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| **ё****Project ID: 2021-1-CZ01-KA220-SCH-000034484****COURSE FOR ENVIRONMENTAL EDUCATION***e-Modules: Teaching Learning activities and their technology enhanced material set to develop****DISCLAIMER****Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.***COURSE AUTHORS**

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| **MODULE 5** |  **THE IMPACTS OF THE ENVIRONMENTAL PROBLEMS AND CLIMATE CHANGE (PART 2 – CLIMATIC AND ENVIRONMENTAL CHALLENGES)** |
| **PART 2** | **Displacement and Migration**  |
| **Lesson 1-2** | **Fisheries and climate refugees**  |

**SUMMARY**

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# 1. COURSE TIME, TARGET AND TOPIC

* **Age of target students:** 15+
* **Teaching time:** 1 hour
* **Disciplines:** Biology
* **Title:** Fisheries- climate refugees

# 2. COURSE OBJECTIVES

## Competences promoted in this lesson:

* Communication in foreign languages competency
* Digital competency
* Learning to learn competency
* Social and citizenship-related competencies

## Lesson objectives:

* Students discuss the impacts of climate change, such as extreme weather events and sea-level rise on migration.
* Students observe the changes in settlements.
* Students assess the risk of climate refugees in different regions.

# 3. LEARNING – TEACHING PROCESSES

There are 4 activities in this lesson:

1. **ENGAGE:** Discussion on the impacts of climate change on migration, focusing on climate refugees ; ask and answer for understanding the multifaceted challenges posed by environmental shifts
2. **EXPLORE: C**onsider various factors such as geography, socio-economic conditions, existing infrastructure, government policies, and international cooperation mechanisms like refugee resettlement programs on migration.
3. **EXPLAIN:** Assess the risk of climate refugees
4. **EXTEND: Students’ projects** (themed Climate Change and Migration)

# 4. EVALUATION

The evaluation is described in the last part of document.

# 5. DOCUMENTS

### ENGAGE

The students' discussion on the impacts of climate change on migration, focusing on climate refugees, is crucial for understanding the multifaceted challenges posed by environmental shifts. Here's how they might approach their assessment:

**1. Understanding Fisheries Impact:**

Start with discussing how climate change affects fisheries. Warmer waters can lead to shifts in fish populations, affecting livelihoods dependent on fishing industries. Decreased fish stocks can result in economic hardships for communities reliant on fisheries as a primary food source or income.

**2. Extreme Weather Events and Sea-level Rise:**

Explore how extreme weather events like hurricanes, cyclones, and floods, exacerbated by climate change, disrupt coastal communities. Sea-level rise threatens low-lying coastal settlements, increasing the risk of displacement for millions of people worldwide.

**3. Observing Settlement Changes:**

Encourage students to observe and analyze changes in settlements due to climate change. This could include the abandonment of coastal communities due to sea-level rise or migration from regions experiencing prolonged droughts or agricultural failures.

**4. Assessing Risk in Different Regions:**

Have students assess the risk of climate refugees in various regions. Coastal areas prone to sea-level rise and extreme weather events are at high risk, as are regions experiencing desertification, water scarcity, and loss of agricultural productivity. Vulnerable populations in developing countries often lack resources to adapt and are more likely to become climate refugees.

**5. Policy Implications and Solutions:**

Discuss potential policy responses to address the challenges posed by climate refugees, such as international agreements on climate mitigation and adaptation, investment in resilient infrastructure, and support for communities to adapt to changing environmental conditions. Encourage students to explore solutions that prioritize equity and social justice for affected populations.

Overall, the discussion should highlight the interconnectedness of climate change, migration, and human settlements, emphasizing the urgent need for collective action to address these challenges effectively.

### EXPLORE

The impacts of climate change on migration are multifaceted and increasingly significant as the effects of climate change continue to intensify. Here's a breakdown of how students might explore these impacts:

1. Extreme Weather Events: Climate change leads to an increase in the frequency and intensity of extreme weather events such as hurricanes, floods, and droughts. These events can displace communities by destroying homes and infrastructure, leading to forced migration.

2. Sea-Level Rise: Rising sea levels, a result of climate change, threaten coastal communities worldwide. As sea levels rise, low-lying areas become submerged, making them uninhabitable and forcing people to relocate.

3. Changes in Settlements: Students can observe how climate change is altering settlement patterns. For instance, as certain areas become less habitable due to drought or sea-level rise, people may be forced to migrate to more hospitable regions. This can lead to increased urbanization or the formation of climate refugee camps.

4. Assessing the Risk of Climate Refugees: Different regions face varying levels of risk regarding climate-induced migration. For example:

 - Coastal regions are particularly vulnerable due to the threat of sea-level rise and increased storm activity.

 - Areas prone to drought may experience internal displacement as people move in search of water and food security.

 - Island nations face the risk of complete displacement as their landmasses become uninhabitable due to rising sea levels.

 - Developing countries with limited resources and infrastructure may struggle to cope with the influx of climate refugees.

 - Conflict-prone regions may experience heightened tensions as competition for dwindling resources increases due to climate change.

In assessing the risk of climate refugees, students can consider various factors such as geography, socio-economic conditions, existing infrastructure, government policies, and international cooperation mechanisms like refugee resettlement programs.

Overall, by exploring the impacts of climate change on migration, students can gain a deeper understanding of the interconnectedness of environmental, social, and economic factors and the urgency of addressing climate change to mitigate its adverse effects on human populations.

### EXPLAIN

Certainly, let's delve deeper into each aspect:

**1. Extreme Weather Events:** Climate change contributes to an increase in the frequency and intensity of extreme weather events such as hurricanes, floods, and droughts. These events can have devastating effects on communities, leading to displacement of populations. For example, hurricanes can destroy homes and infrastructure, making areas uninhabitable for an extended period. Floods can inundate farmlands and settlements, forcing people to seek shelter elsewhere. Droughts can lead to water scarcity and crop failure, prompting migration in search of food and water.

**2. Sea-Level Rise:** Climate change causes thermal expansion of oceans and melting ice caps, resulting in rising sea levels. This phenomenon poses a significant threat to coastal communities worldwide. As sea levels rise, low-lying areas become susceptible to flooding and erosion, rendering them uninhabitable. This prompts residents to relocate to safer locations inland, leading to internal or international migration. Small island nations are particularly vulnerable, as even a slight increase in sea levels can engulf significant portions of their landmass.

**3. Changes in Settlements**: Climate change influences settlement patterns as certain areas become less habitable due to environmental degradation. For instance, coastal erosion and sea-level rise may prompt people to abandon coastal communities and relocate inland. Similarly, regions experiencing prolonged drought may see population declines as people move to areas with better access to water resources. These changes can lead to shifts in urbanization patterns, with cities experiencing influxes of climate migrants and rural areas depopulating.

**4. Assessing the Risk of Climate Refugees**: The risk of climate refugees varies depending on several factors:

 **- Geographical factors:** Coastal regions, low-lying areas, and regions prone to extreme weather events are at higher risk.

 **- Socio-economic conditions**: Vulnerable populations with limited resources and livelihood options are more likely to be displaced by climate change.

 - **Existing infrastructure:** Regions with robust infrastructure and adaptive capacity may be better equipped to withstand the impacts of climate change and support displaced populations.

 **- Government policies**: Adequate policies and measures for disaster risk reduction, adaptation, and mitigation can mitigate the risk of climate-induced displacement.

 - **International cooperation:** Global efforts to address climate change and support adaptation and resilience-building measures in vulnerable regions can help reduce the risk of climate refugees.

In summary, the impacts of climate change on migration are complex and interconnected, with extreme weather events, sea-level rise, changes in settlements, and various socio-economic factors contributing to the displacement of populations. Assessing the risk of climate refugees requires consideration of multiple factors and calls for concerted efforts at the local, national, and international levels to address the root causes of climate change and build resilience in vulnerable communities.

### EXTEND

### *Student project*

Project Title: Climate Change and Migration: Understanding the Impacts

1**. Introduction to Climate Change and Migration**: Begin with an overview of climate change, its causes, and its impacts on the environment and human societies. Introduce the concept of climate-induced migration and its significance in the context of global challenges.

2**. Case Studies and Examples**: Explore real-life case studies and examples of communities affected by climate change-induced migration. Include examples of extreme weather events, sea-level rise, and other environmental factors leading to displacement.

3. **Data Analysis and Visualization:** Utilize data and statistics to analyze the scale and scope of climate-induced migration. Create visualizations such as maps, charts, and graphs to illustrate trends and patterns in migration flows.

4. **Impacts on Communities and Settlements**: Investigate how climate change affects communities and settlements, including changes in land use, urbanization patterns, and socio-economic dynamics. Highlight the challenges faced by displaced populations and host communities.

5. **Assessment of Risk and Vulnerability**: Assess the risk of climate refugees in different regions based on factors such as geographical location, socio-economic conditions, and adaptive capacity. Discuss the implications for policy-making and humanitarian response.

6. **Mitigation and Adaptation Strategies**: Explore mitigation and adaptation strategies to address the impacts of climate change on migration. Discuss measures such as disaster risk reduction, climate-resilient infrastructure, and sustainable development practices.

7. **Presentation and Discussion**: Present the findings of the project through a multimedia presentation, including visuals, data analysis, and case studies. Engage in a discussion with classmates, teachers, and other stakeholders to exchange ideas and perspectives on the topic.

### EVALUATE

* **Comprehensiveness:** The project covers various aspects of the topic, including an introduction to climate change and migration, case studies, data analysis, impacts on communities, risk assessment, and mitigation strategies. This comprehensive approach ensures a thorough understanding of the subject matter.
* **Engagement:** The project encourages student engagement through hands-on research, data analysis, and multimedia presentations. By incorporating visuals, case studies, and interactive discussions, it fosters active learning and critical thinking among students.
* **Relevance:** The topic of climate change and migration is highly relevant in today's world, given the increasing frequency and severity of climate-related disasters and the growing number of climate refugees worldwide. By addressing this pressing issue, the project highlights the importance of environmental sustainability and social resilience.
* **Interdisciplinary Approach:** The project draws on knowledge from multiple disciplines, including environmental science, geography, sociology, and policy studies. This interdisciplinary approach enriches the learning experience and provides students with a holistic understanding of the complex interactions between climate change and migration.
* **Presentation:** The inclusion of a multimedia presentation enhances the effectiveness of the project by visually communicating key concepts, data, and findings. The image depicts students actively engaging with their audience, effectively conveying their research findings and promoting discussion.

Overall, the outlined project effectively addresses the impacts of climate change on migration in a comprehensive, engaging, and relevant manner. It provides students with valuable opportunities to explore, analyze, and communicate complex environmental and social issues while fostering collaboration and critical thinking skills.

**All links to sources**

The Intergovernmental Panel on Climate Change:

[**https://www.ipcc.ch**](https://www.ipcc.ch)

Fisheries Research

[**https://www.sciencedirect.com/journal/fisheries-research**](https://www.sciencedirect.com/journal/fisheries-research)

**United Nations Environment Programme**

[**https://www.unep.org**](https://www.unep.org)