

## CLIMATE CHANGE: THE GENERAL CLIMATE WARMING

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**Abstract.** The present work presents a climate change namely the global warming. In this regard we analyze aspects that have resulted from the recent international conference held in Paris from 30.11.2015- 12.12.2015. Thus is underlined the most important aspect, namely the reducing of global warming below 20°C (360F) until 2100 and the allocation for this purpose, an amount of 16.5 trillion dollars until 2050 (to the Environmental Fund), money directed especially to poor countries. Gradually will give up the intensive industries generating pollution through emanations, especially CO<sub>2</sub> and other toxic gases in favor of friendly environmentally energy sources (solar, wind, geothermal etc.). It also mentions that all the agreements signed by the 195 countries participating in the conference are not binding.

**Key words:** Agreement, climate changes, global warming, toxic gases, Paris.

### Introduction

The United Nations Climate Change Conference held in Paris (France) from 30 November to 12 December 2015. It was the 21st annual session of the Conference of the Parties (COP 21) to the UN Framework Convention on Climate Change US 1992 (UNFCCC) and the 11th Session of the Meeting of the Parties (COP 11) to the Kyoto Protocol in 1997. The objective of the conference was to achieve a universal legal agreement on climate mandatory in all nations of the world. According to the organizing committee at beginning of key talks expected outcome was an agreement to set a goal of limiting global warming below 2°C above the pre-industrial levels. In the version adopted by the Paris Agreement, the parties will "continue efforts" to limit temperature increase to 1.5°C. The limitation by 1.5°C temperature increase requires zero emissions between 2030 and 2050 according to some scientists. China's participation, due to the efforts of the Obama Administration and Secretary of State John Kerry, led the Conference in Paris and other reluctant countries that have signed the agreement between the parties.

### Discussions

In Paris (France) for 13 days (11.30.2015 – 12.12.2015) was held the International Conference on climate change and especially the adverse effects of global climate warming phenomenon. 195 countries have succeeded - after much debates - to reach an agreement - a document resulted in only 12 pages - pledging

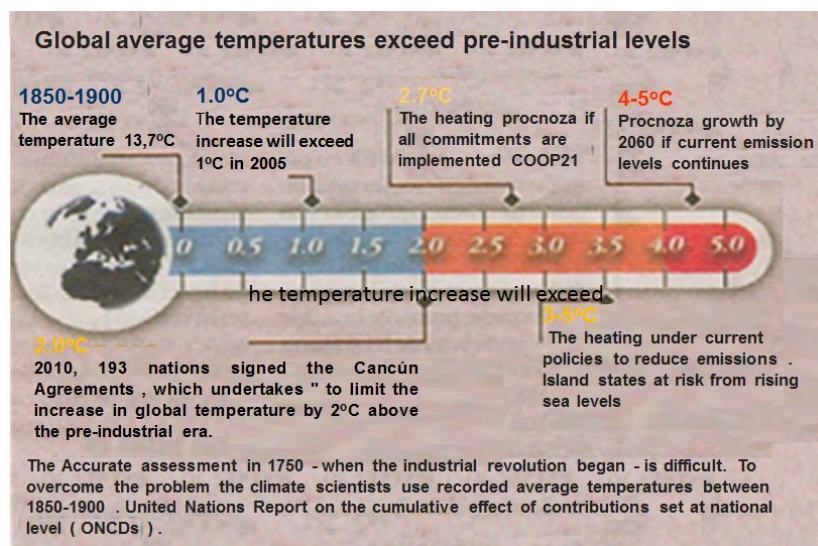
to work together to keep temperature rises below 2°C (36°F) and if possible the 1.5°C until 2100 (Fig. 1, 2) (Marin, 2015).

The provisions of this Agreement shall be reviewed and revised every five years. The industrialized countries will gradually give up to intensive industries, generating pollution and to stop the transfer of such industries to underdeveloped countries. Instead of these industries will expand the use of environmentally friendly energy sources (wind, solar, geothermal, etc.). In this sense will be allocated - until 2020 - to The Environmental Fund 100 billion dollars, especially for the economically less developed countries.

The specialists consider that the global warming and the passing industry to a clean energy will cost 16.5 trillion dollars up to 2050. They also say that in 2050 we will probably still addicted to oil, gas and coal (3/4 of resources).

Let's see who is now due to this phenomenon of climate change, and especially the general temperature increase both in air, soil and water.

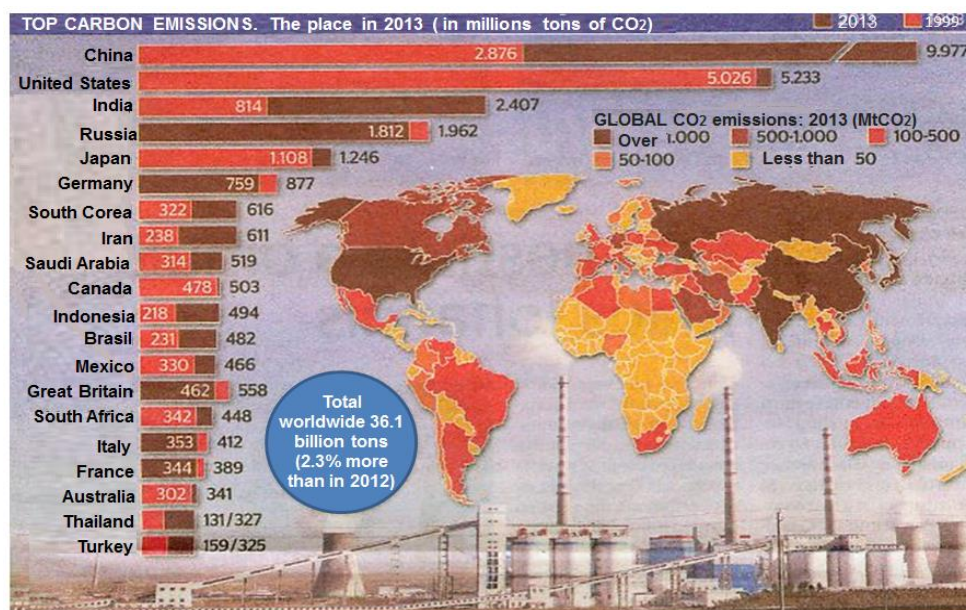
As it is known, for several decades, scientists reported in numerous papers published on the occasion of various international conferences, symposiums, etc. that the global warming is a dangerous phenomenon, being constantly increasing, and this will lead to general climatic changes, changes that will deeply affect people and the entire biodiversity on Earth (Brown, 2006/2012, Masu, 2011).



**Fig. 1.** Global warming scenarios. COP21 aim of an international agreement binding in letting limit global average temperature increase to 2°C just above the pre-industrial era\*. *Source:* Meteorological Office Britain's Hadley Centre Climate Action Tracker, WMO. (*Graphic:* News).

As a result of these signals coming from the scientific world have organized several international meetings devoted to the accumulation in the Earth's atmosphere of the harmful toxic gases, in particular CO<sub>2</sub> but as well methane, nitrogen, fluorocarbon etc. which are all responsible of the "greenhouse effect" and the temperature increase. The first meeting of this kind was in Kyoto (Japan) in 1997 where it is established a 5 % reduction of CO<sub>2</sub> emissions until 2012 (compared to 1990). It was an insufficient proportion, but also so many industrialized countries of the world have not wanted to sign the Protocol, protocol which expired at the end of 2012.

In 2009 in Copenhagen (Denmark), was a new International Conference in which was the proposed a reductions of harmful gases by 20 % (even 30 %) up to 2020. Unfortunately it has not been reached to a consensus, as many states have not wanted to sign such a protocol. For example, China has claimed the right to continue emitting greenhouse gases, with the same amount of industrialized Western countries but it has pledged to reduce its CO<sub>2</sub> emissions by 40-45 % until 2020, if other developed countries shall proceed in the same way. It is interesting to point out that in 2008 China produced 6.8 billion tons of harmful emissions and the USA produced only 5.95 billion tons. By the time China produced emissions as USA together with Russia (no sign of reduction!) In fact the whole Chinese industry is heavily based on coal and oil.



**Fig. 2.** Carbon emissions worldwide reached a new record level in 2013. *Source:* Global Carbon Atlas; photo: Getty Images (graphic: News) ("Adevărul"/14.09.2014).

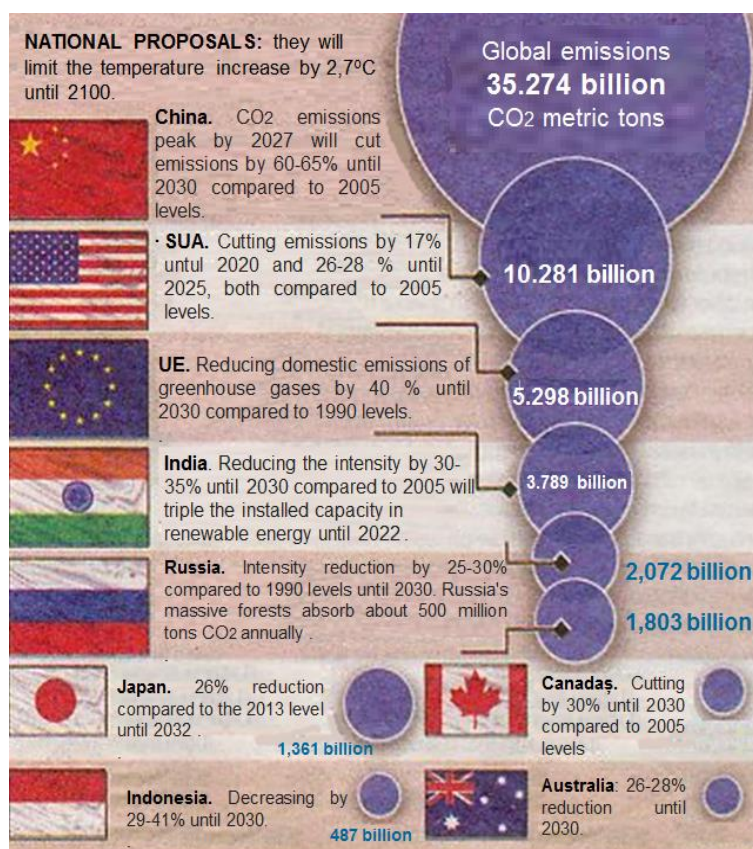
Our country has reduced emissions in 2009, reaching second place in Europe after Estonia, with only 42 billion tons that had the right at 72 billion tons. Our industry is poor, what pollutants to produce??!

How the results of the Copenhagen Conference were not those expected, it has produced a new expert meeting in Cancún (Mexico) (what a beautiful resort!). They stayed 10 days and failed understanding differences and interests, some being obvious. So was proposed a new Conference in 2011, also in a beautiful area, in Bangkok (Thailand). In Cancún and Bangkok were established few agreements, but also insufficient in relation to the amount of increase alarming toxic gases into the atmosphere but especially the harmful consequences it produces. Among others things in Cancún had reached an agreement to reduce the temperature increase to 2°C but it has not been respected by anyone (Bavaru and Bercu, 2014).

As a result, in September 2014 over 100 heads of States and Governments met in New York to discuss again about the reducing emergency harmful gas emissions, in a so-called Climate Summit organized under the aegis of the United Nations.

Conclusions were: the stopping of the global warming to 2°C, i.e. the cutting of gas emissions by 40-70 %. In 2013 it recorded the highest degree of pollution with gas - especially CO<sub>2</sub> - in Earth's atmosphere and emergency measures that had to be taken. More specifically, it reached in the Earth's atmosphere, 36.1 billion tons of CO<sub>2</sub> worldwide with 2.3 % more than in 2012 (Fig. 2, 3) (Marin, 2014). Calculations showed that in 2010 was consumed one trillion tons of coal.

It should be noted that there are also skeptical heads of States towards the idea of fighting against global warming. Among them it is worth to remember those from Canada, Russia and Australia. More Australian Prime Minister Tony Abbott, did not attend the Summit in New York and ostensibly arrived after the closure of the Conference (had been invited), and he was a few years ago stated that "the climate warming is an absolute silly" (may his words can be considered as, not what has been demonstrated by the scientific specialists). There are other examples in this sense.



**Fig. 3.** Commitments for the Climate Summit in Paris. *Source:* UN report on the aggregate emission reduction commitments, the EU Joint Research Centre ("Adevărul"/14.12.2015)

For this reason it was decided that in 2015, the end of the year, to take place in Paris a large International Conference devoted to the climate change, specifically focused on the effect of the global warming of the Earth.

We would like to recall that France has served as a model for all delegates at a Conference in Paris (not for nothing was chosen Paris), because France is one of the few developed countries in the world that has succeeded in 2012 to *decarbonize* their own production of electricity, never using fossil fuels - 90 % of this production is given by natural sources without carbon (nuclear hydro wind and solar) (19th Session of the Conference of the Parties to the UNFCCC, 2013; "France confirmed as host of 2015 Climate Conference". Ministry of Foreign Affairs. 22 November 2013).

Ahead of this meeting in Paris, in early August 2015, Barack Obama, President of USA, presented a project of fighting harmful gas emissions with greenhouse effect, in which it proposes a reduction of 1/3 of these emissions.

According to President Obama, national electricity generation based on fossil fuels will have to limit its CO<sub>2</sub> emissions by 32 percent up to 2030 compared with 2005. The American States will have to cross the border using renewable emission - type solar, wind or, where possible, hydropower's as well.

More difficult will be for 14 States of USA in which the energy supply is based only on coal, as well as to the Chinese, occupying the first place in the world, followed by the Americans in second place, with about 40% of the total used energy (Obama, 2015).

Stopping the global warming to less than 2°C would mean - in the opinion of specialists – the reducing emissions of harmful gases by 40-70 % of current production. The proposed target is to be reached no later than 2030, 2050, at zero emission of CO<sub>2</sub> into the atmosphere, otherwise it can't be limit the temperatures rise to 1.5°C. It was proposed to reduce the emissions per capita, at 9 %, up to 2030.

Calculations made showed that the CO<sub>2</sub> is found in greater quantity in the northern hemisphere compared to the southern one. It is normal to be so strong, all industrialized countries are found in the northern hemisphere.

The economists have calculated that in the future will be needed 16.500 billion ( as I said at the beginning ) by 2050 in order to reduce global emissions to a maximum of 2°C (maybe 1,5°C). The environmentalists believe that despite the efforts that will make, our planet will warm up to 2.7°C until the end of the century (Brown, 2011).

The studies made by specialists from a university of the S-E Australia - New South Wells - showed that marine waters, which cover about 71 % of the Earth's surface, heated with 1.8°C over the past 70 years, this influencing the marine biodiversity (we'll talk about it another time).

However the scientists estimates show that if they continue to keep the harmful gas emissions with greenhouse effect at the current level, the planet will warm up to 4°C even to 5°C at the end of this century, with catastrophic consequences on mankind and biodiversity on Earth (Fig. 1). It is estimated that 1/3 of the Earth's biodiversity will disappear, both species of animals and plants; the most affected will be the plants which will have not enough water, the water becoming the number one of the planet (the life was born in the water and life is not possible without water). We remember only one thing one hectare of forest purifies per year 18 million m<sup>3</sup> air and holds on the leaves 80 tons of dust and soot. About these consequences we will discuss on another occasion.

Recently, the publication "The Guardian" recalls a study, performed by specialists, which shows that in 2013, due to the air pollution and pollution in general, have died in the world 5.5 million people, more than half of deaths were recorded in China and India.

Professor Michael Brauer, from British Columbia University, points out a thing that is generally known: "Air Pollution, globally, is the fourth large risk factor, the largest environmental risk factor for producing numerous diseases: heart disease, lung cancer, bronchitis, acute infections, types of emphysema etc."

Professor Michael Brauer believes that all these risk factors have appeared since the time of the industrial revolution in the United States and Western Europe, the pollutant toxic air clouds forming after the massive industrial development.

Another researcher from China - Qiao Ma - showed that in 2013 in China 360,000 people died, only because of the coal combustions in the electrical power stations.

This is the reason why China signed the agreement in Paris to reduce carbon dioxide emissions. About the consequences of this pollution and global warming on people and biodiversity will speak in another paper.

But the climate changes - especially the phenomenon of global warming - caused numerous catastrophic phenomena (diluvium rains, terrible floods, terrible fires, etc.), which have cost the humanity around 90 billion euros and which has resulted in numerous deaths.

While in Paris are discussing these issues, even in the early days of the Conference, in the first days of December, the public schools of Beijing forbade times outdoor sports because of persistent pollution, the smog and then, over several days, the schools were closed completely, because the "killing blow pollution" which had exceeded 25 times the over the allowed limit of O.M.S. Also in Milan (Italy) or in Macedonia have been problems due to air pollution. Milan was banned the private cars circulation and in Macedonia were closed the universities and schools, recommending the patients not to leave their houses.

Speaking of global warming, the weather experts consider that all years of the 21st century, are listed in the top of the 50 hot years after 1880, since being to make calculations and measurements accurately on climate, and the year 2015 is considered to be the warmest year till now, so far, June of 2015 was the warmest month of the 135 years since measurements are made. In our country the day of January 11, 2016 was declared the warmest day of the weather records history -18°C in the south-west part of our country and on the day of February 16, 2016 was recorded in the south part 25°C - an absolute record for Romania. As a result, the biodiversity and vegetation in particular can have big problems.

On average, the temperatures around the globe have increased to 0.06°C/decade (from the 1th of January 1880), but the growth rates were much higher after 1960 and, in particular, by the year 2000 (15°C/year).

The specialists in climatology consider that the past 15 years have been the warmest (after 1900), years in which the temperature increases have reached up to 0.9°C, nearly a moreover degree.

That's why the 12 of December 2015 will become a memorable day, a day in Paris where 195 states have signed a treaty, an agreement whereby they undertake – in total consensus - to reduce the global temperatures increases below 2°C. The signed Treaty is not mandatory, but all the signatory states decided to join in this effort to limit temperature increases to no more than 2°C by the end of this century. The French Foreign Minister, Laurent Fabius has described the agreement as "an historic turning point" and the UN General Secretary Ban Ki-moon in his speech at the end of the Paris Conference "a monumental triumph for humanity and our planet" (Doyle and Lewis, 2015).

The agreement will enter into force once will be ratified at least by 55 states which will have a contribution of at least of 55 % in emissions of toxic gases into the atmosphere. Starting with the year 2018 the provisions of the agreement will be reviewed every 5 years (as we said before). Each state or private institution should include in their future programs of activity the measures to control the emissions of harmful gases into the atmosphere (Editorial Board, The New York Times, 2015a/2015b).

Each country that has ratified the Treaty will have to establish, every five years, their own objectives to reduce the gases emissions with greenhouse effects. The agreement requires each Government to revise its urgent goals over the next four years. In the agreement are not provided for penalties for countries that misses the proposed objectives. Instead, the rules are provided to assist and encourage each country to do what and propose. These issues have been the test pieces to which it is most difficult to agree to a settlement. There is no mechanism to force the signatory countries to apply certain measures and stroke limit (Davenport, 2015; Kinver, 2015). Incidentally, the former Vice-President of the USA - Al Gore - a well-known ecologist who in his studies (Al Gore, 2007) fired numerous warning signs - predicted that "no agreement is perfect and these projects need to be and can be concluded in time, but it is absolutely necessary to get past the immediate measures to reduce the dangerous carbon pollution of the planet" (Vidal, 2015).

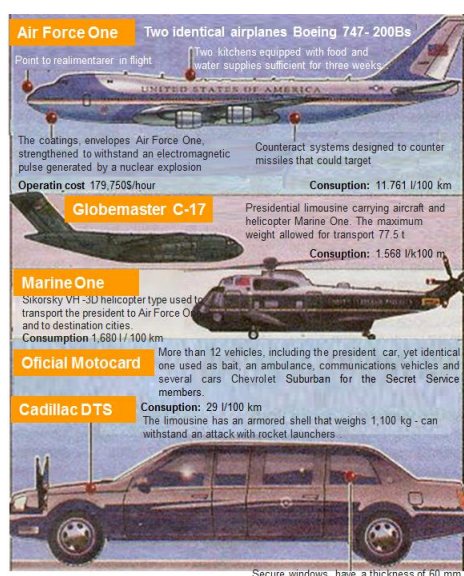
At the Paris Conference, the Indian Prime Minister Narendra Modi was officially announced that he, along with the French President François Hollande, intends to propose the creation of an Alliance of "solar-rich" countries to recover from the nature and used an efficient energy source that costs cheaper. It will be an Alliance similar to that of oil exporting countries (OPEC); in this sense, the two leaders have also sent written invitations to more than 100 countries to join this initiative, and the new created institution will be called The International Agency for Solar Applications and Policies (INSPA) (G20 summit: Modi pushes for \$100 bn finances to pursue clean energy, proposes grand global solar alliance, 2015; Narendra Modi, 2015; Narendra Modi, Francois Hollande invite over 100 countries for solar alliance, 2015).



Finally we want to mention a few of the unique and less known aspects. First we recall that some industrialized countries and developing countries have opposed such an agreement to reduce carbon emissions and the transparency on this issue. An important role concerning the bringing China to negotiations had President Obama and the State Secretary of USA, John Kerry. This thing convinced all the reluctant countries, including developing countries, to come to the talks (Marin, 2014; Marin 2015).

You may recall that the USA emitted into the atmosphere, 10 % of the total gases emissions with greenhouse effect, while China emits almost double by about 30 % of total emissions.

The Conference took place at the Exhibition Park "Bourget", close to the "Stade de France" stadium, where with only a few days ago (13 November) had occurred one of the six terrorist attacks resulting in bloody killing of 130 people. As a result, Exhibition Park looked like a besieged fortress guarded by more than 3,000 of policemen and armed soldiers well. There have been several clashes and enough violent demonstrations crushed by police with tear gas, and resulting in numerous arrests (Rubier and Peltier, 2015; Worland, 2015).



**Fig. 4.** President Obama the number one polluter of the planet (*graphic: News*).  
*Source: "Adevărul"/14.12.2015*

The lovers of a clean environment have done some very interesting calculations concerning fuel consumption during the period of the Paris Conference for about 50,000 persons who arrived in the French capital during the period of the Conference. The members of the press from the publication "The Daily Mail" in London have calculated that for all of them (come with airplanes,

trains or cars) were consumed by about 102.2 million liters of different fuels. All that funny, the White House leader, Barack Obama, is intensely criticized for his numerous travels made with "White House airplane" (Air Force One), being accused by numerous American environmentalists as one of the biggest polluters on Earth, defying the American ecosystems but also those of the Earth (Romanovschi, 2015).

## Conclusions

In Paris, on December 12, 2015 has been agreed and approved by 195 nations an historic agreement to combat the climate change and achieving of some sustainable actions and investments, in the future, as regards the carbon emission reductions. The Paris Agreement has brought, for the first time, all people in a common cause, based on their historical current and future responsibilities.

The main purpose of the universal arrangement is to maintain, in this century, an increase of the global temperature to 2°C even at 1.5°C above pre-industrial level. Limiting the temperature increase to 1.5°C is a direction to a much more secure defense against the worst effects of a changing climate. In addition, the agreement aims to strengthen to cope with more capacity against the impacts of climate change.

The future of the planted depends how each participating state at the Paris Conference will know to achieve respect the general purpose and the taken engagements, in line with their own national objectives.

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