WHO ARE JESPER SJØRVAD

Education:

- Maritime Navigator and Lead Auditor

Experience:

- Chief Officer in the merchant marine
- Crisis Management advisor at RelyOn Nutec
- Operations Manager at Esvagt A/S
- Director of HSEQ at A2Sea
- HSEQ Expert in Oil Gas Denmark

Now:

- Business Developer at DBI


energy
CLUSTER
DENMARK


MISSION
GREEN FUELS

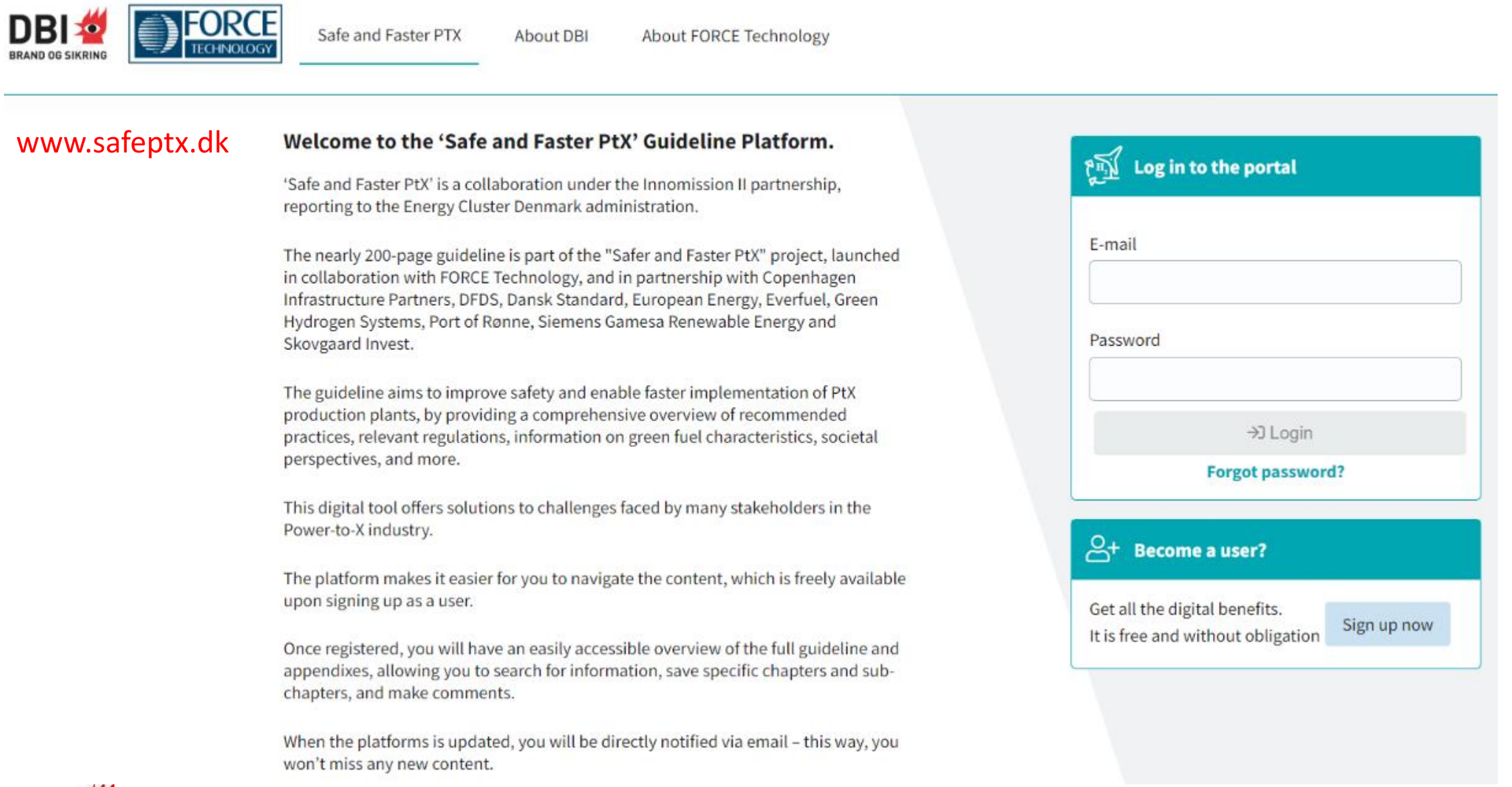

Innovation Fund Denmark

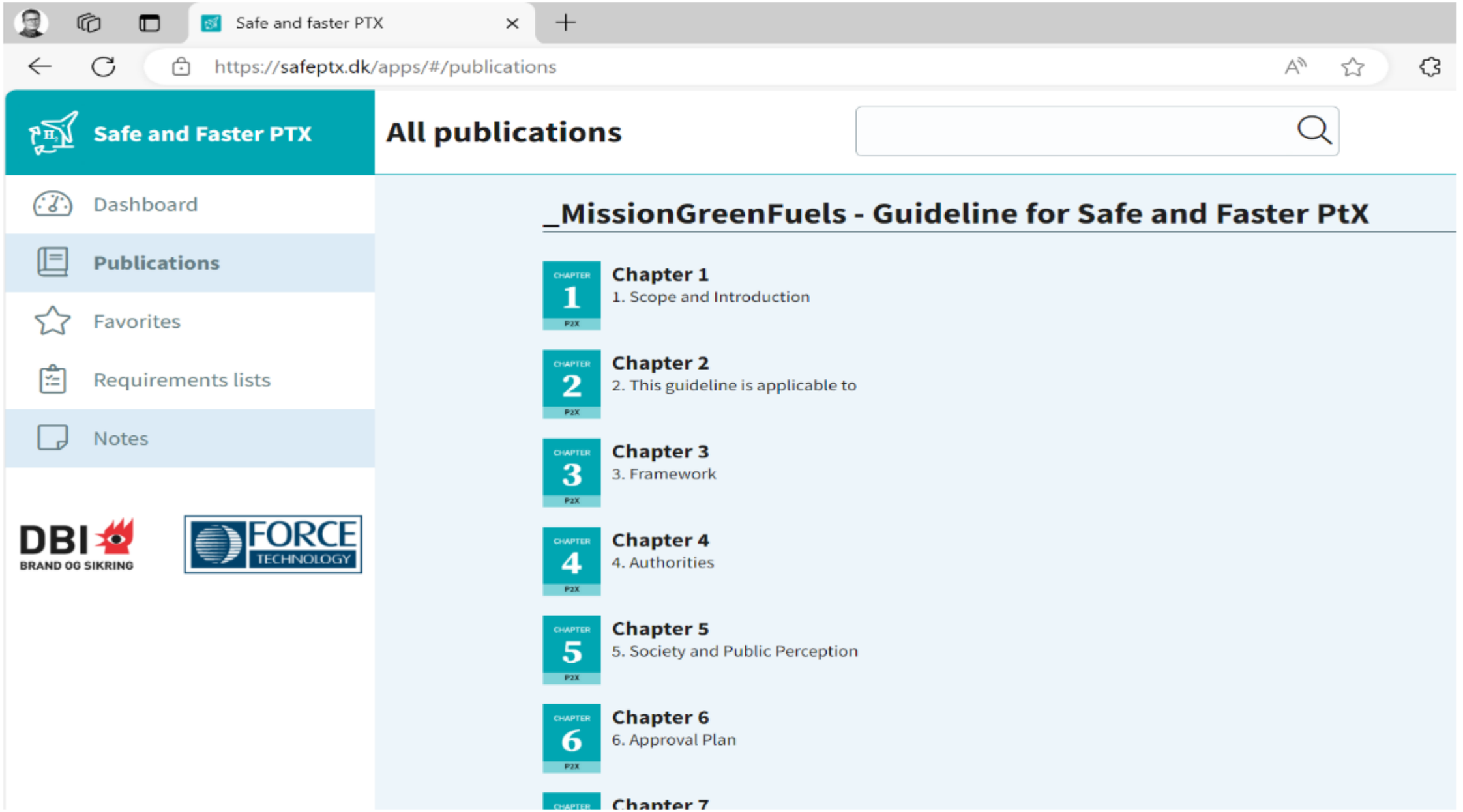

DBI


FORCE
TECHNOLOGY

”SAFER AND FASTER P2X” GUIDELINE

www.safeptx.dk


DBI
BRAND OG SIKRING
FORCE TECHNOLOGY
Safe and Faster PTX
About DBI
About FORCE Technology
www.safeptx.dk
Welcome to the 'Safe and Faster PtX' Guideline Platform.
'Safe and Faster PtX' is a collaboration under the Innomission II partnership, reporting to the Energy Cluster Denmark administration.
The nearly 200-page guideline is part of the "Safer and Faster PtX" project, launched in collaboration with FORCE Technology, and in partnership with Copenhagen Infrastructure Partners, DFDS, Dansk Standard, European Energy, Everfuel, Green Hydrogen Systems, Port of Rønne, Siemens Gamesa Renewable Energy and Skovgaard Invest.
The guideline aims to improve safety and enable faster implementation of PtX production plants, by providing a comprehensive overview of recommended practices, relevant regulations, information on green fuel characteristics, societal perspectives, and more.
This digital tool offers solutions to challenges faced by many stakeholders in the Power-to-X industry.
The platform makes it easier for you to navigate the content, which is freely available upon signing up as a user.
Once registered, you will have an easily accessible overview of the full guideline and appendixes, allowing you to search for information, save specific chapters and sub-chapters, and make comments.
When the platforms is updated, you will be directly notified via email – this way, you won't miss any new content.
Log in to the portal
E-mail
Password
Login
Forgot password?
Become a user?
Get all the digital benefits.
It is free and without obligation
Sign up now


Safe and faster PTX
https://safeptx.dk/apps/#/publications
Safe and Faster PTX
All publications
Dashboard
Publications
Favorites
Requirements lists
Notes
DBI
BRAND OG SIKRING
FORCE TECHNOLOGY
_MissionGreenFuels - Guideline for Safe and Faster PtX
CHAPTER 1 P2X
Chapter 1
1. Scope and Introduction
CHAPTER 2 P2X
Chapter 2
2. This guideline is applicable to
CHAPTER 3 P2X
Chapter 3
3. Framework
CHAPTER 4 P2X
Chapter 4
4. Authorities
CHAPTER 5 P2X
Chapter 5
5. Society and Public Perception
CHAPTER 6 P2X
Chapter 6
6. Approval Plan
CHAPTER
Chapter 7

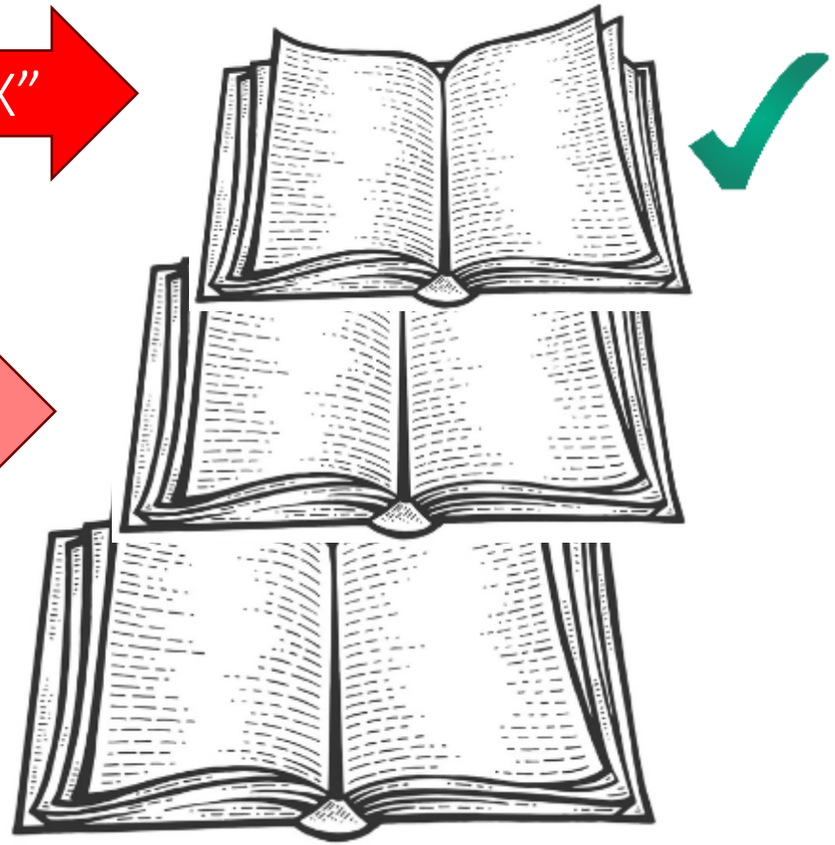
DBI

“SAFE AND FASTER PTX - GUIDELINE“

Innomission Pool 1: “Safe and Faster PtX”

Innomission Pool 2: “Safe SBU”

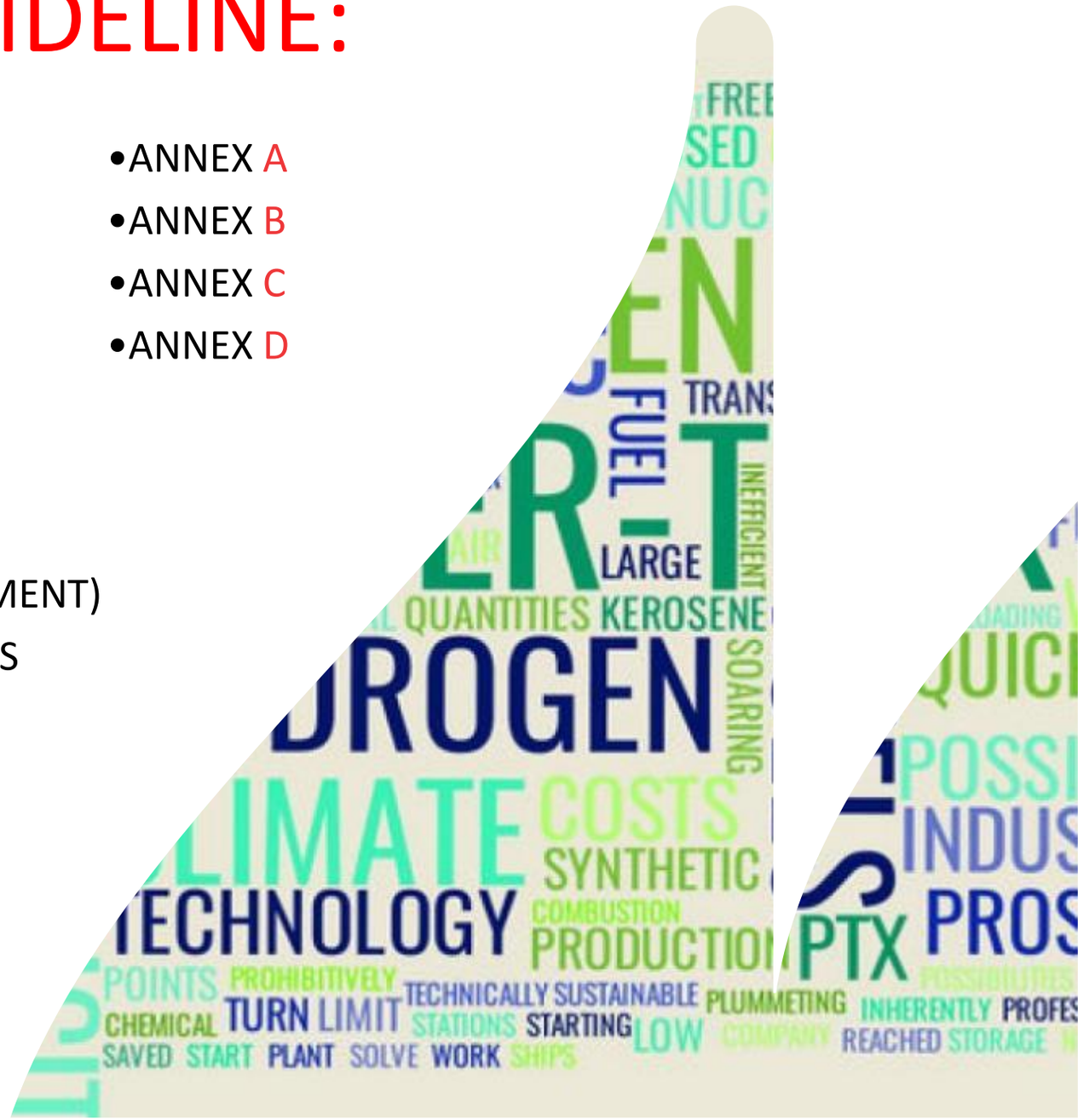
Innomission Pool 3: ”Safe OMI”



CONTENT OF THE GUIDELINE:

1. SCOPE AND INTRODUCTION
2. THIS GUIDELINE IS APPLICABLE TO
3. FRAMEWORK
4. AUTHORITIES
5. SOCIETY AND PUBLIC PERCEPTION
6. APPROVAL PLAN
7. RISK MANAGEMENT AND ASSESSMENTS
8. GENERAL HSE (HEALTH SAFETY AND ENVIRONMENT)
9. COMPLIANCE WITH PTX RELATED REGULATIONS
10. CONSTRUCTION INTEGRITY
11. GREEN-FUELS DATA AND CHARACTERISTICS
12. BIBLIOGRAPHY

- ANNEX A
- ANNEX B
- ANNEX C
- ANNEX D



DBI

CONTENT OF THE GUIDELINE:

1. SCOPE AND INTRODUCTION:

provide a guidance for best practice of the management of the safety in relation to establishing a Power-to-X plant.

2. APPLICATION:

The guideline is applicable to all industries and sectors that produce, handle or store green fuels, including producers, suppliers, authorities, branche unions, institutes, NGOs, and societies.

3. FRAMEWORK:

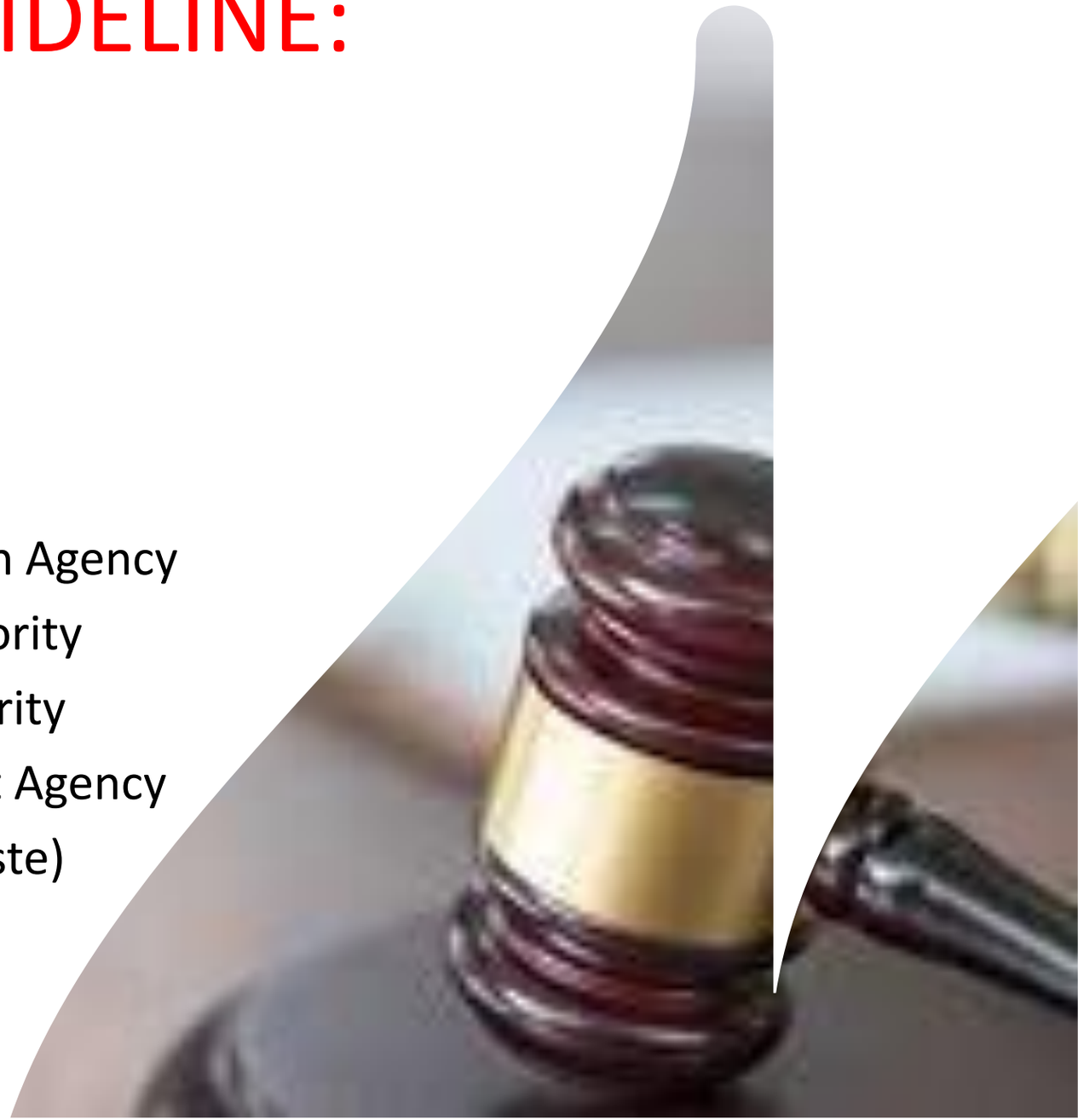
- Interviews of stakeholders
- Regulations and standards
- Studies related to Hazards, prevention, and public perceptions.

DBI

CONTENT OF THE GUIDELINE:

4. AUTHORITIES

- 4.1. Risk Authorities
- 4.2. Municipal Departments
- 4.3. State Departments
- 4.3.1. Danish energy Agency
- 4.3.2. Danish Environmental Protection Agency
- 4.3.3. Danish Work Environment Authority
- 4.3.4. Danish Safety Technology Authority
- 4.3.5. Danish Emergency Management Agency
- 4.3.6. PET (Politiets Efterretningstjeneste)
- 4.3.7. Ministry Of Transport



DBI

CONTENT OF THE GUIDELINE:

5. SOCIETY AND PUBLIC PERCEPTION:

5.1. Why Society Matters

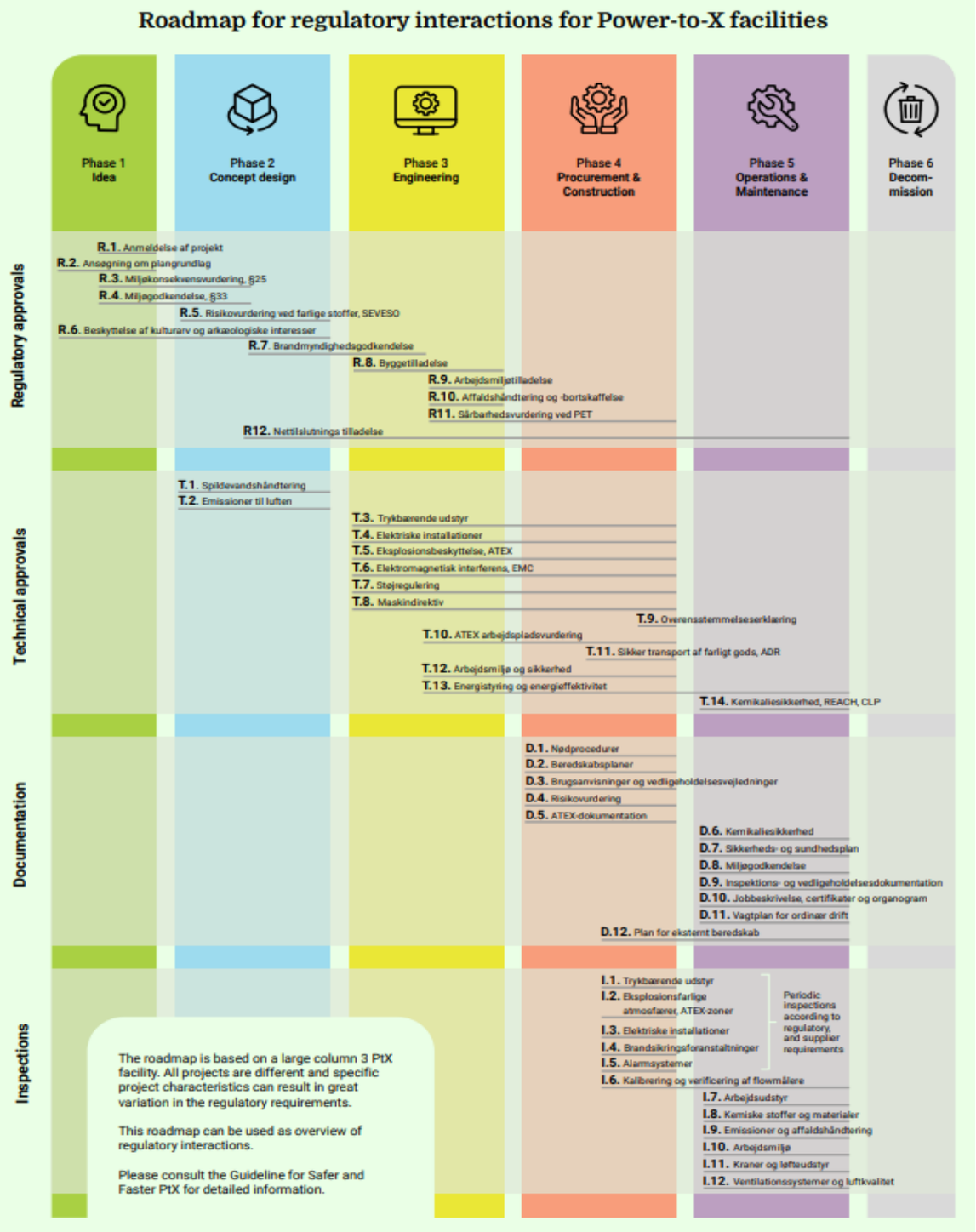
5.2. How Public Involvement Can Be Done

5.3. Example Of A Public Engagement Plan

5.4. Which are the benefits if we do it

CONTENT:

6. APPROVAL PLAN:



CONTENT OF THE GUIDELINE:

7. RISK MANAGEMENT AND ASSESSMENT:

7.1. Fundaments for risk assessment

- 7.1.1. Risk assessment motivation
- 7.1.2. The purpose of the risk assessment
- 7.1.3. Who should be involved
- 7.1.4. Identifying interfaces

7.2. Risk assessment steps

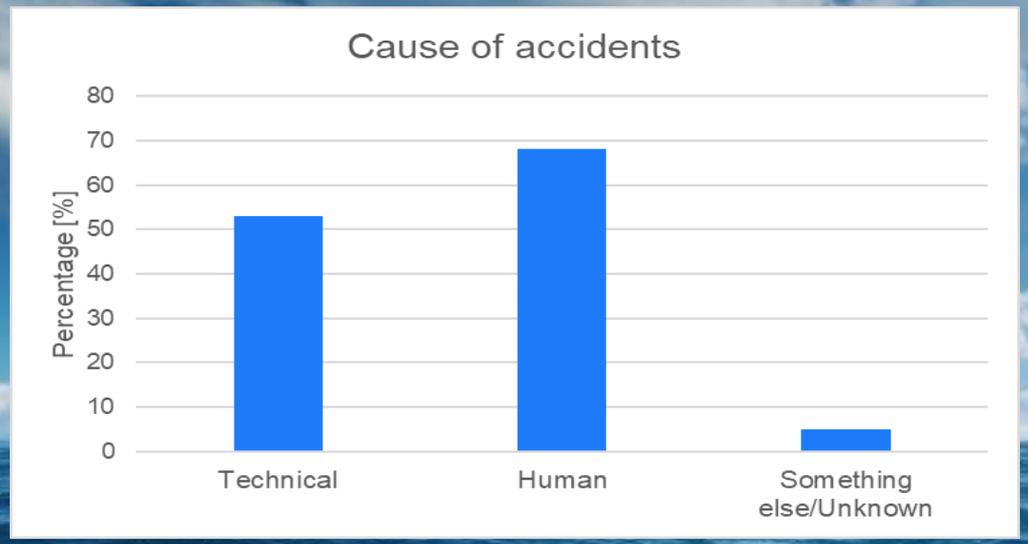
- 7.2.1. Identification
- 7.2.2. How to identify hazards
- 7.2.3. Analyses
- 7.2.4. Evaluation
- 7.2.5. Methodologies for analyses

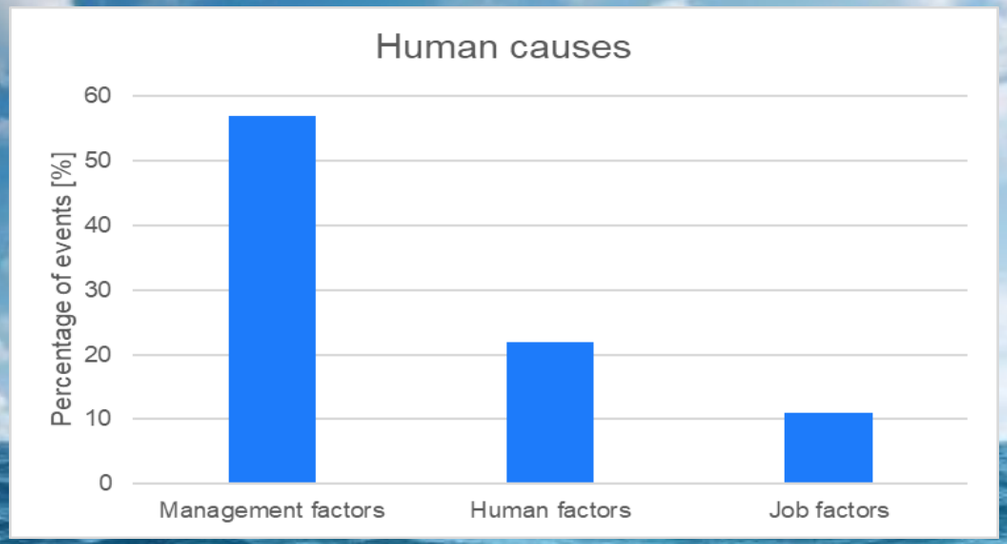
7.3. Identifying interfaces for the assessment

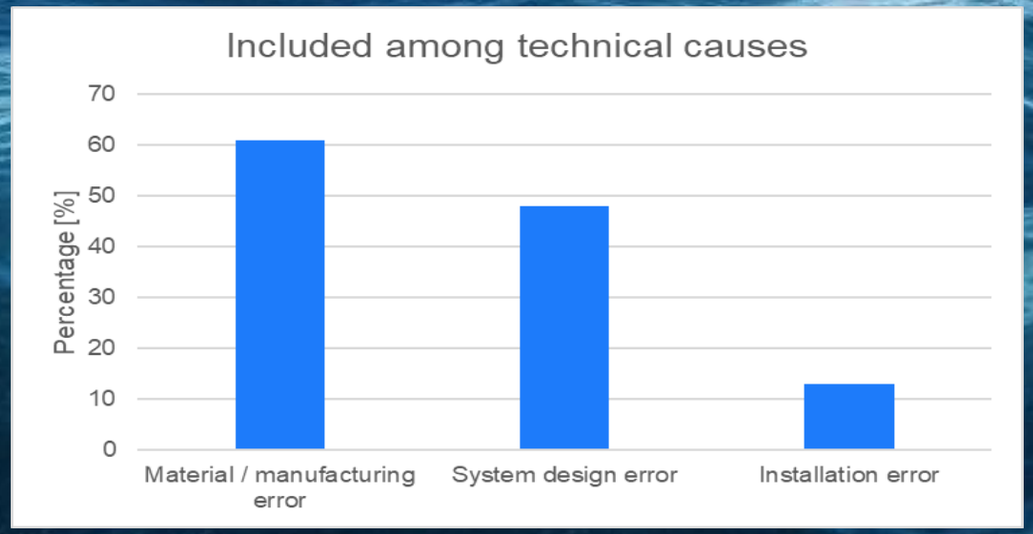
7.4. Interfaces and boundaries of the risk assessment on different levels

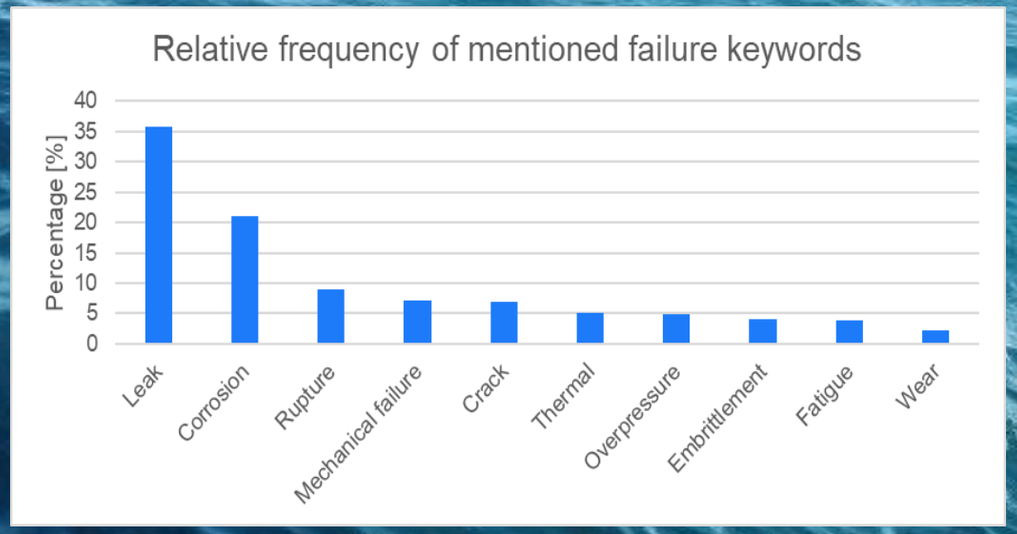
Severity	Consequences				Increasing Likelihood				
					A	B	C	D	E
	People	Assets	Environment	Reputation	Never heard of in the industry	Heard of in the industry	Has happened in the organization or more than once per year in the industry	Has happened at the location or more than once per year in the organization	Has happened more than once per year at the location
0	No injury or health effect	No damage	No effect (no or temporary impact - days)	No impact (local media, no significant concern)	L	L	L	L	L
1	Slight injury or health effect (first aid or medical treatment)	Slight damage	Slight effect (local scale, short term damage – weeks)	Slight impact (short term local concern)	L	L	L	L	L
2	Minor injury or health effect (restricted work case or LTI)	Minor damage	Minor effect (local scale, short term damage – months)	Minor impact (short term national mention)	L	L	L	M	M
3	Major injury or health effect (partial disability)	Moderate damage	Moderate effect (local scale, medium terms damage – years)	Moderate impact (medium term national concern)	L	L	M	M	H
4	< 3 fatalities, or permanent total disabilities	Major damage	Major effect (local scale, long term damage – decades)	Major impact (regional or persistent national concern)	L	M	M	High Risk (Formal Demonstration of ALARP required)	
5	> 3 fatalities	Massive damage / total loss	Massive effect (regional scale, permanent damage)	Massive impact (global concern and media coverage)	M	M	H	H	H

TECHNICAL VS HUMAN: (Data from HIAD 2.0)









CONTENT OF THE GUIDELINE:

8. GENERAL HSE

- 8.1. **PSS Plan** (during construction)
  - 8.1.1. Example of a PSS Plan(Plan for Safety and Health)
- 8.2. Health, Safety and Environment Plan
  - 8.2.1. **HSE Plan** (Example of a list of content for a HSE plan)
- 8.3. PPE (Personal Protection Equipment)
- 8.4. Environmental considerations
  - 8.4.1. In general
  - 8.4.2. Carbon emissions
  - 8.4.3. Resource usage
  - 8.4.4. Waste Management
  - 8.4.5. Land use and habitat protection
  - 8.4.6. Air quality
  - 8.4.7. Energy efficiency
  - 8.4.8. Transportation and logistics
  - 8.4.9. Social and community Impact

DBI

CONTENT OF THE GUIDELINE:

9. COMPLIANCE WITH REGULATIONS:

CONTENT OF THE GUIDELINE:

10. TECHNICAL SAFETY

10.1 Hydrogen at the core
10.2 Technical Safety and Essential Safety Requirements
10.3 Hydrogen Readiness
10.4 European Roadmap on Hydrogen Standardisation
10.5 Regulations and Directives for Technical Safety
10.6 Product Certification and Compliance
10.7 Compliance with Harmonised Standards
10.8 Compliance by Other Options
10.9 Technical Documentation
10.10 Technical Risk Analysis
10.11 The Effect of Hydrogen on Material Properties
10.12 Materials and Component Testing

CONTENT OF THE GUIDELINE:

11. GREEN FUELS DATA:

11.1. Power-to green-Hydrogen
11.2. Power-to-e-fuels
11.3. Power-to green AMMONIA
11.4. Power-to green Methane
11.5. Power-to green methanol
11.6. Power-to green jet-fuel
11.7. Carbon dioxide (CO2)

→ FOR EACH FUEL

- *Hazardous behaviour*
- *Identification*
- *Important properties*
- *Fire hazards*
- *Environmental hazards*
- *Human hazards*
- *Combability with others*
- *PPE*
- *First-aid measures*
- *Storage conditions*

Thank You

Jesper Sjørvad, DBI
Danish Institute of Fire and Security Technology

Mail: jsj@dbigroup.dk
Phone: +45 50 80 96 33