

# Discussion cards

## Goal

Raise awareness and discussion about the complexity of climate change issues, some solutions and the connections with our places and professions. Blank cards are intended to be used as an "open-safe space" for ākongā to propose their own ideas, fostering their relationship with places/habitats, issues, and solutions, as well as exposing them to possible careers in this field.

This activity was inspired by "Layers of Climate Change"

[URL: <https://eos.org/wp-content/uploads/2023/12/layers-of-climate-change.pdf>].

## Proposed activity

### Materials:

- Cards (Place/habitat, Issue, Solution, Profession, Blank cards, Glossary)
- Whiteboard Pens

### Instructions:

- Split the class into small groups (3-5 children) and give them a set of cards.
- Each group must combine a place/habitat, issue, solution, and profession to make a set. (*HINT: it might be easier to start a set with the issue card. Look for alike words to help you begin to match issues with solutions etc.*).
- The children can use the blank cards to propose their own ideas about places/habitat, issues, solutions, and professions that were not included in the cards.
- Ākongā might find there may be overlaps i.e. there is more than one solution to an issue, or more than one profession that is needed to work on a solution. This is expected. It is intended for them to gain a broader understanding about the complexity of environmental problems and how everything is part of interrelated systems and communities.
- The glossary should be made available during the activity (scientific literacy development).
- At the end of the exercise, each rōpū (group) can present to the class what they have found. This is where the gold is found, in the discussions and critical thinking around why groups placed sets together.
- Kaiako can guide a discussion by asking why and how ākongā connected their cards, and how they feel about proposed solutions, trying to encourage them to have an optimistic view of the future.

### Printing instructions:

If you want to print additional cards, we recommend the following printing settings:

- Size: A4
- Full page slides (if asked)
- Colour (suitable for printing B&W)
- Print both sides

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# Discussion cards - Key for teachers



These are suggested sets, but there is no right or wrong answers, giving the complex nature of the climate issues.

ISSUE	SOLUTION	PLACES/HABITATS	PROFESSION
The rising sea levels caused by melting glaciers pose a threat of flooding to coastal communities.	Monitor alterations in glacier size using satellite data and publicly distribute the information to enhance coastal resilience.	ICE // OCEAN // COASTLINE & COASTAL COMMUNITIES // ESTUARIES & WETLANDS // ISLAND NATIONS	CLIMATE SCIENTIST // ENVIRONMENTAL ENGINEER // URBAN PLANNER // CLIMATE COMMUNICATION SPECIALIST // CLIMATE ADAPTATION PLANNER // MANA WHENUA
The acidification of ocean waters affects marine food webs, putting fisheries at risk.	Adopt eco-friendly fishing methods, track ocean acidity, and foster coastal landscapes that buffer against acidification.	OCEAN // COASTLINE & COASTAL COMMUNITIES // ESTUARIES & WETLANDS // ISLAND NATIONS	CONSERVATION BIOLOGIST // ENVIRONMENTAL ECONOMIST // URBAN PLANNER // ENVIRONMENTAL EDUCATORS // CLIMATE ADAPTATION PLANNER // MANA WHENUA
Flood-prone areas undergo changes and expansion, while the infrastructure remains outdated.	Incorporate green spaces and ecofriendly construction materials in new urban developments.	CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS	CLIMATE ADAPTATION PLANNER // URBAN PLANNER // ENVIRONMENTAL ENGINEER // CLEAN TECHNOLOGY ENTREPRENEURS
Extensive deforestation negatively impacts biodiversity, increases the risk of drought, and accelerates soil erosion.	Practice sustainable forestry, safeguard at-risk forest ecosystems, and engage in tree reforestation efforts.	FOREST	ECOLOGIST // CLIMATE POLICY ANALYST // CLIMATE ADAPTATION PLANNER // ENVIRONMENTAL EDUCATORS // CLIMATE COMMUNICATION SPECIALIST
Worsening drought conditions increase frequency and severity of wildfires.	Create innovative forest management approaches and maps identifying wildfire risks, considering changing rainfall patterns.	FOREST	ECOLOGIST // CONSERVATION BIOLOGIST // CLIMATE ADAPTATION PLANNER // ENVIRONMENTAL EDUCATORS
Urban/city heat pockets unfairly impact on economically poorer communities.	Create accessible and equitable urban green spaces to improve public health.	CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS	ENVIRONMENTAL ENGINEER // ECOLOGIST // CLIMATE POLICY ANALYST // URBAN PLANNER // ENVIRONMENTAL ECONOMIST // CLEAN TECHNOLOGY ENTREPRENEURS

# Discussion cards - Key for teachers



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ISSUE	SOLUTION	PLACES/HABITATS	PROFESSION
Changes in the El Niño-Southern Oscillation (ENSO) pose a threat to food availability.	Offer smallholder farmers easily accessible Earth system data.	RURAL // CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS	METEOROLOGIST // CLIMATE SCIENTIST // SUSTAINABLE AGRICULTURE EXPERTS // ENVIRONMENTAL ECONOMIST // CLIMATE COMMUNICATION SPECIALIST
Methane (CH <sub>4</sub> ), a greenhouse gas more powerful than CO <sub>2</sub> , is increasing.	Plug methane leaks in natural gas wells, storage, and pipelines.	ATMOSPHERE	METEOROLOGIST // RENEWABLE ENERGY SPECIALIST // CLIMATE POLICY ANALYST // CARBON CAPTURE AND STORAGE (CSS) SPECIALIST // CLEAN TECHNOLOGY ENTREPRENEURS // CARBON SCIENTIST
Hurricanes and cyclones intensify and occur more frequently.	Integrate climate adaptation measures into coastal communities and infrastructure.  Examples: Planning & engineering measures	ATMOSPHERE // RURAL // CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS	METEOROLOGIST // CLIMATE SCIENTIST // CLIMATE POLICY ANALYST // CLIMATE ADAPTATION PLANNER // CLIMATE COMMUNICATION SPECIALIST
Carbon dioxide (CO <sub>2</sub> ) warms the atmosphere.	Promote both natural ecosystems and innovative technologies for capturing and sequestering carbon.	ATMOSPHERE	CLIMATE SCIENTIST // RENEWABLE ENERGY SPECIALIST // CLIMATE POLICY ANALYST // CARBON CAPTURE AND STORAGE (CSS) SPECIALIST // CLEAN TECHNOLOGY ENTREPRENEURS // CARBON SCIENTIST
Loss of taonga species.  Examples: Native bird and fish species.	Work with mana whenua and Mātauranga Māori kaiarahi (leaders) to address issues.	RURAL // CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS // ESTUARIES & WETLANDS	ECOLOGIST // CONSERVATION BIOLOGIST // ENVIRONMENTAL EDUCATORS // MĀTAURANGA MĀORI KAIARAHİ // KAITIAKI
Culturally significant places at risk of being damaged.  Examples: Coastal urupā (Māori burial grounds) and marae.	Work with mana whenua and Mātauranga Māori kaiarahi (leaders) to address issues.	RURAL // CITY // COASTLINE & COASTAL COMMUNITIES // ISLAND NATIONS // OCEAN	ENVIRONMENTAL ENGINEER // URBAN PLANNER // CLIMATE ADAPTATION PLANNER // ENVIRONMENTAL EDUCATORS // MĀTAURANGA MĀORI KAIARAHİ // KAITIAKI

**The rising sea levels caused by melting glaciers pose a threat of flooding to coastal communities.**

**The acidification of ocean waters affects marine food webs, putting fisheries at risk.**

**Flood-prone areas undergo changes and expansion, while the infrastructure remains outdated.**

**Extensive deforestation negatively impacts biodiversity, increases the risk of drought, and accelerates soil erosion.**

**ISSUE**

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**ISSUE**

**Worsening drought conditions increase frequency and severity of wildfires.**

**Urban/city heat pockets unfairly impact on economically poorer communities.**

**Changes in the *El Niño-Southern Oscillation (ENSO)* pose a threat to food availability.**

**Methane (CH<sub>4</sub>), a greenhouse gas more powerful than CO<sub>2</sub>, is increasing.**

**ISSUE**

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**Hurricanes and cyclones intensify and occur more frequently.**

**Carbon dioxide (CO<sub>2</sub>) warms the atmosphere.**

**Loss of taonga species.**

**Examples: Native bird and fish species.**

**Culturally significant places at risk of being damaged.**

**Examples: Coastal urupā (Māori burial grounds) and marae.**

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**Monitor alterations  
in *glaciers* size using  
satellite data and  
publicly distribute  
the information to  
enhance *coastal*  
*resilience*.**



**Adopt eco-friendly  
fishing methods,  
track ocean acidity,  
and foster coastal  
landscapes that  
buffer against  
*acidification*.**



**Incorporate green  
spaces and  
*ecofriendly*  
construction  
materials in new  
urban  
developments.**



**Practice sustainable  
forestry, safeguard  
at-risk forest  
ecosystems, and  
engage in tree  
reforestation efforts.**





# SOLUTION



# SOLUTION



# SOLUTION



# SOLUTION



**Create accessible and equitable urban green spaces to improve public health.**



**Create innovative forest management approaches and maps identifying wildfire risks, considering changing rainfall patterns.**



**Integrate climate adaptation measures into coastal communities and infrastructure.**



**Examples: Planning & engineering measures**



**Offer smallholder farmers easily accessible Earth system data.**





**SOLUTION**



**SOLUTION**



**SOLUTION**



**SOLUTION**





**Plug methane leaks  
in natural gas wells,  
storage, and  
pipelines.**



**Promote both  
natural ecosystems  
and innovative  
technologies for  
capturing and  
sequestering  
carbon.**



**Work with mana  
whenua and  
Mātauranga Māori  
kaiarahi (leaders) to  
address issues.**





# SOLUTION



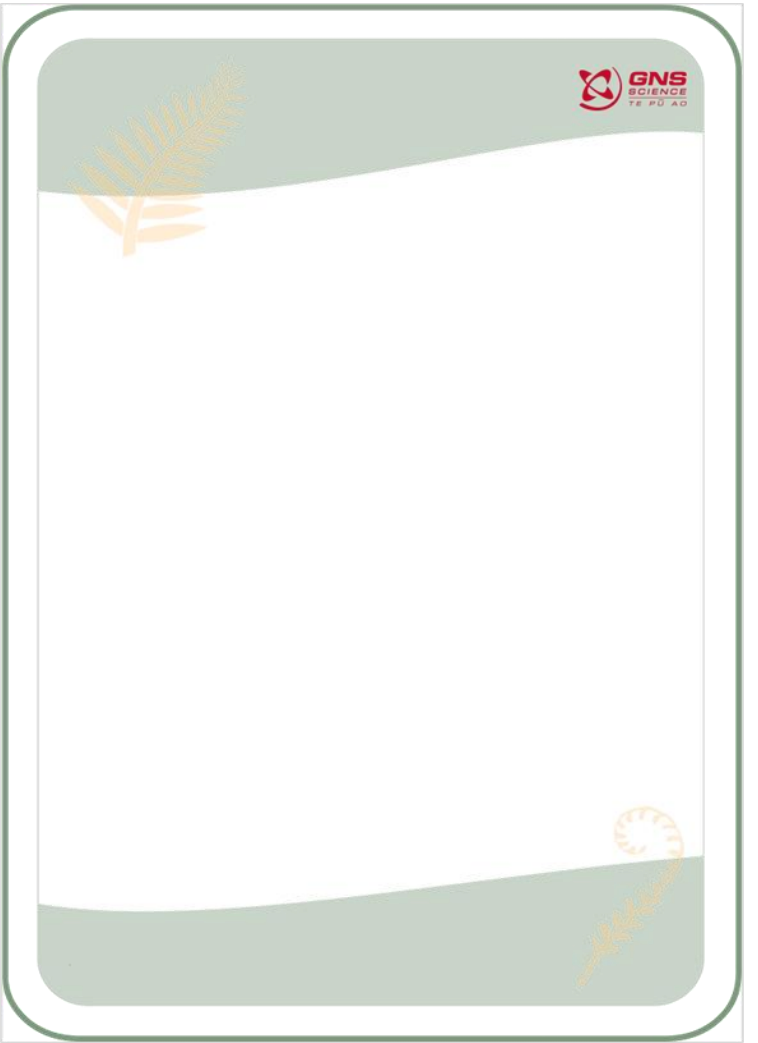
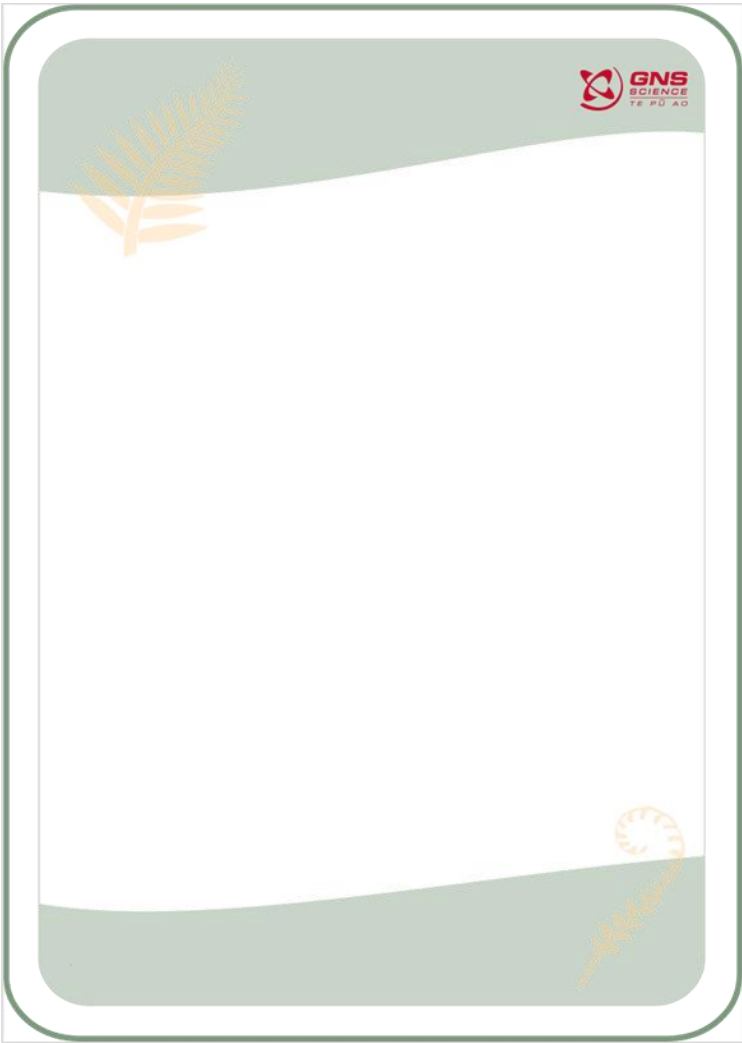
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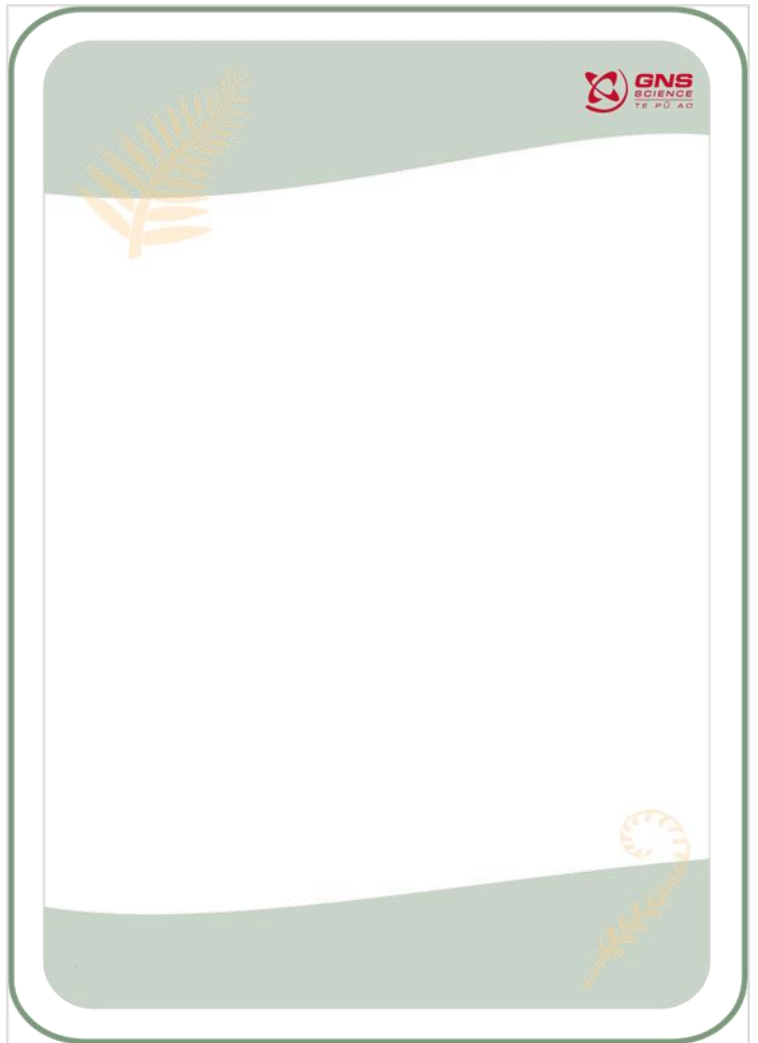
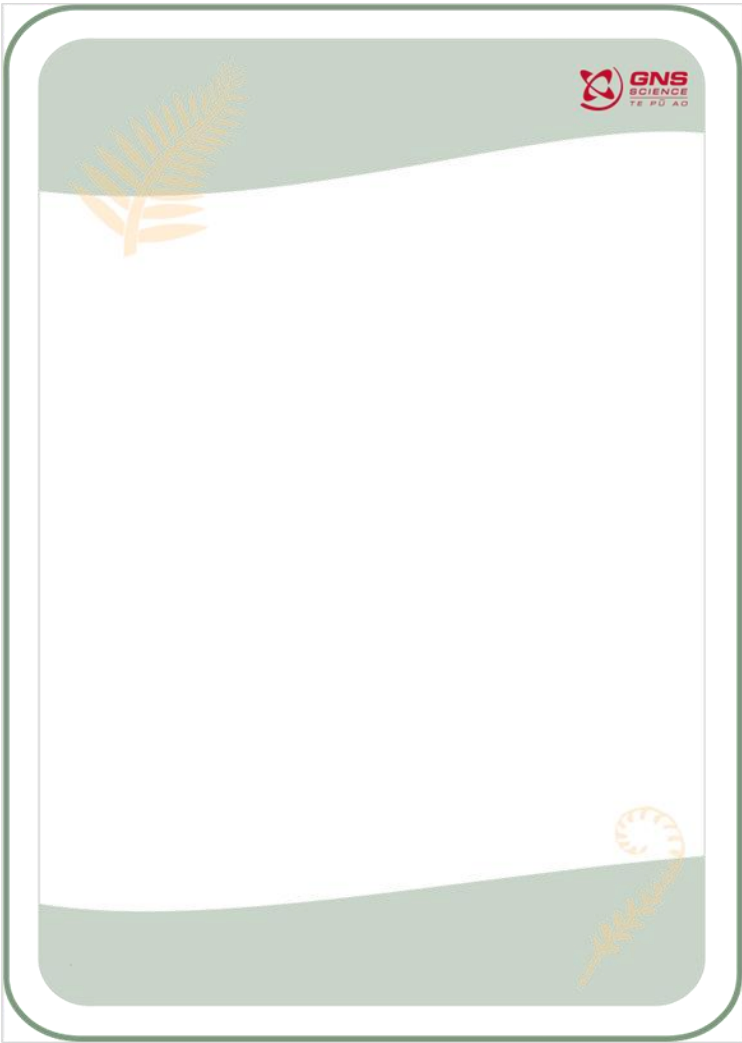


# SOLUTION



# SOLUTION







**SOLUTION**



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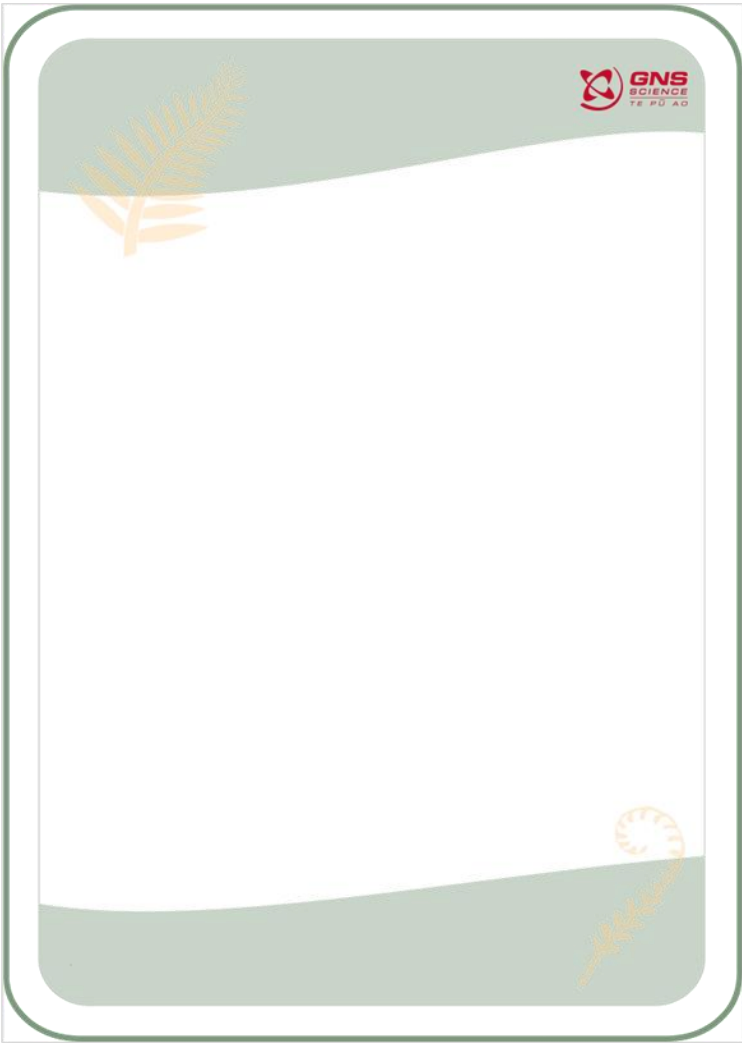


**SOLUTION**



**SOLUTION**







# SOLUTION



# SOLUTION



# SOLUTION



# SOLUTION



# ATMOSPHERE

**Mixture of gases  
that surround Earth  
like a blanket.**



# FOREST

**Examples:  
Waipoua Forest,  
Whakarewarewa  
Forest**



# OCEAN

**Examples:  
Pacific Ocean,  
Atlantic Ocean**



# RURAL

**Examples:  
Waiuku, Warkworth**





# PLACES/ HABITATS



# PLACES/ HABITATS



# PLACES/ HABITATS



# PLACES/ HABITATS






# CITY

**Examples:  
Auckland,  
Wellington, London**



# ICE

**Examples:  
Antarctica, Arctic  
Circle**



# ISLAND NATIONS

**Examples:  
Tuvalu, Kiribati, Fiji,  
Samoa, Tonga, Cook  
Islands**



# COASTLINE & COASTAL COMMUNITIES

**Examples:  
Whangaparāoa,  
Beachlands**





# PLACES/ HABITATS



# PLACES/ HABITATS



# PLACES/ HABITATS



# PLACES/ HABITATS







# ESTUARIES & WETLANDS

**Examples:  
Mangatāwhiri  
wetlands, Manukau  
Harbour**





# PLACES/ HABITATS



# PLACES/ HABITATS

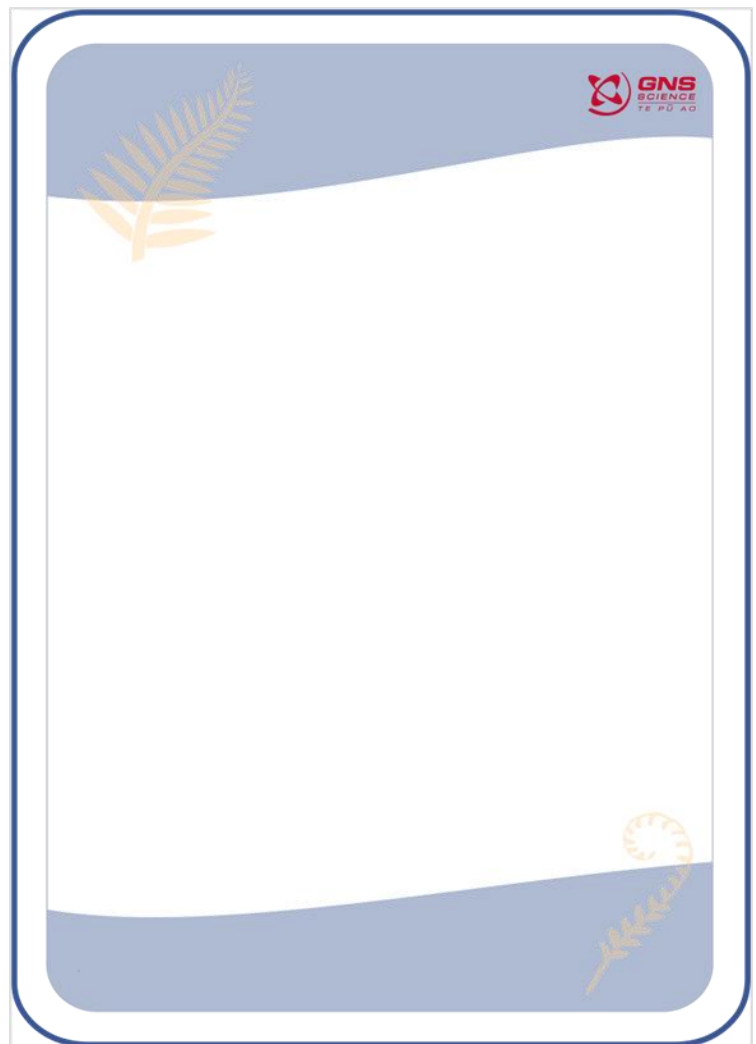
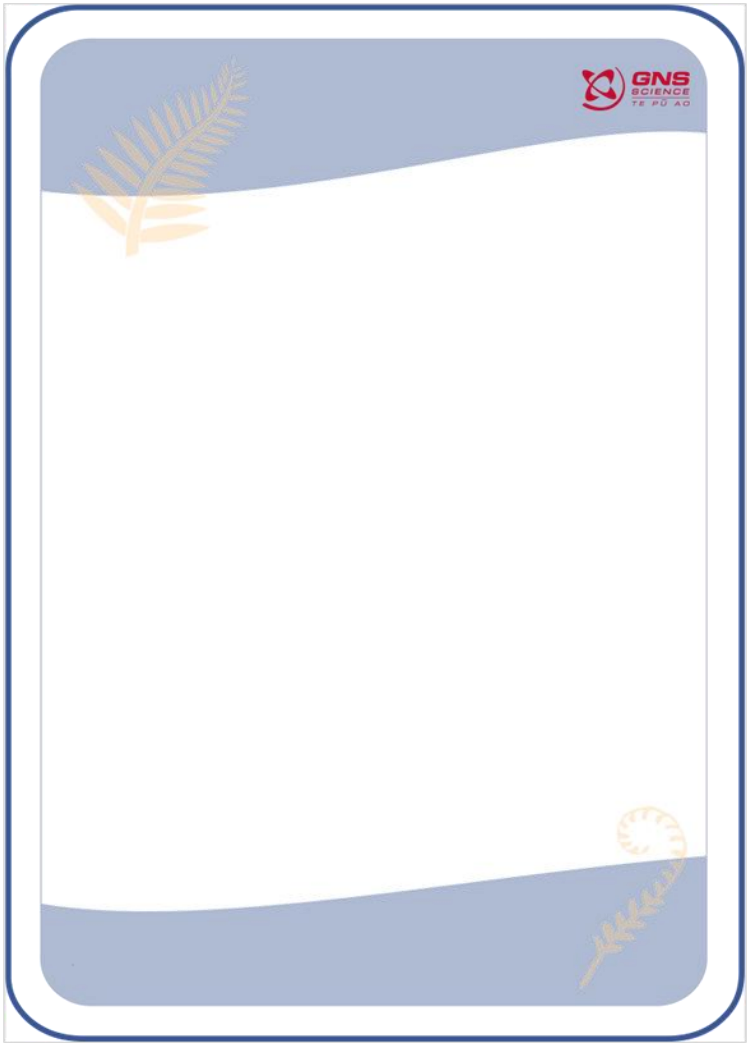
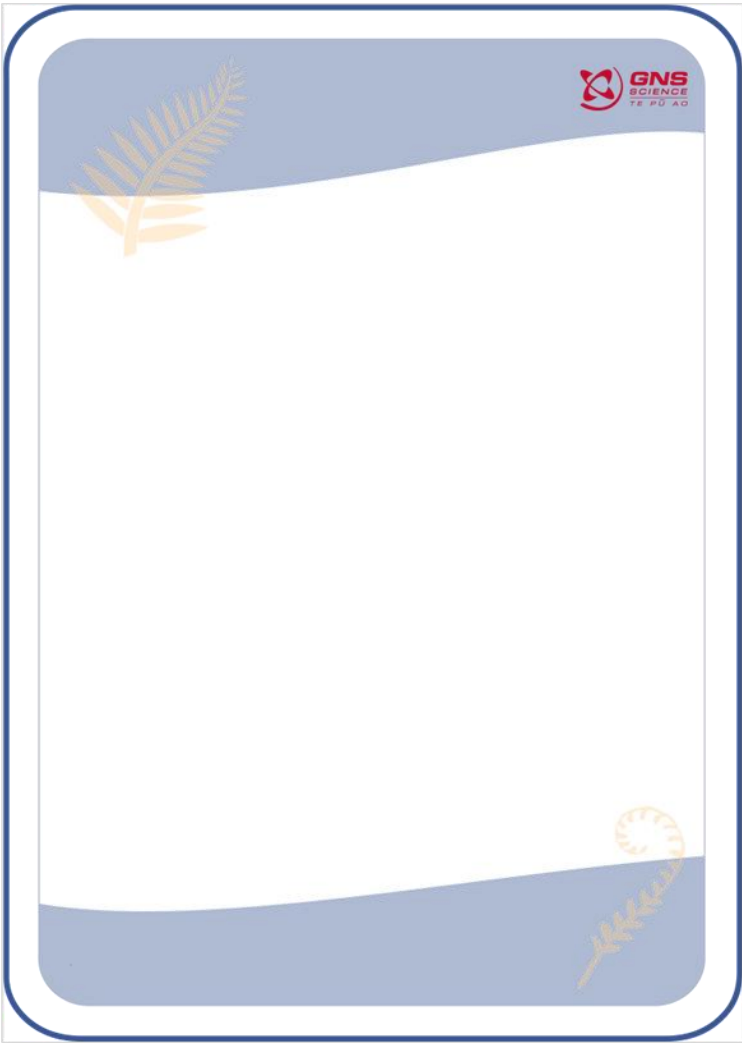


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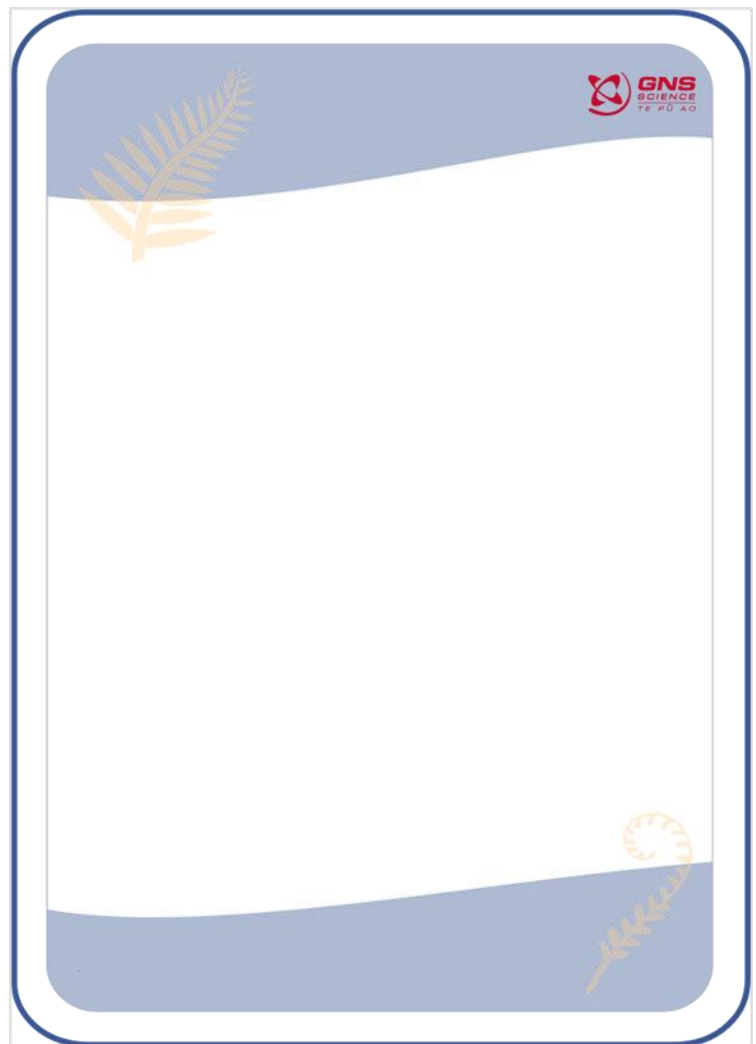
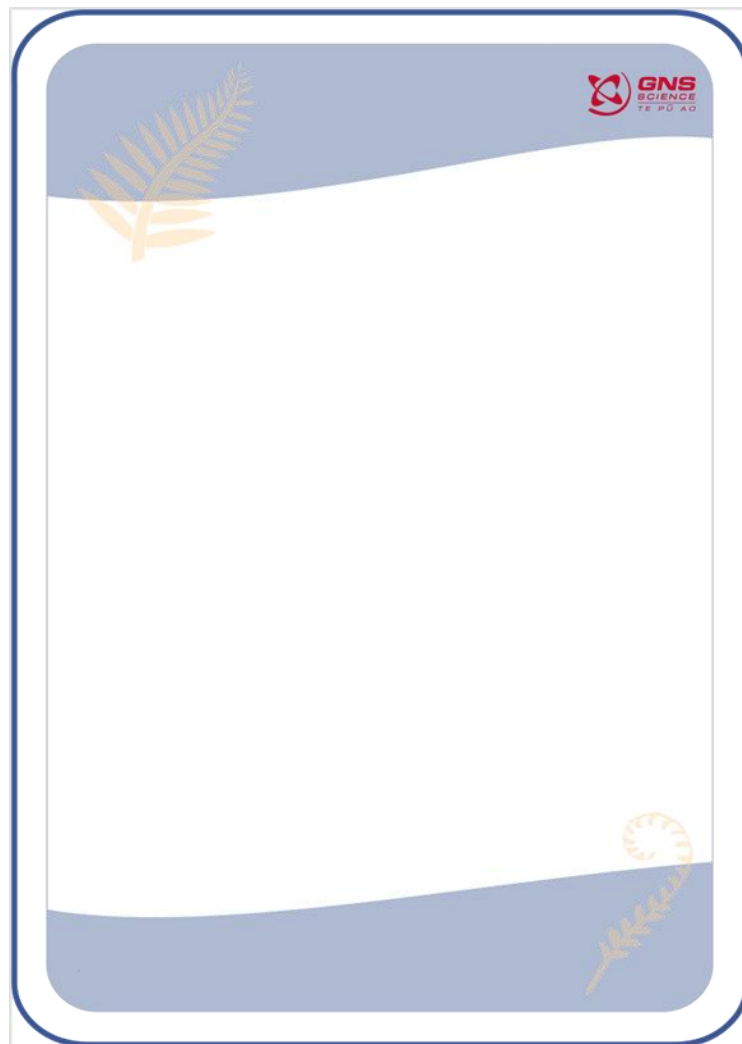
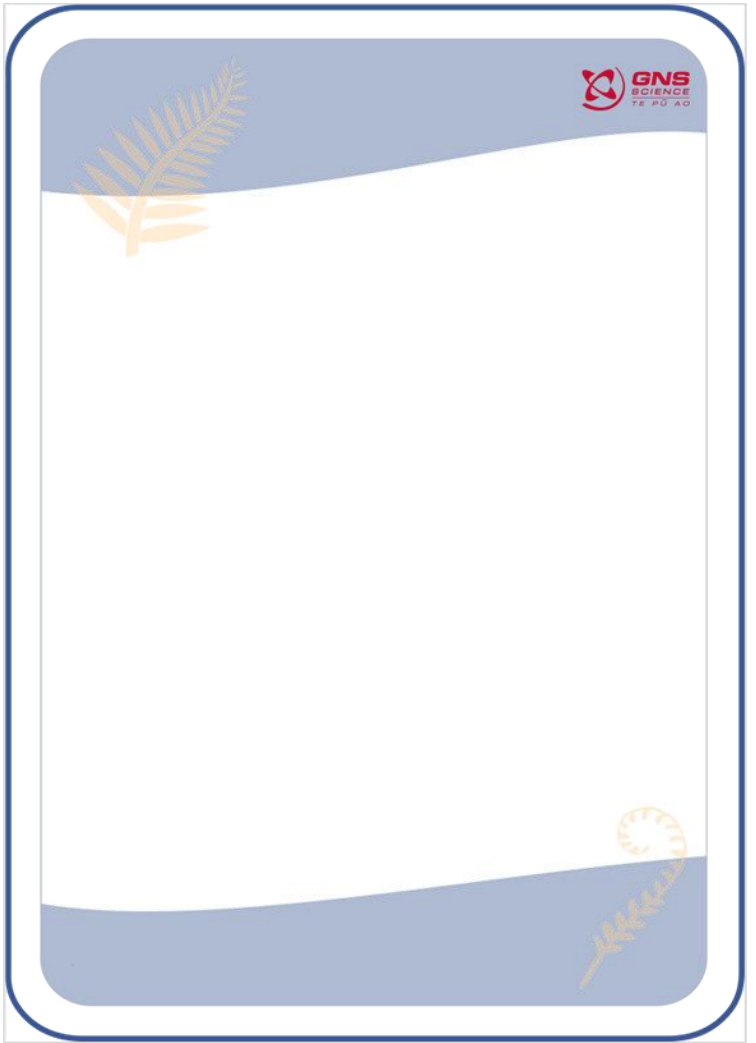
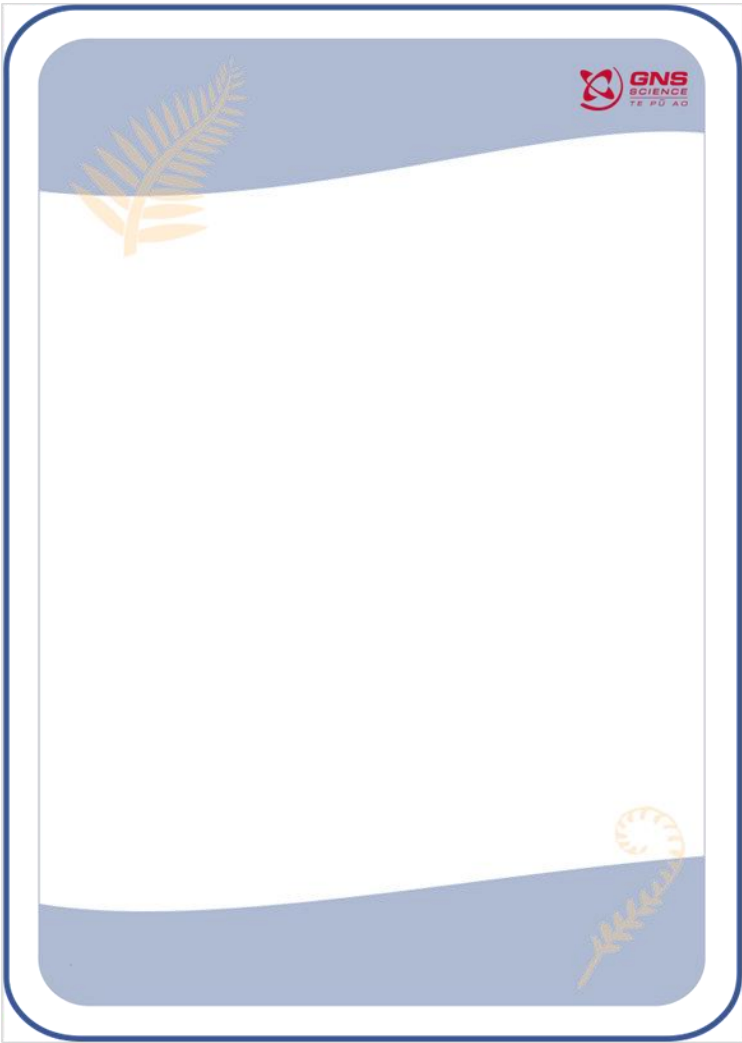


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# PLACES/ HABITATS



## CLIMATE SCIENTIST

**Helps us understand and take care of the Earth's weather and how it's changing.**

## ENVIRONMENTAL ENGINEER

**Helps take care of the Earth by figuring out ways to keep air, water, and land clean and safe for people, animals, and plants.**

## RENEWABLE ENERGY SPECIALIST

**Helps find and use clean energy sources like the sun and wind to power our homes and gadgets instead of using things that can harm the Earth.**

## ECOLOGIST

**Explores and learns about plants, animals, and their homes to help keep Earth healthy.**

# PROFESSION

# PROFESSION

# PROFESSION

# PROFESSION



## **CLIMATE POLICY ANALYST**

**Helps make rules and plans to protect the Earth's climate by studying and suggesting ways to reduce pollution and use cleaner energy.**

## **ENVIRONMENTAL LAWYER**

**Helps protect nature by using laws to make sure people and businesses take care of the environment and follow rules to keep our planet healthy.**

## **METEOROLOGIST**

**Studies what happens in the atmosphere and make weather forecasts to help us understand and predict things like rain, storms, and sunshine.**

## **URBAN PLANNER CITY & DISTRICT COUNCILS**

**Helps decide where buildings, parks, and roads should go to make cities happy, healthy, and fun for everyone.**

# PROFESSION

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## **CONSERVATION BIOLOGIST**

**Helps protect and save animals and plants by studying them, their habitats, and finding ways to keep them safe for the future.**

## **CARBON CAPTURE AND STORAGE (CSS) SPECIALIST**

**Helps find clever ways to catch and keep carbon dioxide, a gas that can harm the Earth, so we can have cleaner air and a healthier planet.**

## **SUSTAINABLE AGRICULTURE EXPERTS**

**Helps farmers grow food in a way that keeps the environment healthy, helps communities, and makes sure we can have plenty of yummy food for a long time.**

## **ENVIRONMENTAL ECONOMIST**

**Helps figure out how to take care of our planet by studying how people use resources and finding ways to protect the environment while still having enough for everyone.**

# PROFESSION

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## **CLIMATE ADAPTATION PLANNER**

**Helps communities get ready for changes in the weather by making plans to keep people safe and protect the environment.**

## **CLEAN TECHNOLOGY ENTREPRENEURS**

**Create and develop cool inventions that help protect the Earth by using clean and eco-friendly solutions to solve environmental problems.**

## **ENVIRONMENTAL EDUCATORS**

**Teaches about nature, conservation, and sustainability, inspiring people to care for the planet through engaging activities.**

## **CLIMATE COMMUNICATION SPECIALIST**

**Helps explain to people why the Earth's climate is changing and what we can do to take care of our planet better.**

# PROFESSION

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## **CARBON SCIENTIST**

**Helps us understand  
and find ways to reduce  
the amount of carbon in  
the air to keep the  
planet healthy.**

## **MĀTAURANGA MĀORI KAIARAHĪ (LEADERS)**

**Māori experts in Te  
Ao Māori and Māori  
worldview.**

## **MANA WHENUA**

**Tangata  
whenua/people of  
the place/habitat in  
question.**

## **KAITIAKI**

**Carers for the  
environment in the  
widest sense.**

# PROFESSION

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## **ACIDIFICATION**



**When the water becomes more acidic. In oceans, CO<sub>2</sub> absorption increases acidification, harming sea creatures like corals and shells.**

Glossary

## **BIODIVERSITY**



**Variety of life on Earth, encompassing the diversity of species, ecosystems, and genetic variations within and among them.**

**Examples: animals, plants, insects, sealife and humans.**

Glossary

## **INFRASTRUCTURE**



**The support system for a city or town, including things like roads, bridges, water and wastewater systems that helps everything work smoothly.**

Glossary

## **CLIMATE ADAPTATION**



**Making adjustments to how we live to better deal with the changes in weather and climate.**

Glossary



# BIODIVERSITY

Glossary



# ACIDIFICATION

Glossary



# CLIMATE ADAPTATION

Glossary



# INFRASTRUCTURE

Glossary





## COASTAL RESILIENCE



**Making sure our shores are strong and prepared for challenges like storms and rising sea levels.**

**Examples: Seawalls and groynes**

Glossary

## CULTIVATE



**To grow and take care of plants, making sure they have the right conditions to thrive.**

Glossary

## DEFORESTATION



**Cutting down a lot of trees in a forest (usually for farming in Aotearoa).**

Glossary

## EARTH SYSTEM DATA



**Information that helps us understand and take care of our planet better, for example: information collected from satellites, weather stations, and sensors, like temperature, rainfall, and changes in the environment including Mātauranga Māori.**

Glossary



# CULTIVATE



Glossary



# COASTAL RESILIENCE



Glossary



# EARTH SYSTEM DATA



Glossary



# DEFORESTATION



Glossary

## **ECOFRIENDLY**



**Being kind to the Earth by using things that don't harm the environment, like recycling, saving energy, and taking care of nature. Kaitiakitanga in Te Ao Māori.**

Glossary

## **EL NIÑO-SOUTHERN OSCILLATION (ENSO)**



**A climate phenomenon characterized by the periodic warming of sea surface temperatures in the Pacific Ocean equatorial zone, and the west coast of North and South America, influencing global weather patterns.**

Glossary

## **EQUITABLE**



**Equitable means being fair and giving everyone an equal chance or opportunity. Equity recognises people and places have different needs and resources to enable them to have the same opportunities on a level platform. It's like giving people the right shoes for their size feet, instead of the same size for everyone.**


Glossary

## **FOSTER**



**To help something grow, like taking care of plants or animals to make them healthy and strong.**

Glossary



# EL NIÑO-SOUTHERN OSCILLATION (ENSO)



Glossary



# ECOFRIENDLY



Glossary



# FOSTER



Glossary



# EQUITABLE



Glossary

## GLACIER



**A giant thick mass of ice accumulated over a long period of time.**

**Examples: Fox Glacier in Westland**

Glossary

## INNOVATIVE TECHNOLOGIES



**Tools or ideas that people create to solve problems or make life better in new and exciting ways.**

Glossary

## MANAAKI



**Manaakitanga means the process of showing respect, generosity and care for the people who use services, their whānau and communities.**

Glossary

## POWERFUL



**In the context of greenhouse gases, means that methane (CH<sub>4</sub>) has a stronger effect on the environment compared to carbon dioxide (CO<sub>2</sub>).**

Glossary



# INNOVATIVE TECHNOLOGIES



Glossary



# GLACIER



Glossary



# POWERFUL



Glossary



# MANAAKI



Glossary

## SEQUESTER(ING) CARBON



**Finding clever ways to trap and store carbon dioxide to help the Earth stay healthy.**

Examples: plants sequester (absorb and store) carbon dioxide through photosynthesis.

Glossary

## VULNERABLE



**Something or someone that needs extra care and protection because they can be easily hurt or affected.**

Glossary



Glossary



Glossary



# VULNERABLE

Glossary



# SEQUESTER(ING) CARBON

Glossary



Glossary



Glossary





Glossary



Glossary



Glossary



Glossary



Glossary



Glossary



Glossary



Glossary



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Glossary



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