SAFEN – Safe Energy Carriers

SH_2IFT Hydrogen safety workshop - Safe handling of gaseous and liquid hydrogen

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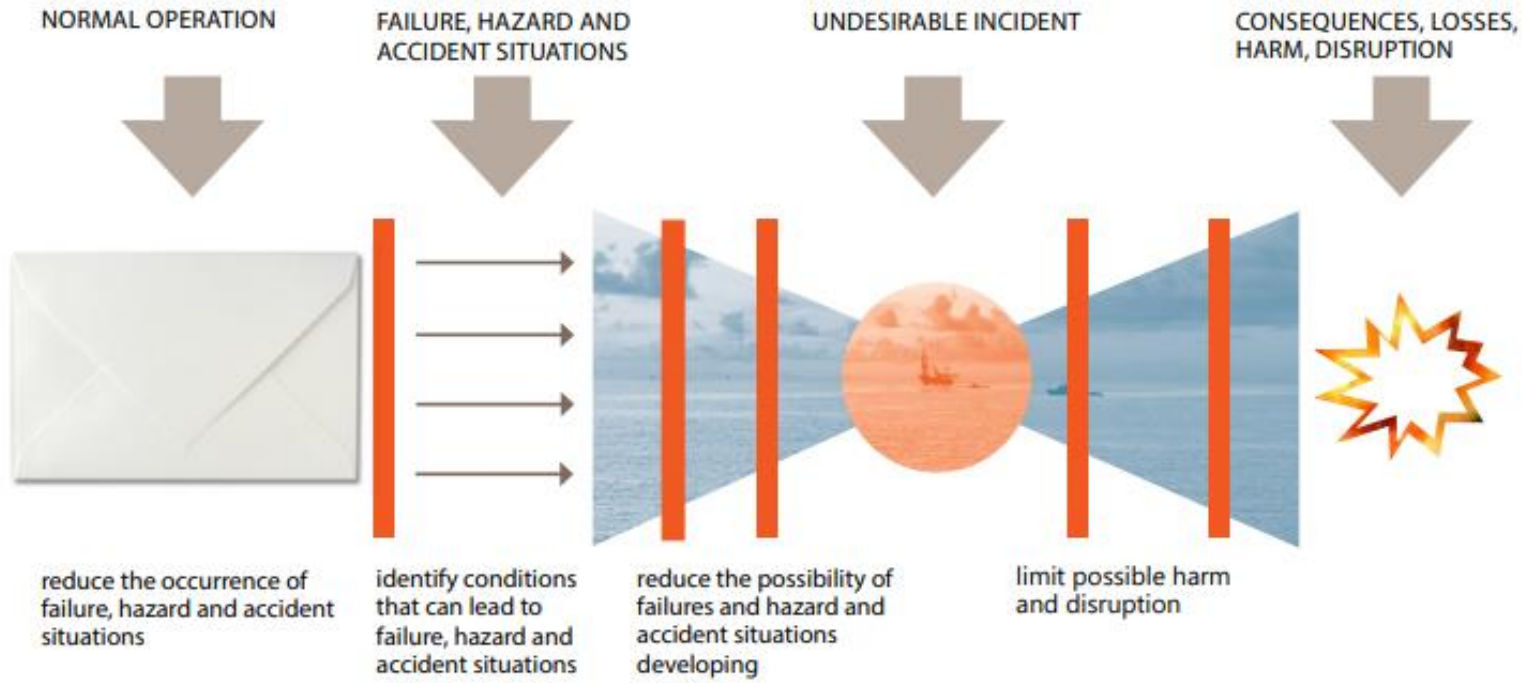
SAFEN motivation

First principle in risk management is to identify the solutions that avoid the undesirable incident

Barriers mitigating consequences are also fundamental, but always second to barriers controlling occurrence



There is a knowledge gap on understanding failures, hazards and accident situations in the renewable industry involving H_2, NH_3 and CO_2

Knowledge gaps on consequence modelling are not addressed by SAFEN. Where input is relevant, we utilize state-of-the-art knowledge on consequence modelling

The figure is taken from PSA's barrier memorandum

SAFEN

Safe Energy Carriers

Closing knowledge gaps, sharing learnings and developing risk-based methodologies for hydrogen, ammonia and CCS facilities

Status: JIP project started up in March 2022

Schedule: Phase 1 (1 year) + Phase 2 (1 year)

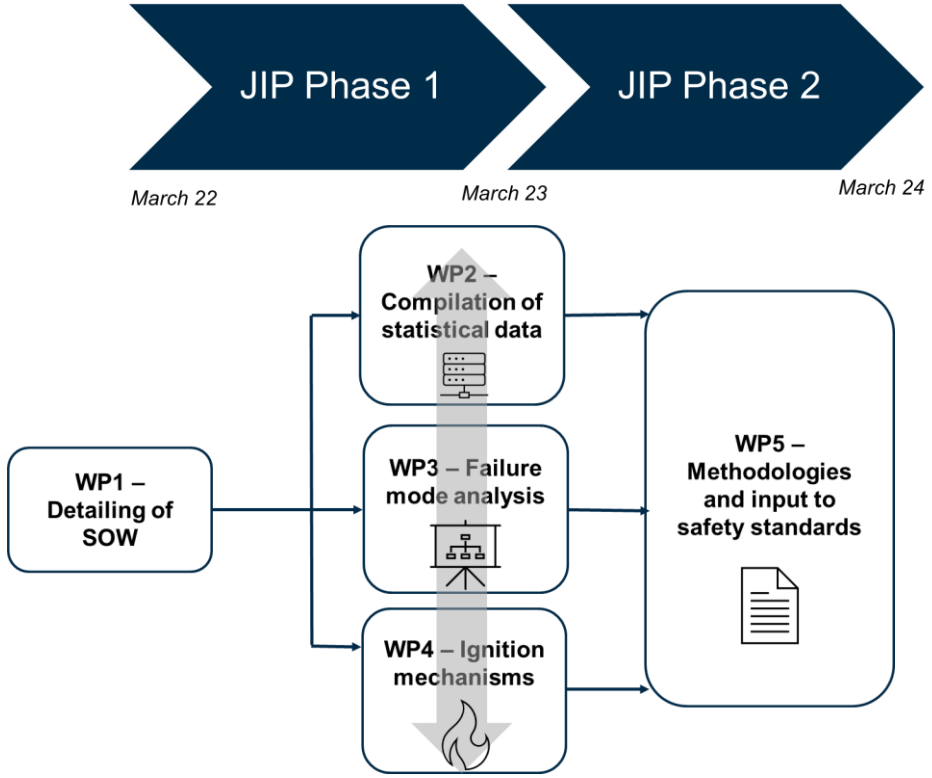
Funding: Industry partners and consultancies (in-kind)

Evaluation of application under public funding programs for Phase 2.

Budget: 10 MNOK for Phase 1

Project owner: Safetec

Partners: Consultancies, Authorities, Energy companies /Asset owners



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Safety challenges in different industries and concepts

Maritime
Need to prove that alternative solution is as safe as conventional technology

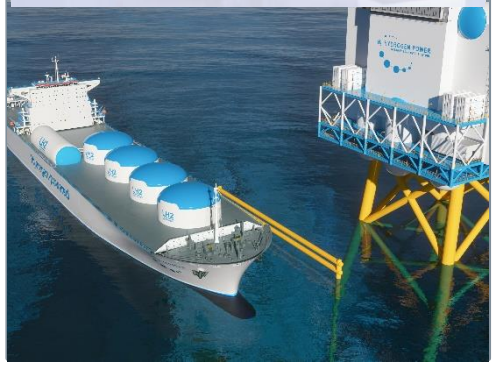
Alternative

Conventional

Offshore concepts
Production, storage and handling of hydrogen and ammonia offshore

Land based production facilities
H_2 and NH_3 production, CCS, Storage of large amounts of H_2, NH_3 and CO_2

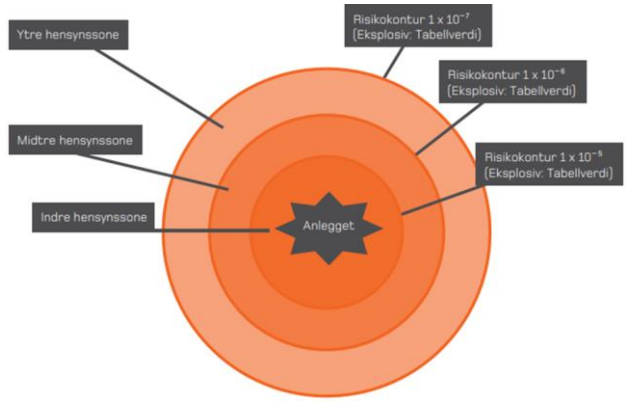
Loading, bunkering and refuelling operations

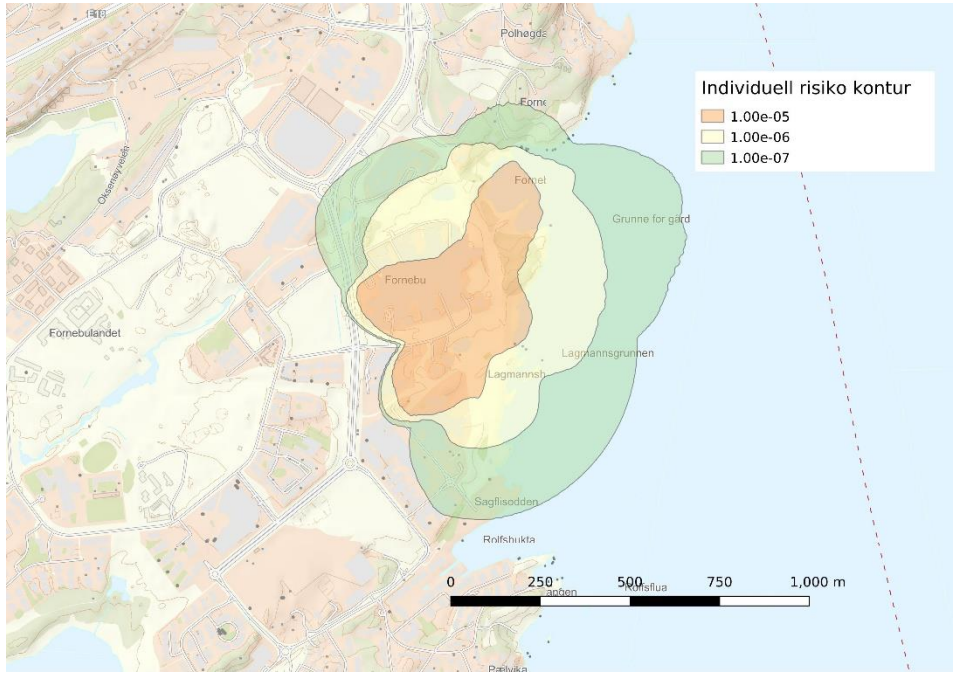


SAFEN will deliver the basis for assessing what is safe enough!

Risk based land use - challenges

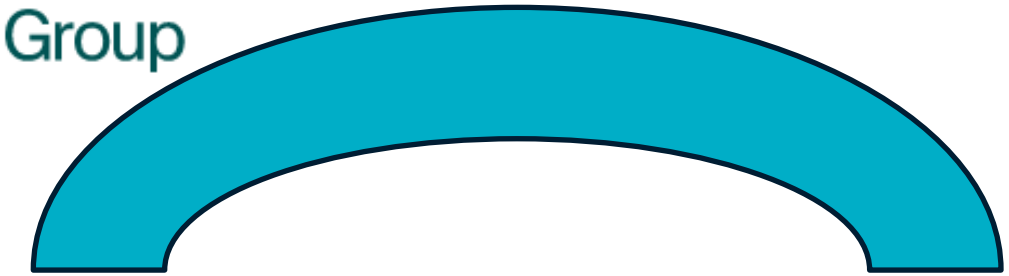
- Safety distances for a facility need to be established in early phase
- At this stage the details in the concept design is not known
- The assessment of safety distances will conclude if the location is feasible, give input to zoning plan processes and authorities
- Late changes in safety distances may lead to project delays
- Overly conservative safety distances may result in difficulties finding a suitable location





Risk countors for an imagined location in Oslo

SAFEN will deliver a methodogogy to establish safety distances in early phase



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Safe Energy Carriers

What do we know about loss of containment and ignition mechanisms for new energy carriers?

What do we need to know about loss of containment and ignition mechanisms for new energy carriers?

A project initiative

to close

knowledge gaps

We are the team building the bridge !

Thank you! Questions?

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