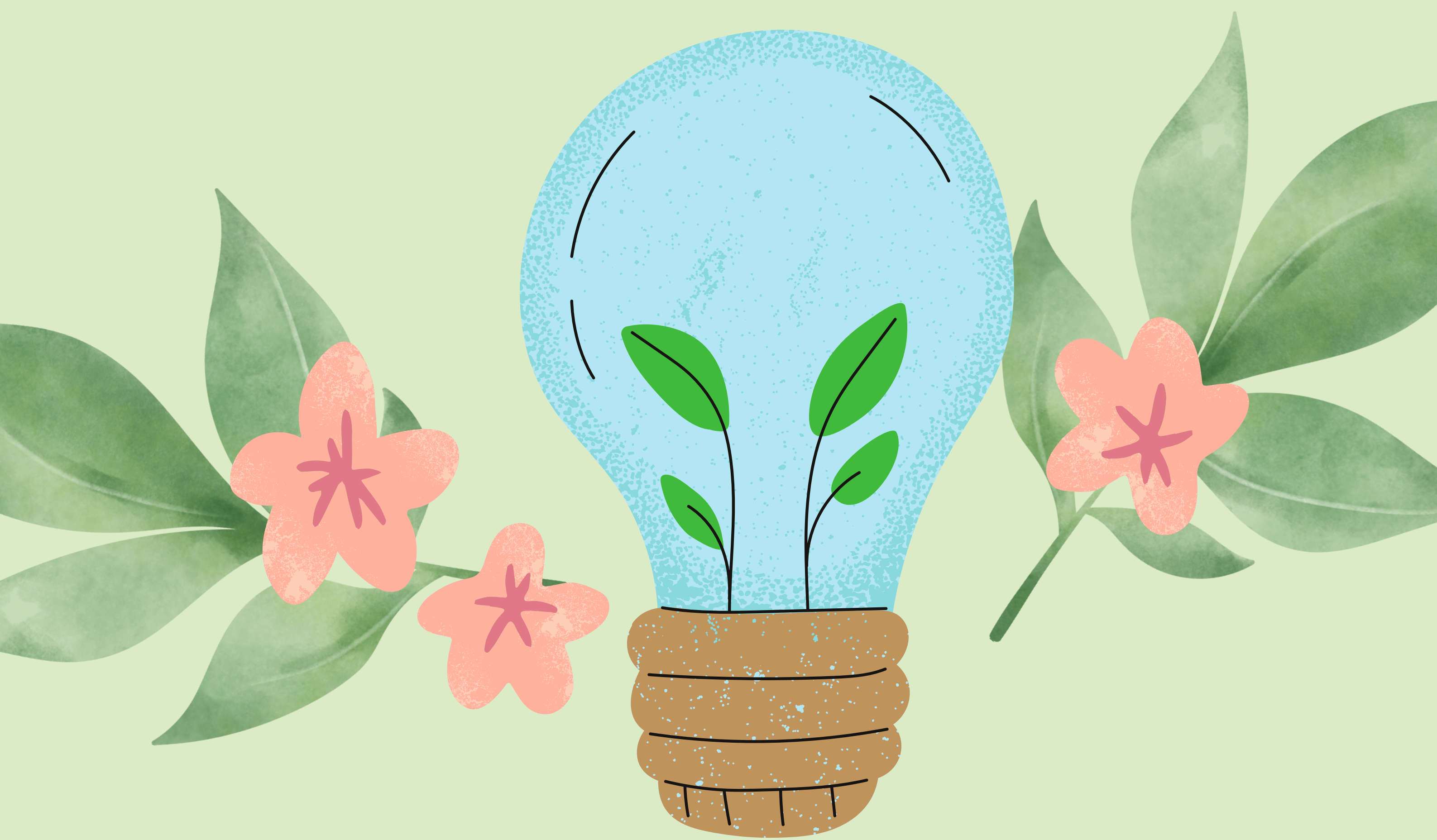


AG 2030

CHALLENGE



Intro to Challenge

The AG2030 challenge asks of us young STEM-minded individuals to propose sustainable plans that will lead to innovative solutions, through incorporating new technology that utilises renewable energy. To envision a sustainable agricultural system means that we have to cultivate plant products, crops and food resources with a considerate and eco-conscious approach. As the generation who will be responsible for our future environment, we must take on our social responsibilities to restore natural habitats, as well as improve soil health and confront our world's climate problems related to agriculture.

Agroforestry

Agroforestry allows native trees and shrubs to be **integrated into farming landscapes** to conserve plant species. As well as this, the increase in tree numbers allows for more carbon dioxide to be absorbed from the atmosphere via photosynthesis, through the stomata in the leaves of the plants. The **high biodiversity** associated with agroforestry (as they're are a broad range of tree and plant species) indicates that the ecosystems formed will reflect high stability, and become more resilient to environmental change.



- **Reduces greenhouse gases** through the trees absorbing CO₂ from air
- Leaves from trees used as **biodegradable compost to improve soil fertility**
- Provides long-term secure green job employment
- Allows for **symbiotic relationships** with other plants and native animals, as trees provide secure shelter and shade

Vertical Farming

Vertical farming allows for small crops to be grown vertically in an eco-house. This enables for a more **efficient land usage**. Vertical farming allows produce to be produced near urban areas, which are expected to home 2 out of every 3 people by 2050 (USDA, 2020). Hence vertical farming would reduce distribution chains to **lower emissions**, provide higher nutrient produce and **reduce water runoff**. **LED lights** will be utilised, as they are more efficient and will see **lower operating costs** compared to fluorescent or incandescent lights. According to the International Energy Agency, LED lighting is expected to **increase by an extra 70% by 2030** (IEA, 2021).

- Monitors irrigation, light exposure, soil pH, CO₂ levels and humidity



Reducing Animal Agriculture + Renewable Energy

In reducing animal agriculture, it will allow for the transition to the exponentially growing market of **plant-based** diets and products, which with marketing investments in such companies, will target product demand. Animal agriculture, specifically the **'grazing natural vegetation space'**, accounts for over **45% of Australia's land-use**, which is 3,448, 896 km² (Climate Works Australia, 2021). It is proposed that as animal agriculture is reduced, 80% of the space used for grazing will be **restored to forestry** through a tree partnership program with **local communities and businesses**, hence increasing employment opportunities. The 20% of land left (689,779.2 km²) will be converted to **windmill and solar panel farms**, allowing the energy utilised in agricultural crops and grains, to be of 100% renewable energy. The solar farms will also **double as pollinator habitats**, through providing honey bees with low-growing, shade-tolerant flowers under the solar panels (Davis, 2021). While the transitioning uptake in **100% renewable energy will open employment**, creating greener jobs like windmill technicians, solar sales consultants, wind and storage managers and engineers. These are all 'green' jobs for the future, that don't jeopardise our future.



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