

# CLIMATE CHANGE: CAUSES, EFFECTS AND THE WAYS OUT

**Laura Bashir**

*Scientific supervisor: Nadiya Kostyuchenko Sumy State University, Sumy, Ukraine*

Climate is a significant and lasting change in the statistical distribution of weather pattern over periods ranging from decades to millions of years. It can be a change in average condition.

Based on the broadest scale, the rate at which energy is received from the sun and the rate at which it is lost will determine the equilibrium temperature and climate of earth distributed around the globe by winds ocean currents and other mechanisms to affect the climate of different regions.

It includes factors such as natural or forcing, meaning the natural forces that take place or occurring forces in the earth which include processes such as solar radiation, mountain building, the continental drift and the change in green house concentration. The variety of climate change feedback can either amplify or diminish the initial force.

The forces can be either internal or external. The internal are the natural processes within the climate system (e.g. the thermohaline circulation). External forcing mechanisms can be either natural (e.g. changes in solar output) or anthropogenic (e.g. increase in green house gases).

We can see the evidence of climate change in our everyday life.

It has been observed that the temperature has increased for about 0.89 from 1901 to 2012. An increase in the amount of rainfall in the mid latitude of the northern hemisphere has been observed since the beginning of the 20<sup>th</sup> century. The sea level has risen by 10 cm since 1900 and even more in the current decades. A large amount of glacier deposits are melting down all over the world (e.g. in the Alps mountains, Rockies in Africa, etc.) as well as the ice sheets in the sea (e.g. in the Southern sea or the Antarctic sea, etc.). Climate change has the following effects:

- *Increase in temperature.*
- *Changing in landscape.* As a result of climate change the landscape of different places has changed. For example, now there is a semi desert in northern part of Kenya meaning that the Saharan desert is expanding down to the South.
- *Rising of the sea level.* During the 20th century the sea level rose for about 15 cm (6 inches) due to melting of glacier ice and expansion of warmer seawater. Scientists predict that the sea level may rise as much as 59 cm (23 inches) during the 21st century, threatening coastal communities, wetlands, and coral reefs.
- *Increase of drought, fire and floods.* Higher temperatures cause a higher rate of

evaporation and more droughts in some areas of the world.

- *Change of ecosystems.* As temperatures increase, species may either move to a cooler habitat or die. Species that are particularly vulnerable include endangered species, coral reefs and polar animals. Warming has also caused changes in the timing of spring events and the length of the growing season.
- *Seawater is becoming more acidic.* Carbon dioxide dissolving into the oceans is making seawater more acidic. There could be impacts on coral reefs and other marine life.
- *Effects on human health.* There have been more deaths due to heat waves and more allergy attacks as the pollen season grows longer. There have also been some changes in the ranges of animals that carry disease like mosquitoes.
- *Crops are withering.* Increased temperatures and extreme drought are causing a decline in crop productivity around the world. Decreased crop productivity results in food shortages.

There are three basic ways to prevent the further climate change:

- 1) *To reduce emissions through efficiency.* That means to use less of the things that contribute the emission of greenhouse gases (e.g. using fuels that emit less CO<sub>2</sub> than fuels currently being used, using biofuels, hydrogen; using electricity from renewable sources, such as wind and solar).
- 2) *To reduce emissions through substitution.* That means to use something else which is less harmful to the environment (e.g. using bicycles instead of cars; using solar energy).
- 3) *To reduce emission through sequestration.* That means to use something to capture and store emissions (e.g. using new combustion system to prevent emissions of greenhouse gases from the industries; using more advanced methods of waste disposal).

Thus, climate change is an unpleasant situation. Every individual in his everyday life should take part in the prevention of further climate change for his own benefit and future of the whole world.

Economics for Ecology [Текст]: матеріали XX Міжнародної наукової конференції, м. Суми, 6-9 травня 2014 р. / Редкол.: Д.О. Смоленніков, Л.А. Кулик. - Суми : СумДУ, 2014. - 145 с.