

Sustainable Development in the Red River Delta with Situation of Climate Change

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In the current period, climate change is a serious problem, attracting the attention of every country in the world. In Vietnam, climate change is already and will have great influence to the sustainable development of the Red River Delta. This paper raised the fundamental issue of climate change for sustainable development of the Red River Delta, which offers solutions towards reducing the impact of climate change in the Red River Delta in the current context.

Keywords: *Red River Delta, climate change, development, sustainable development*

1. Framework Convention on Climate Change United Nations (UNFCCC)¹ definition of climate change (CC) is “a change in climate due to the effect directly or indirectly by human activities

¹ UNFCCC is the abbreviation of the English phrase Convention United Nations Framework on Climate Change, which was translated into Vietnamese by the United Nations Framework Convention on International Climate Change. Before the dangers and challenges for all humanity, the UN has gathered many scientists and experts around the world come to discuss and agree, there should be an International Convention for Climate and considered it is a legal basis to focus the international community to deal with the positive development of climate change. And the United Nations Framework Convention on Climate Change adopted on 05.09.1992 at the UN headquarters in New York. There were 155 state leaders around the world signed the Convention at the Conference for Environment and Development in Rio de Janeiro, Brazil on May 6/1992, including the Government of Vietnam. The ultimate objective of UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference of man with the climate system. The UNFCCC countries in the world is divided into two groups of countries: Group 1: Under Appendix 1, including the developed countries with greenhouse gas emissions greatly. Group 2: Not listed in Appendix 1, including Vietnam, the developing countries.

to change the composition of the global atmosphere, next to the fluctuation of natural climate, are observed through periods”.

We can say that climate change is considered the indispensable objective, it demonstrates the movement of the earth. However, studies also show that there are two main causes of increasing climate change. First, it was natural causes such as fluctuations due to factors related to the orbital motion of the earth, the change of the earth's surface, the amount of CO₂ in the atmosphere, the operation of volcanoes, volume of cloud, the changes within the crust and ocean salinity. Second, it is due to human activities have increased greenhouse effect of the atmosphere, creating a stimulated emission (increase) of 2.3 w/m², making the earth's surface and layer lower atmosphere heats up, global average sea level rising. Climate change during the twentieth century until now been caused primarily by humans, so

the climate change term (or also known as global warming) is considered synonymous with the modern climate change.

Report of the World Bank pointed out that in the world, Vietnam has two large plains of the country which is Mekong River Delta and Red River Delta, will be one of the five countries most affected by global climate change and sea level rising. In recent years, climate change has caused great loss of lives, property and production activities as well as the life of residents of all regions in the country. With a coastline of over 3.260 km along the length of the country, an area of exclusive economic zone over 1 million km², ranking 27th of 156 countries which have ocean in the world and large coastal nation in East Asia, there is great potential development for exploitation of marine resources, while sea levels will have considerable harm to agricultural land as well as people's lives,

especially in a dozen provinces and cities along the coast. In particular, according to experts' forecasts, Mekong River Delta- granary, the largest fishery barn in the country and the Red River Delta is the bowl rice of all the North- Viet Nam suffer the most severe. In the past 50 years, sea level in Vietnam rose to 50 cm, increased rainfall in the rainy season and decreased dry season. Vietnam is facing many storms, floods, more droughts in the past. Forecasting by 2100, sea levels will rise to 1 m, temperature increased by about 3°C. According to calculations, if sea level rise to 1 m will have 10% of the population of our country are directly affected, loss to GDP is about 10%, about 40 thousand km² coastal plain of Viet Nam will be flooded every year.

2. In order to adapt to climate change, the Government of Vietnam has ratified the Framework Convention on Climate Change United Nations (UNFCCC) and Kyoto Protocol, and 02/12/2008 Prime Minister issued Decision 158/2008/QĐ- TTg about "National target program to respond to climate change", which represents the efforts of Vietnam before the challenges of climate change to limit the negative effects of climate change for Vietnam in general and in agriculture, rural areas in particular.

Confirming that the Red River delta is one of the most vulnerable on Earth due to climate change, the weather has deteriorated and is increasingly severe impact on this area. With the Red River Delta, climate change has make sea level rise, droughts, floods occur with increasing frequency. These factors will increase flooding,

salinization, the spread of acidic, the risk of rising water levels; that may arise difficulties regulating traffic floods; the process of urbanization is growing faster with high population growth are creating more pressure for the management of dyke, forecast of rain, storms and floods ... In Hanoi, the city is facing serious flooding when rainfall exceeds 100 ml / h by the old underground drainage system and low capacity; many lowland lakes and ponds were filled to construction and housing, reducing the ability to recover the water source, the explosion of the urbanization process makes the solid waste is not handled effectively, causing flooding and stagnant aquifer... and lead to other consequences. Overcoming this problem that can solve a very large part the effects of climate change for the Red River Delta.

In recent years, the Red River Delta were constantly faced severe drought conditions in the spring winter harvest by the river water levels fall below the level of history continuously in the last ten years. The sea level rise will cause inundation in the Red River Delta. International Rice Research Institute (IRRI) said that the rice production of Vietnam focused primarily on two Red River Delta and Mekong Delta, so only a small rise in sea levels will also cause the catastrophic consequences. According to a report by the World Bank (WB), in case of sea level rises one meter, damage from loss of productive land in the area inundated estimated total food production in our country will decreased by 12% (about five million tons). Also flooded area, a

large area in the Mekong Delta and Red River Delta will be inundated, the country's food production could be reduced to tens of percent due to this influence.

The area of arable crops of the Red River Delta can be reduced, due to climate change makes some areas unsuitable for food production and a part of food crop land will be converted into land for people who forced to move due to flooding. For the livestock sector, productivity and production of some animals may be reduced due to fluctuation of temperature, humidity and other external factors increase. Food production reduced also makes source of supply the feed decreases, affecting the development of the livestock industry. Increased temperature with fluctuations in the climate can reduce the resistance of animals, and create a favorable environment for pathogens causing outbreaks of epidemic in cattle, poultry. It excludes the impact of climate change on water resources; impacts of climate change on forestry, fisheries and rural development in Red river delta.

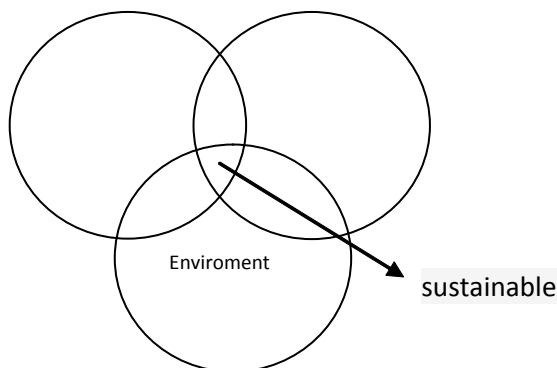
Today, sustainable development become urgent demand in the process of development in the world in general and individual countries in particular. Vietnam has actively participated in international conferences and the implementation of the commitments on sustainable development. On 17.8.2004 Prime Minister signed Decision No. 153/2004/QĐ- TTg issued "Strategic orientation of sustainable development in Vietnam", including the orientation as a legal basis for the localities, organizations and individuals

to coordinate actions to ensure sustainable national development in the 21st century. At this writing, the issue of exploitation and sustainable use of natural resources and environment were mentioned specifically by the contents: Tackling land degradation, use of resources efficiently and sustainable land; protect water environment and sustainable use of water resources; rational exploitation, economize on sustainable mineral resources, forest resources and marine resources; coastal areas, islands; sustainable development aspects economy - society.

The theory of sustainable development appeared the 80 years and was officially launched at the conference of the World Commission on Environment and Development (WCED), famous on the world with called Brundtland in 1987. At a conference on global environment RIO-92 and RIO-92 +5, the concept of sustainable development are supplemented by the scientists that "sustainable development is formed in the integration, mixed and compromise of the three interacting systems are natural systems, economic and socio-cultural system". According to this point of development, sustainable development is understood as result of interaction and interdependence of the three systems, and sustainable development which caused the deterioration and destruction of the other systems or specifically, the sustainable development is the interactive harmony and compromise between the three systems mentioned above.

We know that Red River is the cradle of civilization Red River,

Figure: The concept of sustainable development



flourished bronze civilization with bronze drum, tower, arrows, with water-rice agriculture, the area of more than 1.4 million ha, accounting for 3.8% the area of nation with a vast sea in the east and southeast, the region's population is 18,400,600 people (2007), accounting for 21.6% of the population nationwide. Current and future Red River Delta is one of regions that plays the important role in the economic - social development of the country, especially in the division of labor of the country. This region has a favorable geographical position for the economic and social development - as a bridge between the North East, North West to North Central, Red River Delta is considered as favorable natural conditions region, rich and diverse natural resources, populous, rich labor resources, the intellectual high ground, situated in the heart of the North, in the key economic northern, Hanoi is a center of industry, administrative, political highest.

3. We can say that, for sustainable development, in economic-social development plans of every regions in the short and long term including the Red River Delta, must

soon put matters global climate change seriously. In development planning, we should note the mitigation and prevention which recorded in the national Agenda 21, besides responding well to focus on adaptation issues to climate change. Now, in the process of innovation and integration, it is necessary for the government to hold a appropriate authority with sufficient capacity to study global climate change and sustainable development, to put forward a great many ideas to improve the economic-social development in general and the Red River Delta in particular in the context of new global climate change. We need to pay attention to the issue of diversity biology conservation which precious resource of the nation, the basis of sustainable development and in our period that climate change issues are a matter of "hot", attracting the attention of all States in the world, the meaning of sustainable development is more significant than ever before. In this paper, we would like to present some basic solutions to adapt and mitigate climate change impacts in the Red River Delta:

First, to everything is in smooth waters, should soon make good

propaganda and communication about the harmful effects caused by climate change and sea levels rising, to make all strata of society raise awareness of global disaster of climate change based on the community, because the work is only successful when people has implemented self-aware, knowledgeable and responsible to the world and the environment which they live.

Second, after all the problem of human resources is key and important, so to cope with climate change should take advantage of all internal and external resources (international cooperation) to create human resources for the response to climate change.

Third, combine the building risk management map to climate change and sea level rise in the Red River Delta with breeding of animals and plants to suit the weather and soil of the region. These plans must be established by the leading experts involved, such as environment, hydrometeorology, agriculture, health, transportation ... and necessarily should be evaluated by the authority. Building regulations tightly, strong enough and have the right to sanction institutions and individuals that violate the general provisions on climate change mitigation.

Fourth, actively improve flood control standards towards sustainable development, upgrading the dyke system to protect the right border of Red River, conducting closely and response to emergency situations happened to the dike system. Currently, the urgent needs of the global climate change mitigation, could combine risk management tasks with the task

of responding to climate change and sea level rising into the flood protection board at all levels.

4. At present, sustainable development became urgent demand in the development process in the world. Red River Delta is the second largest granary of the country, have contributed to economic- social development of the country significantly. Next period, to sustainable development, in economic- social development in the short and long term of every regions, including the Red River Delta, must pay attention to matters global climate change seriously. Trust and hope that, with determination, trying, the effort of all level sectors and people. Combined with the solution is

feasible to adapt and mitigate climate change impacts in the Red River Delta will set the stage for the sustainable development of the region in particular and the country in general ●

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