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Responsible sourcing practices in the solar PV sector

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Context and background

Key sustainability challenges for the PV industry:

- GHG emissions
- Materials usage
- Sustainable consumption
- End-of-life management
- Land use
- Biodiversity impacts
- Air quality impacts
- Others

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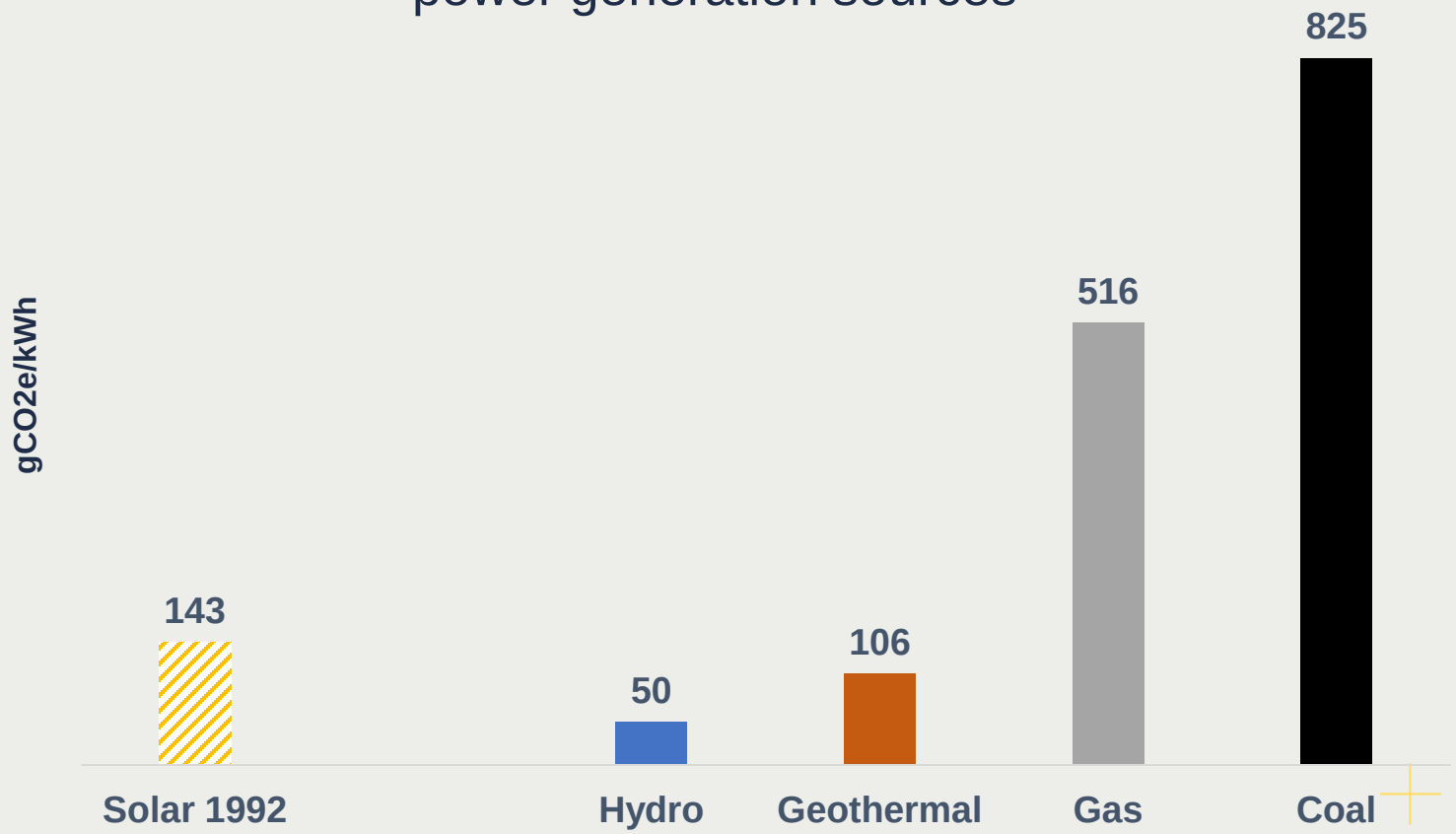
Solar PV carbon footprint

Solar GHG emissions in comparison to other power generation sources



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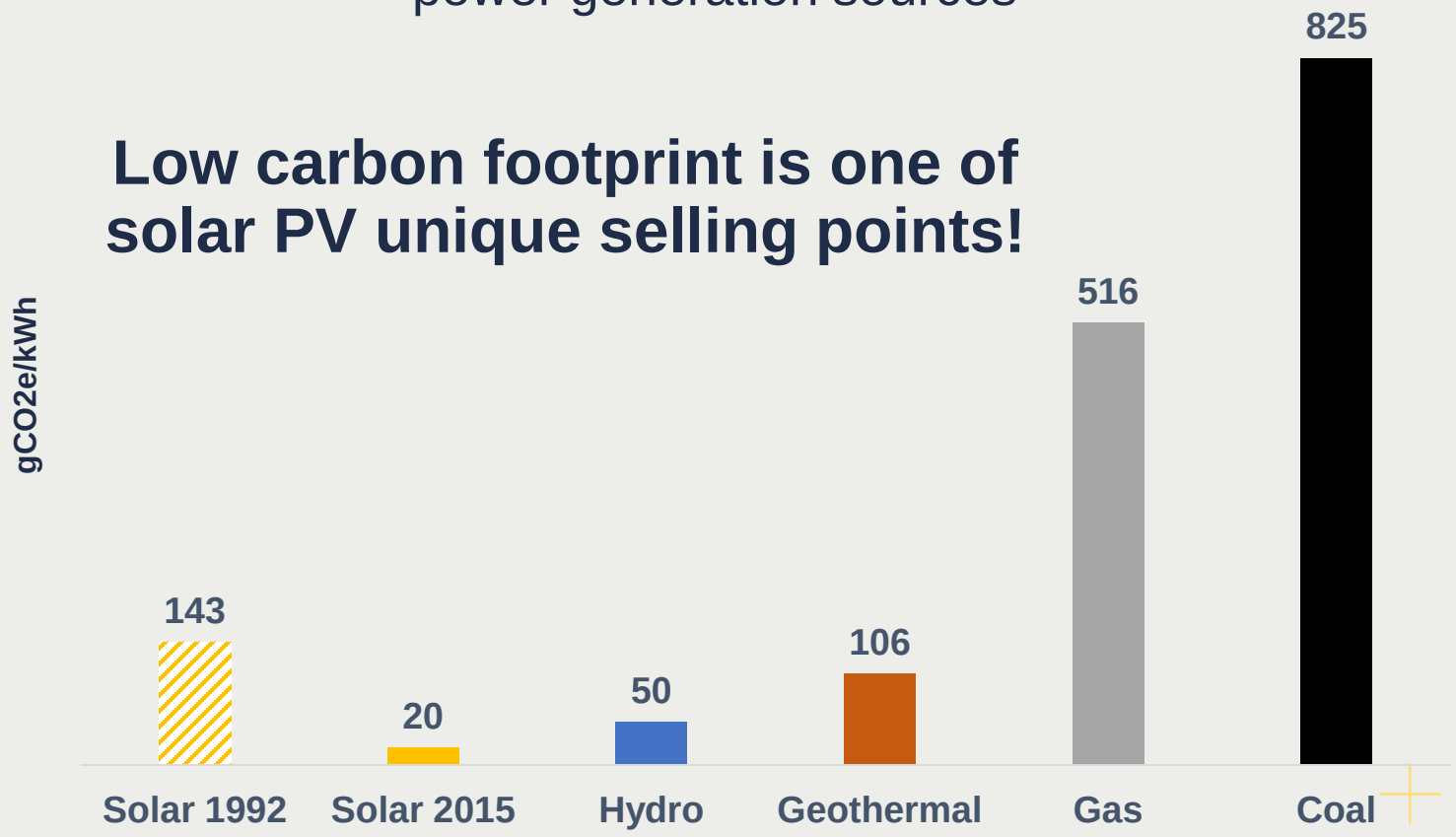
Sources: Louwen et al. (2016); UNEP (2016).

Solar PV carbon footprint

Solar GHG emissions in comparison to other power generation sources

Low carbon footprint is one of solar PV unique selling points!



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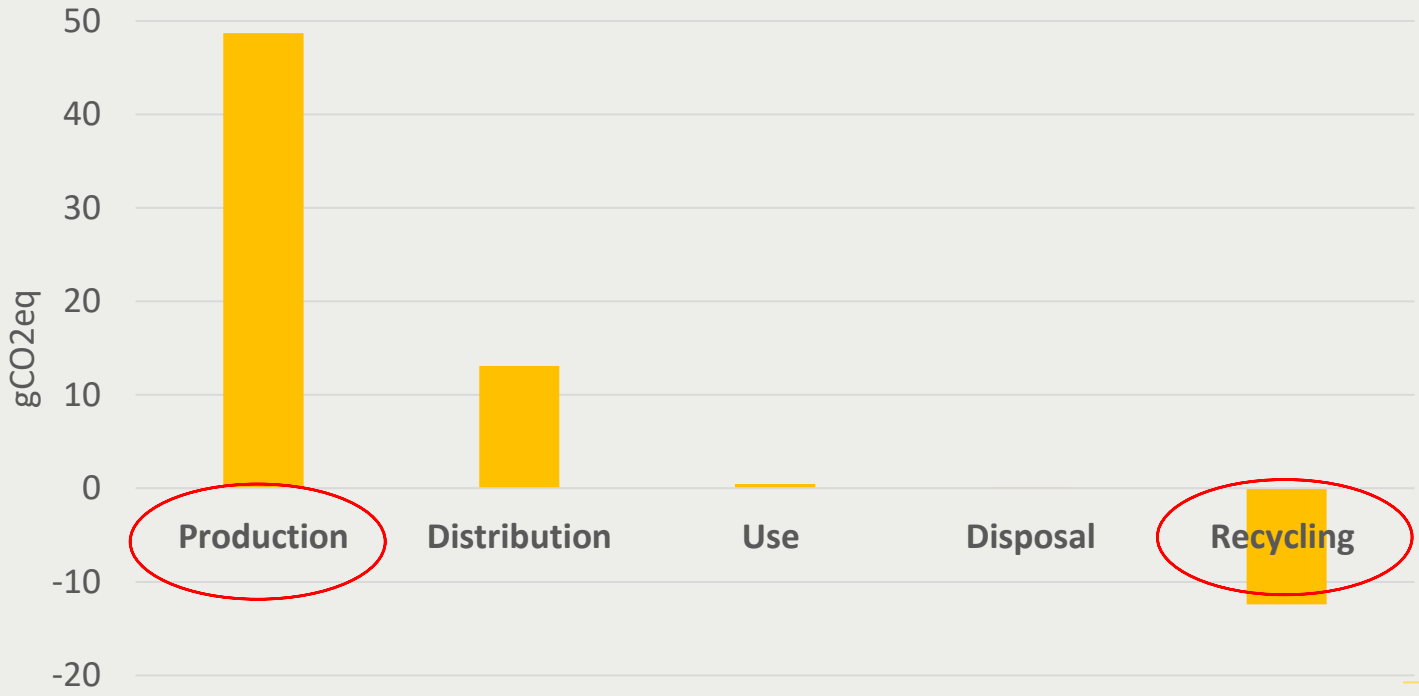
Sources: Louwen et al. (2016); UNEP (2016).

How to improve PV carbon footprint further?

Solar PV carbon footprint in lifecycle perspective



1. Production phase has the highest carbon footprint
2. Carbon savings potential with enhanced end-of-life management

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Source: JRC, 2019. Data based on VITO Ecoinvent 2014. Base-case utility-scale PV system with multi-si modules.

Carbon footprint: Best practices

pv magazine

Jinko becomes first solar manufacturer to make 100% renewable energy pledge

The Chinese module giant has committed to sourcing 70% of its energy from renewables by 2023 and all of it by 2025. If serious, that could represent confidence in the amount of new renewable energy generation capacity to come online in China given the company's huge production capacity expansion plans.

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RE 100

THE CLIMATE GROUP CDP

First Solar plans to power 100% of its global manufacturing facilities with renewable energy by 2028

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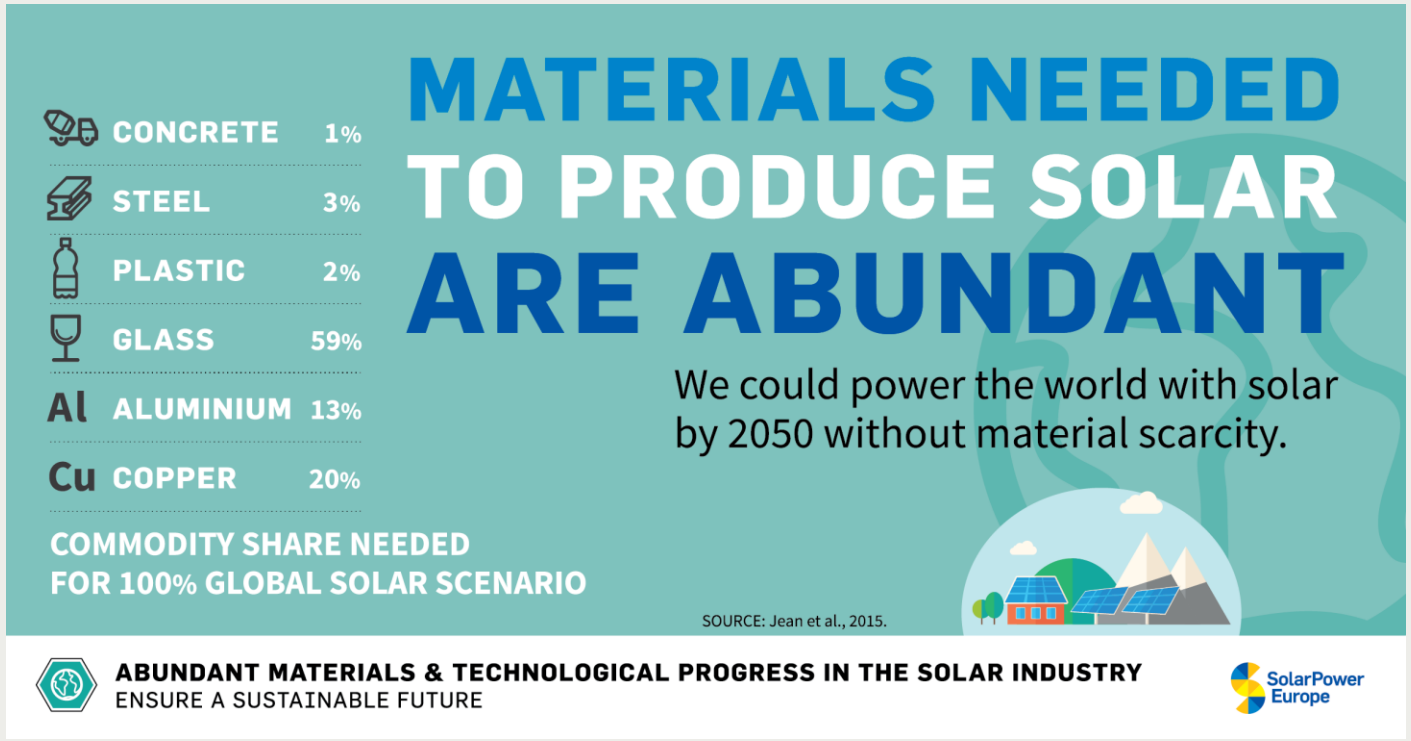
Materials usage



- Most of materials used in PV manufacturing are common materials – steel, concrete, glass, plastic, aluminium, copper
- Critical raw materials and precious metals (silicon, silver) are increasingly substituted, reduced and recycled

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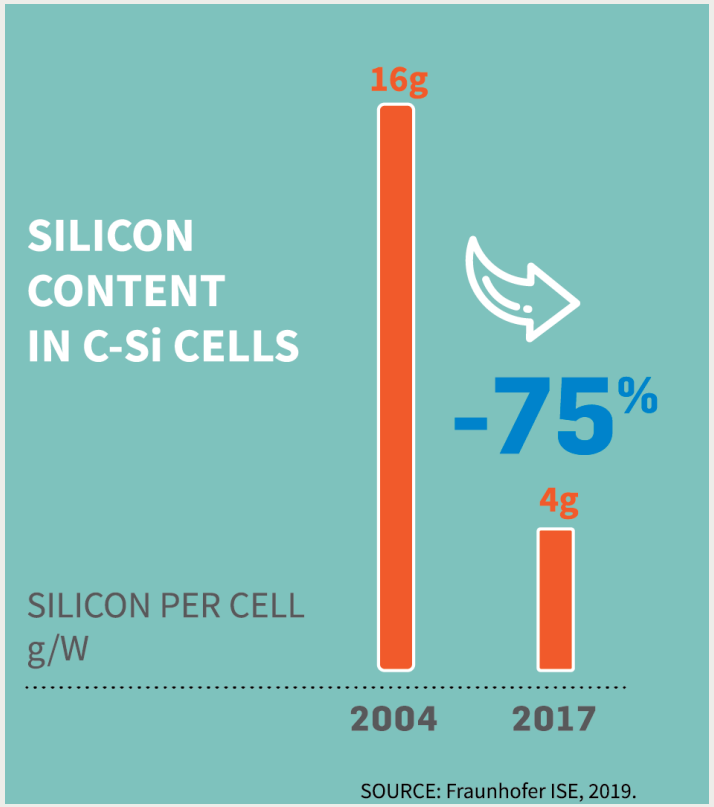
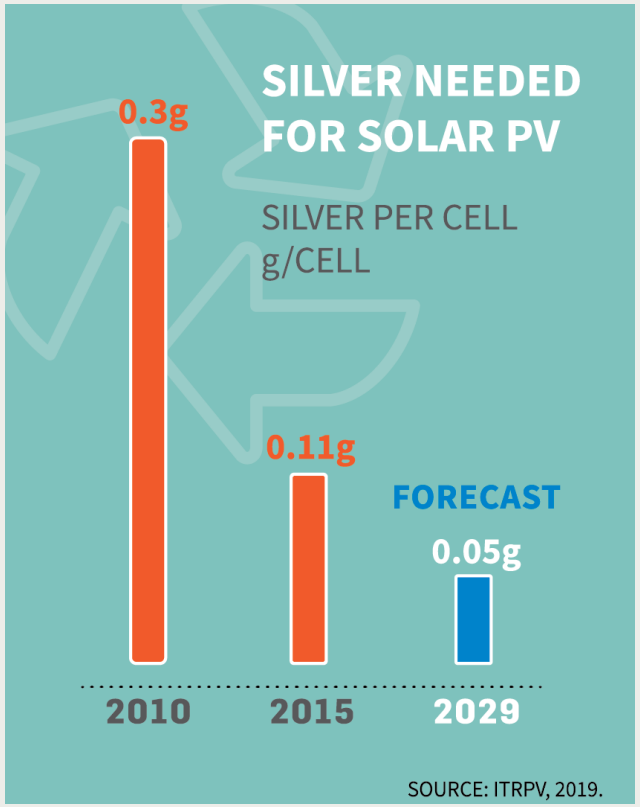
Materials usage: Best practices





- Increased silicon manufacturing efficiency through optimised manufacturing processes, increased cell efficiency, higher share of recycled materials
- Decrease of silver usage thanks to improved efficiency and substitution

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End-of-life management

- Currently, PV modules at their end of life are processed in existing recycling plants for glass or metals
- Technical recycling yields of up to 90% by weight are obtained – mostly comprising of aluminium frames and glass
- Energy is recovered from the incineration of the plastic fraction
- Take-back and treatment of modules and inverters is already mandatory in the EU
- PV has a long lifetime of around 30 years, only after this period products will enter the waste stream
- Low waste stream volumes today, but large volumes in the future

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End-of-life management: Best practices

- Responsible recycling of early-loss or end-of-life PV modules can reduce waste and loop valuable raw materials such as glass, aluminium, silver and copper back into the value chain
- State-of-the-art recycling facilities for solar modules or innovative end-of-life management approaches

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Thank you for your attention!

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