

## Research Article

# Farmers' Adaptability to Climate Change in Lampung Province

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### ABSTRACT

This research aims to analyze the impact of climate change on the productivity of rice farming businesses, know the knowledge, attitudes, and adaptability to climate change, and present a review and criticism analysis for product updates related to climate change. The study respondents numbered 100 rice farmers in Lampung Province. The processed data is analyzed by using descriptive statistics, using Crosstabs analysis to calculate the frequency and percentage of two or more variables at once while to see the influence of farmer behavior is using path analysis. The results of this study showed that the impact of climate change greatly affects rice farming businesses which leads to a decrease in the productivity of farmers' rice farming businesses. The lack of knowledge of farmers about climate change and the attitude of farmers in dealing with climate change are great concern, but in the follow-up to curiosity and problem solving tends to be less, this is due to farmers less enthusiastic in determining the attitude of climate change. The level of adaptation of farmers to climate change only occurs when determining planting time, so it needs to increase the power due to climate change. Recommendations from these results, among others, related to regulations that require renewal. This update obtained two perspectives, namely the legal perspective and the perspective of the development of the climate issue itself.

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## INTRODUCTION

Climate is the average weather or weather condition that lasts for a long period of time. Climate speaks of average temperatures, average rainfall and the intensity of storm events that occur in a region over a long period of time, even centuries. Moreover, it occurs naturally and complicatedly as an implication of the interaction between water, air, and land surface. The existence of climate produces particular temperatures and rainfall that gives life to humans, plants, and animals. Further, climate and eutrophication impacts of caught fish are lower than farmed fish based on this study. On the other hand, the calculation data have very many uncertainties, but the fuel consumption values for net fishing are quite neat as presented by Schau et al.

(2009). The value of BH fishing by trawling used in our study is quite the same as the Norwegian pelagic trawl (Schau et al., 2009). The fuel consumption in small-scale fishing has also been found to vary in Finland (Silvenius et al., 2013, Silvenius, 2014 and Juana et al., 2013). Climate change also affects the increase in air temperature. The air temperature of Indonesia in the last 30 years rose about 0.1 degrees Celsius. The increase looks small, but the world has limited that until 2030. The temperature change should not be more than 1.5 degrees Celsius. Meanwhile in Indonesia, until 2020, the temperature has almost reached 1.6 degrees Celsius since 1866 (Siswanto et al, 2016). Warming climate in Indonesia will also be accompanied by an increasingly dry season up to 20 percent in some regions of Indonesia such as South Sumatra, Java, Madura, Bali, West Nusa Tenggara, and East Nusa Tenggara (Siswanto, 2015 dan Siswanto, 2017). In addition, the public society should be aware of Indonesia location which is in the ring of fire area so that the risk of disasters such as earthquakes, tsunamis and volcanoes, landslides to floods are inevitable.

These challenges require early anticipatory steps so that Indonesia and the world are able to adapt and mitigate appropriately. Knowledge of climate change among the public is still unclear and limited. There are still many people who do not care about climate change. The information about climate change is very important to know, especially for farmers. Some farmers only understand climate change that occurs based on their daily activities. By having knowledge about climate change, it can solve crop failure.

One of potential aspects affecting climate is agriculture. It can be known that climate is one of the main elements of the metabolic system and physiology of plants. As a result, the existence of climate change has a bad impact on agricultural sustainability. The direct and tangible impact of climate change is the occurrence of crop failure experienced by farmers since they mis-determined the planting period due to extremely seasonal shifts. There is a close relationship between climate change and agricultural production. The effects of climate change on agriculture are multidimensional, starting from natural resources, agricultural infrastructure, and production systems to food security, the welfare of farmers, and society in general.

The impact of extreme climate change in the form of drought ranks first in the cause of crop failure. This condition has implications for the decline in production and welfare of farmers. In addition to direct influence on the level of food crop production, climate change also has an indirect influence that can reduce the productivity of food crops with increased pest and disease attacks. The entry of the rainy season develops many plant diseases such as *Xanthomonas oryzae pv* and *pyricularia grisea* in rice plants. This also raises the vulnerability of farmers' adaptability to climate change so that a figure who is able to survive and set an example to other farmers. Such figures can be like advanced farmers who have competitiveness, filter, and sanding (Haryanto, et al., 2018) and can be self-help extensionists who have technical companion abilities, disseminate innovations that suit the needs of farmers, provide training to their partner farmers, become informal leaders, and maintain local wisdom can be the basic capital as agents of change in rural areas (Haryanto, et al., 2020).

Regarding laws and regulations in Indonesia, the climate still does not get high attention. Climate regulation in Indonesia is currently regulated in Law No. 31 of 2009 on Meteorology, Climatology, and Geophysics (MKG Law), whose content materials are incorporated into one with regulations regarding meteorology and geophysics. Until 2020, the MKG Law has been applied for 11 (eleven) years. Another product of legislation that later established related to climate was Law No. 16 of 2016 on the Ratification of the Paris Agreement to the United Nation Framework Convention on Climate Change which is the result of the ratification of international agreements.

Despite these mitigation measures, climate change is currently occurring (Andresen, Hilberg, and Kunkel 2012; Lobell, Schlenker, and Costa-Roberts 2011) and are expected to continue in the future (IPCC, 2007). This condition encourages the need for climate change adaptation measures to reduce negative potential and maximize the positive potential of climate change impacts. In response to the climate change adaptation push, the Indonesian government took action with the issuance of the RAN-API (BAPPENAS 2012) document. Therefore, the purpose of this study is to analyze the impact of climate change on rice farming production, know the knowledge, attitudes, and adaptability to climate change, and present a review and criticism analysis for the renewal of legislative products related to the Meteorology, Climatology, and Geophysics Law.

## METHOD

The study was conducted in Lampung Province in November 2019. The number of samples in this study amounted to 100 rice farmer respondents consisting of: (1) 20 farmers in Tulungagung Village and 20 farmers in Pekon Mataram, Gadingrejo District of Pringsewu Regency; (2) 20 farmers in Jatimulyo Village, Jatiagung District of South Lampung Regency; (3) 20 farmers in Way Pring Village, Pugung District of Tanggamus Regency; and (4) 20 rice farmers in Kutoarjo Village, Gedong Tataan District of Pesawaran Regency.

The study used survey methods and literature studies. Data retrieval was done by surveying a number of individuals who are representative of representing their population to obtain a certain number of values over a number of variables (Anwar, 2007). In data collection, it is done in two ways: (1) observation was conducted to obtain the data from the field as the basic material in the making of this report, and (2) Interview. The research was conducted by interview process with questionnaire guidance on 20 respondents in their respective locations to get the information needed as a basis for making a report accurately and clearly.

The data collected in this study are in the form of qualitative and quantitative data. The qualitative data included such as pinions, opinions on climate impacts in life, and how the adaptability of rice farmers. The quantitative data is interpretation of data according to variables in the research. After collecting the data, the researchers analyzed them descriptively by using cross tabulation analysis or Crosstabs to calculate the frequency and percentage of two or more variables simultaneously. In order to see the influence, the researchers used path analysis. Path analysis can be used to find out direct or indirect relationships through intervening variables.

## RESULTS AND DISCUSSION

### Descriptive Rice Farming

Agriculture is an applied science that discusses and learns how to use resources efficiently and effectively in an agricultural business in order to obtain maximum results. In the fielded down activities that have been done, it is known that the procurement of land farming managed by farmers as a large amount of land itself. The land ownership is a heritage land that has changed its name. In obtaining inputs on production facilities, all respondents bought seeds of rice Ciherang, IR64, Sentani, Rojolele and Impari. Respondents bought the seeds through nearby kiosks and farmer groups. This is in line with the opinion of Ira et al. (2021) which states that the most important factor in cultivating rice plants is the use of fertilizers that are used as a source of success for planting rice plants. Fertilization aims to maintain nutrients in rice plants so that they develop properly and can avoid pests and diseases. The use of fertilizer can be seen from the time of fertilizer delivery, the quantity of fertilizer, and the type of fertilizer where the good and proper fertilizer will determine the development and growth of plants. The use of drugs is done with good and correct spraying so that the resulting production can be maximized. The use of labor in farming must be done from nursery to the management of results so that the production obtained increases due to the effective and efficient use of labor.

In general, the fertilizers are urea, SP36, NPK, TSP, KCL, manure, and phonska obtained by purchasing them at the nearest kiosk and farmer groups. There are several variations in the use of fertilizers in rice farming from the composition and type of fertilizer used. The variation of fertilizers is caused by the financial ability of farmers to meet the needs for their farming and is also influenced by the area of their farming land. Disturbances in farming or often called by Plant Pest Organisms (OPT) in rice plants which is very disturbing for their existence in the local environment. There are several pests that interfere with rice plants, including leafhoppers, snails, birds, caterpillars, rats, insects, broken necks, leaf spots (Sudarma, 2013). The biggest problems from the results of fieldwork obtained by data are leafhoppers and neck fractures. The control of the pests was carried out by the respondents by using pesticide types of pesticide, avidor, regen, plenum, maneuver, and starban. Most of the farmers only use pegs to carry out eradication. Protecting rice plants from disease is a business that cannot be separated from the management of the rice farming ecosystem. Rice production plays an important role in meeting food needs and increasing welfare, so activities related to plant protection must be increased in the production system (Prasetyo, 2015).

The average respondent conducted a nursery using labor for one rice growing season depending on the area of land and some respondents also conducted their own breeding with the number of workers in the family as much as 1 person for one rice growing season. Soil processing and fertilization is carried out by labor in the family of 2 people for one growing season and depends on the amount of harvested land area. The average weeding is done by 2 people within the family and people from outside the family. The average hpt eradication is done by 2 people. The average harvest is done by 7 people and transportation is carried out by an average of 7 people. When done by workers outside the family, they use the wage system, although there are still those who use the *gotong royong* (mutual assistance) method. Wages are adjusted to the area of land or length of work. Men's wages amount to Rp80,000, while women's wages amount to Rp60,000- Rp65,000 per day.

## Impact of Climate Change on Rice Farming Production

Climate change is a long-term change in the distribution of weather patterns that occurs continuously over a period of time. The occurrence of climate change also affects agricultural production activities. Based on the results of airy down activities that have been done, it is known that climate change has a negative impact on crop yields. This occurs due to the absence of reserved water sources that can be used in agricultural activities. The rice field farming system has rain and there is no discourse on irrigation development from the government which causes the increasingly deterioration of the situation of farmers in the current climate change situation. Farmers have not only experienced a decline in productivity but have experienced total crop failure over the past few months during the dry season. This condition will have a negative and risky impact on the long term, if there is no prevention, the farmers will lose income periodically. So far, farmers have not figured out a way out of the climate change problem. Here is data on the impact of climate change on agricultural production taken by several samples at the research site.

According to the results of interviews with respondents, this considerable change occurred due to the scarcity of water resources to irrigate paddy fields which caused the growth of rice to be disturbed, clumps of rice became smaller and not all the grains of rice can be filled, so that less rice is produced. This have a direct impact on farmers' income, since most of the respondents have a main livelihood as farmers, so that through their farming they can meet the cost of living for their families.

## Farmers' knowledge of climate change

Knowledge becomes one of the components in shaping the behavior of farmers. Knowledge is also one of the considerations in making decisions. It is also in line with the knowledge of climate change that will have an impact on farmers' behavior in the face of changes in their farming. Knowledge in understanding climate change is able to help farmers in making decisions and determined in rice farming, considering rice is highly dependent on the availability of water provided through rain which becomes one of the weather components and components in the climate.

**Table 1.** Farmer's knowledge on climate change in Lampung Province

Indicators	Total (respondents)	
	Yes	No
Climate change phenomenon	60	40
Local weather calculations	40	60
Receive climate change information	20	80
The effects of climate change are agricultural activities	80	20
Considering weather factors	100	0
Climate change period	76	24
Components of climate change	85	15

Table 1 shows the farmers are less certain about the understanding of climate change itself. Farmers' knowledge is limited to things that are real and have been felt directly in daily life such as reduced water flow and decreasing intensity of rain and increasing air temperature. Farmers tend to depend on each other in terms of decision making. During the planting season, they will simultaneously plant. However, if some farmers do not plant, the other farmers do not plant either.

Climate change has a lot of impact on agricultural activities in this regard especially rice. Due to climate change rice farming activities stopped completely due to the absence of water source reserves that can be used for irrigation of rice fields. Climate change information has an impact on the determination of planting time and harvest time. This makes the time of planting and rice harvesting patterns become irregular, drought makes the soil structure cracked and the trees around the settlement become dry so as to add to the atmosphere becomes hotter and arid. This is very noticeable from the differences in climate change in Lampung Province.

The lack of knowledge of farmers about climate change is also caused by the lack of information provided by agricultural extensionists to farmers about climate change, as well as the lack of farmers' initiatives in finding out information about climate change. Until now, there has been no special socialization from extensionists or other parties related to efforts to combat climate change. As a result, farmers are only subject to climate change that have a drastic impact on agricultural activities. The method done by farmers in calculating the

weather still uses traditional methods of calculating the dry season and rainy season. All farmers in Lampung Province know how the seasons are calculated based on rain.

### Farmers' Attitudes Towards Climate Change

Attitude is a response or reaction of a person to an object or stimulus. Farmers' attitude towards the climate itself is the action of adjustment or adaptation of farmers to climate change in reducing the potential impacts caused by climate change. The attitude of farmers will show actions that are very influential to their farming activities.

Based on the results of analysis and surveys in the field, farmers have concerns about agricultural sustainability if drought conditions come throughout the year. However, farmers have no interest in understanding more about climate change. Farmers also do not try to find better information to extension workers or to other farmers about the phenomenon of climate change and efforts in dealing with and tackling climate change. The arrival of farmers in solving climate problems is due to low contact with other farmers. Extensionists rarely provide climate change information. Here are some samples of farmers' attitudes towards climate change in Lampung Province.

**Table 2.** Farmers' attitude towards climate change in Lampung Province

Indicator	Total (respondents)	
	Yes	No
Feeling worried	99	1
Adaptation efforts	33	67
Disseminating climate change information	13	87
A sense of concern	40	60
Understanding climate change further	36	64
Consult with an extension	22	78

Based on the data above, farmers have realized that climate change has a bad impact on rice cultivation. They feel worried if climate change will continue to interfere with agricultural activities. If farmers feel worried, farmers will adapt to minimize their impact. Adaptation is simply done by, such as, changing planting time, changing soil processing techniques, changing commodities and so on. However, farmers tend not to spread information about climate change to fellow farmers or other communities. They are only aware of themselves and information of climate change is low even the knew the bad impacts. Farmers' level of concern about the climate is also low. They are more focused on controlling disease pests and also increasing production. To deal with climate change, there are only 22 people who consult with the extension on this issue and hope the extension having new innovations by finding out a way to solve this problem.

### Adaptability to Climate Change

Climate change has a lot of impact on agricultural activities. With the drought that has been going on for the last few months, farmers have to take a stance as an adaptation force to climate change. However, the lack of communication between farmers and extension workers causes inability to adapt well to environmental changes. Judging from its role, agricultural communication can play a role to help fellow farmers and provide opinions for references and sharing platforms.

Poor interaction of agricultural communication causes malfunctioned communication. Farmers do not have a reference in making the right decisions related to agricultural strategies. In this case farmers are also unable to inform each other and help fellow farmers in terms of decision making due to climate change. As a result, they only submit to accept the circumstances and conditions due to climate change that ended in crop failure and loss of the main source of income. Here are some data of adaptation power samples to the climate of rice farmers in Lampung Province.

**Table 3.** Adaptation to the climate of rice farmers in Lampung Province

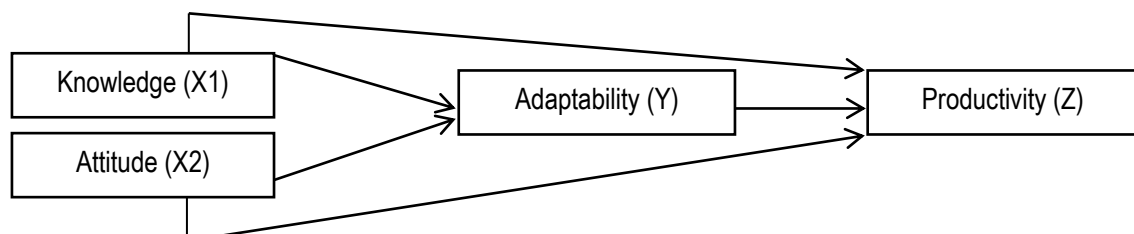
Indicator	Total (respondents)	
	Yes	No
Change in planting time	85	15
Soil processing techniques	52	48
Change the intensity of watering	60	40
Changing plant destruction organism control techniques	25	75
Transforming commodities	25	75

Based on the data above, it can be concluded that climate change causes rainfall and prolonged drought. Farmers decided their planting time based on existing rainfall period. Even the farmers are currently only planting rice after 5 months, farmers should be able to enjoy the harvest, but this time they are just waiting for the arrival of the forest and let the land be abandoned. In addition, farmers also changed the technique of processing land. The availability of water resources, farmers only need soil processing once or twice because of the previous drought that farmers can repeatedly do soil processing. Based on the interview results, respondents told the researchers that they had done soil processing meanwhile a few days later there was no more water. This condition makes farmers have to spend a lot of money for farming business.

The amount of water is extremely limited so farmers make changes to the intensity of irrigation. They have to share with other farmers in irrigating their fields. However, in adapting to climate change, farmers do not adapt by changing pest control techniques, they only continue to use the pesticides. Moreover, they do not know that changing pest control techniques can be an adaptation to climate change. The limited water resources make farmers to replace the rice to other commodities, such as peanuts, corn, cassava, and others. This alternative is done to minimize crop failure.

### The Influence of Farmers' Climate Knowledge and Attitudes on Productivity through Climate Change Adaptation Power

Attitude and knowledge are crucial aspect in farmer behavior. Climate change today certainly gives a lot of impacts to weather changes resulting the determinant points in aquaculture activities. Therefore, farmers' knowledge and attitudes are thought to affect productivity through adaptation power made by farmers in the face of climate change.



Model 1: Direct influence of farmers' knowledge and attitudes on climate to adaptability in climate change; Model 2: Direct influence of knowledge, attitude, and adaptability of farmers in climate change rice cultivation productivity; and Model 3: Indirect influence of farmers' knowledge and attitudes on climate and productivity through farmer adaptation power levels in climate change.

**Table 4.** Path analysis of the influence of farmers' behavior on climate change adaptation power

Variable	Standardized coefficient beta	Sig	R <sup>2</sup>
Structural Equations 1 (X1, X2 to Y)			
X1	0.237	0.155	0.058
X2	0.111	0.500	
Structural Equations 2 (X1, X2, Y to Z)			
X1	0.549	0.000	0.463
X2	-0.316	0.016	
Y	-0.141	0.270	

### Model 1

Based on structural analysis path 1 that has been done by testing the influence of knowledge and attitudes of farmers on the climate on the adaptability of farmers in climate change, it is known that the significance value of the knowledge variable (X1) = 0.155 and attitude (X2) = 0.500 is greater than p 0.05. These results show that farmers' knowledge and attitudes about climate have no significant effect on adaptability in climate change. Formula  $e1 = \sqrt{(1 - 0,058)} = 0.94$ . In addition, the value of R square is 0.058 it shows that the contribution of influence of knowledge and attitudes of farmers about the climate by 5.8% while the remaining 94% is a contribution from other variables not included in the study

### Model 2

The influence of knowledge, attitudes and adaptability of farmers in climate change to the products that have been tested in structural testing 2. It is known that the significance value of the variable knowledge (X1) = 0.000 and attitude (X2) = 0.016 is smaller than p 0.05 and the adaptability (Y) = 0.270 is greater than p 0.05. These results show that knowledge and attitudes in climate change to productivity have a significant influence, while the adaptability in climate change to productivity does not have a significant influence. In addition, the value of R square is 0.463 it shows that the contribution of influence of knowledge and attitudes of farmers on climate by 46.3% while the remaining 53.7% is a contribution from other variables not included in the study. Meanwhile, for the value e1 can be known through the formula  $e2 = \sqrt{(1 - 0,463)} = 0,732$ .

### Model 3

Analysis of the influence of knowledge about climate on productivity through adaptability in climate change can be known from the value of times between beta years to accrual power with beta adaptability to productivity ie  $0.237 \times -0.141 = -0.033$ . Therefore, the total influence given by X1 to Z is  $0.237 + (-0.033) = 0.204$ . Based on these calculations, the value of direct influence is 0.237 and indirect influence is -0.033 which means that indirect influence is less than the value of direct influence, the right shows that directly farmers' knowledge of the climate has a significant influence on productivity.

Analysis of the influence of farmers' attitudes on climate to productivity through adaptability in climate change can be known from the value of times between beta years to accrual power with beta adaptability to productivity ie  $0.111 \times -0.141 = -0.015$ . Therefore, the total influence given by X1 to Z is  $0.111 + (-0.015) = 0.096$ . Based on these calculations, the value of direct influence is 0.111 and indirect influence is -0.015 which means that indirect influence is less than the value of direct influence, the right shows that directly farmers' attitudes about climate have a significant influence on productivity. This is in line with the research of Haryanto *et al* (2017), where the adaptability of farmers has an influence, especially in terms of management of farming that is of local wisdom.

### Climate Related Laws

The MKG Law was passed on October 1, 2009 by the President of the Republic of Indonesia, Susilo Bambang Yudhoyono. In the span of 2009, the growing issue in the formation of legislation products in Indonesia was quite affected by environmental issues, e.g. Law No. 32 of 2009 on Environmental Protection and Management, Law No. 30 of 2009 on Electricity, Law No. 21 of 2009 on Ratification of Agreement For The Implementation Of The Provisions Of The United Nations Convention On The Law Of The Sea Of 10 December 1982 Relating To The Conservation And Management Of Straddling Fish Stocks And Highly Migratory Fish Stocks (Agreement on the Implementation of the Provisions of the United Nations Convention

on the Law of the Sea dated December 10, 1982 relating to the Conservation and Management of Limited Fish Preparations and Preparations of Far-Entro fish), Law No. 19 of 2009 on Ratification of the Stockholm Convention On Persistent Organic Pollutants, Law No. 18 of 2009 on Livestock and Animal Health, Law No. 4 of 2009 on Mineral and Coal Mining (Andi Sandi, 2012)

International environmental issues that developed in the span of 2000-2010 mainly concern global warming. Indonesia, which has the 9th largest forest area in the world, although steadily decreasing, has a responsibility in terms of handling global warming and handling other issues including climate.

However, until now there has been no update of legislation on climate issues. As mentioned in the previous section, the regulation of climate MKG law must share meteorological and geophysical materials. Whereas theoretically and practically, these three things have different substances. In the current MKG Law, the three things are denied by giving slices that are quite different from each other. Meteorology, defined as a symptom of nature related to weather; climatology, defined as natural related to climate and air quality, while geophysics, defined as natural symptoms related to tectonic earthquakes, tsunamis, gravity, earth magnets, air electricity, and time signatures. That is, substance has occurred a mixture between two materials in one law.

In addition, when looking at the validity of this Law, it can be stated that the MKG Law has been irrelevant and requires renewal. In the span of 2009 to 2020 there have been many changes to the central level legislation products that could affect other laws. In the theory of legislation there are at least 2 (two) aspects that must be fulfilled in a statutory regulation, namely the formal aspect and the material aspect. Both aspects, during the period 2009-2020 has undergone significant changes. The next section will try to outline the legal framework of both aspects.

### **Legal framework Adjustment to the systematics of legislation**

In accordance with the provisions of the Constitution of the Republic of Indonesia year 1945, the provisions on the procedure of the formation of the law are regulated by the law. The significance of the arrangement of the ordinances of the formation of the law lies the formal aspect. The Law on the establishment was then established through Law No. 12 of 2011 concerning the Establishment of Legislation that replaces Law No. 10 of 2004. The substance of Law No. 12 of 2011 is about the procedure of the formation of legislation in terms of stage by stage in each legislative institution and the format of writing each legislation.

Both stages and writing formats, hold the importance to maintain the quality of a regulation. Regulation on stages, is an effort to ensure that there is a fair, open, and transparent drafting process so that the law formed is more acceptable. As for the format, it is important to explore the contingency and uniformity of the form, so that both the legislator is easier in the process of formation and the community is easier reading and understanding the law.

MKG law year 2009, formed by basing the stages and forms in Law No. 10 of 2004. It needs to be seen as irrelevance with efforts to maintain good quality legislation. Changes that occurred from Law No. 10 of 2004 to Law No. 12 of 2011, among others include hierarchy, material content, criminal provisions, testing mechanisms, and writing formats.

MKG Law in this case has not been in compliance with Law No. 12 of 2011 so it has not been achieved legal unity in terms of formal. Adjustment in terms of formal in this case is needed to achieve legal unity while ensuring that in the process of drafting the new MKG Law, the public can participate in it.

### **Legal Framework for the division of authority between governments**

The division of authority between governments in Indonesia can currently be found in the annex of Law No. 23 of 2014 on Local Government. Law No. 23 of 2014, is a more comprehensive improvement of Law No. 32 of 2004. Through the table of authority division between governments, a map of authority is obtained between the central government, provincial government, and district/municipal governments in various affairs.

The framework of MKG affairs is still a central government business, which is institutionally carried out by the MKG Agency. In the current era of regional autonomy, it is necessary to share authority, especially the region so that the region can carry out responsive policies including those related to MKG affairs.

The division of authority in the affairs of MKG itself does not necessarily have to reduce the central authority. In the theory of regional autonomy, local governments not only carry out decentralization functions,



but also Deconcentrating and Medebewind tasks. Auxiliary duties can be emphasized to be carried out by the local government. Regional involvement in MKG affairs can be done not only to obtain responsive policies, but also to increase the capacity of local governments.

## CONCLUSION

The impact of climate change greatly affects rice farming which leads to a decrease in the productivity of rice farming. This is due to the increase in air temperature, decreased intensity of rain, decreased water availability as well as the number of drought period of the year. The lack of knowledge of farmers on climate change is also supported by the lack of information provided by agricultural extensionists to farmers about climate change, as well as the lack of farmer initiatives in finding out information about climate change. The attitude of farmers in the face of climate change is a big concern, but in response to curiosity and problem solving tends to be less. This is due to farmers are less enthusiastic in determining the attitude of climate change. The level of adaptation of farmers to climate change only occurs when determining planting time, which follows the rainy season, but for various other activities farmers tend not to make any adaptations other than waiting for the right time to farm. Based on the exposure in the previous sections, it can be concluded that the MKG Law requires renewal. This update obtained two perspectives, namely the legal perspective and the perspective of the development of climate issues itself. In the legal aspect, changes to the MKG Law are needed to customize the configuration of the Law that is currently irrelevant both in terms of formal and material. As for the developmental aspects of the issue, international discourse today still has a focus on climate affairs. The renewal of the MKG Law needs to be done to fit in well with the current legal regime and to respond to international issues related to climate.

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