JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(2), 3726-3732
ISSN: 2589-1316

Green History and Cultural Ecology in Climate Awareness of East Aceh Community

Mufti Riyani[1*], Ferani Mulianingsih[2], Wasino[3], Rapita Aprilia[4], Indriaty[5]

[1,3,4,5] *Samudra University, Indonesia*
[2] *Semarang State University, Indonesia*

***Corresponding Author:** fauzuladzim58@gmail.com

Citation: Riyani, M., Mulianingsih, F., Wasino, Aprilia, R. and Indriaty (2025). Green History and Cultural Ecology in Climate Awareness of East Aceh Community, *Journal of Cultural Analysis and Social Change*, 10(2), 3726-3732. https://doi.org/10.64753/jcasc.v10i2.2179

Published: November 21, 2025

ABSTRACT

This research is considered important because global climate change is occurring faster than experts predicted. The concept of "global warming" has now evolved into "global boiling," which requires strategic, multidisciplinary, and systemic action. One step that can be taken is to utilize collective memory related to climate awareness. Green history and cultural ecology are forms of collective memory that play a role in preserving communal values to maintain the sustainability of society in facing natural challenges. Green history refers to historical experiences regarding the interaction between humans and nature, while cultural ecology is knowledge about the reciprocal relationship between humans and their environment that is applied in local traditions. The application of green history and cultural ecology in education can effectively increase climate awareness because it is contextual. This study aims to identify and explore forms of green history and patterns of cultural ecology in the community in East Aceh related to climate change. This study uses a historical anthropological method, with stages including heuristics (source search), source criticism, data interpretation, and historiography (writing results). The research location is in the East Aceh region, which has geographical diversity in the form of coasts, lowlands, and mountains.

Keywords: Green History, Cultural Ecology, Climate Awareness, East Aceh

INTRODUCTION

As many as 15,000 scientists from 161 countries have signed an article warning about extreme climate conditions due to rising global temperatures. This increase in temperature is believed to be caused by various human activities that produce dangerous greenhouse gases and are released into the earth's atmosphere.[1]. NASA administrators say the summer of 2023 will be the hottest on record, since record keeping began in 1880.[2]. Figure 1 shows the condition of the earth's temperature which has increased by 1.2 degrees Celsius warmer than before the 1900s.

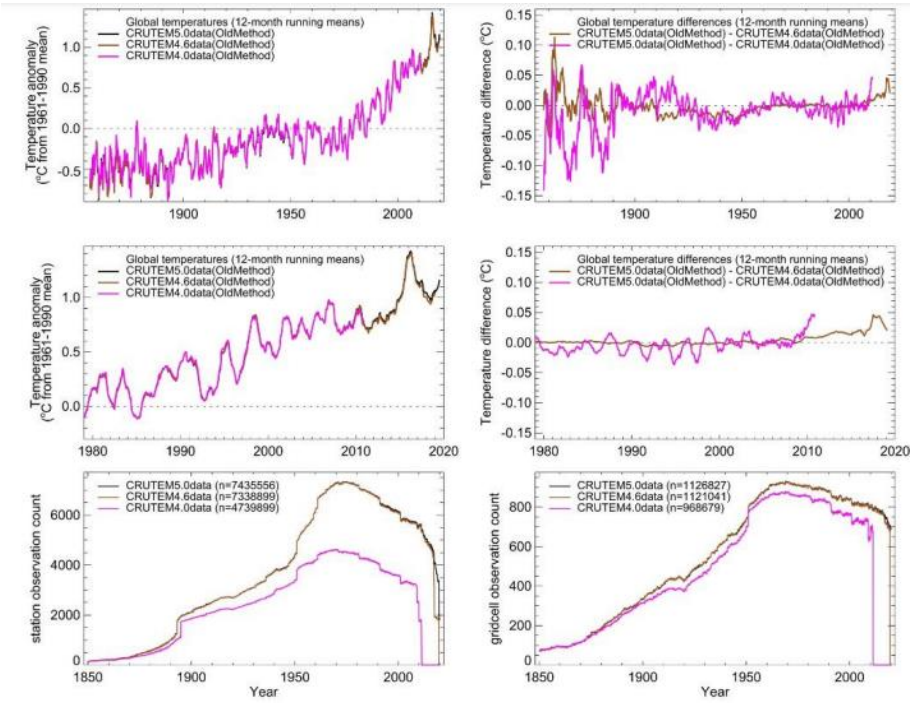


Figure 1. Comparison Chart of Global Average Temperature from 3 Types of Databases [3]

Rapid climate change is one of the factors causing global disasters. Based on six SRES marker scenarios, it is concluded that the global average temperature will increase by 1.1 C and 6.4 C by the end of the 21st century. At the national level, BMKG said that the worsening of the world's climate is influenced by the increase in CO2 which forms greenhouse gases. This was observed from various Global Atmosphere Watch (GAW) stations such as in Bukit Kotatabang, West Sumatra.

On the other hand, the results of a survey by the Central Statistics Agency (BPS) stated that the index of Indonesian people's environmental indifference behavior (IPKLH) was 0.51% from a range of 0-1. This data shows that the level of indifference of Indonesian people is greater than their level of concern for the environment (0.49).

Efforts to foster pro-environmental behavior must begin with reconstructing individual awareness and understanding to gain ecological intelligence. The formation of climate awareness as ecological intelligence is a long process that must begin early through cultural habituation.[4]–[6].

Green history and cultural ecology are part of collective memory that can be used as a foundation in building climate awareness. Green history is understood as the historical experience of the relationship between humans and nature. Writing ideas in the development of history about the importance of environmental concern and action carried out from time to time is the main object.[7]. In the field of education, green history becomes an approach in developing historical teaching materials about the ecological relationship between humans and the geographical environment and the living things in it, or it can also be a pedagogical approach to achieve certain ecological competencies. Green history can be used as knowledge as well as proof of the impacts caused by humans on nature. Thus, ecological awareness can be directed to avoid repeating historical cycles that cause damage to the earth.[8], [9]. Based on the problems and potentials described above, this study aims to analyze collective memory in the form of green history and cultural ecology in the East Aceh community related to climate awareness.

The historical anthropological approach will be used to solve the problem by maximizing the collective memory sources owned by the people of eastern Aceh. Cultural ecology includes ethnohistorical studies so that the use of historical methodology in this study is very relevant. The process is carried out by collecting the life experiences of research subjects in cultural practices related to the reciprocal relationship between humans and the environment based on various sources of knowledge owned by informants.[10]–[15].

METHODS

The type of research used in the formulation of the problem is ethnohistorical qualitative research with 4 main stages; heuristic, criticism, interpretation and historiography.

The research activities consist of;

1. Pre-research stage. At this stage, activities are carried out in the form of preparation and planning. The main focus is to prepare initial data, research roadmap, research locus, instruments and research schedule.

The research location or locus used is the community in the East Aceh region by taking the characteristics of the cultural bearers in the coastal, mainland and interior areas of East Aceh.

2. Implementation stage. Consist of;
   a. Identification and exploration of collective memory.
      Identification is carried out in the form of green history forms and practices and cultural ecology patterns with an environmental perspective. In accordance with the focus of the research, historical methodology will be applied according to the framework formulated by Gottschalk starting with data collection which is typically called heuristics, followed by source criticism, data interpretation and writing of results which is called historiography. In the historical anthropological approach, data collection related to collective memory allows various sources originating from the speech of the community as historical actors and cultural actors based on the knowledge possessed from various forms of data such as archives, documents, oral history, cultural artifacts and so on. Oral history in the context of this research is one aspect used for memory typology. Cultural ecology also includes ethnohistorical studies so that the use of Historical methodology in this study is very relevant. Therefore, in collecting sources, researchers will collect the life experiences of research subjects in cultural practices related to the reciprocal relationship between humans and the environment based on various sources of knowledge possessed by informants or sources. In addition to interviews, documentation and observation, the data collection stage will also utilize the Focus Group Discussion (FGD) method.
   b. Data Validation (External and Internal Criticism).
      Conducted independently by the research team by reviewing the authenticity or originality of the source. In addition, data validation also utilizes the focus group discussion method with experts and research subjects.
   c. The next step is data interpretation or data analysis.
      This stage is carried out by connecting one fact with another fact in the research so that new facts are found as findings.
   d. The final step to answer the first problem formulation is writing the results or in historical methods it is known as historiography.

RESULTS AND DISCUSSION

Implementation Stage. consist of:

1. Identification and exploration of collective memory.

   Identification is done in the form of green history forms and practices and cultural ecology patterns that have an environmental perspective. In accordance with the focus of the research, historical methodology will be applied according to the framework formulated by Gottschalk starting with data collection which is typically called heuristics, followed by source criticism, data interpretation and writing of results which is called historiography.[1]. In the historical anthropological approach, data collection related to collective memory allows various sources originating from the speech of the community as historical actors and cultural actors based on the knowledge possessed from various forms of data such as archives, documents, oral history, cultural artifacts and so on. Oral history in the context of this research is one aspect used for the typology of memory.[16]. Cultural ecology also includes ethnohistorical studies so that the use of Historical methodology in this study is very relevant. Therefore, in collecting sources, researchers will collect the life experiences of research subjects in cultural practices related to the reciprocal relationship between humans and the environment based on various sources of knowledge owned by informants or sources. In addition to interviews,

documentation and observation, the data collection stage will also utilize the Focus Group Discussion (FGD) method.

The results of the identification and exploration of collective memory that were successfully obtained are as follows:

Green History Form

History of Ecology and Industrialization:

East Aceh was originally a fairly well-known pepper producing area, several cultural heritages show the growth of pepper countries with various foreign nations such as the Chinese. The pepper country was led by an uleebalang who acted as a trader. for example, the Simpang Ulim country, the Idi country, Sungai Raya and so on. The remains of pepper plantations can no longer be found, there are only warehouses used to store pepper in the Idi Tunong area as a legacy of Teuku Chik Bin Guci.

During the colonial period, this area was expanded with palm oil plantations and oil mining, especially in the Rantau Perlak area. The oil potential has been exploited since 1 century ago. Exploration began in 1883 with the issuance of a permit from the Sultan of Peurelak to open an oil mine. In 1895, the concession was given to Hollad Perlak Petroleum Maatschappij. After the Japanese capitulation, the oil mine was managed by the military with the institution "Tambang Minjak NRI Darerah Atjeh". In the 1970s it was managed by an American company and eventually managed by Pertamina. The use of fossil fuels in principle contributes to climate change.

In addition, the loss of land in coastal areas is also a serious threat. According to the collective memory of the local community, there are several schools and houses whose existence has disappeared due to rising sea levels. In the collective memory of informants, houses that used to be 7 KM from the coast are now only 500 meters away.

History of Natural Disasters:

Oil well explosions often occur in the East Aceh region. On April 25, 2018, there was a major explosion at the Pasir Putij village people's oil mine, Rantau Perlak sub-district. It killed 22 people and happened again in March 2022 in Mata Ie village with 3 people killed. In the period before the expansion of the region, in Karang Baru sub-district (now part of Aceh Tamiang) there was an explosion that caused 1,655 people to flee. In this incident, houses were damaged. The explosion was accompanied by mud and gas. Disasters that often occur are forest fires in the Serbajadi forest area, floods and fires due to illegal oil exploration. Deforestation in the upstream Leuser area, especially in Serbajadi sub-district, Simpang Jelas also continues. This incident increased even higher during the Covid-19 outbreak.

Floods are also a disaster that often occurs in the lowland areas of East Aceh district. During 2022 and 2023, East Aceh has experienced floods. However, recently (18/01/2023, 20/01/2023) upstream areas such as Simpang Jernih District have also experienced floods. In addition, landslides are also increasingly common. One of them occurred on December 20, 2022 in Birem Bayeun.

History of Agriculture and Forestry

Agriculture in the past used a pepper farming system for international trade commodities, besides that several spices were planted in hilly areas such as Nutmeg and Gambir, especially in the Lokop area, Serbajadi District.

The forests in the Lokop area are widely used for customary purposes with pro-environmental utilization, but large-scale illegal logging has caused severe deforestation. Rice plants are interspersed with certain secondary crops that can fertilize the soil again.

Data Validation (External and Internal Criticism)

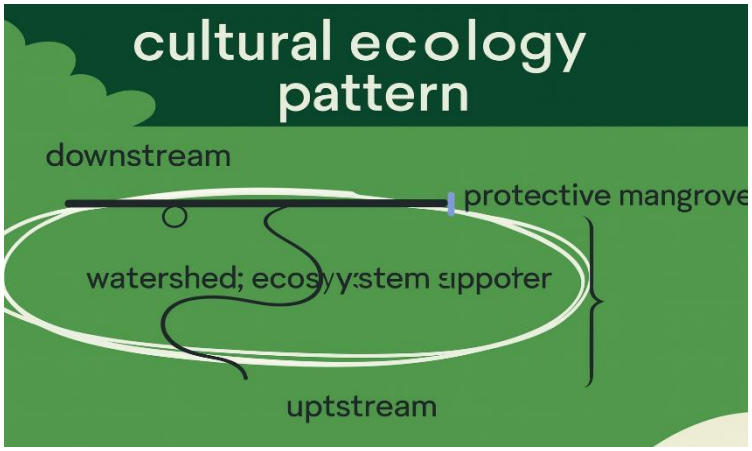
Conducted independently by the research team by reviewing the authenticity or originality of the source. In addition, data validation also utilizes the focus group discussion method with experts and research subjects. Data validation for historical sources consists of external and internal validation. In the historical archives, old maps are used, especially to see changes in the appearance of the earth in 3 districts/cities including the rate of deforestation from year to year. Old historical maps are obtained by accessing oldmaps.com. and GIS.

The next step is data interpretation or data analysis which is continued with Historiography.

This stage is carried out by connecting one fact with another fact in the research so that new facts are found as findings. Based on the study, it can be concluded that the cultural ecology in eastern Aceh encompasses a cultural mandala formed by geographical conditions and dynamics that occur between the area called Hulu (Leuser forest area) and Hilir (Coastal). Along the upstream and downstream connections are maintained by a force of behavioral

patterns and community culture along the River Basin Area or DAS. While in the coastal area there is a fortress from the open sea in the form of Mangrove forests along the East coast of Aceh.

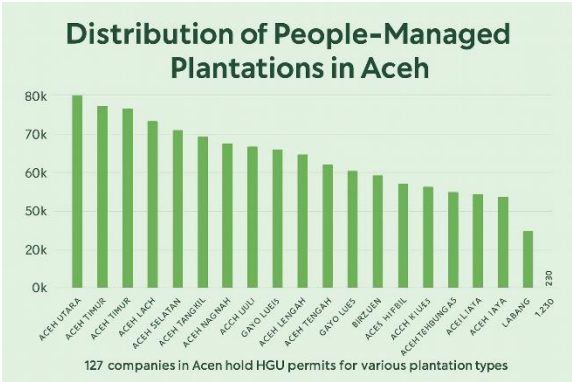
The upstream area is in the south while the downstream area is in the north. If the ecological relationship is described, it is as follows:



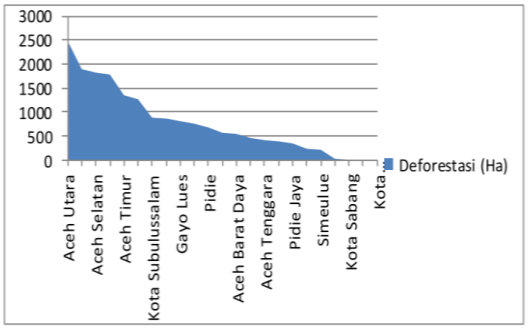
Source: Processed by researchers 2024

In each corner, cultural practices are born that are influenced by geographical, religious, historical and political factors (the priority scale of regional leaders). Cultural practices in the upstream areas are in the form of traditions in forest management, clearing fields or forests, traditions in harvesting forest products such as honey (dendang bees), aren (dendang and the fairy tale of the Ijuk princess and so on). In 3 research locations, a common thread can be drawn related to the ecosystem in the eastern part of Aceh, namely;

Upstream area, the River Basin area as a buffer and the mangrove area as a protector of the downstream area. The upstream area is the Leuser conservation area, while the downstream area is the coastal area with mangroves and forests along the coast. In the Leuser area there are people's plantations, most of which are also in the East Aceh region. In East Aceh district, it even reached an area of 70,336 in 2016 [17].



The rate of deforestation in East Aceh ranks third out of 12 districts/cities in Aceh Province that have experienced a decline in forest cover. In 2015-2015, deforestation in East Aceh had reached more than 1,300 hectares.



Aceh deforestation data 2016-2017[18]

The mangrove area on the East Coast of Aceh is the area with the largest mangrove forest. According to a 2013 WWF study, it was found that the area of mangrove forest in East Aceh Regency reached 18,080.45 hectares, in Aceh Tamiang Regency the area of mangrove forest was recorded at 15,447.91 hectares while in Langsa City it was 5,253.15 hectares. However, in the Decree of the Minister of Environment and Forestry Number 103/MenLHK-II/2015 the area of protected areas is only 9,876.39 hectares with details of 4,797.25 hectares in East Aceh, 4,26.33 in Aceh Tamiang and in Langsa City only covering 862.81 hectares.

Currently, the condition of mangroves in this area is increasingly narrow, in addition to being encroached into gardens, plantations, and housing, mangrove forests are also used for their wood as the main ingredient for making charcoal. Mangrove charcoal kitchens can easily be found along the river channels in this area. Unfortunately, this charcoal kitchen has a long historical background since the colonial era so it is not easy to limit. During the colonial era, the area in East Aceh had become a charcoal producing area that was exported abroad. At present, the demand for mangrove wood for the construction and charcoal industries is still very high.

CONCLUSION

The conclusion of this study is that collective memory in the form of green history and cultural ecology plays an important role in increasing community awareness and adaptation to climate change. This study highlights the importance of historical interactions between humans and the environment (green history) and understanding cultural ecology as a communal perspective that supports environmental sustainability. Through exploration in the East Aceh community, it was revealed that local values in green history and cultural ecology not only maintain ecosystem balance but are also effective as educational tools to increase climate awareness contextually. Thus, green history and cultural ecology can be part of a strategic, multidisciplinary, and systemic approach to addressing the increasingly pressing challenges of global climate change.

REFERENCES

JFB Mitchell, J. Lowe, RA Wood, and M. Vellinga, "Extreme events due to human-induced climate change,"*Philos. Trans. R. Soc. A Math. Phys. Eng. Sci.*, vol. 364, no. 1845, pp. 2117–2133, 2006, doi: 10.1098/rsta.2006.1816.

I. Nashier and P. Lakra, "INTEGRATED JOURNAL OF SOCIAL SCIENCES Global Climate change and its effects,"*Integr. J. Soc. Sci. Integr. J. Soc. Sci*, vol. 2020, no. 1, pp. 14–23, 2020.

TJ Osborn*et al.*, "Land Surface Air Temperature Variations Across the Globe Updated to 2019: The CRUTEM5 Data Set," J. Geophys. Res. Atmos., vol. 126, no. 2, 2021, doi: 10.1029/2019JD032352.

RO Kaaronen and N. Strelkovskii, "Cultural Evolution of Sustainable Behaviors: Pro-environmental Tipping Points in an Agent-Based Model,"*One Earth*, vol. 2, no. 1, pp. 85–97, 2020, doi: 10.1016/j.oneear.2020.01.003.

A. Purnomo, F. Mulianingsih, A. Fahry, and IM Setyarini, "The role of the Paguyuban Masyarakat Peduli Hutan (PMPH) community as a form of disaster management in the highlands of Kudus Regency,"*IOP Conf. Ser. Earth Environ. Sci.*, vol. 986, no. 1, pp. 0–5, 2022, doi: 10.1088/1755-1315/986/1/012045.

F. Mulianingsih, A. Purnomo, SS Nur Hidayatulloh, and IM Setyarini, "Community social capital in facing landslide hazards in Banjarnegara,"*IOP Conf. Ser. Earth Environ. Sci.*, vol. 986, no. 1, 2022, doi: 10.1088/1755-1315/986/1/012042.

AS Nurdiantie, "The Importance of Maintaining Environmental Sustainability Amidst the Rampant Exploitation of Natural Resources through the Implementation of Green History in History Learning,"*Anwarul*, vol. 3, no. 1, pp. 11–21, 2023, doi: 10.58578/anwarul.v3i1.804.

K. Jones, "Greening the past: putting history in its place at the ecological university,"*Int. J. Sustain. High. Educ.*, vol. 23, no. 1, pp. 58–66, 2022, doi: 10.1108/IJSHE-07-2020-0233.

M. Farrukh, A. Raza, NY Ansari, and US Bhutta, "A bibliometric reflection on the history of green human resource management research,"*Manag. Res. Rev.*, vol. 45, no. 6, pp. 781–800, 2022, doi: 10.1108/MRR-09-2020-0585.

BD Denman and R. James, "Cultural ecology and isomorphism applied to educational planning in China's Inner Mongolia,"*Int. J. Comp. Educ. Dev.*, vol. 18, no. 1, pp. 40–52, 2016, doi: 10.1108/ijced-10-2015-0003.

L. Head, "Cultural ecology: Adaptation - retrofitting a concept?,"*Prog. Hum. Geogr.*, vol. 34, no. 2, pp. 234–242, 2010, doi: 10.1177/0309132509338978.

H. Zhang, XY Leung, and B. Bai, "Cultural attractiveness index for sustainable cities:Tourism Agenda 2030," Tour. Rev., vol. 78, no. 2, pp. 411–426, 2023, doi: 10.1108/TR-05-2022-0255.

S. Sumarwati, "Traditional ecological knowledge on the slopes of Mount Lawu, Indonesia: all about non-rice food safety,"*J. Ethn. Foods*, vol. 9, no. 1, 2022, doi: 10.1186/s42779-022-00120-z.

R. Asad, I. Ahmed, J. Vaughan, and J. von Meding, "Traditional water knowledge: challenges and opportunities to build resilience to urban floods,"*Int. J. Disaster Resil. Built Environ.*, vol. 13, no. 1, pp. 1–13, 2022, doi: 10.1108/IJDRBE-08-2020-0091.

DN Champion*et al.*, "(Designing for) learning computational STEM and arts integration in culturally sustaining learning ecologies," Inf. Learn. Sci., vol. 121, no. 9–10, pp. 785–804, 2020, doi: 10.1108/ILS-01-2020-0018.

Sugiarti, E.F. Andalas, E. Saraswati, and T. Kusniarti,*Cultural Ecology; Ecological Studies in the Framework of Interdisciplinary Literary Studies*. Malang: UMM Press, 2019.

K. Cetera and AB Rahmawan, "Prospects of Citizen Lawsuit in State Administrative Disputes Related to Climate Change Issues in Indonesia,"*J. Judicial*, vol. 15, no. 2, p. 145, 2023, doi: 10.29123/jy.v15i2.506.

H. Rantona, Safutra Soekotjo, Oekan Bakti, Iriana Agustin, "Deforestation in the Leuser Ecosystem: Environmental and Poverty in Aceh,"*Proceedings of the 5th Conf. Commun. Cult. Media Stud. Deforestation*, no. April 2019, pp. 14–16, 2019.

