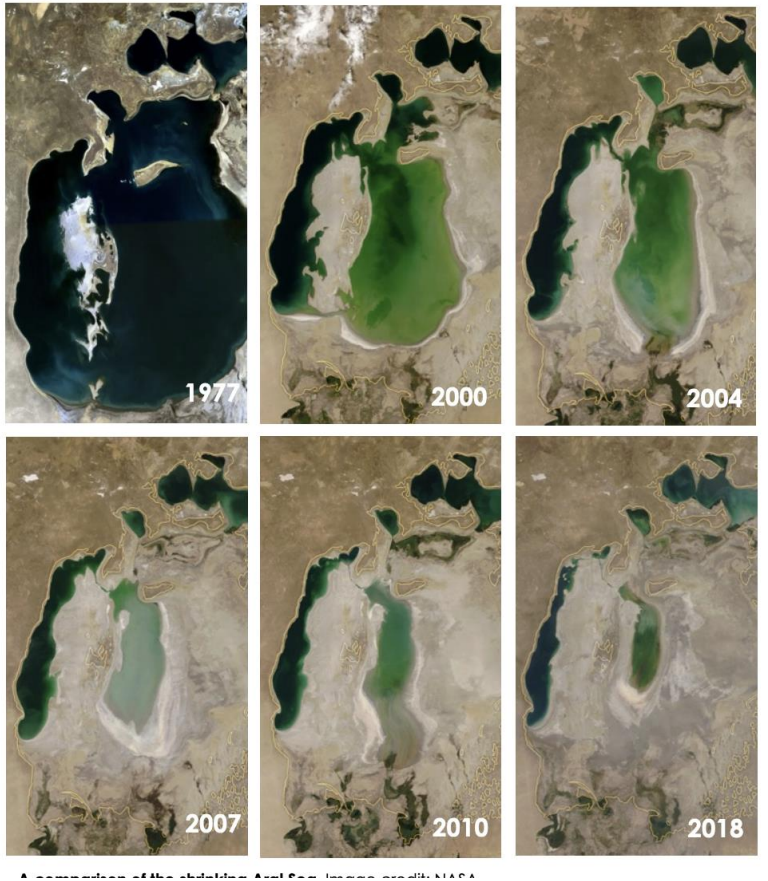
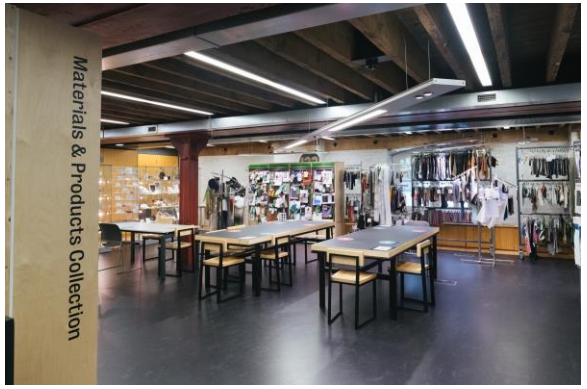
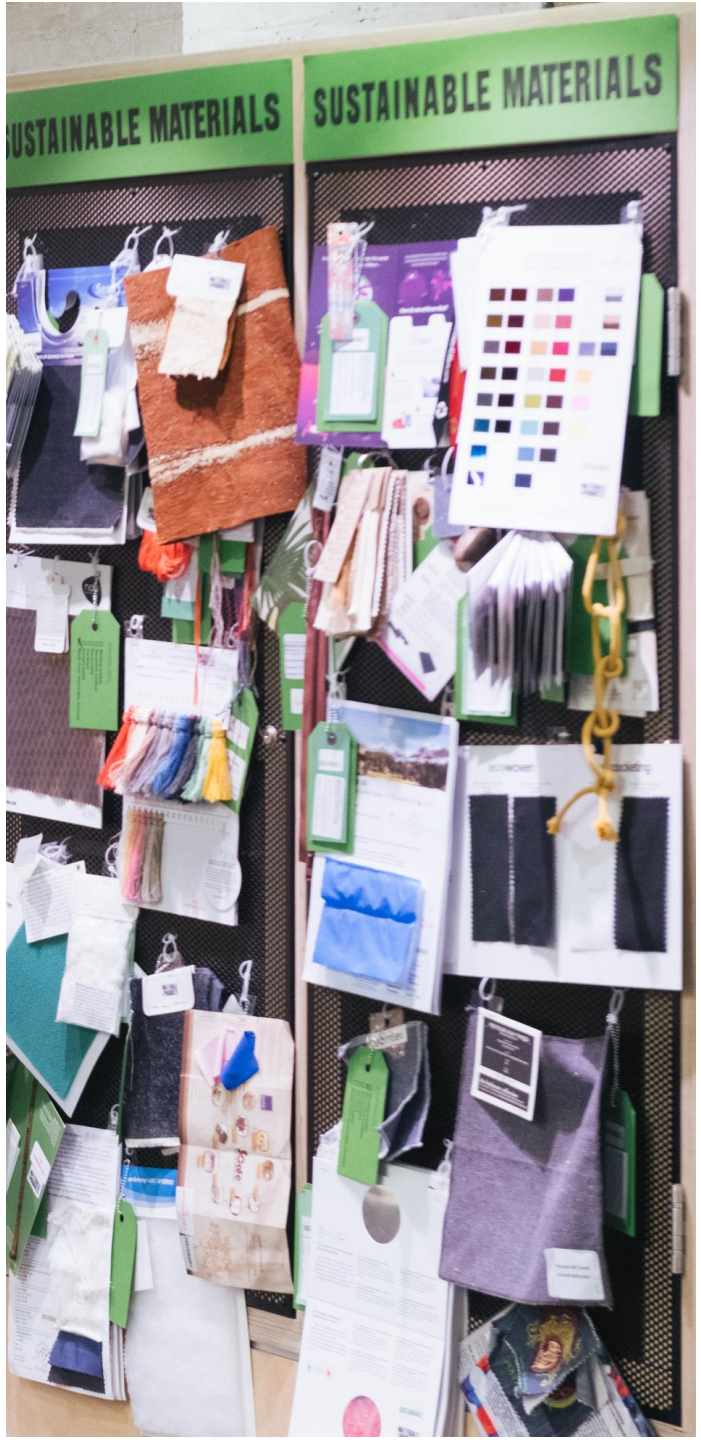


Materials, sustainability and land ethics

ual: university of the arts london

Materials & Products Collections



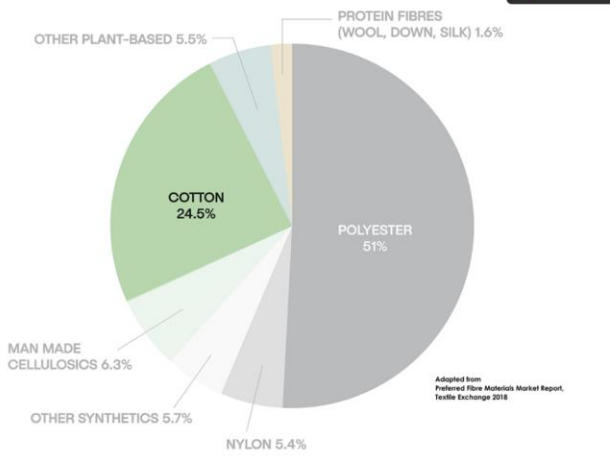

SUSTAINABLE MATERIALS
SUSTAINABLE MATERIALS


Sustainable criteria
Biodegradable
Recycled content
Recyclable
Certified
Compostable
Made from renewable sources

COTTON FIBRE DEMAND

Global fibre demand saw a tenfold increase from 1950 to 2017. Synthetics took the lead in the 1990's, but **COTTON** is by far the most important natural fibre making up approximately 25% of global fibre production.

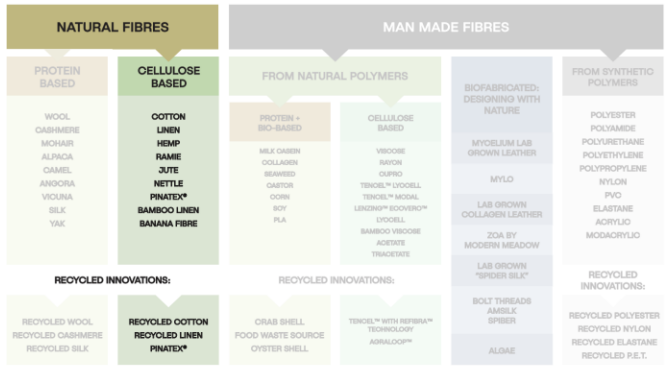
It is estimated that replacing conventional cotton with its organic alternative can save **62% of the primary energy demand.**



MATERIALS MATRIX

COTTON

The **materials matrix** categorises and promotes understanding of the **provenance** of raw materials, therefore prompting the first questions regarding sustainability impacts. **COTTON** is a natural agriculturally grown **CELLULOSE** fibre.



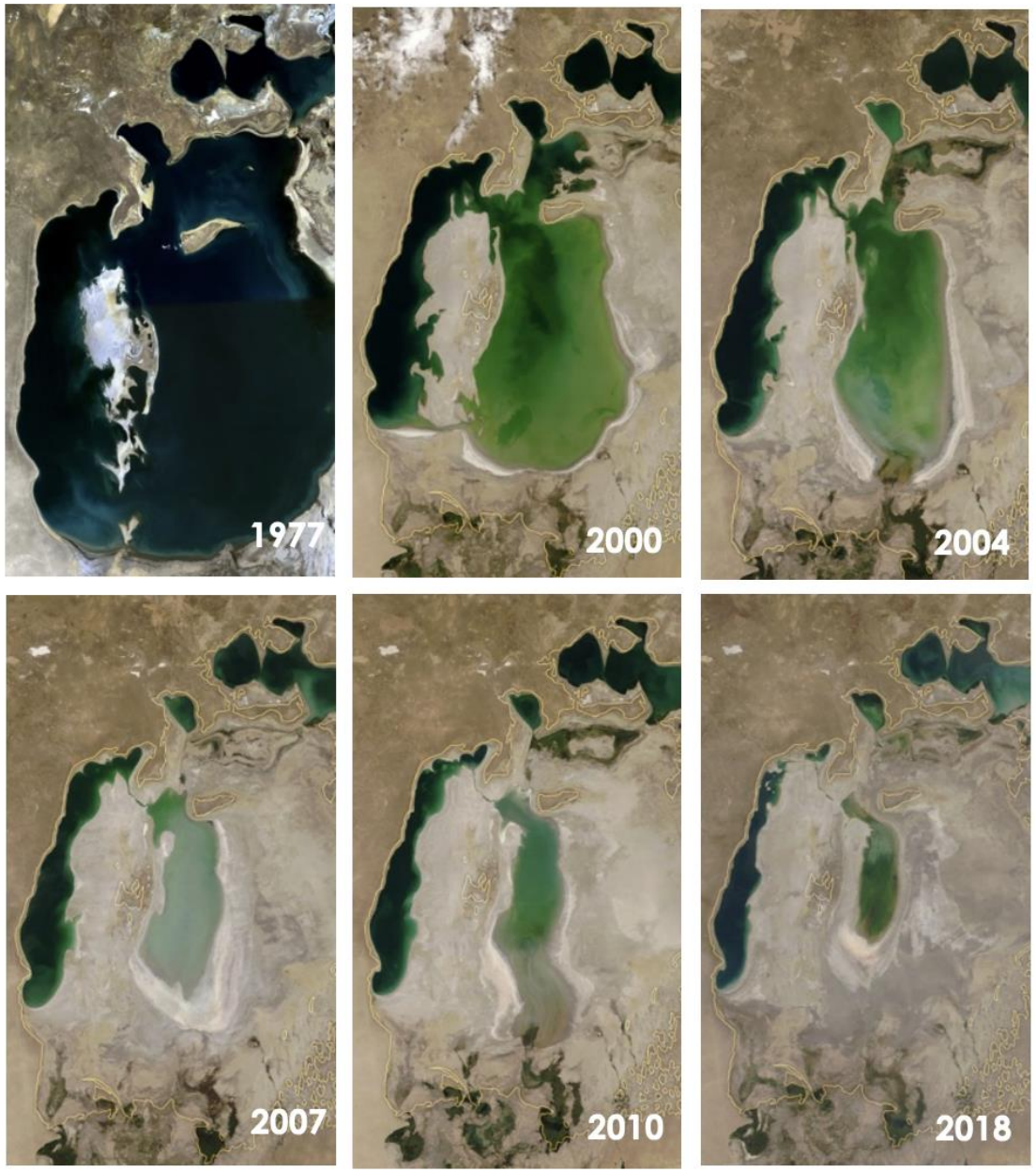
Genetically modified cotton. *Encyclopædia Britannica ImageQuest*.

Field of cotton, Gossypium sp., being harvested. [Photograph]. *Encyclopædia Britannica ImageQuest*.

COTTON production uses 2.5% of the world's cultivated land, yet it accounts for 16% of all insecticides sold globally.

- It also accounts for 4% of artificial nitrogen and phosphorus fertilisers used globally.
- It is estimated that growing cotton requires 200,000 tonnes of pesticides and 8 million tonnes of synthetic fertilisers every year.

ENVIRONMENTAL IMPACTS



A comparison of the shrinking Aral Sea. Image credit: NASA.

- **Conventionally farmed** cradle-to-grave impacts for cotton include water depletion, need for fertile soil to grow, and workers rights abuses in the garment supply chains.
- **Genetically Modified (GM) cotton** reduces biodiversity from high pesticide usage in intensive monoculture agricultural systems.
- **The cultivation area of cotton** covers only 3% of the planet's agricultural land, however its production production consumes an estimated 16% of all insecticides and 7% of all herbicides.
- **In Uzbekistan** the demand for water to irrigate conventional cotton fields has contributed to the draining of the Aral Sea, a crisis so acute that the UN described it as one of the "most staggering disasters of the 20th century".

According to the WHO (World Health Organisation) cotton consumes around 25% of the world's output of pesticides. Many deaths each year in the developing world are linked to pesticide poising, most of which are directly related to cotton farming.

Conventionally farmed cotton is reliant upon **Genetically Modified (GM) seed**. It is pesticide dependent and cannot be propagated by farmers, who need to purchase new seed each growing season.

Cotton seeds pre-treated with agrochemical

Untreated cotton seeds

The use of pesticides accounts for more than 50% of the total cost of cotton production in most of the world.

Source: www.aboutorganiccotton.org | © 2020 Textile Exchange

COTTON VARIETIES

Different COTTON species are native to many tropical and subtropical regions, but the first four varieties below account for most of the cotton grown commercially today;

GOSSYPIUM BARBADENSE (or Sea Island cotton). This type has an extra long staple and originates from South America. It is demanding in terms of irrigation and climate. It accounts for around 15% of global production.

GOSSYPIUM HIRSUTUM This type originates from Central America. It is the most widely grown species and accounts for 80% of global production.

These two types are long staple varieties, and provide the premium fibres for Egyptian, Sea Island and Pima cotton.

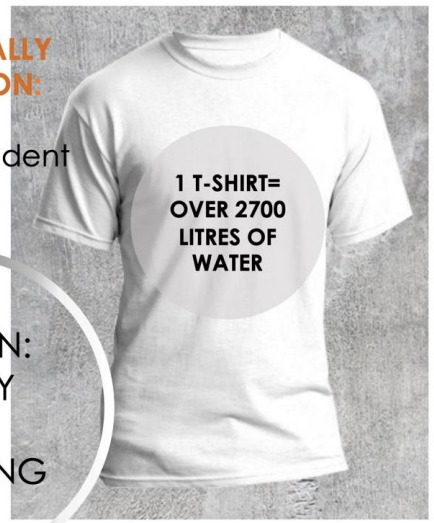
GOSSYPIUM HERBACEUM Also known as Levant cotton, this type originates from South Asia, and is native to southern Africa and the Arabian peninsula. It accounts for less than 2% of the global market.

GOSSYPIUM ARBOREAM Also known as 'tree cotton' it originates from North Africa and the Indo Pakistan subcontinent, and has been cultivated since the Bronze age. From natural and artificial selection it has evolved chracteristics such as drought tolerance, disease and pest resistance.

COLOUR GROWN Peruvian Pima and Tanguis cotton is naturally coloured and organically grown. It requires little water and no fertilizers and pesticides This variety produces a palette raging from cream, golden beige, brown, terracotta, mauve and green.

NATURALLYCOLOUR GROWN COTTON

CONVENTIONALLY GROWN COTTON:
Pesticide and fertilizer dependent



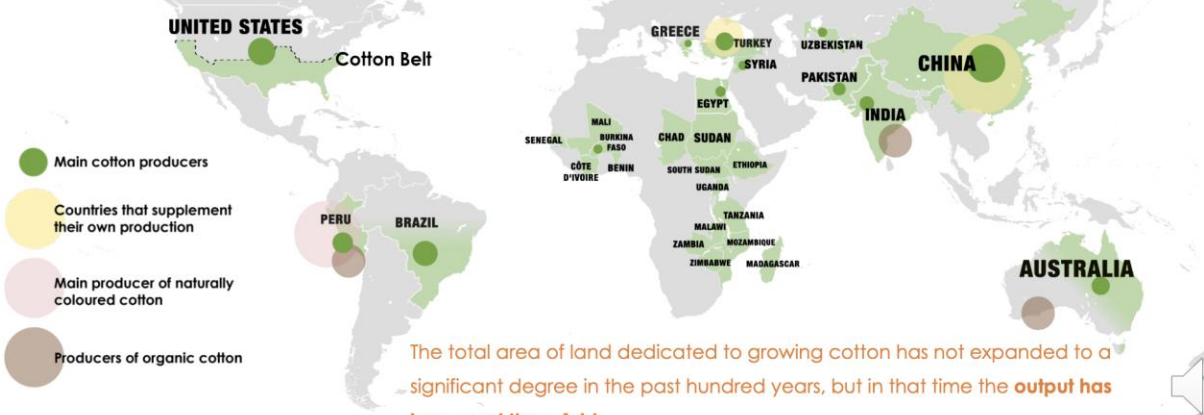
COTTON: THIRSTY AND POLLUTING

ORGANIC 100 content standard

PLACE: THE ORIGIN OF COTTON

Some 220,000 farmers are estimated to be involved in organic cotton farming in 18 countries. India, China and Turkey are the largest organic cotton producers, accounting for 85% of global organic cotton production.

Cotton is the worlds most important non- food crop.
Cotton is grown in more than 80 countries
China, India, Australia, Brazil and Pakistan account for 80% of production

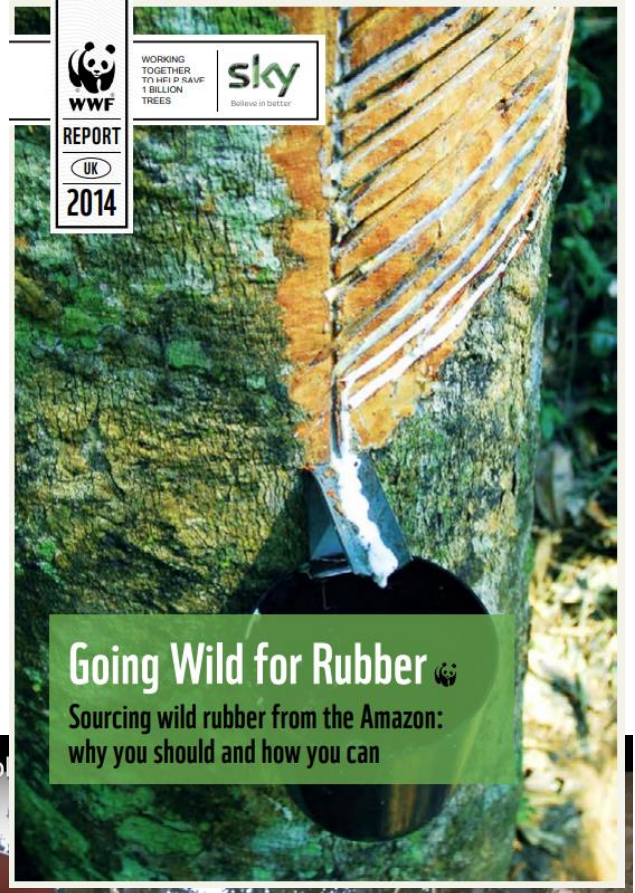


The total area of land dedicated to growing cotton has not expanded to a significant degree in the past hundred years, but in that time the **output has increased three fold.**


imagine if the forest was worth more standing than cut down

Going Wild for Rubber

Figure 2.22: A rubber tapper collecting latex in the surroundings of his house in the rainforest at RESEX Chico Mendes, 2011.



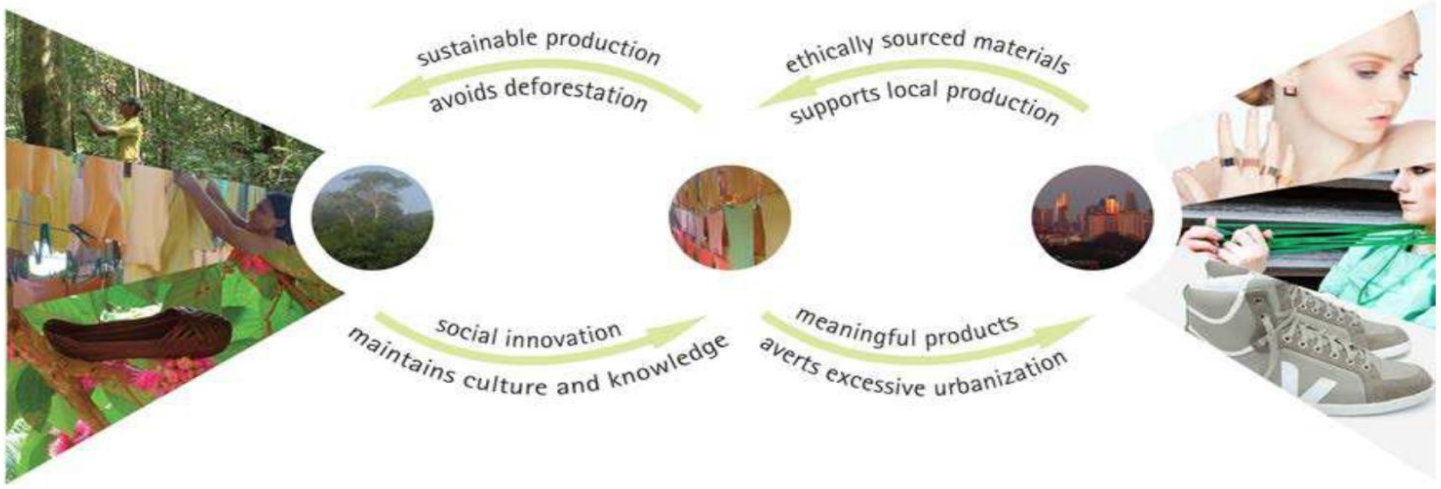


Figure 2.1: Relationship between local production and global market.
Left: a rubber tapper harvests the raw latex; a woman of the community hangs sheets of rubber to dry; a rubber shoe made by the artisan José de Araújo. Right: designer products made of new rubber materials, produced locally

MATERIALS

REALLY MATTER!

ABOUT 80% OF A PRODUCTS IMPACT

LIES IN THE MATERIAL CHOICE ALONE

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