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I- A Safe and just transition?

- Global challenges for sustainable development
  - climate change + deterioration of natural resources
  - built on economic growth, social equity & environmental protection
- Green Economy ➔ Green Jobs ➔ Decent & Safe Work
II- The green debate and its social dimension

- ILO Focus for RIO +20 (UNCSD 2012):
  - economically efficient, socially just, environmentally sound transition to a green economy
  - green jobs creation
  - a framework for a “Just Transition”
  - social protection in green economy policies
  - inclusion of workers and employers in governance & implementation
III. The shades of green in green jobs

- Protection of biodiversity and the environment

- Resource efficiency and low-carbon development in “green sectors”

- “Greening” industries

- renewable energy
- construction
- transport
- recycling
- forestry, &
- agriculture
IV- Green jobs and occupational risks

A. Occupational risks in renewable energy

1. Solar energy
2. Wind energy
3. Hydropower
4. Bioenergy
1. Solar Energy

- Converted to electricity using PVP$^1$ or CSP$^2$
- PVP occupational hazards
  - manufacturing (> 15 hazardous materials + toxic cleaning agents)
  - installation (Physical hazards: Falls from height, manual handling, high temp, confined spaces, electrocution)
  - end of life electronic waste disposal of PVPs
- CSP hazards in construction and maintenance of installations
2. Wind Energy

- Types of jobs
  - project development, turbine component manufacturing, construction, installation, operation and maintenance of wind turbines

- Worker exposure
  - chemical hazards and solvents
  - harmful gases, vapours,
  - physical hazards
  - dusts and fumes

  ➔ health related consequences
  - dermatitis, liver & kidney damage, blisters, chemical burns, and reproductive effects & MSDs
3. Hydropower

- Important renewable energy for electrical power production

- Small-scale hydropower vs. large hydropower stations

- Hazards during construction, operation + maintenance
  - Electrical, water and moving machinery hazards
  - Chemical exposure
4. Bioenergy

- Fast development of bioenergy
- Impact of using land to grow energy crops
- Same OSH & environmental concerns as in fossil fuels
  - during thermal processing: Exposure to carcinogens, heavy metals & gases, particulate matter, CO, SO, lead, VOC, mercury & dioxins.
B. Waste management and recycling

- Fastest growing source of green employment

- Hazards and risks from
  - recycling technologies
  - waste to energy process
  - landfill mining
  - electronic waste

- Involves workers in the informal economy
The waste hierarchy

Moving up the waste hierarchy

Prevention
Preparing for re-use
Recycling
Other recovery
Disposal

The waste hierarchy. Being wise to waste. EC, 2010
B. Waste management and recycling (Cont’d)

- **Shipbreaking**
  - found 90% in Bangladesh, China, India, Pakistan & Turkey
  - green job? ➔ recycles metal, reduces need for mining

- **Hazards**
  - exposure to hazardous substances & wastes (asbestos, oil & oil sludge, toxic paints, PCBs, isocyanides, sulphuric acid, lead & mercury)
  - physical, mechanical, biological, ergonomic, psychosocial
C- OSH risks in the greening of traditional sectors

1. Mining and extractive technologies

2. Agriculture

3. Forestry work

4. Construction and refurbishment
2. Mining and extractive technologies

- Environmental impact:
  - green-house gases, soil and water contaminants

- Occupational risks:
  - fires & explosions, electrocutions, exposure to silica dust, mercury, other chemicals & heat

- Mine project design:
  - optimize mine planning, processes, operations, technology & equipment
  - incorporation of OSH into performance criteria
2. Agriculture

- Sustainable agriculture promotes the elimination of agrochemicals through organic agriculture.

- Common hazards for both traditional and organic agriculture.

- Need for research on the OSH implications of production, handling, processing & storage of GMOs.
3. Forestry work

- Deforestation & forest degradation contribute to greenhouse gas emissions
- OSH hazards are similar between conventional and sustainable forestry
- Green jobs in this sector is dependent on inclusion of decent work in sustainable forest management
- OSH guidelines and local community concerns to be integrated in certification standards
4. Construction and refurbishment

- Energy-efficient construction & sustainable refurbishment
- The ILO 7 principles for sustainable construction & renovation
  - reduce resource consumption
  - re-use resources
  - use recyclable resources
  - protect nature, eliminate toxics
  - eliminate hazardous chemicals
  - apply life-cycle costing
  - focus on quality
- OSH competences should be incorporated in the greening of the building sector
V. The way ahead

- The transition to a green economy
  - Decent employment + environmental protection
  - Social-equity and well-being
  - OSH as an integral part of the strategy:
    - green job creation policies
    - risk assessment and management from design phase to life-cycle analysis implementation & monitoring
    - Enforcement of OSH quality standards in green jobs
  - Social dialogue and participation of employers organizations, trade unions and other stakeholders in policy making & governance
For an environmentally sustainable and socially inclusive green economy, the Safety and Health of workers is indispensable.