

**Risk overview
for human rights, climate and environment
in the value chain of
solar panels and wind turbines**

- The risk overview for solar cells can be found on pages 2-3
- The risk overview for wind turbines can be found on pages 4-5

Selected risks in the solar panel value chain

- for potential and actual negative impacts on human rights, environment and climate.



EXTRACTION OF RAW MATERIALS

- Working environment and conditions - including living wages
- Forced labour in Xinjiang, China - 35% of raw materials come from this province
- Forced labour relocation programmes to provinces in China
- Impact of mining on indigenous peoples
- Challenges with other materials (e.g. glass, aluminium, silver?)
- Child labour



PROCESSING AND MANUFACTURING

- Working environment and conditions - including living wages
- Forced labour in Xinjiang, China
- Forced labour relocation programmes to provinces in China
- Energy intensive - use of coal impacts climate and environment
- Risk of pollution from production - chemicals such as PFAS



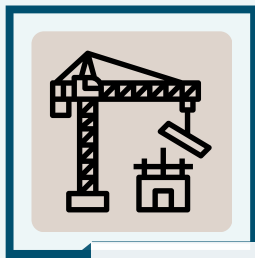
SALES AND PROJECT PLANNING

- Relocation of local community
- Stakeholder engagement with local community
- Impacts on livelihoods
- Impacts on biodiversity
- Corruption
- Impacts revealed through life cycle analysis.



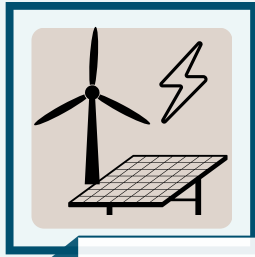
TRANSPORT

- CO2 emissions
- Occupational health and safety
- Working conditions
- Migrant workers



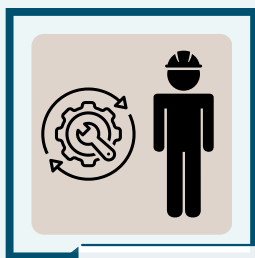
CONSTRUCTION

- Occupational health and safety
- Working conditions
- Impacts from security measures eg. electrical fences and weaponised staff
- Migrant workers
- Impacts on biodiversity
- Impacts on local community



OPERATION

- Impacts on biodiversity
- Impacts on local community - eg. noise, real estate market.
- Pollution
- Impacts from security measures eg. electrical fences and weaponised staff.



MAINTENANCE

- Lifetime extension can reduce risks from production and installation of new plants.



DISPOSAL AND RECYCLING

- Recyclability can limit impacts from production.
- Can the solar panels be safely disposed off?

NOTE: The risk overview is a summary of workshops held with industry participants in collaboration with the Confederation of Danish Industry. It does not show what will necessarily be the most salient risks for your business, but highlight some of the most severe risks and issues that may be overlooked.

Each company still needs to make its own assessment of salient risks.

Selected risks in the value chain of wind turbines

- for potential and actual negative impacts on human rights, environment and climate.



EXTRACTION OF RAW MATERIALS

- Conflict minerals
- Climate impact
- Impacts on local ecosystems and biodiversity
- Working environment and conditions - including living wages
- Impact of mining on indigenous peoples
- Child labour
- Climate impact



PROCESSING AND MANUFACTURING

- Risk of pollution from production
- Working environment and conditions - including living wages
- Climate impact



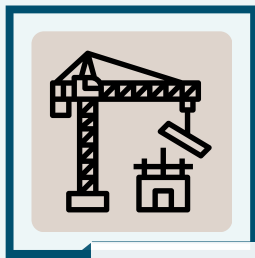
SALES AND PROJECT PLANNING

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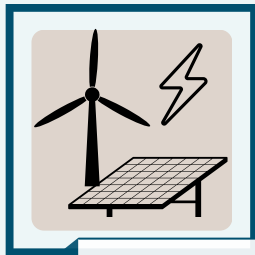
TRANSPORT

- CO2 emissions
- Occupational health and safety
- Working conditions
- Migrant workers



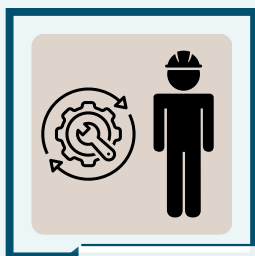
CONSTRUCTION

- Occupational health and safety
- Working conditions
- Migrant workers
- Impacts on biodiversity
- Impacts on local community



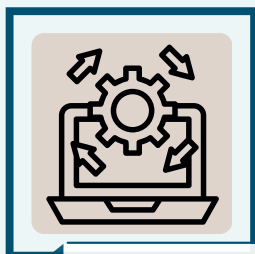
OPERATION

- Impacts on biodiversity
- Impacts on local community - eg. noise, real estate market.



MAINTENANCE

- Occupational health and safety
- Working conditions
- Lifetime extension can reduce risks from production and installment of new turbines.
- CO2-emissions from transport to offshore wind turbines



DISPOSAL AND RECYCLING

- Recyclability of materials and spare parts can limit impacts from new production.
- Can the wind turbines be safely disposed off?

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