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Wool & The Carbon Cycle

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When you invest in wool, you are investing in life, and the recycling of life. Wool is:

- Made from biogenic carbon
- Long-wearing, odour and stain resistant, and consuming less water and energy in typical wear cycles
- Inherently biodegradable, and so readily returned to the natural carbon cycle

GLOSSARY:

Atmospheric carbon – in the atmosphere, carbon attaches to oxygen in a gas, forming CO_2

Biogenic carbon – carbon emitted by formerly living matter which has absorbed carbon through its life (such as wood products, food waste and sea algae)

Fossilised carbon – carbon from fossil fuels such as coal, gas and oil

Photosynthesis – the process by which plants turn carbon dioxide into living cells. Consuming 6 units each of carbon dioxide to produce each single cellulose precursor unit, photosynthesis underpins life on earth as we know it and is vital to climate regulation.

Wool is made of recycled, biological carbon

All life on earth is based on carbon.

Each year, some 155 billion tons of atmospheric carbon is converted to biomass carbon (biogenic carbon) by photosynthesis, absorbing in the process some 130 trillion watts (terawatts) of solar energy - close to 28% of the sunlight energy to reach the earth's surface.

Sheep consume this biogenic carbon when they eat grass, and transform it into the amino acids of the wool fibre.

40% of the weight of clean wool is pure biogenic carbon.

Over the millennia, excess biogenic carbon generated by this and other natural processes has been placed into long-term storage by nature, in the form of the 10,000 trillion tons of carbon contained in fossil oil, tar, gas, and coal reserves. Fossil oil is 83-85% pure carbon.

Oil-based synthetic fibres come from fossilised carbon

Currently about 60% of all textile fibres are oil-based synthetics. These polyester, nylon, and acrylic fibres are derived from the fossilised oil reserves which have served as carbon stores for the planet.

Since the first oil wells were struck in Pennsylvania in 1870, 115 trillion tonnes of fossilised carbon have been added to the atmospheric carbon cycle from crude oil alone.

While nature can soak up 60% of this additional carbon through photosynthesis and through oceanic storage, the net difference is 4 billion tonnes of additional atmospheric carbon accumulating each year.

It is this fossilised carbon which lies at the core of our global warming crisis.

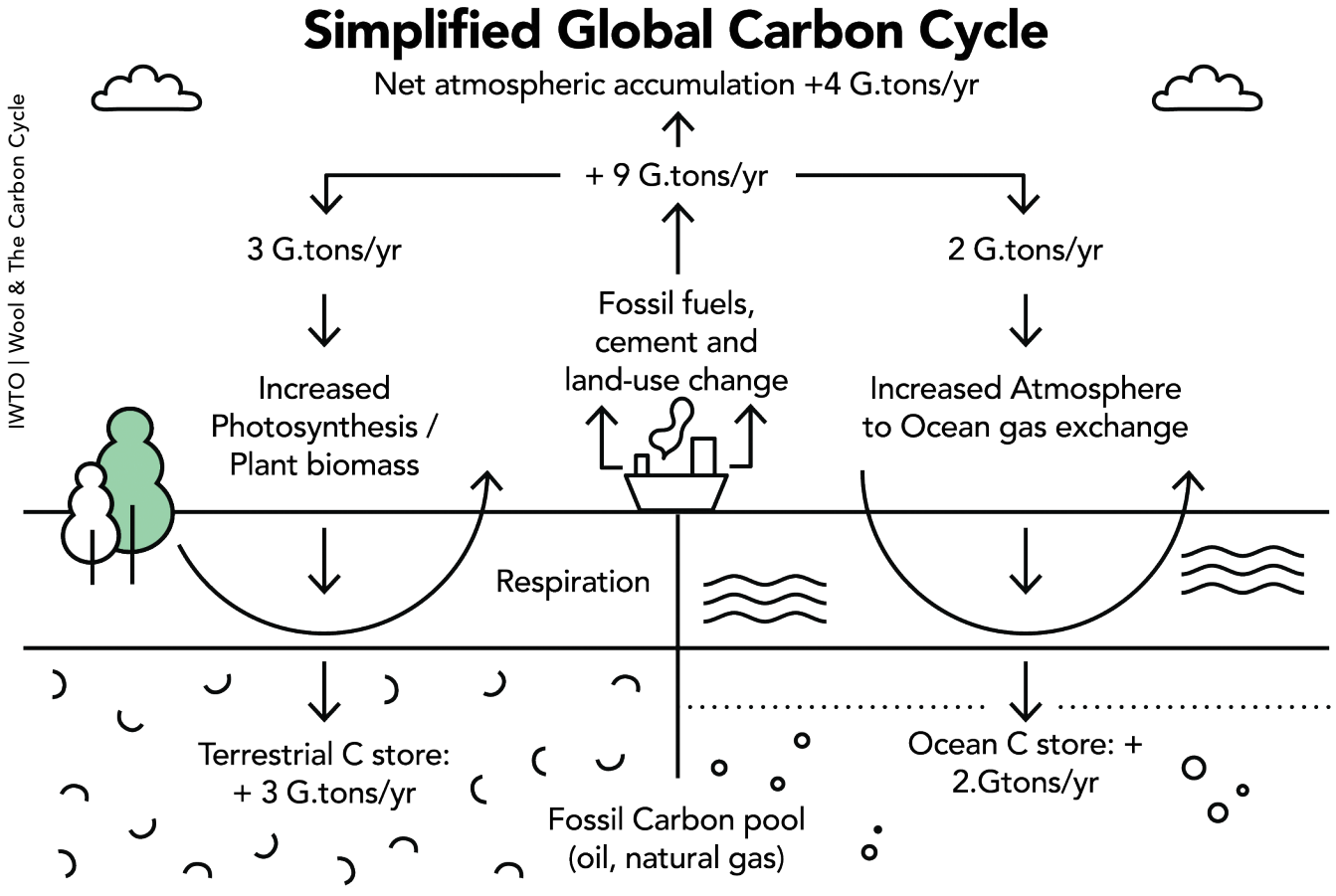
Carbon is the cornerstone of life on earth

In nature, the cycle of life is a manifestation of the carbon cycle. One life nourishes the next as carbon, the skeleton of life, flows from life form to life form.

Wool, made of biogenic carbon, readily biodegrades at the end of its life, and returns its carbon to the earth's soil where it will be recycled into the next life.

But unlike wool, oil-based polyesters, nylons, and acrylics have been created by chemists, and only in the last 50 years. These synthetic chemical structures are new to nature, which has not evolved means to deal with them.

Instead of naturally biodegrading, these structures miniaturise to micro- and nano-scale and accumulate. They are major contributors to the micro-plastics crisis engulfing our oceans, rivers, landfills, and potentially our air.



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About IWTO

With a world-wide membership encompassing the wool pipeline from sheep to shop, the International Wool Textile Organisation represents the interests of the global wool trade. By facilitating research and development and maintaining textile industry standards, IWTO ensures a sustainable future for wool. To learn more about IWTO and its activities, visit www.iwto.org.

INTERNATIONAL WOOL TEXTILE ORGANISATION IWTO

Dr Paul Swan is a Technical Advisor to IWTO in the field of eco-credentials, as a member of the IWTO Sustainable Practices Working Group and the Wool LCA Technical Advisory Group. His extensive experience in wool production and wool textile research includes over a decade in senior executive roles for Australian Wool Innovation Ltd.