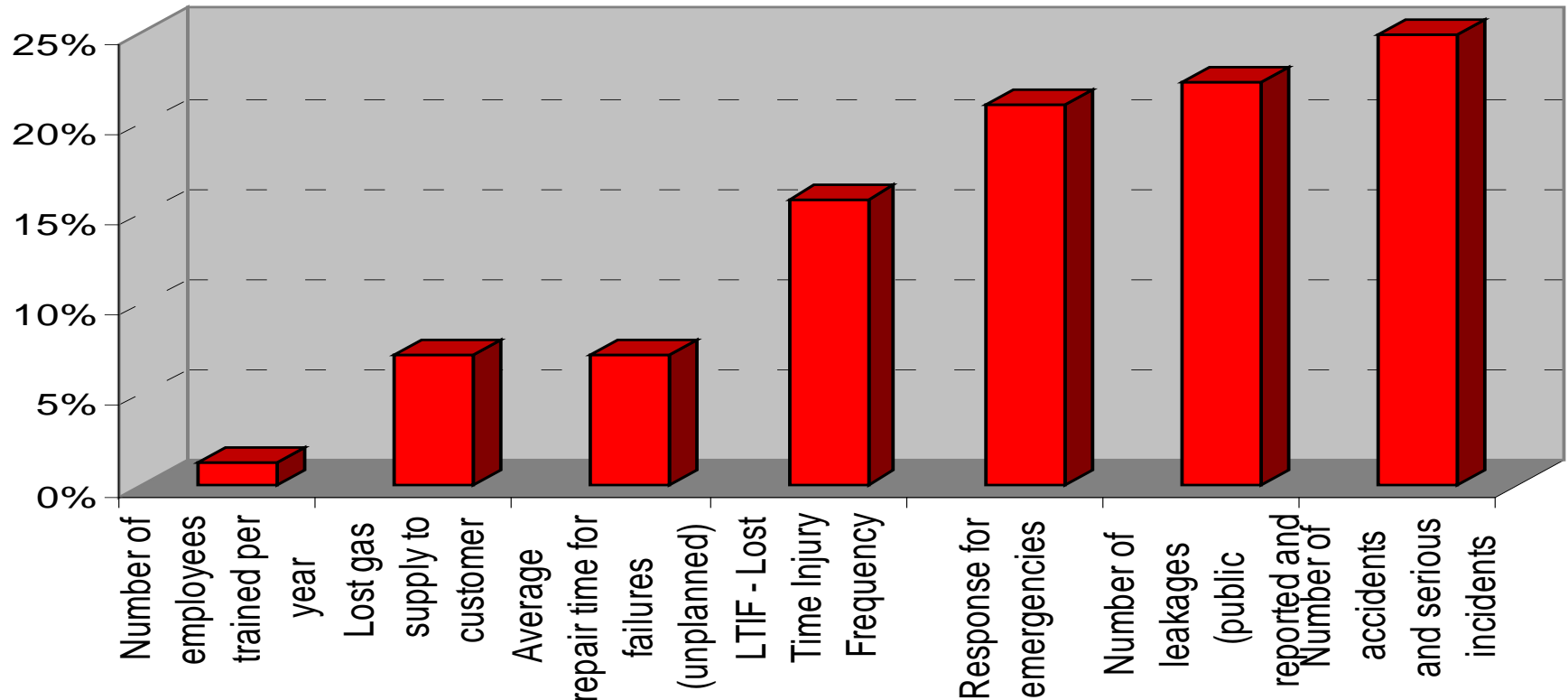What methods of communication are used?

How far down the organisation is the safety strategy communicated?

Safety KPI's

- Almost 50% of companies have a reward/remuneration policy linked to safety performance.

Which KPI's are the most important within your company?

Conclusions and recommendations

- Safety is a number one priority

- Top 3 KPI's are lagging indicators

- A number of KPI's are personal targets for managing directors

- Evaluate and bring balance in indicators

- Be accurate and reserved with personal indiactors
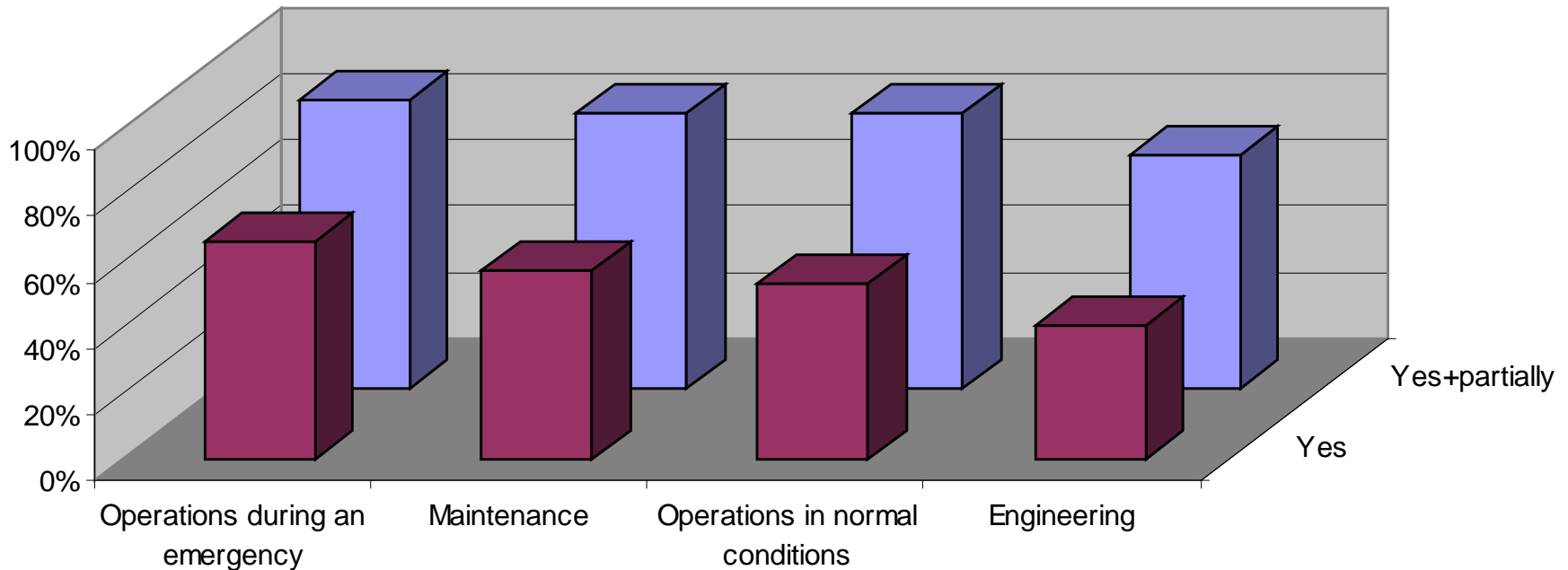
Human Factor and Competence

Questions

- Phases of activities
- Most effective KPI's
- Training technologies
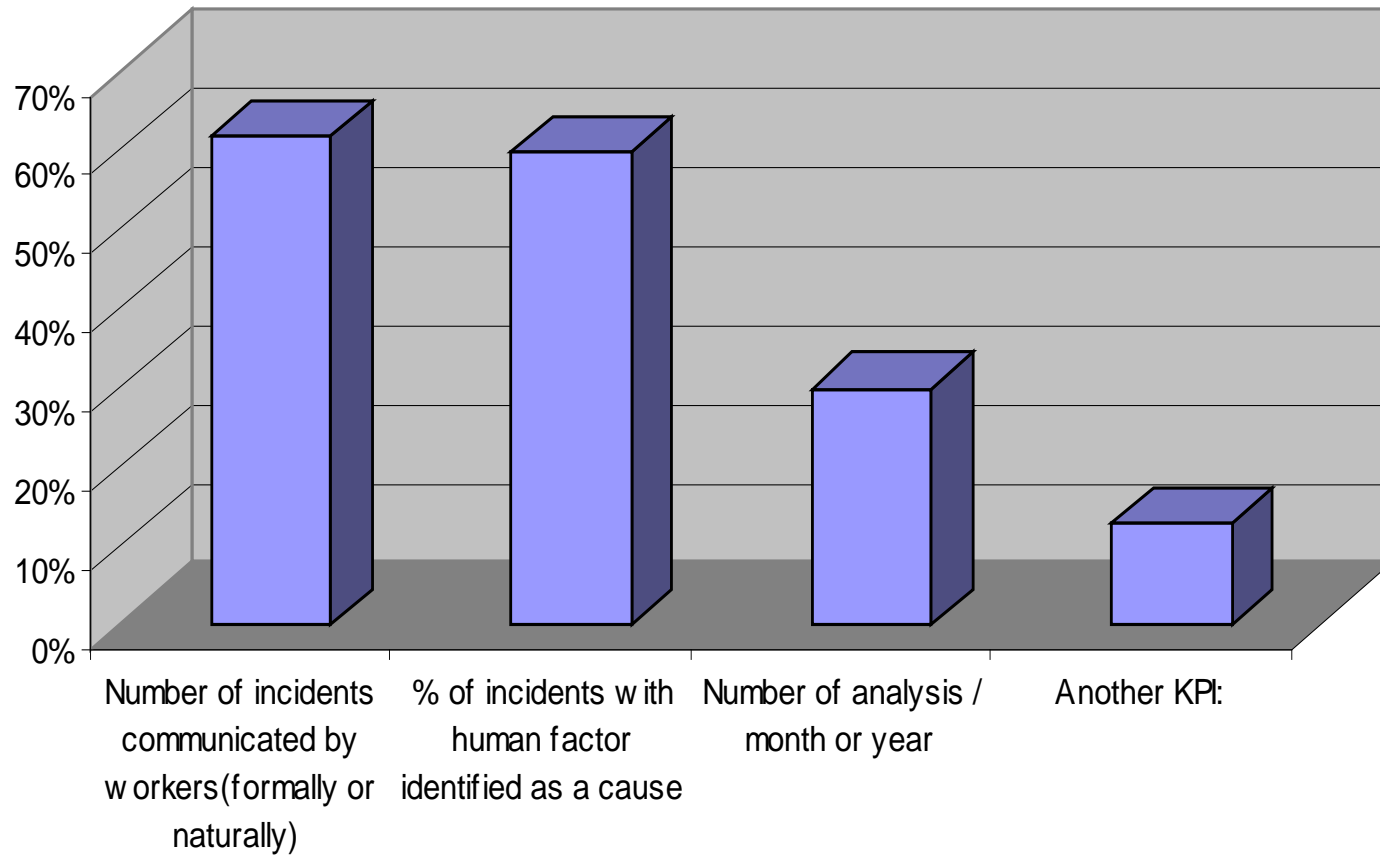- How do we secure competence

Human Factor and Competence

- 40% considered safety an important human factor in the engineering stage
- more than 65% considered safety an important human factor during operations during and emergency

Do you analyse activities of your workers?
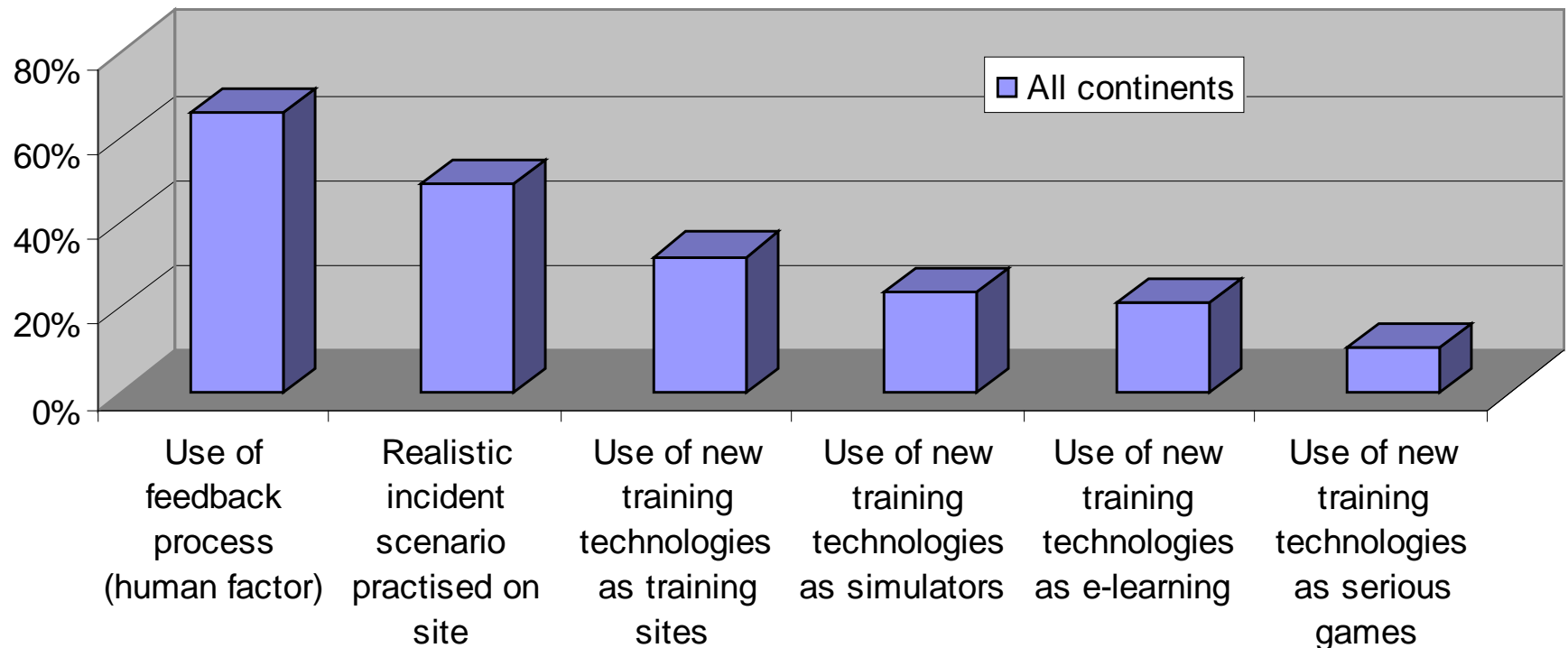**(Answers for all countries)**

KPIs used

- Development and maintaining competence

Which of these types of processes and/or procedures do you use?

Conclusions and recommendations

- More focus and attention
- Static more than dynamic
- More short term than long term
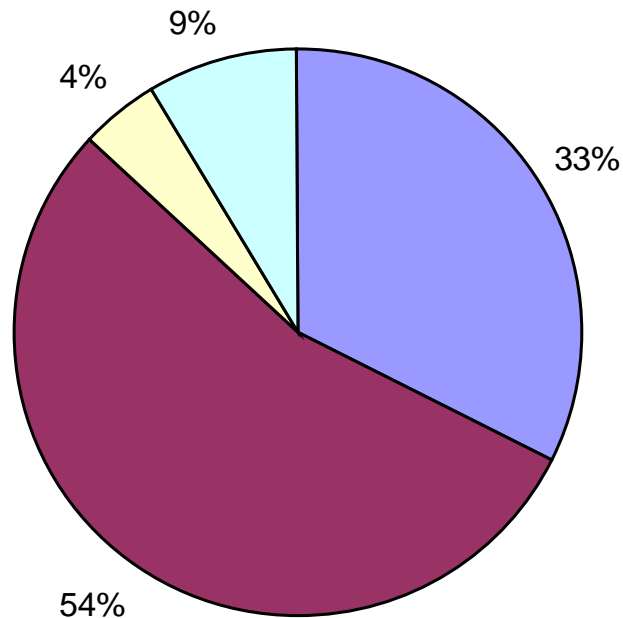- Conservative
- More progressive in newer gas countries

Inspection and Maintenance

Questions

- What systems are in use
- Who is involved in setting the companies KPI's
- What types of inspection strategies are used?

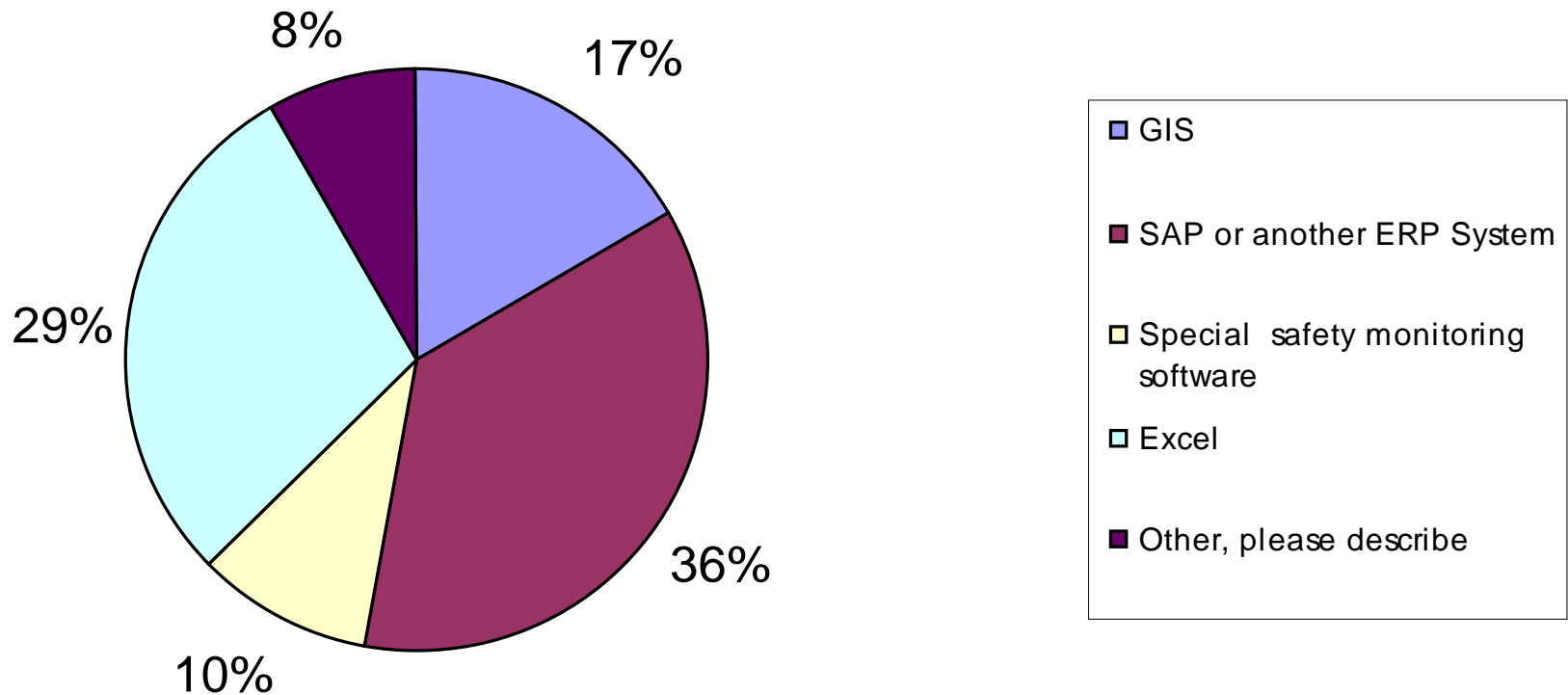# Inspection and Maintenance

- Management System implemented

What system have you implemented to improve maintenance and inspections KPIs?

Legend:
- Annual regular review
- Quality Management System (ISO 9001; PAS 55; TCM …)
- No system implemented
- Other, please describe
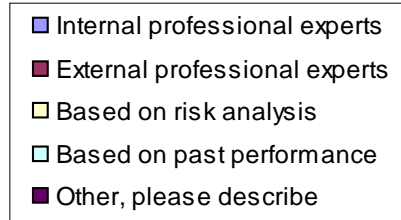
Pie chart values: 33%, 54%, 4%, 9%

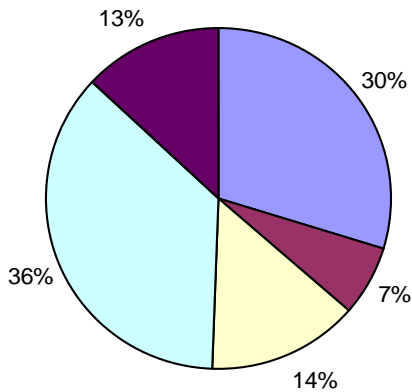- Information Systems

Which format do you use to administer safety KPIs? Can select multiple answers.

GIS	
SAP or another ERP System	
Special safety monitoring software	
Excel	
Other, please describe	

- Setting KPI's, rules and standards

How are the values of the KPIs set? Can select multiple answers.

- Internal professional experts
- External professional experts
- Based on risk analysis
- Based on past performance
- Other, please describe

30%
7%
14%
36%
13%

Who establishes the rules and standards for maintenance and inspection?

- National Energy legislation (government)
- National Energy Regulator
- Professional independent association (e.g. DVGW)
- Own Company
- Other, please describe

27%
17%
17%
26%
13%
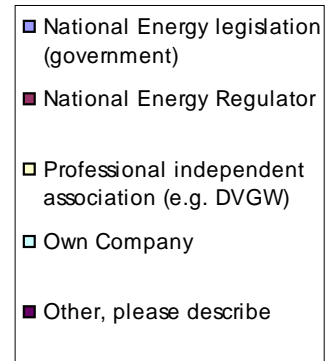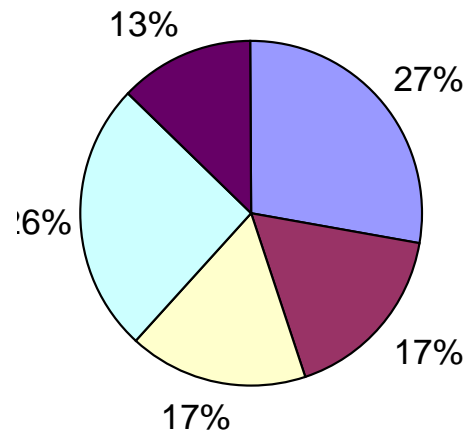
Conclusions and recommendations

- Setting Process Safety KPI's should be an inclusive process
- Reporting and administering KPI's needs control and validation
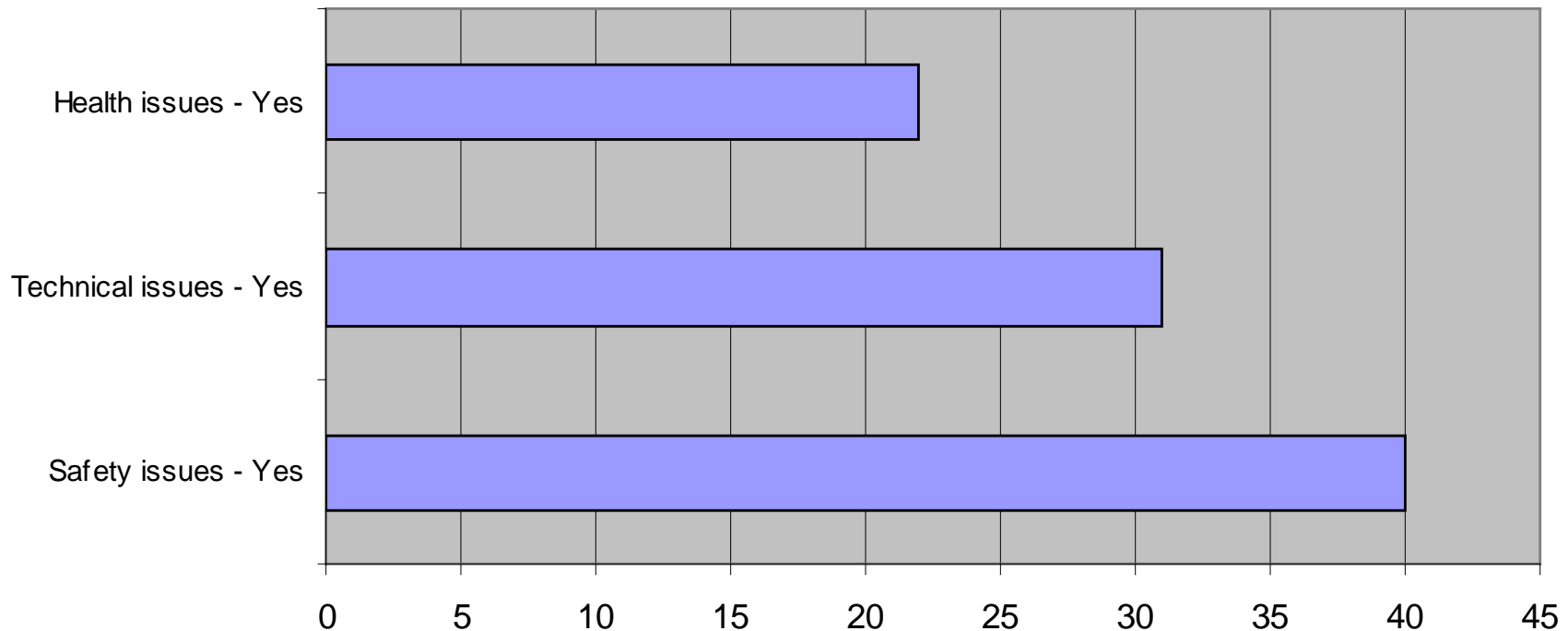
Emergency Arrangements and Response

Questions

- Who is involved in setting emergency response arrangements
- The funding arrangements
- How the processes are resourced

- Influence of mandatory regulation

Please indicate whether mandatory regulation in gas distribution influence on the following issues: (can select multiple answers)

Emergency Arrangements and Response

Funding and Resources

- 50% of companies: costs not covered in network tariffs
- First response by one person
- Mainly insourced
- Training once a year together with third parties

Conclusions and recommendations

- Great differences in KPI's
  - Definitions
 - Influence of legislation and regulation

- Standardization is recommended
- Professional training and communication

Audit and review

Questions

- What external standards are used for the safety management systems
- How the systems are assessed and validated

Which certification system is in use for safety management systems in your company? Can select multiple answers.

34%

45%

12%

9%

- ISO 9001
- PAS 55
- OHSAS
- other systems
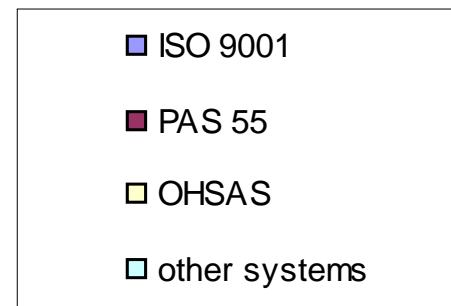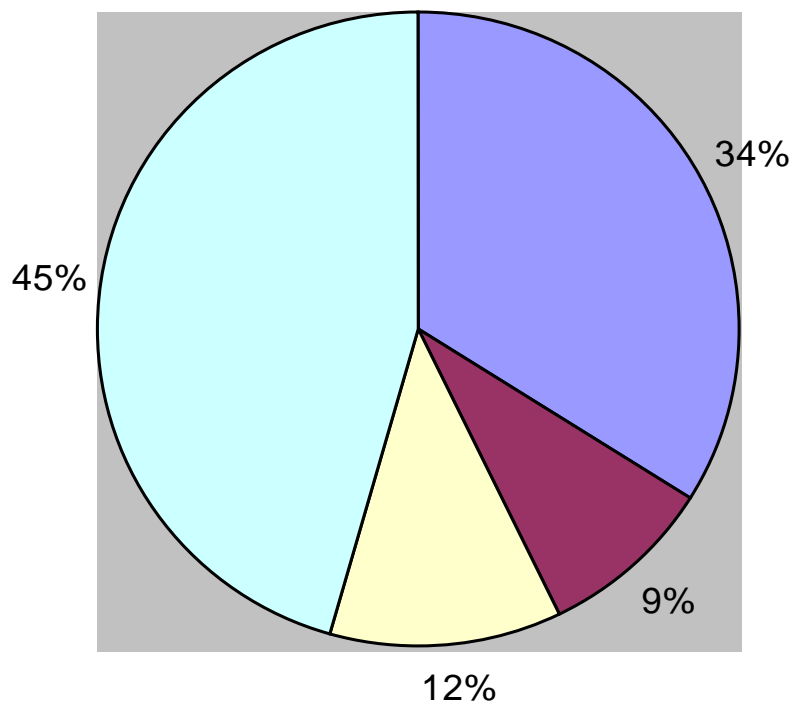
- Maturity of Safety Management system

How mature do you think your safety management system is? Select only one.
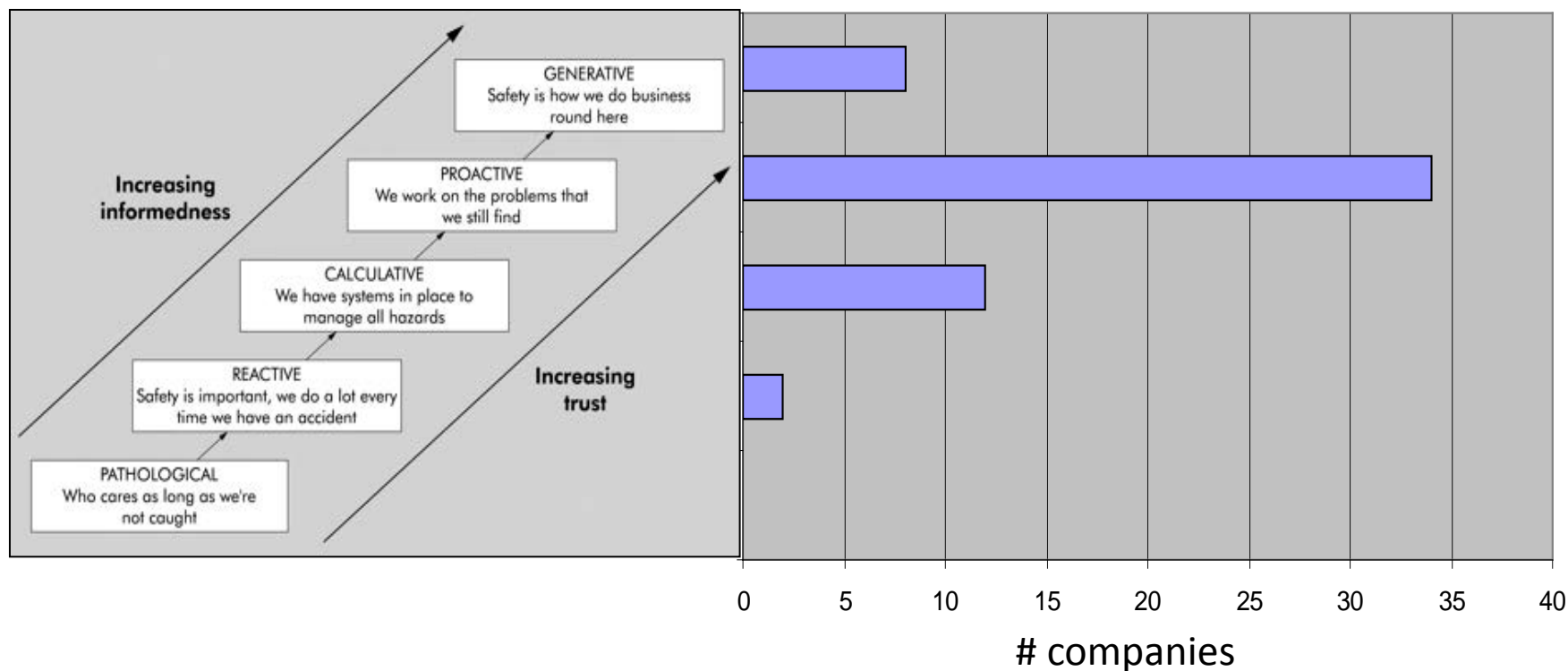
companies

Summary Conclusions

- Safety management is a number one priority for gas distribution companies all over the world.

- Human factor seems now to be the major risk of gas distribution industry after third part damages.

- Gas companies are using the progressive competence development solutions only in a limited way

- A large proportion of respondents used excel based reporting to provide KPI's. This could present a risk in terms of data quality and thereby value of the reporting.

- Emergency arrangements are different between the countries because they are determined and influenced by national legislation and regulation in accordance with national rules.

- There is no world wide standard for a holistic safety management system. ISO9001 is widely used.

Summary Recommendations

- It is recommended that companies bring a balance between leading and lagging process indicators and continually review their set KPI values in order to ensure they are fully relevant in a changing environment.

- Because of the risk it is recommended to introduce a human factor KPI in the Board Survey: "% of incidents with human factor identified as a cause" should be a good proposal

- Where possible, an end to end system that draws the data from a "core" system is recommended thereby limiting the "human" interaction and manipulation.

- Professional periodical emergency training is necessary. Trainings for all staff (in sourced and outsourced) in cooperation with fire brigades and professional organizations should be organized.

Thank you for your attention