

Architecture

- 1 What effect do you think natural disasters can have on our homes?
- 2 Look at the photos below. They show the effects of flooding and some solutions to living in flood-prone areas. Read the text quickly and label the images.

◀ ▶
Facebook
Twitter
LinkedIn
Share
Email

Floating homes: building houses to survive natural disasters

Architectural challenges

Architects and builders around the world are having to find solutions to big problems these days. Some of their current challenges include:

- a growing world population leading to an increase in the demand for housing
- the difficulties that natural disasters and climate change present to construction, e.g. sea levels are rising and mass flood events are occurring more frequently
- greater impact from disasters due to higher population density
- pressure to provide innovative and effective housing to withstand natural disasters.

How do architects approach these problems?

Assessing the problem

Factors that architects need to consider often include things such as location, cost, function for homeowner, materials, visual impact and environmental impact. In many cases, the land available to build on is under threat so the types of houses that are needed and the materials architects use have to change.

Finding inspiration

In the case of providing housing to withstand floods, many have looked to countries that are prone to flooding. In the coastal and river regions of Bangladesh, Thailand and Myanmar, for example, people are used to regular floods and build their houses on wooden stilts. This idea has been adopted in the UK, where planners are being forced to build houses on 'brownfield' sites next to rivers to keep up with demand for accommodation. The problem is, these sites are often on flood plains. However, as sea levels continue to rise, there is a limit to how high we can keep on raising our houses.

Project considerations

Architects have also tried to stop disasters from reoccurring by looking at how and why they happened. In 1953, London and the east coast of England suffered a major flood when record sea levels left hundreds of people dead. The solution was to construct the Thames Barrier, and the outcome a huge brand new flood barrier on the River Thames. However, not all communities can afford such designs. More economical barriers include dykes and levees. However, as Hurricane Katrina in New Orleans proved, these are not always effective. In August 2005, hundreds of people were killed and thousands of homes destroyed when the sea burst through the levees, causing mass flooding. It is believed to have cost the country an estimated \$100 billion.

Creative solutions

Instead of struggling against it, architects have had to start working with the rising water. In the Netherlands, where 60% of the land is below sea level, architects have come up with an innovative way to build houses. Not far from Amsterdam, is the Maasbommel project. They are the world's first amphibious dwellings. The houses are built on platforms that rest on dry land, but during a flood the platform goes up, allowing the house to float. To stop the houses from floating away, they are fixed to two large posts, called piles, which are set deep into the ground.

Cooperating with nature

Although amphibious houses are very new, perhaps they are the future of building homes to combat climate change. By working with mother nature, we can live in a world where frequent flooding doesn't always cause devastation to our lives.



A



B



C



D

3 Read the text. Then complete the list below with words or phrases from the text.

- 1 Problems architects face:
.....
.....
- 2 Factors to consider when building houses:
.....
.....
.....
- 3 Countries that build houses on stilts:
.....
- 4 Types of flood barrier:
.....
- 5 How are amphibious houses prevented from floating away during floods:
.....

4 Choose appropriate words to complete the sentences.

- 1 As sea levels rise, is happening more often.
- 2 Brownfield sites are difficult to build on because they are often on
- 3 Hurricane Katrina cost the USA \$100 billion because the sea the levees.
- 4 of the Netherlands is below sea level.
- 5 Amphibious houses float on

5 Work with a partner and discuss the questions.

- 1 Would you like to live in an amphibious house?
- 2 Are amphibious houses an effective solution to flooding? Discuss the advantages and disadvantages.

?? DID YOU KNOW?

One unusual floating home lies in the world's highest lake. The Uros tribe live on Lake Titicaca in Peru. Like the amphibious homes in the Netherlands, their homes float and the land they are built on also floats! Using a special kind of plant called *titora*, which grows in the lake, the Uros have been building floating islands for hundreds of years. Finding more land to build on is never a problem for the Uros. They just build more *titora* islands!

PROJECT

- 1 In pairs, find out about another innovative way to build houses in the face of climate change and natural disasters. What are the design features, materials and costs involved? Where are they being built? Who can afford them?
- 2 Design your own futuristic home to withstand natural disasters or climate change. Focus on:
 - the natural disaster/symptom of climate change it is built to withstand
 - the people it is built for/who can afford it
 - the type and cost of materials needed
 - the impact on the community and the environment.
- 3 Draw and label your design, showing the special features mentioned above. Present your design to the class.

VOCABULARY FOCUS

- amphibious [adj]:** something able to live on land and in water
- barrier [n]:** blockade, obstruction
- brownfield sites [n]:** disused industrial land ready for redevelopment
- dwelling [n]:** house
- dykes and levees [n]:** banks built next to rivers and seas to prevent flooding
- flood plains [n]:** natural flat area near water that floods regularly
- flood-prone [adj]:** at risk from flooding
- innovative [adj]:** inventive and modern
- mass [adj]:** large, big-scale
- stilts [n]:** tall poles often used to support and lift a building
- withstand [v]:** survive, tolerate