

## A hands-on challenge to find a solution to a real life problem caused by climate change in Bangladesh

### Background

In Bangladesh climate change is having a major impact on those communities living in riverside areas. Heavier, longer rainy seasons mean that land where farmers used to be able to grow crops to feed their family is being flooded before crops can be harvested. As a result families go hungry. In this challenge, pupils are asked to design and make a structure that enables farmers to continue to grow their crops even when the land floods.

### Preparing the challenge

#### You will need:

- Challenge teaching materials:** Floating garden PowerPoint presentation, 1 set of *Picture cards*, *Student research* and *design sheets* and *Evaluating the work of others* per small group of 2–4 students
- Modelling equipment such as:** 250ml plastic drinks bottles, small plastic and polystyrene food trays, straws, K'Nex, plasticine, string, card, doweling, packaging with air pockets, cartons, sello-tape, masking tape, elastic bands, corks, yoghurt cartons, lolly pop sticks/wooden spills, blu-tac, bubble wrap and scissors.
- Testing equipment:** Washing up bowls or sinks half-filled with water, card cut to 23 x 30cm and weights up to 5kg.

### Running the challenge

- Organise the class into small teams of 2–4 pupils
- This challenge enable pupils to gain a CREST Discovery Award. For further details on how your pupils can qualify for the award go to [www.crestawards.org](http://www.crestawards.org).
- Introduce the challenge by asking pupils about how they think climate change is already affecting communities around the world.



### Starter activity

- Hand out a set of picture cards per group from the starter activity and allow students time to discuss the questions on the PowerPoint presentation.
- Enable pupils to feedback on how they've grouped their pictures, reflecting how climate change is causing drought and flooding in different parts of the world (PowerPoint slide 3).

### Main activity

- Introduce the context, problem and challenge for pupils.
- You may want to get some initial ideas from pupils before showing them considerations on PowerPoint slide 6. This includes details of the maximum size for their models.



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### Continued:

- 💧 Allow pupils time to carry out research and record their findings about the context and any existing solutions to growing crops in flood prone areas. A useful web link is [practicalaction.org/floating-gardens](http://practicalaction.org/floating-gardens).
- 💧 Handout individual or group design sheets and allow pupils some time to look at the materials available before they start developing their design ideas for their floating rafts.
- 💧 Allow pupils a set time to make their models before they will be tested to see how much weight they can carry before sinking. Remind them to check the size to ensure the challenge is 'fair'. Depending on what you want to achieve from this activity you may want to give the students a limited set of materials with two or three variables to choose from e.g. buoyancy.
  - Encourage pupils to test then adapt their models.
- 💧 The winning team will be the one whose model supports the most weight.
  - Encourage pupils to complete their evaluation of their work on their design sheets.
  - Allow time for each group to prepare and present their findings. This should include how well they worked together as a team, their research findings, design idea(s) and final model. A pupil sheet Evaluating the work of others, can be used for pupils to record their feedback during the presentations.
- 💧 You may wish to award certificates for everyone who takes part, with special certificates for the winners. They are available to download from the website.

### After the activity

- 💧 After the main activity, show pupils PowerPoint slides 7–9 and/or the poster accompanying the challenge which can be ordered free by emailing [schools@practicalaction.org.uk](mailto:schools@practicalaction.org.uk) or downloaded from [practicalaction.org/floatinggardenchallenge](http://practicalaction.org/floatinggardenchallenge). These give details of a solution developed by Practical Action – a raft made from layers of hyacinth roots, bamboo and soil to grow the crops on.
- 💧 Use PowerPoint 10 to prompt discussion on how pupils could Grow some cress or lettuce on their rafts and/or develop a larger raft for a school pond.
- 💧 Make a 'living' display of the students floating gardens discovery with the free A2 poster - [www.crestawards.org](http://www.crestawards.org)
- 💧 If you'd like to share your experience of working on the challenge or pictures of students work, then please email them to [schools@practicalaction.org.uk](mailto:schools@practicalaction.org.uk). We'll aim to add them to our website.
- 💧 Students doing this activity may qualify for a CREST Award. To find out more go [crestawards.org](http://crestawards.org)
- 💧 For details of other Practical Action challenges please go to [practicalaction.org/STEM](http://practicalaction.org/STEM)