**Supplementary Material for Furthering Decent Work by Expanding the Role of Occupational Safety and Health**

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6. **Introduction**

The Sustainable Development Goals (SDGs) interact with one another, creating synergies and trade-offs. Throughout the world there are trade-offs between heterogeneous SDGs. SDG 8, Decent Work and Economic Growth, is associated with a high fraction of trade-offs with many of the other 17 SDGs. A trade-off is where progress in one goal hinders progress in another [1]. Nevertheless, Occupational Safety and Health (OSH) is a core element of decent work and hence is instrumental in the other SDGs as well. Decent work is a shared responsibility among various agents: employers, politicians, OSH professionals, workers, insurers, governments, and educators [2].

1. **OSH functions and decent work**

Research

Recently, implementation research has been advocated as a necessary focus of OSH research [3]. Such research, as well as Total Worker Health and Workplace Innovation research, adjoins, overlaps, and otherwise addresses some of the other elements of decent work not historically part of OSH [4]. Occupational health psychology has been a leading focus in research on decent work conditions and advocating for its achievement [5]. The concept of decent work is a central element of the psychology of working theory (PWT), which has been the focus of much research [6].

Additionally, research should promote evaluation and continual improvements of strategies aimed to achieve decent work conditions and ensure their sustainability in the long term. In this regard, data should be collected to assess decent work outcomes from the perspective of all the OSH figures involved. Ongoing evaluation during implementation is key to providing data for making mid-course corrections that can influence the operationalization’s ultimate success. This will require more practice-based research partnerships that address institutional and system-level facilitators to support policies and pathways to decent work.

Practice

Another step in the OSH field to address decent work is use of the *work-related diseases* concept [7]. The term is meant to describe not only recognized occupational diseases but also other diseases and disorders to which the work environment and work tasks contribute significantly, among several causative factors [7–9]. In this regard, whereas an occupational disease has a specific or a strong relation to an occupational risk factor (generally with only one causal agent), a work-related disease can have several causal agents and occupational risk factors that may play a role (together with other risk factors). Such diseases therefore can have a complex etiology.

A further concept that is moving the OSH field closer to addressing more aspects of decent work is well-being [10,11]. “Existing concepts of well-being cover more aspects of work than working conditions or safety and health at workplaces … the most relevant components [being] income, working time arrangements, possibilities for skills development and career advancement, and degree of individual control over work [12(p. 89)].” More broadly, well-being also includes focus on living in communal harmony and in a sustainable manner [13].

Advocacy

Decent work was central to the 2023 Joint Congress of the International Commission on Occupational Health/Work Organization and Psychosocial Factors Conference. The theme of the conference was Imagine Decent Work Beyond COVID-19. The focus was on creating new paths for decent work, and the whole conference was an effort in advocacy. However, to properly address decent work, there will be a need for transdisciplinary studies and systems science to be fully on target.

Governance

After the first few attempts to operationalize decent work, there has been a lapse in developing indicators in general, and for the OSH component in particular. To make progress in this area it is useful to see how regional OSH agencies and OSH research institutes such as the National Institute for Occupational Safety and Health (NIOSH), European Agency for Safety and Health at Work (EU-OSHA), and Eurofound operationalize job quality. Worldwide, the “job quality framework” of the Organization for Economic Cooperation and Development (OECD) is used. As noted in an EU report, “Work-related health outcomes represent a much higher burden for society than work accidents”; moreover, “all occupational diseases with a principally unambiguous relation between cause and consequence account for only a small percentage of all work-related diseases [12(p. 74)].”

1. **Determinants of Decent Work**

New Technologies and New Forms of Work

Technology can both enhance the achievement of decent work and be an impediment to it. Technology can reduce drudgery and danger of some types of work but can also displace workers or create new stresses [14,15]. It is difficult to predict how automation, robotization, and digitalization will influence the size of employment. What has been observed is that automation, particularly the use of artificial intelligence (AI) in platform work, has turned workers into self-employed people with no rights and less social protection. The increase in informality, telework, and digital labor platforms will raise psychosocial risks because of reducing worker control and autonomy, as well as challenging the boundary between work and personal life [16,17].

There is a need to understand how new and emerging risks will impact the future of work [18]. Collaborative research actions with OSH are important for interventions in anticipation and subsequent mitigation [19]. The development of appropriate public policies will ensure workers’ rights in the face of new forms of work [20].

An expanded coverage network that includes all workers, including those in the informal market, will facilitate the adaptation of specific policies, with freedom of association and collective bargaining, ensuring social protection and opening new pathways for social dialogue [20,21,22]. The multivocality of workers and their arbitration in recognizing new and emerging hazards increase bargaining power, especially in low- and middle-income countries [20,21,23]. The OSH professionals need to address the future of decent work comprehensively, [23] and a circular and environmentally sustainable economy can reduce illnesses related to new technologies and forms of work [24,25].

The OSH field can promote decent work by (1) promoting continuous surveillance for early identification and mitigation, [26] (2) redesigning safety measures through fostering dialogue and cooperation among workers and professionals from different fields, [27] (3) implementing a green economy (circular, social, and solidarity economy) to generate green jobs, [28,29] and (4) implementing proactive and collaborative public policies that support entrepreneurship and innovation in promoting decent work [11,17,29,30].

Demographics – Aging Workers

In a society aging at a high rate and where a prolonged working life is a priority of many countries, improvements in life expectancy have not always been accompanied by reduced disability rates, as people are living longer but not necessarily in better health [31]. The disability rates of older workers (more than 50 years old) are diverse and may limit daily activities [32].

The changes during the aging process of workers, characterized by several negative effects, [33–35] highlight the issue of sustainable workplaces and decent work for all. Disability levels arise not only from the aging process but also through exposure to adverse work environments [31,35]. This perspective is crucial when looking at the changes in global economy and its enormous impact in labour markets, making significant the creation of early employment trajectories and exploring the influence of contextual factors in working life experiences since workers were young [36].

The creation of decent work is a multifactorial, complex issue that requires adoption of a systems framework to identify and implement appropriate structures to support the creation of sustainable employment across the life course to encourage and enable older workers to remain at work [37].

Several recommendations should be considered by researchers, practitioners, advocates, policy makers, and governments [34–40]. In the macro-level: provide guidance for organizations in the creating of sustainable working conditions through improved management of physical and psychosocial hazards; ensure disability protection of productive aging workers and promote policies to ensure disability protection along working lives; promote lifelong learning programs toward the empowerment of workers; disseminate information about labour rights and social resources; support initiatives by workers’ representatives; and promote and participate in forums with government representatives, employers, and civil society.

At the meso-level, use new technologies to promote a better coupling between humans and work systems and to increase the integration of disabled and older workers; investigate the impact of automation in the creation of quality jobs aiming for the prevention of disability; explore virtual reality to promote new forms of work for disabled and aging workers; include mental health in the perspective of systems design; explore the potentials and pitfalls of new challenges; and promote the design of work systems integrating human factors and ergonomic principles.

At the micro-level, undertake systems analysis of the drivers for sustainable employment, with a particular focus on older workers; conduct longitudinal research to examine the relevant influences related to sustainable working conditions; investigate the needs of workers throughout working life, identifying critical periods; undertake comprehensive risk assessments of the work environment to include coverage of physical and psychosocial hazards, in order to ensure prevention strategies can be implemented early; involve older workers in planning their jobs to ensure a good match between their capacities and the job requirements; ensure the integration in workplaces of disabled, productive, aging workers; and analyze work systems, taking into consideration the limitations and capabilities of workers as they age.

Demographics – Gender

Gender inequality at work negatively affects decent work and economic growth. The intersectionality of gender and other forms of discrimination impede access to decent work and achievement of economic security [41–44]. Gender equality and gender sensitivity in existing OSH laws are still lacking in much of the world, leading to the lack of decent work for women. Gender equality at work is a matter of human rights, and it makes good sense for employers [41–43]. “One of the main obstacles for achievement of gender equality is the failure to use” sex-disaggregated data for situation analysis and for gender-responsive planning [41]. In addition to a rights-based equity rationale, there is also an economic efficiency rationale.

Gender equality requires a holistic approach if decent work is to be achieved. This should include employment policies, social dialogue on skills and training issues, and access to social protection. Aside from maternity protection issues, there is inadequate attention to biological and reproductive issues in OSH.

The ILO has issued 10 guidelines that are useful in mainstreaming gender into OSH policy and practice. These include topics such as development, legislation, and policies to address gender inequality in OSH practice; ensuring consideration of gender differences in work management; use of sex-disaggregated data; equal access to occupational health services; equal participation of both women and men; designing work equipment and personal protective equipment for protection of both women and men; and addressing working time arrangements and work-life balance [45]. The ILO agenda for decent work puts gender equality as central [46].

Failure to take gender-specific patterns of occupational hazards and risks into account in OSH policies and prevention strategies leads to deleterious outcomes and impedes achievement of decent work [45].

Globalization

Globalization contributes to the lack of OSH programs in many countries and is a major impediment to achieving decent work. While globalization has had a positive impact on economic growth, its impact on OSH and ultimately decent work has not been universally positive [47]. As economies become more interconnected, increased vulnerability to economic shocks and fluctuations can increase. Social protection systems, including OSH, have become increasingly crucial in ensuring that workers are safeguarded against the negative impacts of globalization [48].

The lack of full ratification and implementation of the ILO convention on Occupational Health Services is a strong impediment to decent work. As Rantanen and colleagues [47] observe in Decent Work Country Plans, “...accidents and safety have been well-addressed, but the health dimension and the work-related diseases, WRB except for HIV-AIDS at the workplace are almost non-existent.”

The global burden of work-related diseases and injuries is large. Globally, 2.9 million deaths have been attributed to work (2.58 million due to work-related diseases and 0.32 million to occupational injuries) [9]. Consequently, there is a need for further developments and inclusions of strategies for occupational health services in Decent Work Country Plans [47].

Globalization has a complex impact on work. While it can bring about job opportunities and economic growth, it also presents challenges for vulnerable workers and industries [49]. Effective policies, investments in education and training, and a focus on fair labor practices can help maximize the benefits of globalization while addressing its negative consequences on employment. The OSH field can promote and support these actions.

Social dialogue is essential in promoting decent work in a globalized world. It is recognized that social dialogue in addressing labor issues and advancing workers’ rights is significant. Social dialogue with stakeholders ultimately leads to more equitable and sustainable global labor markets, as well as OSH [50].

Globalization has a significant influence on decent work and workers’ rights. International organizations, as well as research institutions, continuously analyze the challenges and opportunities that globalization presents for workers and advocate for policies and practices that uphold decent work and workers’ rights [51].

Informal work in the context of decent work

Over 60% of the global labor force is informal, especially in low- and middle-income countries, representing 2 billion workers. Most workers are driven to informality because of a lack of opportunities and means of livelihood [52]. These include numerous people worldwide working as farmers, fishers, construction workers, miners, home-based domestic workers, kitchen workers, street vendors, cleaners, waste pickers, gig workers, deliverers, and couriers, among others. Exposures and risks at informal work vary widely depending on the occupation, economic activity, region, and workers’ characteristics and situations. However, they can include exposure to chemical, physical, ergonomic, and biological risks, as well as low job control and unsafe and forced work. Workers can also be exposed to psychosocial hazards, social exclusion, workplace violence, harassment, isolation, and long working hours without adequate rest and work-life balance, which can lead to adverse health outcomes [20,53].

Informal work usually interacts with other determinants of decent work. Vulnerable workers and minorities such as migrants, children, black, elderly, and gender-marginalized individuals tend to be driven to informal and precarious jobs, which may intensify the burden of exposure and diseases. Climate change and pandemics may affect informal workers disproportionally, who may lack OSH advice and training, adequate protective equipment, flexibility, and control over work conditions. New technologies, such as artificial intelligence, add more complexity with new forms of work and drive the “Uberization” of work, where legions of workers are in limbo between formality and informality, working through e-platforms for global enterprises that pledged not to have any workers, taking advantage of soft or absent regulation and rights [20].

Commonly, informal workers lack social and legal protection, stable income, compensation, benefits, and life and health insurance, [20,54] and they are ignored in health care and surveillance actions. However, informal work must be addressed in the regulatory framework, public policies, and OSH discussions globally [53,55,56].

Decent work must be guaranteed as a fundamental right for all informal workers. Analysis and interventions on work environments and processes may consider promoting decent work, health, and well-being while mitigating workers’ exposures, risks, vulnerabilities, and health effects. Informal workers must be educated, empowered, and included in labor and health debates and public policy design, including through labor unions and workers’ representatives [57]. Informal work and its risks need to be incorporated into the curriculum of health and OSH professionals, highlighting informality as a critical health vulnerability.

Safe work standards, equality, and dignity at informal workplaces must be ensured and promoted constantly. Lastly, more research and epidemiological data analysis are needed to better understand the complex aspects of informality, take action, and monitor progress toward formal, safe, decent work. Thus, it must be prioritized, promoted, and funded accordingly.

Pandemics

The impact of COVID-19 on the world of work has been significant and indicative of what future pandemics might bring [58,59]. COVID-19 lessened the availability and opportunity to achieve decent work. Frontline workers (health care, first responders, retail and service workers) may be most at risk from pandemic infections. Pandemics may put many people out of work and result in unemployment and underemployment. At issue is whether workers would be able to return to their jobs or if their jobs will be lost. COVID-19 led to decentralization of work, which had various negative impacts, including decreases in social skills and interactions, increases in loneliness, and changes in physical and mental health [60]. Lowe noted that “the pandemic has amplified worker mental health issues, from stress to burnout and anxiety [61].” COVID-19 also disproportionately affected black, indigenous and racialized workers [61]. As Sigahi et al. noted, during the pandemic “...working conditions suffered from severe restrictions, thereby threatening workers’ health [58].” Workers’ voice and their right to have an input in decisions was also affected, and all these factors limited the achievement of decent work. The need for authoritative public health guidance during a pandemic complicates the extent of worker input into management decisions, but there is still room for participatory discussions involving workers if that is an organizational objective.

The COVID-19 pandemic has illustrated the relationship between work, public health, physical and mental health, and decent work. There is a need for government agencies to monitor, evaluate, and respond to these trends. This requires expanding the OSH framework, which previously focused on disease and injury hazards [23,59].

Adaptations of organization management systems will be required to support efforts to develop resilient working conditions in preparing for new pandemics.

OSH efforts to address a pandemic also could be used to address unemployment and protect the rights of workers. The OSH community could serve to foster communications between employers, workers, and authorities, which would be a means of advocating for workers’ rights. Additionally, there is a need for research to continue to learn the lessons from COVID-19 by tracking the “...long-term effect of the ... pandemic on employment patterns, work arrangements, and worker safety, health, and well-being [59].” There is value in using a systems-based multi-level model such as developed by Sorensen and colleagues [62] to anticipate the way work is structured, managed, and experienced by workers. Such a model can help set research priorities and yield information to help develop policies for decent work.

Workplace policies

Workplace policies are rules or guidelines in a business that define the practices of the organization with regard to health and safety, workplace conduct, hirings, management actions, and interactions with co-workers and customers. Workplace policies guide an organization and communicate its values, culture, and philosophy. The policies are the means by which an organization achieves decent work. Poor policy management is a barrier to achieving decent work. Key in workplace policy is the extent to which workers’ voice is honored. When workers’ voice is not honored, that is a barrier to decent work [63].

Workplace policies are an essential vehicle for protecting, supporting, and promoting workers’ rights. The enforcement of the right of workers to perform their jobs in optimal health and safety conditions is an OSH matter, since one of its main purposes is to assess and manage occupational risk factors. When the workplace is decentralized such as in telework (contract or temporary), new and complex challenges to protect workers’ rights arise. Lack of equality in treatment will have an effect on achievement of OSH as well as all other aspects of decent work [49].

Numerous OSH actions, interventions, tools, and strategies can have positive reflections and beneficial effects, although indirect, on application fields related to decent work that are not classic or traditional ones of OSH [64–66]. The OSH system and its professionals have considerable potential to defend workers’ rights and implement their social protection through a holistic and comprehensive model of workplace policies analysis, management, and development. For example, the OSH experiences, expertise, and skills related to application of the *Total Worker Health®* (TWH) approach that have been gained in recent years and may grow worldwide in the near future may also be valuable in the development of integrated workplace policies aimed at supporting the social protection of workers [67,68].

There is a need to ensure the effectiveness of workplace policies to investigate OSH and ethical incidents. For various types of jobs such as subcontracting, temporary work, and multiple-party employment, OSH policies need to clearly define the responsibilities of the employer [49].

A critical recommendation is equality of treatment for workers in different work arrangements. Employers should develop human-centered workplace policies. Decent work can also be furthered by the promotion of discussion between employers and workers on how to modify/design work environments to prevent exposure to psychosocial and physical hazards. Policy makers and governments can define and implement extended social protection policies that involve the OSH community in both their definition and practical application (for example, by exploiting synergies between and roles of OSH professionals, employers, and workplaces). Research is needed to investigate exposure risks and teleworkers’ acute and psychosocial risk factors, work intensification, and long work hours [60].

Climate Change

Climate-related hazards and resulting adverse effects are increasingly affecting workers [16,69,70]. Climate change has a major impact on whether there will be decent work. Increasingly, climate-change-caused migration is affecting whether, and where, some workers have work. Climate change hazards are leading to decreased worker productivity [71].

Climate change can impact workers through high temperatures, air pollution, exposure to ultraviolet radiation, hazardous vectors and plants, and extreme weather. Climate change also can have an effect on the built environment and as a driver of industrial transitions causing workers to lose jobs.

A major hazard from climate change is an increase in the number of hours of work, leading to physical and mental fatigue, traumatic injuries, and various health effects. As climate change effects become more prevalent, the mental health of the population in general and workers in particular can be affected. The impact of climate change will disproportionally affect workers already burdened by deleterious occupational, environmental, and socioeconomic effects [72]. Informal workers are particularly vulnerable to adverse effects from climate change [73].

There is a need to further understand and investigate the health and safety effects of climate change on workers and what interventions employers, authorities, and workers can implement. This will require a dialogue between workers, employers, and authorities.

There is also a need for surveillance of the impacts of climate change. Surveillance of climate-related outcomes is lacking in many countries. This makes it difficult for authorities to identify high-risk groups and develop mitigation strategies. Additionally, enforcement of occupational health and safety standards is critical for protection of work populations from climate-related hazards [72].

Heat stress is the most ubiquitous of climate-related effects and has a great impact in countries that have higher rates of working poor, informal employment, and subsistence agriculture [74]. “The greater number of working hours expected to be lost to heat stress, the lower coverage of their social protection systems,” the ILO has noted, [74] and “to address health stress, governments must work together with workers and employers’ organizations through social dialogue in designing, implementing, and monitoring integration and adaptation policies.”

The OSH field can promote decent work with regard to changing climate conditions by (1) including climate change as a focus in OSH training programs, (2) promoting and advocating actions by employers and authorities in developing mitigation and adaptation policies and programs, (3) identifying lack of equity, gender inequality, and lack of social protection among workers exposed to climate-related hazards, and (4) serving as a voice about the broad range of adverse effects that climate change can have on decent work.

1. **Impediments, needs, and recommendations**

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Cell 1

Newly Emerging Hazards – Employment Creation

Psychosocial hazards will continue to emerge as the greatest threat to workers [75]. New holistic approaches are needed to address hazards and threats in the future of worker well-being, and Total Worker Health represents such a holistic approach [67,68,76].

**Practitioners**

* Implement OSH services dedicated to psychosocial risks by evaluating those which, although not strictly pertaining to the OSH system, are nevertheless a consequence of changes in the world of work associated with scientific and technological progress and employment creation (for example, job insecurity, fair wages, and reasonable working hours).
* Adopt an integrated and multidisciplinary approach toward the workers, with their social and psychosocial well-being as the main focus.

**Researchers**

* Investigate, specifically through a transdisciplinary approach, possible occupational and non-occupational (for example, social, economic, and educational) determinants and their synergistic interactions that could negatively impact workers’ health and safety.
* Identify and apply specific research application tools (such as the NIOSH WellBQ) that can provide useful indications for developing strategies and policies to counteract the effects of the above-mentioned determinants.

**Advocates**

* Raise awareness among policy makers and the public about the possible OSH implications of hasty and uncontrolled technological progress and/or employment creation.
* Highlight OSH concerns and ensure that they are adequately considered in political and social debate.

**Policy makers and governments**

* Give full consideration to OSH principles within the decision-making process.
* Design and implement public policies and strategies to support job creation that respects decent work principles.

**Educators**

* Develop targeted training and information programs for employers, employees, and OSH professionals.
* Utilize transdisciplinary and systems thinking approaches in training new professionals in OSH.

Cell 2

New and Emerging Hazards – Social Protection

Social protection has an important role in confronting new and emerging hazards, ensuring conditions for the development and social integration of workers and their families and development of public policies that adhere to the principles of decent work [30,47].

**Practitioners**

* Develop new transdisciplinary skills and training with a holistic approach to proactively anticipate new and emerging risks [16,19].
* Identify categories of workers (such as rural and Industry 4.0) and groups (such as women and elderly) by investigating new elements and phenomena in their work processes and environments, anticipating their mitigation.
* Support the autonomy and flexibility of vulnerable workers in the management actions for new production approaches.
* Redesign safety, visualizing the dialogue and cooperation between professionals from different areas [27].

**Researchers**

* Investigate technological innovation for clean production (green production) in varied social and economic conditions.
* Investigate social and environmental innovation of human-centered Industry 5.0 principles.
* Publish and disseminate best practices and recommendations associated with new and emerging risks.

**Advocates**

* Promote trade union training and dialogue to strengthen vulnerable workers in low- and middle-income countries.

**Policy makers and governments**

* Implement green economy (circular, social, and solidarity economy), generating green jobs [28,74].
* Implement proactive and collaborative public policies in addressing new and emerging hazards that support entrepreneurship and innovation in promoting decent work [30,74].
* Introduce Industry 5.0 principles and new technologies that promote cross-sector collaboration, ensuring sustainable growth and social protection of workers in the face of new and emerging hazards.

**Educators**

* Educate new professionals in systems thinking and transdisciplinary approaches.

Cell 3

New and Emerging Hazards – Rights of Workers

**Practitioners**

* Provide precautionary protection when there is uncertainty of the severity of a new hazard.
* Involve workers in planning for the use of new technologies.

**Researchers**

* Investigate psychosocial demands of new technologies on workers.

**Advocates**

* Promote consideration of workers’ rights when new technologies are introduced into the workplace.

**Policy makers and governments**

* Develop policies to ensure protection of workers when new technologies are implemented.

**Educators**

* Ensure that curricula address rights of workers as a foundational component

Cell 4

New and Emerging Hazards – Social Dialogue

Fair terms of employment, decent working conditions, safety and health at work, and development for all cannot be achieved without active involvement of workers, employers, and governments [52,77]. New and emerging hazards for safety and health or workers are a considerable challenge in the context of social dialogue because of large uncertainties about hazard, risk, and burden.

**Practitioners**

* Communicate to employers, workers, and representatives of government the potential safety and health risks associated with the presence of new and emerging hazards in workplaces.
* Facilitate active workplace participation of workers in the processes of identifying, evaluating, and managing new and emerging hazards by pursuing a bottom-up approach.

**Researchers**

* Investigate all possible adverse effects related to exposure to new and emerging hazards.
* Define innovative and current strategies for assessing and managing these risks.
* Implement effective and innovative training and education programs for employers, workers, and OSH professionals, aimed at increasing their knowledge and awareness of new and emerging hazards.

**Advocates**

* Promote a social dialogue between the parties that is collaborative and constructive (rather than confrontational), to arrive at shared solutions to adequately address the new and emerging hazards.
* Foster the dissemination of research findings to stakeholders, thereby facilitating a social dialogue on how to incorporate this information into practical strategies and policies.

**Policy makers and governments**

* Develop intervention actions and policies that facilitate the transferability of research data.
* Promptly update the relevant regulatory framework on worker health and safety protection, taking into account the indications arising from the social dialogue.

**Educators**

* Implement training programs for workers about new hazards.
* Develop education programs for professionals on promoting social dialogue.

Cell 5

Demographics (aging and gender) – Employment Creation

The creation of decent work is a multifactorial, complex issue that requires adoption of a systems framework to identify and implement appropriate structures to support the creation of sustainable employment across the life course to encourage and enable older workers to remain in work. An aging population has and will continue to have a significant impact on the available labor force. For retention of older workers, two conditions must be met: 1) a desire by an individual worker to remain in paid employment and 2) the ability of an individual to remain at work. Addressing gender equality is a critical component of achieving decent work. Providing opportunities for women to obtain and advance in good jobs is paramount.

**Practitioners**

* Undertake comprehensive risk assessments of the work environments to include coverage of physical and psychosocial hazards specific to women and older workers.
* Ensure that psychosocial and physical hazards are assessed on a regular basis, so that prevention strategies can be implemented early.
* Involve older and women workers in planning their jobs to ensure a good match between their capacities and the job requirements.

**Researchers**

* Undertake systems analysis of the drivers for sustainable employment, with a particular focus on women and older workers.
* Conduct longitudinal research to examine the relevant influences related to sustainable working conditions.
* Analyze at the workplace level what comprises successful interventions to support the creation of sustainable working conditions for older and women workers.

**Advocates**

* Support development of opportunities for skill training of women and older workers.
* Act as mediator in establishing partnerships with public and private sectors.
* Raise resources for projects at the regional and local levels.
* Disseminate information about labor rights and social resources.
* Support initiatives by workers’ representatives.
* Promote and participate in forums with government representatives, employers, and civil society.

**Policy makers and governments**

* Provide guidance for organizations in creating sustainable working conditions for women and older workers through improved management of physical and psychosocial hazards.
* Educate employers on the benefits of retaining older workers and the skills they can contribute to workplaces.
* Create opportunities and incentives for reskilling/upskilling of women and older workers to ensure they are able to meet the contemporary demands of organizational needs.

**Educators**

* Provide reskilling and upskilling for workers and professionals.
* Providing training on gender- and age-specific hazards.

Cell 6

Demographics – Social Protection

Health is a major factor influencing the ability of women and older people to participate in work. Disability protection for workers, particularly older workers, is integral for workforce participation. The creation of working conditions and jobs that are appropriate and adequate for workers with and without disabilities is needed.

Social protection is a powerful tool to address gender inequality [78]. There is a need for decent work strategies that incorporate gender-specific OSH issues in social protection programs.

**Practitioners**

* Ensure the integration in workplaces of disabled, productive, aging workers.
* Analyze work systems, taking into consideration the limitations and capabilities of workers as they age.
* Provide workplace and job adjustments according to the skills and capabilities of women and older workers.
* Promote the design of work systems integrating human factors and ergonomic principles.
* Use new technologies to promote a better coupling between humans and work systems, promoting the integration of disabled workers.
* Promote digital literacy among disabled and older workers.
* Promote lifelong learning projects in organizations to develop new abilities and capabilities for women, disabled, and older workers.

**Researchers**

* Explore the potentials and pitfalls of new challenges, like artificial intelligence (AI), to increase the integration of disabled and older workers.
* Investigate the needs of workers throughout working life, identifying critical periods.
* Include mental health in the perspective of systems design.
* Explore virtual reality to promote new forms of work for disabled and aging workers.
* Investigate the impact of automation in the creation of quality jobs, aiming at the prevention of disability.
* Investigate gender-specific hazards and risks, and identify means to prevent and control them.

**Advocates**

* Inform disabled and aging workers about their occupational risks and rights.
* Promote the participation of representatives of women, disabled, and aging workers in public policies.

**Policy makers and governments**

* Ensure disability protection of productive women and aging workers.
* Promote policies to ensure disability protection along working lives.
* Promote OSH actions and policies to prevent disability due to work conditions.
* Boost job quality and assess job quality regarding disability protection for all generations and genders.
* Promote lifelong learning programs toward the empowerment of workers.
* Promote OSH actions and policies to protect disabled aging workers.
* Promote actions and policies toward sustainable workplaces and decent work for all.

**Educators**

* Develop lifelong learning programs for OSH professionals.

Cell 7

Demographics – Rights of workers

The rights of women and older workers are not always observed in the workplaces. Of particular note is the absence of equal pay for work of equal value. Age and gender discrimination creates obstacles in obtaining employment, in the practice of employment, and in retaining employment in difficult economic times.

**Practitioners**

* Involve women and older workers in planning for work design and hazard control.

**Researchers**

* Evaluate the effectiveness of personal protective equipment for women workers.

**Advocates**

* Promote equality for all workers in the workplace.

**Policy makers and government**

* Develop policies promoting social dialogue that address specific needs of women and older workers.

**Educators**

* Train OSH professionals in how to foster social dialogue in the workplace.

Cell 8

Demographics – Social Dialogue

Social dialogue is defined by the ILO to include all types of negotiation, consultation, and simple exchange of information between or among representatives of governments, employers, and workers on issues of common interest relating to working conditions and economic and social policies. Precarious work is an obstacle to social dialogue. Women workers, older workers, and young workers have been disadvantaged regarding social dialogue. Social dialogue is essential to enable decent work. Depending on the context, some groups such as women, young, and older workers are at risk of being excluded from social dialogue, formal or informal, because they are not well organized or for socio-cultural reasons [79].

**Practitioners**

* Ensure the integration in workplaces of women, youth, and aging workers.
* Ensure health and safety training for youths to equip them for decision making and social dialogue.
* Promote inclusion of youths, women, and older workers in workplace policies.
* Analyze work systems, taking into consideration the limitations and capabilities of women, young, and older workers.
* Provide workplace and job adjustments according to the skills and capabilities of women, young, and older workers.
* Promote the design or work systems integrating human factors and ergonomic principles.
* Use new technologies to promote the integration of women, young, and older workers.
* Promote digital literacy among women, young, and older workers.
* Promote lifelong learning projects in organizations, to develop digital abilities and capabilities for women, young, and older workers.

**Researchers**

* Identify gaps in decent work experience for youth, women, and older workers.
* Explore the potentials and pitfalls of new challenges, like AI, to increase the integration of women, young, and older workers.
* Explore virtual reality to promote new forms of work for women and aging workers.
* Investigate the impact of automation in creating quality jobs, aiming at prevention of discrimination.
* Identify veritable options for social dialogue for youth, women, and older workers.

**Advocates**

* Inform women, youth, and aging workers about their occupational risks and rights.
* Promote the participation of representatives of women and aging workers in public policies.
* Prevent groups from being excluded from social dialogue, by promoting organized formal or informal structures.
* Include more women in employers’ and unions’ organizations.
* Encourage women and youth participation in social dialogue.

**Policy makers and governments**

* Promote social dialogue and a participatory approach.
* Promote social dialogue to enable decent work.
* Reinforce formal dialogue between governments, employers, and workers.
* Organize policies and actions to foster the inclusion of youth and women.
* Boost job quality and assess job quality for all.
* Promote lifelong learning programs toward the empowerment of workers.
* Promote OSH actions and policies to protect women, youths, and aging workers.

**Educators**

* Train professionals to understand disadvantages of women, young, and older workers.

Cell 9

Globalization – Employment Creation

Globalization has a complex impact on employment creation. While it can bring about job opportunities and economic growth, it also presents challenges for vulnerable workers and industries [49]. Effective policies, investments in education and training, and a focus on fair labor practices can help maximize the benefits of globalization while addressing its negative consequences on employment.

**Practitioners**

* Enhance compliance with international safety and health standards.
* Promote information to employers and workers about the impact of globalization.

**Researchers**

* Research the impact of unemployment due to globalization.
* Study the psychosocial effects of high competition, mental overload, loss of autonomy, and reduced inter-human contact.

**Advocates**

* Advocate for fair labor practices, including equitable wages and benefits.
* Provide information about the relationship among globalization, informal work, precarious work, and migrant work.

**Policy makers and Governments**

* Promote economic diversification to make the economy less dependent on certain sections.
* Implement measures to ensure that safety and health standards are upheld in the global supply chain, both domestically and internationally.

**Educators**

* Provide workforce training and development programs focused on globalized industries such as global supply chains.

Cell 10

Globalization – Social Protection

As economies become more interconnected, increased vulnerability to economic shocks and fluctuations can be increased. Social protection systems have become increasingly crucial in ensuring that workers are safeguarded against the negative impacts of globalization [48].

**Practitioners**

* Develop and implement emergency response and preparedness plans, coordinating with local authorities.
* Designing inclusive social protection programs.

**Researchers**

* Examine how globalization affects the availability and adequacy of social protection systems.
* Research how social protection can be improved to adapt to the changing nature of globalization.

**Advocates**

* Campaign for more robust social protection.

**Policy makers and Governments**

* Include a dynamic social protection system and redistribution measures as an integral part of a set of policies.
* Ensure that the specific elements are included in a national context as part of a coherent set of policies.

**Educators**

* Train OSH professionals on how to implement social protection programs for workers.

Cell 11

Globalization – Rights of Workers

Globalization has a significant influence on decent work and workers’ rights.

**Practitioners**

* Identify workplace hazards and implement control measures to mitigate risk.
* Disseminate information to workers in various situations.

**Researchers**

* Work with international organizations, such as the World Health Organization (WHO), ILO, and the World Bank, to include OSH as an integral part of global development and labor agendas.

**Advocates**

* Support the enforcement of labor rights, including ensuring fair wages, safe working conditions, and rights to collective bargaining for workers.

**Policy makers and Governments**

* Ensure that workers’ rights are not weakened from blind spots caused by globalization.
* Engage with all stakeholders to improve the rights of workers.

**Educators**

* Raise awareness of the universal rights of workers.

Cell 12

Globalization – Social Dialogue

Social dialogue is essential in promoting decent work in a globalized world. It is recognized that social dialogue is critically important in addressing labor issues and advancing workers’ rights. Social dialogue engagement with stakeholders ultimately leads to more equitable and sustainable global labor markets, as well as OSH [50].

**Practitioners**

* Provide employers with field evidence of workplace hazards and risks.

**Researchers**

* Conduct research on the association between globalization and the work environment to promote social dialogue.

**Advocates**

* Advocate for the development and adoption of international and domestic standards.

**Policy makers and Governments**

* Encourage the integration of core labor standards, including social dialogue with social partners.
* Create incentives for employers who go above and beyond in implementing OSH measures.

**Educators**

* Train workers, advocates, policy makers, practitioners, and OSH professionals to address the effects of globalization in the context of social dialogue.
* Promote the use of tools such as the Self-Assessment Method for Social Dialogue Institutions (SAM-SDI, ILO) for enhancing social dialogue.

Cell 13

Informal Work – Employment Creation

Informal work is defined by the ILO as “all economic activities carried out by workers and units that are – in law or in practice – not covered or insufficiently covered by formal arrangements [80].” Globally this includes more than 80% of enterprises and 60% of workers. While informal work benefits workers who have no job, it is typically characterized by low production and growth, loss of fiscal revenue, equity issues, a high incidence of poverty, severe decent work deficits, and lack of suitable social protection [49].

**Practitioners**

* Promote information to employers and workers concerning the importance of formality to ensure workers’ OSH.
* Promote a coherent, integrated approach involving OSH policies and health promotion, skill development, and employment creation.

**Researchers**

* Investigate the prevalent forms and drivers of informality and formalization specific to countries and circumstances.
* Refine strategies to collect and share data on informal employment.

**Advocates**

* Collaborate with governmental institutions to increase awareness of the benefits of formality for employers [81].
* Improve business awareness of the benefits of formality, including access to financial and insurance services deriving from employing workers with formal contracts [81].

**Policy makers and governments**

* Increase the ability of the economy to absorb informal workers and enterprises into the formal economy.
* Reduce tax compliance cost and simplify tax systems to reduce the burden of informality.
* Define a suitable timetable for a step-by-step approach to the transition from an informal to a formal economy in all the economic sectors concerned.

**Educators**

* Educate professionals about the informal economy and needs of informal workers.

Cell 14

Informal Work – Social Protection

Workers in the informal economy are not recognized, registered, regulated, or protected under labor legislation and social protection, and this prevents them from exercising or defending their fundamental rights. Social protection includes nine major areas: child and family benefits, maternity protection, unemployment support, employment injury benefits, sickness benefits, health protection, old age, invalidity/disability benefits, and survivor benefits [82].

**Practitioners**

* Develop risk assessment and management processes able to identify informal economic activity in different occupational settings.
* Define the IE entity in order also to implement occupational health counseling and health promotion initiatives for workers.
* Promote efforts, including formative campaigns, to support employers’ awareness of the importance of formality with respect to workforce OSH.

**Researchers**

* Identify OSH hazards in informal work.
* Investigate suitable occupational risk-preventive and health-promotive strategies.
* Define suitable health indicators to monitor informal work.

**Advocates**

* Support social measures to protect informal workers.
* Support consultations with workers’ and employers’ organizations to identify hazards of informal work and means to prevent them.
* Promote social insurance programs.

**Policy makers and governments**

* Promote policy actions and laws to address efficiently the transition from informal to formal work 83,84].
* Develop and implement social protection instruments, including safety nets, economic inclusion programs, and productivity-enhancing measures, as well as social insurance implemented with the support of coordinated policies [85].

**Educators**

* Train OSH professionals to develop research on and programs for informal workers.

Cell 15

Informal Work – Rights of Workers

Although the informal economy is the most common employment arrangement in the world, it is widely characterized by lack of workers’ rights.

**Practitioners**

* Explore exposures and risks, and investigate informal workers’ acute and chronic health conditions, considering possible links with occupation.
* Train informal workers on recognized occupational risks and ways to protect themselves.

**Researchers**

* Produce best-practice evidence on informal workers’ exposures, health impacts, and rights, considering the rapid globalization, industrialization, technification, changing of workforce demographics, and non-standard work arrangements.

**Advocates**

* Promote informal workers’ organizations and unions and inform them about their occupational risks and rights, to qualify their participation in public policies development.
* Promote workers’ inclusion, communication with decision makers, and collaborations between state, company, and worker representatives with government financial support [57].

**Policy makers and governments**

* Regulate informal workers and recognize informal workers’ rights.
* Ensure comprehensive labor legislation and social protection for informal workers, including through work and social benefits, such as pensions, compensation for workplace injuries and illnesses, sick leave, paid holidays, and access to affordable child care [20,54].
* Promote OSH actions and policies to protect informal workers from occupational risks and social and environmental injustices.
* Include informal workers in labor and health statistics, such as occupational injury and unemployment rates [20,53,56].
* Ensure universal health coverage and equitable access for informal workers to quality health services [56].
* Facilitate informal workers’ transitions to formality, considering the specific circumstances of different countries and categories of economic units or workers [20].
* Promote collaborations between governmental and non-governmental actors to foster decent work and to protect informal workers’ rights, including among academia, health workers, informal-worker organizations, and advocates.
* Ensure and promote the participation of informal workers’ unions and organizations in political arenas and decision-making processes.

**Educators**

* Include informal work and OSH in the health curricula and continuing-education initiatives.

Cell 16

Informal Work – Social Dialogue

Workers in the informal economy are usually excluded from and underrepresented in social dialogue. Social dialogue can be a tool for enhancing the rights of workers in the informal economy.

**Practitioners**

* Ensure the use of social dialogue to engage workers in the informal sector.
* Promote health and safety training of workers in the informal sector.

**Researchers**

* Explore options for social dialogue (bipartite and tripartite) between informal sector workers, employers, and government.
* Provide evidence-based data that are country-specific on work conditions of workers in the informal sector, and develop appropriate interventions and policies.
* Monitor interventions to assess their effectiveness.

**Advocates**

* Promote social dialogue between government and trade unions in the informal sector, with examples of success in other countries.
* Promote cooperation and collaboration between employers in the same trade in the informal sector to form an employers’ forum.
* Promote programs that celebrate/encourage informal sector workers and workplaces with OSH best practices.

**Policy makers and governments**

* Ensure registration of all informal workers with relevant government agencies.
* Include a section for informal sector workers in national policies for workers, especially for considerations of minimum wage, working hours, and other work conditions.
* Include the unions of informal sector workers in the development of national policies.
* Develop policies for women, young workers, and apprentices in the informal sector.
* Institute policies that promote social dialogue in the engagement of workers in the informal sector.
* Develop legislation for standards and basic requirements for informal workplaces.
* Through social dialogue, encourage enrollment of informal sector workers in community-based insurance programs that will enhance access to quality health services.
* Develop policies to transition from informal work into the formal work sector.

**Educators**

* Promote training of representatives of worker groups in the informal sector as peer educators on essentials of safe and healthy workplaces.

Cell 17

Migration – Employment Creation

Migrants contribute to the economic growth of their host countries in many ways and bring new skills and competence with them, thus improving labor market efficiency and helping reduce labor shortages [86]. Migrant workers are often involved in dirty, dangerous, different, and dull jobs with low pay.

**Practitioners**

* Promote coherent, integrated approaches involving OSH policies and health promotion, skills development, social protection, and employment creation.
* Verify/check that the terms and conditions of a worker’s employment are specified in an appropriate, verifiable, and easily understandable manner, in accordance with national laws, regulations, employment contracts, and applicable collective agreements [87].
* Verify/check that the terms and conditions of employment are clear and transparent, and inform the workers of the location, requirements, and tasks of the job for which they are recruited.
* Support adequate occupational risk assessment and management processes that may be specifically targeted on the migrant workforce.

**Researchers**

* Conduct multidisciplinary, policy-oriented research focused on the analysis of migrant workers recruitment and employment conditions in different international settings.
* Identify and promote strategic and technical partnerships in migration research.
* Provide technical expert advice to governments and institutions.

**Advocates**

* Collaborate on the fair recruitment process of migrants, offering counseling to overcome limited access to information on safe recruitment channels and employment procedures [49].
* Collaborate with governmental and non-governmental Institutions to ensure protection and access to justice for victims of abusive and fraudulent recruitment and labor practices.
* Improve awareness on the right to freedom of association and collective bargaining.
* Ensure that workers have access to free, comprehensive, accurate information regarding their rights and the conditions of their recruitment and employment [74,88].

**Policy makers and governments**

* Develop and enforce policy actions and laws on migration.

**Educators**

* Train OSH professionals about needs of migrant works and employment issues involved with migration.

Cell 18

Migration – Social Protection

Migrant workers generally do not qualify for and are legally excluded from social protection. They can face a number of practical barriers in this regard: lack of information on or knowledge of rights and the administrative processes to access them; complex and lengthy administrative procedures; lack of contributory capacity or other financial challenges; language barriers; and lack of representation organizations and effective social dialogue [49].

**Practitioners**

* Empower and inform migrant workers on how to access social protection programs, including OSH, in both countries of origin and countries of destination [89].
* Involve individuals and communities in OSH policy decision making to develop policies and plan or adapt OSH services to make the best use of available resources [90].
* Support routine collection of data on the health status, needs, and access to healthcare to be able to tailor care to the needs of migrants.
* Conduct surveys highlighting migrants’ own views on their health and barriers to access to healthcare [91].

**Researchers**

* Develop information concerning the state of migrant workers’ access to social protection in order to identify gaps and offer alternatives [92,93].

**Advocates**

* Support migrants, who can face challenges in accessing social benefits.
* Advocate for the provision of social protection to migrant workers, through a strategy that deals with research, education, training, and engagement [89,92–94].
* Encourage reforms in the social security systems to ensure the extension of social protection to migrant workers.
* Produce and share with migrant workers materials to explain the social protection programs in the countries of origin and destination.
* Build networks between unions to share experiences, exchange and learn from each other on the protection of migrant workers’ rights, and establish active collaboration and meaningful partnerships with civil society organizations [49].

**Policy makers and governments**

* Develop policy actions and laws to extend social protection to migrant workers.
* Support access to and the portability of long-term benefits accumulated during the stay in destination countries when migrants return to their country of origin [45].
* Facilitate the access to some benefits, such as work injury benefits and basic healthcare, that should be legally provided by destination countries [95,96].

**Educators**

* Produce educational materials and tools for monitoring the implementation of social protection programs [92,93].
* Define lack of information and knowledge on social protection rights.
* Support training and education programs to allow social partners to build/extend their technical capacities.

Cell 19

Migration – Rights of Workers

Migrant workers often are not able to read the ILO Fundamental Principles and Rights of Work, which address freedom of association and right to bargain collectively; elimination of all forms of forced or compulsory labor; effective abolishment of child labor; and co-elimination of discrimination in employment and occupation [97].

**Practitioners**

* Engage with migrant workers; conduct surveys on their conditions in order to identify and report possible abuses.
* Understand the labor and recruitment regulations applied in the countries of origin and destination; understand and address gender-specific challenges; identify workers’ needs and gaps in legal protection and enforcement.
* Inform workers about risks occurring in their job tasks and provide suitable training on good practices for safe procedures at work.
* Ensure migrants’ access to OSH services and the adoption of appropriate preventive and protective measures.
* Develop a preventive culture in occupational health for migrant workers [98].

**Researchers**

* Conduct OSH qualitative and quantitative research on preventive programs in occupational healthcare delivery, adapted to current and future global geopolitical situations for migrants.
* Conduct policy-oriented research on how to best protect migrant workers.

**Advocates**

* Collaborate with governmental and non-governmental institutions in supporting the principle of equal opportunity and equal treatment at work.
* Promote a rights-based approach to labor migration and have an active function as policy-influencers, monitors, capacity-builders, and service providers [99].
* Provide legal assistance; counseling on safe migration, OSH, and rights at work; and verify the suitable adoption of preventive and protective measures for workers.
* Provide language courses, trainings on financial education, and professional education to workers [94].
* Support workers in precarious positions to make changes to their working conditions when unsafe or hazardous conditions are identified.

**Policy makers and governments**

* Develop/implement policies able to sustain the principle of equal opportunity at work [100].
* Develop/implement policies where the principle of equal treatment is followed to ensure that work performance is rewarded according to productivity and merit [82].

**Educators**

* Train OSH professionals in the fundamental principles of the rights of workers.

Cell 20

Migration – Social Dialogue

Social dialogue is important for migrant workers to realize their rights and achieve social protection. Many factors, such as language, lack of political power, discrimination, and lack of social standing impede social dialogue.

**Practitioners**

* Support workplace practices and measures for OSH as one of the main settings of social dialogue.

**Researchers**

* Conduct policy-oriented research to support the collection of information useful to better contextualize social dialogue with and for workers.
* Collect and analyze relevant and reliable labor migration data and knowledge to support dialogue by workers.

**Advocates**

* Transfer best practices and training regarding migrants’ rights and decent work conditions to social partners.
* Contribute to the professionalization of the social dialogue partners.
* Develop a set of guidelines and recommendations regarding the cooperation between partners to facilitate and support a friendly environment for social dialogue [101].
* Focus on conditions of employment and decent work; freedom of association and collective bargaining; representative unions; and relations and respect among workers.
* Disseminate knowledge on activities of social dialogue partners in the sphere of fostering migrant rights.
* Ensure decent work conditions for migrant workers in order to join competences and favor the achievement of migrant social integration [82].
* Meet current and future skills and labor needs internationally through reforms in national, vocational, technical, and scientific training and qualifications.

**Policy makers and governments**

* Develop and/or implement comprehensive, coordinated, and sustainable migration policies and practices that are based on economic, social, and development concerns and are able to ensure beneficial migration, social harmony, and dignified treatment of nationals and non-nationals [102].
* Develop (labor) migration international standards.
* Pay attention to legislation, migration policy, and administration of (labor) migration workplace practices and measures for OSH as the main settings of social partners’ action.

**Educators**

* Train OSH professionals, employers, and authorities on the needs of migrant workers and how to address them.

Cell 21

Pandemics and Employment Creation

The impact of COVID-19 on the world of work has been significant and indicative of what future pandemics might bring [59]. Frontline workers (health care, first responders, retail, and service) may be most at risk from pandemic infections. Pandemics may put many people out of work and result in unemployment and underemployment. At issue will be whether workers will be able to return to their jobs or if their jobs will be lost.

**Practitioners**

* Support and implement the biological risk assessment and management process (especially taking into account the main characteristics of the specific biological agent, such as the modes of transmission).
* Provide informed and up-to-date education and training programs to employers and workers.
* Provide support to workers, especially regarding psychosocial risks (for example, isolation, technology overload, right to disconnect).
* Provide support to employers concerning practical guidelines, adequate training, and guidance on how to configure home workstations in accordance with a sufficiently protective set of ergonomic principles.

**Researchers**

* Define targeted practical guidelines to prevent and/or counteract the contagion in workplaces.
* Define and test appropriate control and emergency preparedness measures.

**Advocates**

* Raise awareness among workers (and the public, more generally) about the desirability of using personal protective equipment and being vaccinated.

**Policy makers and governments**

* Develop appropriate intervention strategies and preventive policies to effectively face and tackle pandemic effects on employment.
* Reformulate (on the basis of the lessons learned from the COVID-19 pandemic) and periodically update the national pandemic plans.
* Ensure the widest and earliest possible access to prophylactic measures such as vaccination (if available).

**Educators**

* Develop a focus on infectious diseases and pandemics for OSH professionals.
* Train OSH professionals in anticipating job-related hazards from pandemics and means to address job loss.

Cell 22

Pandemics – Social Protection

The global workforce was heavily impacted by the COVID-19 pandemic and many societies were not prepared to address the effects. Many workers lacked or did not have access to social protection.

**Practitioners**

* Establish preparedness programs for businesses and organizations for future pandemics.

**Researchers**

* Develop scenarios about how work arrangements could change future pandemics.

**Advocates**

* Encourage the application of a public health perspective to future pandemics.

**Policy Makers and Governments**

* Use systems-level modeling to develop effective policies to protect workers in future pandemics.

**Educators**

* Train OSH professions about intervention for use in future pandemics.

Cell 23

Pandemics – Rights of Workers

The COVID-19 pandemic induced profound and lasting change at every community and society level, including the world of work and workers’ rights [49]. Pandemics are capable of posing new risks and threats to fundamental principles and rights at work, affecting a number of factors such as income losses, informal jobs, child labor, and social dialogue and protection. The OSH community could serve to foster communications between employers, workers, and authorities, which would be a means of advocating for worker rights.

**Practitioners**

* Address the main consequences of pandemic events (for example, income losses deriving from unemployment or underemployment, incremental or informal jobs, child labor, and reduced social dialogue) that have the potential to undermine workers’ fundamental rights.
* Help cooperation between employers and workers in developing shared strategies and workplace enforcement policies supporting rights at work.

**Researchers**

* Develop and expand, through a multidisciplinary approach, the field of OSH research to include pandemic-related determinants that may negatively impact workers’ rights.
* Investigate the adverse effects of pandemics on workers’ rights, especially referring to relationships with other pillars of decent work.

**Advocates**

* Promote information campaigns for workers on their fundamental rights at work.

**Policy makers and governments**

* Sustain workers’ rights even in pandemic periods by promoting, developing, and implementing proportionate and appropriate containment measures that take workers’ rights into account.
* Engage with all stakeholders in order to promote pandemic policies that are effective but at the same time do not restrict workers’ rights.

**Educators**

* Train OSH professionals in assessing workers’ rights during pandemics and the means to safeguard them.

Cell 24

Pandemics – Social Dialogue

During the COVID-19 pandemic there were high rates of stress in frontline workers [58,103]. The pandemic highlighted and accelerated trends that are influencing the future of work [59]. Many of the problems that arose in frontline workers were due to the lack of social dialogue at all levels. Workers’ concerns were not heard or addressed in many instances [58,59,103].Preparedness is needed for future pandemics.

**Practitioners**

* Promote a participatory approach to allow workers to be involved in the design of preparedness plans.
* Promote use of communication channels with supervisors; provide symbolic recognition and emotional support to frontline workers [58].
* Encourage employers to be prepared for pandemics.

**Researchers**

* Investigate how to promote participatory research approaches and use these approaches [58].
* Investigate how different levels of management can address working conditions, and then disseminate the results of the research.
* Collaborate with frontline workers to confront health misinformation [103].

**Advocates**

* Encourage governments to seek out stakeholders about working conditions in a pandemic and post pandemic.
* Promote the use of systems-level changes to mitigate detrimental effects of pandemics on workers [59].
* Promote prioritization of frontline worker well-being [103].

**Policy makers and governments**

* Obtain input from workers and employers about working conditions and policy gaps that need addressing.
* Focus communication efforts on frontline workers (especially healthcare workers).
* Collaborate with a variety of public and private stakeholders and community partners to address root causes of healthcare worker burnout.

**Educators**

* Train OSH professionals to address pandemics and promote cross-sector communications.

Cell 25

Job Creation – Climate Change

Climate-related hazards are increasingly affecting workers [69,70]. The impact of climate change on work and OSH has been identified in seven categories of hazards: increased ambient temperature; air pollution; ultraviolet radiation; extreme weather; expanding vector habits; industrial transitions; and built environment conditions [72].

**Practitioners**

* Assist employers in applying controls to climate-related hazards.
* Influence employers on the importance of carbon neutrality and on upskilling workers as new jobs are created.

**Researchers**

* Assess the impact of climate-related job displacement on workforces.
* Develop and investigate scenarios involving geoengineering and assess potential hazards.
* Investigate climate-related working conditions in the informal sector [73].

**Advocates**

* Influence governments on the importance of promoting carbon-neutral jobs and of upskilling current workers [104,105].
* Participate in coalitions for creation of new jobs.

**Policy makers and governments**

* Support the transition to carbon neutral jobs.
* Mandate reskilling and upskilling programs [104,105].

**Educators**

* Educate OSH professionals in occupational hazards related to climate change and how to mitigate them.

Cell 26

Social Protection – Climate Change

The role of OSH-trained individuals with regard to social protection is primarily in the area of providing OSH knowledge and services.

**Practitioners**

* Ensure OSH services are available to prevent adverse effects form climate change [106].
* Promote social protection of workers [104].
* Promote broad awareness among employers of the need for carbon neutrality; advocate for the creation of green-collar jobs.
* Monitor workers for adverse climate-related effects.

**Researchers**

* Investigate the link between climate change hazards and worker health [70,73].
* Study the effectiveness of interventions to prevent adverse effects.
* Investigate mental and physical health effects of job displacement.
* Identify workers at greatest risk from work-related climate hazards.

**Advocates**

* Promote efforts to protect workers who will be displaced from jobs [105].

**Policy makers and governments**

* Set standards to promote prevention and control of climate-related hazards.
* Integrate climate change hazards into national risk assessments [105].
* Promote surveillance of adverse effects from work-related climate change hazards.
* Provide social programs for “just transition” of workers.

**Educators**

* Educate OSH professionals in occupational hazards related to climate change and how to mitigate them.

Cell 27

Climate Change – Rights of Workers

Climate-related hazards can affect the rights of workers to a safe and healthy workplace and to just transition if jobs are lost. The OSH community is critical to explicating the hazards and ways to mitigate them. Moreover, as jobs are lost through infrastructure destruction or transition to new carbon-neutral industries, the OSH field will need to be oriented to identify infringement of workers’ rights and the means to protect them.

**Practitioners**

* Promote “green energy” and just transition for displaced workers [104].
* Influence employers on the need for prevention of climate-related hazards [69,73].

**Researchers**

* Investigate disparities in exposure to climate-related hazards.

**Advocates**

* Promote the right to negotiate over climate-related hazards.

**Policy makers and governments**

* Develop strong worker protection standards.
* Address inequalities resulting from exposure to work-related climate hazards [104].

**Educators**

* Provide transdisciplinary training to OSH students to equip them to address the rights of workers that are impacted by climate-related hazards.

Cell 28

Climate Change – Social Dialogue

The role of OSH trained individuals with regard to social dialogue is primarily in the area of providing OSH knowledge and services and communicating with workers.

**Practitioners**

* Serve as a resource for promoting dialogue involving workers [104].
* Be a resource against misinformation about climate change [105].

**Researchers**

* Study barriers to work-related climate hazard prevention actions [69,73].
* Study how to achieve implementation of interventions.
* Engage in transdisciplinary efforts to address work-related climate hazards.

**Advocates**

* Promote the awareness and importance of addressing climate-related hazards to protect workers.

**Policy makers and governments**

* Mandate worker participation in climate-related discussions.
* Promote investment in training for workers to participate in climate-related dialogue [104].
* Understand friction and antagonism as power in co-production of knowledge [107].

**Educators**

* Provide training to OSH professionals to facilitate cross-disciplinary communication related to climate-related hazards.

Cell 29

Workplace policies – Employment Creation

Workplace policies can have a major impact on hiring, firing, and workplace conditions. The workplace and enterprise should thrive to the extent that these policies are oriented toward decent work.

**Practitioners**

* Ensure that workplace policies coincide with decent work indicators to the extent possible.

**Researchers**

* Investigate how workplace policies impact the health and safety of workers.

**Advocates**

* Encourage the development of upskilling, retraining, and life-long learning programs.

**Policy Makers and Governments**

* Develop programs to increase employment opportunities in the OSH field.

**Educators**

* Provide OSH professionals with knowledge to understand issues of unemployment and underemployment and their link to health.

Cell 30

Workplace Policies – Social Protection

Workplace policies can have unintended or adverse effects on workers’ well-being. The OSH system and its professionals have considerable potential to defend workers’ rights and implement their social protection through a holistic and comprehensive model of workplace policies analysis, management, and development.

**Practitioners**

* Sustain and support workers’ employability through the application and implementation of prevention and protection measures that take into account susceptibility and individual health conditions of workers (for example, pregnancy, disability, and aging).
* Promote discussion between employers and workers on how to modify/redesign work environments to ensure the application of reasonable accommodations that enable workers (who need them) to achieve their full professional realization.

**Researchers**

* Identify the main OSH issues (for example, occupational diseases, accidents at work, delayed return to work, disability, and vocational rehabilitation) that may lead to loss of work or income and develop appropriate countermeasures.
* Develop or field-test innovative and multi-disciplinary approaches to worker well-being that address in an integrated manner all possible determinants that can reduce it.

**Advocates**

* Foster public awareness and workers’ awareness of workplace policies, especially in the weaker and most vulnerable categories.
* Promote the matching of labor supply and demand in particular by establishing partnerships with training institutions in order to define training courses targeted to current demands of the labor market.

**Policy makers and governments**

* Allocate budgets for training and re-training according to labor market needs.
* Develop targeted employment programs and policies particularly focused on the most susceptible and vulnerable individuals.
* Define and implement extended social protection policies that involve the OSH community in both their definition and practical application.

**Educators**

* Train OSH professionals in social protection policies and linkage to OSH.

Cell 31

Workplace Policies – Rights of Workers

Workplace policies are an essential vehicle for protecting, supporting, and promoting workers’ rights. The enforcement of the right of workers to perform their jobs in optimal health and safety conditions is an OSH matter, since one of its main purposes is to assess and manage occupational risk factors. When the workplace is decentralized such as in telework, new and complex challenges to protection of workers’ rights arise.

**Practitioners**

* Contribute to the implementation of workplace policies (and oversee their correct application) in the workplaces in support of workers’ fundamental rights (for example, freedom of association, elimination of forced labor, abolition of child labor, elimination of discrimination, and safe and healthy working conditions).
* Facilitate dialogue between employers and employees in order to create the right conditions to make formal jobs attractive and desirable (for example, by increasing wages, providing company benefits, and ensuring flexible working schedules).
* Orientate teleworkers on recognized occupational risks and ways to protect themselves.
* Include OSH in new forms of work organization, including teleworking, in the curriculum of health courses and in continuing-education initiatives.

**Researchers**

* Expand the research area beyond the traditional model of occupational risk assessment and management and focus on how work-related risk factors (and their interactions with classic occupational risk factors) can negatively influence the full realization of workers’ rights.
* Develop or field-test innovative and multi-disciplinary approaches to worker well-being.
* Explore exposures and risks, and investigate teleworkers’ acute and psychosocial risk factors, work intensification, and long working hours in telework [60]
* Develop validated scientific instruments to facilitate the observation and systematization of telework, integrating qualitative research.
* Conduct longitudinal research on the impact of OSH on telework.

**Advocates**

* Promote public debate on workers’ rights in particular by raising awareness that accepting informal work is a short-sighted and losing attitude in the medium to long term.
* Urge politicians and governments to place the issue of workers’ rights at the center of the political debate, addressing it with innovative strategies that also take into account OSH perspectives and the advantages of using workplace policies.

**Policy makers and governments**

* Involve the OSH community in the technical tables and decision-making processes in which actions, strategies, and policies to defend workers’ rights are defined.
* Develop policies and actions to support formal work that enable employers to make a job offer more attractive and also make it more convenient for workers to accept it.
* Manage and prevent psychosocial risk factors in telework. Ensure that teleworkers have the same rights and protections as those in traditional on-site employment.
* Develop policies that ensure the health, safety, and well-being of teleworkers [108]. This includes providing ergonomic equipment, ensuring access to social protection, and promoting work-life balance.
* Ensure the participation of teleworkers in the political arena, collective agreements, and decision-making processes.
* Address caregiving responsibilities and gender equality.

**Educators**

* In OSH curricula, incorporate training about the extent of workers’ rights in OSH.
* Provide training about hazards in new forms of work and how to ensure workers’ rights in new policies.

Cell 32

Workplace Policies and Social Dialogue

Social dialogue is a tool for increasing workplace cooperation and ultimately workers’ safety, health, and productivity. However, many workplace policies do not promote social dialogue or when such policies exist they are often not enforced.

**Practitioners**

* Ensure that workers are able to participate in developing workplace policies.

**Researchers**

* Investigate the long-term implications of workplace policies on worker well-being.

**Advocates**

* Promote the development of worker-centered workplace policies.

**Policy Makers and Governments**

* Obtain worker input to monitor, evaluate, and respond to trends in employment patterns, work arrangements, and well-being of the workforce.

**Educators**

Train OSH professionals on how to obtain worker engagement in the development of workplace policies.

1. **Supplement References**
2. Pradhan P, Costa L, Rybski D, Lucht W, Kropp JP. A systematic study of sustainable development goals (SDG) interactions. Earth’s Future 2017; 5: 1169–79.
3. Ferraro T, Pais L, dos Santos NR. Decent work: an aim for all made by all. Int J Social Sci 2015; 4(3): 30–42.
4. Guerin RJ, Glasgow RE, Tyler A, Rabin B, Huebschmann AG. Methods to improve the translation of evidence-based interventions: a primer on dissemination and implementation science for occupational safety and health researchers and practitioners. Saf Sci 2022; 152: 1–18.
5. National Institute for Occupational Safety and Health (NIOSH). Fundamentals of Total Worker Health approaches: essential elements for advancing worker safety, health, and well-being. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Office for Total Worker Health, 2017. Publ. No. 2017-112.
6. Sauter SL, Hurrell JJ Jr. Occupational health contribution to the development and promise of occupational health psychology. J Occup Health Psychol 2017; 22(3): 251–8.
7. Blustein DL, Olle C, Connors-Kellgren A, Diamont AJ. Decent work: a psychological perspective. Front Psychol 2016; Mar 24,7:407. doi: 10.3389/Epsyg.2016.00407.eCollection2016.
8. El Batawi MA. Work-related diseases: a new program of the World Health Organization. Scand J Work Environ Health 1984; 10: 341–6.
9. Schulte PA, Pana-Cryan R, Schnorr T, et al. An approach to assess the burden of work-related injury, disease, and distress. Am J Public Health 2017; 107(7): 1051–7.
10. Takala J, Hämäläinen P, Sauni R, et al. Global-, regional- and country-level estimates of the work-related burden of diseases and accidents in 2019. Scand J Work Environ Health 2023. https://doi.org/10.5271/sjweh.4132.
11. Schulte PA, Guerin RJ, Schill AL, et al. Considerations for incorporating “well-being” in public policy for workers and workplaces. AJPH 2015; 105(8): e31–44.
12. Oeij PRA, Rus D, Pot FD, eds. Workplace Innovation: Theory, Research and Practice. Cham, Switzerland: Springer Nature, 2017.
13. Lieck L, Anyfantis I, Irastorza X, et al. Occupational safety and health in Europe: state and trends 2023. Bilbao: European Agency for Safety and Health at Work, 2023: 74, 89.
14. Kanter B, Peixoto R. Thinking with Bem Viver across rural and urban Amazonia: indigenous and black spaces of resistance. J Pol Ecol 2023; 1: 471–96.
15. Acemoglu D, Restrepo P. Automation and new tasks: how technology displaces and reinstates labor. J Econ Perspect 2019; 33(2): 3–30.
16. Autor DH. Work of the past, work of the future. AEA Papers Proc 2019; 109(4): 1–32.
17. Schulte PA, Iavicoli I, Fontana L, et al., on behalf of the Workgroups on the Future of Decent Work and Demographic Changes and Occupational Health. Occupational health and safety staging framework for decent work. Int J Environ Res Public Health 2022; 19(17): 10842. <https://doi.org/10.3390/ijerph191710842>.
18. International Labour Organization (ILO). Safety and health at the heart of the future of work: building on 100 years of experience. Geneva: ILO International Labour Office, 2019.
19. Frank J, Mustard C, Smith P, et al. Work as a social determinant of health in high-income countries: past, present, and future. The Lancet. 2023; 14(402): 1357–67. [https://doi.org/10.1016/S0140-6736(23)00871-1](https://doi.org/10.1016/S0140-6736%2823%2900871-1).
20. Rigolot C. Transdisciplinarity as a discipline and a way of being: complementarities and creative tensions. Human Social Sci Commun 2020; 7: 100. https://doi.org/[10.1057/s41599-020-00598-5](https://doi.org/10.1057/s41599-020-00598-5).
21. International Labour Organization (ILO). World Employment and Social Outlook 2023: The value of essential work. Geneva: ILO International Labour Office, 2023. <https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_871016.pdf>.
22. Min J, Kim Y, Lee S, Jang TW, Kim I, Song J. The fourth industrial revolution and its impact on occupational health and safety, worker's compensation and labor conditions. Safe Health Work 2019; 10(4): 400–8. <https://doi.org/10.1016/j.shaw.2019.09.005>.
23. Behrendt C, Nguyen QA. Innovative approaches for ensuring universal social protection for the future of work. ILO Future of Work Research Paper Series 1. Geneva: ILO International Labour Office, 2018. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms\_629864.pdf.
24. Schulte P, Howard J. The impact of technology on work and the workforce. Statement for World Day for Health and Safety at Work 2019. Geneva: ILO International Labour Office, 09 March 2019. <https://www.ilo.org/global/topics/safety-and-health-at-work/events-training/events-meetings/world-day-for-safety/33thinkpieces/WCMS_681603/lang--en/index.htm>.
25. Fuller R, Landrigan PJ, Balakrishnan K, et al. Pollution and health: a progress update.  The Lancet Planetary Health 2022; 6(6): 535–47. [https://doi.org/10.1016/S2542-5196(22)00090-0](https://doi.org/10.1016/S2542-5196%2822%2900090-0).
26. Montt G, Fraga F, Harsdorff M. The future of work in a changing natural environment: climate change, degradation and sustainability. ILO Future of Work Series, no. 4. Geneva: ILO International Labour Office, 2018. https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS\_644145/lang--en/index.h.
27. Bocca B, Battistini B, Leso V, et al. Occupational exposure to metal engineered nanoparticles: a human biomonitoring pilot study involving Italian nanomaterial workers. Toxics 2023; 11: 120. <https://doi.org/10.3390/toxics11020120>.
28. Chosewood LC. Introduction to total worker health for worker safety, health and well-being. Rev Bras Med Trab 2018; 16: 21–4.
29. European Union (EU). Social dialogue as a tool to promote health and safety at work. Bruxelles: European Economic and Social Committee, 2021.
30. International Labour Organization (ILO). Time to act for SDG 8: Integrating decent work, sustained growth and environmental integrity. Geneva: International Labour Office, 2019.
31. Di Fabio A, Maree JG. Using a transdisciplinary interpretive lens to broaden reflections on alleviating poverty and promoting decent work. Frontiers in Psychology. 2016; 7: 503. <https://doi.org/10.3389/fpsyg.2016.00503>.
32. Avendano M, Cylus J. Working at older ages: why it’s important, how it affects health, and the policy options to support health capacity for work. In: Sagan A, Normand C, Figueras J, North J, White C, eds. European Observatory Policy Briefs. Copenhagen: 2019.
33. Pagan R. Ageing and disability: job satisfaction differentials across Europe. Soc Sci Med 2011; 72: 206–15. <https://pubmed.ncbi.nlm.nih.gov/21145635/>.
34. Gould R, Ilmarinen J, Jarvisalo J, Koskinen S. Dimensions of work ability. results of the health 2000 survey. Helsinki: Finnish Centre for Pensions, The Social Insurance Institution, National Public Health Institute, Finnish Institute of Occupational Health, 2008. <https://sivusto.kykyviisari.fi/wp-content/uploads/2018/09/Gould-Dimensions-of-work-ability.pdf>.
35. Morschhäuser M, Sochert R. Healthy work in an ageing Europe: strategies and instruments for prolonging working life. European Network for Workplace Health Promotion, 2006. <http://www.ageingatwork.eu/resources/health-work-in-an-ageing-europe-enwhp-3.pdf>.
36. Nilsson K. Conceptualisation of ageing in relation to factors of importance for extending working life: a review. Scand J Public Health 2016 Jul; 44(5): 490–505.
37. Amick BC, McLeod CB, Bültmann U. Labor markets and health: an integrated life course perspective. Scand J Work Environ Health 2016; 42(4): 346–53. <https://doi.org/10.5271/sjweh.3567>.
38. International Labour Organization (ILO). Report of the Director-General: Decent Work. 87th Session, International Labour Conference, Geneva. Geneva: ILO International Labour Office, 1999. <https://www.ilo.org/public/english/standards/relm/ilc/ilc87/rep-i.htm>.
39. Aitken A, Singh S. Time to change? Promoting mobility at older ages to support longer working lives. J Econ Ageing 2023; 24: 100437. <https://www.sciencedirect.com/science/article/abs/pii/S2212828X2200069X?via%3Dihub>.
40. Fischer FMF, Martinez MC, Alfredo CH, et al. Aging and the future of decent work. Int J Environ Res Public Health 2021; 18(17): 8898. <https://www.mdpi.com/1660-4601/18/17/8898>.
41. Nilsson K. A sustainable working life for all ages: the swAge-model. Appl Ergon 2020; 86: 103082. <https://doi.org/10.1177/1403494816636265>.
42. International Labour Organization (ILO). Gender equality at the heart of decent work. International Labour Conference, 98th Session, 2009, Geneva.
43. Newman C. Time to address gender discrimination and inequality in the health workforce. Human Res Health 2014; 12: 25. https://www.human-resources.health.com/content/12/1/25.
44. Ncube F, Kanda A. Current status and the future of occupational safety and health legislation in low- and middle-income countries. Safety Health Work 2018; 9: 365–71.
45. Gray Group International (GGI). Gender inequality at work: impact on decent work and economic growth. GGI insights. 2023. <https://www.graygroupintl.com/blog/gender-inequality-at-work>.
46. International Labour Organization (ILO). 10 Keys for gender sensitive OSH practice: guidelines for gender mainstreaming in occupational safety and health. Programme on Safety and Health at Work and the Environment (Safe Work). Geneva: ILO International Labour Office, 2013.
47. Kauppinen K, Kumpulainen R, Houtman I. Gender issues in safety and health at work. European Agency for Safety and Health at Work, 2003.
48. Rantanen J, Muchiri F, Lehtinen S. Decent work. ILO’s response to the globalization of working life: basic concepts and global implementation with special reference to occupational health. Int J Environ Res Public Health, 2020; 17(10): 3351. <https://doi.org/10.3390/ijerph17103351>.
49. International Labour Organization (ILO). Social protection floors for social justice and a fair globalization. International Labour Conference, 2011. Geneva: ILO International Labour Office, 2011.
50. International Labour Organization (ILO). Promoting employment and decent work in a changing landscape. Geneva: ILO International Labour Office, 2020.
51. Eurofound. Social dialogue in times of global economic crisis. By Guyet R, Tarren D, Triomphe C-E. Report No. EF1221. Dublin: Eurofound, 2012.
52. Reynaud E. The International Labour Organization and globalization: fundamental rights, decent work, and social justice. ILO research paper no. 21. Geneva: International Labour Office, 2018.
53. International Labour Organization (ILO). Women and men in the informal economy: a statistical picture (third edition). Geneva: ILO International Labour Office, 2018.
54. Benavides FG, Silva-Peñaherrera M, Vives A. Informal employment, precariousness, and decent work: from research to preventive action. Scand J Work Environ Health 2022; 48: 169–72. Doi:10.5271/sjweh.4024.
55. American Public Health Association (APHA). Support decent work for all as a public health goal in the United States. Policy no. 20223. Washington, DC: APHA, 2022.
56. Florence B, Vanek J, Chen M. Women and men in the informal economy: a statistical brief. Manchester, UK: WIEGO, 2019. ISBN 978-92-95106-42-0.
57. World Health Organization (WHO). Health, decent work, and the economy (Policy Brief). Geneva: WHO, 2019.
58. Barca V, Alfers L. Including informal workers within social protection systems: a summary of options. United Kingdom: SPACE, DAI Global, 2021.
59. Sigahi TFAC, Kawasaki BC, Bolis I, Morioka SN. A systematic review of the impacts of COVID-19 on work: contributions and a path forward from the perspective of ergonomics and psychodynamics of work. Hum Factors Ergon Manuf Serv Ind 2021; 31: 375–88.
60. Peters SE, Dennerlein JT, Wagner GR, Sorensen G. Work and worker health in the post-pandemic world: a public health perspective. Lancet Public Health 2022; 7: e188–94.
61. Antunes ED, Bridi LRT, Santos M, Fischer FM. Part-time or full-time teleworking? A systematic review of the psychosocial risk factors of telework from home. Front Psychol 2023; 14: 227.
62. Lowe G. The pandemic’s impact on the future of work. February 23, 2022. https://utorontopress.com/blog/2022/02/23/the-pandemics-impact-on-the-future-of-work/.
63. Sorensen G, Dennerlein JT, Peters SE, Sabbath EL, Kelly EL, Wagner GR. The future of research on work, safety, health and wellbeing: a guiding conceptual framework. Soc Sci Med 2021; 269. <https://doi.org/10.1016/j.socscimed.2020.113593>.
64. Heeks R, Graham M, Mungai P, Van Belle J-P, Woodcock J. Systematic evaluation of gig work against decent work standards: the development and application of the Fairwork framework. The Information Society 2021; 37(5): 267–84.
65. Persechino B, Fontana L, Buresti G, et al. Collaboration of occupational physicians with
national health system and general practitioners in Italy. Ind Health
2017; 55: 180–91.
66. Persechino B, Fontana L, Buresti G, Fortuna G, Valenti A, Iavicoli S.
Improving the job-retention strategies in multiple sclerosis workers:
the role of occupational physicians. Ind Health 2019; 57: 52–69.
67. Moccia M, Fontana L, Palladino R, et al. Determinants of early working impairments in multiple sclerosis. Front Neurol 2022; 13: 1062847.
68. Hudson HL, Nigam JAS, Sauter SL, et al., eds. Total worker health. Washington, DC.: American Psychological Association, 2019.
69. Iavicoli I, Spatari G, Chosewood LC, Schulte PA. Occupational medicine and Total Worker Health®: from preventing health and safety risks in the workplace to promoting health for the total well-being of the worker. Med Lav 2022; 113: e2022054.
70. Ferrari G, Leal SCL, de Souza RCT, Galdamez EVC. Impact of climate change on occupation health and safety: a review of methodological approaches. Work 2022. doi: 10.3233/WOR-211303.
71. Romanello M, Di Napoli C, Drummond P, et al. The 2022 report of The Lancet countdown on health and climate change: health at the mercy of fossil fuels. Lancet 2022; 400: 1619–54.
72. Swiss Re Institute. Climate change. Annual report 2021. Zurich: Swiss Re Institute. <https://reports.swissre.com/2021/vision-and-strategy/market-trends/climate-change>.
73. Schulte PA, Bhattacharya A, Butler CR, et al. Advancing the framework for considering the effects of climate change on worker safety and health. J Occup Environ Hyg 2016; 13: 874–65.
74. Dodman D, Sverdlik A, Agarwal S, et al. Climate change and informal workers: towards an agenda for research and practice. Urban Climate 2023; 48: 101401. https://www.sciencedirect.com/science/article/pii/S2212095522003194.
75. International Labour Organization (ILO). Social protection, Chapter 5. In: ILO 100 news and website resources. Geneva: International Labour Office, 2019. https://www.ilo.org/100/en/story/protection.
76. Schulte P, Streit JMK, Sheriff F, et al. Potential scenarios and hazards in the work of the future: a systematic review of the peer-reviewed and gray literatures. Ann Work Expos Health 2020; 64(8): 786–816, <https://doi.org/10.1093/annweh/wxaa051>.
77. Iavicoli I. Building Total Worker Health into national plans [interview with the author]. NIOSH Total Worker Health 2023; 12(2, June).
78. International Labour Organization (ILO). Decent work and the 2030 Agenda for Sustainable Development. Geneva: International Labour Office, 2022. https://www. ilo.org/wcmsp5/groups/public/---europe/---ro-geneva/---ilo-lisbon/documents/event/wcms\_667247.pdf.
79. International Labour Organization (ILO). Time for equality at work. Global report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work. Report of the Director-General. Geneva: International Labour Office, 2003. <https://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_PUBL_9221128717_EN/lang--en/index.htm>.
80. Van Empel C. Social dialogue for urban employment: changing concepts and practices. Habitat International 2008; 32(2): 180–91.
81. International Labour Organization (ILO). Promoting employment and decent work in a changing landscape. ILO: Geneva: International Labour Office, 2020.
82. MENA-OECD. MENA-OECD Government Business Summit. Session 4. Social resilience: moving away from informality to formal employment and businesses. 30-31 March 2021. <https://www.oecd.org/mena/competitiveness/issue-paper-session-4.pdf>.
83. International Labour Organization (ILO). Shaping skills and lifelong learning for the future of work. ILO.109/Report VI. Geneva: International Labour Office, 2021.
84. Roig M, Pewitt J. A changing world of work: implications for the social contract. Policy Brief No. 94. United Nations Department of Economic and Social Affairs, March 2021.
85. International Labour Organization (ILO). Transition from the informal to the formal economy: theory of change. Geneva: International Labour Office, 2021. <https://www.ilo.org/wemsp5/groups/public/---ed_protect/---protrav/---travail/documents/briefingnote/wcms_768807.pdf>.
86. World Bank. Resilience, equity, and opportunity: the World Bank's social protection and labor strategy 2012-2022 (English). Washington, DC: World Bank Group, 2022. <http://documents.worldbank.org/curated/en/443791468157506768/Resilience-equity-and-opportunity-the-World-Banks-social-protection-and-labor-strategy-2012-2022>.
87. OECD (2023). International migration outlook 2023. OECD Publishing, Paris. <https://doi.org/10.1787/b0E40584-en>
88. International Labour Organization (ILO). Fundamental principles and rights at work. Geneva: International Labour Office, 2016.
89. International Labour Organization (ILO). ILO’s 2016 general principles and operational guidelines for fair recruitment. Geneva: International Labour Office, 2016.
90. International Labour Organization (ILO). How to facilitate the recognition of skills of migrant workers. Geneva: International Labour Office, 2017.
91. MacFarlane A, Ogoro M, de Freitas C, Niranjan V, Severoni S, Waagensen E. Migrants’ involvement in health policy, service development and research in the WHO European Region: a narrative review of policy and practice. Trop Med Int Health 2021 Oct ;26(10): 1164–76. doi: 10.1111/tmi.13643. Epub 2021 Jul 20. PMID:34169612.
92. Lebano A, Hamed S, Bradby H, et al. Migrants’ and refugees’ health status and healthcare in Europe: a scoping literature review. BMC Public Health 2020 Jun 30; 20(1): 1039. doi: 10.1186/s12889-020-08749.
93. International Labour Organization (ILO). World Social Protection Report 2020-22: Social protection at the crossroads: in pursuit of a better future. Flagship Report. Geneva: International Labour Office, 2021.
94. International Labour Organization (ILO). Shaping skills and lifelong learning for the future of work. ILO.109/Report VI. Geneva: International Labour Office, 2021.
95. Afonso A, Negash S, Wolff E. Closure, equality or organization: trade union responses to EU labour migration. J Eur Soc Policy 2022; 30(5), 528–42. <https://doi.org/10.1177/0958928720950607>.
96. International Labour Organization (ILO). Transition from the informal to the formal economy: theory of change. Geneva: International Labour Office, 2021. <https://www.ilo.org/wemsp5/groups/public/---ed_protect/---protrav/---travail/documents/briefingnote/wcms_768807.pdf>.
97. United Nations Network on Migration (UNNM). Promising practices in the provision of essential services to migrants. UNNM, 2022. https://migrationnetwork.un.org/sites/g/files/tmzbd1416/files/docs/provision\_of\_essential\_services\_good\_practices.pdf.
98. International Labour Organization (ILO). ILO declaration on fundamental principles and rights at work and its follow-up. Geneva: International Labour Office, 2022. <https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/normativeinstrument/wcms_716594.pdf>.
99. International Commission of Occupational Health (ICOH). ICOH Statement on Protecting the Occupational Safety and Health of Migrant Workers. Saf Health Work 2022 Sep;13(3):261-262.
100. Raess D, Dur A, Sari D. Protecting labor rights in preferential trade agreements: the role of trade unions, left governments, and skilled labor. Rev Intern Org 2018; 13: 143–62.
101. Thirusanku J, Singh I. Equal opportunity within the workplace. J Econ Bus 2021; 4(3):208–20.
102. Global Migration Policy Associates. Activity summary report 2014. https://www.globalmigrationpolicy.org/articles/GMPA%20Docs/GMPA%20Activity%20Summary%Report%202014.pdf.
103. Dondero M, Altman C. Immigrant policies as health policies: state immigrant policy climates and health provider visits among U.S. immigrants. SSM – Population Health 2020;10:100559. doi: 10.1016/j.ssmph.2020.100559
104. Murthy VH. Addressing health worker burnout. The U.S. Surgeon General’s advisory on building a thriving health workforce. 2022. https://www.hhs.gov/sites/default/files/health-worker-wellbeing-advisory.pdf.
105. United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. Just transition of the workforce, and the creation of decent work and quality jobs. United Nations Framework Convention on Climate Change, April 2020. <https://unfccc.int/sites/default/files/resources/Just%29transition.pdf>.
106. Laybourn L, Throp H, Sherman S. 1.5°C – dead or alive? The risks to transformational change from reaching and breaching the Paris Agreement goal. IPPR and Chatham House, 2018. https:// www.ippr.org/research/publications/1-5c-dead-or-alive.
107. Perkison WB, Kearney GD, Saberi P, et al. Responsibilities of the occupational and environmental medicine provider in the treatment and prevention of climate change-related health problems. JOEM 2018; 60(2): e76–81.
108. Klenk N, Meehan K. Climate change and transdisciplinary science: Problematizing the integration imperative. Environ Sci Policy 2015; 54: 160–7.
109. Schall MC, Chen P. Evidence-based strategies for improving occupational safety and health among teleworkers during and after the coronavirus pandemic. Hum Factors 2022; 64(8): 1404–11. https://doi.org/10.1177/0018720820984583/FORMAT/EPUB.