



Grey or green?

Lesson plan: compare grey, green and hybrid coastal defences on cost, protection and extra benefits, then advise a fictional barangay



Ages	14 to 18 (grades 9 to 12)
Time	60 to 75 minutes
Group	Groups of four
Where	Any classroom. No internet needed.
You need	The slides, one option and matrix sheet per group, the Barangay Dagatan map from lesson 1

What students learn

- The difference between grey, green and hybrid coastal defences.
- How the costs and benefits of each compare, using real figures.
- Why mangroves must be planted in the right places.
- How to make and defend a decision with a multi-criteria matrix.

Before the lesson

1. Print one **option and matrix sheet** per group.
2. Reuse the **Barangay Dagatan map** from lesson 1.
3. Decide on a budget, for example enough for 200 m of seawall, or its equivalent.

The lesson

- 1** Grey and green **10 minutes, slides 1 to 3**. Compare costs, stressing they are global medians.
- 2** Extra benefits and limits **10 minutes, slides 4 and 5**. Carbon, fisheries, and where to plant.
- 3** Advise the barangay **30 minutes, slide 6**. Groups score the options, choose and present.
- 4** Wrap up **10 minutes, slide 7**. Vote on the most convincing plan and discuss.

Answers and what to listen for

What to listen for: strong plans combine options, for example reef protection and mangrove replanting in old fishponds for long-term protection, with early warning and an evacuation centre to protect lives now, and perhaps a short seawall only where the school or road is most exposed. Weak plans rely on one option alone.

Making it easier or harder

- **Younger groups:** compare just two options: a seawall and mangroves.

- **Older groups:** add maintenance costs over 20 years, and discuss who pays.
- **Link:** the Fish, fishers and no-take zones module uses the same village for a sanctuary decision.

Curriculum links

- **Geography and Araling Panlipunan:** coastal management, hazards, decision-making.
- **Science:** ecosystems and climate adaptation.
- **Philippine senior high school:** disaster preparedness and research skills.
- **Ocean Literacy Principle 6:** the ocean and humans are inextricably interconnected.

The teacher reading has the science behind every slide, with links to the sources.

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