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Examine the Effects of Greenhouse Gases on Climate Change

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ABSTRACT

Greenhouse gases have an important role in understanding earth climate history. Based on these studies greenhouse effect which produces heat due to trapping of heat by greenhouse gases in adjusting earth temperature, Climate change refers to the oscillations in earth global or regional climate in time interval and defines those changes that fluctuate with mean atmospheric conditions or average weather (common) in timescale intervals which fluctuate between decades to million years. Researches and specialists believed that with using of pure energies like solar, windy and heat ground energy and etc, instead of energies cause by fossil fuels will impede of environmental protection implication. So the average volume of light shining at a day is 4 kilowatt H/m² and the average volume of sunny hour is more than 2800 hour at a year. These changes may have been resulted from earth internal processes or forces beyond it or in recent times due to activities related to the man-made climatically changes. Especially in recent application in the subject of environment policy, the expression of; climate change; often refers to the current changes in new climate.

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Introduction

Climate change refers to the oscillations in earth global or regional climate in time interval and defines those changes that fluctuate with mean atmospheric conditions or average weather (common) in timescale intervals which fluctuate between decades to million years. These changes may have been resulted from earth internal processes or forces beyond it (like oscillations in sun light intensity) or in recent times due to activities related to the man-made climatically changes. Especially in recent application in the subject of environment policy, the expression of ;climate change; often refers to the current changes in new climate such as mean temperature increase of earth surface known as earth warming. In some instances the expression of; climate change; also applies to the human cause and effect relationship as used in climate change framework convention of united nation UNFCCC, UNFCCC convention uses the expression of; climatically oscillations; for those changes having non-human origin. Access of developing countries to kinds of new energy resources, have basic important for economic expansion and new projects show that between development level of one country and his volume of energy consumption is a direct relation. With attention o fossil energy limitation resources and increase of energy consumption at new world, we cannot emphasis on existence energy resources. At our country, the needs of energy resources and decrease of fossil energy, some factors are necessary such as, keeping the health of environmental, decrease of implication, providing fuel and using of new energies like: windy, hydrogen solar energy and etc. Today, policy, economy crisis and matters like limitation of fossil resource strength, environmental concerns, increase of publication, economy growth and consumption coefficient, all of them are world arguments that with all their aspect occupied thoughts of Scientifics for finding suitable way at solving energy

problems at world, especially at environmental crisis. This is obvious that today economy and policy coverage, depend on their use of fossil energy resources, and missed fossil resources, not only is a threat for economies of exporting countries. All this matter caused by missed fossil energy resources fortunately, all world notions, know the importance and the role of different kind of energy resources, specially new (renewal) energies for guarantees now and futures need of people, and at a wide range at developing usage of this immortal resources, they want to invests all their capitals. With regarding these kinds of basic thoughts at field of immortal energy using and related technologies at industrial and developing countries such as Iran is absolutely necessary to providing basic program, plan and suitable guidelines. We expected with development use of pure energies at Islamic Republic Iran, according to results said at this thesis and essential guideline and suitable planning could making clear many challenges and identify suitable way to do the best. We hope this said planning could be response important questions and ambiguity like:

- 1) Potential value of every one limitation energy bearers at Iran.
- 2) Identify and selection of right regain (finding right site).
- 3) Compiled view for limitation energies.
- 4) Economy explanation regarding to deigned different factors.
- 5) Planning, the way and capacity of investment, identify prefer ability of every limitation energies.
- 6) Compiled plan for related technologies development at Iran

Solar Energy: About two deiced after entering fetavoltaeek cells in to public arena of energy produces, close relation between policy and energy resources bring that, there aren't any place for economic explanation argument and finding away for using solar energy and electricity. In Iran, because our shining with good power and high ability and our country also is kind of ready area for using this energy, so the average value of light

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shining at a day is 4 kilowatt Hm^2 and the average value of sunny hour is more than 2800 hour at a year of course, all said values is average value and at salt desert area of our country like Yazd sunny hours reach to 3200 hours. With attention to this matter that Iran is a mountainous country that almost of his area set on at high of 1000 upper than water sea level, the ability of delivery sun light shining will be more. The use of limitation energies consumption of Iran was low, after words until now solar energy is not commercial formally. Areas that have high potential for solar energy including: Shiraz, Tehran, Khorasan and Yazd. Although the cost of using of solar energy is so light, but today at making policy is not consider only the cost of solar systems, so the advantages gaining from use of them like decrease of environmental protection implication also considered. With attention to all designed matter, could finding some area of our country that use of solar energy at them have economy explanation. As a sample, using of solar cells at for away areas could reach high price during several years. With regarding to existing technologies and the expansion use of solar energy at a world, Seems at sections like: buildings heat, produce heat water, cooking food, blotter making fresh water, and this energy could be compete with current energies. Doing researches shows until now, making independent solar power stations is not profitable, so combination cycle power stations like solar- gas or solar- vapor will be so economy. One of important obstacles at using of solar energies is capitals for getting solar industries that must be considered all basic functions. Different kinds of limitation energies produce by effect of sun shining. Fotovoltaeek cells that produce electricity, sahmoy and solar concentration towers, windy and heat ground energy all of them reach their energies from sun. Already of European countries work severely on solar energy and using of this energy would talk last words at human future life.

Suitable Ways for Bright Using of Solar Energy

Green buildings- Coordinate with Solar Energy

Green buildings that are famous as coordinate buildings with environmental they are kinds of constructions that providing possible bright use of valuable natural resources like: water, wind, solar energies aside effective materials. During recent years this buildings encounter with extraordinary development at new design and technology, this matter cause environmental implication decrease and naturally create more health environment at outside and inner of buildings. Implications created by demolition and reconstruction buildings and them including weather, soil quality and unpure energies consumption. With expansion of construction and green technologies at governmental and individual segments compiled program is not limitation. By this mean at U.S the use of green buildings Council (USGBC) design a program that expand the use of green buildings around the world. This program named LEED that mean leadership in Energy and Environmental, this program made by basic energy and environmental and also is balance factor between essential functions and environment.

Project teams (authorities, extension markers, architects and contractors) with attention to basic of this program as a powerful instrument could manage to find best ways for physics and economy fields and also helped to aims of green projects.

Coordinate Sites with Environmental

Attention to different factors at the time of designing cause more effectiveness of this building.

- The situation of building.
- Designing area with regarding to natural and agriculture environments.

- Use of empty area between buildings or grounds that before was implication.
- Decrease use of local automobile.
- Bright use of local texture.
- Controlling and managing superficial water.
- Decrease of implication.

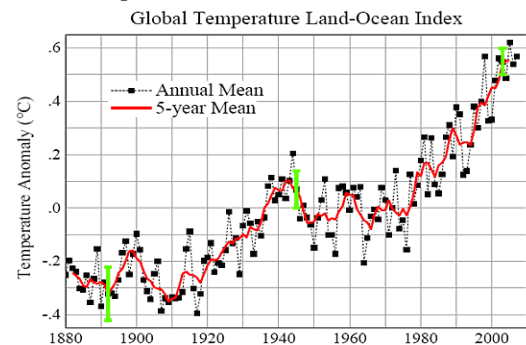


Figure 1: Global Temperature Land-Ocean Protection of Water

- Decrease the volume needs water for building and person.
- The lack of using of drinking water for irrigation and washes.
- Use of new technologies for sewages filtration.
- Protect of drinking water quality and water of rivers, canals and lakes.

Energy and Atmosphere

- Managing on impression at ground atmosphere and decrees of energy consumption.
- Use of limitation energies.
- Cycle and origin protect of buildings.
- Elimination of halons and Conservatory gasses.

Resources and Materials

- Renewed use of existing building.
- Decrease volume Consumption materials.
- Use of local-regional and limitation materials.
- Right use of wooden resources and replaced them.
- Decrease of futile and managing them.

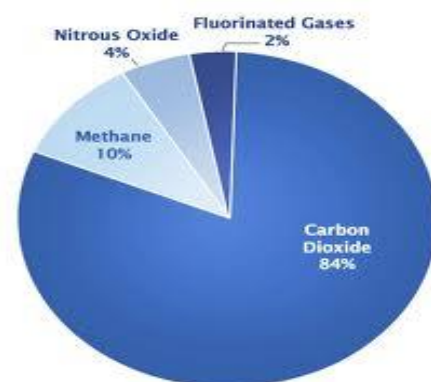


Figure 2: Greenhouse Gas Emissions

Quality of Inner Building from the View of Environmental

- Elimination or decrease of impeded resources at inner building.
- Weather ventilation and controlling impeded.
- Heat and Cold studding and forbidden of port heat.
- Controlling of weather quality.
- Bright and correct use of light and view.

Environmental Benefits

Constriction and make building, have expansion negative impact on jungles, pastures, planet ecosystems and also animal and agricultures with correct selection and right chose of buildings situation could forbidden of this matters and also forbidden of irregular cities that are serious problems.

Reconstruction of existing building, use of unutilized ground between buildings and use of ground that before was impeded by machines life that forbidden of unutilized growth cities. Decrease cast of operations. The cost of energy and water consumption at buildings with designer of LEED technology decreased rather than old buildings. This volume during a period of time could compensation primary costs and archive positive indicator investment. Buildings that are making with these desirable technologies could lead to development and expansion of now projects. Reconstruction of existence buildings could decrease building cost. At this system with using of abilities could use of one project as another cover project. With getting small of some instruments like chillers could forbid of irregular consumption. Climate change refers to the oscillations of inter-earth environment; existing natural processes around it and the effect of human activity. External factors which can form the climate are often called climatically forces including processes such as oscillations in sun radiations, earth revolution and the amounts concentrations of greenhouse gas.

Ocean Oscillations: Almost in timescales of some decades, climate change can also result from changes in oceanic-atmospheric intersystem. Most of the climate conditions the most apparent of all, EL NINO southern oscillation (ENSO) also includes ten years pacific, northern Atlantic Ocean and ataractic ocean oscillations known as special conditions in climate system that has at least been saved in the oceans due to their prescience by different warm methods and displaced between different sources. In longer timescales oceanic processes such as thermo hyaline revolution play key roles in redistribution of warmth and in the case of change can influence climate severely. Air contaminators which have been spread or formed in atmosphere can cause the rise of rainfall. This phenomenon occurs because small particles function as nuclei and reinforce the formation of rain droplets. This is the same principle existing about formation cloud. Much increase of rainfall especially in the air above urban centers in which spreading of particles occurs in a very high extent .This point has been approved that formation of mist in big cities is two times of that in undeveloped regions and formation of cloud in big cities is ten times more than that of cities' suburbs. High SO₂ concentration increases mist in industrial regions. The released NO and SO₂ are associated with acid rains.

Greenhouses Gases: Recent studies show that radiation force by the greenhouse gases is the main factor for global warming. Greenhouse gases have an important role in understanding earth climatically history. Based on these studies the greenhouse effect which produces heat by greenhouse gases has a key role in adjusting earth temperature. During last 600 million years the amount of carbon dioxide has been probably changed from more than 500 to less than 200 ppm which is mainly due to the influence of geology processes and biology innovations.

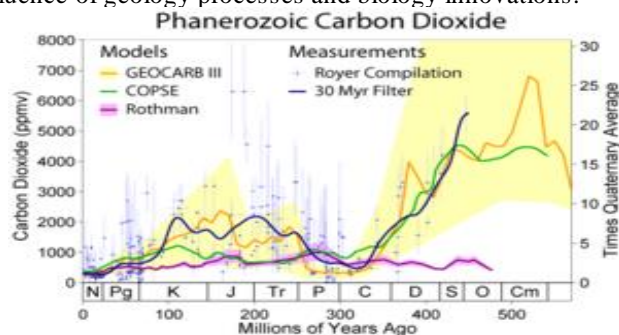


Figure 3: Phanerozoic Carbon Dioxide In Versus Time

But there are several samples of rapid changes in the amount of greenhouse gases in the earth atmosphere which has apparently a close relationship with severe warming such as Suzan Paterson's maximum period (Paleocene- Iverson, decline period of Permian-Terrassic), decline periods of creepers and dinosaurs and the end of earth frost period in Scandinavia region .During new period increasing level of carbon dioxide is regarded as the main factor causing global warming since 1950 till now.

Human Effects on Climate: Human influential factors are those activities by which human beings change the environment and influence on climate. Now largest intended factor is increasing CO₂ level due to fossil fuel combustion by which aerosol suspended particles (suspended particles in the atmosphere) because cooling effect on climate. Other factors including using the earth, ozone destruction and deforestation also influence on climate.

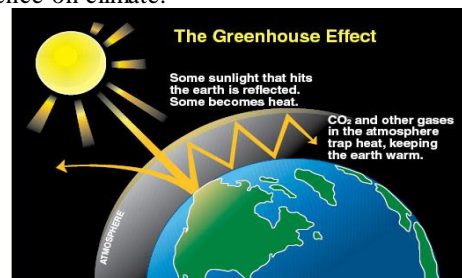


Figure 4: Greenhouse Effect

Fossil Fuels: By the beginning of industrial revolution in 1950s and its fast spreading till now, fossil fuel consumption by human beings has increased CO₂ level from the amount of about 280 to more than 370 ppm .This amount is being increased to reach to more than 650ppm before the end of 21st century. Besides increasing amount of methane, it is anticipated that the above changes result in temperature increase of about 4.1-6.5 °C between 1990-2100. The areas of forests are now continuously reduced in most of the temperate region countries after several decades of tolerating substantial and congestion effects of air pollution. Air contaminating materials developed by fossil fuel consumption in transportation and power producing industries expand in an unprecedented rate over the forests and exert great pressure on them and the forests of tropical regions have recently been influenced by these materials-Air conditioning materials such as sulfates, acid producing nitrates, gaseous sulphur dioxide, ozone gas and heavy metals accompanied by natural tension are the main factors for this destruction. Air contaminators individually or collectively weaken the trees in several different ways. These materials directly cause the narrowing of trees and yellowing ads or mature falling the wide and needle leaves from the branches. These trees lose their resistance against natural factors such as drought and intense temperatures variations .In sum these direct and indirect pressures, endanger the ability of forest for protecting aquifer uses and soil stability.

U.S. Greenhouse Gas Emissions by Sector 2010

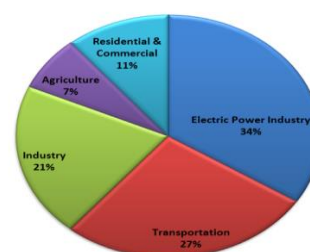


Figure 5: Greenhouse Gas Emission by Sector 2010

The most clear and practical way of reducing the amount of contamination spreading, is increasing energy efficiency especially in houses, vehicles and factories. The more widespread use of natural gas will be effective in this respect, because the combustion of this gas almost does not produce any kind of contaminants. Finally reduction of main air contaminants will be enhanced by just transference from fossil fuel-based economy to renewable energies –based one such as sun energy, wind, water force and etc. There is an unseen and delicate layer of ozone in a far location above coldness protecting us against sun dangerous ultraviolet radiations. The ozone layer has been there for centuries. But now human destroys this protective shield. CFCS haloes and other synthetic chemicals are floating over our heads in 10-15 kilometers distance. They are dissolved and release molecules which destroy ozone. Before extensive use of ground the largest human influence on regional climate may probably have resulted from ground use. Irrigation, deforestation and farming mainly cause environment change. For example they can change sun regional reflection by influencing on ground coverage and changing the amount of sun rays being absorbed. For example there are evidences confirming that the climate of Greece and other Mediterranean countries have constantly been changed by deforestation between 700 B.C till Christ birth the wood of these forests has been used for manufacturing ships, buildings and as a fuel by which the new climate in the region has mainly become drier and hotter and different species of trees used in the old age for making ships are no longer found in this region. William Radioman's clamorous and primary Anthrop son hypotheses assert that development of farming accompanied by deforestation because the increase of carbon dioxide and methane during last 5000-8000 years. These increases caused by last reductions can be responsible for the delay in next frost period initiation based on Radioman hypothesis.

Climatically change has been extended throughout the history. The field of climatology archeology has provided information about climatically change and also completes new climatically observations. Without doubt this prehistoric changes result merely from natural factors. There has been a discussion this issue that how climatically change affects on world economy. In his report of October 29th 2006, Nicholas Stern, the economist of World Bank asserts that climatically change could have affected on economical development so that it can cause the bankruptcy of one fifth of its economy unless an efficient proceeding is performed.

Evaluating the Effect of Weather Change

To evaluate the amount of vulnerability of country due to not controlling the emission of greenhouse gases, six different scenarios have been planned. These canaries are themselves a selective combination of models and different scenarios such as JCM, HadCM2 and ECHAM, there are three distribution and three different Climatically sensitivities. Three different situations have been considered for emission of greenhouse gases in these combinations which are as follows:

- A) Low distribution
- B) Keeping distribution stable in present condition
- C) High distribution

Finally the results of performed modeling between the combination of canaries and different climatically sensitivities shows that temperature increase is between 1-1.5 °C, 2.5-4.1°C and 5.9-7.7°C for case A, B and C respectively. Also the same combinations were used for presenting the changes in rainfall in the country, the results of which are as follows:

For condition a -11-19.1% reduction of rainfall comparing to base year.

For condition B -30.9-50% reduction of rainfall comparing to base year

For condition C -58-80% reduction of rainfall comparing to base year

Water Sources: To investigate the effect of earth warming on water sources of Iran different studies have been conducted using hydro -meteorology data and different water current models which have been combined with emission canaries and temperature changes. The results of periodic water current data having been compiled from 398 hydrology station indicate that flood water index have changed in 47 percent of them. Besides; in 600 meteorology stations under study during 1990-2000 Climatically changes have been observed, Long –term water current model used for 30 river basins indicates that temperature development increases water current in winter due to converting snowfall to rainfall and in spring due to rapid melting of snow. Also it is clear that temperature development has affected on water current of water basins and reduces water current oscillations resulting from rainfall.

Farming: Anticipated temperature increase due to weather changes causes rice seedling fertility, maize longer life, wheat unlikeliness and potato germinating reduction. On the other hand weather changes along with reduction of the amount and time of rainfall causes reduction of wheat and cotton production based on chronological data, so that recent droughts during 1377-1378(1998-1999) causes reduction of 1050000 tons aquatic wheat product and 2543000 tons dry farming wheat product. These results indicate that agriculture section of Iran is most vulnerable against the phenomenon of weather changes.

Forest and Ground Application: Earth warming affects forest section sharply. Changing natural growth location of plant species of forest especially resistant ones and extinction of semi-resistant species are examples of these changes. Natural growth of forest plants will be disturber and results in reduction of wood production and non-wood products in the forest. A cattle rushing to forest domains and grasslands and intensification of plant diseases causes the development of ground erosion especially in dry and semi-dry regions. Increasing sea water level in Persian Gulf and Oman Sea causes the distraction of marine Hear forests (Mango). Living environment will become very harsh for wildlife in woodland regions rapidly due to reduction of forage in forests which can be a sign of desert development. Temperature increase and drought cause distraction of plant cover and as a result soil erosion accelerates that finally unpleasant social consequences such as migration will happen due to weakening of ecological capacities of the region because of these destructions.

Sun Oscillation: Sun is considered as a mortal source which provides all the energy required for climate system and is a complete section in configuring of earth climate, in longest time scales, sun continues its main evolution trend and in the same time it becomes more brilliant. At the emergence of world history it was believed that the world had been too cold to be able to keep water on its surface which resulted in a subject known as the paradox of listless young sun. In newer time scales there are different forms of sun oscillations such as 11-year sun cycle and the period of longer variations but 11-year sun cycle of sun spot does not emerge brightly and automatically in climatologically data. These oscillations have been regarded influential in emergence of short period of frost and in some cases observing earth warming since 1900-1950. Any eruption happening in different times in any century can affect on

weather which take some years to become cold for example the eruption of Pinato Mountain in 1991, the effect of which can rarely be seen in the world temperature. Large eruptions known as volcano big domains occur just sometimes in any 100 million years but are able to alter earth climate for million years and cause total extinction. At first scientists imagined that dispersed dust in the atmosphere due to volcano large eruptions via trivial blockage of sun radiation to the earth surface has been responsible for its cooling but assessments show that most of the scattered dust in the atmosphere returns to earth surface within six months. Based on conducted studies and assessments in the plan of enabling weather changes under supervision of united nation weather change convention and by using the raised canaries, if the concentration of carbon dioxide doubles until 2100, the mean temperature of Iran will increase within the rate of 1.5-4.5, Which develops sensible narrations in water sources, energy demand, agriculture and dietary production, deforestation drought intensification and periodicity and treat for human's health are the direct harmful effects of weather changes. Economical damages are referred to as indirect effects of climate change due to interacting proceedings of developed countries.

Conclusion

One of the worrying consequences of climate change is emergence of clash and war for possessing the natural and environmental resources. For example regional clashes for access to water in many parts of the world specially middle east. To investigate this issue first some cases were mentioned to familiarize the audience with weather phenomena such as greenhouse gases and earth warming and then the physical effects of these climate change on the earth was declared among which we can refer to soil erosion ,increasing sea water level and dissertations. Many natural calamities such as storms and tsunamis result from climate change because these changes accelerate the formation of calamities and are considered as factors for their occurrences. The range of these changes is so pervasive that involves world security and endangers it by destructing peace signs. In current terms whenever people are afraid of lack of providing subsistence and living necessities, human security is endangered. Security borders in today world not only become unstable during war and evident threats but also climate change can also be regarded as a threatening factor for human security , a threat that encounter human with big challenges and endanger security in different domains such as economical and hygienic seriously. Generally the shortage of healthy fresh water sources is a factor for probable clashes in future. Today, human interference subjects at environmental is revealed more than any time. The concept of development is synonym of protection of natural environment and environmental and at economy indicator national counts such as inner UN pure produce, keeping natural resources and environmental also designed. Energy is basic need for continuation economic expansion, providing and guarantees welfare and rest of people. Now, world energy consumption is about 10 Gtoely (equal to 10 milliard tons pure oil at one year). This volume shows the measure of world energy consumption at future century and surely this important question design that will be fossil energies sources at future century response the world energy need for permanence, expansion and evolution? At least for three mast important factors, the answer to this question is negative and new energy sources must replace to old one. This factors including:

1) Limitation and at the same time desirability of fossil energies that from logical view have better application rather than oxidation and also environmental problems.

2) Implication result from oxidation and increase density of 'Carbon dioxide' at atmosphere and their conclusion countered the world with irrevocable and throaty changes. The increase of earth Tempress, weather changes, going up the water of sea level and to least aggravation national arguments are kind of sad result. In other hand, finishing fossil sources and predict increase of costs, encourage, policy makers to set balance offers and some policies for controlling environmental and researchers for expansion resources with low implication that have powerful ability for substation with now energy systems.

3) All limitation energy undertake more share at world energy providing this sources have the possibility of response two basic fossil sources at the sometime limitation energies naturally coordinate with nature and have not implication, because they are limited and have more gravity. Another characters of this sources is dispersion and expansion of them around the world, they needs lower technologies that have more gravity. So at programs and international policies, in the way of expansion stability of world, limitation energies have special role but to a coordinating limited sources, also have some problems with now systems of world energy consumption, for solving them, must specific world recherche allocated to them. With regarding to now human technologies, nuclear energy and electricity, wind energy are tow sustainable energy for fossil fuel. Iran country from the view of different energy sources is most riches countries in the whole world; Iran has most potential of limitation energies like wind, Jeotormal, sun and etc. The view of energy and environmental until 2030 the weather of ground changes in result of human activities especially at energy segment. Most environmental and weather changes at world could be explained like this.

1) Publication value of CO₂ at 200 years past time increase 31 percent.

2) Publication value of CH₄ from 1800 increases at least two times.

3) By increase atmosphere descend impact at middle geographic fields and sow flood and great storm.

4) In the past century, the free level of sea water at world increase 1 to 2 millimeter annual.

5) The growth season at every decade is longer from 1 to 4 years about past 40 years. At future 30 years the value of carbon dioxide, publication by impacting of produce and energy consumption will increase with faster music than basic energy consumption. Two from three of this increase resulted from consumption at developing countries, and at power producer and transportation segment, cause more than 75 percent increase of Carbon dioxide and would be transported the situation of geographic growth Carbon dioxide from industrial countries to developing countries. The presented strategies in this part are as follows: preventing from negative climatically change necessitates developing an organization like united nation for forming the cooperation of countries, an organization that compiles an obligatory commitment for not harming the nature and considers effectual and penal guarantees for them. The recommendations presented are not my mental thought but they are the opinions of thinkers and existing references are reliable. Kyoto treaty is just valid until 2012 which causes the member countries to leave their obligations, for this reason today world needs a new treaty about living environment which specially impose limitations for carbon dioxide producers. On the other hand Kyoto treaty is not regarded as a complete treaty because it

resulted just to stabilization of greenhouse gases. Now the world needs a treaty which challenges the production of greenhouse gases seriously and cause its reduction. The most fundamental problem in performing international treaties is the lack of a superior authority for obliging all governments to accept international treaties to observe regulations about living environment and we must say: Now there is no superior authority for obliging countries such as America to observe regulations of treaties and the only effective factors in this field are moral considerations and world general thoughts. Atmosphere such as brook or river has natural processes which have a role in its cleaning. Without such processes transfer will immediately turn into an unsuitable environment for human living. Scattering, gravitational precipitation, coagulation, absorption (along with washing and rewashing) are considered as the most important natural mechanisms of contaminants in the atmosphere.

Absorption of Particles: In natural processes of absorption, particles and gaseous contaminants are gathered in rain or fog and precipitate along with moisture. This phenomenon called washing occurs in a level lower than clouds' surface. The necessary potential for washing the particles and gases based on recent studies has indicated that for small particles having the diameter lesser than 10 μ m washing will not be effective. Gases may dissolve without chemical changes and in some instances enter reaction with rain like SO₂ gas which is easily dissolved in rain and comes down with rain droplets. In spite of this SO₂ may react with rain and develop H₂SO₃ dusts H₂SO₄ popular as acidic rains and have potentially more deleterious effects comparing to initial SO₂. In this condition washing occurs in a lower level than clouds and when rain falling droplets absorb contaminants washing phenomenon occurs in the clouds. Thus the particles smaller than micron dimensions function as condensation cores around which water droplets are formed. This phenomenon in urban regions cause more rainfall and mist formation. Superficial absorption happens in an atmosphere frictional layer namely the nearest layer to the surface. In this phenomenon gaseous liquid and solid contaminants are absorbed by a surface and remain there after becoming concentrated. Natural surfaces such as soils, cliffs, leaves and grasses are able to absorb and retain the contaminants. Particles may come in to contact with absorption surfaces by gravitational precipitation or inertia effect during which gaseous contaminator particles are transferred to the surface by the wind currents. Inertia effect is more for particles in dimensional ranges of 10-15 μ m of smaller surfaces such as grasses and the leaves of trees comparing to bigger surfaces in order to separate particles. Diluting in the atmosphere is possible through the use of tall chimneys.

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