# The role of Human Factors and Ergonomics in providing decent work.

An update from the ILO Report Writing Committee

IEA Council Meeting

October 29, 2025

# Background

- Existing Maximum Weight Convention, 1967 (No. 127), and the Maximum Weight Recommendation, 1967 (No. 128) requires revision to maintain relevance
- 2021: Principles and guidelines for human factors/ergonomics (HFE) design and management of work systems
  - Prepare for tripartite meeting of experts in 2022 to discuss the scope of issues to be addressed by standard setting
- 2023: Review report on laws and practice related to human factors /ergonomics and manual handling at the workplace
  - Provide an overview of HFE-related legislation, standards, and guidance documents in selected countries and regions across the globe
  - Provide useful technical background for the preparation of ILO's normative work on workplace HFE and manual handling of weight, International Labour Conferences in 2028-29

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# Objective

**Terms of Reference**

**Report on Ergonomics and Manual Handling**

- The main goal is to prepare a technical report that will serve as a background report to draft technical guidelines for a tripartite meeting of experts on ergonomics and manual handling.
- Provide a comprehensive report on current workplace ergonomics and manual handling ensuring that the meeting is informed by the latest scientific and practical insights
- The goal is to support the expert discussion and contribute to the development of technical guidelines on the subject

# The Core Writing Team

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A list of 33 reviewers has been compiled to provide feedback on the various drafts.

# Process and Timeline

# Report Overview

- Section 1: Introduction
- Section 2: HFE Overview
- Section 3: Applications of HFE
- Section 4: Non-Standard Work Conditions
- Section 5: Sectors of Work Population
- Section 6: System Stakeholders
- Section 7: Future of Work

# Section 2: HFE Overview

- HFE aims to ensure the well-being of humans in the system while optimizing system performance.
- HFE is a human-centred approach where system performance is viewed holistically as a function of interactions between humans and other system components.
- HFE is design-driven and evidence-based, by designing or re-designing system components to better fit or accommodate human capabilities, limitations, and needs.

# Section 2: HFE Overview

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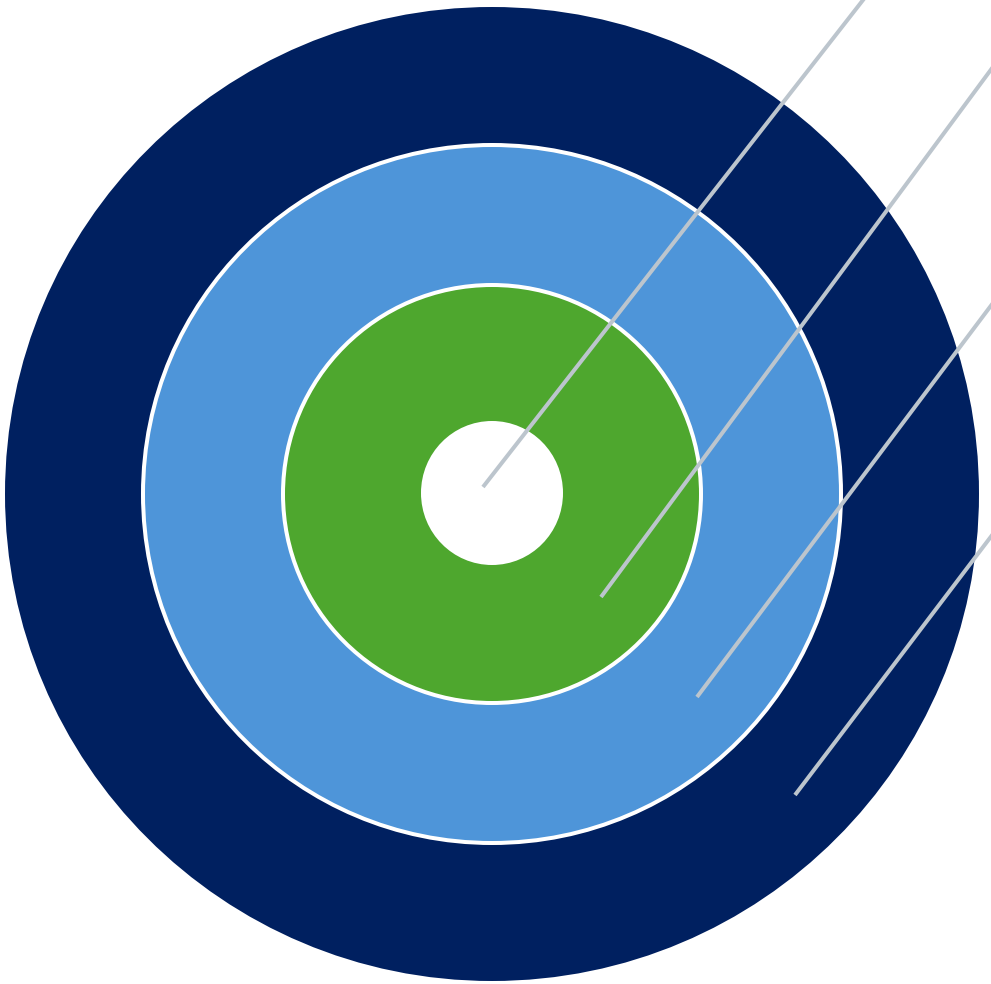
Enterprise policies and national/regional regulations should ensure that **work is designed to fit the capabilities of workers** and discourage practices that fit the worker to the demands of the work.

In doing so, the **well-being and productivity of the workers will be maintained for their lifespan**, which benefits the worker, the enterprise, and their governing body.

Microlevel interventions can reduce risk from specific hazards, but macrolevel interventions are needed to reduce overall risk from hazards.



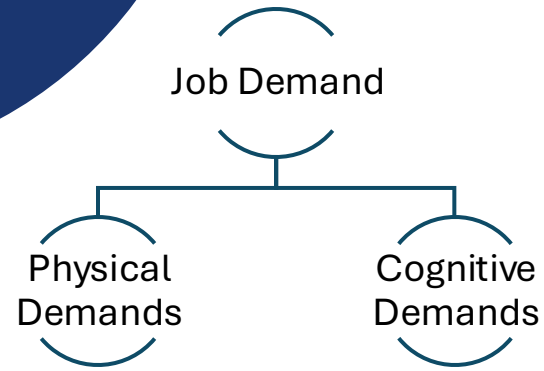
Individual (Microlevel)

Work System (Macrolevel)

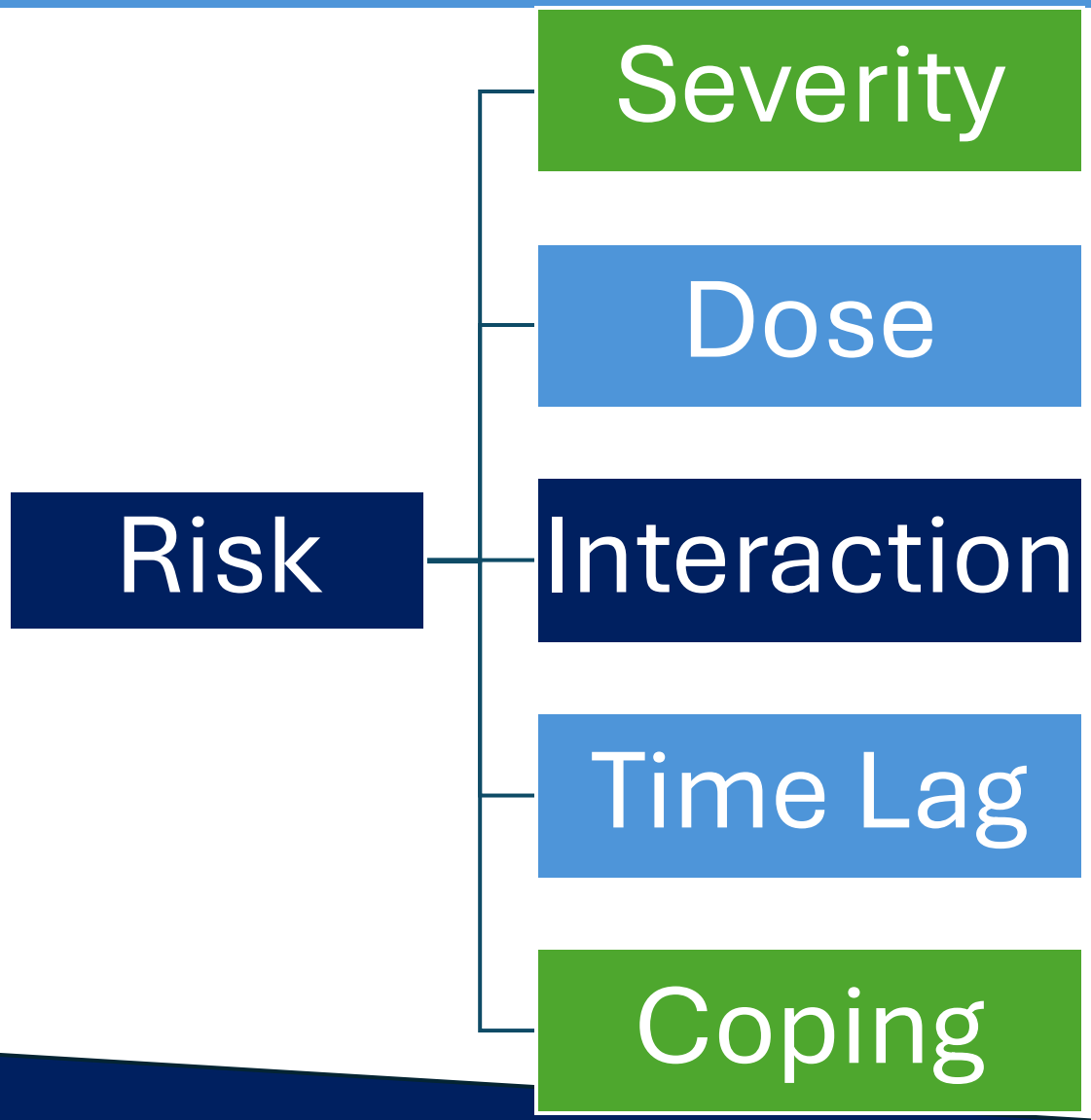
Industrial

National/ Regional

# Section 2: HFE Overview

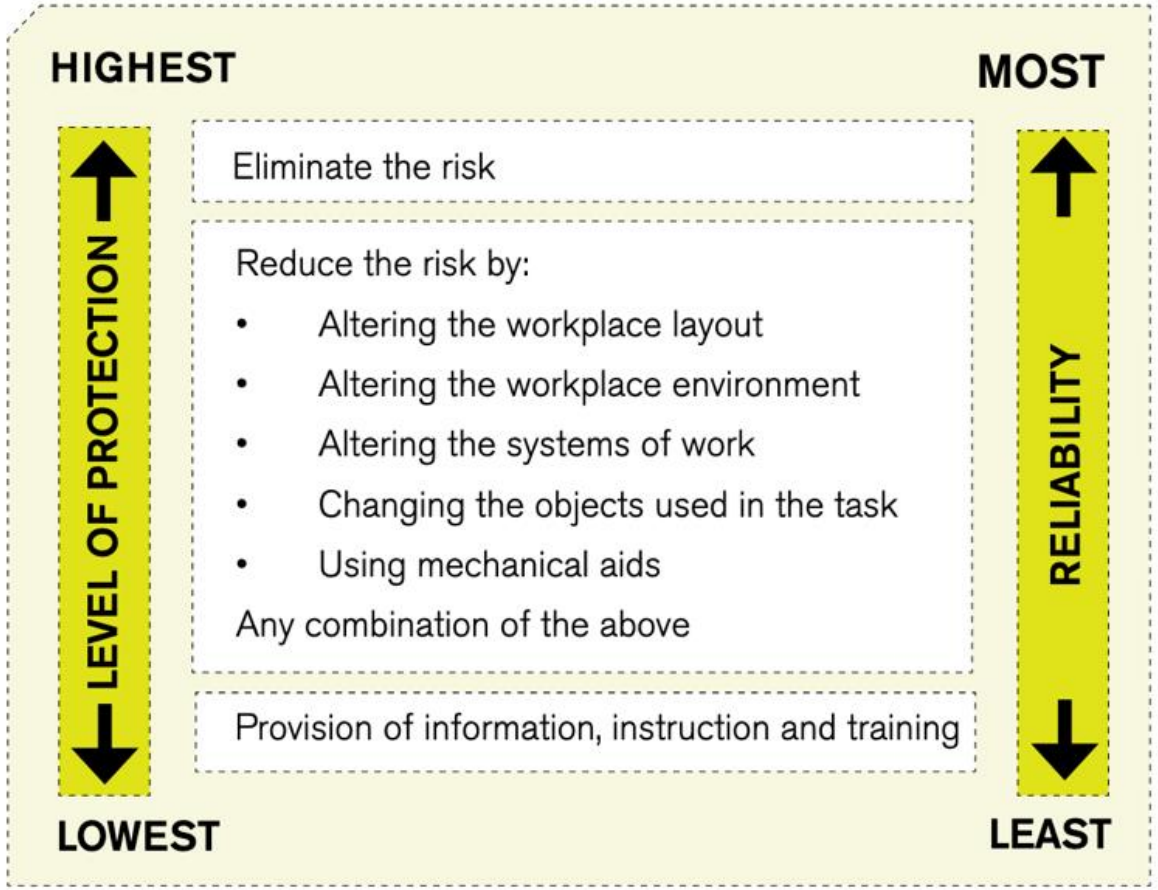



# Section 2: HFE Overview




Adopt a well-established framework for a Hierarchy of Controls that can be applied in a methodical way that prioritizes (multiple) mitigation efforts that will be most effective at reducing hazards.

# Section 2: HFE Overview

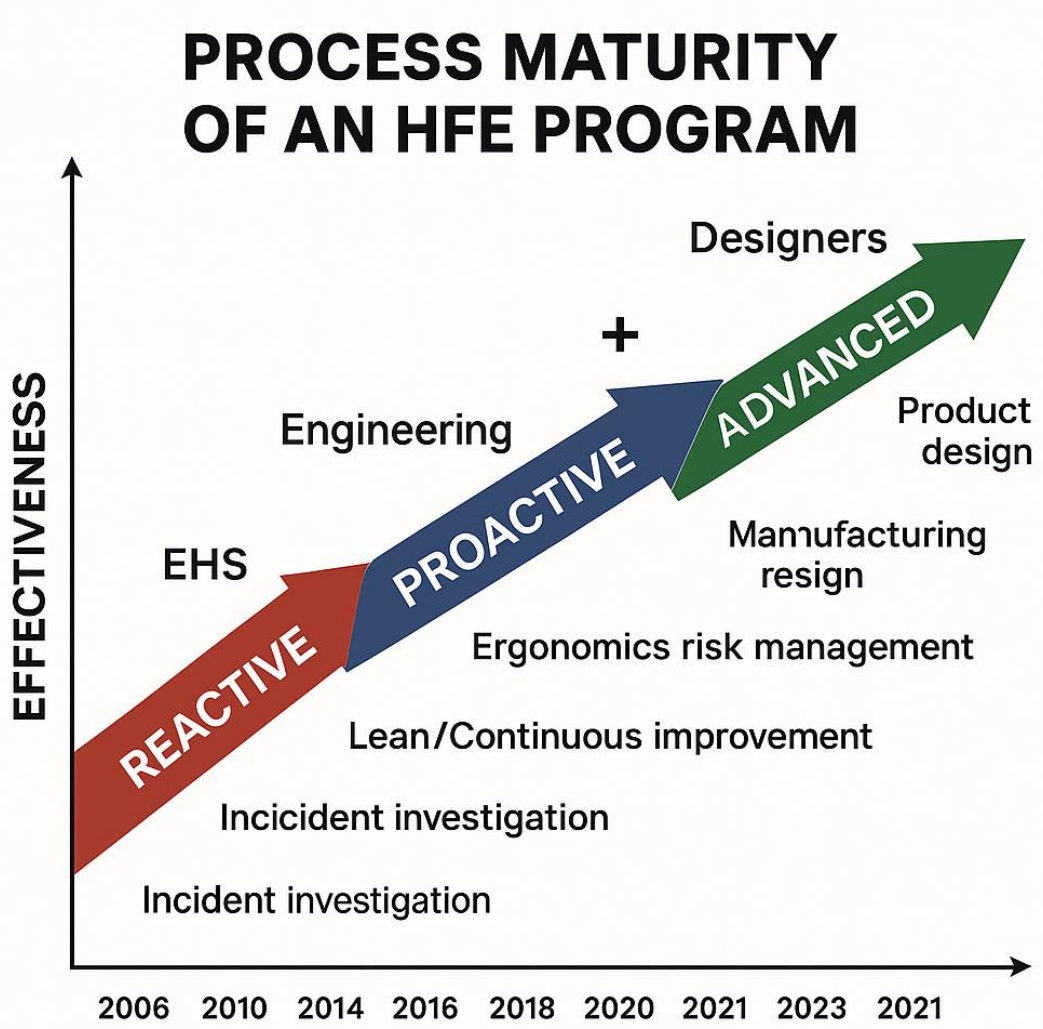




*Effectiveness and reliability of controls (WSV, 2017).*

# Section 2: HFE Overview

… a foundation of **positive safety culture**, **transparent leadership**, and **shared accountability**…

Strong **management engagement and training** with **worker participation** …drives **continuous improvement** ensuring that **systems evolve**…



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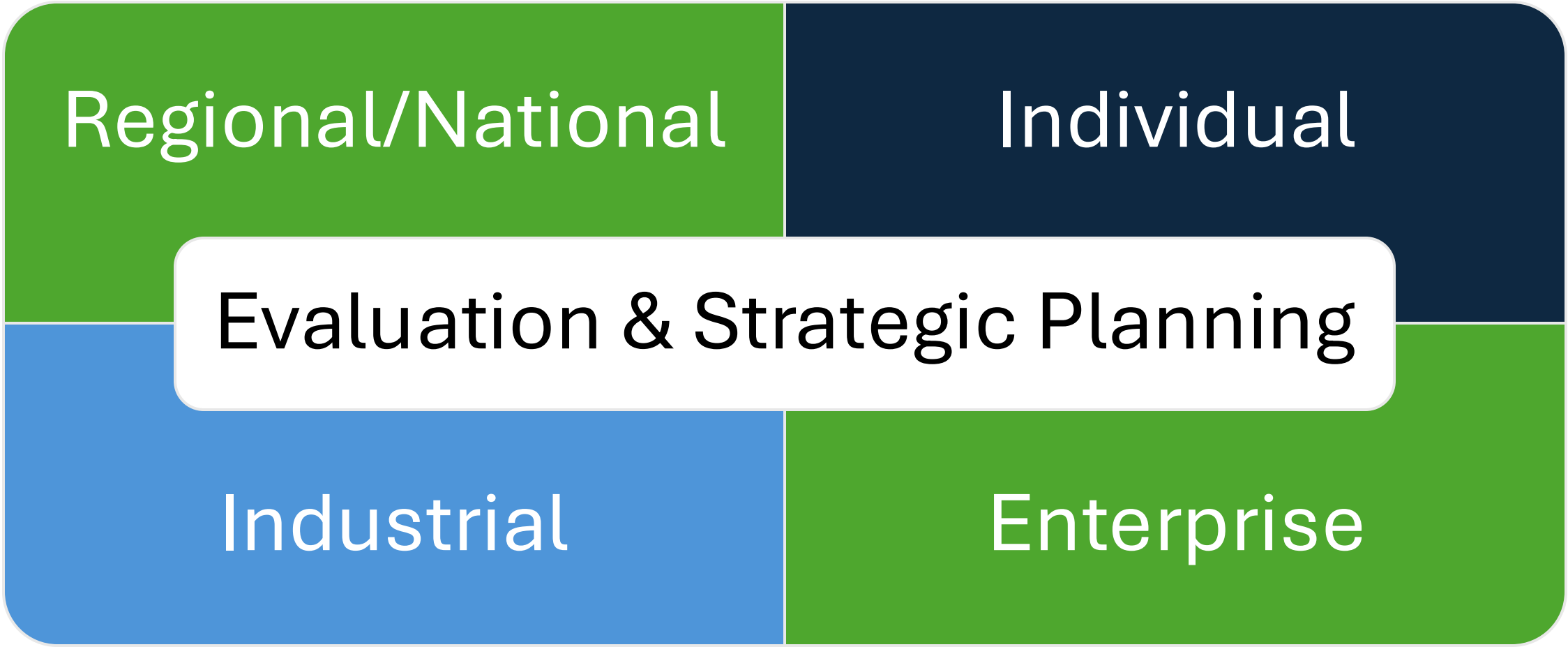
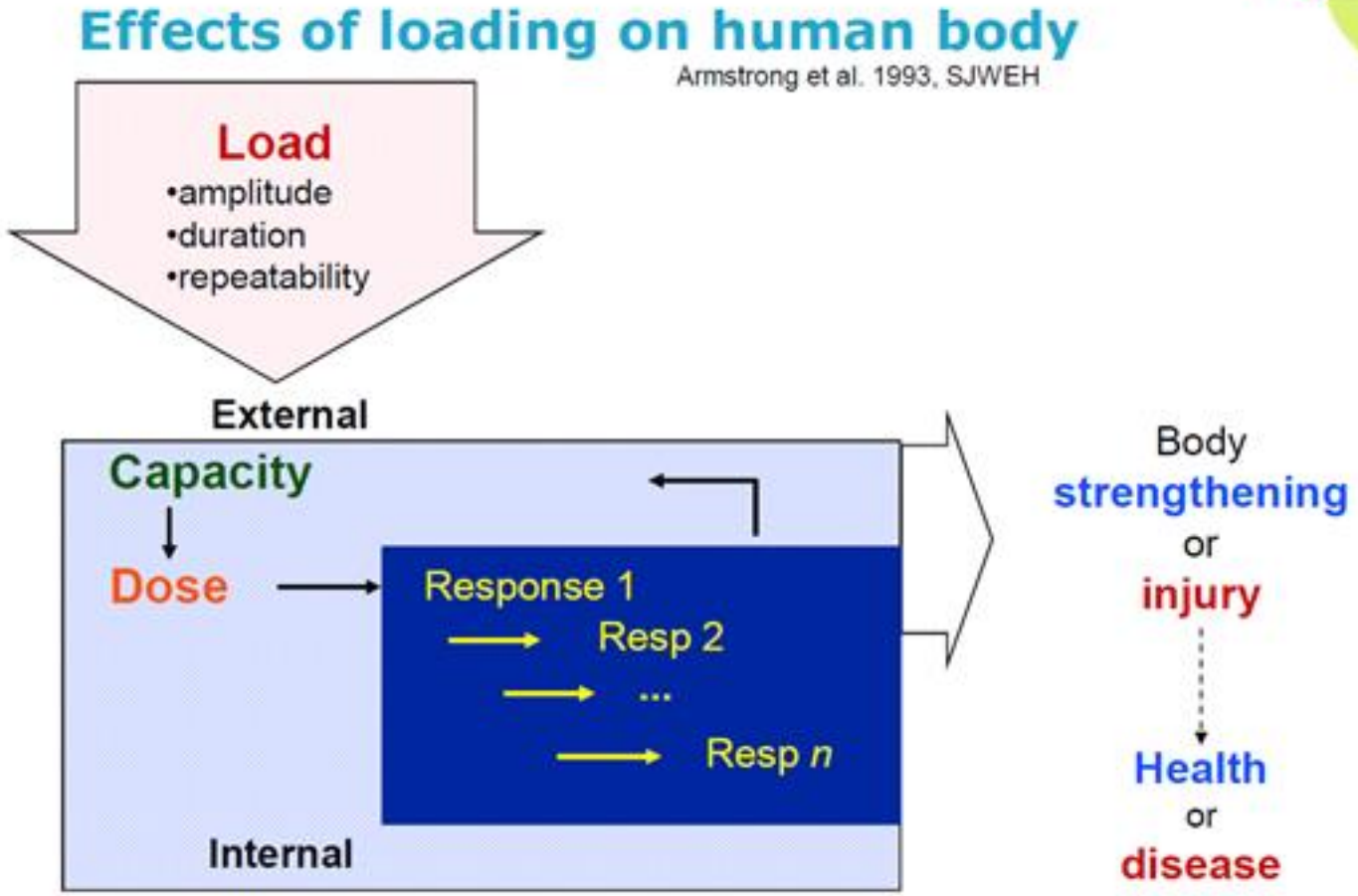


# Section 3: Workplace MSDs

Work-related MSDs are prevalent in most countries and negatively impact function, employability, population disability, and well-being.

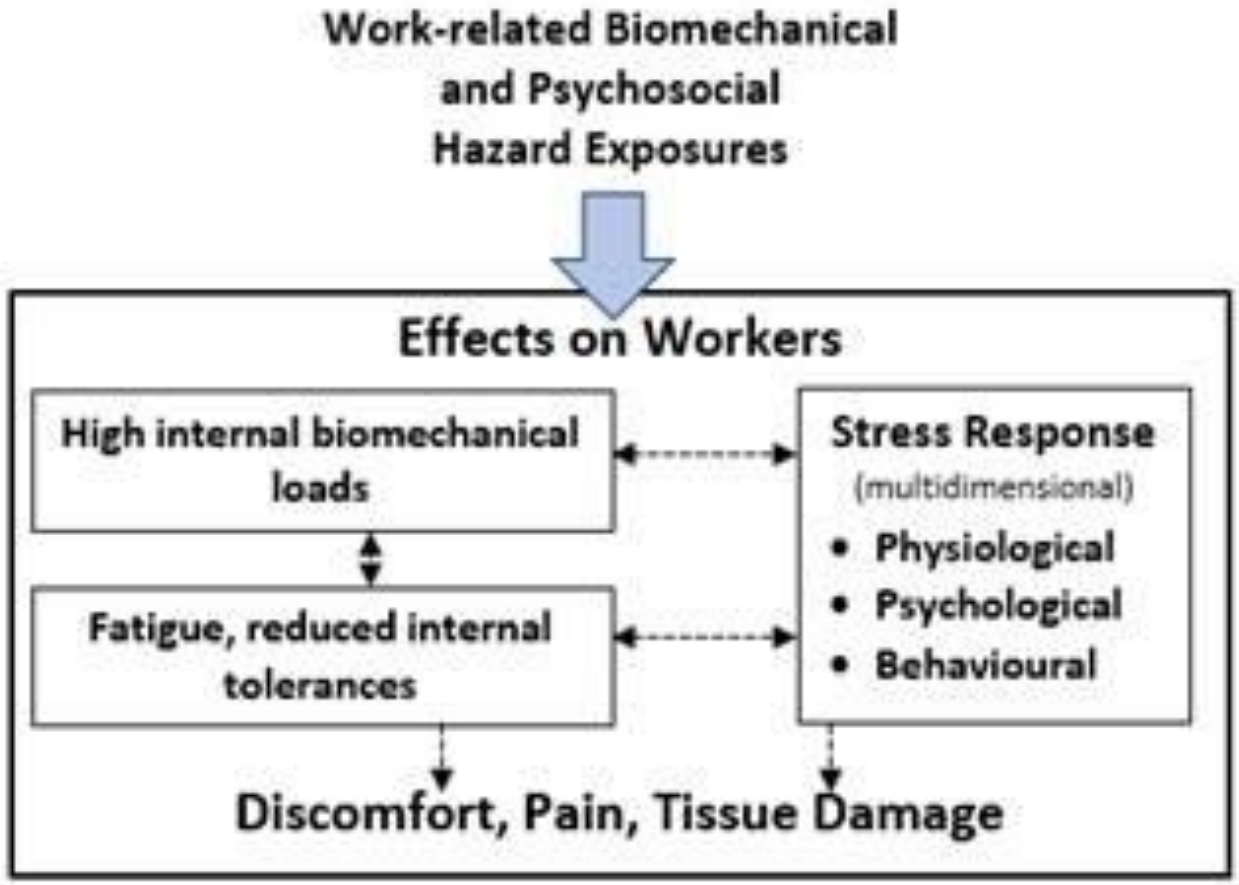


# Section 3: Applications of HFE

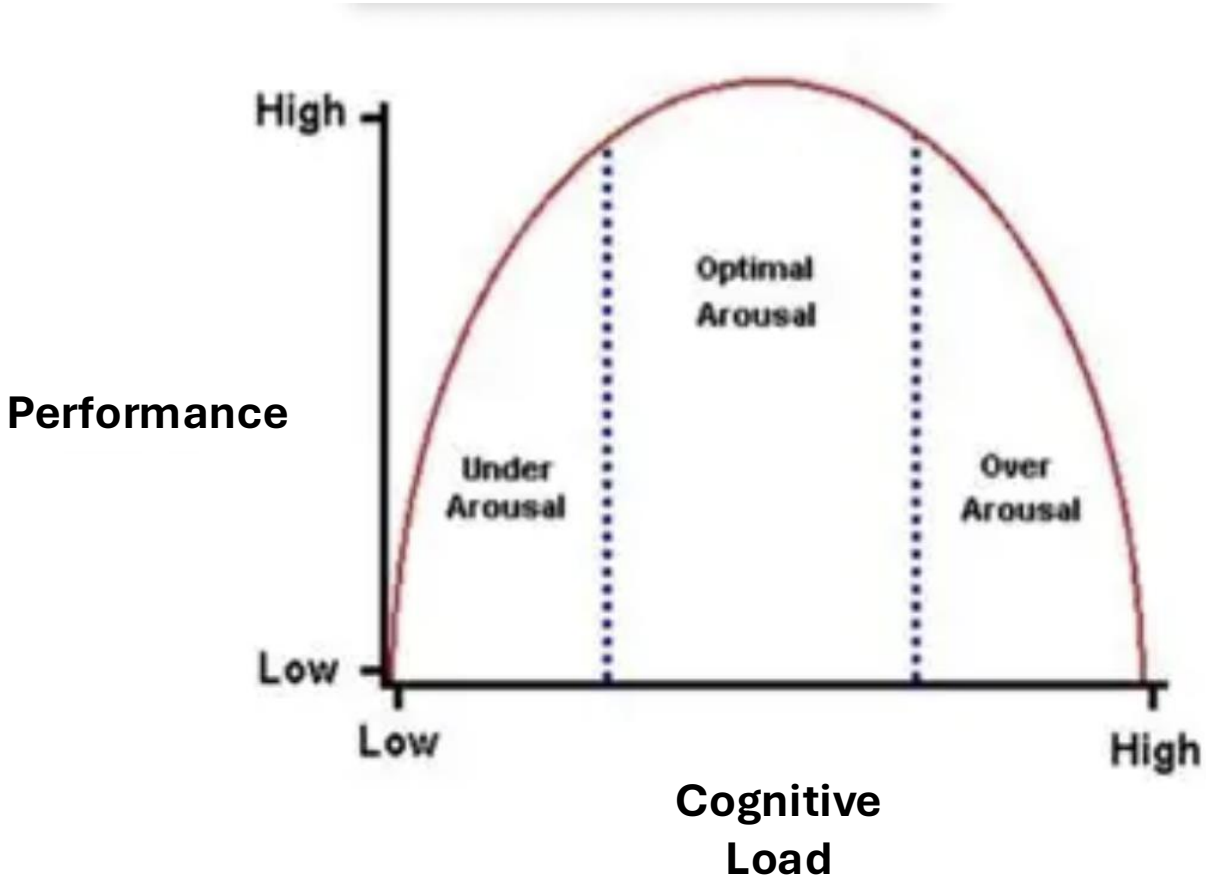
There are different pathways from physical hazards to MSDs that can be modified by psychosocial and cognitive hazards.

Self-reported **discomfort and pain** are important **indicators** of increased risk of MSDs.

## MSD Prevention



# Section 3: Applications of HFE




Variability of performance may be an early indicator of suboptimal cognitive load.

## Human Performance

Performance can be measured in terms of error frequency, accuracy, and time for task completion. Optimal performance occurs under moderate cognitive load.

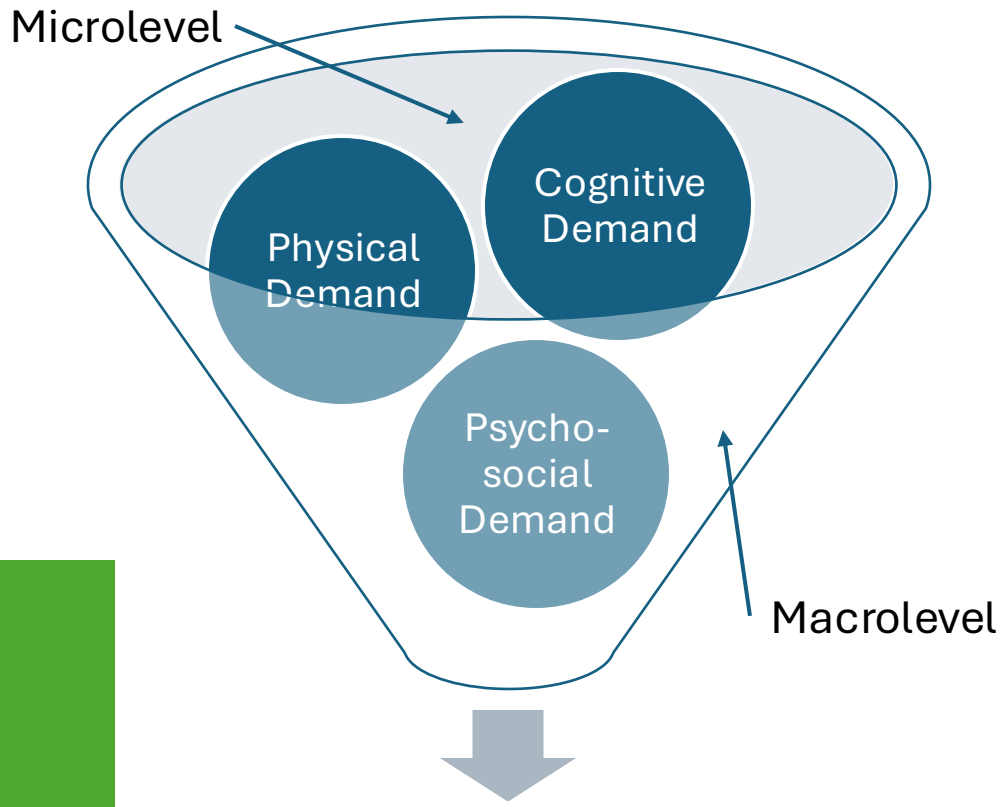
Human-Robot collaboration should allow each to perform separate yet coordinated tasks within shared spaces, without strict timing dependencies, and within visual proximity.

# Section 3: Applications of HFE

*A risk matrix that identifies the overall risk based on how probable and severe an event is.*

| Probability P | S4: extreme damage (over 1.000.000€) | S3: major damage (bis 100.000€) | S2: medium damage (bis 10.000€) | S1: minor damage (bis 100€) | S0: no significant damage (0€) |
|---|---|---|---|---|---|
| **Severity S** | | | | | |
| **P4**: extremely frequent events (daily) | P4S4 | P4S3 | P4S2 | P4S1 | P4S0 |
| **P3**: frequent events (once a month) | P3S4 | P3S3 | P3S2 | P3S1 | P3S0 |
| **P3**: Events with medium frequency (once a year) | P2S4 | P2S3 | P2S2 | P2S1 | P2S0 |
| **P2**: rare events (every 10 years) | P1S4 | P1S3 | P1S2 | P1S1 | P1S0 |
| **P0**: extremely rare events (every 100 years) | P0S4 | P0S3 | P0S2 | P0S1 | P0S0 |

## Accident Prevention




**Reducing the frequency and severity of workplace accidents**, particularly those resulting in acute trauma or death, **requires a comprehensive systems approach** grounded in HFE principles.

# Section 3: Applications of HFE

**Agriculture, food and forestry**

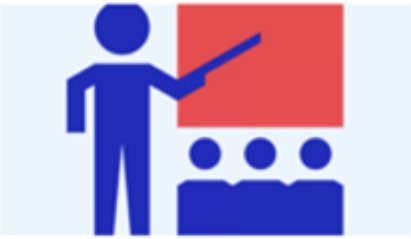
**Extractives and energy**

**Manufacturing**

**Private services sectors**

**Infrastructure, construction and related sectors**

**Education**

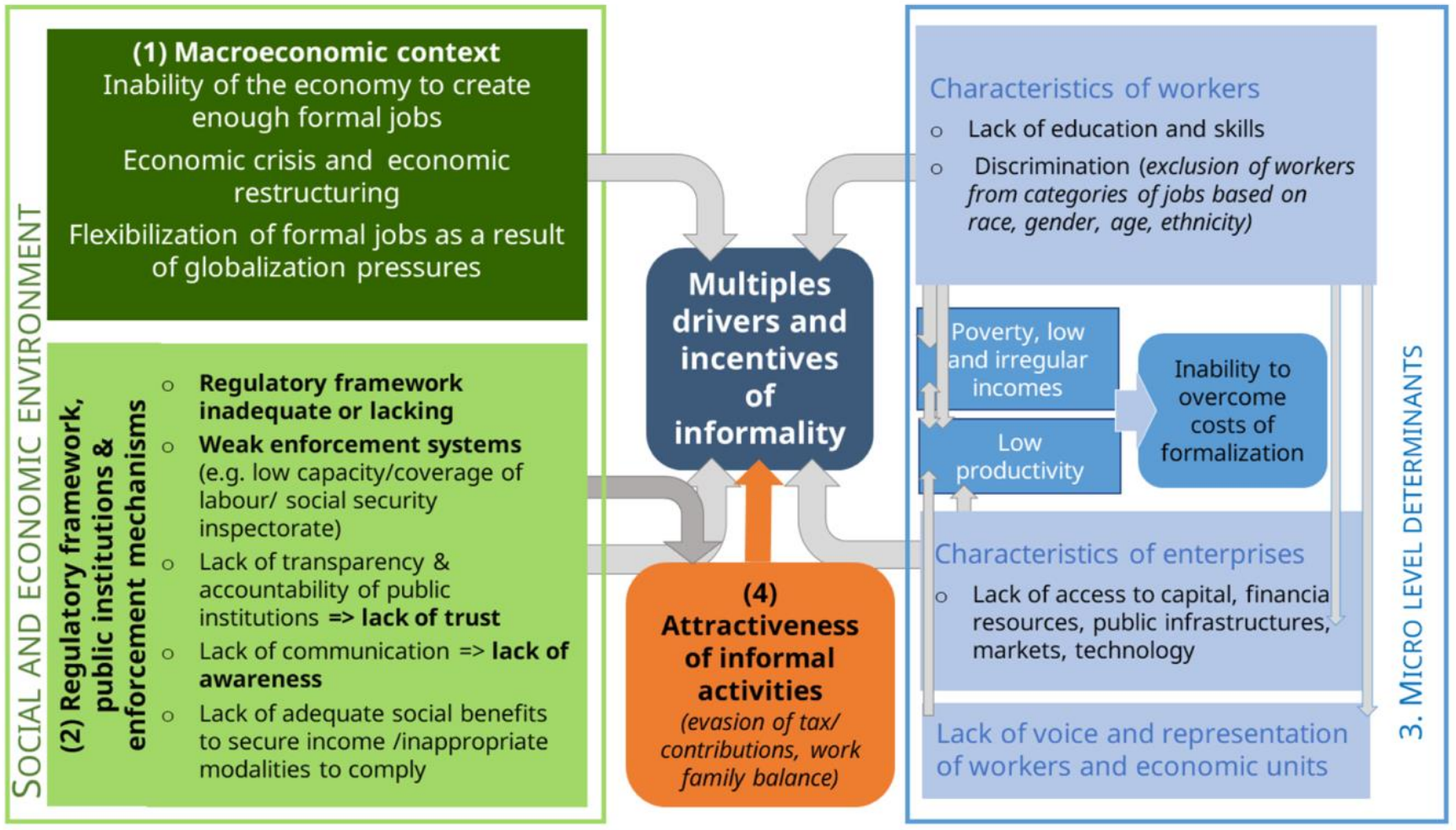


Education and training >

**Public service, utilities and health**

**Maritime and transport**

# Section 4: Non-Standard Work




**Quantify non-standard workers** engaged in a system ….take measures to **assess their** work-related **needs** …

…include **participatory engagement, hazard assessments,** and **specialized resources and interventions** that address hazards …

# Section 4: Non-Standard Work

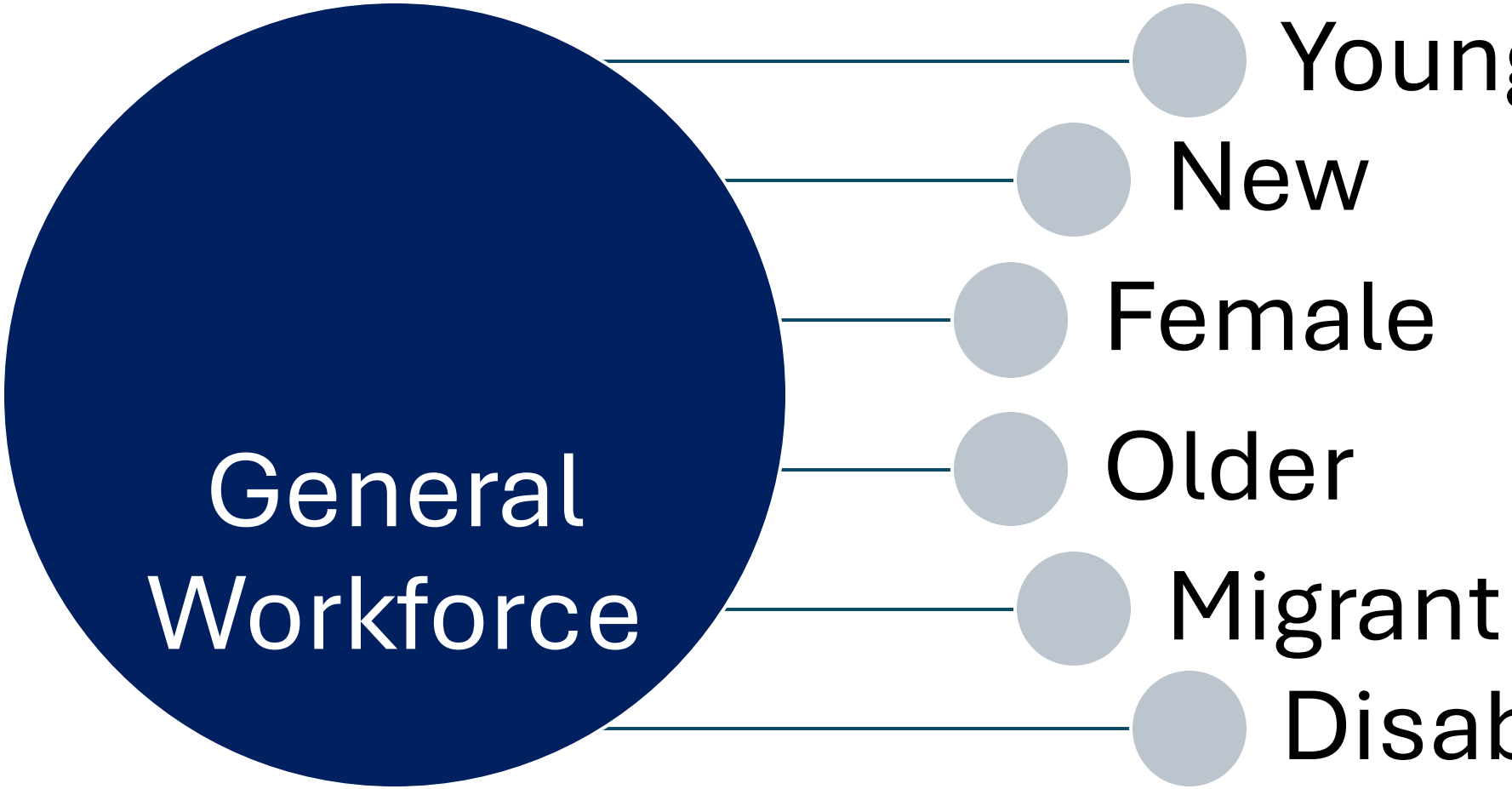
- Remote/isolated
- Irregular Shifts/Hours
- Temp/Contractual/Platform
- Informal
- Self Employed

Workers should have access to public sector services that **fill resource gaps** created by employment status.

**Resources should be provided** by Labor organizations, collectives, networks, or publicly funded organizations.

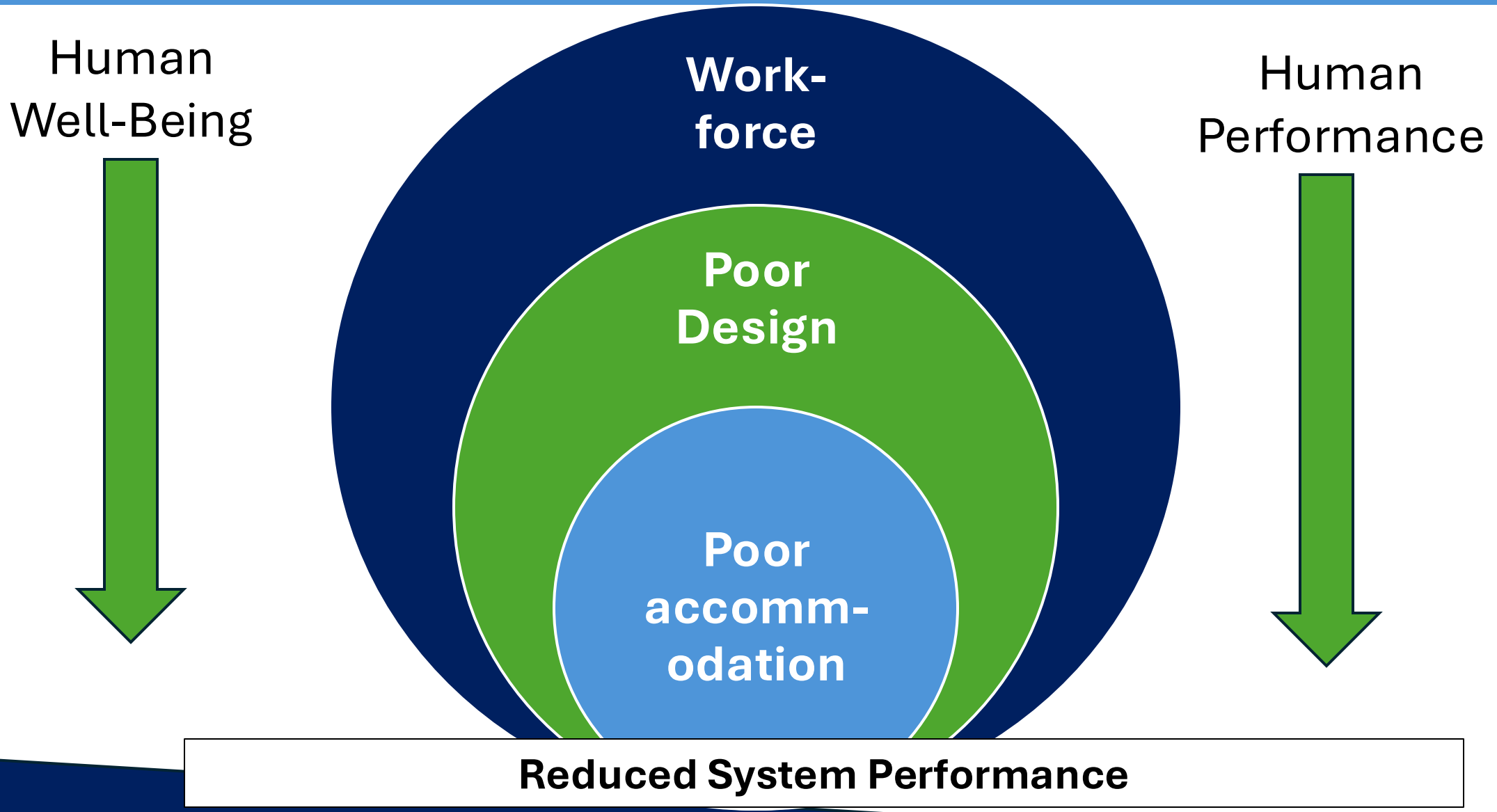
**Public agencies** should **enforce** basic work safety standards.

# Section 5: Sectors of Workforce




**Most workers** will **belong to one** of these **sectors** at some point in their working life span.

# Section 5: Sectors of Workforce



# Section 6: Stakeholder Responsibility and Action

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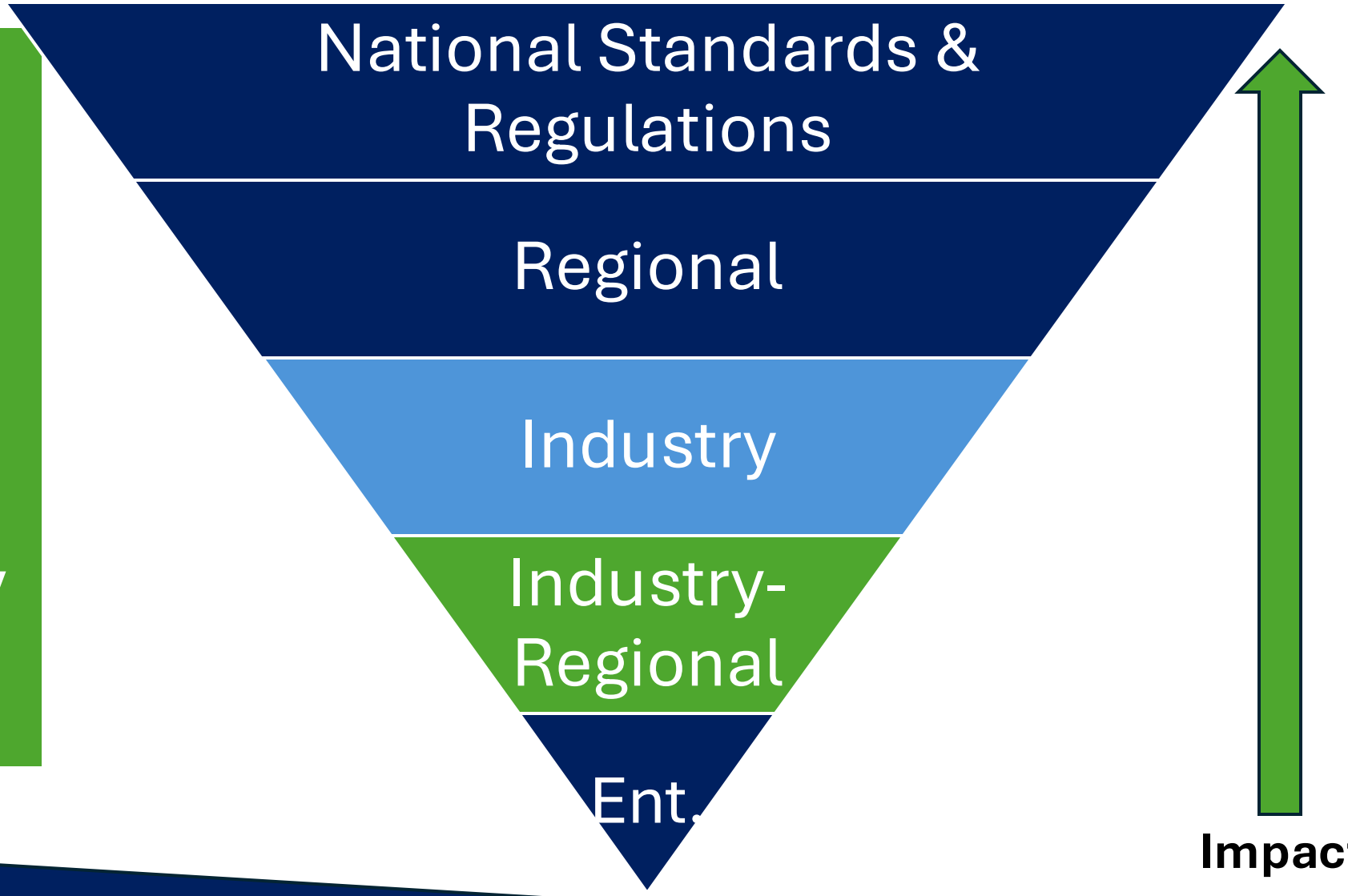
## National/ Regional Responsibility

Establishing and enforcing national **HFE legislation bridges the gap between policy and practice**—creating safer, healthier, and more inclusive workplaces that enhance both human well-being and economic performance.

**Policymakers** play a critical role in embedding Human Factors and Ergonomics (HFE) into national development frameworks by creating a unified **national vision and strategy** that aligns with public health, productivity, and employment goals.

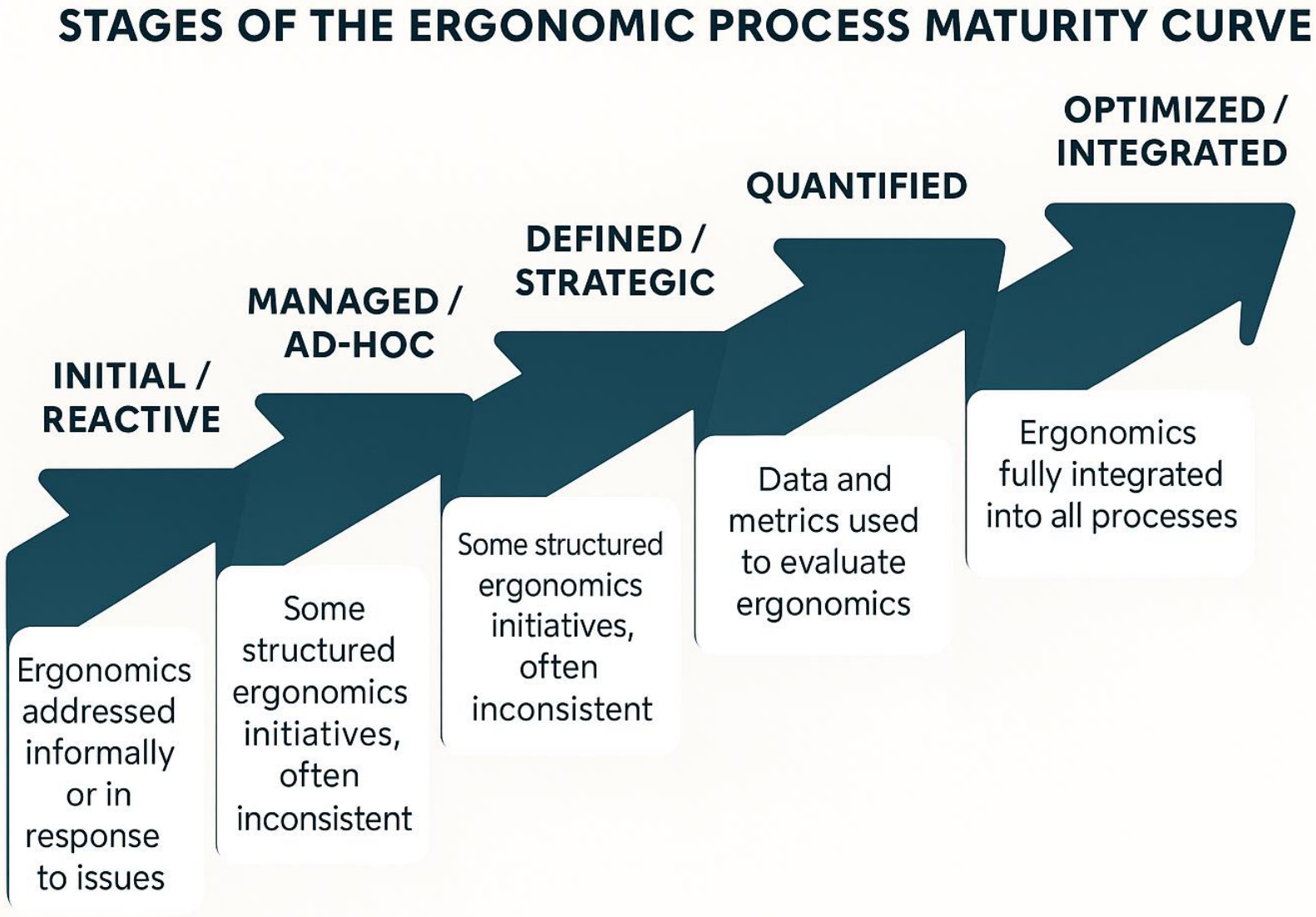
# Government, Industry, and Enterprise

Regional and Industrial leadership can support regional impact by either carrying out national vision or filling gaps left by the lack of one.



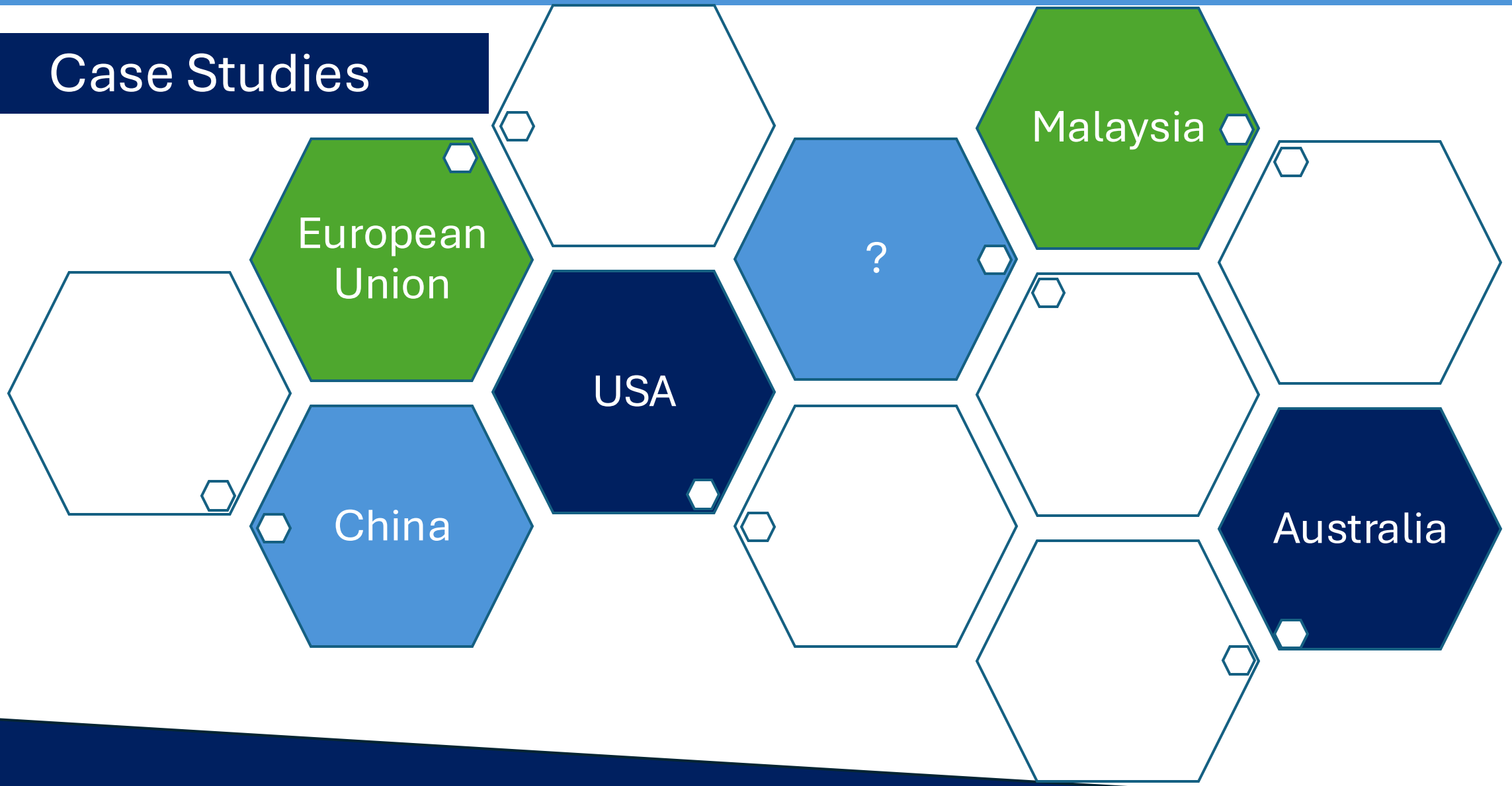
# Section 6: Stakeholder Responsibility and Action

The Ergonomic Process Maturity Curve (EPMC) is a model that can help nations, regions, industries, and enterprises assess and improve their ergonomic practices over time.

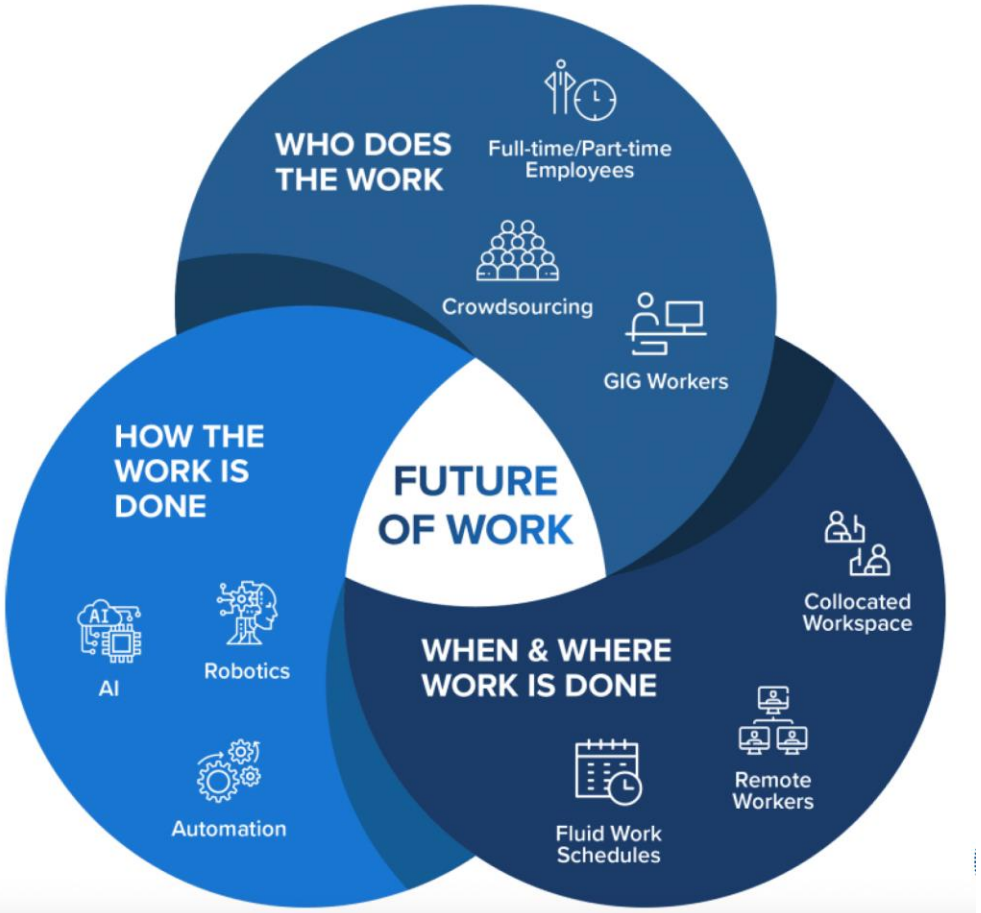


# Section 6: Stakeholder Responsibility and Action

## Case Studies



# Section 7: Future of Work




HFE plays a vital role in the transition from *Industry 4.0* to *Industry 5.0* which signifies a paradigm shift toward human-centered design—where technology not only enhances efficiency but also safeguards worker well-being, autonomy, and dignity.

# Annex

- Industry-specific guidelines, standards, best practice references that include HFE- move to main?
- Participatory approaches with case studies of their application
- Reference list of hazard measurements and risk assessment tools for physical, cognitive and psychosocial hazards?
- List of relevant ISO standards or other national standards related to HFE?

# Discussion

- Maximum weight limit
  - Clearly requested but there is no clear answer
- Clearly identify key principles to be considered for Technical Guide
  - Best way to organize content to support Technical Guide
- Differentiating content from prior reports
  - Incorporate but not replace prior reports
- Expand sections
  - Case Studies
  - Future of Work

# ILO Timeline

Discuss Technical Report (2026)

Finalize Technical Guidelines (2027)

Discuss Convention (2028-2030)

# Objective

- Definitions and scope
- General principles and policy
- Responsibilities and duties (Government, employers, workers, ergonomic professionals)
- Technical fields of workplace human factors/ergonomics (actions at the national vs enterprise levels)
  - General HFE systems approach
  - Consideration and design for all relevant characteristics of workers
  - Participatory HFE methodologies
  - Proactive measures
    - HFE design
    - Proactive HFE design for new forms of work
    - Proactive programmes
  - Tailor HFE to organizational characteristics
    - Traditional organizations and forms of work
    - Non-traditional organizations and forms of work
  - Controls for MSD hazards and control hierarchy
  - Industry or task-specific solutions
  - Technical devices and tools
  - Maximum weight
  - Training, instructions and a continuous learning process
  - Health surveillance