

## Proactive occupational safety indicators in construction



NIVA online webinar  
Practical perspectives on safety promotion in construction  
13-02-2026



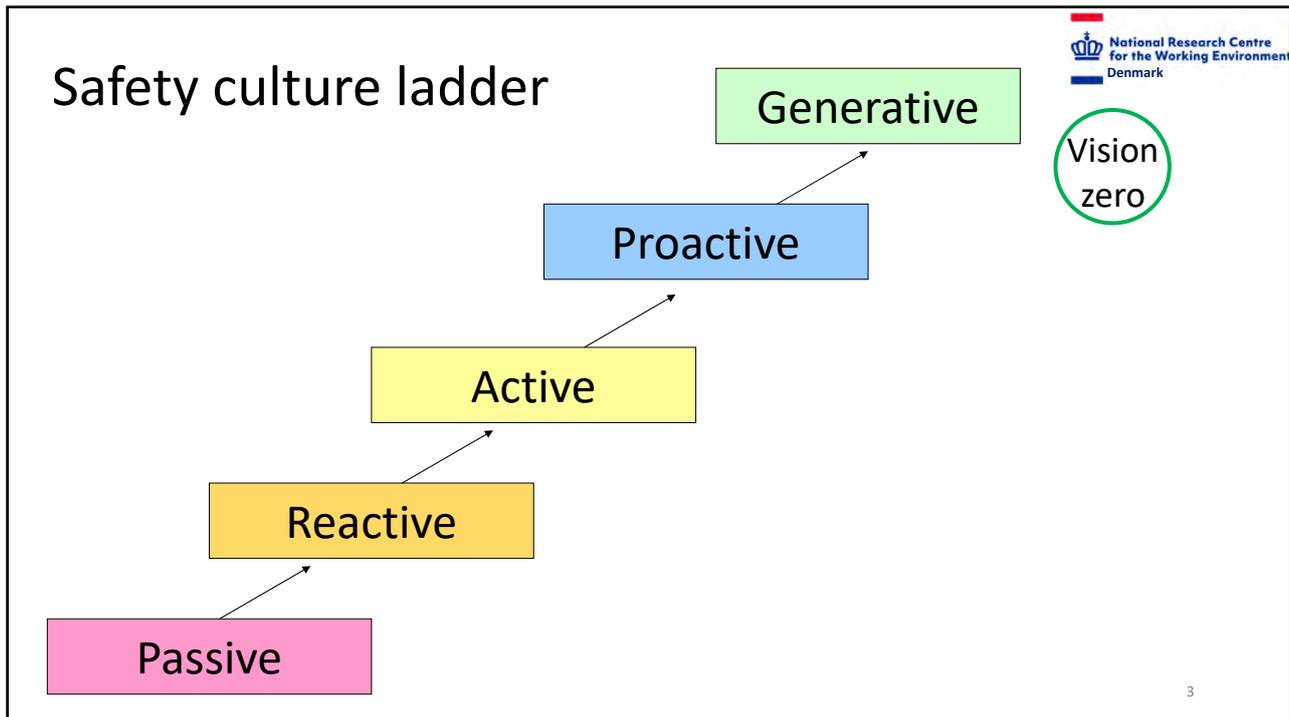
**Pete Kines, PhD**  
Senior researcher  
Division of Safety Research  
pki@nfa.dk



## Appetizers for the NIVA course in Malmø

Practical perspectives

1. Safety culture maturity ladder
2. Vision Zero for safety in construction
3. Leading safety indicators
4. 'Safety observer' app for construction



## EU study – ‘Vision Zero’ companies

- 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 %)

The map highlights the seven countries from which data was collected: Denmark, Finland, Poland, Czechia, Slovakia, Hungary, and Romania.

*Zwetsloot, Kines et al., Safety Science, 2017 a & b*

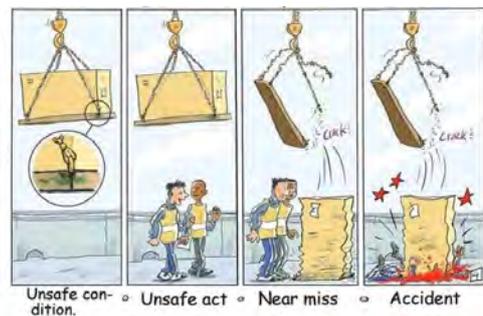
## Traditional safety approach vs. Vision Zero

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
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
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>
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>

## Measuring safety and health at work

### Traditional goals measured by reduction in:

- Accidents and injuries
- Sickness absence
- Disease
- Insurance and compensation costs
- Early retirement



### Leading indicators and actions

- Proactive
- Preventive
- Predictive



## Methods – international collaboration

- Literature **review**
- **Companies** from around the world – small, medium and large, cross-sectoral
- International **sector organizations**: mining, construction, energy, trade and transportation
- Safety and health **educators** and **trainers**
- Safety, health and wellbeing **researchers**



7

## Inputs from literature and industries

	Safety, health and wellbeing themes	Leading indicators	
		Literature	Industry
1	Leadership commitment	12	6
2	Identify and control hazards and risks	7	10
3	Targets and programmes	14	8
4	Ensure SHW system	10	24
5	Well-designed equipment and workplaces	1	5
6	Qualifications, competences	10	8
7	Investing in people and participation	10	11
	<b>Totals</b>	<b>64</b>	<b>72</b>

8

## Evidence from the London Olympics 2012

100 million working hours - low accident rates - no fatalities

### Five success factors

- Visible impactful leadership
- **Daily activity briefings**
- Following-up near misses
- Taking action on reports
- Recognition and reward



9

## Leading indicators

What do we count? How do we count it?

- ✓ Policy: SHW integrated
- ✓ Education
- ✓ Training
- ✓ Briefings (number, frequency)
- 
- ✓ Follow-up
- ✓ Action
- ✓ Evaluation
- ✓ Learning



Briefings

Toolbox meetings



Safety rounds

# The 14 Proactive Leading Indicators

- 1.1 Visible leadership commitment
- 1.2 Competent leadership
- 2.1 Evaluating risk management
- 2.2 Learning from unplanned events
- 3.1 Workplace and job induction
- 3.2 Evaluating targeted programmes
- 4.1 **Pre-work briefings**
- 4.2 Planning and organization of work
- 5.1 Innovation and change
- 5.2 Procurement
- 6.1 Initial training
- 6.2 Refresher training
- 7.1 Suggestions for improvement
- 7.2 Recognition and reward

## 14 Fact sheets

**Indicator No. 4.1 Pre-work briefings**  
 Rule No. 4 Define targets - develop programmes

**Aims**  
 Integrating SWB in pre-work briefings allows leaders and workers to identify current specific hazards, risks and prevention measures. This shows leadership focus and commitment to SWB, and a commitment to consulting the active participation and influence of workers.

**Key concepts**  
 The work briefings are short, regular meetings between leaders and workers held directly before work tasks begin. The briefings may be planned or spontaneous/ ad-hoc. The discussions deal with previous, current and upcoming work, including danger or existing SWB. Attention is paid to mutual identification and control of hazards and risks and other issues that deserve special attention as an integral part of work and business.

**Good practices**  
 1. Ensure that pre-work briefings are a normal part of workers' job description, and make them accountable for it.  
 2. Reach an open atmosphere, where new-way communication is central. Ask questions to trigger workers to think for themselves, and employ active listening skills. Be aware of positive and negative body language, and be culturally and linguistically sensitive.  
 3. Use the briefings to confirm or update the job SWB risk analysis.  
 4. Focus on safety issues, health (such as exposure to noise, chemical substances, heavy lifting) and wellbeing (for example mental support and teamwork, time pressure and work load).  
 5. Pay attention to challenges that may arise during the work and those known from previous experiences, including unexpected situations from the work, dangerous situations, near misses, exposure to hazardous chemical, physical or biological factors, and cases of discrimination or bullying.

**Limitations**  
 One work briefing (hourly) or more (weekly, daily) is possible.

**How to measure (see more details in the ISA guide to proactive leading indicators)**  
**Option 1:** Are SWB an integral part of discussions in pre-work meetings? (Yes/No)  
**Option 2:** How often are SWB an integral part of discussions in pre-work meetings? (Once or more times, frequently, occasionally, rarely, never or very rarely)  
**Option 3:** Determine the number of pre-work meetings held (per group/ leader) per month over the last 12 months in which each aspect of SWB was an integral part of the discussions. Some meetings may have included all three issues, whereas others may have focused on only one or two of them. The frequency of the briefings will depend on the hazards and variations in tasks and the workplace.

**Example option 3:** Assuming SWB should be addressed in pre-work briefings each working day - each 20 briefings held in the first month safety was an integral part of the discussions in 12 of the briefings, health in 6, and wellbeing in 2.

**Graph:** A line graph showing 'Number' on the y-axis (0 to 20) and 'Last 12 months' on the x-axis (1 to 12). Four lines represent: 'briefing' (fluctuating between 10 and 20), 'safety' (fluctuating between 5 and 15), 'health' (fluctuating between 2 and 10), and 'wellbeing' (fluctuating between 1 and 5).

- ← Aims
- ← Key concepts
- ← Good practice
- ← Limitations
- ← How to measure (3 options)
- ← Example of graphical results

## Three options for using the indicators

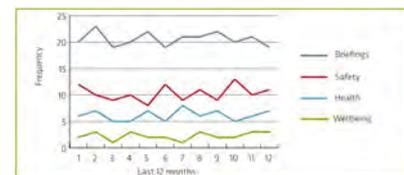
**Example indicator 4.1:** Are Safety, Health and Wellbeing an integrated part of discussions in pre-work briefings?



**Option 1:** YES / NO

**Option 2:** Frequency estimation - scale of 0 - 4, 'Never' to 'Always'

**Option 3:** Quantitative measurement – actual frequency or percentage



## Working with leading indicators

- Identify your strengths and needs for improvement in SHW
- Discuss priorities with leaders and workers
- Adapt the indicators – make them relevant for your context and resources
- **Get experience with one or two indicators**

## Proactive leading indicators

- Guide with 14 fact sheets
- <http://visionzero.global>

- Available in:
  - English
  - French
  - German
  - Japanese
  - Russian
  - Spanish
  - Ukrainian
  - Etc.



15

## Scientific publication

- Zwetsloot, Leka, Kines, Jain (2020). Vision Zero: Developing proactive leading indicators for safety, health and wellbeing at work. *Safety Science*. 130, 104890, 1-10.

- Open access (free to download)



Vision zero: Developing proactive leading indicators for safety, health and wellbeing at work

Gerard Zwetsloot<sup>a</sup>, Saverio Leka<sup>b,c</sup>, Peter Kines<sup>d</sup>, Aditya Jain<sup>e</sup>

<sup>a</sup> Safety Research & Consulting, Ankerhusenej  
<sup>b</sup> Carl Lewné Business School, University College Cork, Ireland  
<sup>c</sup> Centre for Organizational Health & Resilience, School of Health, Behaviour & Society, University of Brighton, UK  
<sup>d</sup> The National Research Centre for the Working Environment, Denmark  
<sup>e</sup> Health, Safety & Environment, University of Birmingham, UK

### ARTICLE INFO

**Keywords:**  
 Safety Science  
 Occupational health and safety  
 Research in practice  
 Organizational culture

**DOI:** 10.1016/j.ssci.2020.104890

### ABSTRACT

The importance of leading an operational safety and health (OSH) indicators in complementing lagging indicators in an emerging topic for the performance of a prevention culture in organizations. The purpose of this paper is to describe the development process of a set of proactive leading indicators for safety, health and wellbeing (SLHW) at work, which was carried out as part of the International General Assembly (IGA) Vision Zero Strategy. Principles of integrated knowledge transfer and exchange between research, policy and practice were followed to build the conceptual and development phases, and a novel evidence approach was applied across four stages: identifying a literature review and input from industry's quantitative research through an online survey; a qualitative evidence through feedback from organizational representatives and key stakeholders and a consensus building workshop with the IGA Steering Committee. A set of sixteen indicators was proposed to complement the OSH 'Three Zero strategy', two in relation to each of a more precise aim for preventing OSH at work. The indicators focus with integrating each aspect of OSH in e.g. safety and competent leadership, prevention, job work findings, ensuring the managerial and strategic programmes, leading their operational results, maintenance and change, work organization, understanding and evidence finding. Results can be presented qualitatively and quantitatively as a 'yes' or 'no' response, on a Likert or continuous (five-point) scale, or with frequency and percentages. The indicators are designed for use by both small and large organizations across all sectors, and can be used for benchmarking and as key performance indicators. They are not only intended to better detect and control OSH processes, but also to support the development of a prevention culture. Recommendations are provided on how the indicators can be refined and improved through future research.

### 1. Introduction

'Vision Zero' (VZ) at work is a multidisciplinary approach to prevention that integrates the three aspects of safety, health and well-being (OSH). It is based on the assumption that all accidents, harm and work-related ill health are preventable. VZ is the mission and commitment to create and maintain safe and healthy work and to prevent all accidents, harm and work-related ill health in order to achieve eradication of OSH. VZ should be understood as a journey, a process towards the goal, it is also a cultural-based vision implying that work should not negatively affect workers' OSH, and if possible, should help them maintain or improve their OSH and covering their well-being, competence and employability (Zwetsloot et al., 2017a). VZ is regarded as a consistent strategy (Zwetsloot et al., 2017a; Zwetsloot et al., 2017a), which

implies that the process of cultural development is driven by the commitment of both (top) leaders and workers, to the implementation of VZ commitments, communication, culture, and learning, are key aspects (Zwetsloot et al., 2017a). A continuous strategy can start at any level of OSH performance, and trigger a continual improvement process, that requires that VZ is reviewed and a large variety of organizations, not only for the workplace intervention, but also for other organizational

This paper describes the development of a set of proactive leading indicators for OSH for the International Social Security Association (ISSA), ISSA and its member nations the prevention launched their VZ strategy and the OSH Global VZ campaign in September 2017 for the XVI world congress on safety and health at work in Singapore, the strategy and campaign are run by ISSA partners in more than 90

<sup>\*</sup> Corresponding author at: Carl Lewné Business School, University College Cork, College Road, T12 XMP Cork, Ireland.  
 E-mail address: [gerard.zwetsloot@ucck.ie](mailto:gerard.zwetsloot@ucck.ie) (G. Zwetsloot).

Received 05 October 2020 and revised 15 October

Received 12 May 2020; Accepted 14 June 2020

0925-7535/© 2020 The Author. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

16

## Safety Observer app (version 3.0)



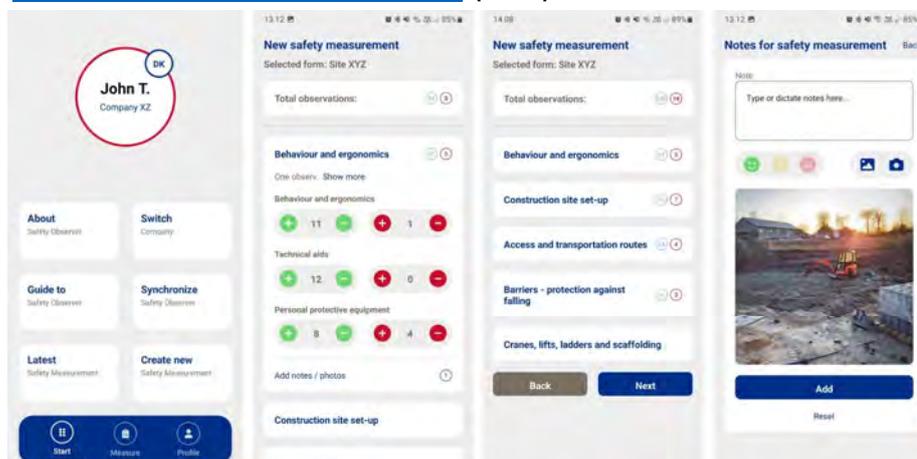
- Measuring compliance to on-site safety conditions and behaviours
- For use in systematic safety rounds



## Safety Observer (version 3.0) App for systematic safety rounds



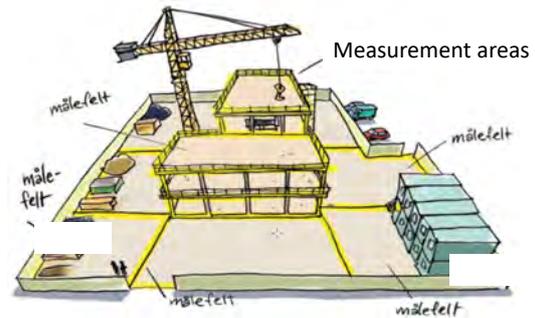
- <https://safetyobserver.dk>
- <https://nfa.dk/safetyobserver> (info)



18

## Measuring compliance to on-site safety conditions and behaviours

- Behaviour & ergonomics
- PPE & technical assistive devices
- Signs, labels & warnings.
- Equipment & tools
- Order and tidiness
- Etc.



- **Make your own lists!!**

Thank you for your attention

Hope to see you in Malmø



Pete Kines  
pki@nfa.dk