GLOBAL CLIMATE CHANGE AND SECURITY THREATS

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Abstract

Climate change and the associated particularly pronounced warming of the Earth today represent a serious global environmental threat. The paper presents the issues of climate change as a source of threat to not only the environment but also a source of current security threats. The aim is to point out to climate change, which some forecasts with a negative impact on the environment are now actually happening. The paper focuses on the detection of gradual climate changes that culminate in the final verdict of the IPCC, to the impacts of climate change on the most serious ecosystems with reference to possible security threats such climate changes that may significantly affect the quality or safety of a person or existence of life on Earth.

Keywords: Climate change, environment, greenhouse effect, security threat

Introduction

> ***"Today, someone is sitting in the shade because someone planted a tree a long time ago."***
>
> ***Warren Buffett***

At the beginning of the "industrial revolution" no one knew that the burning of fossil fuels leads to the release of carbon dioxide (hereinafter referred to as CO_2). We were looking forward of the first steam locomotives, competed the one who will build the tallest building or plot a most effective weapon. We forgot, however, that all the energy required to be spent once. The energy that we take charge and whose enormous consumption brings us also threats in a form of nature destruction and the subsequent climate change.

The climate is gradually warming, melting glaciers and increasing the level of the oceans and seas. It is like a vicious circle that leads us gradually to destruction. Many coastal areas live in fear of their carcass. They never know when they may attack the water. Melting glaciers threatens not only

people but also flora and fauna. But also the regions which are without the seas suffer from floods and rising groundwater. By the world glide regular devastating storms that are the result of imbalances climate. These problems arise due to the increasing temperature and the amount of water and the atmosphere.

Given the current course of climate change and related extreme weather, this problem will be more likely to resonate well in the security field. Climate change will not affect only on the environment but mainly on the life and health of the population. The article approximated readers „causes" of creation of global warming, its impact on the most serious areas of the ecosystem and the subsequent potential security threats when filled with doomsday scenarios climatologists. In conclusion, several solutions are presented for a postponement of climate change on the level of the individual as a full citizen of the planet Earth.

According to the British aid agency Oxfam, the number of natural disasters due to global climate change the world for the last twenty years has multiplied (from 133 to around 350 per year). The number of people affected by natural disasters pace did not grow in 2007 went up by 68 % to 254 million people (Oxfam, 2014).

Every individual, man or animal, has an intuitive ability to sense impending danger. Individual senses when it threatened its security and existence. His behavior is influenced by inhabiting and he takes measures to eliminate the threat and subsequent damage. Lack the intuitive ability of some individuals to take action to eliminate security threats. This condition can have two reasons:

1. Climate change and its consequences resulting security threats do not pose a serious risk to individuals.
2. The individual by his mental ignorance and convenience of living loses its ability to assess the real danger and take action as necessary.

Climate change and the greenhouse effect

Global warming is an indication of the complex and not fully understood process, which resulting in an increase in the average temperature of the oceans and the atmosphere in the short term (a few tens to hundreds of years) in the scale of the entire planet. In the strict sense of the term is used to observed climate change at the end of the 20th century. Although the debate on global warming often focus mainly on temperature, climate change may also bring changes in other geographic features, including rising sea levels, extreme rainfall and other negative aspects. These changes can cause various destructive phenomena through floods, droughts, intense heat and reduce agricultural yields, to extreme changes in climatic conditions causing the mass extermination of the population. So even if

humankind immediately drastically reduced carbon dioxide emissions, if all the cars stopped, if it stopped all oil, gas and coal plants and stop would burn forests - even in this unrealistic scenario, warming continued for several decades until it finally ceased (Engeln, 2007).

In 1958 the American climatologist Charles David Keeling be first to prove an evidence of increased CO_2 levels. He found that its concentration in the atmosphere is 315 ppm (parts per million: one million litres of air contains 315 litres of CO_2), while in the 19th century, it was measured only about 280 ppm. This represents an increase of more than 12 % (Engeln, 2007).

Scientific analysis shows that CO_2 concentrations are rising every year and clearly come from burning fossil fuels such as oil, gas and coal. These theories have the "naysayers" who do not deny the increase of CO_2 concentration, but argue that the warming is natural and is caused primarily by increased solar activity.

The increase in CO_2 and other greenhouse gases like methane in the atmosphere contributes to its heating process. This raises the so-called greenhouse effect when solar emission freely passes through the carbon dioxide in the atmosphere and transmits the Earth's surface. When the earth objects reflected and directed into the atmosphere, some of the heat accepts CO_2 and reflecting it back into the air and it is heated. Solar energy will stay trapped in the form of heat inside the greenhouse (Hofierka, 2012; Kanuk 2009; Kanuk et al., 2013).

Historically, the problem of global warming is already reflected in the Paleogene, when it was a so-called Tertiary climatic variation. Paleogene (65.5 to 23 million years ago) is older Tertiary stage. Early Paleogene period, which lasted about ten million years (prior to 65.5 to 55.8 million years ago) is called the Paleocene. In the end, 56.3 million years ago, the climate has seen a sharp spike, which translates into a significant global warming. Today this period, lasting anything between 100 thousand to 200 thousand years, is called the Paleocene-Eocene thermal maximum (PETM). The average temperature over the previous period is increased by 3-5 °C and atmospheric carbon dioxide content increased 2.5-fold. Of course, that such a change significantly affected ecosystems at that time.

At the beginning of the PETM temperature soared by a few degrees and according to some studies, the contents of atmospheric CO_2 climbed to 1,700 ppmv. It seems that even the warmest equatorial ecosystems that did not mean any disaster. Like the later emerging and equally warm, but long-term Eocene optimum when CO_2 fluctuated between 1,000 to 2,000 ppmv (Fig.1) (PETM, 2014).

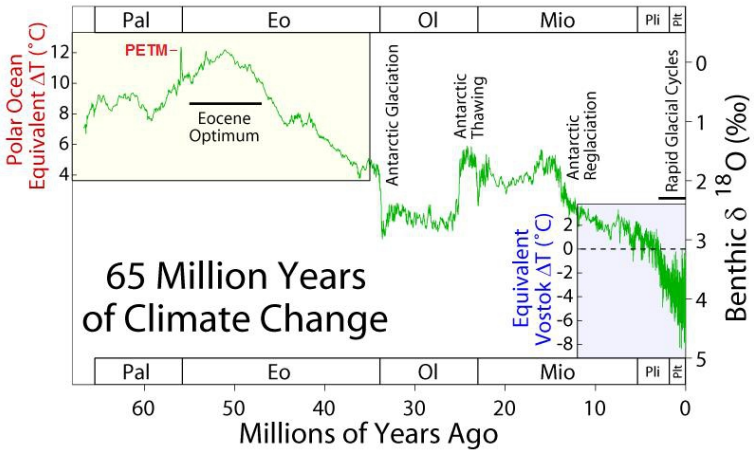

Fig.1: PETM in Paleogene (Source: PETM, 2014).

Temperature rose steadily in the PETM due to the slow release of greenhouse gas (around 2 billion tons per year). Today, fossil fuel burning is leading to 30 billion tons of carbon released into the atmosphere every year, driving temperature up at an incredible rate (Fig.2) (PETM, 2014).

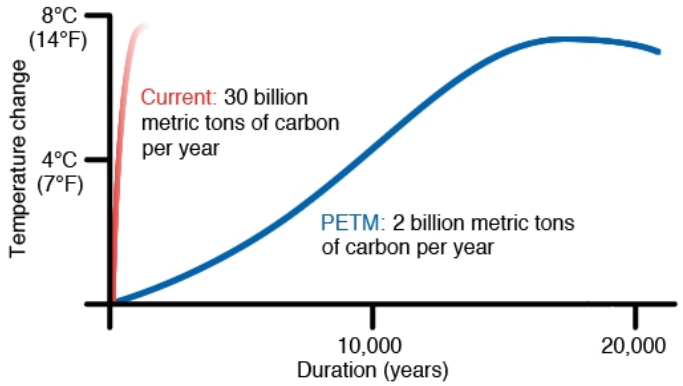

Fig.2: Rate of temperature change today (red) and in the PETM (blue) (Source: PETM, 2014).

The widespread temperature increases are considered to be an aspect of global climate change (Fig.3). Average global temperature during the period 1880-2009, compiled from various data sources by NASA. Zero in this figure corresponds to the average global temperature for the period 1961-1990. The red curve is a 5-year average that compensates the year-to-year variability. All measurements are imperfect for a variety of reasons, including accuracy limitations of the instrumentation, and sampling uncertainty from incomplete data coverage. The uncertainty analysis for this dataset gives an estimated increase in the average global temperature over the 20th century of 0.57 ± 0.17 °C, where ± 0.17 °C is the uncertainty in the estimate at the 95 % confidence level (Rohde, 2012).

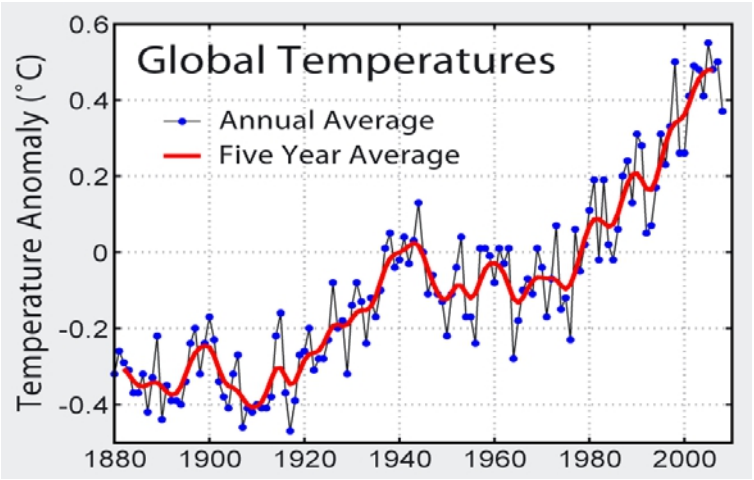

Fig.3: Average global temperature during the period 1880-2009 (grey lines with blue points: annual average, red curve: 5-year average) (Source: Rohde, 2012).

Long-term evolution of global average atmospheric temperature for the period since 1880 to 2012 is described in Fig.4. The abnormalities were recorded during 1961-1990. Green curve represents the evolution of ocean heat content in the layer 0-800 m in the period since 1951 to 2012 as deviations from the average from 1951 to 2006. Blue curve represents the growth of sea level rising, the curves at the bottom represent the 9-year moving average global temperature and ocean heat content (Pecho, 2013).

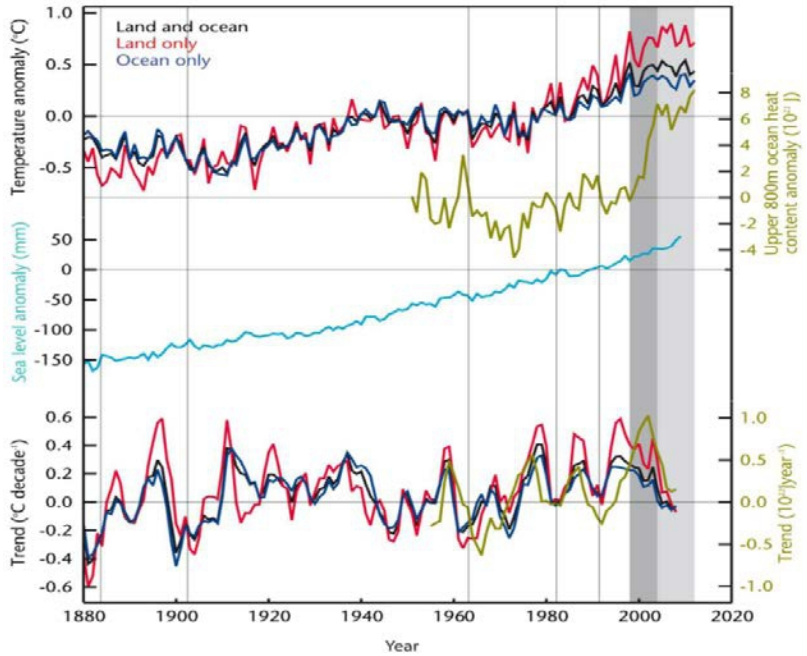

Fig.4: Long-term evolution of global average atmospheric temperature (1880-2012) over land (red); ocean (blue); land and oceans combined (black) (Source: Pecho, 2013).

In the stratosphere, of over twelve kilometres, ozone acts as a layer protecting life on the globe. Ozone almost completely absorbs strong ultraviolet radiation and protects against cancer, for example, or changing the genetic organisms. In 1974, Americans Frank Sherwood Rowland and Mario Molina Jose described a mechanism which caused unreal apprehensions worldwide. Both chemists investigated fluorine and chlorine hydrocarbons (hereinafter FCLHC). It was the compounds, which then are used as a propellant in sprays or coolants in refrigerators and air conditioners. About 500,000 tons FCLHC each year escaped into the atmosphere only from spray. The researchers found that chlorine atoms under certain conditions ozone attack. Single chlorine atom can destroy up to 100,000 ozone molecules. In 1984, researchers published the results of their measurements over Antarctica with the astonishing conclusion that the South Pole is actually high speed losing the ozone layer (Bischoff, 2007).

Dutch chemist Paul Josef Crutzen, including Nobel Prize laureate in chemistry and the World Ozone for "outstanding contributions to the protection of the ozone layer " with Frank Sherwood Rowland and Mario Molina Jose in 1986 figured out why the Antarctic inexorably losing ozone layer. Crutzen explained that at the end of the polar night, when once again begin to shine the sun's rays, takes place on the surface of ice crystals reaction. This reaction excluded from FCLHC a large number of chlorine atoms and these then start of ozone-destroying ozone molecules. This has resulted in violations of the ozone layer in the South and partly at the North Pole. The results of these investigations also have political consequences. In 1987 the European Community and 25 other countries signed the Montreal Protocol to halt the production of FCLHC (2030 to be around the world completed their production). Emeritus Professor Crutzen also came with a proposal released to the atmosphere of sulphur, which is converted to sulphates and then reflect the sun's rays and ultimately thus impede the Earth warming (Bischoff, 2007).

The fact that the environmental protection promotes economic growth is underpinned by a number of different studies. Specific knowledge, however, the political practice of enforced only slowly. Another new study demonstrates the irreplaceable importance of the environmental policy on the economy. The Potsdam Institute for the Environmental Research, under the authority of the German Government has calculated what the economic consequences of a change of the environmental objectives of the European Union (EU), had by 2020 reduced CO_2 emissions by not 20 % but 30 %. The result would be the formation of up to six million new jobs in the EU and the average economic growth in the European area would increase by about 0.6 % per year. Only in Germany alone would by investing in the environmental protection, the unemployment rate fell by almost 3 % (GEO, 2011a).

Another view is of the study, whose creator was a former World Bank chief economist Sir Nicholas Stern in 2006. Nicholas Stern in his study preferred the view where by the influence of direct and indirect consequences of climate change, the global economy would fell into the greatest recession in modern history. At the same time, however, he adds that if we invest each year only 1 % of global GDP, for example, in new technologies to reduce CO_2 discharges, it will be the worst effects of climate change avoided. Similarly, expresses the 400 experts of the Intergovernmental Panel on Climate Change (IPCC), which operates since 1988. In the agreed period IPCC publics report on the state of climate change. For example, in 2007, presented in 2000 IPCC scientists from its third evaluation report, according to which the greenhouse gas emissions by 2015 to stabilize the global warming does not exceed the value of 2°C (Engeln, 2007).

Light of the world already partly also saw the Fifth IPCC Assessment Report on Climate Change, part of which was published on 9/27/2013. In it, researchers say with 95% confidence that the temperature rise on the Earth is the result of human activities (IPCC Verdict, 2013). Perhaps the greatest success of the "battlefield" against climate change was the adoption of a supplement to the United Nations Organisation (UNS) Convention on Climate Change as the Kyoto Protocol. It happened in Japan in 1997, where 141 countries around the world committed to reducing emissions of carbon dioxide and five other greenhouse gases. Nevertheless, the protocol did not sign the major emitters of greenhouse gases U.S. (the largest) and Australia.

So far, probably the most important climate conference “Fifteenth session of the Conference of the Parties (COP 15)”, held in December 2009 in Copenhagen, where the results achieved by the Kyoto Protocol[1] should be evaluated. The main objective of the summit was to reach a consensus on greenhouse gas reduction targets for the period up to 2050 and the border ceiling increase in global interior temperatures (or 1.5°C or 2°C). During the summit, but "leaked" information to the media that the current promises of warming 2°C do not reflect the commitments made and that the existing ones heading planet warmed by 3°C. This report only added fuel to the fire for over 100,000 protestors in the streets of Copenhagen. Those with their slogans and banners called for negotiators to take the necessary measures to prevent global warming. Emotionally impressed by the speech of Head of Delegation of Tuvalu, who tearfully appealed to the physical survival of his country depends on the will of other countries to take the necessary measures (COP15, 2009; EurActiv, 2010). The output of nearly two-week conference

[1] Fifth session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP 5), December 2009.

is called "The Copenhagen Treaty", under which individual countries to take measures to prevent global warming below 2°C. The agreement does not define any emission commitments for 2020 and even long-term goals and vision for 2050. This means that the voice of the people entrusted with thousands of demonstrators, not heard. There were no major commitments in terms of reducing greenhouse gas emissions.

In total, the most important and biggest climate conference failed to meet the expectations of the current inhabitant. It can be said that the victory achieved industry giants led by the U.S. and China who do not want to give up positions of power at the expense of climate change. Nevertheless, many developing countries insist on fair access in atonement historical responsibility of developed countries and changing their lifestyle. Their applications have been partially fulfilled by the promise of billions of subsidies to combat and cope with global warming.

The last climate conference in Qatar, however, brought new issues to the wind. The present countries agreed that a second control period of the Kyoto Protocol does not expire until 2020. To these countries have been also added Australia, but the U.S. and China, as the largest emitters of greenhouse gases, the protocol again refused. To the second report do not also added Russia, Canada and Japan. Together so the cooperating States accounts for only 15 % of the global CO_2 emissions (iDNES, 2013).

Affected ecosystems

Glaciers and oceans

We now know that during the known Earth's history to us here had many long ice ages. First glaciation began about 2.3 billion years ago, the last Ice Age ended about 11,000 years ago. This was followed warming, which predicted settlement of northern Europe to modern man. The consequences of global warming is probably most apparent at the poles, where even a small warming can melt huge masses of ice cover and unduly affect the natural environment, life cycles. Satellite measurements of ESA and NASA signed up during the Antarctic spring at heights between 13 and 21 km above the Earth, the disappearance of almost all ozone. The ozone hole, which was larger than the entire South America, is stretched over an area of 28,000,000 km square (Bischoff, 2007).

However, most climate scientists concerned that the glaciers at the poles not melt gradually, but in some circumstances could melt rapidly and uncontrollably. The cause of such a sudden thaw could be changed so called "albedo" as the ability of the Earth's surface to reflect sunlight. Ice and snow reflect incident solar radiation almost completely (even more than 90 %), while the Earth's surface and oceans for the most part of sunlight absorbed (reflected only 5 % to 25 %), and while heating up. The ice rinks are

therefore smaller, the hotter it is in their ambient. This means that the melting process is even faster (Engeln, 2007).

During summers, Arctic sea ice melts at the edges and the polar ice cap shrinks, then during winters there is freezing and growth at the edges. Fig.5 compares the summer Arctic sea ice minimum in 1979 (red) with the sea ice minimum in 2005. Since 1979, more than 20 % of the Polar Ice Cap has melted in response to warmer air and ocean temperatures. This melting does not contribute to a rise in sea level because it is ocean ice that was already contributing to the sea level before it melted. Disappearing sea ice is also causing the loss of coastal villages to erosion that did not previously occur because there was sea ice rather than open ocean on the coast. Land-based ice, including the Antarctic and Greenland ice sheets and mountain glaciers, does contribute to sea level rise when it melts because it is new water added to the oceans (WGMS, 2009).

Fig.5: Comparison the summer Arctic sea ice minimum in 1979 (red) with the sea ice minimum in 2005(Source: WGMS, 2009).

The mass of glaciers, which is the total amount of water they contain, is a combination of the area of the glacier and its average thickness. The World Glacier Monitoring Service (WGMS) oversees annual reporting on the "mass balance" of over 90 glaciers worldwide. Mass balance is the net gain or loss of mass in units of "mm w.e." (millimetres of water equivalent), which is the average thickness of ice that was gained or lost if it was melted. Fig.6 shows the average mass balance for all reported glaciers (black) and for a subset of 30 reference glaciers (red) for 1980-2008. Over this time period the glaciers on average lost an amount of mass equivalent to a thickness of 12,000 mm (12 metres) of water, and the loss rate (slope) has been increasing since the mid. 1990s. This water ends up in the oceans and contributes to a rising sea level. A particularly distressing aspect of disappearing mountain glaciers is that they are the source of water for billions of people in various parts of the world (WGMS, 2009).

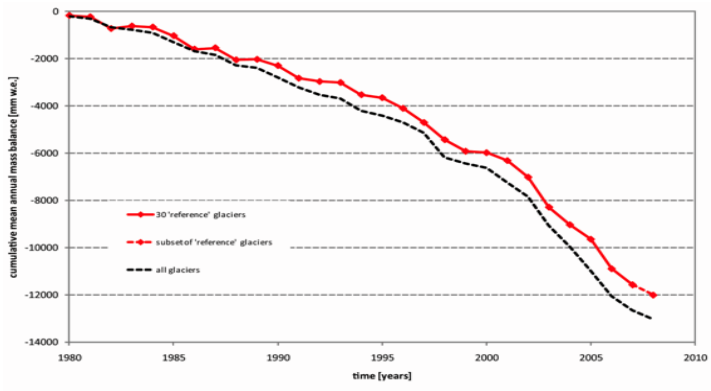

Fig.6: Arctic Sea Ice Extent: 1979-2005 (Source: WGMS, 2009).

Melting all glaciers, which are found in Antarctica and Greenland, on a base of calculations would cause rising the world oceans level of 60 to 80 m, while melting the glaciers on all other continents only about 0.5 m. By contraries, melting ice of non-continental origin (for example in the Arctic Ocean), which floats on the ocean level, its level does not increase. Archimedes' principle applies here as in the case of freely floating ice cubes in a glass with a drink. Therefore, it is quite curious, as some experts on climate change interpret climate nonsense that the melting of floating ice causes the oceans level rising. The world seas and oceans level rising is due to the melting continental glaciers (Fig.7) (Kravcik, 2010).

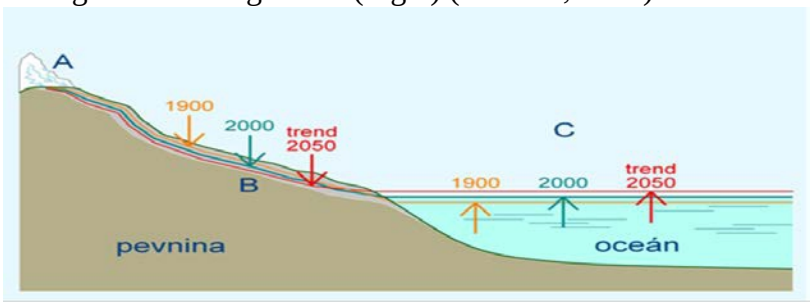

Fig.7: Impact of melting glaciers (A) and reduced water supplies across continents (B) to rising sea levels (C) (Source: Kravcik, 2010).

Changes in permafrost, as permanently frozen soils or water parts of the planet, are another indicator of global warming. Temperatures will increase the area of permafrost areas diminished. When heating the permafrost, which accounts for nearly a quarter of the Earth's surface, the carbon released into the atmosphere (even in larger quantities than in deforestation) and that binds dangerous methane. Methane itself is doing so many times more harmful than CO_2.

Rising sea levels are usually attributed to the melting glaciers effects of global warming. Various information sources have diverging opinions on

the degree of rising sea levels in the 20th century, but most of them indicate the number of 10 cm or more, which is approximately 1 mm per year. At the beginning of the 20th century, the rate of rising levels probably did not exceed 1 mm per year, at the end of this century, however, greatly exceeded 1 mm per year. Currently, the rising sea levels for the year are up to 2.4 mm.

The Colorado University Sea Level Research Group periodically evaluates the global mean sea level (GMSL) (Fig.8). GMSL was derived from tide gauge measurements taken since 1870 (dark blue line). The light blue region is the range of uncertainty in the measurements. The tide gauge data are consistent with very accurate satellite measurements of GMSL since 1993 (red line). Sea level has increased by about 240 mm since 1870. Since 1993, sea level has increased by almost 60 mm at a relatively constant rate of 3.2 mm/year, which is over 50 % faster than the average rate of sea level rise over the 20th century. The sea level increases when new water is added to the oceans from the melting of ice on land, and sea level decreases when evaporated water from the oceans is retained on land by the growth of ice sheets and glaciers (as during a glacial period). Sea level is also affected by the temperature of the water through "thermal expansion", where warmer water takes up more volume than cooler water, so the oceans expand in response to an increase in temperature. A warmer atmosphere from global warming leads to a warmer ocean and sea level increase, after a time lag for the heat transfer and mixing to deeper levels to occur (Nerem et al., 2010).

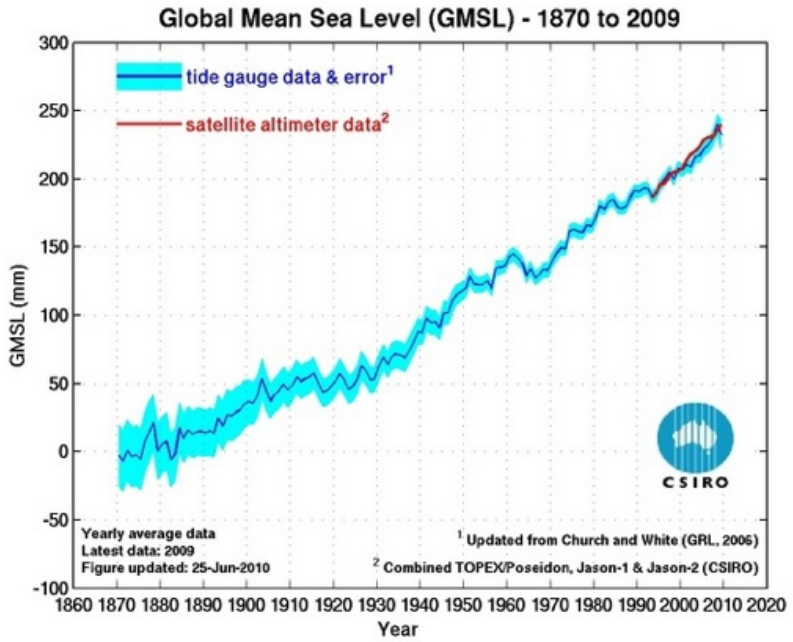

Fig.8: GMSL increase: 1880-2012 (Source: http://www.cmar.csiro.au/ sealevel/downloads/CSIRO_GMSL_figure.pdf).

Rainforests

The lungs of the planet, as many call them, cover about 2 % of the Earth's solid surface. Rainforests lie in the tropics, where is the constant temperature and high humidity by influence of rainfall. They are located in Africa, Asia, the Commonwealth of Australia, South and Central America and some Caribbean islands known as Belize. For life on the planet Earth the rainforests are extremely important because they purify the air by recycling the greenhouse gases and prevent soil erosion. In the last century, however, the majority of these forests felled and this natural energy factory continues to disappear. It is assumed that every minute on the planet felling 2,000 trees. In this respect most vulnerable are Asian rainforests when in India in recent years have come 10 million hectares of the rainforest through cutting timber and fires. For comparison, in Africa are destroyed 4 million hectares of the rainforest per year. The largest rainforests are in South America, however, where the threat lurking in the construction of roads in the Amazon basin. Deforestation in the Amazon in the years 1984-2012 is shown in Fig.9. The grubbing rainforests in Brazil in 2013 presents Fig.10.

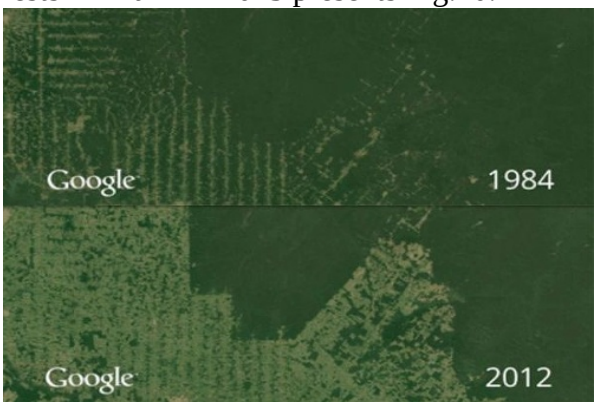

Fig.9: Deforestation in the Amazon
(Source: http://www.topky.sk/cl/13/1349182/Zem-sa-meni-zavratnym-tempom--FOTO-jej-premeny-za-poslednych-28-rokov-).

Fig.10: Grubbing rainforests in Brazil in 2013
(Source: http://www.sme.sk/c/6011625/tempo-klcovania-dazdoveho-pralesa-v-brazilii-sa-zrychluje.html).

Equally important are the mangrove forests which form at the coasts so called the protective ramparts and prevent soil erosion and thus help to better to withstand wind or tsunami. Nevertheless, since 1980 has given way to the worldwide an estimated 25 % of these important ecosystems due to construction of dwellings and shrimp farms (Dech, 2009). The young planting mangroves in the Sundarbans mangrove wildwood in the Bay of Bengal is in Fig.11.

Fig.11: The Sundarbans mangrove wildwood in the Bay of Bengal (Source: http://www.quido.cz/priroda/sundarbans.html).

The main result of the absence of forests, which greatly affects climate change, is the subsequent absence of photosynthesis. Green plants so do not change CO_2 into oxygen, which contributes to global warming. Trees are also extremely sensitive to climate change because heat affects the absorption of water. The most at risk are coniferous forests in the far north, a significant risk of loss, which would result in the extinction of many species, including reindeers. For example, on the Kenai Peninsula in Alaska for several years insects, which were due to higher temperatures optimum conditions for life, destroyed 1.6 million hectares of spruce forest.

Sources of drinking water

Half of the population of EU is currently available to less than 1,700 m^3 of water per capita per year. By 2080 will be another 14 to 38 % of the population in the Mediterranean area affected by water scarcity. These are just some projections facing us warn scientists and experts increasingly. The fact is that dry summers and also increasingly dry winter, gradually causing the lack of this precious liquid. To do this, we still add ever-increasing chemical pollution of the seas, rivers, water reservoirs etc. and horror we find that drinking tap water may not always be obvious (Kavan & Krocova, 2013).

Since solar radiation is enormously powerful, its impact felt directly also large bodies of water, serving as sources of drinking water. In 2007, researchers found an increased water content of bromine, which is formed by the action of strong light from the bromide and ozone presented in the water strong carcinogen. In America, on detection placed on the Ivanhoe reservoir levels at Silver Lake in Los Angeles three million black plastic balls that are usually placed on the water surface at airports to linger on them birds (Fig.12) (GEO, 2013). Personally, however, we believe that the risk of bromides solar radiation only exchanged a risk of phthalate migration from the plastic balls.

Fig.12: Black plastic balls on the water reservoir Ivanhoe on Silver Lake in Los Angeles (Source: http://www.trendite.net/2008/06/11/los-angeles-drops-400000-plastic-balls-into-ivanhoe-reservoir-to-block-carcinogen/).

Extreme weather

In recent years, European winters are milder and wetter and the continent is experiencing increasingly frequent periods of summer heat. For example in 2003 when between Helsinki and Athens killing effects of climate change estimates some 35,000 people, the experts consider on the one of Europe natural disasters since time immemorial. According to the World Health Organization (WHO) currently 150,000 deaths per year caused by climate change, i.e. heat waves and more frequent infectious diseases caused by intensive and rapid propagation of disease agents (Engeln, 2007; GEO 2011b).

When in August 2005 struck full force of Hurricane Katrina on the coast of New Orleans in the U.S., for damages caused $ 125 billion, making it the costliest natural disaster in U.S. history (Fig.13). Tropical storms because massive power supplies warm water of the oceans, so the links to global warming are justified (SCIENCE, 2005).

Fig.13: Hurricane Katrina in 2005
(Source: http://hurikanyatornada.webnode.sk/hurikan-katrina/).

Security threats of climate change

British consulting firm Maplecroft addresses issues of global risks. To facilitate future investment decisions of companies this undertaking created so called Index of sensitivity to climate change "Climate Change Vulnerability Index" (CCVI), which is based on 42 factors such as population growth, rising sea levels and the performance of the political system. Evaluated was the sensitivity of 170 countries on climate change in the next 30 years. The message is clear. Climate change threatens the strong South Asian countries, namely extremely populated areas with high rates of poverty. The highest risk of the environmental disasters, but also social and economic crises are for countries Bangladesh (1st place) and India (2nd place). African countries Madagascar (3rd place) and Mozambique (5th place) are equally at risk. Less risk arises for countries like Norway, Finland, Iceland, Ireland or Sweden (GEO, 2011a).

According to many climate models, which describe areas suffering from drought, the ones in the future offended. In the Mediterranean, for example, believed that southern Spain, where rain is already a rarity, is gradually converted into the desert. If the temperature between Tel Aviv and Gibraltar only increased by 2°C, according to the WHO scenarios to 2060 it will cause tremendous changes. Will be less rain annually and will take longer to dry, so almost 40 % of the crop dries. Deserts will expand and forest fires will be frequent (Engeln, 2007).

Warming seas and oceans has resulted in higher wind speeds in tropical storms. They are giving that a longer durability. Already in mid-2005, a team of scientists from the U.S. Georgia Institute of Technology published an article in the prestigious journal Nature. It sets out the results of their scientific studies, according to which for the last 35 years has doubled

the number of tropical storms with high destructive power. An example would be the already mentioned Hurricane Katrina (SCIENCE, 2005).

According to the latest statistics on global natural disasters due to climate change so processed "green" international company Carbon Central Network (CCN) are prognoses unflattering (CCN, 2014):

- For the last 100 years the temperature has increased by 0.7°C - 1.5°C.
- 2009 was one of the five hottest years since 1850 and it was assumed that only with a moderate El Nino phenomenon, the year 2010 will break the record. - U.K Met Office.
- 2010 was with 1998 is the hottest yet.
- 18 countries experienced record temperatures so far in 2010.
- World Meteorological Organization announced that 2000-2009 was the warmest decade with 8 of 10 hottest years 10 hottest years now, have been years in the period after 1990 until now.
- It is assumed that with continued warming will be 100 years global temperature at the level it was at the end of the last ice age 15,000 years ago.
- At present, the world ocean levels rising 50% faster than in the last century.
- Global warming is already having an impact on agriculture and biodiversity. Expected 82 % decrease in the production of corn, cotton and soybeans provided these scenarios.
- According to the annual reports of U.S. EPA (U.S.Environmental Protection Agency) and U.S.GS (U.S.Geological Survey) and NOAA (National Oceanic and Atmospheric Administration) the most wet Atlantic coastal countries will be lost from New York to North Carolina, where the world ocean level rises of one meter or more.
- By 2100 it is projected to increase sea levels by 18 to 59 cm, mainly due to melting glaciers.
- During 2008, Arctic ice melted 34 % more than normal. Over the past 5 years in Greenland increased by 70 % of the territory, which melts.
- According to NOAA Arctic Glacier has lost since the mid -70s on the part of himself twice the size of Texas. Arctic summer may be the middle of this century without ice, not to the end of the century, as originally planned.

Probably the most current information on the state of the Earth provides us with the last 5th Comprehensive Assessment Report of IPCC, which partially disclosed principals are summarized in the following points (IPCC Verdict, 2013):

- Warming of the climate system is unequivocal. Global surface temperature has increased since 1880 by about 0.8°C. Increased

concentrations of greenhouse gases, warmed the atmosphere and the oceans, lost the amount of snow and ice, rising oceans level.

- It is extremely unlikely (i.e., at least 95 % certainty) that human' activities were the dominant cause of the observed increase in surface temperature over the last 60 years. CO_2 concentration in the atmosphere has risen in consequence of human activities since 1750 by about 40 %, and almost entirely due to the burning of fossil fuels and deforestation.
- Each of the last three decades was a little warmer than the previous one. Last 15 years, but warming slowed, which can be attributed to fluctuations in natural cycles such as El Niño and the cooling effect of volcanic eruptions and reduced solar activity.
- If there is a significant reduction in greenhouse gas emissions, global average surface temperatures could be limited to 0.9 to 2.3°C compared to pre-industrial levels and the rise of sea levels at the end of this century at 30-50 cm compared to 1986-2005. However, without taking any measures it is 62 % chance that by the years 2081 to 2100 the temperature could be by more than 4°C above pre-industrial levels.

The environmental sector is also notable due to the presence of two peculiar agendas: political and scientific. Although these agendas overlap and affect, their common aim should be to protect the environment. Scientific agenda authoritative works on the principle threat assessments for the purpose of securitizing and de-securitizing steps. Political agenda addresses the formation of public awareness of security activities and reallocation of shared resources for the successful resolution of this issue. However, there sometimes disputes about which types of security threats requiring immediate action that would suffice only politicize (Buzan et al., 2005; Kazansky, 2013; Kriha, 2011; Pana, 2012).

These, in our opinion sometimes artificially contrived disputes often raise the richest world companies like Shell, Monsanto and other steel, petrochemical, pharmaceutical and other companies in an effort to downplay the primary threats to the greedy profit. Such companies often pay confusing or even misleading studies, which oppose to the scientific empirical studies. Their paid studies and media daily convince us of the uniqueness of their products and the necessity of buying them.

What can we do?

- We buy wood products only from renewable trees and use recycled paper and support conservation projects.
- We limit buying plastic products and products packaged in plastic container.

- We limit traveling by car (if necessary, to share about seats with friends) and turn off lights and use energy efficient appliances.
- We remember that the cheapest and best energy is that which is not consumed.
- Water for watering gardens we gather its capture during the rainy season and in the gardens we make use of drip irrigation.
- Before bathing we prefer less demanding showering.
- We do not overheating our households and favourite series on TV can be viewed in the warm-up-suit or under a rug.
- In the garden and around the homes we use less stone and concrete, which absorbs the heat and so warm the surroundings.
- In our neighbourhood we plant in trees or bushes that to will help clean the air and they will provide to us a pleasant shade and to birds provide needed shelter.
- We help to the various "enviro" organizations to boycott laws against nature and to discover free dumps and support the enviro-organizations at international activities by our mail voice.

Conclusion

Security threats of climate change today, clearly knocking on the door. Whether we will describe them according to the theories of Buzan and Bischoff or scientists of the IPCC, climate change do not stop. As the most leaders and powerful companies of the planet will not be willing to share and invest in new programs, a responsibility for the Earth remains in the hands of ordinary consumers. Examples include rainforests, most of which are located in the developing countries that are indebted to the rich countries. On debt repayments the developing and poor countries often use the funds obtained by cutting timber from wildwoods. The solution may be so called swaps - the debt for nature conservation. The creditor will forgive the debt, unless the debtor agrees to nature conservation. An example would be Belize that its debt is exchanged with the U.S. For detachment from plastic, chemicals and other pollutants that are daily emitted to the entire ecosystem and our bodies, there is a simple solution. As individuals, we still have the choice to live our life in environmental knowledge. Simply written, if we stop buying, they will stop to produce and destroy.

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