



## GLOBAL WARMING AND ITS IMPACT ON THE FISHERIES INDUSTRY

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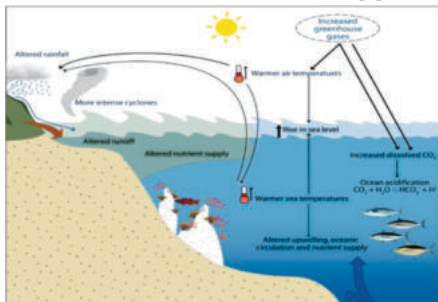
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**ABSTRACT** Several social and environmental factors such as industrialization, deforestation, erosion of toxic pollutants have played dominant role in the increase rate of the global warming. This notion has affected the various segments of the planet. Sectors such as Fishery, Farming, and Agroforestry and Forest management sectors have been facing deleterious realities because of the greenhouse emission from the last few decades. In recent times, scientist has become apprehensive about the fact of reducing the negative effects caused by the global warming. Moreover, several studies have circulated various strategies to mitigate the risk factors of greenhouse effects to protect the future of the planate.

**KEYWORDS :** Global warming, Climate engineering, Fisheries industry, Green Marketing, Governmental Policies of Fisheries

## INTRODUCTION

Global warming has become a significant concern of today's world. Over last two decades Global warming perceived as a crucial phenomenon that signifies the rapidly changing pattern of the climate. This phenomenon is considered as a highly controversial area as various scientists from all over the world depicts several crucial reasons for this climate change and that led to controversial arguments. The expeditiously increasing the temperature of the planate surface has various negative impacts on our live. As humans, trees and animals can be injured by the emission of the greenhouse effect. In addition, global warming's consequence might be created by the insensible human activities or naturally. However, this popularly known phenomenon is impacting various parts of the planate in different ways. As forest management sector, fishing industry and agricultural industry are facing significant risk threats because of the Global warming issue. Besides that, following sectors businesses operations are heavily dependent on the source of the natural environment [2].



**Figure 1: climate change and fisheries**

(Source: 1)

Global warming encompasses a wide range of significant causes including erosion of toxic gasses, deforestation, and unorganized waste management. Apart from that other crucial factor involves Oil drilling, industrialization, Consumerism, Overfishing and power plants. Previous studies have shown, the increasing rate of the heat is directly affecting the biodiversity of the climate [8].

Additionally, fisheries industry is facing detrimental greenhouse effects as the level of the increasing heat simultaneously expanding the heat of the sea surface. Scientists have noted, warming of sea surface has affecting the phenology, distribution of the underwater biodiversity, and abundance. Moreover, erosion of toxic chemicals acidified the water level and destroyed the fish diversity. Following issue is a significant cause of increasing rate of the extinction of calciferous animals. Apart from that several natural calamities such as storms, inundation and drought are the natural factors that are severely impacting fisheries. Henceforth, rise of the sea level is reducing production of fish and damaging the livelihoods of the fishery communities. In this study, one sum up the various dimensions of

global warming and its effects on the planet especially the fisheries sector. Apart from that the main consequence of global warming and the required actions that should take in order to protect the environment globally has been analyzed. Several detrimental factors of greenhouse effects that are impacting the diversity of the sea also have explored in this research. Though, in this study various challenges of fishery industry because of the global warming have been explored [7]. In addition, U. S. National Marketing Institute (NMI) reports that 80 % of the customer are involved with green production among them 17% customer are heavily involved with GM. Previous research shows, consumer assumption is heavily influenced by their educational qualification. Therefore, educated individuals are frequent buyers of green goods [4]. Many researchers find that educated individuals are not only changing their consuming pattern but also encouraging other individuals to buy green products.

## OBJECTIVES

- To understand the effects of Global warming on the fisheries production
- To analyze the impact of greenhouse effect on the planate
- To explore the consequence of greenhouse gasses emission
- To examine the main Causes related to global warming
- To explain the natural sources that impacting the greenhouse erosion.
- To discuss the various dimensions of Global warming and fisheries industry
- To identify the changing pattern of human activities that might reduce the risk factors of the greenhouse effect.

## III. METHODOLOGY

An international phenomenon that has been taking in to consideration of every sensible human being is popularly known as global warming. Additionally, Global warming has impacted the planet in several ways. The increasing rates of carbon dioxide (CO<sub>2</sub>) into the atmosphere have drawn every conscious citizens concern. Although, the most affected sector, fisheries industry have become various nuances due to the dangerous effects of global warming. However, Several Marine environment protection discussion has been analyzed in this study. Besides that, various new phenomenons has been introduced and discussed elaborately to gain valuable insights for the chosen topic. Emerging phenomenon such as climate engineering, green marketing has been examined in this study. Moreover, in this study summarization of the various global warming topic especially related to the marine and effects of greenhouse gasses and chemicals have been discussed [6].

## IV. CLIMATE ENGINEERING

A derived notion has arrived from the collective consciousness of eminent scientists who has contributed to reduction of global warming. The famous Swedish researcher Svante Arrhenius first identified the rise of carbons in the atmosphere in 1896 [11]. He also concluded the contribution the fossil fuel in the climate eventually increase the

warmth of the atmosphere resulting global warming. In addition, eminent scientists whose works has been appreciated for their contribution towards the chosen topic are as follows, Waleed Abdalati, Nerilie Abram, Ernest Afiesimama, and Myles Allen. However, environmental scientists or geo-engineers have proposed a notion called "climate engineering". The notion of climate engineering is also known as "geoengineering" [12].

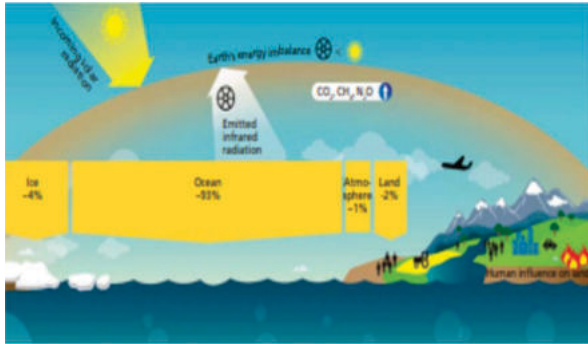


Figure 2: Storage of energy budgeting system

(Source: 5) This innovative concept involves the injection of reflective molecules into the higher level of airspace. Moreover, this injection helps to disperse and reflect sunray back into extent. Another climate engineering perspective involves, upgradation of the ocean surface can be done by stimulating the extensive phytoplankton blooms means seeding the ocean base with iron. Therefore, delineation of the movement of carbon dioxide into the aerosphere through the process of photosynthesis. Moreover, various researchers have denied the suggested concept of geoengineering. Although, many scientists have not convened with the parameters of the climate engineering, it have faced various ethical problems and unresolved legal issues.

**V. Impact Of Green House Effect On The Fisheries Industry**

Marine environment has been facing several significant threats for the expanding measure of the man-made greenhouse gases. Appropriate steps should be taken by this early stage of the marine degradation. Scientist has found the detrimental effects caused by the rising temperatures have influencing the physical properties of the seas and oceans as a whole. However, the physical properties of marine environment include changing pattern of the hydrographical construction and currents. Apart from that, interchange in between oxygen content and the salinity of the water. Studies have found high usage of fuel has been identified in the fishery industry for operating the fishing vessels has directly related to the emission of greenhouse gasses. Therefore, these issues significantly affected the marine ecosystems. Various studies have concluded, ocean deoxygenation is considered as another risk factor related to the oceans ecosystem. Besides that, trade of fish items and availability of marine items has been affected by the global warming issues.

Past studies have shown, significant countries that are heavily dependent on fisheries industrysuch as Norway, Britain, Japan, US have affected by the global warming reduction policies.

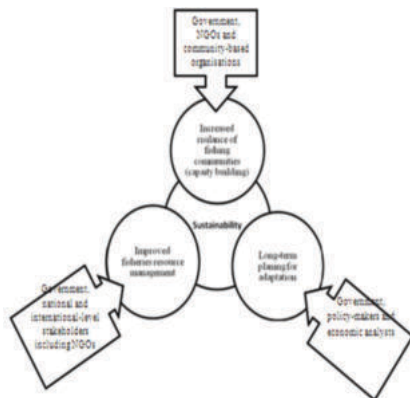


Figure 3: governmental policies for improvement of the fishery sector

(Source: 1)

In this study the above figure (Figure 1) shows, the reduction strategies

for the sectors of the fisheries. It has been shown; several NGO'S and government schemes circulate various opportunities to the fishery community to improve their economic status along with the maintaining biodiversity of the marine environment. Moreover, various nations set several short and long-term planning for the improvement of this industry. As resource management of fishery sector's acquire skillful workers who have trained in this field.

Thus, further development can be done by those skilled workers. Otherwise, governmental and NGO's shareholders should allocate significant fund and guidance for its proper investment on the fishery sector. Moreover, Studies have set limelight on the upgradation of the old governmental policies. Updated policies might improve the financial analysis of the fishery firms. In addition, a short term goal of the fishery firms has helped the business man to gain more capital from the fishing business.

**Vi. Suggested Methods For Reducing The Issue Of Global Warming**

Several methods have been initiated by the scientists to reduce the detrimental effects of global warming including Green Marketing (GM) or sustainable marketing, expand the usage of wind and solar energy, re-modification of organic wastes as biofuels, Projection of forest areas and reincarnation of governmental schemas for creating awareness of about the environmental global risks. Henceforth, GM is the method of producing sustainable and biodegradable goods to ensure a company's reputation in the global market.

Appropriate Green marketing encompasses a range of different stages including Eco-friendly goods, executing eco-friendly wrapping, transferring the ecological advantages of the goods, and embracing sustainable market practices. GM influences the behavioral pattern of consumer buying and helps to create consciousness about the usage of biodegradable products. Besides that it motivates customers to consume more sustainable products. It has been found in the previous studies that various international companies like Adidas, Body Shop, and Patagonia are seriously emphasizing on their manufacturing process and taking required steps to meet the goal of GM [2].

Government from different countries had taken several initiatives to create awareness to their citizens to adapt in green way of life. Universal economical organization like World Bank, International Monetary Fund and Organization for Economic Co-operation and Development are providing funds to the required countries. In reference to India various flagship has been taken for going green.

For example, in 2019 National Clean Air Program (NCAP) has been launched for fighting against air pollution. In addition, Delhi and Kolkata have the highest Air Quality Index (AQI) in comparison to other cities.

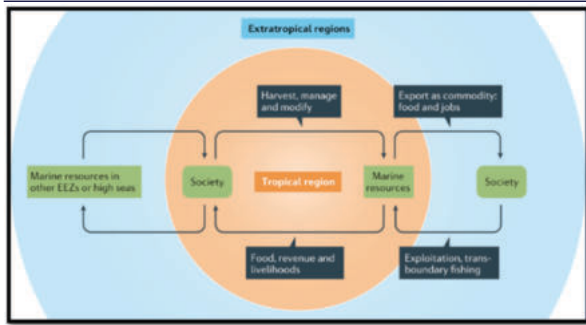
Nutrient	Quantities	Unit
Protein	18.2	G
Iron	0.82	Mg
Calcium	9.0	Mg
Iodine	0.1	Mg
Potassium	321	Mg
Vitamin A	0.02	Mg
Vitamin B	2 0.1	Mg
Vitamin B6	0.2	Mg

Figure 4: Nutritional value of fish

(Source: 2)

**Vii. Green Marketing**

Past studies have stated biodegradable consumer buying decisions might vary from nation to nation. During very recent periods, it has been observed that consumers have become sensible on their consuming behavior because of the demotion of the environment. Thus, customers have become very conscious about the materials they are purchasing. In addition, U. S. National Marketing Institute (NMI) reports that 80 % of the customer are involved with green production among them 17% customer are heavily involved with GM. Previous research shows, consumer assumption is heavily influenced by their educational qualification. Therefore, educated individuals are frequent buyers of green goods. Many researchers find that educated individuals are not only changing their consuming pattern but also encouraging other individuals to buy green products.



**Figure 5: Extratropical regions**  
(Source: 14)

GM can be defined as a dependent variable because it partially influences the buying behavior of a customer. The phenomenon is deliberately effected purchase decision, understanding, attitude, inclination, consuming nature of a consumer. A theoretical framework, Means-End Chains method (MECs) has been done which convey the information about three prime states of Saudi Arabia have highlighted the key factor that influences the buying behavior of a consumer is the sustainability of a product. Along with this, a constructive interconnection has been found between green goods, consuming decision of a customer and the insight of green goods. Therefore, previous results clearly show significant relation between GM and consuming behavior of a buyer.

#### X. Problem Stament

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#### REFERENCES

- [1] Allen, M., Antwi-Agyei, P., Aragon-Durand, F., Babiker, M., Bertoldi, P., Bind, M., Brown, S., Buckenridge, M., Camilloni, L., Cartwright, A. and Cramer, W., 2019. Technical Summary: Global warming of 1.5 C. An IPCC Special Report on the impacts of global warming of 1.5 C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
- [2] Bosch-Belmar, M., Milisenda, G., Basso, L., Doyle, T.K., Leone, A. and Piraino, S., 2020. Jellyfish impacts on marine aquaculture and fisheries. *Reviews in Fisheries Science & Aquaculture*, 29(2), pp.242-259.
- [3] Franco, B.C., Defeo, O., Piola, A.R., Barreiro, M., Yang, H., Ortega, L., Gianelli, I., Castello, J.P., Vera, C., Buratti, C. and Pájaro, M., 2020. Climate change impacts on the atmospheric circulation, ocean, and fisheries in the southwest South Atlantic Ocean: a review. *Climatic Change*, 162, pp.2359-2377.
- [4] Henriksson, P.J.G., Banks, L.K., Suri, S.K., Pratiwi, T.Y., Fatan, N.A. and Troell, M., 2019. Indonesian aquaculture futures—identifying interventions for reducing environmental impacts. *Environmental Research Letters*, 14(12), p.124062.
- [5] Hoegh-Guldberg, O., Jacob, D., Taylor, M., GuillénBolaños, T., Bindi, M., Brown, S., Camilloni, I.A., Diedhiou, A., Djalante, R., Ebi, K. and Engelbrecht, F., 2019. The human imperative of stabilizing global climate change at 1.5 C. *Science*, 365(6459), p.eaaw6974.
- [6] Laffoley, D., Baxter, J.M., Amon, D.J., Currie, D.E., Downs, C.A., Hall.Spencer, J.M., Harden.Davies, H., Page, R., Reid, C.P., Roberts, C.M. and Rogers, A., 2020. Eight urgent, fundamental and simultaneous steps needed to restore ocean health, and the consequences for humanity and the planet of inaction or delay. *Aquatic Conservation: marine and freshwater ecosystems*, 30(1), pp.194-208.
- [7] Mendenhall, E., Hendrix, C., Nyman, E., Roberts, P.M., Hoopes, J.R., Watson, J.R., Lam, V.W. and Sumaila, U.R., 2020. Climate change increases the risk of fisheries conflict. *Marine Policy*, 117, p.103954.
- [8] Ogunbode, C.A., Doran, R. and Böhm, G., 2020. Exposure to the IPCC special report on 1.5 C global warming is linked to perceived threat and increased concern about climate change. *Climatic Change*, 158, pp.361-375.
- [9] Pörtner, H.O., Roberts, D.C., Adams, H., Adler, C., Aldunce, P., Ali, E., Begum, R.A., Betts, R., Kerr, R.B., Biesbroek, R. and Birkmann, J., 2022. *Climate change 2022: Impacts, adaptation and vulnerability* (p. 3056). Geneva, Switzerland: IPCC.
- [10] Smith, K.E., Burrows, M.T., Hobday, A.J., Sen Gupta, A., Moore, P.J., Thomsen, M., Wernberg, T. and Smale, D.A., 2021. Socioeconomic impacts of marine heatwaves: Global issues and opportunities. *Science*, 374(6566), p.eabj3593.
- [11] Taskinsoy, J., 2019. Blockchain: an unorthodox solution to reduce global warming. Available at SSRN 3475144.
- [12] Vicente-Serrano, S.M., Quiring, S.M., Pena-Gallardo, M., Yuan, S. and Dominguez-Castro, F., 2020. A review of environmental droughts: Increased risk under global warming?. *Earth-Science Reviews*, 201, p.102953.
- [13] Yang, H., Lohmann, G., Krebs.Kanzow, U., Ionita, M., Shi, X., Sidorenko, D., Gong, X., Chen, X. and Gowan, E.J., 2020. Poleward shift of the major ocean gyres detected in a warming climate. *Geophysical Research Letters*, 47(5), p.e2019GL085868.
- [14] Yoro, K.O. and Daramola, M.O., 2020. CO2 emission sources, greenhouse gases, and the global warming effect. In *Advances in carbon capture* (pp. 3-28). Woodhead Publishing.