



CLIMATE CHANGE ACTUAL SITUATION, AND RISKS IN ALBANIA

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Abstract

As it is known Albania is a small country where the main economy is services, some industry and agriculture and there are many challenges in addressing the climate changes risks. Actually main problems are heavy floods and landslides. Also the weather is changing in Albania bringing increase of temperature, extreme weather, floods, drought, waves, rainfall, etc. This papers gives an overview of climate actual situation, and risks in Albania. It brings information on how climate change impact main resources and infrastructure in Albania. It gives also a general overview on sectorial impacts and vulnerabilities to climate change, the policy context and information regarding ongoing climate change recently development in Albania. The paper ends with conclusion and recommendations.

Keyword: Climate change; flood; fire; lanslides; pollution

1. INTRODUCTION

Albania is a small country with a population around 3 million. The economy is still very fragile and the most important sectors are services, industrial and agriculture. Because of not right implementations and policies the country faces many challenges in addressing climate change risks.

There are many factors which make the climate change as a priority for the future planning. Mains are energy supply system, agriculture sector, heavy floods, landslides, etc.

Climate change in Albania has started to feel in the second half of the nineties, becoming more evident in 1997, the year when winter came less, and in many areas with no snow. Usually, in the mountainous areas of Albania was snowing during winter (sometimes it ranged up to 2-3 meters in height), but in 1997 all winter was warm, and spring came hot, with a hot March. Since that year, the winters in Albania have become increasingly shorter and warmer, while the summers are made longer and hotter, sometimes with temperatures above 40°C. The hot summer accompanied by autumn flooding, have been made a yearly phenomenon.

The climate change impacts have already become apparent visually in coasts along the Adriatic where are crumbling across the length of the coast due to rising sea levels - in some areas, the sea has advanced to 50 m inland, destroying coastal forests and vegetation as well as enhancing the salinity of lagoons and fields along the coast. Sea level rise has led to serious injuries all over the Adriatic cost.

Many of the trees are dry and continue drying out of salinity growth. At other points, the amount of salt in coastal water wells has increased considerably, destroying the economy of these villages.

2. ACTUAL SITUATION OF CLIMATE CHANGES IN ALBANIA

According to the experts in the field the predictions of climate change will be temperature increases, the weather will be more extreme, with floods, droughts, heat waves, and rainfall will be decreasing in summer. Actually the protection of Albania's environment is behind the rhythm of economic development. The increased demand for natural resources and uncontrolled exploitation has caused significant damage to the environment. More than 30% of the forests in Albania is destroyed. Reasons are different but more important are: extension of agriculture land, cutting the tree for heating and construction. It is interesting to know that 90% of *energy production* is from hydropower, but from the other side agriculture dependent on irrigation. This brings a serious problem on the country's water resources. Considering this situation, the government is promoting other forms of renewable energy – such as solar energy and biomass energy. Because of the pollution of water resources and lack of insufficient wastewater collection and treatment, leaking sewers and waste dumps the *safety of drinking water* is becoming serious problem. The national objective has been to have 98% of people access to safe drinking water, but this target is still to far to be reached. Another problem, trying to be solve for a long time is *Sanitation*. In rural areas, only a small proportion of the areas with piped water supply is equipped with sewer networks. This situation is very critic and not well addressed from the authorities. One of the biggest pollution source is *waste*. For a long time has been a strong debates concerning this issue. Actually there are more than 35 hotspots around the country. Albania is one of the most vulnerable countries in the region to a changing *climate*. It is estimated that summer *rainfalls* will decline by about 10% by 2020 and 20% by 2050ⁱ. This will bring a big impact on energy production and agriculture with an estimated loss of 60% of power generation capacity. This situation will have a big social impact and affect poor and rural people because of their greater dependence on agriculture. Concerning the *hazards*, Albania ranks as one of the countries with the highest economic risk in the world. Actually around of 86% of its territory prone to two or more disasters. This situation gives impact on vulnerable family. The *floods* in 2010 and 2015, 2017 showed that Albania's national disaster preparedness is reactive rather than preventive and that investments are needed to develop and implement national and local measures to adapt to changing climate conditions and reduce risks from future disasters.

3. RISKS IN CLIMATE CHANGE IN ALBANIA

As many other countries, Albania is becoming increasingly vulnerable to impact of Climate changes. The most significant hazards related with Climate Change are: *Extreme temperature; Wildfire; Windstorms; Landslides; Drought; Floods*. From the sectorial point of view the most vulnerable sectors are: *Energy; Agriculture; Water resources; Forestry; Tourism and settlements*. The vulnerability is driven in part by recent extremes in climate variability but also by past practices, socioeconomic conditions, or legacy issues. Two sectors that are acutely impacted by these shifts in climate are *energy* and *agriculture*.

Increasing temperatures; Climate change is increasingly affecting the nature and life of Albania. Measurements show that the number of days with temperatures of 20 degrees Celsius has doubled and the number of tropical nights has tripled, compared to the perennial average. It is expected to increase by 1.5 degrees Celsius by 2050. Temperatures continue to remain high even in November, while the usual falls for the fall season are still far from perennial averages. Climate change has resulted in mild winters that has favored the growth of tropical plants in Albania and has made it possible to show mosquitoes in altitude over 400-500 m above sea level. The winter is relatively short and mild and wet in the vicinity of the coastal areas. The summer lasts very long and is hot and dry.

Forestry and Fires; Climate change has also increased the number and intensity of *fires* in Albania. The causes of frequent fires can be very high temperatures in summer, long-lasting droughts and melting of the snowfall in the mountains. Albania is one of the Mediterranean countries most affected by fires. It is thought that in Albania in the coming years, because the

average temperatures will increase coastal and southern areas, like Albania, will be always hotter and drier during the summer season, a season that will be extended even more over the years. Over the last two decades, the phenomenon of forest fires has increased in number and also in the size of the affected areas. Albanian forests are affected by forest fires especially at the end of spring and during hot and dry summer. The causes of these fires can be anthropogenic (human carelessness, burning pastures by shepherds, etc., and to a lesser extent, intentional or criminal fires) or natural (lightening).



Figure 1
Fire in Gjirokastra, Albania
2017

Source:

https://www.koha.net/uploads/koha.net/images/2017/July/09/auto_2C122206-0FBC-4CF7-A65A-8EE9583D2084_cx24_cy8_cw77_w1023_r1_s1499633335.jpg?v=2

Climate Change and Energy: As we said before, 90% of *energy production* is from hydropower. This brings a serious problem on the country's water resources. Considering this situation, the government is promoting other forms of renewable energy – such as solar energy and biomass energy.

Climate Change and Agriculture: Actually in Albania Climate change already started and this situation needs immediate, medium, and longterm solutions. Changes in precipitation, rising temperatures, and increases of natural disasters are forcing Albania to address these impacts in new and innovative ways and begin adapting to a changing climate. One way used is working with farmers to help better understand the consequences of these changes, and helping to mitigate many of the most serious consequences resulting from shifts in climate. Grape production, for example is expected to have a severe impact - falling to 21 percent in some areas. However, winter wheat production is predicted to improve across the country - as climate change is likely to result in a prolonged season of cultivation, higher temperatures; seasoned in autumn and winter, and greater precipitation and greater water availability during the season of cultivation.

Food security remains a major development challenge in Albania. On the other hand, irrigation water availability is largely restricted by the change of the climate. This will greatly aggravate the effects of climate change on crops - particularly crops with irrigation. Ensuring food security in a changing climate is an important and pressing challenge in Albania. As part of efforts to address the challenges of food security and climate change, a new approach to agriculture is developing. This new approach, known as "*climate-aware agriculture*", highlights the need for agricultural practices that can simultaneously increase productivity in today's climate, build resilience to climate change and reduce greenhouse gas emissions.

Land slides: Among natural disasters, flooding and landslide created the biggest economic damage to Albania during 1990-2014. Over the course of 24 years, around of 33.5% economic damage was caused by *landslid*. Albania is in urgent need for afforestation of bare surfaces from trees over the last two decades and the protection of existing forest areas from fires. Researchers claim that afforestation will protect the soil from massive earthquakes. According to experts, the level of soil erosion by rains has increased 12 times; there were 14 tons of ground for hectares and we have gone 180 tons of rubble for acres. (Figure 5).

Earth's instability in Albania comes mainly as a result of heavy rain or snow precipitation. Frequent slides (rock slides and cliffs or instant deposits) are often marked along the steep slopes close to national and regional roads, drainage channels, irrigation and other engineering works. Problems due to geological causes also have often occurred in engineering facilities, almost in any case lacked a geological-engineering study or rarely taken into consideration by designers or investors (the study has been done formally). Bad examples are Tirana-Elbasan highway where is a huge landslide, and where because of that the building of the highway is stopped (Figure 2, 3, 4).

Floods: The river system in Albania poses the greatest flood risk, because of the fact that during the November-March period, about 80-85% of the annual rainfall falls. In the last 40 years between 1980 and 2010, nine floods of large hydrometeorological floods were recorded, mainly in the northern area. About 86% of its territory is exposed by two or more natural disasters. Among natural disasters, flooding and landslide created the biggest economic damage to Albania during 1990-2014. Over the course of 24 years, 38.2 percent of economic damage was caused by floods and 33.5 percent, from landslide and 7 percent were damage caused by rapid floods. The remaining damages of about 20 percent are shared among the damages that have caused earthquakes, storms, fires, snow storms, etc. Since 2009, where floods have continued with high intensity, the total damage to net value created by the end of 2015 is estimated at about 200 million euros. Only from the rainfall of 6 January 2015 that created floods in some areas in Central and Southern Albania, the damage was estimated at about 15 million euros, of which about 9 million euros were created by the collapse of roads and bridges (Figure 6).

Rainfall: Researchers claim that almost every year rainfall is half the year before, droughts are added, and the rainfall trend is declining. They add that global warming and climate change threaten Albania from the western lowland, because with only 5 cm sea level rise there are flooded large areas of land close to zero or below its level. Albania does not affect the climate of the globe, but is undergoing the activities of other states. *"The part of our coastline is equal to or slightly lower than the sea level. So, if the sea rises, not with the 100 cm, 50 or 20 scenarios, but even if it rises to the minimum scenario currently taking place at 5 cm, then the coastal line penetrates the country down to Lezha - Mamurras road and up on the Fier - Rrogozhinë - Durres road. Our country is undergoing what is happening today in the world. Albania is a victimized country (S.Guri) "*ⁱⁱ*- "Albania has a level of rainfall of 1200-1400 mm per year. In areas such as Malesia e Madhe ranges 3500-4000 mm of rainfall per year. In areas such as Korça and Erseka, precipitation ranges from 800 to 900 mm per year. These have an uneven distribution during the months of the year. The most recent period of the year shows a decrease, while in the summer we have an increase of the drought period (P.Zorba)"*ⁱⁱⁱ



Figure 2 Situation of the area on 2005 before Highway construction. [Source: Google earth]



Figure 3 Slided area after the Tr-El highway constructed (2016) [Source: Hoxha E]



Figure 4 Actual situation (2018) of the slided area, Tr-El highway. [Source: Google earth]



Figure 5 – Landslides in Blinisht village, Reps [Source: <http://top-channel.tv/2018/03/30/rreshqitja-e-tokes-zhduk-nje-fshat-te-tere/>]

Shifting Coastline: The effects of climate change have begun to become apparent to Albania, where the coastal line is displaced inland with an average length of 50 meters, destroying the vegetation, the usable seaside for tourism, as well as rolling large areas of land. In some regions, the introduction of the sea into the earth is very seriously threatening the inhabited areas seriously by destroying the vegetation, the usable seaside for tourism.

In the multitude of studies on sea level growth, scientists have predicted that growth will range from 3 to 6 meters worldwide until 2100. So in five or six generations, Albania will face a sea that will grow in one meter. As shown on the map (Figure 7) entire areas of these areas, including inhabited areas and agricultural land, and beaches will be flooded. These floods will find their way into important segments of local and national roads. Sources of drinking water supply as well as many tourist accommodations and structures will be affected also.



Figura 6 Photo from flood in Shkodra, Albania, 2015 [Source: http://www.panorama.com.al/wp-content/uploads/2015/06/Permbytjet_Shkoder_243019784.jpg]

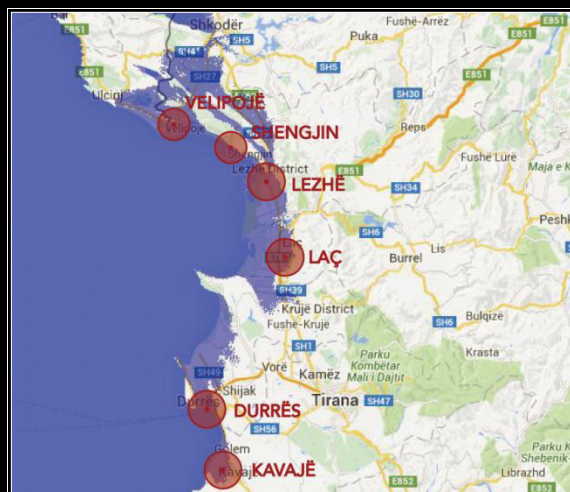


Figure 7 Adriatic areas in flood risk from the see level increased [Source: <http://agroweb.org/archive/fo/10/201601291623579001057.png>]

Risks in human health: This geographic shift (coastline) has led to the appearance of mosquitoes and infectious diseases spreading through this insect, such as hemorrhagic fever or Nile fever. Climate change has resulted in mild winters favoring the growth of tropical plants in Albania as well, while temperature fluctuations are undergoing drastic changes. All these changes like extreme warming, drought, fires, storms, floods directly affect human health. *Challenges in this area are:* capacity building to understand the health risks from climate change;

preparation of health systems to respond to threats to health; Climate-related emergencies management in health care institutions; Monitoring of air pollution to reduce respiratory diseases; improvement of alert mechanisms for infectious diseases; improving the health information system related to climate change. Over the last decades the evidence shows that there has been an increase in the prevalence of allergy from pollen in Albania, which appears in symptoms of polynomial and asthma in about 10% of the population with significantly higher prevalence rates in some countries, especially in the age groups new.

Humanitarian risk: Climate change is expected to cause and increase disasters. The humanitarian consequences of climate change have a wide, multisectoral impact as they affect people in low-income areas disproportionately. Poor people and communities are reluctant to seek emergency humanitarian aid, as they face an increased frequency and intensity of weather related hazards. Excessive heat poses a serious threat to the entire population, but special groups are more vulnerable. These groups include the elderly and preferably all individuals with reduced ability to take care of themselves, such as young and disabled children, those with pre-existing cardiovascular, respiratory and renal disease, diabetes, neurological disorders and psychiatric illness. Extreme weather events have direct and indirect health effects on people and indirect costs for the economy.

Discharging gases into the atmosphere: Albania is now rated by international institutes as a decarbonized country because of the closure of old metallurgical industries and not the release of gases into the atmosphere, but from the other it has damaged its forests and is not carrying out long-term investments in environmental conservation and development hers. Currently Albania emitted 2.76 tons CO₂ per capita which compared to EU 9.9 tons per capita make it the lowest country, but they are some new projects which projected to increase in the coming years, mainly from transport followed by agriculture and waste sector.

Informing the public: Albania is not a good user of meteorological and hydrological information, and according to researchers, officials and business companies underestimate scientific evidence in projects to protect nature with long-term plans. Awareness of the Albanian public about the dangers of climate and the environment is still not at the leve it must be.

4. ALBANIAN STRATEGY FOR ADAPTING WITH CLIMATE CHANGE

There are some existing strategies to adapt with Climate changes as:

- (1) National Strategy for Development and Integration 2015-2020, Second draft, 31 July 2015;
- (2) National Integrated Water Resources Management (IWRM) Strategy, draft, July 2015;
- (3) Albanian Strategy for Health System Adaptation into the Climate Change 2011-2021, October 2011;
- (4) National Strategy on Energy, draft, 2015 Environment Crosscutting Strategy (2015 – 2020);
- (5) Integrated Crosscutting Coastal Plan (draft) National Territorial Plan (draft).

The Albanian strategy for adapting the health system with climate change includes: Strengthening health services to improve their response to climate change impacts; Public awareness of the effects of climate change on health; Adapting the information system in order to detect the risks of climate change, in order to assess their effects on health in time; Encouraging scientific research on health and climate change; Strengthening of air pollution monitoring systems with special focus on particulate matter and ozone; Increasing the capacity to cope with health problems expected to be caused by heat waves and extreme cold weather; Improve the cooperation and integration of the health system into national emergency structures responsible for floods and fires, landslides and other natural disasters under the influence of climate change; Adapt and integrate surveillance and control systems for contagious diseases; Strengthen services for the prevention and management of health problems caused by

increased exposure to pollen; Strengthen monitoring and prevention of health problems arising from ultraviolet radiation.

Conclusions and Recommendations

Conclusions

- Considering all above results that Albania is seriously affected by the climate changes.
- Analysing the existing situation and actions taken results that the Climate Change impact it is not a high priority for the authorities.
- The awareness of the public it is not in the requested level.

Recommendations

- It is recommended to make a concrete and updated Plan of Action on climate change mitigation and adaptation across sectors;
- To support the development of a National disaster risk reduction strategy;
- To support the disaster early warning systems and the vulnerable groups living in areas affected by climate change;
- To enhance local capacities for sustainable forest management and protected areas and biosphere reserves;
- To support school, administrations, civil society organizations, youth and children in promoting environmental education, and developing initiatives aimed at natural resources preservation;
- To promote innovative technologies for renewable energy and integration of health and environmental;
- To support the regional cooperation.
- To support for enforcement of environmental legislation;
- To rehabilitate and increase irrigation and drainage capacities and the variation of crop varieties and optimize the use of fertilizers.

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ⁱ <http://www.worldbank.org/en/country/albania/brief/climate-change-in-albania>

ⁱⁱ Sazan Guri

ⁱⁱⁱ Petrit Zorba.