



# Aquaculture and Agriculture: Exposing the Nexus between Mangrove Deforestation, Climate Change, and Modern Slavery in Southeast Asia



COLLEGE OF ARTS AND SCIENCES  
Curriculum in Global Studies

## A Comparative Case Study of Indonesia's Palm Oil and Thailand's Shrimp Aquaculture Industries

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### 01. Introduction



**The mangrove forests of Southeast Asia play a vital role in providing ecological, economic, and social benefits to the world.**  
35% of the world's mangroves are destroyed. In Southeast Asia, the primary drivers of this loss—exceeding 50%—stem from aquaculture and plantation expansion.



**23.9M people are displaced due to climate disasters.**  
Between 2006 and 2016, around 26% of the economic costs of climate-related disasters in developing countries came from agricultural losses and fishery depletion.



**The relentless pursuit of profit-driven expansion leads to economic strains from diminishing returns.**  
Today, multinational corporations and local enterprises alike engage in unsustainable extraction practices, exacerbating mangrove clearing in Southeast Asia.



**1 out of 150 people are ensnared in modern slavery worldwide.**  
The Asia-Pacific region hosts the highest absolute number of individuals in forced labor, totaling 15.1 million, comprising 55% of the global figure.

### 02. Research Question

Which factors account for the connections between mangrove deforestation, climate change, modern slavery, and capitalistic practices in the Indonesian palm oil and Thai shrimp aquaculture industries?

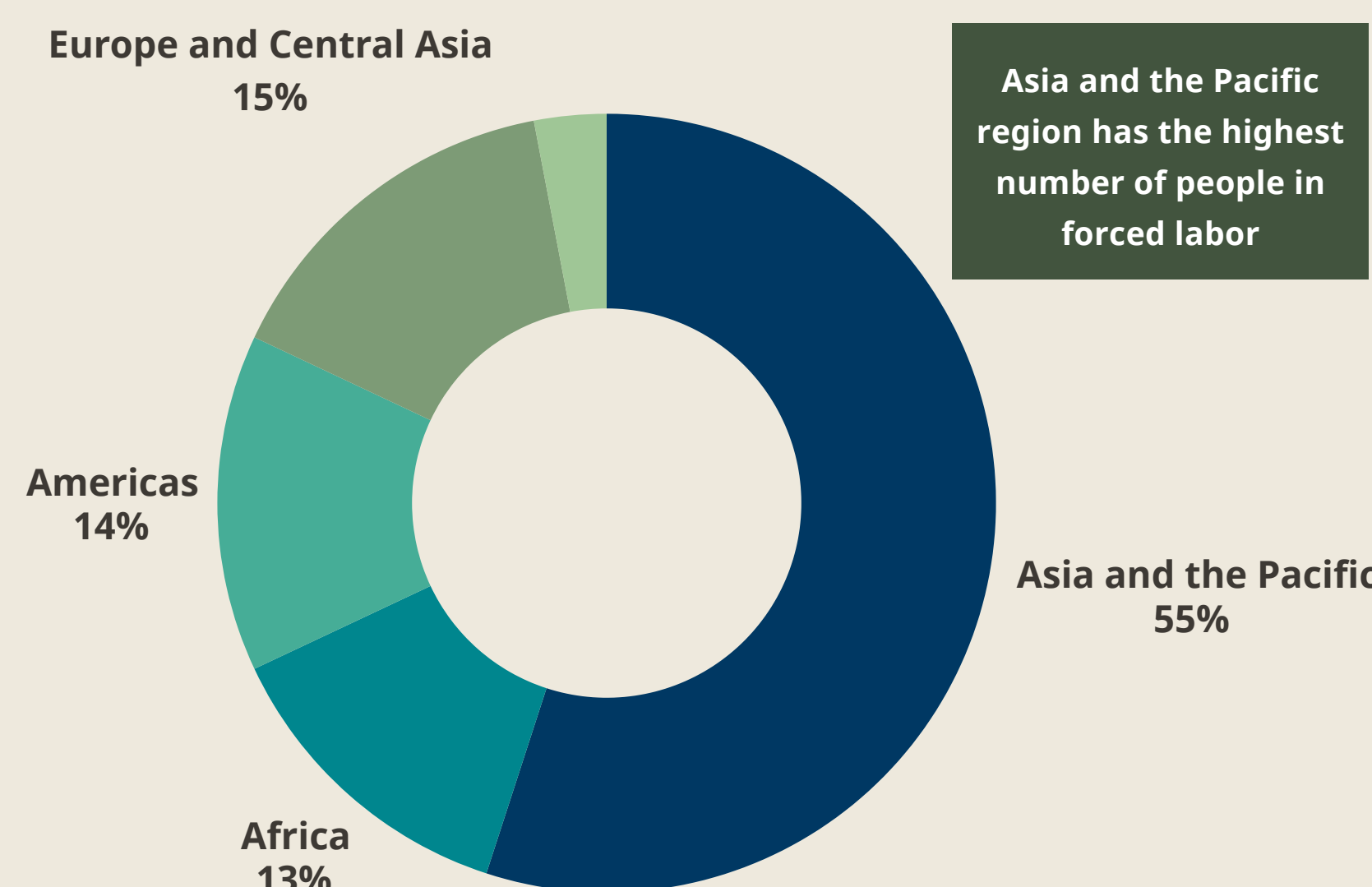
This research seeks to propose holistic solutions to address the root causes of these interconnected issues.

#### What is modern slavery?

Modern slavery involves illegal coercion and control, forcing individuals into labor or marriage against their will.

#### Why the selection of the case studies?

Palm oil extraction in Indonesia and shrimp farming in Thailand play pivotal roles in the region's economy but also contribute to environmental destruction and labor exploitation. Through in-depth analysis, this research uncovers these dynamics and proposes solutions.



### 03. Methodology

#### Current literature

1. Gaps in how the 3 factors shape one another
2. Investigates "environmental degradation" broadly
3. Overlooks geographic and structural connections

#### My research

1. Nontraditional case study format
2. Mangrove degradation and deforestation
3. Two case studies to comparatively analyze across structural and geographical factors

- Literature review
- Academic and grey literature
- Interviews
- Comparison studies

### 04. The Case Studies

#### PALM OIL INDUSTRY IN INDONESIA

##### The rise of palm oil:

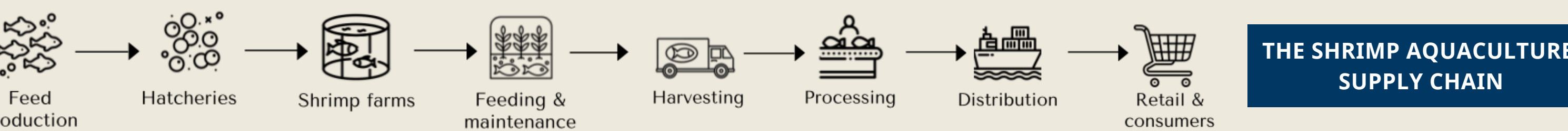
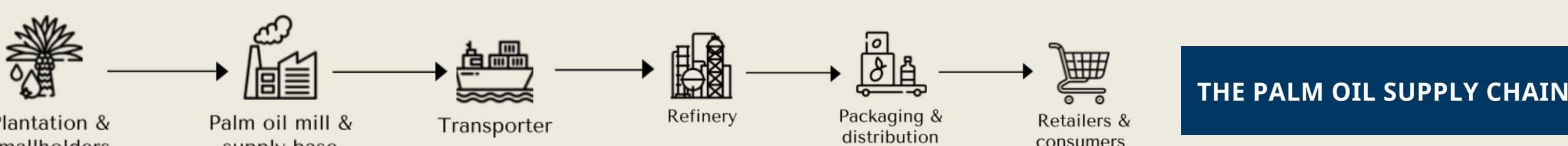
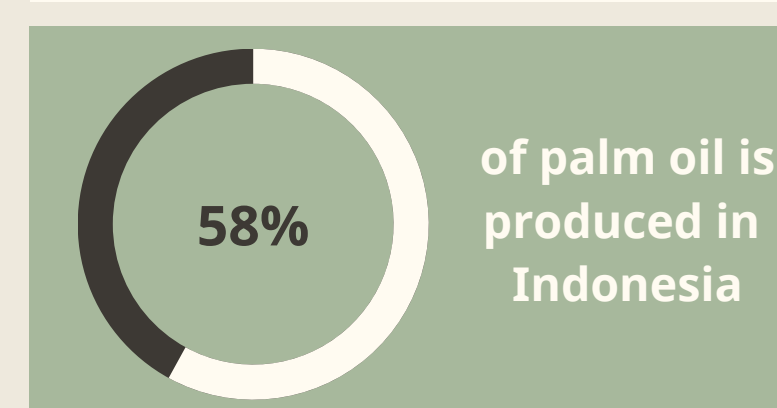
- **Versatility:** Found in food items, detergents, cosmetics, animal feed, and bioenergy.
- **Efficiency:** Palm oil yields the highest quantity of vegetable oil per unit of land, producing up to 10x more oil than soy, its nearest competitor.
- **Ubiquity:** Palm oil is in 150 countries, with each person consuming ~17.6lbs annually.

##### Largest palm oil producers:

1. Indonesia: 44.6M tons per year
2. Malaysia: 12.14M tons per year

##### Largest palm oil importers:

1. India: 7.2M tons per year
2. China: 6.46M tons per year



#### SHRIMP INDUSTRY IN THAILAND

##### The rise of shrimp aquaculture:

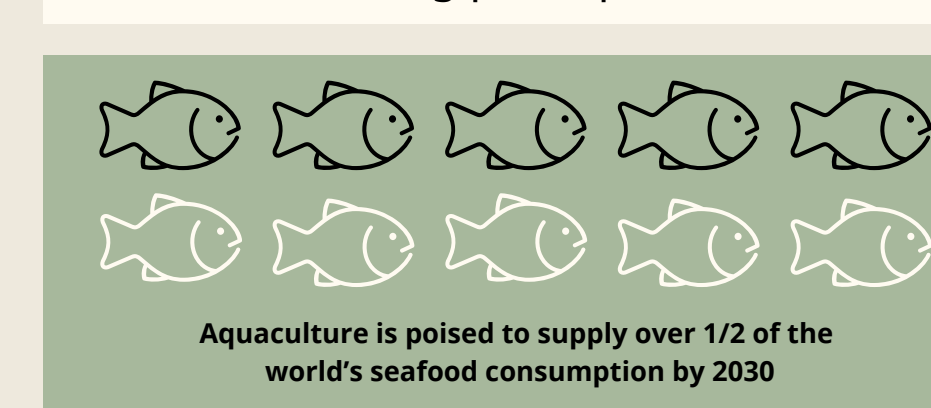
- **Affordability:** Farmed shrimp is a relatively inexpensive source of protein compared to traditional seafood options.
- **Nutrition:** Caters to health-conscious consumers by offering lean protein.
- **Accessibility:** Farmed shrimp products are available canned, frozen, and pre-peeled.

##### Largest shrimp aquaculture producers:

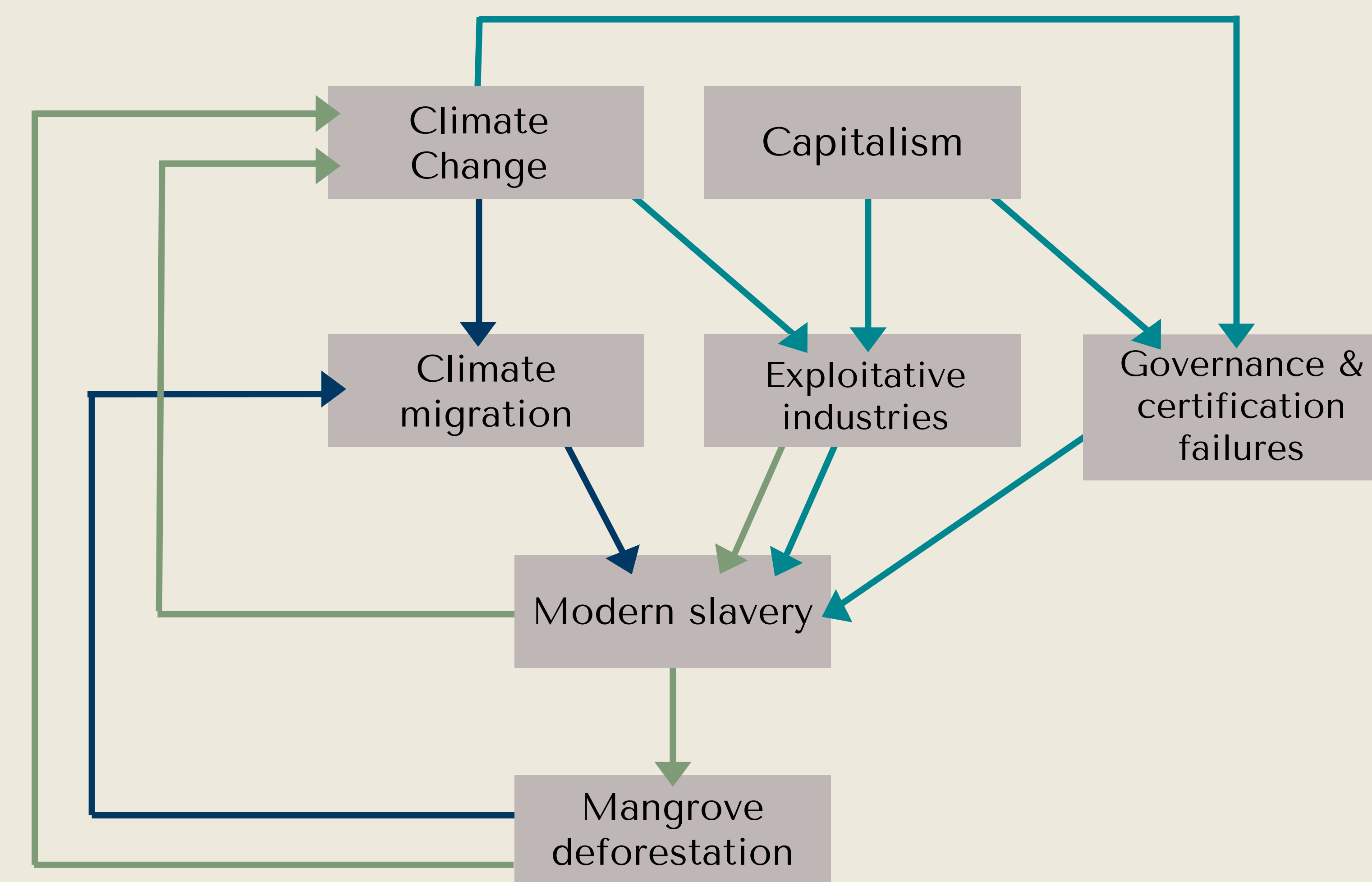
1. Thailand
2. China

##### Largest shrimp aquaculture importers:

1. Maldives: 87.3kg per capita
2. Iceland: 84.3kg per capita



### 05. Findings



#### The three parts of the nexus, color-coded:

- 1) **Climate change + mangrove deforestation --> climate migration --> modern slavery**
- 2) **Climate change + capitalism --> exploitative industries + governance & sustainable certification failures --> modern slavery**
- 3) **Exploitative industries + modern slavery --> mangrove deforestation + climate change**

### 07. Conclusion

#### 3 takeaways:

1. The detrimental impacts of cheap labor practices on industry expansion
2. Increased scrutiny of companies' ESG/TBL considerations
3. Importance of holistic approaches to sustainable development

#### Future research:

- Comparative analysis with other case studies, like rice production in Malaysia
- Assess efficacy of solutions

#### Consumer choices:

- Align our consumption habits with our values
- Research better certificates and make noise



#### What is neoliberalism?

Neoliberalism is an economic and political ideology emphasizing free-market capitalism, deregulation, privatization, and minimal government intervention in the economy. It promotes individual responsibility and competition, often resulting in wealth concentration and social inequality. Additionally, it has fueled the proliferation of global supply chains, notorious for their exploitation of labor and environmental degradation, contributing to widespread social and environmental harm worldwide.