

HIGHER EDUCATION ROLES TO SUPPORT CLIMATE CHANGE MITIGATION

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Submit: 03 November 2023, Revised: 20 November 2023, Accepted: Desember 2023

DOI : <https://doi.org/10.22487/agroland.v0i0.1940>

ABSTRACT

Climate change has become an issue that affect every aspect of our lives, including in food security and economic matters. Climate change mitigation plays a key role to prevent the worst impact of climate change. Higher education can take a role on university-based mitigation action in reducing local emission by promoting service-learning approaches that include climate change mitigation. This paper aims to explore the role of higher education to support climate change mitigation to achieve tangible local benefits in facing climate change. This research uses a systematic literature review method related to climate change mitigation in higher education. This paper illustrating the role of higher education to support climate change mitigation by using service-learning approach and creating climate change governance networks. Higher Education Institution as an organization with significant impact toward local community can act as catalyst for sustainable development system. Higher education institution needs to regulate and renew energy systems and reorganize transportation system in order to reduce CO₂ emissions and communicate message to higher education community to support climate change mitigation actions in personal level.

Keywords: Climate, Education.

INTRODUCTION

It is now widely known that urgent action is needed to limit climate change and to prepare for changes to our climate that are already underway and unavoidable. Climate change impact significant sector around the world include social, economy, and increase environmental risk. These climate change give significant impact to ecosystem, food

production, energy supply, and affecting common livelihoods.

Being major employers with large assets and land area, most of higher education institutions are important actors in training hubs for education and research. These sectors are important in the adaptation and transformations required to mitigate and adapt to climate change. The need for climate change mitigation is recommended to be explicitly recognized across higher education's

activities such as education, research, operations and infrastructure and community outreach (Dyer G and Andrews J, 2011). Various declaration and statement have described the importance of higher education sector to raise awareness among the public and local community inside the institution (Lozano R, et al., 2013).

Beyond higher education institutions primary function as providers of education, they also provide an environment for future leaders and policy makers. Higher education institutions considered to play key role in societal transformation (Kapitulčinová D, et, al., 2018). Today, the higher education community in Indonesia is increasingly demonstrating commitment to do climate action. There are initiatives from Indonesia University to initiate UI GreenMetric with more than one thousand participating universities from around the world. This ranking made to promote energy and water conservation, waste recycling, and green transportation at higher education institution (Universitas Indonesia, 2023). This article focuses on the higher education sector, its capacity and role in contributing to the climate change mitigation adaptation process.

RESEARCH METHODS

This article has been carried out within the framework of qualitative research approach. Data were collected by systematic literature review. The basic steps that involved in conducting this article will be (1) designing the review, (2) conducting the review, (3) analysis, and (4) writing the review (Snyder H, 2019). These steps play important role to analyse and describe the higher education roles to climate change mitigation action and programs in education, research, and local community sector.

RESULTS AND DISCUSSION

Climate change mitigation in higher education.

Interest in climate change issue in higher education sector has been

increasing. Higher education institution plays critical role as significant property owner, education, and research hub, and preparing leader and societal transformation (Kautto N, et, al., 2018). The action toward climate change consists of mitigating and adapting. There is clear bias toward adaptation and climate change mitigation in higher education institutions. Higher education institution take role in climate change mitigation by preventing climate change and reduce greenhouse gas emission. Today, climate crisis has become biggest issue in the world. Therefore, higher education must take lead in climate adaptation by preparing for impact made by climate change (Hess D J and Collins B M, 2018).

This paper focus on climate change mitigation effort. Higher education community in Indonesia is increasingly demonstrating commitment to do climate action. This effort promoted around reducing carbon print by developing system to regulate energy and water conservation, waste recycling, and green transportation. Some *universities* have already begun preparing to face climate change crisis that cross their research, education, and operational and community engagement efforts.

Higher education study course and *programs* in most region around the world show increasing trends to include climate change issue in many areas of their curriculum. Survey by (Filho W L. 2010) describe student's perspective about climate change education showed that there are little to no doubt (over 70%) of the usefulness of climate change subject matter to students. This survey also showed challenges for higher education institution in implementing climate change mitigation related activities. The climate change issue seems to be too complex and abstract for student. Therefore, higher education institution needs to make the issue more present in many areas of university.

Higher education sector role in climate change mitigation

Higher Education Institution as an organization with significant impact

toward local community can act as catalyst for sustainable development system (Lüdeke-Freund F and Burandt S, 2010). Higher education institution has to adjust their instrumental and organizational aspect to develop societal change towards climate change mitigation (Filho W L, 2010). Higher education institutes can and should be doing adaptation in terms of curriculum, research, operations, and risk management. There are some aspects that considered in relation between higher education institution and climate change mitigation actions (Bowen E E and Martin P A, 2010). First, higher education institution needs to regulate and renew energy systems and reorganize transportation system in order to reduce CO₂ emissions. Second, to communicate message to higher education community to support climate change mitigation actions in personal level (Benayas J, et, al., 2010).

Higher education institutions hold critical role to prepare society to face climate change challenge in the future. Higher education institute should aim to identify and develop strategies to contribute to mitigation action (Hergert R, 2010). Higher education institutions should provide research and education curriculum around strategies to prevent bigger risk from climate crisis. Higher education institutions also need to increase offering electives and core course that target the topics. Higher education institution serve hub with local community. This role could be a chance to create, test, and disseminating knowledge about climate change mitigation. This effort should also acknowledge the knowledge about climate change with local community along with offering the implement solutions. Local communities must be prepared to face the risk of the climate change crisis through infrastructure and design.

Climate change mitigation planning in higher education

Climate change education throughout higher education institution can

be one of the most effective media to develop student capacities to face climate crisis. Climate change education inside higher education institution demands focus on creative and critical thinking. Climate change education should be engaging for students to ask question and take action on climate change mitigation action. Climate change education involves preparing students to be ready for rapid changing in the future (Stevenson R B, et, al., 2017). The nature of climate change is unpredictable. Therefore, a learning approach that is flexible and targeting specific hazards is necessary for students. Educational roles in climate change mitigation best take form of social learning to develop societal transformation through practice (Kagawa F and Selby D, 2010). Higher education system can be perceived as organization that nurture and educate students in education and research activity (Leal Filho W, et, al., 2011). These activities are effective way to learning and understanding climate change.

Figure 1 suggest some basic steps for a reflection process in climate change mitigation in an organizational environment. The first step is based on a formal and institutional core of knowledge that holds guidelines, declarations, principles, and management systems. The second step refers to knowledge that is created and contributed between higher education institution members (common knowledge and contributions). The third step required formalizing the shared knowledge as a rigid structure. Sustainability challenges require solutions from interdisciplinary people with different skills and becoming sustainable organization can be challenging task for higher education institute. Higher education members belong to structural tasks. The members cannot move freely to do real actions toward climate change mitigation.

For the vast majority of the world population with less affluent community members, communicate about climate change could be challenging (Lavey W G,

2019). Though, this area often in need of climate change mitigation understanding. Higher education institution in rural area face challenging communication problems to promote climate change mitigation (Glantz M H and Kelman I, 2010). Higher education institution in those area need to develop certain communication method, such as simpler language and more presentable promotion (Rooney M and McMillin J, 2010).

Besides many approaches and method used to promote climate change mitigation in education, there are two themes that identified as effective method to promote climate change mitigation in education institution. First, focusing on relevant and meaningful message personally. Second, using engaging teaching method (Monroe M C, 2017). These methods are applicable and effective in addressing controversial issue such as climate change.

Climate change impact significant sector around the world include social, economy, and increase environmental risk. Being major employers with large assets and land area, most of higher education institutions are important actors in training hubs for education and research. These sectors are important in the adaptation and transformations required to mitigate and adapt to climate change. Beyond higher education institutions primary function as

providers of education, they also provide an environment for future leaders and policy makers. Higher education institutions considered to play key role in societal transformation.

Climate change education throughout higher education institution can be one of the most effective media to develop student capacities to face climate crisis. Higher education study course and programs in most region around the world show increasing trends to include climate change issue in many areas of their curriculum (Maxwell J and Blashki G, 2016). Higher Education Institution as an organization with significant impact toward local community can act as catalyst for sustainable development system. Higher education institute can and should be doing adaptation in terms of curriculum, research, operations, and risk management. There are some aspects that considered in relation between higher education institution and climate change mitigation actions. First, higher education institution needs to regulate and renew energy systems and reorganize transportation system in order to reduce CO₂ emissions. Second, to communicate message to higher education community to support climate change mitigation actions in personal level.

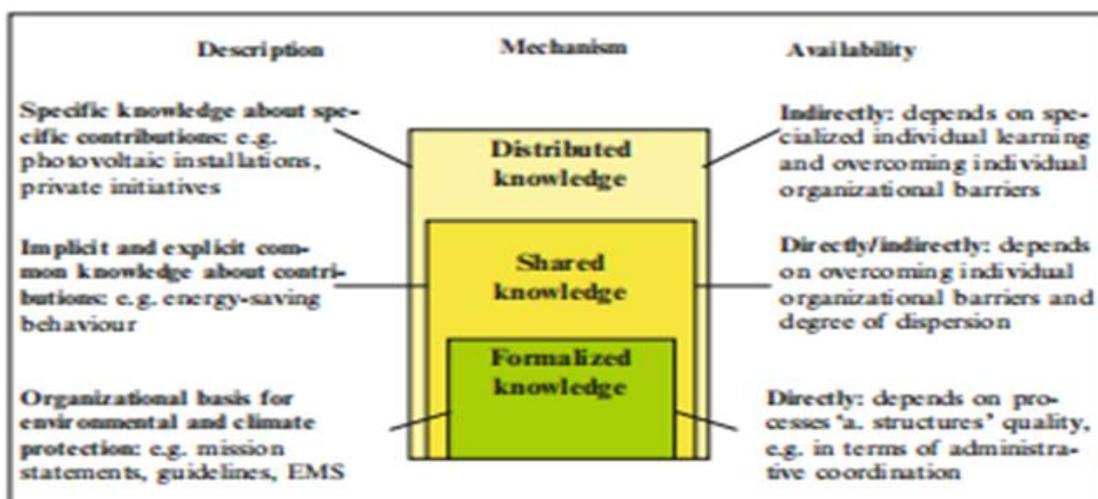


Figure 1. Mechanism of Organizational Learning (Lüdeke-Freund F and Burandt S, 2010)
 Table 1. Example of Short Message for Climate Change with Affluent Members.

Scenario	Do message	Don't Message
When the road is flooded	Turn around	Don't drive through water
When the weather is hot	Drink water	Don't dehydrate yourself
Before going home from work	Remember to tur out the air conditioner	Don't reduce property security

ACKNOWLEDGMENTS

The authors would like to express great appreciation for supporting team during the development of this article. This paper and discussion behind it would not have been possible without the assistance and encouragement from colleagues from Faculty of Economy and Business and financial support from Musamus University.

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