



INTERNATIONAL CONFERENCE ON

Ensuring Industrial Safety

*The role of government, regulations,
standards and new technologies*

Securing Industrial Safety: role of collective actions

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30
31 May 2019

Vienna International Centre
Conference Room 1

Vienna, Austria



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Industrial safety and security as public goods

- *The spillover effect*
- *The benefits spread beyond the administratively defined borders, and can become international in scope: hence regional and global issue*
- *The benefits can be inter-generational*
- **ISS contributes to realize SDGs**
- **The under-provision of ISS may create negative externalities (public bads), affecting global economic development, peace and prosperity (SDGs).**





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Public bads from not securing OHS

- Global financial losses due to workplace injury/illness exceed **\$ 1,250 billion** every year
- Workers suffer **270 million** occupational accidents & **160 million** occupational diseases per year
- Occupational injuries account for **10 million** Disability-Adjusted Life Years lost (healthy years of life lost due to disability/premature death), and **8%** of unintentional injuries worldwide
- Poor occupational health and reduced working capacity of personnel can cause economic loss of **10-20%** of GDP
- Globally occupational deaths, diseases, and illnesses account for and estimated loss of **4%** of world GDP



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Public bads from disasters (man made hazards related to technological, biological and environmental hazards)

- Human capital loss attributed to disasters
- Health consequences
- Man made capital destroyed (industrial plants, infrastructure)
- Economic loss
- Agricultural loss
- Environmental damage



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Need for Collective Actions

Public goods and externalities are instances that call for a coordinated social response and collective actions to provide these goods at socially optimal level (public economics)

- ❑ **Collective action**: planned action by two or more agents to correct under-provision of ISS and address public bads, through coordination, cooperation and coercion.
- At the **country/national level**, the response is through the institutional framework, with the nation state at the center. The purpose of the response is to **internalize externalities**, by rewarding positive and penalizing negative, through system of incentives and penalties.
- At the **supranational level**, the response is often through international agreements (bilateral, regional and multilateral), or voluntary coordination (conventions, Sendai Framework, and regional cooperation agreements).



Collective actions, ISS and the new global economic setting

- Globalization of production, trade, innovation
- GVC lead players leveraging various assets globally (fragmented production and fragmented jurisdictions).
- Exponential technological progress and convergence of technologies (4IR); scientific disciplines; blurring the differences between economic sectors; removing physical borders
- Kaleidoscopic comparative advantages > competitiveness
- The role of state and the role of private sector
- Institutions are lagging behind!

Securing ISS as a moving target!



Industrial Revolutions: new technologies → new opportunities and risks

1.0

18TH CENTURY
MECHANIZATION
Railroads
Steam and water

2.0

18TH CENTURY
MECHANIZATION
Railroads
Steam and water

3.0

20TH CENTURY
AUTOMATION
→ Computer
Electronics

4.0

TODAY
CYBER PHYSICAL SYSTEMS
IoT; IoS; IoP; Robotics
Big Data, AI, 3D, NBCIS
(technology convergence);
Exponential technological progress; data issues

Industrial accidents → Working conditions
(overwork, child labor, etc.)
Human safety & health hazards

Waste/cyber security/
OHS/ethical issues; social
safety nets; UBI

Material and energy intensity; pollution,
environmental concerns

ISS in circular economy

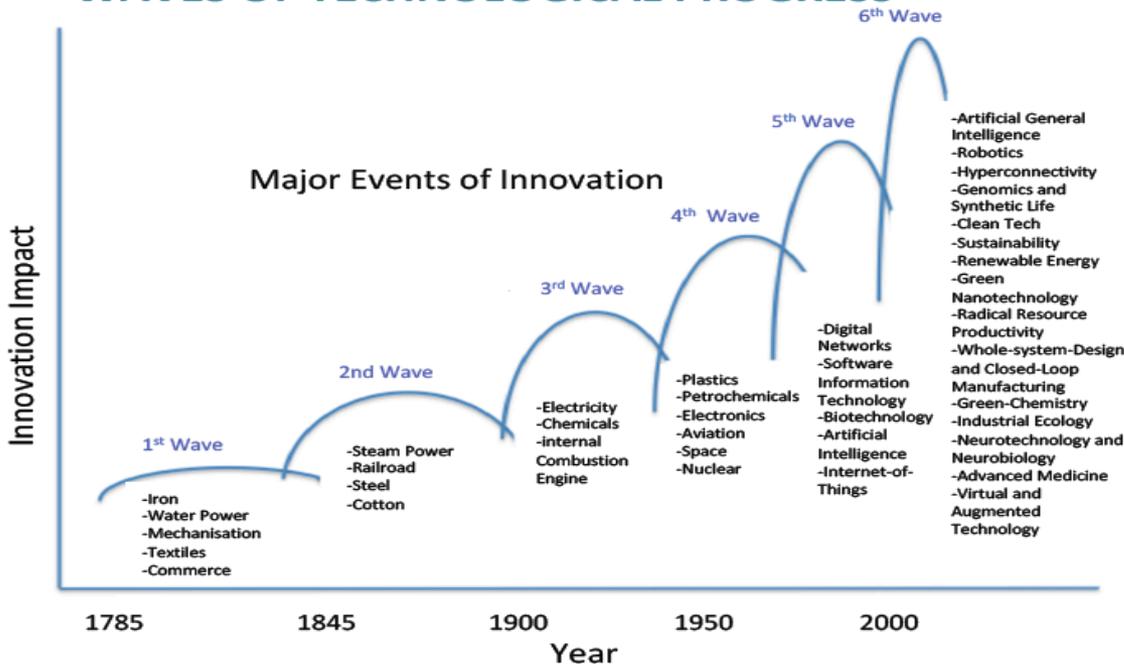


14.0: exponential technology progress

In the era of globalization, 4IR, exponential technology progress and great convergence

The safety and security target is moving fast and in many directions.

WAVES OF TECHNOLOGICAL PROGRESS





New business modes: New risks for OSH



How the Gig Economy Works



Using smart phone-based apps, an individual seeking contract/temporary work searches through job listings or expresses a desire to find a short-term "gig."



Employers seeking contract/temporary workers post job listings via an app and/or look for candidates who have expressed interest in finding gigs.





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Institutions

- Industry 4.0 creates opportunities to make work environments safer
- Industry 4.0 may render current industrial safety regulations obsolete due to emerging trends in technology advancements (big data, cloud computing, artificial intelligence, robotics, 3D printing, simulation and visualization models and convergence of technologies).
- Regulation of industrial safety needs constant adoption of innovative approaches to improve effectiveness and invest in building their monitoring capacities for ensuring industrial safety and security.



Why collective actions?

The conference is an example of sharing knowledge and building awareness on shared goals for industrial safety. But moving forward, more need to be done...

As industrial safety becomes more interconnected, international, and technologically complex, many goals cannot be achieved without a systemic approach based on collective actions.





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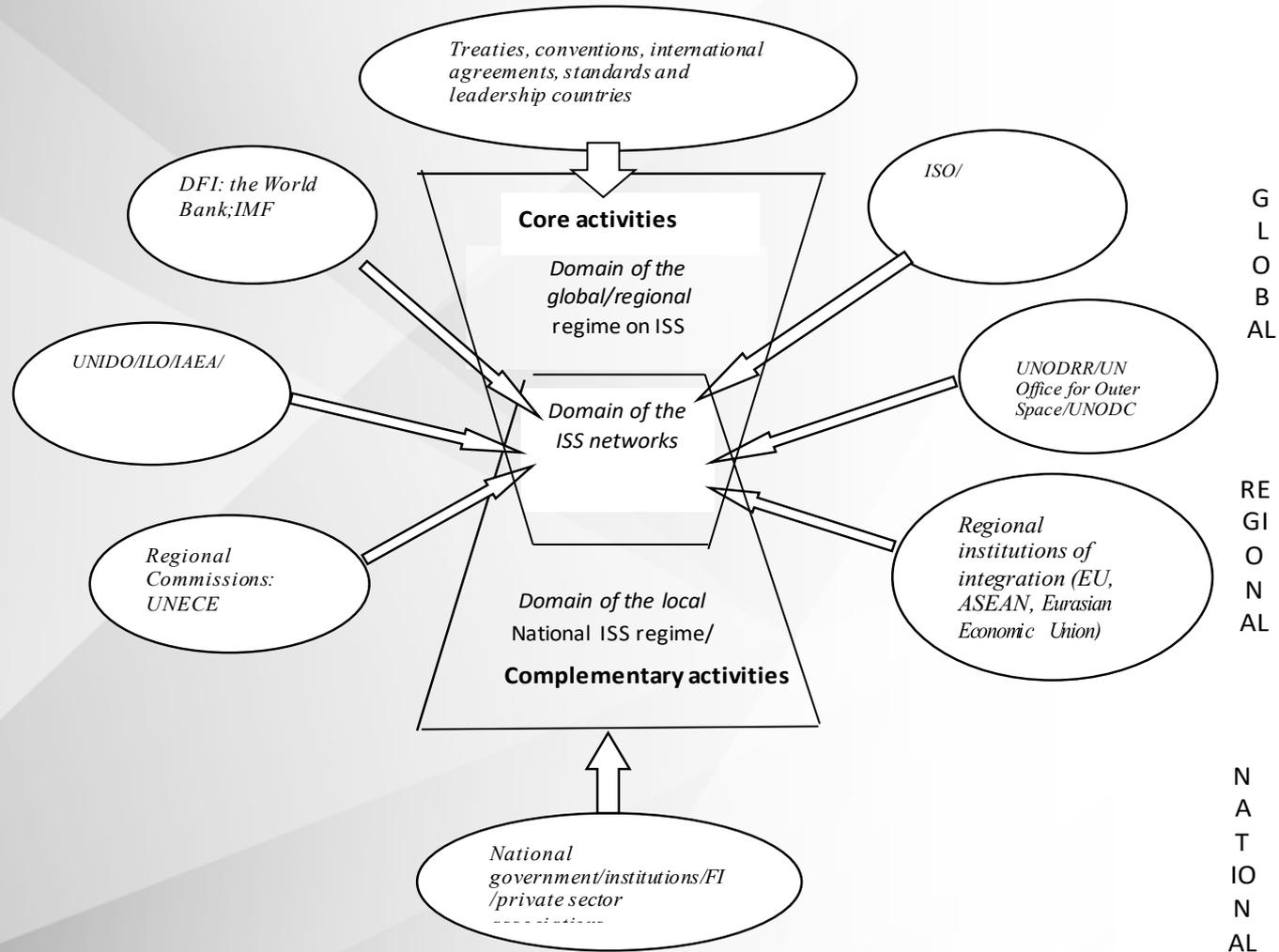
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Looking into the future:

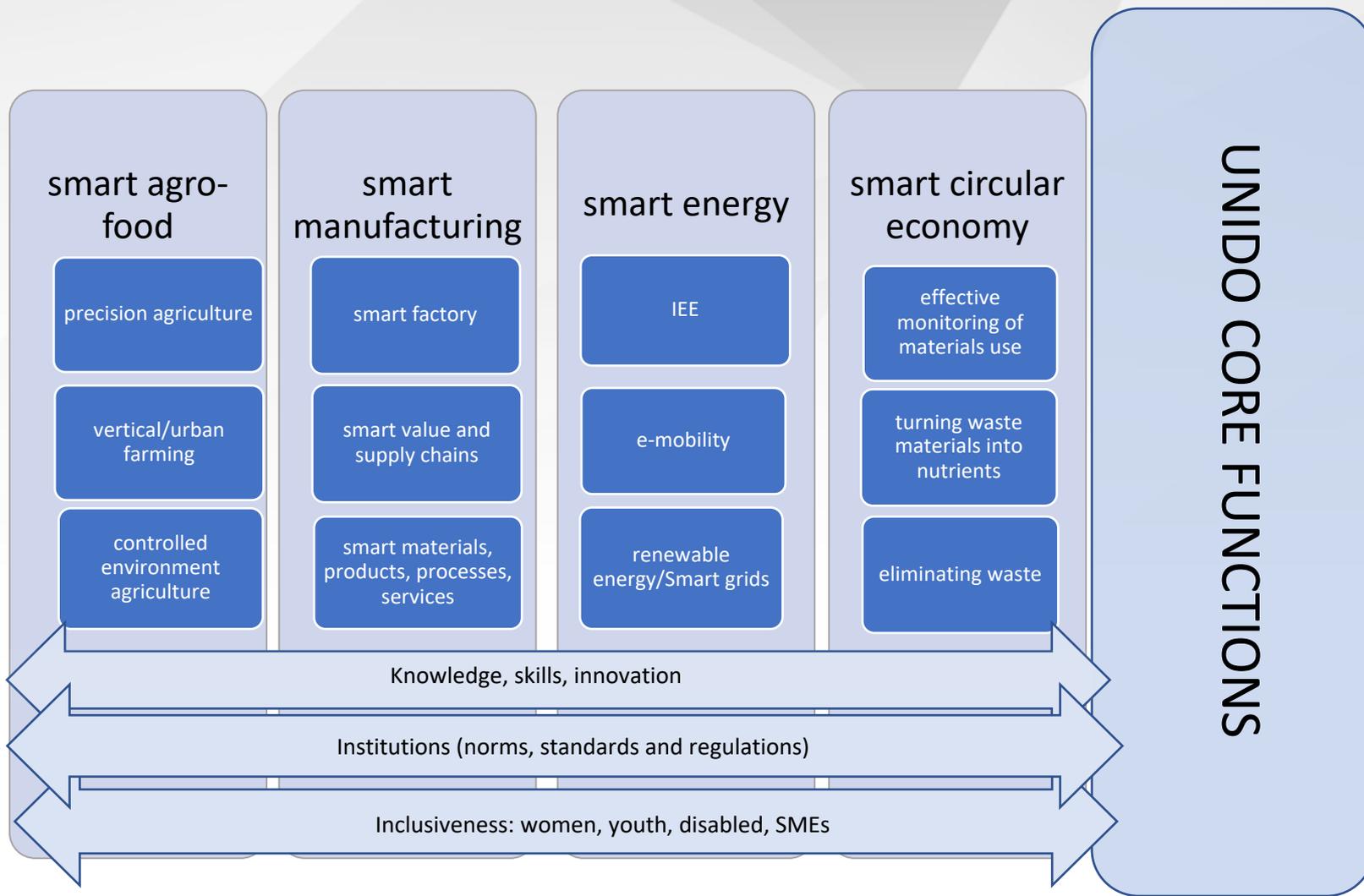
call for global collective actions that promote coordination among national efforts through bilateral or multilateral agreements, or voluntary coordination and cooperation initiatives

Figure 1 Institutional cluster ensuring industrial safety and security in the era of NIR





UNIDO 4IR STRATEGY





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UNIDO core functions

RESEARCH & EVIDENCE-BASED
POLICY ADVICE

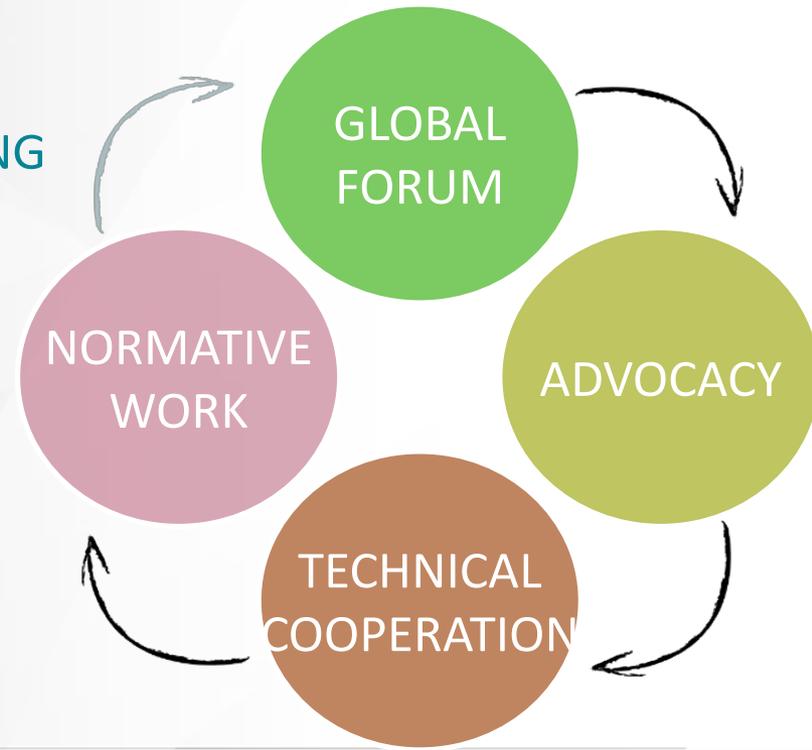
CONVENING AND BUILDING MULTI-
STAKEHOLDER PARTNERSHIPS

KNOWLEDGE DISSEMINATION

NORMS AND STANDARDS SETTING

ADVOCACY

TECHNICAL COOPERATION



UNIDO 4IR STRATEGY: PROGRAMS OF INTERVENTION

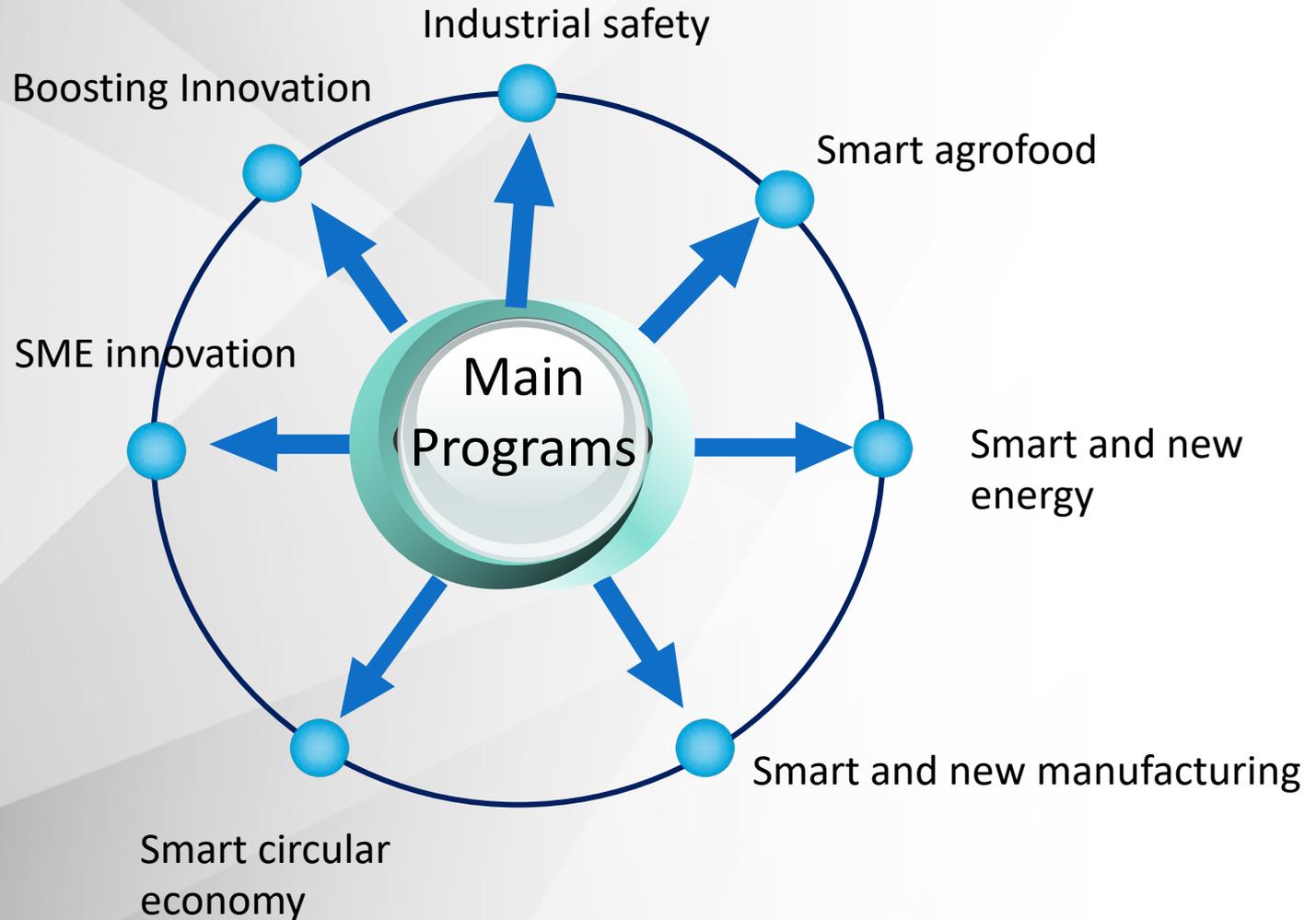


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UNIDO INDSUTRIL SAFETY PROGRAMME

Mainstream concepts of industrial safety in UNIDO work:

- **Convening** (knowledge sharing) and building multi-stakeholder partnerships on securing ISS (global, regional level) addressing all IS aspects; **and knowledge and experience sharing; Advocacy**
- **Connect, network and build partnerships** with established working groups and institutions dealing with the ISS.
- **Research & evidence-based policy advice:** technological progress and securing ISS.
- **Norms, regulations and standards setting** (working with the ISO on OHS and others related to 4IR).
- **UNIDO's technical cooperation programs:** ISS KPIs; Global Industrial Safety Database; guiding tools, manuals; address SMEs' challenges; Leverage 4IR technology for securing ISS (predict risks - digital twins; monitoring and early warning system; Capacity building on securing ISS



BLUE PRINT
Conference Resolution

by
the participants of

the International Conference on Ensuring Industrial Safety:
the role of government, regulations, standards and new technologies

WHEREAS ensuring industrial safety is an important aspect for pursuing the 2030 Agenda for Sustainable Development and associated Sustainable Development Goals.

WHEREAS Industry 4.0 creates opportunities to make work environments safer and at the same time may render current industrial safety regulations obsolete due to emerging trends in technology advancements, such as big data, cloud computing, artificial intelligence, robotics, 3D printing, simulation and visualization models and convergence of technologies.

WHEREAS regulation of industrial safety needs constant adoption of innovative approaches to improve effectiveness and invest in building their monitoring capacities for ensuring industrial safety and security.

WHEREAS international cooperation is an effective tool for improving industrial safety by exchanging experience and best practices of carrying out the regulatory activities.

WHEREAS the participants of the International Conference on Ensuring Industrial Safety: the role of government, regulations, standards and new technologies, having held productive consultations on matters of mutual interest on 30-31 May 2019 in Vienna, wish to record their intentions and objectives for cooperation.



NOW THEREFORE the participants of the International Conference on Ensuring Industrial Safety: the role of government, regulations, standards and new technologies in Vienna declare:

1. Their intention to facilitate close cooperation between UNIDO and all concerned national stakeholders involved in ensuring industrial safety, with the objective of contributing to the achievement of the 2030 Agenda for Sustainable Development and associated Sustainable Development Goals;

2. Their intention to promote cooperation in the following areas:

Improvement of the approaches to regulation of industrial safety and electrical power safety
Exchange of experience in developing regulations and standards in the field of industrial safety;
Exchange of experience in training and examination of experts in the field of industrial safety and electrical power safety.

3. Their desire to identify and fulfil suitable projects and programmes relating to the above areas of cooperation on an annual or biennial basis in accordance with the respective policies, procedures, rules and regulations of UNIDO and depending on the availability of the necessary funds and in cooperation with UNIDO seek a possibility of establishing a specialized working group on industrial safety within its structure.



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Thank you

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