



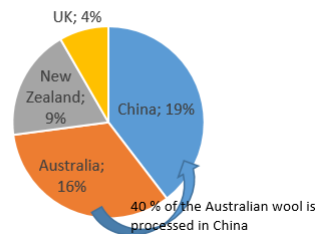
Some facts for promoting the use of sheep wool



Recent situation

- **From the 17th to the first half of the 20th century:** Wool textile production was among the most important global industries.
- **The share of wool in total world fibre supply** declined from 9.9 % (in 1960) to 1,3 % (2011/2012)
- **Not all wool enters the market for the following reasons:** Not suitable for textile manufacturing, no potential buyers, no wool collecting and/or washing and trading facilities etc.
- **From providing income, wool turned into a burden.** Wool waste of different proveniences has become an issue of solid waste management.
- Currently, **sheep shearing** is mainly for animal welfare without profit for the farmer.
- **Annual shearing** produces 1.5–3 kg of coarse wool per animal, amounting to over 200 000 tonnes in Europe in total.

World Wool Production in 2020 in %



- **In 2021, in Italy,** only 5 % of the wool was used for processing.

- **In the UK,** 4 % of the sheep farmers' income is generated by wool; in New Zealand 20–25 %.

EC Regulations 1069 (2009), 142 (2011) handle the wool waste management

These regulations (1) define wool as an animal by-product that is considered solid waste, if not directed towards the textile supply chain, and (2) set rules about the management of raw wool and hair. Raw wool and hair are regarded as category 3 animal by-products (ABPs), meaning they are classed as low risk, unless washed or disinfected.

- **Neither raw nor treated wool itself is toxic.** There is a little health risk from organic dust during industrial processing as well as due to the possible presence of toxic (pharmaceutical) substances used for mould prevention.

- **Processing of wool is water intensive.**



Wool processing machine: still working, however authorised often only for individual purpose.
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Advantages of sheep wool

- **Biodegradable:** If buried in the ground, wool will completely decompose into its elements, such as nitrogen, carbon and oxygen. Because wool is a protein fibre, it quickly disintegrates while providing nutrients to the soil.



Internet: <https://www.smarticular.net/oekologisch-kochen-mit-dem-kochsack-preiswert-praktisch-und-gesund/>

- **Reusable resource:** Wool products can be recycled, e.g., as wool dryer balls for the drying machine.

- **Wool is local**

- **Good for the climate:** Transhumance sheep often graze land that is unusable for other types of livestock. Experts have shown that responsibly managed pastures can create carbon sinks, which neutralize greenhouse gas emissions.

- **Wool is naturally flame-resistant:** No chemicals are needed to ensure that produced materials meet law flammability requirements.

Solutions for wool waste valorisation

Construction sector

- Wool as thermal and sound insulation material for green constructions.
- Wool can improve indoor air quality, as it is an effective filter and adsorbent for hazardous volatile organic compounds such as formaldehyde and toluene in low concentrations.
- Natural fibres of vegetable and animal origin can replace conventional reinforcement fibres. They are cheap renewable resources, biodegradable of low density with good thermal, mechanical properties.
- By adding sheep wool fibres to concrete mixes, concrete gets harsher, and workability increases.

Medicine & wellbeing

- Recovery of keratin proteins by solubilisation: A way of raw wool fibre valorisation, mainly for regenerative medicine and cosmetics.

Engineering sector

- Fibre reinforced polymer composites (FRPC) are a class of engineering materials, suited for consumer products and advanced applications such as packaging, disposables, automotive or civil infrastructure.

- Wool as sorbent for oil spill clean-up especially in case of fresh and seawater pollution. Synthetic oil adsorbents are largely used due to their high effectiveness, but their poor biodegradability raises disposal issues. Natural fibres are biodegradable and low-cost.
- Wool-based sorbents for the treatment of water pollution with heavy metals: Heavy metals, in wastewaters from industries, are considered priority pollutants due to their toxicity, carcinogenicity, mutagenicity, even in concentrations below the allowable limits. Biobased active solids with metal-binding capacities, are a sustainable alternative to the conventional activated carbon.

Miscellaneous

- Mechanical powderisation of wool for non-clothing applications.
- Sheep wool is used for many handicraft activities and is sold worldwide in small quantities online (Etsy, Aduis, drops design, pinterest, lana grossa).
- Wool waste bioconversion can be used for producing fertilizers, animal feed supplements, keratinases, for weed barriers in gardens or around trees/shrubs, as mulch and as deterrent for slugs and other pests.




Policy advice

- **Apply the Waste Framework Directive (EC Directive 98, 2008) for wool:** Implementing recovery strategies, actions for reuse & recycling in each country, with regional recycling & production facilities.
- **Implementation of** chemical-free, low-water-consuming cleaning facilities resp. technologies, e.g. carbonization, solvent bleaching, ultrasound, traditional washing using various detergents in steam or hot water, electrical discharge cleaning. Alternatives to remove impurities (suint, wool grease, and vegetable matter).
- **Raising awareness** about and **supporting** environmental friendly and financially interesting examples and solutions for wool processing.
- **Valorisation of wool** as a renewable and biodegradable resource has social, economic and environmental benefits, contributing to sustainable development.
- **Create a PDO (Products with a protected designation of origin) for extensive European wool:** guarantee the origin of wool, specificity of the farming systems, welfare for animals and workers, transformation in Europe.
- **Reduce the taxes for this PDO production** (for instance 0 % VAT for the whole production chain, for local transformation...)
- **Adapt CO2 footprint calculation** by including the positive effects on landscape management and considering that different outcomes which are produced at once.

For more information:

<https://transfarm-erasmus.eu/>



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Further links

- <https://www.worldatlas.com/articles/the-world-s-top-wool-producing-countries.html>
- <https://ec.europa.eu/eurostat/databrowser/view/TAG00017/default/table?lang=en>
- <https://www.campaignforwool.org/the-campaign/>
- <https://shepherdsdream.com/blog/wonders-of-wool/myths-about-wool-3/>
- <https://www.isolena.com/en/know-how/myths-sheepswool-insulation.html>
- CW – Circular Wool - Turning waste wool into commercially viable products: [https://single-market-economy.ec.europa.eu/sectors/textiles-ecosystem/eliit/learn/partners-hips/cw-circular-wool_en#:~:text=Annual%20shearing%20\(necessary%20for%20the,-tonnes%20in%20Europe%20in%20total](https://single-market-economy.ec.europa.eu/sectors/textiles-ecosystem/eliit/learn/partners-hips/cw-circular-wool_en#:~:text=Annual%20shearing%20(necessary%20for%20the,-tonnes%20in%20Europe%20in%20total)
- The World's Top 10 Wool Producing Countries: <https://www.worldatlas.com/articles/the-world-s-top-wool-producing-countries.html>