# From Paddock to Plate – Geography

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| **Focus:**<br>Students develop an understanding of the functioning of environments and the scale of human-induced environmental change challenging sustainability. They explore worldviews influencing approaches to environmental use and management. Students undertake an investigative study of the causes and consequences of environmental change in an environment (the coastal fringe) in Australia and another country. They compare and evaluate the management responses in both countries and propose ways individuals can contribute to environmental sustainability. A strong emphasis will be placed upon the management and movement of beach sand and sediment. | **Outcomes:**<br>• Refer to each *From Paddock to Plate* Teacher Manual for the Curriculum Focus. |
| **Time allocation: 16 weeks** | |
| **Key inquiry questions:**<br>• How do environments function?<br>• How do people's worldviews affect their attitudes to and use of environments?<br>• What are the causes and consequences of change in environments and how can this change be managed?<br>• Why is an understanding of environmental processes and interconnections essential for sustainable management of environments? | **Geographical Tools:**<br>• Maps<br>• Fieldwork<br>• Graphs and statistics<br>• Spatial technologies<br>• Visual representations |

**Content overiew:**

- **Environments**

Students: investigate the role and importance of natural environments. For example, identification of the function of natural environments in supporting life, e.g. maintaining biodiversity

- **Environmental change**

Students: investigate human-induced environmental changes across a range of scales. For example, a brief examination of types and extent of environmental change.

- **Environmental management**

Students: investigate environmental management, including different worldviews and the management approaches of Aboriginal and Torres Strait Islander Peoples. For example, discussion of varying environmental management approaches and perspectives.

- **Investigative study**

Select ONE type of environment in Australia as the context for a comparative study with at least ONE other country.
Students: investigate the biophysical processes essential to the functioning of the selected environment.

- ❖ Explain how the biophysical processes operating in the environment maintain function.
- ❖ Investigate the causes, extent and consequences of the environmental change.
- ❖ Examine the causes and extent of change to the environment in each country.
- ❖ Analyse the short and long-term consequences of the environmental change in each country.

| Lesson sequence | From Paddock to Plate Teacher Manual references |
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| **Driving Questions:**<br><br>• How do humans affect coastal environments?<br>• How do humans manage coastal sediment in Australia and in countries overseas? | |
| **Entry Event**<br>What is an environment?<br><br>1. Students spend 5 minutes discussing with their peers what they believe an 'environment' is as well as taking a moment to formulate their own definition in their workbooks.<br>2. Students should complete this activity without referring to the internet or any other secondary source. | |
| **The nature of biomes:**<br><br>1. The teacher leads the class discussion about identifying and describing the world's biomes.<br>2. Students discuss the biomes that would be most suitable for growing food.<br>3. Students brainstorm the agriculture industry's possible environmental effects on biomes.<br>4. Students write definitions for food security and what it means to them.<br>5. Students watch the 'Food Waste' virtual excursion and identify specific biomes shown in the footage.<br>6. Students list the threats to world food production and discuss how each threat is being addressed: Page 12, Year 9 Geography Teacher Manual.<br>7. Walk around the school and find the most suitable location to establish the school's vegetable garden.<br>8. Students work individually or in pairs to write up a summary of biomes and their effect on food security. | ▪ Page 9-18, Year 9 Geography Teacher Manual |
| **How do environments function?**<br>1. Teachers explore the concept of human-induced environmental changes with students and provide examples: Page 8, Year 10 Geography Teacher Manual | ▪ Page 8, Year 10 Geography Teacher Manual<br>▪ Page 9, Year 10 Geography |

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| 2. Students brainstorm the challenges they pose or the benefits they achieve for sustainability in the agriculture industry.<br>3. Watch the 'Food Waste' virtual excursion: Page 9, Year 10 Geography Teacher Manual<br>4. Analyse and explain whether environmental change is necessarily a problem that should be managed, particularly from the perspective of farmers and those who work in the agriculture industry: Page 14, Year 10 Geography Teacher Manual<br>5. Teachers use the examples in the teacher manuals to discuss geographical management strategies for environmental changes: Page 15, Year 10 Food Waste Geography Teacher Manual<br>6. Students and teachers use the *From Paddock to Plate* case studies to compare different strategies to manage environmental change. For example, consider what you think global warming might do to a loaf of bread? Page 19, Year 10 Geography Teacher Manual<br>7. Students are asked to explore the four environmental functions of planet earth:<br>❖ The source function.<br>❖ The sink function.<br>❖ The spiritual function.<br>❖ The service function.<br>8. Teacher leads class discussion on these four functions and initiates a class discussion/debate as to which of these functions are more valuable than others?<br>9. Teacher discusses how Indigenous peoples from around the world would have viewed and interacted with these functions. Teacher refers to FP2P teacher manuals and discusses the notion of living by Indigenous knowledge and having a spiritual relationship with the land. | Teacher Manual<br>▪ Page 14, Year 10 Geography Teacher Manual<br>▪ Page 15, Year 10 Geography Teacher Manual<br>▪ Page 19, Year 10 Geography Teacher Manual<br>▪ Page 17, Year 10 Geography Teacher Manual |
| **What is biodiversity?**<br>1. Teacher refers to the definition of biodiversity.<br>2. Students copy the definition as well as a list of the known threats to biodiversity.<br>3. Students watch the FP2P 'Wheat' virtual excursion.<br>4. Determine how genetically modified food crops will or will not assist with demands placed on global food production: Page 25-27, Year 9 Geography Teacher Manual<br>5. Food For Thought: Understand how gene technology works and give examples of its current application in food production: Page 25-27, Year 9 Geography Teacher Manual<br>6. Debate the importance of labeling GM foods.<br>7. Propose geographical management strategies for environmental changes. i.e. reserves and corridors to preserve biodiversity (a spatial strategy): Page 15 & 16, Year 10 Geography | ▪ Page 25-27, Year 9 Geography Teacher Manual<br>▪ Page 15 & 16, Year 10 Geography Teacher Manual<br>▪ Page 12 & 13, Year 10 Geography Teacher Manual |

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| Teacher Manual<br>8. Research and compare the differences in people's views about the causes of environmental issues in Australia and across the world including loss of biodiversity: Page 12 & 13, Year 10 Geography Teacher Manual | |
| **What is an ecosystem?**<br>1. Teacher refers students to the definition of an ecosystem and discusses this concept with the class.<br>2. Students copy the definition in their own words.<br>3. Teacher shows the class an image of an illustrated river ecosystem. Students are to spend approximately 10 minutes with the students next to them trying to identify and answer variety of questions such as: How many ecosystems are present in the picture? What are the threats to these ecosystems? Which animals and plants are producers, consumers and decomposers?<br>4. Teacher leads class discussion analysing the group/classes response to the activity.<br>5. Teacher directs students to 'Case Study One' on page 17 of the Year 10 Food Waste Geography Teacher Manual: Explore how a changing climate is altering the Arctic food chain.<br>6. Students watch a selection of the *From Paddock to Plate* virtual excursions and draw each ecosystem explored in the videos. | ▪ Page 17, Year 10 Food Waste Geography Teacher Manual |

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| **Environmental change:**<br>1. Teacher refers students to the definition of an environmental change and discusses this concept with the class.<br>2. Students copy the definition in their own words.<br>3. Teacher shows the class the *From Paddock to Plate* 'Honey' virtual excursion and emphasise how environmental change can influence honey production and honey flavour.<br>4. Students are to spend approximately 10 minutes with the students next to them brainstorming and writing down in their books the places that they have seen the greatest environmental change.<br>5. Teacher leads discussion on how Indigenous people of the world have potentially contributed to environmental change, ie: the creation of open grasslands/savanna in the Australian landscape or the over exploitation of the Moa by Maori people in New Zealand (Aotearoa). | |

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| **Environmental management:**<br>1. Teacher refers students to the list of environmental management strategies: Page 15-17, Year 10 Geography Teacher Manual<br>2. Students copy the definition in their own words.<br>3. Teacher selects a *From Paddock to Plate* virtual excursion to watch with the students.<br>4. Identify a series of quotes in the video with the class that relate to the concept of 'walking softly on earth'. Teacher briefly discusses this concept with the class. Teacher discusses that very little is gained with walking heavily in life. Our bodies react negatively to the impacts and stresses that walking heavily places on our joints and muscles, similarly the earth reacts negatively to humans walking heavily on the planet, carbon footprint, etc.<br>5. Teacher leads discussion on how Indigenous people all over the world, live and function by living with minimal environmental impact: Page 17, Year 7 Geography Teacher Manual<br>6. Talk about the material, cultural and spiritual wellbeing associated with rivers, waterholes, seas, lakes, soaks and springs for Aboriginal and Torres Strait Islander Peoples. Hunters (traditional and modern) walk softly, 'toes' first to minimise their noise in the forest, dancers walk and run toes first to minimise noise when moving across the stage. Interestingly studies have show that until shoes are introduced to toddlers, humans begin our lives by naturally walking mid-foot/toes first. Teachers pose the question: Can you see similarities or draw comparison to man's use of the natural environment and the concept of walking softly on the earth? How heavy do you walk on the earth? Page 17, Year 7 Geography Teacher Manual<br>7. Refer to the *From Paddock to Plate* virtual excursions to determine how each farmer, student, teacher, gardener and business owner is minimising their footprint on the earth.<br>8. Class Activity: Students interact with online Carbon Footprint calculator to identify how heavily they actually walk on the planet. What footprint will they leave behind? Students write their carbon footprint into their books and write a brief summary as to why they feel they received the result they did.<br>9. Flipped classroom activity: Students watch the 'Food Waste' virtual excursion at home and select one project from Monbulk Primary School that can be implemented at their school to reduce the carbon footprint. For example, rubbish-free lunches, composting food waste and growing fresh food in the school grounds for school lunches. Write a proposal for discussion in class the following day.<br>10. Discuss what would happen if the world's soil ran out. Talk about what impact this would have on food production: Page 11, Year 8 Geography Teacher Manual | ▪ Page 15-17, Year 10 Geography Teacher Manual<br>▪ Page 17, Year 7 Geography Teacher Manual<br>▪ Page 11, Year 8 Geography Teacher Manual |

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| **Geographical Issues:**<br>1. Teacher discusses the various aspects of geographical issues including land management, water management, coastal management and air quality.<br>2. Students copy the definitions into their books.<br>3. Teacher discusses the major geographical issues experiences and managed within the Australian context as show in the *From Paddock to Plate* virtual excursions.<br>4. Students copy definitions into their books.<br>5. Teacher discusses the nature of salinity and determines how salinity affects crop production. Refer to the 'Soil salt tolerance of vegetable crops' table: Page 13 & 14, Year 7 Geography Teacher Manual<br>6. Watch the 'Wheat' virtual excursion.<br>7. Consider and list causes for erosion on farm. Is land clearing for agriculture one of them? Refer to examples on page 13 & 14 of the Year 8 Geography Teacher Manual and spend time inserting scenarios of each under example headings.<br>8. Teachers speak about the project that examines the environmental impacts of dryland cropping 'at a paddock to neighbourhood catchment scale' and the scale of soil erosion: Page 14, Year 9 Food Waste Geography Teacher Manual<br>9. Teacher discusses irrigation and asks students to look at the case study and references on page 15-18 of the Year 7 Geography Teacher Manual.<br>10. Teacher selects a *From Paddock to Plate* virtual excursion and asks students to write down all the technological advancements in agriculture they see. Investigate the technology being used at the establishment of the Free Air Carbon dioxide Enrichment (FACE) facility in Victoria, set up to assist researchers to better understand the impacts of rising CO2 on crop production and inform industry to help develop adaptation options: Page 21, Year 10 Food Waste Geography Teacher Manual<br>11. Teacher defines genetic engineering agriculture: Page 25-27, Year 9 Geography Teacher Manual. Use the provided link to find out what GM foods are approved for sale in Australia and New Zealand, including potatoes.<br>12. Teacher describes sustainable farming practices and asks students to write down examples. Watch the 'Food Waste' virtual excursion and point out examples of sustainable practices. Watch the 'Grass-fed Beef' video and discuss how Warren the farmer has eliminated chemical usage on his farm.<br>13. Teacher discusses who is responsible for addressing the issue of global water scarcity. Students find their local water corporation website and where water for agricultural, industrial | ▪ Page 13 & 14, Year 7 Geography Teacher Manual<br>▪ Page 13 & 14, Year 8 Geography Teacher Manual<br>▪ Page 14, Year 9 Food Waste Geography Teacher Manual<br>▪ Page 15-18, Year 7 Geography Teacher Manual<br>▪ Page 21, Year 10 Food Waste Geography Teacher Manual<br>▪ Page 25-27, Year 9 Geography Teacher Manual<br>▪ Page 15, Year 7 Geography Teacher Manual<br>▪ Page 13, Year 7 Geography Teacher Manual<br>▪ Page 12, Year 7 Geography Teacher Manual<br>▪ Page 11, Year 9 Milk Geography Teacher Manual<br>▪ Page 13, Year 10 Geography Teacher Manual<br>▪ Page 8, Year 10 Geography Teacher Manual |

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| and domestic use. Water for the Future is the Australian Government's long-term initiative to better balance the water needs of communities, farmers and the environment: Page 15, Year 7 Geography Teacher Manual. Refer to the importance of water security in the vegetable industry: Page 13, Year 7 Geography Teacher Manual. Students create an annotated diagram to demonstrate how water flows through the environment and connects places: Page 12, Year 7 Geography Teacher Manual.<br>14. Watch the 'Milk' virtual excursion and discuss greenhouse gas emissions in the form of methane that is omitted from cows and the impact this may have on the climate and therefore its influence on biomes. Find relevant quotes from the video: Page 11, Year 9 Milk Geography Teacher Manual. Also refer to 6'53" in 'Vegetable' video and discuss why greenhouse gases are less if you grow your own food. Watch the 'Food Waste' video and identify all the ways that each person in the video is reducing the amount of waste going into landfill. Consider food rotting in landfill giving off a greenhouse gas called methane that is 25 times more potent than the carbon pollution that comes out of a car exhaust. Watch the 'Fish' video. Is global warming affecting the sardine fisherman? Why or why not?<br>15. Teachers ask students to compare differences in people's views about the causes of environmental issues in Australia and across the world: Page 13, Year 10 Geography Teacher Manual for a list of issues for consideration.<br>16. Teacher and students watch the 'Food Waste' virtual excursion and point out discuss human-induced environmental changes: Page 8, Year 10 Geography Teacher Manual | |
| **Coastal Mangement: Microplastics/plastic in the marine environment:**<br><br>1. Flipped classroom activity: students read the news article at home on page 15, Year 9 Geography Teacher Manual about how coastal agricultural industries are meeting their responsibility to farm in a way that protects the Great Barrier Reef - www.abc.net.au/news/2015-09-02/reef-program-awards/6743482<br>2. Ask students to develop a tool, technique or technology to help remove plastic from the ocean. Watch this short trailer of the adventure documentary 'A Plastic Ocean' - www.youtube.com/watch?v=6zrn4-FfbXw Refer to text references on page 27, Year 8 Fish Geography Teacher Manual. Refer to the case study on page 29, Fish Year 8 Geography Teacher Manual and discuss this innovative idea to clean up the ocean of plastic.<br>3. Listen to 18-year-old Boyan Slat talk about how he plans to tackle global issues of sustainability - www.youtube.com/watch?v=ROW9F-c0kIQ | ▪ Page 15, Year 9 Geography Teacher Manual<br>▪ Page 27, Year 8 Fish Geography Teacher Manual<br>▪ Page 29, Year 8 Fish Geography Teacher Manual<br><br>❖ Extension Activity:<br>Students who finish early can watch a short TEDX from a world-renowned ocean photographer who discusses his observation on one of the |

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| | world's oceans. https://www.ted.com/talks/brian_skerry_reveals_ocean_s_glory_and_horror<br><br>❖ Extension Activity:<br>Students are encouraged to collect marine debris and plastics in their spare time. Towards the end of term, students will work together or individually to create art works using only discarded marine waste. Students can produce physical sculptures, stop go animations, pictures, photographs, etc. |