



Design an Earthship

Buildings and infrastructure have a significant environmental impact, not only when they are constructed, but also when they are inhabited or used. **Currently, buildings cause 20% of global greenhouse gas emissions** and the most popular insulation materials are either toxic or non-biodegradable. One alternative to the mainstream construction methods is **biotecture**: architecture that involves the use of organic materials.

Biotecture is used to create **earthships**. An earthship is a type of house or shelter made from both natural and upcycled materials. They can be found all over the world and are often powered by **renewable energy**. In this activity, your students will be designing their very own earthship. This will allow them to apply their knowledge about sustainability and to **think creatively about climate solutions**.

Instructions

Students should each produce a side profile of their earthship design. All materials and constituent parts should be **labelled** and briefly **explained**. Students should be encouraged to research **existing earthships** so that they can use proven sustainable and off-grid solutions as inspiration for their designs. The activity sheet includes an example of an earthship design.

We recommend your students spend the class time researching together and asking questions if need be, and are assigned the design section of the activity as homework. The activity sheet includes an example of an earthship design. If possible we recommend not printing out this activity as the blueprint page found in the handout may use a lot of ink.

Students' designs should also include the following:

- An area for growing food (e.g., a small greenhouse or outdoor garden)
- A way to collect and supply energy (e.g., solar panels, wind power)
- A way to provide cooling/heating and ventilation (e.g., cooling tubes, tyres as a form of insulation)
- A way to collect and supply water (e.g., using barrels to collect rainwater)
- A way to manage waste

We welcome feedback and would be delighted to hear your thoughts on this activity. Feel free to send an email to schools@climatescience.org and we'll be sure to get back to you soon :)