L.21

CARBON FARMING

FOOD Ed.

FOOD EDUCATION
FOR CHANGE

Photo: Arka Dutta

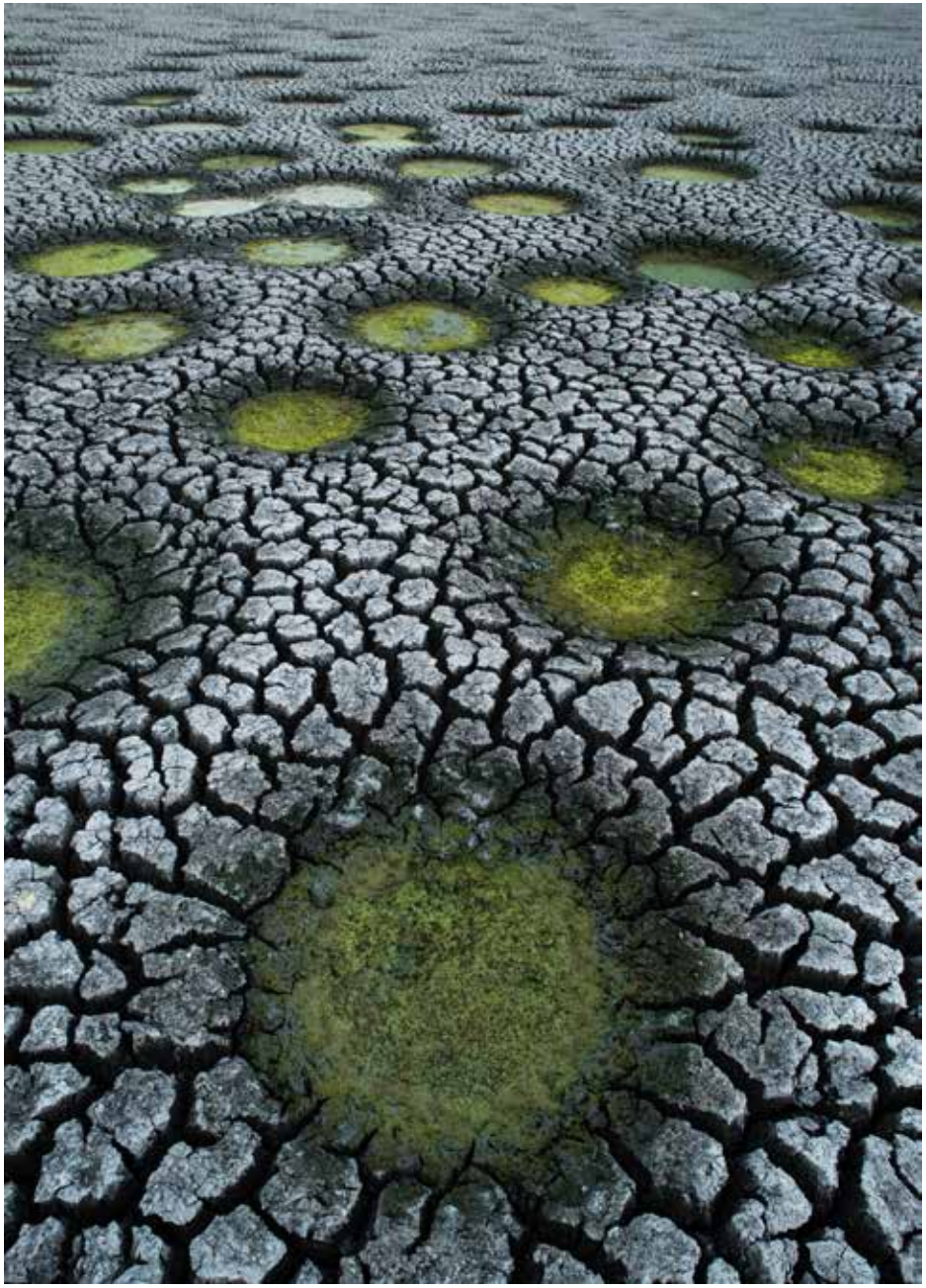
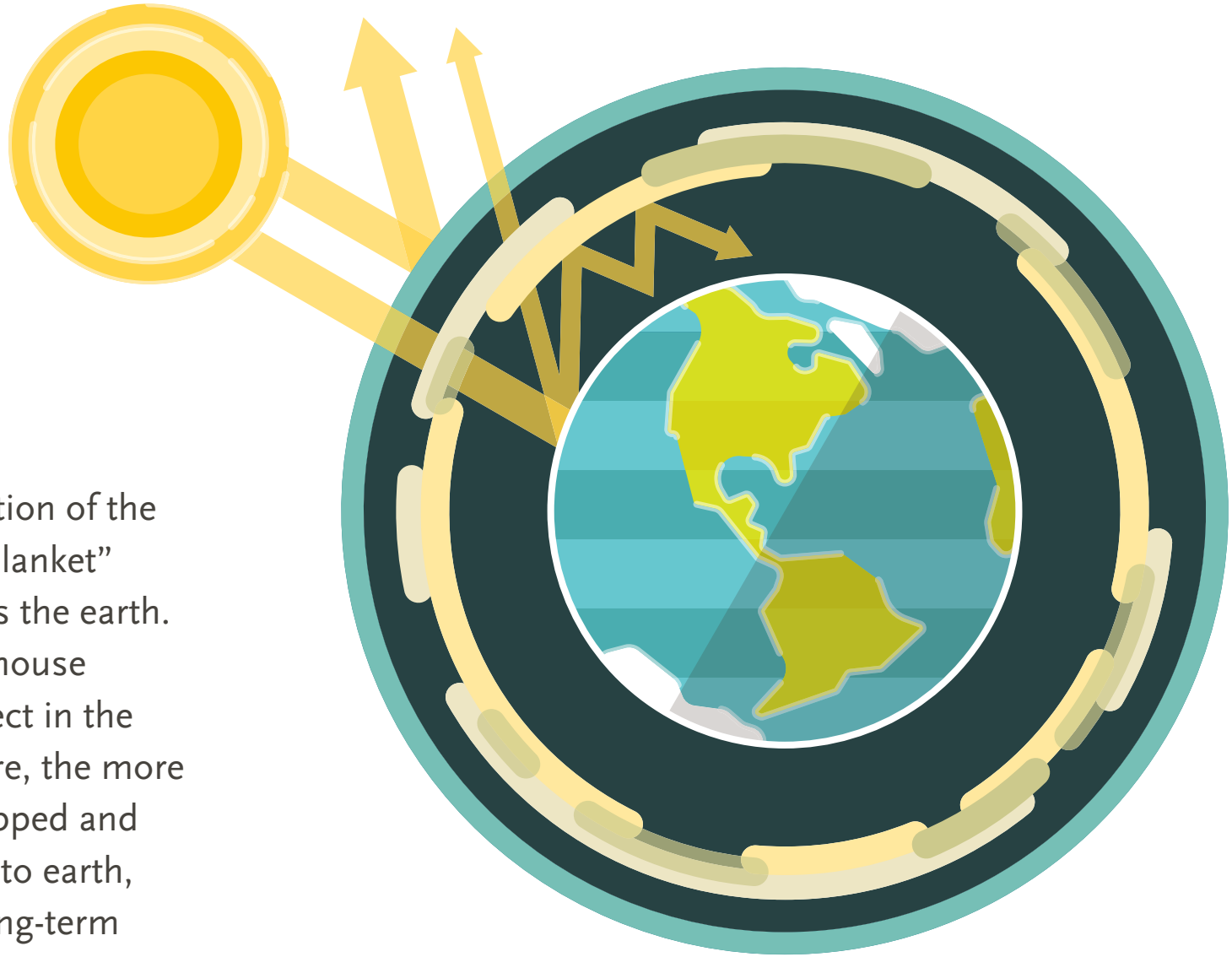


Photo: Tomasz Solinski

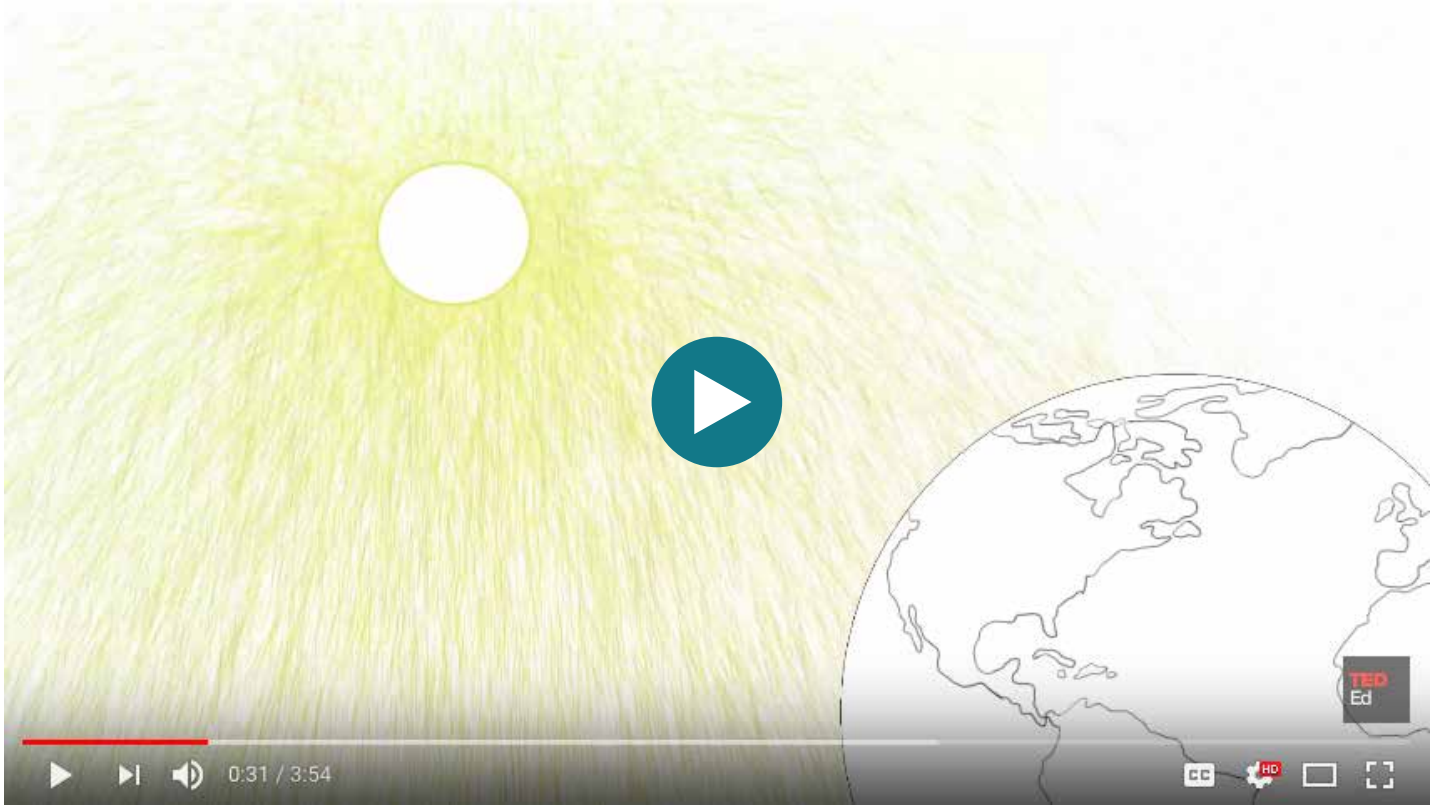


An illustration of the "thermal blanket" that warms the earth. The greenhouse gases collect in the atmosphere, the more heat is trapped and redirected to earth, causing long-term climate change.

Carbon Dioxide (CO^2) concentration leads to global warming, but carbon is essential to life!

- It is the fourth most common element in the universe and the second most abundant element in the human body. Life cannot exist without it.
- It exists in many forms because it can bind with other elements to create complex and stable compounds. Those long chains of compounds store a lot of energy and release a lot of energy when broken.
- Carbon is always moving in a cycle from air to land to air.

THE CARBON CYCLE



One way to address global warming is to **sequester** or fix as much carbon into the soil as possible—this process is called "**carbon farming**"

Carbon was fixed in the soil through the LONG geologic process that created coal, oil, and natural gas from trees and other dead plants hundreds of millions of years ago.

But carbon also enters the soil through plants.

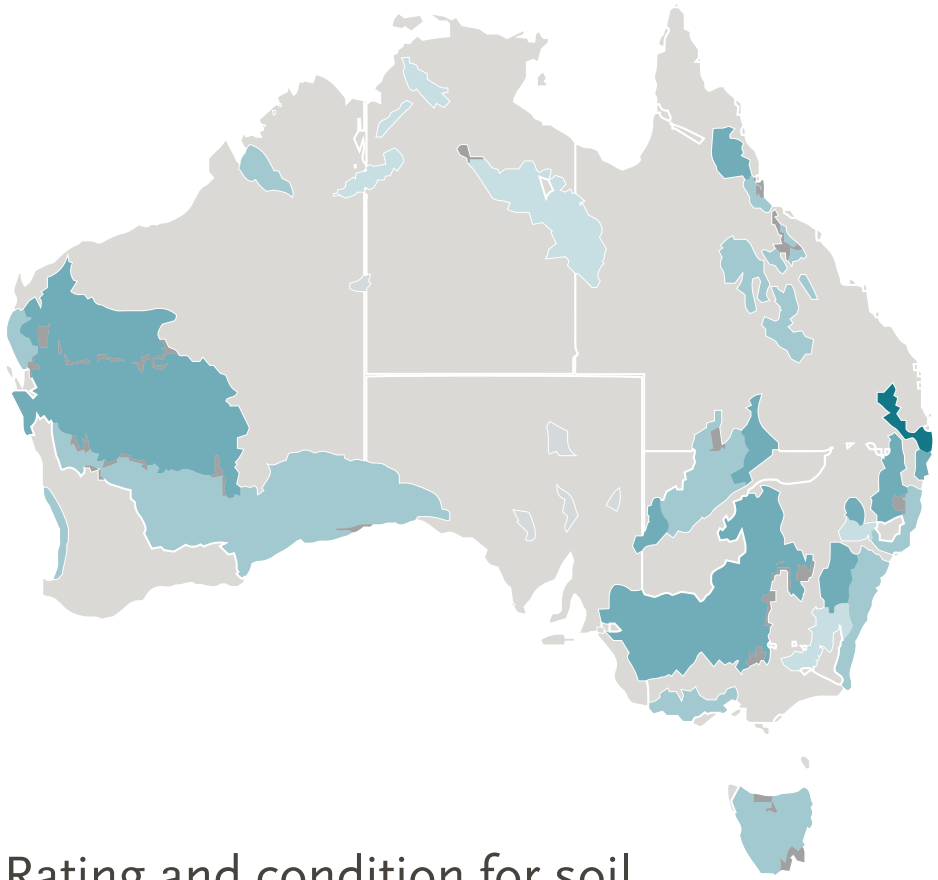
Photosynthesis transforms sunlight into chemical energy using carbon dioxide from the air and water from the soil. That process releases oxygen into the air and creates organic compounds used for plant growth.

30-40% of the carbon created by photosynthesis is expelled into the soil by a plant's roots. It feeds the microorganisms that help to build healthy soil.

The more photosynthesis → the more roots → the more carbon enters the soil.

Carbon Farming works to remove as much CO2 from the atmosphere as possible and sequester it in stable, healthy soil!

Australia is one place where carbon farming is popular, in part because farming practices brought from England depleted the land's dry soils of their carbon stocks.



https://soe.environment.gov.au/theme/land/topic/soil-carbon-dynamics

One technique is **pasture cropping**, which involves planting a crop in pasture land.

Pasture cropping farmers use a drill to plant cereals like wheat or oats early in the spring. The drill does not disturb the pasture grasses that are dormant in cold weather.

Harvesting the cereals stimulates the growth of pasture grasses, which then feed the sheep or cattle that graze on the land.

Why is pasture cropping a promising practice?

- The cereal crops and the grasses are feeding soil micro-organisms, building up soil carbon, and improving fertility faster than the grasses could alone.
- Pasture grasses are perennials—they have a multi-year life cycle. That means that they can develop must deeper root systems than annually planted crops.
- Animals control the growth of grasses while the cereals are growing, control weeds, fertilize the soil with their manure, and trample dead and decaying organic matter on the surface of the soil.

Does it work?

- In Australia, farmers and scientists have seen improved quality and yields of crops and animal products.
- Native grass, bird, and animal numbers have increased substantially.
- Soil microbial counts and soil nutrients have also increased significantly.
- Soil carbon has increased 203% in 10 years in soil that can now hold 200% more water.

Imagine:
Farming that works to fight global warming!