

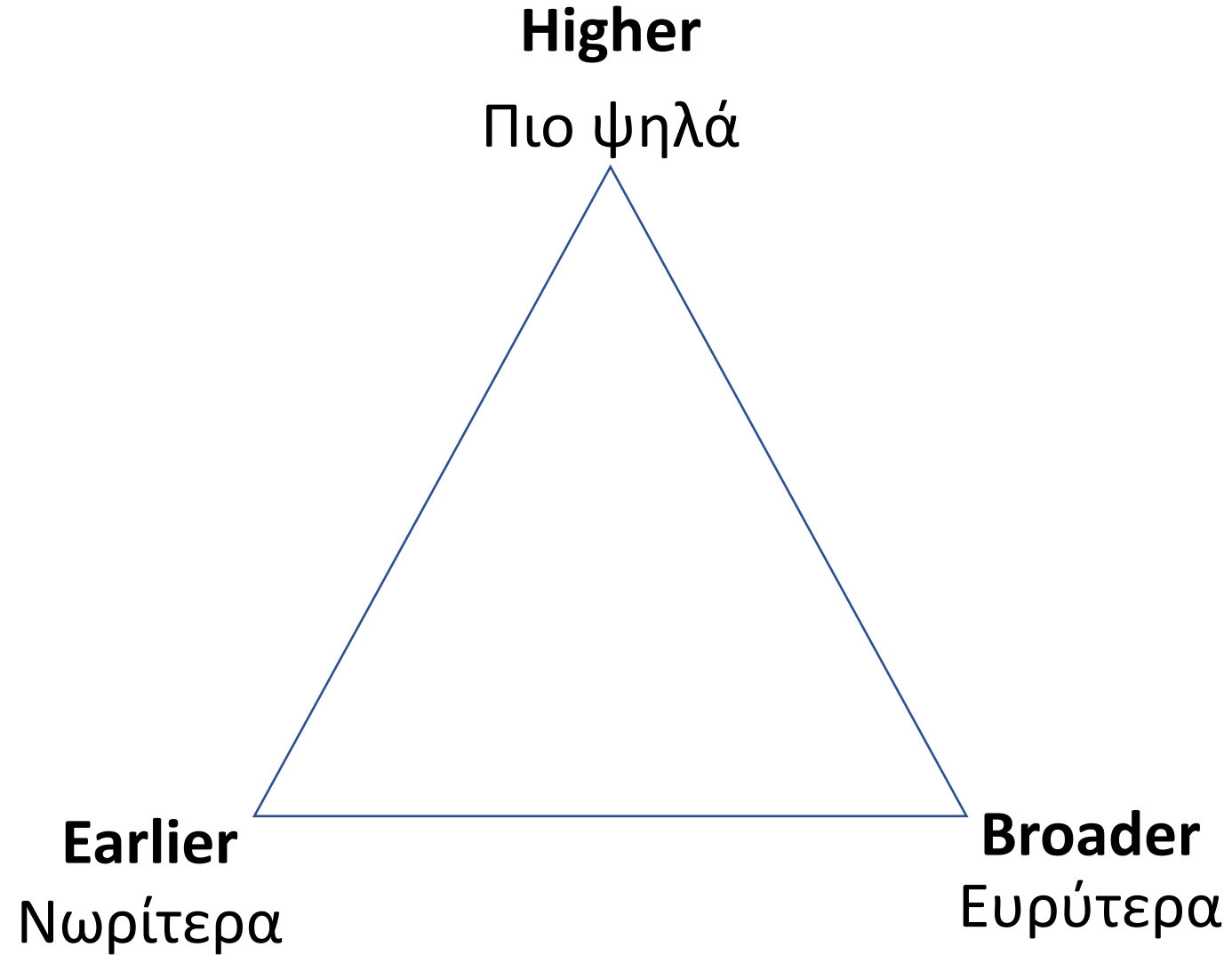
# Evidence-based safety interventions for the prevention of accidents at work - multidisciplinary approaches



COSH2023, Nicosia, Cyprus, 26-05-2023



# TAKE HOME MESSAGE





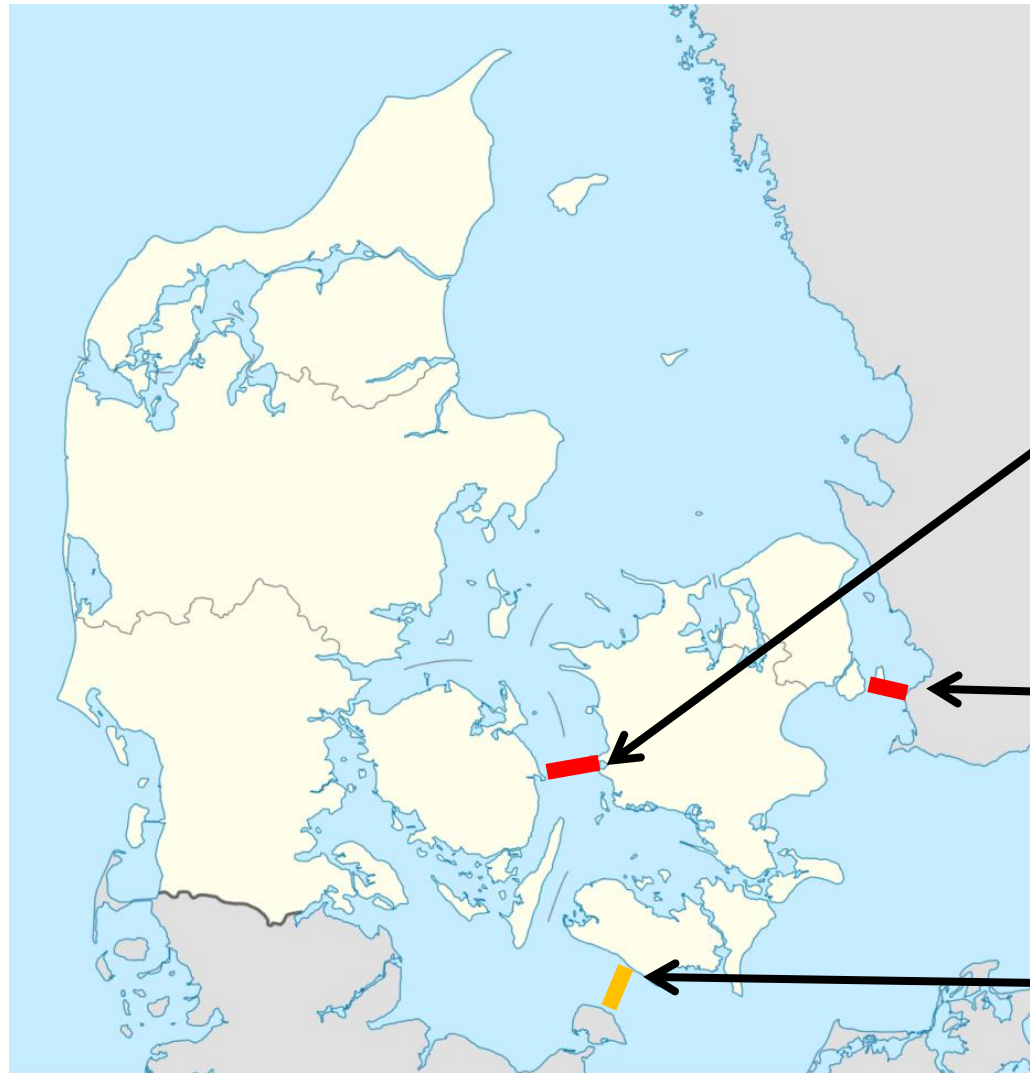
Cyprus



Denmark



# Construction of long bridges and tunnels in Denmark



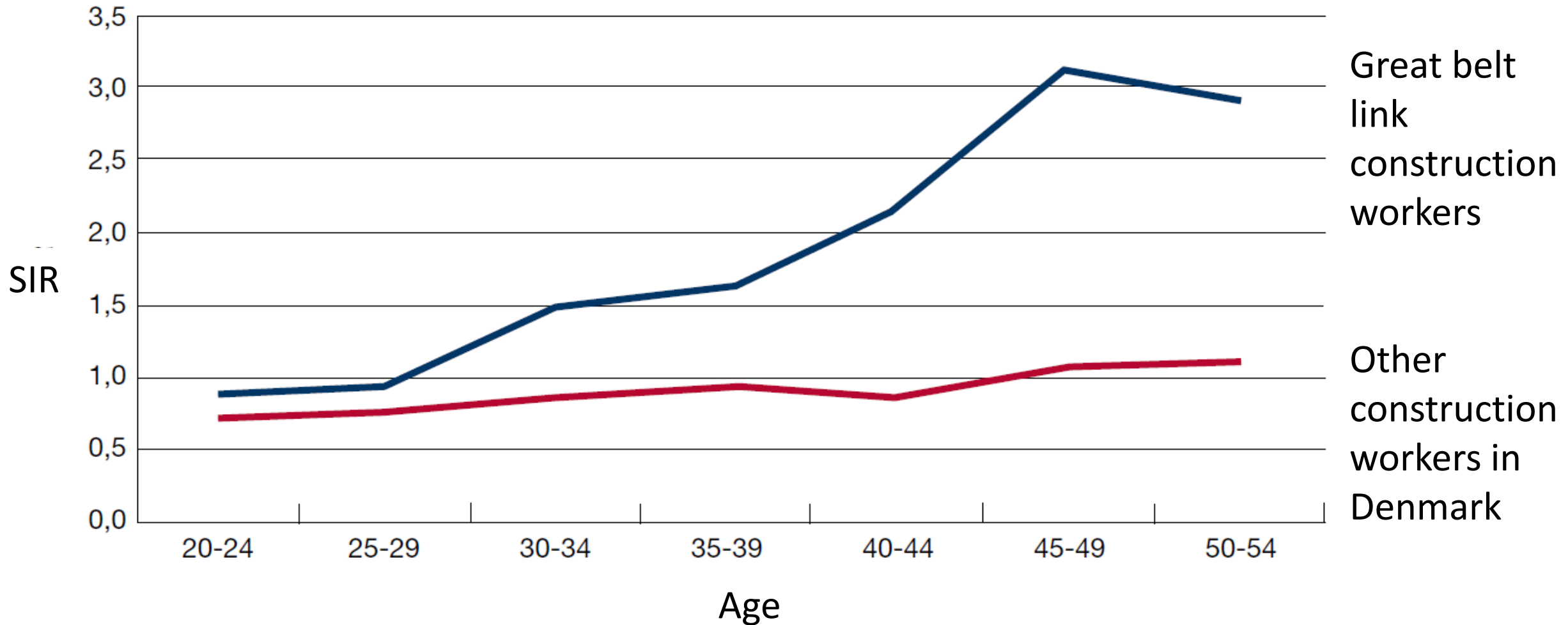
## Denmark

- 400+ islands
- Great Belt Link 18 km (1998)
- Øresund Link 16 km (2000)
- Fehmarn Belt Tunnel 18 km (~2029)

# Great Belt Link – 18 km (construction 1988-1998)



# Great Belt Link – disability retirement



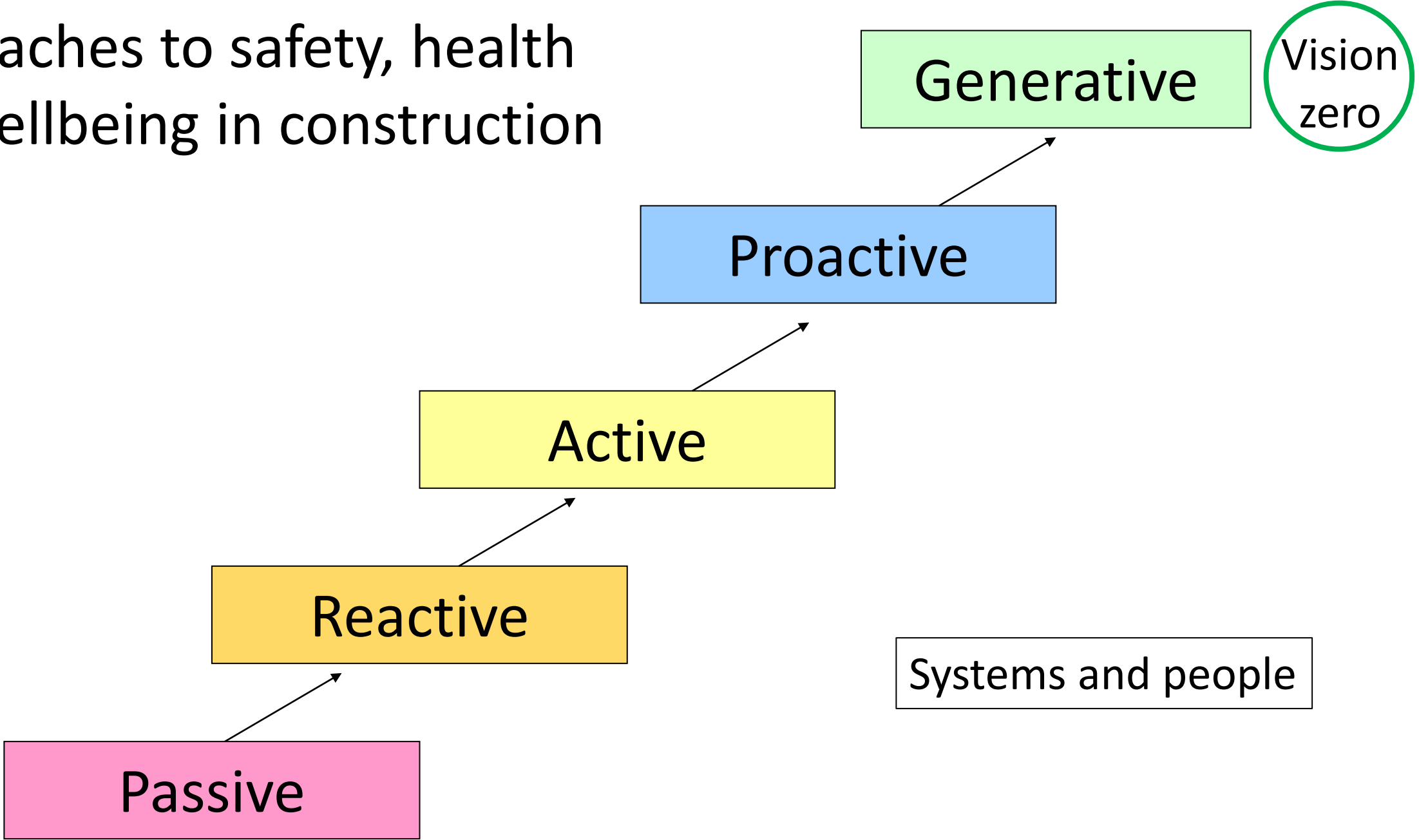
Standardised incidence ratio (SIR=1) for all male workers

# Øresund link

16 km tunnel and bridge from  
Denmark to Sweden

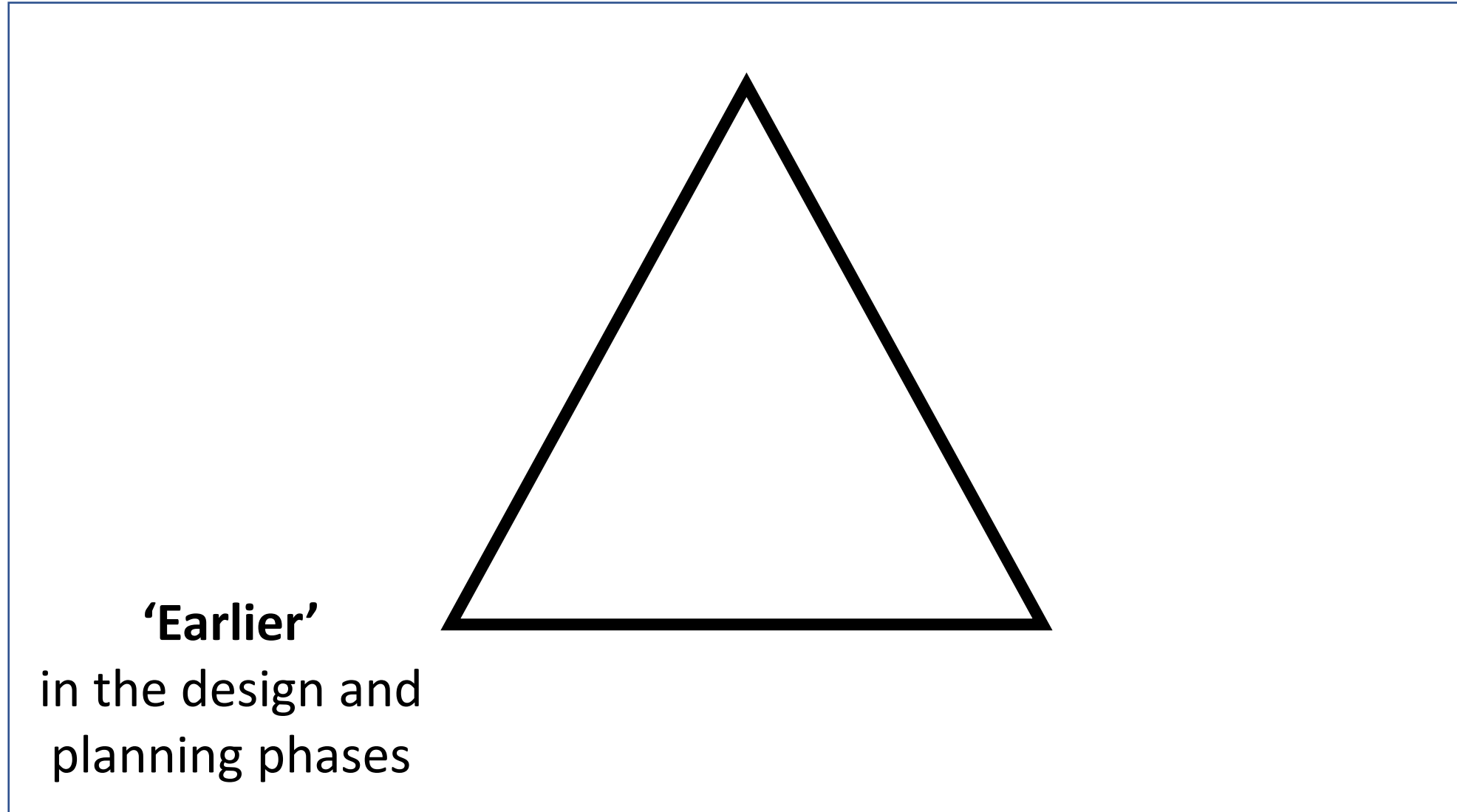


# Approaches to safety, health and wellbeing in construction



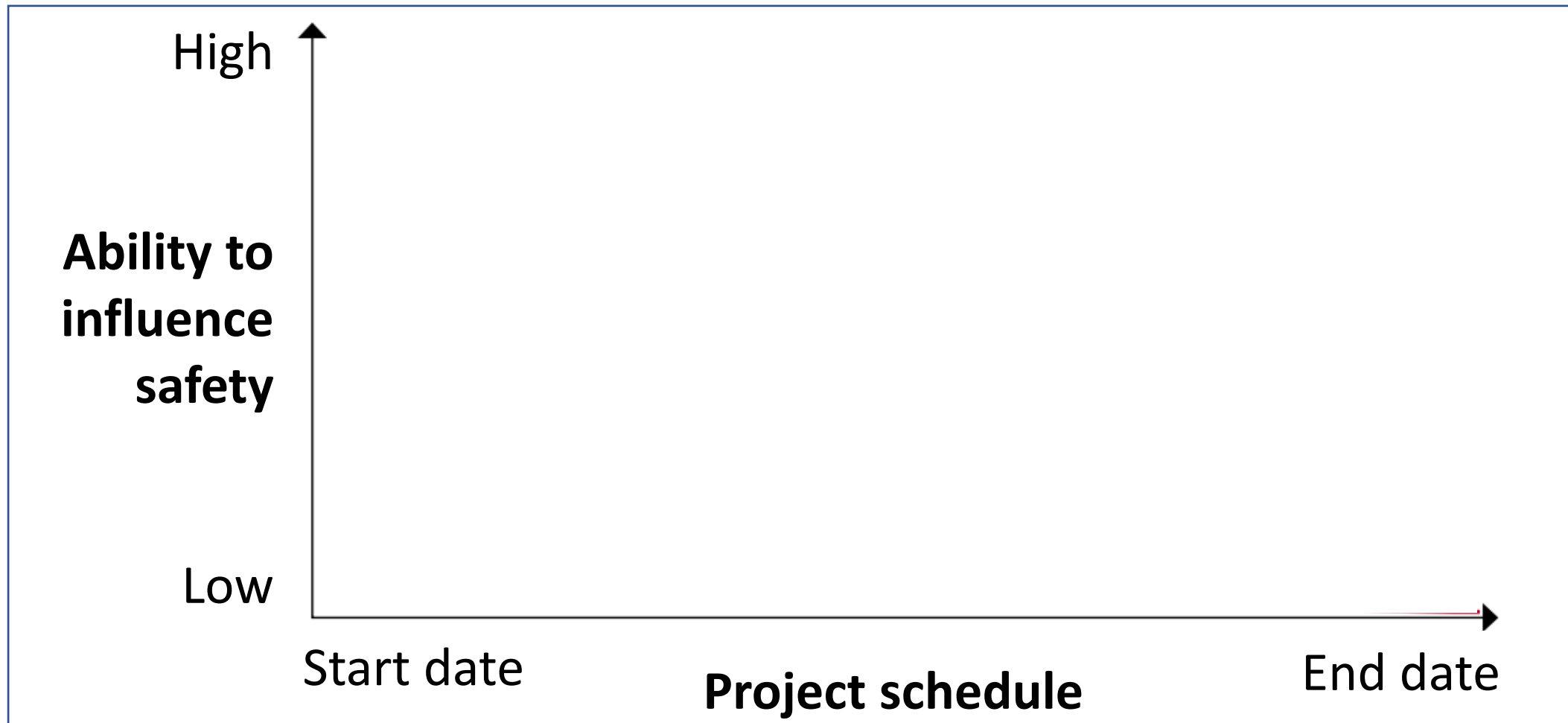


# Improving safety, health and wellbeing in construction



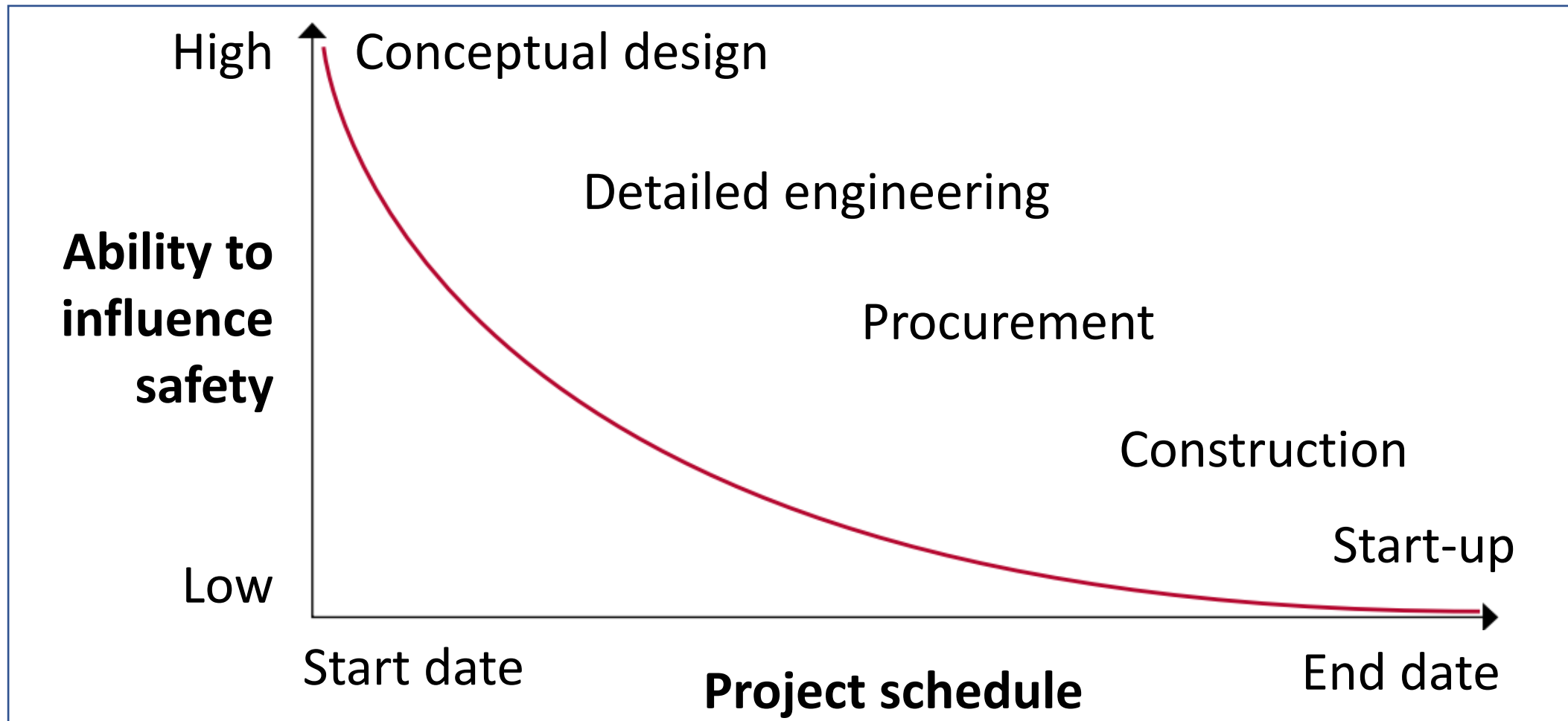
# Safety, health and wellbeing in construction

- **'Earlier'** in the concept, design and planning phases ('Szymberski' curve)



# Safety, health and wellbeing in construction

- **'Earlier'** in the concept, design and planning phases ('Szymberski' curve)



# What works in workplace accident prevention?

- A systematic review of over 60.000 scientific articles and publications
- Studies from 5 continents
- All branches and most injury and accident types
- 100 studies with a variety of scientific study designs

Source: Dyreborg .... Kines (2022) - Campbell Systematic Reviews, 18, e1234

‘Safety interventions for the prevention of accidents at work – a systematic review’

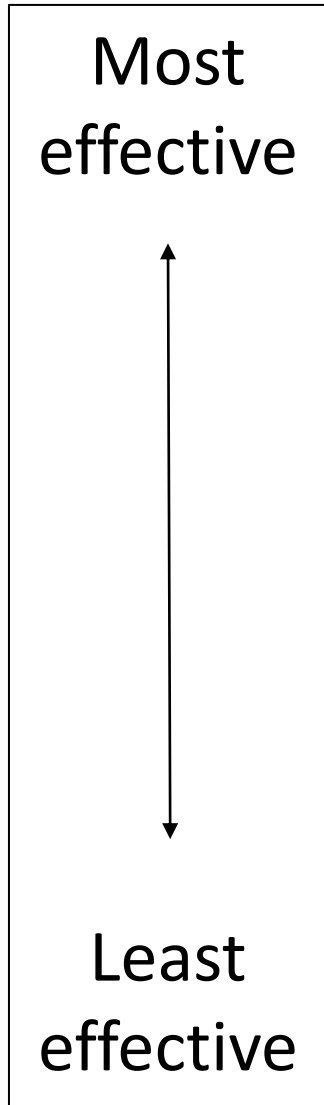
# Accident prevention - what works?

Safety initiatives targeted towards changing:

- Knowledge and attitudes 😞 (*do not work by themselves*)
- Human physiology (e.g. physical training) 😞
- Human behaviour (e.g. safety training) 😞
- Organization 😞
- Regulation 😊 😞
- Safety norms, climate or culture 😊 😞
- Use of technical assistive devices 😊
- Tools and machines (physical) 😊

Integrated  
initiatives  
(combinations)  
😊 😊 😊

# Hierarchy of hazard controls



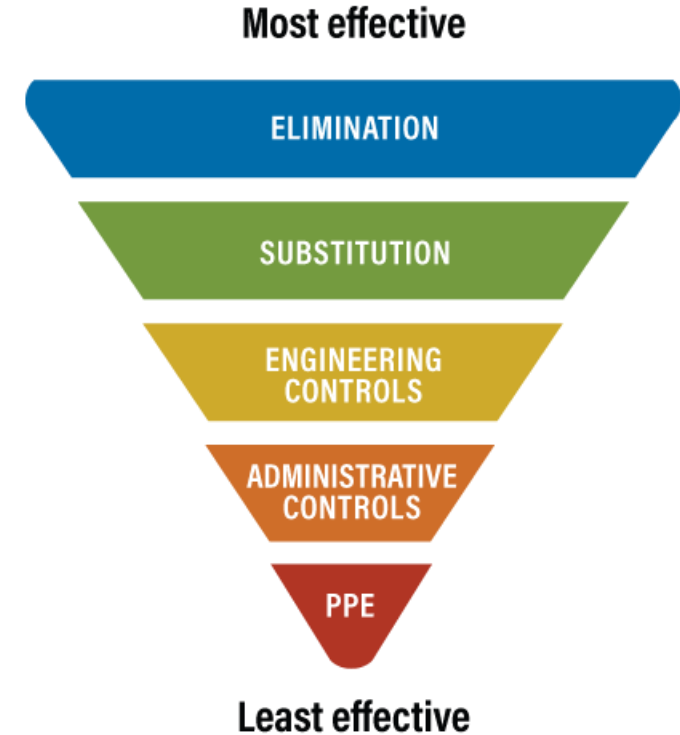
Elimination – remove the hazard

Substitution – replace the hazard

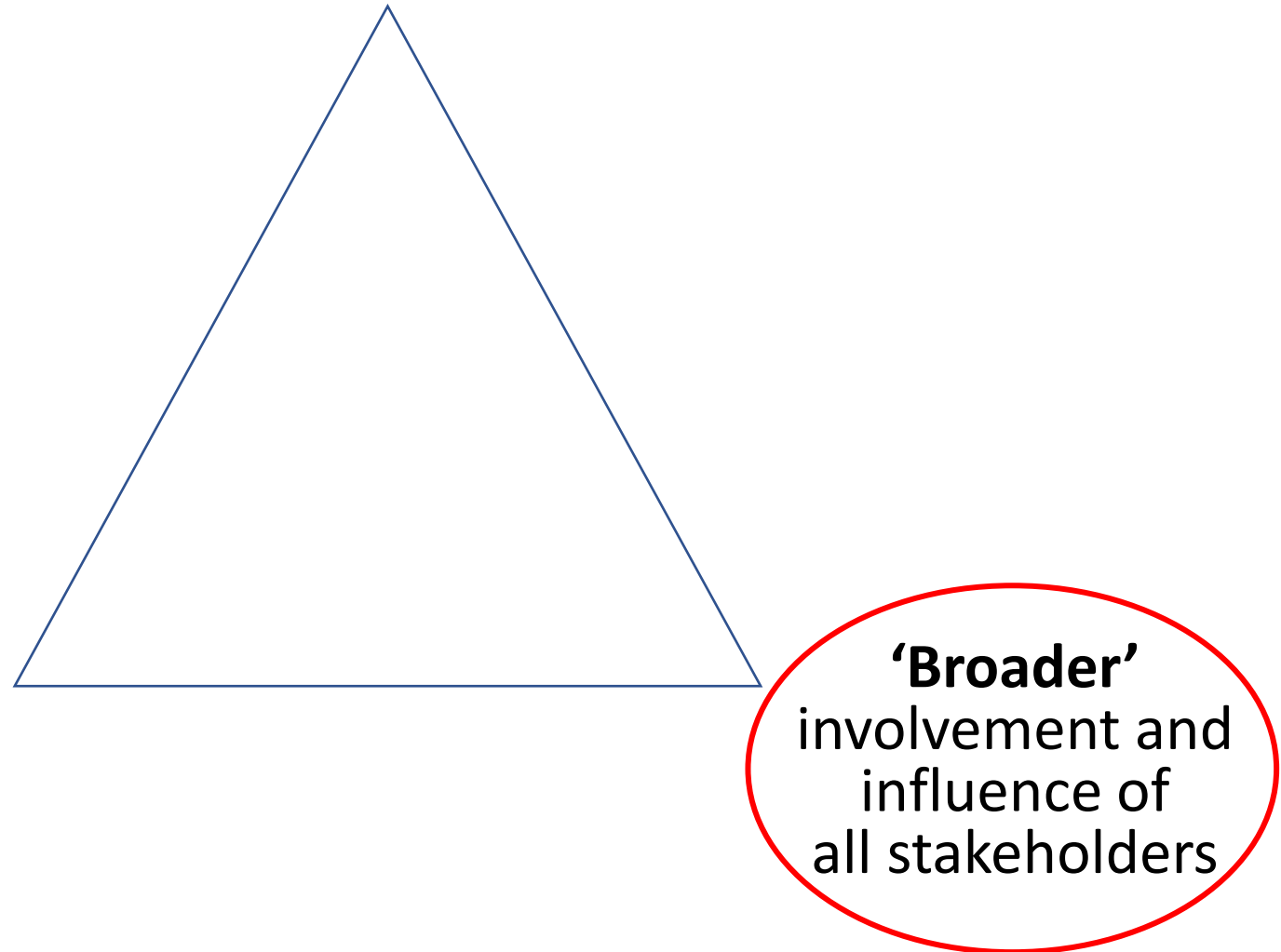
Engineering – control the hazards

Organization – change the way people work

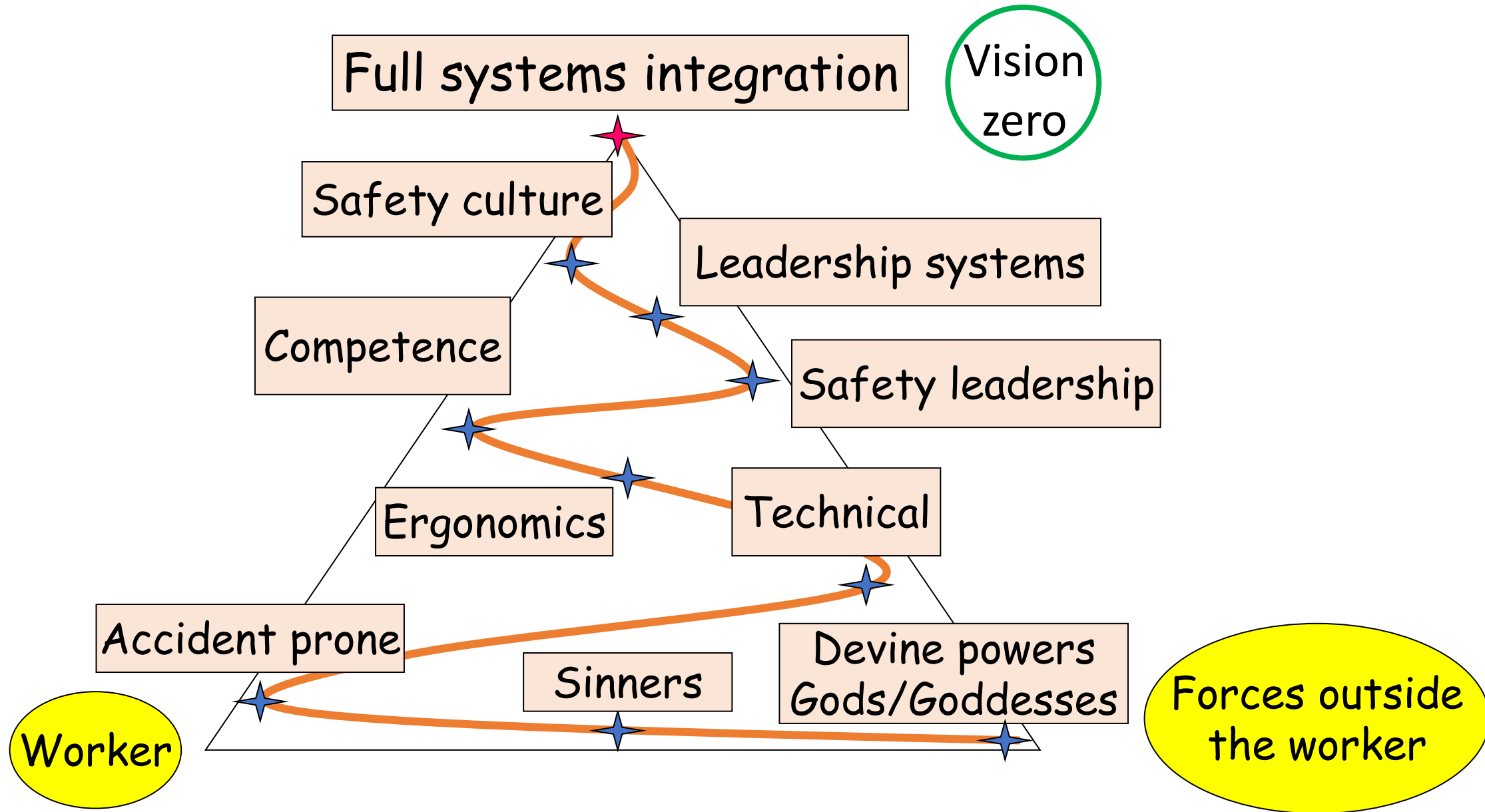
People – protect the worker with education, training, personal protective equipment



# Improving safety, health and wellbeing in construction



# Developments in safety thinking





# 'Vision Zero' companies in Europe - 2015



# EU study – ‘Vision Zero’ companies in 2016

- 7 EU countries, 27 companies
- Interview, questionnaires and national workshops
- 8819 questionnaire respondents
- 66 % workers, 30 % leaders/managers/supervisors
- 13 manufacturing companies (51 % respondents)
- **7 construction companies (28 %)**
- 7 other companies (21 %)



# Traditional safety approach vs. Vision Zero

Safety <b>control</b> strategy	Safety <b>commitment</b> strategy
Safety is a <b>goal</b>	Safety is a <b>journey, a process</b>
<b>Preventing</b> accidents	<b>Creating</b> safety

# Traditional safety approach vs. Vision Zero

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Safety programs	Safety an <b>integrated</b> part of <b>business</b>
Risk <b>management</b>	Business <b>leadership</b>
Safety management <b>systems</b>	Safety <b>culture</b> and learning

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Safety owned by <b>few</b>	Safety owned by <b>all</b>
Safety is a <b>cost</b>	Safety is an <b>investment</b>
Workers are part of the <b>problem</b>	Workers contribute to <b>solutions</b>

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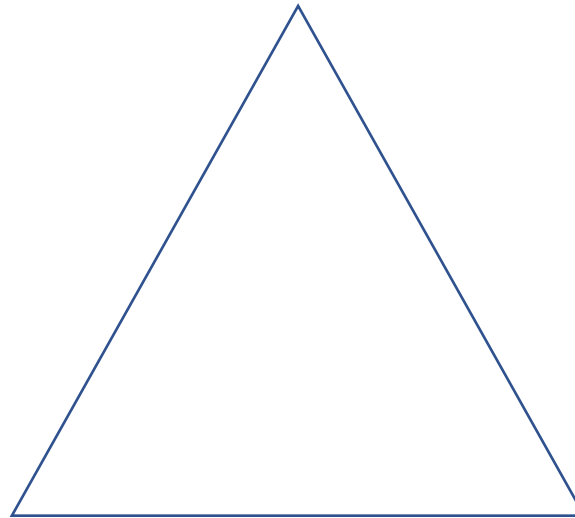
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Incidents are <b>failures</b>	Incidents are <b>opportunities for learning</b>
Benchmark on <b>injuries</b>	Benchmark on <b>good-practice</b> and <b>leading indicators</b>

# TAKE HOME MESSAGE

Improving safety, health and wellbeing in construction

**‘Higher’** up the hierarchy of hazard controls

**‘Πιο ψηλά’** - ιεραρχία των ελέγχων κινδύνου



**‘Earlier’** in the design and planning phases

**‘Νωρίτερα’** Στάδια σύλληψης της ιδέας, μελέτης και σχεδιασμού / προγραμματισμού

**‘Broader’** involvement and influence of all stakeholders

**‘Ευρύτερα’** Συμμετοχή και επηρεασμός όλων των ενδιαφερομένων

# Further reading ...

- Dyreborg ... Kines (2022): Safety interventions for the prevention of accidents at work – a systematic review. *Campbell Systematic Reviews*, 18, e1234.
- Zwetsloot G, Leka S, Kines P, Jain A (2020). Vision Zero: Developing proactive leading indicators for safety, health and wellbeing at work. *Safety Science*, 130, article 104890, 1-10.
- Zwetsloot G, Leka S, Kines P. (2017). Vision Zero: from accident prevention to the promotion of health, safety and wellbeing at work. *Policy and Practice in Health and Safety*, 15(2), 88-100.
- Zwetsloot, Kines, Wybo, Ruotsala, Drupsteen & Bezemer (2017). **Zero Accident Vision** based strategies in organisations: Innovative perspectives. *Safety Science*, 91, 260-268
- Zwetsloot, Kines, Ruotsala, Drupsteen, Merivirta, Bezemer (2017). The importance of commitment, communication, culture and learning for the implementation of the **zero accident vision** in companies. *Safety Science*, 96, 22-32.







Thank you!

Σας ευχαριστώ για την προσοχή σας

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