



CLIMATE CHANGE VULNERABILITY ASSESSMENTS

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OVERVIEW:

- ✓ Climate Vulnerability Assessments – tools that identify what species may be most vulnerable based on their exposure to projected changes in the environment (e.g., warming oceans) and their sensitivity or adaptability to handle those changes based on various life history characteristics (e.g., reproductive rates, diet, etc), species' distributions, and projected future climate and ocean conditions.

- ✓ Vulnerability - how climate-related changes could affect a species' abundance, and to some extent, their distribution. The results are intended to guide research on possible climate impacts on species or stocks and help decision-makers consider how to prepare for and respond to climate-related changes.

- ✓ Climate Change Vulnerability - the susceptibility of a species, system, or resource to the negative effects of climate change and other stressors, and includes three components: exposure, sensitivity, and adaptive capacity:
 - Exposure is the amount and rate of change that a species or system experiences from the direct (e.g., temperature, precipitation changes) or indirect (e.g., habitat shifts due to changing vegetation composition) impacts of climate change.
 - Sensitivity refers to characteristics of a species or system that are dependent on specific environmental conditions, and the degree to which it will likely be affected by climate change (e.g., temperature or hydrological requirements); and
 - Adaptive capacity is the ability of a species to cope and persist under changing conditions through local or regional acclimation, dispersal or migration, adaptation (e.g., behavioral shifts), and/or evolution.

- ✓ Climate – the long-term patterns and characteristics of weather conditions in a specific region over a significant period, typically spanning decades to centuries. It encompasses various elements such as temperature, precipitation, humidity, wind patterns, and atmospheric conditions that are observed over a prolonged period.

- ✓ Climate Change - alterations in long-term weather patterns on a global or regional scale, resulting from natural processes and human activities. It involves shifts in temperature, precipitation patterns, sea levels, and other climatic variables beyond typical natural variability. Climate change is primarily driven by factors such as increased greenhouse gas emissions, deforestation, industrialization, and changes in land use, leading to global warming and alterations in Earth's climate system.

- ✓ Vulnerable species – species that face a high risk of extinction or significant population decline in the near future if the factors (e.g. climate change) threatening their survival persist.

ACTIVITY 1:

Complete the word search below:

Word Search

T	S	F	Z	I	H	S	A	S	S	E	S	S	M	E	N	T	A
I	P	E	C	C	H	Z	E	U	E	L	O	C	E	A	N	P	U
P	E	X	A	H	Z	A	C	N	P	M	A	R	I	N	E	O	T
O	C	T	D	E	A	X	B	L	S	Q	V	O	R	I	R	L	O
A	I	I	A	I	X	N	E	I	I	I	W	S	I	M	L	L	O
U	E	N	P	F	M	P	G	A	T	M	T	M	M	A	X	U	L
I	S	C	T	L	O	E	O	E	U	A	A	I	O	L	N	T	S
G	L	T	H	P	L	L	T	S	T	A	T	T	V	S	S	I	M
F	T	E	M	P	E	R	A	T	U	R	E	H	E	I	X	O	K
G	V	G	L	O	B	A	L	W	A	R	M	I	N	G	T	N	N
V	U	L	N	E	R	A	B	L	E	B	E	G	M	O	L	Y	S
A	E	V	O	L	U	T	I	O	N	B	J	D	P	W	B	V	Z

Find the following words in the puzzle.

Words are hidden → ↓ and ↘ .

ADAPT
ANIMALS
ASSESSMENT
CHANGE
CLIMATE
EVOLUTION
EXPOSURE

EXTINCT
GLOBAL WARMING
HABITAT
MARINE
OCEAN
POLLUTION
SENSITIVITY

SPECIES
TEMPERATURE
TOOLS
VULNERABLE

ACTIVITY 2:

Answer the following multiple-choice questions:

1. Which of the following is the main greenhouse gas responsible for global warming?
 - a) Carbon dioxide (CO₂)
 - b) Nitrous oxide (N₂O)
 - c) Methane (CH₄)
 - d) Ozone (O₃)

2. The IPCC stands for:
 - a) International Panel on Climate Change
 - b) Intergovernmental Panel on Climate Change
 - c) International Protocol for Climate Change
 - d) Intergovernmental Protocol for Climate Change

3. What is the primary cause of rising sea levels?
 - a) Thermal expansion of ocean water
 - b) Increased ice formation in polar regions
 - c) Melting of glaciers and ice sheets
 - d) Ocean acidification

4. Which sector contributes the most to global greenhouse gas emissions?
 - a) Agriculture and livestock
 - b) Transportation
 - c) Energy production and use
 - d) Industrial processes

5. The Paris Agreement is an international treaty aimed at:
 - a) Limiting global temperature rise to well below 2 degrees Celsius above pre-industrial levels
 - b) Reducing global greenhouse gas emissions to zero by 2050
 - c) Promoting renewable energy technologies worldwide
 - d) Establishing a global carbon tax

6. What is the main purpose of climate modeling?
 - a) Predicting the exact future impacts of climate change
 - b) Simulating and understanding the Earth's climate system
 - c) Developing strategies for geoengineering projects
 - d) Evaluating the economic costs of climate change

7. The term "climate mitigation" refers to:
 - a) Strategies to adapt to the impacts of climate change
 - b) Efforts to reduce greenhouse gas emissions
 - c) Conservation of endangered species affected by climate change
 - d) Techniques for carbon capture and storage

8. Which of the following is a renewable energy source?
 - a) Natural gas
 - b) Coal
 - c) Nuclear power
 - d) Solar power

9. What is the primary driver of deforestation?
 - a) Urbanization and infrastructure development
 - b) Natural forest fires
 - c) Logging and timber extraction
 - d) Expansion of agricultural land

10. Which region is most vulnerable to the impacts of climate change?
 - a) Northern Europe
 - b) Central Africa
 - c) Southeast Asia
 - d) Western United States

ACTIVITY 3:

Outline a lab experiment to assess the impact of elevated carbon dioxide (CO₂) levels on the growth and development of plants, mimicking a climate change scenario.

ACTIVITY 4:

In 400 - 600 words, explain how climate change has led to the population decrease of a particular species native to your country.

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