



Disaster Risk Reduction and Climate Change Investment in Disaster Education Context

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Abstract

Disaster Risk Reduction in Indonesia is an effort that must be done systematically, measurable to achieve national resilience to hydro-meteorological disaster that increases along with climate change. This article examines the forms of risk reduction referring to the global agenda that is Sustainable Development Goals and Sendai Framework Disaster Risk Reduction. This article is more specialized investment framework for disaster risk reduction by the government in reducing the impact of climate change and systematically reducing risk through education. Risk reduction conditions in urban and rural areas show a gap in knowledge context that is superior to urban. However, substantial risk due to climate change occur in rural areas concerned to food security. This lack of knowledge is due to the community, including students, who live in cities have a diverse selection of information and better presentation. Accessibility to this information related to IT infrastructure and socio-economic activities in urban areas of more intensive than in rural areas. Disaster education investments can be systematized through materials and media that support climate change learning according to the spatial context.

Keywords: Disaster Risk Reduction, Climate Change, Disaster Education

Introduction

Indonesia naturally susceptible to natural disasters especially disaster hydrometeorology to be made worse by climate change at all country. Climate change is one of factors that encourage higher the risks in the earth, by respecting the united nations framework convention on climate change, is an opportunity that are meaningful and coherent between the governments the related in reduce the risk of disaster (UNISDR, 2015). Tangible form the impact of climate change is felt by Indonesia which is a maritime. Indonesia has the area of the waters 76 % of the total areas, about of 6.315.222 km² with long the shoreline Indonesia Island along 99.093 km and the number of island has be standardized as many as 13.466 island (Geospatial Information, 2015).

Climate change has an impact on coastal areas and sea in different of ways and causing high risks. Coastal areas is highly sensitive to surface, change the frequency and intensity the wind, significant improvement in high waves, increase in the concentration carbon dioxide (CO²), and temperature increasing (Zikra *et al.*, 2015). Climate change has increase the potential extreme weather around Indonesian waters that causes intensity upwelling weakened characterized by the temperature increase the surface of the sea in about 0,9-1,6°C (Martono, 2016). The generated impacts make a difference to the environment especially in management coastal areas paradigm which have resulted affect broad this area and production seaweed cultivation and to overcome these issues, so scenario example of an adaptation be able to be implemented is intensification and land extension, over the area, livelihoods alternative, and *minawisata* (Amri *et al.*, 2016). Climate change also resulted in the phenomenon *el nino* and *la nina* in Indonesia prove connection between rainfall and high the water of the sea, that *el nino* reduce high the water of the sea and *vice versa la nina* raise



high the water of the sea. *El nino* phenomena cause change in the rain in the Lampung provincial and give the impact on Indonesia farm production due to the drought season longer, but in other areas Cilacap regency, Central Java as many as 8 sub-districts in potentially flooded by sea water (Manic *et al.*, 2014; Suprihatin *et al.*, 2016). On the other side climate change also improving disaster risk, social fragility such as pressure at issue the availability of water, agricultural, ecosystem, growth population, and environmental degradation as risks that happened to a Baluran Indonesia national park shown increase which was originally 1999 including categories and 84,76 % to susceptible categories (59,88 %) in 2010 (Annie , *et al.*, 2017; Harjadi, 2016).

The phenomenon of climate change leads to the increasing potential calamitous event especially hydrometeorology disaster such as flood disaster, tidal flooding, drought, landslides, and waterspout/ typhoon. In 2008 and 2014 , more than 144 million people around the world had to be evacuated due to the disaster that many of them caused by climate change and the rise in the frequency and intensity, gradually significant blocking the process to achieve sustainable development (UNISDR, 2015). Indonesia is a state that belongs to 5th rank grew up in Asia with the incidence of natural disasters largest and is dominated by hydrometeorology disaster (Yos *et al.*, 2010). The potential disasters that are very large caused by Indonesian territory characteristic was worsened by the occurrence of climate change. The commitment Indonesian governments is needed in the reduction of the impact on the society of being exposed to disasters and climate change. Disaster risk reduction due to climate change priority to do and this could be done through the context of education. Education is basic in perform the act of adaptation and mitigation to climate change.

Method

The research method is done by Description of Disaster Risk Reduction Situations in urban and rural areas to see gaps in educational contexts. The data come from secondary data obtained through research in 2013-2016

Results and Discussion

The commitment of Indonesia in Reducing Disaster Risks and Climate Changes

Adaptation efforts and mitigation are considered very important to reach resistance to disasters and climate change. Based on the state of being says that the many change due to climate change, Indonesia has to do the act of the balance in achieving priority sustainable development. Indonesia objectives strategic is development which is recognized with *nawacita* (nine agenda priority) is a step in realizing change long-term in accordance with Indonesian vision. The purpose in harmony with national commitment in climate change surveillance in the adaptation and mitigation integrated and priority cross-sectors set forth in national medium-term development plan (RPJMN) 2015-2019 year. Implementation adaptation plan and mitigate the climate change in various field written down in the cross the field of on the RPJMN with a target the emission GRK around 26 % in the 2019 and improving security climate change at region (RPJMN, 2015).

An association of leader 193 member states of the UN in 2015 set sustainable development goals (SDGS) on its global development agenda in the period 2016-2030. Climate change also is a part of negotiations between the government on SDGs beyond 2015 that can be provide the opportunity to the international community in mix all policy, institutions, the purpose, indicators, and system of measurement for the implementation, besides honor a mandate they all of these (UNISDR , 2015). All SDGs targets intersect with components *nawa* ways it is clear there are the convergence between *nawa* ways with the RPJMN and SDGS (UNDP, 2015). The 17 the purpose SDGs be the basis new commitment the international community in the development of global in which on the objective 13th on climate change.

Supporting the mainstreaming of the movement against climate change has been done relating to disaster risk reduction globally. The framework of disaster risk reduction beyond 2015 adopted at the time of organizing The 3rd World Conference to the reduction of the risks of disaster that held in Sendai, Miyagi, Japan. During a conference of the world, participants including Indonesia asserted the commitment in disaster risk reduction and development disaster security in the context of sustainable development. On a Sendai document framework to disaster risk reduction 2015-2030 have the 4 actions of priority, on its 2 and 4 are directly connected related to climate change. The second priority of strengthening of management to manage disaster risk disaster risk related to climate change on a global scale and regional act done is to maintain global and regional collaboration mechanism as well as institutional affairs and use of the instruments for the relevant implementation. Forth priority the improvement of disaster preparedness for an effective and to rebuild with more better in its recovery, rehabilitation and construction to that end it is important to the national level and localized in preparing and review policy and renew contingency preparedness, planning and involve the relevant institution, consider scenario of climate change and its impact on the risks (UNISDR, 2015).

Reducing Disaster Risks and Climate Changes in Disaster Education Context

Disaster risk reduction and climate change is issues faced by all the global community. The main cause of derived naturally and caused by human activity to the environment as a dweller main in the land. Disaster risk reduction and climate change having fronts the same attention based on a chart the following:

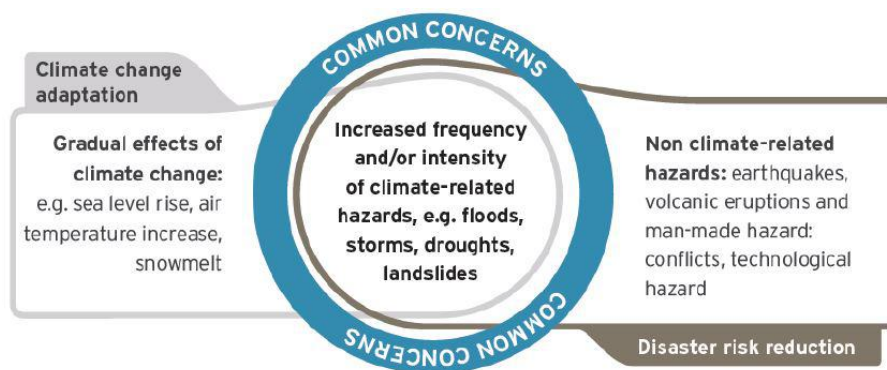


Figure 1. Overlap between disaster risk reduction and climate change adaption

Source: Annie, L., and Walbaun Véronique, 2017

As shown in the graph, the concern of both issue are (Annie, L., and Walbaun Véronique, 2017):

1. The issue of disaster risk reduction and climate change has the ultimate goal for which same as sustainable development, society endurance, community, and household;
2. The issue of disaster risk reduction and climate change face complexity and challenge same as rely on action and policy;
3. The issue of disaster risk reduction and the climate change concerning on all sectors as water, food security, agriculture, the climate information, preparedness for disasters, health, education, the environment, energy, and the city community;



4. The issue of disaster risk reduction do not have a choice in addition to adaptation to climate change and be instrumental in choose a example of an adaptation could be efficient speed up adaptation and mitigate the effects of financial inflicted;
5. Mitigation in climate change very contribute to reduce the risk of disaster and vulnerability to natural disasters as well as disaster technology.

A global community together approach integrated to disaster risk reduction and climate change. At the practical, disaster risk reduction and climate change adaptation could interconnected in approach multisectoral. Conditions of the reduction disaster risk in urban and rural show a gap in the context of education. The research results show knowledge preparedness students who are in urban areas are on categories ready and higher be compared students in rural areas included in categories less prepared (Sunarhadi, M.A., and Nanda Khoirunisa, 2014). This lack of knowledge is due to the community including students, who live in cities have a diverse selection and have more choice alternatives of information also better presentation. Accessibility to this information related to IT infrastructure and socio-economic activities in urban areas of more intensive than in rural areas. However, substantial risk due to climate change occur in rural areas concerned to food security. Disaster education investments can be systematized through materials and media that support climate change learning according to the spatial context. The systematized through materials and media that support climate change learning like learning guide reading proven can adding climate change knowledge. According to using a reading guide on climate change material before using the average reading guide learning is 41,22 and increase become 53,11 after using learning guide guidance, its indicate learning using the reading guide for climate change material is effective (Arozaq et al., 2017).

Conclusion

Risk reduction conditions in urban and rural areas show a gap in knowledge context that is superior to urban. However, substantial risk due to climate change occur in rural areas concerned to food security. This lack of knowledge is due to the community, including students, who live in cities have a diverse selection of information and better presentation. Accessibility to this information related to IT infrastructure and socio-economic activities in urban areas of more intensive than in rural areas. Disaster education investments can be systematized through materials and media that support climate change learning according to the spatial context. Finally, as education and awareness raising is a common key activity to prevention programming, whenever possible and relevant, such programs could contribute to reducing disaster risks.

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