



Hot Age

or

Ice Age



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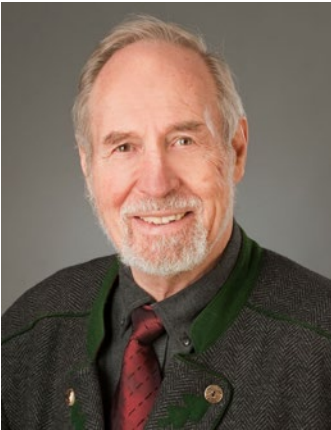
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A. Author

Wolf-Walter Stinnes (M.Sc.Phys.)



Wolf-Walter Stinnes, born in Essen in 1939, matriculated in 1959 in Dillenburg. He married in Germany and emigrated due to health reasons to South Africa, where he completed his wide-ranging studies (physics, chemistry, cybernetics, philosophy, mathematics) with a M.Sc.Phys. degree. He has 6 children, 12 grandchildren and 2 great-grandchildren.

He maintained a consulting office there and lectured physics at the Universities in South Africa and Pretoria. As a young man, he had come across two industrial pioneers within his family, who had played a key role in the development of German coal mining in the Ruhr area, in the Rhine shipping industry and in the electric power production, Mathias and Hugo Stinnes. Their overall economic foresight and their deep-rooted feeling of responsibility towards social, national and European matters became a guiding principle in his later professional life. When he was given the responsibility to supply electricity to the largest province in South Africa, it later grew into a development plan for the entire province, in 1997. It became the basis for the planning and development of irrigated agriculture, mining, industrial settlement and other related fields throughout the entire Northern Cape.

As part of his consulting work, he developed many patents, including the so-called TerraFuture turbine, which, as a solar technology with long-term energy storage and desalination, will provide extremely low-cost electrical energy. At the same time, he developed the leading composting process (Kneer) further. With this combination, deserts can be recultured at affordable

cost. Seeing that the IPCC's climate-alarmism dangerously obscured the real problems of mankind, namely soil erosion and desertification, he found himself compelled to comment it in this book. He is apparently the first to explain the mechanism of ice ages and has shown that the greening of the Sahara is possible and can mitigate the next icing.

B. What are the Real Problems of Mankind

Whilst presently the IPCC (Inter-Government Panel on Climate Change) indulges in horror scenarios about global warming of our planet through CO₂, whereby the final catastrophe can allegedly only be avoided by limiting the CO₂-emissions so that the temperature of the atmosphere will not rise by more than 2°C (recently 1,5°C). However, the imminent problems like dramatically increasing **soil erosion and accelerating desertification**, alongside the just starting **next Ice Age** are completely obscured by this hysteric alarmism. The Facts:

A) During the last 600.000 years, 6 Ice Ages of 90.000 years each have taken place in Eurasia, which have been followed by warm periods of 10.000 years each. The 6th and last warm period, lasting already 12.000 years, is just ending, as shown below.

B) Today 7,4bn people are living on the globe, passing the 10bn mark still in this century. China + India (nearly 3bn) are presently importing 50% of their food supplies, whilst India was still self-supporting in 1971. China has, during the last 60 years, lost 40% of its arable land by erosion! Soil is eroding worldwide, deserts are expanding at increasing speed. In Germany the organic percentage of arable soil has decreased, since 1930, from 6,0% to 0,5%.

Erosion starts when fine-sediment with the necessary absorption area is not available in the soil anymore, and

water-soluble minerals (for instance fertilizers) are blown away or washed out. The slime of the soil bacteria is the glue that is keeping the fine sediment from inside the soil in its place. These soil bacteria bring the soil minerals into solution and make them, in symbiosis with the plant roots, available as liquid food for the plant in exchange for energy-rich carbon-hydrates thus causing **natural fertility**. These bacteria are killed by inter alia (nitrogen)-overfertilization and droughts. Soil erosion will manifest itself by a dramatic increase in dust storms. **The world is, indeed, facing an erosion and hunger catastrophe!** The World Economic Forum (Davos) has been warning us, since 2011, that the worldwide erosion process will become irreversible within 50 years!

Great parts of the earth consist of **dry areas** and are in need of irrigation. Pumped up water normally needs to be desalinated, whereby conventional power and desalination are too expensive, so that a **general water shortage is looming**. **Indeed, even wars over water have already been waged, as between Libya and Shad!**

Since most of the developing countries do not have an **adequate infrastructure**, they cannot mine their own resources. Because of this, the infrastructure will not be developed, despite the fact that the **demand for these resources is growing worldwide!** In an economic context, the development of these countries is becoming more and more important. Cheap and reliable power, as pre-requisite for the development of the mining and industrial sector, and for a decent transport infrastructure, is a very important contribution to the development!

Recycling will also become increasingly **important**, since our **resources are limited**. **Cheap and reliable power** is also a necessary prerequisite **for affordable recycling**.

The decisive question is whether we shall be able to solve the following problems in time:

- The general, dramatic increase in soil erosion and desertification
- The impending famines
- The menacing shortages of sweet water
- Too high cost of (primary) energy and power
- Too slow development of emerging countries and their resources
- Too fast consumption of natural resources and too small rate of recycling
- Seemingly untamable mass migration
- Loss of vast agricultural areas by a new Ice Age

C. Why and how does the Earth's Atmosphere warm up?

Before we enter the CO₂ discussion, we first have to understand how solar and space radiation, earth heat, the earth surface, and the atmosphere work together to warm up the atmosphere. This is all the more important, given the fact, that most supporters of the hypothesis that man-made CO₂ will warm up the atmosphere to dangerous temperature levels, have no clear understanding of the real state of affairs. We will try and help them understand why their hypotheses are in direct contradiction with serious science and practical experience. The author will, as far as possible, use simple examples from everyday life to show that the hypotheses of the climate alarmists do, in fact, prove the opposite and are untenable in a scientific context. He will also show that one does not need complicated computer programs and supercomputers to falsify the mantra of man-made CO₂ as the earth's climate killer, while predictions about world climate are uncertain, since many basic mechanisms which are heating the atmosphere are not yet fully understood and do contain such big uncertainties,

that the climate models used by the IPCC have no base to make any meaningful predictions. We shall come back to this later.

Possible Heating Mechanisms for the Atmosphere

- Visible solar radiation;
- Invisible solar or space radiation (infrared (IR) or ultraviolet (UV))
- Heat conduction from the inner earth (from nuclear fusion reactions at the earth's inner core) to the surface, heating the air;
- Heat transfer from the earth's hot surface into the air by **heat conduction**, as this surface has been heated by visible radiation;
- Heat transfer from the earth's hot surface into the air by **convection**, as this surface is heated by visible radiation, including heat transfer by latent heat of water;
- Atmospheric IR counter radiation, as certain "greenhouse gases" absorb IR radiation from the earth's surface, heating the air and re-radiating towards the earth's surface.

1. Visible Solar Radiation

According to Boltzmann's law, a black body of **5.950°C** like the **solar surface** radiates with a narrow heap function where the **peak** lies at a wavelength of **0.5μ (10⁻⁶m)**, whilst a black body at **20°C like the earth's surface** radiates with a **peak at 10μ**. Both peaks lie inside an optical window of the atmosphere where the heaps coincide with the width of the respective optical window, so that only few radiation quanta have an energy level outside the heap. These two optical windows allow nearly loss-free passage of visible and IR electromagnetic quanta through the atmosphere as long as only Oxygen and Nitrogen are present. Without greenhouse gases (water vapor), the earth's surface will get very hot during daytime by absorbing a lot of energy in the form of visible light quanta, whilst it will cool down during night hours, due

to losses of IR quanta ($\Delta T \geq 100^\circ\text{C}$). With greenhouse gases, the daily temperature differences in the air near the ground can reach up to 60°C , for instance in the Central Sahara.

2. Invisible Solar or Space Radiation, infrared (IR) or ultraviolet (UV)

Most of the **UV radiation** is filtered out by the atmosphere (Ozone) so that it will contribute very little to heating the ground, but it can cause sunburn by single quanta. Between $0,7\mu$ (red) and 3μ (IR) the atmosphere will filter out the greatest part of the incoming/outgoing radiation, whilst at 15μ the optical window closes so that longer (IR) wavelengths cannot pass. The IR radiation from the sun outside the visible radiation heap is also negligible, so that the contribution of UV and IR radiation from the sun for heating the earth atmosphere is negligible.

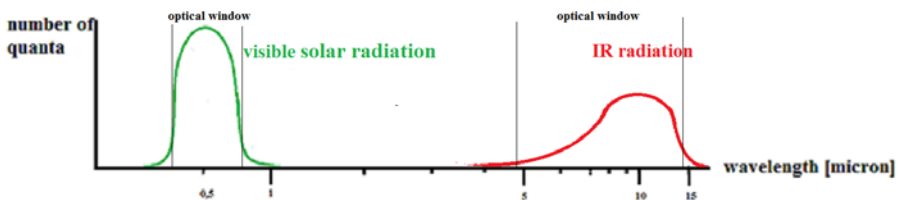


Figure 1: Graph of visible radiation ($T = 5.950^\circ\text{C}$) and IR radiation ($T = 20^\circ\text{C}$) not to size!

We deduce from the above diagram that the heap of solar radiation at the sun's surface temperature of 5.950°C is so narrow that the IR radiation from the sun plays a negligible role in heating the earth or its atmosphere. We thus conclude that the atmosphere is only very slightly heated through solar radiation, as the visible light is passing nearly unhindered through the main gases, oxygen and nitrogen.

3. Heat Conduction from the inner Earth to its Surface:

Although the inner magma core of the earth has a temperature of about 7.000°C and the magma layer, upon which the continents are floating, a temperature of 5.000°C , heat conduction through the outer “slag” layer is so slow that its contribution to heating the earth’s surface is in practical terms negligible.

By assessing these three effects we come to the conclusion that primarily the earth’s surface layer is heated and not the atmosphere, so that the heating of the atmosphere is caused by heat transfer from the earth’s hot surface to the air.

4. Heat Transfer from the Earth’s hot surface into the atmosphere by heat conduction

As the earth’s surface is nearly exclusively being heated by visible solar radiation, the heat transfer to the atmosphere might be done through heat conduction, i.e. the transfer from one molecule to the other by elastic collisions. This would require a complete (temperature) stratification of the atmosphere where the air molecules would remain in their strata. As air is a very bad heat conductor, heat conduction would be too slow in order to explain the observed daily temperature changes with height. Furthermore, the atmosphere is by no means stratified but turbulent, so that heat conduction is playing only a very minor role in heating the atmosphere.

5. Heat transfer into the atmosphere by convection

As heat conduction from the hot earth’s surface is only playing a very minor role, the heat transfer into the atmosphere is done by convection, i.e. the air layer next to the ground surface gets very hot and unstable and detaches itself from the ground in small light whirls, uniting with other whirls to form bigger turbulences

which cause updraft thermals. This can easily be seen in clear weather when gliders and great birds are spiraling upwards in these thermals, though they are in fact sinking against the ascending air. The atmosphere is thus heated by convection from the earth's hot surface which in turn has been heated by visible solar radiation, and by latent heat heating the air through condensing water vapor, forming mist and clouds.

D. The Role of Greenhouse Gases

1. The Greenhouse Gas CO₂:

In 1897 the famous Swedish chemist and physicist Svante Arrhenius published a book about CO₂, wherein he called this gas a “greenhouse gas”, as he had calculated the temperature of the atmosphere back in 1890 and found that it should be lower than it actually was. After having discovered that a CO₂-filled gas cylinder absorbed IR radiation which could lose its excess energy by heating the atmosphere, he concluded that in earlier times the lack of CO₂ in the atmosphere could have caused the Ice Ages. He did, however, not mention water vapor as a greenhouse gas which, as we know today, plays an incomparably greater role than CO₂.

2. CO₂ versus Water Vapor:

To clarify the role of CO₂ in relation to water vapor we do some small calculation:

At 15°C and 50% relative humidity the air contains 7,5g water vapor per m³. Since one gram-mol relates to 18g, 0,417 mol-weight water vapor are contained in 1m³ air near the ground.

As the average CO₂-concentration in the air is, according to the

IPCC (Intergovernmental Panel on Climate Change), currently at 400ppm, whilst it was so far reported as 360ppm, the CO₂ content in the air has thus risen by 40ppm or 11%.

The average mol-weight of air is $(32 + 4 \times 28) / 5 = 28,8\text{g}$. The average weight of air/m³ is thus $28,8 \times 1.000/23 = 1.250 = 1,25\text{kg/m}^3$. From this, the average weight of CO₂/m³ can be calculated and yields 0,5g CO₂ per m³.

The argument that the temperature drops with height in the atmosphere and so does the relative water vapor concentration, is not valid since water vapor is lighter than air and CO₂, as the heavier gas has also a higher concentration at lower altitudes, so that a more detailed calculation will show that the relative concentration of CO₂ will be even lower than the figure below.

Since the mol-weight of CO₂ is $12 + 2 \times 16 = 44\text{g}$, then 0,5g/m³ relates to 0,01136 mol/m³. **The relation of CO₂ molecules to water molecules in the air is thus $0,417/0,01136 = 37$.**

As the radiation cross section of H₂O molecules for IR absorption is 323 times as high as the one of CO₂ molecules, the average IR absorption of water vapor is $323 \times 37 = 11.951$ times as high as that of CO₂ at the prevailing conditions.

The average contribution of CO₂ to the greenhouse effect in the atmosphere through IR absorption relatively to water vapor is thus only 0,008%, i.e. it is negligible!

3. The pretension of non-overlapping IR-absorption lines

Some of the most recent IPCC publications came up with the statement that the “radiational cross section” in the infrared optical window, mentioned above, could not be applied, as the absorption lines of CO₂ and H₂O are distinct and do not overlap so that the absorption lines of CO₂ “close the gap left by the H₂O molecules”. What these IPCC hobby-scientists did overlook is that these absorption lines can only be observed at extremely

low gas pressures or temperatures. The reason is that the energy quanta absorbed divides the energy between the quantum states (eigenvalues of oscillations) and the translation energy of the whole molecule (Brownian movement), so that the absorption lines are smeared out and are thus overlapping as soon as the relaxation time of quantum states is large, compared to the time intervals between molecular hits by other molecules. The IPCC argument is thus a fake argument, as the atmosphere contains dense gases far away from zero temperature! **The radiational cross section is thus the only means to calculate infrared absorption!**

4. The Contribution of Methane (CH₄) and other Greenhouse Gases

Methane has a concentration of 1.800ppb = 1,8ppm compared to 400ppm of CO₂ in the atmosphere. The average time of decay to CO₂ is 9 years. As methane has 23 times the cross section of CO₂ in relation to IR radiation, its contribution to the greenhouse effect is $1,8/400 \times 23 = 10,35\%$ of CO₂'s contribution. **The average contribution of methane to the greenhouse effect is thus 0,0008% of the contribution of water vapor.**

Even a tenfold methane concentration would not cause a measurable contribution to the greenhouse effect and could not cause a catastrophe, as predicted by IPCC alarmists (arctic methane ice), particularly due to the quick decay of methane to CO₂. Nitrogen-oxygen compounds like N₂O, NO, NO₂ and others are also strong greenhouse gases, but play a minor role due to their low concentration, at least in the (here important) troposphere (up to 12.000m).

5. Speed of CO₂ exchange between Water and Atmosphere

While the IPCC is branding the danger of an increasing level of CO₂ as the climate killer, most people do not know that there is a constant exchange of CO₂ between the atmosphere and the vast ocean surfaces, i.e. 2/3 of the globe's surface, with the consequence that an excess amount of CO₂ would automatically be absorbed by the oceans themselves. This effect can easily be checked by opening a bottle of mineral water from the fridge after some time in a warm room, where CO₂ is bubbling out, because the water has been warmed. It would not bubble out from a cold bottle. This tells us that the higher CO₂ content in the atmosphere is the consequence of the preceding heating of the water/air and not the cause of heating.

The professional IPCC supporters, however, deny this simple relation by pretending that the solution of CO₂ in water is such a slow process that only a negligible fraction of the increased CO₂ content in the atmosphere would go into solution, so that the enhancement in man-made CO₂ would fully contribute to increasing the atmosphere's temperature. This argument could only be correct, if the strata in the atmosphere and in water would be static and not turbulent, if the CO₂ exchange with water would be as slow as claimed and if CO₂ would play any role in this.

We can, however, see with our own eyes that the atmosphere is turbulent enough to remove any stratification. Any blue-water sailor will immediately realize that the 300m ocean waves from past storms cause the water particles in the oceans to follow a drum-like path with the axis parallel to the waves to a depth of 300m, so that there is constant turbulence in this upper layer and thus a fast CO₂ exchange between the ocean's surface and the air.

More recent publications show that the evaporated water in form of mist and clouds formed by little water drops in the atmosphere

have 275.000 times the surface of the globe's water surface (oceans = 70%) so that the CO₂ absorption by these drops is around one million times bigger and faster than the absorption by the water surfaces on ground level, since the freshly evaporated water does not contain CO₂. There could consequently be 10 to 50 times the amount of CO₂ stored in these droplets as compared to the whole dry atmosphere (H.Böttiger 2008). The short-term CO₂ exchange between atmosphere and oceans is thus much faster than previously thought, and thus, by orders of magnitude, faster than any warming of the atmosphere by CO₂.

The fact that the "IPCC's chosen scientists" did not include these facts into their climate models, render their computer models useless and, likewise their predictions, wrong.

6. High Density CO₂ Layer over Tropical Oceans:

When it became clear that the above model could not explain global warming by CO₂, a new postulate was instituted in the eighties by the follow-up organization of the (in)famous „Club of Rome“ (which predicted Bangladesh to be submerged by at least 10m by the year 2.000), namely the IPCC (Intergovernmental Panel on Climate Change). According to that new model, the CO₂ is not evenly distributed in the atmosphere but forms, being the heavier gas, a dense layer of highly concentrated CO₂ just above the tropical oceans, locally exceeding the effect of water vapor by far and thus heating the upper water layer so that a strongly increased evaporation would cause a great increase in the concentration of water vapor in the atmosphere thus raising the greenhouse effect and global warming dramatically.

However, this postulate is already wrong in its basic assumptions, as such "cold air lakes" with the heavy gas CO₂ staying at the bottom (inversion layer) can only be formed in deep valleys, if all vertical and horizontal gas movements are suppressed and no heating by the sun is possible, because solar radiation could not

heat the ground surface, causing convection and turbulence and destroying the stable stratification. This can only happen in icy winters in trough valleys where mist will prevent solar radiation to reach the ground.

This cannot happen in the tropical zones in the oceans, since the postulated heating of air layer just above the water will specifically cause strong convection and will thus destroy the postulated stratification by ascending air whirls and carry the CO₂ through these thermals thousands of meters up into the air, as the gliders and gliding birds directly confirm.

Moreover, **nobody could ever prove or has ever measured the postulated high CO₂ concentration above the ocean's surface.** As water vapor is considerably lighter than air, convection and turbulence are further enhanced thus destroying any stratification even faster. The postulated CO₂ layer effect is thus, from the start off, a **fake argument raising suspicion about the motives and qualifications of the scientists concerned.**

General Remark:

Without CO₂ no organic life can exist on this globe, since CO₂ is synthesized with the aid of chlorophyll and the sun into life-building carbon-hydrates, the building stones of organic matter in the water and on land!

E. Additional Facts Disproving the IPCC's CO₂ Postulates

1. CO₂-Absorption by Plankton in Upper Ocean Layer:

There is an additional mechanism which the IPCC models have totally neglected or purposely omitted: Not only inland plant growth but also the plankton cells in the upper sea levels utilize huge amounts of CO₂. They form with the aid of sunlight hydro carbons which after the decay of the plankton sink down to the sea bottom where they form anaerobic layers of fermenting sludge eventually forming oil and methane. At least the oil is staying there in the form of long-term oil deposits at the bottom of the sea, as the process continuously extracts huge amounts of CO₂ from the upper sea level, and thus from the atmosphere.

Limestone-forming micro-organisms do as well live on CO₂ in the sea water, forming, except for their organic hydrocarbons, limestone (CaCO₃) from sunlight and H₂CO₃ in the sea to protect their soft bodies. After decaying, their lime-bodies are sinking to the sea bottom, condensing into limestone, which will eventually form massive mountain ranges, sterilizing CO₂ for many millions of years. Their activity (appetite for CO₂) is so high that the higher ocean levels would be completely depleted from CO₂, if CO₂ would not be supplied from other sources (H.Böttiger 2008). Coral reef plants are also large-scale CO₂ predators, building up enormous tropical limestone reefs, so that the limestone cycle is threatening our CO₂ reserves in the air.

2. IR-Absorption by Water Vapor weaker than previously thought

One of the more recent IPCC postulates about the contribution of water vapor relatively to CO₂ does insinuate that the longer decay time of the higher quantum states in CO₂ would cause

it to get rid of its “latent heat” by elastic collisions, thus heating the surrounding air, whilst water vapor would, due to its quickly decaying quantum states, lose its energy through IR-radiation before the next elastic collision and could therefore not contribute much to heating the atmosphere. This argument is, however, self-defeating since the chance to excite one of the 37 surrounding water molecules to a higher quantum state by collision is very high, so that the IR-radiation losses would then take place via water. This would in fact enhance the role of water vapor as greenhouse gas in relation to CO₂.

3. Man-made and Volcano-made CO₂ in the Atmosphere

The recent more accurate determination of the CO₂ released from the magma chambers of active volcanoes to establish an early warning system for earthquakes and outbursts, revealed that the amount of natural CO₂ releases (200 to 300 Gigaton p.a.) to man-made CO₂ (7 Gt p.a.) shifts the relation of man-made releases to natural releases to 3% (H.Böttiger 2008). Needless to say, that the IPCC has closed its eyes and has neglected these new and really important findings altogether.

Only against the combined foregoing findings becomes the role of CO₂ understandable but the fact remains that CO₂ and specifically man-made CO₂ does not play a significant or even measurable role in heating the atmosphere.

4. 420ppm CO₂ at Mauna Loa:

The Mauna Loa Observatory is situated in Hawaii at the Pacific Ridge, which is formed by ascending magma from the inner earth, so that there is a maximum of gassed out CO₂. To conclude from 420 ppm at Mauna Loa, that the rest of the atmosphere has the same concentration, is as scientific as to postulate an atmospheric temperature of 80°C from measurements near the boiling hot springs of Iceland.

F. The Ice Age in Eurasia

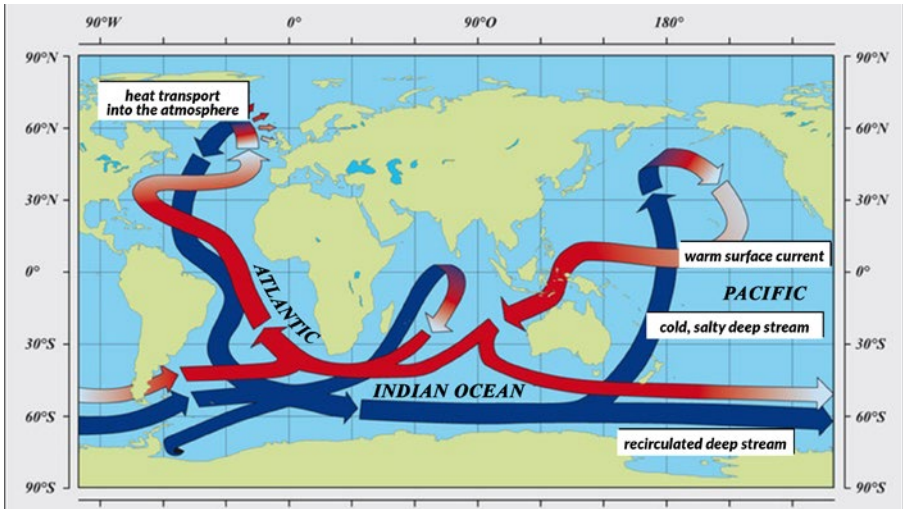
1. Svante Arrhenius

The “grand old man” and first scientist to postulate the heating of the atmosphere by CO₂, who died in 1927, had in fact searched for the reasons of the Ice Ages in Eurasia and believed to have found it in 1897 in the cooling of the atmosphere due to a lower CO₂ concentration during the Ice Age. However, he could not supply any reason for the lower CO₂ content so that his theory had no foundation to begin with. This is no surprise, since Planck’s quantum hypothesis was only published in 1900 and the explanation of the absorption of certain wavelengths in the visible and IR spectrum was only achieved by quantum mechanics after 1929.

He had overlooked the fact that the formation of glaciers does not only require subzero temperatures, which are always guaranteed in polar winter, but also a very high precipitation in winter time so that, in summer time, solar radiation is too weak to melt all this snow. He did neither see nor investigate the role of the warm Gulf Stream in the arctic region.

2. The Snow Machine in the Arctic

By transporting huge quantities of heat energy from the tropical oceans into the northern arctic region of North Greenland and North-Norway (1 – 4 million Gigawatt), and considerably warming up Western Europe, the Gulf Stream is the real cause for glacier formation in the Arctic region which is remarkably warmer than the Southern Arctic region.



*University of Heidelberg (partly incomplete, Benguela current is cold!
Humboldt current is cold!)*

The Gulf Stream starts as a cold stream (Benguela Stream) in South Africa and flows alongside the West African coast heading North, heating itself up in the Gulf of Guinea and excessively in the Gulf of Mexico (up to 30°C), then continuing as a warm surface current alongside the US East Coast to north. At Newfoundland, the Atlantic West Wind drift drives it to the East towards the Norwegian coast, where it bends North with one branch entering the Barents Sea and keeping the ports Kirkenes and Murmansk ice-free during the last warm age.

Before it crosses the line between North Cape (Norway) and Spitsbergen during a Warm Age the Gulf Stream has become heavier by evaporation (more salt) and cooling than the water below, so that it is partially falling down 4.000m in undersea waterfalls, flowing back to South as deep-sea current by undercrossing the surface stream several times.

As the water in the Gulf of Guinea and Mexico is warming up (during a Warm Age), heating the Gulf Stream even more, additional ice in Greenland and Norway is melting and replacing

evaporated sweet water and lost heat energy, so that the Gulf Stream starts to enter the Polar Sea.

As it enters the Polar Sea, the drift-ice-free water surface is growing continuously. This is the start of the next Ice Age, since, during winter time, more and more open sea area will evaporate increasingly more water around the North Pole with its natural high-pressure system and dry air, whilst a fast-growing low-pressure system in the lower atmosphere will develop south of the North Pole. This will cause strong North West storms (Coriolis deviation), i.e. an extremely strong polar cell (whirl system) around the North Pole, the dry air of which will absorb huge amounts of evaporated water and off-load it as snow at the North coast of Eurasia (+ Canada).

3. Formation of Glaciers in North Eurasia

As only small amounts of these snow masses can melt during the short Arctic summer, huge glaciers are developing at the Eurasian North Coast. Some additional effects do exist: As these glaciers were growing up to proven heights of 8.000m, the average temperature was lowered by at least 56°C, so that, during the summer, nearly no glacier ice can melt. Incidentally do the Teutonic sagas (Edda) also mention these icy mountains. A second effect is that with the expansion of these glaciers to the South, their area and thus albedo (reflection of solar radiation) is growing, also shortening the melting period and increasing glacier growth so that the glaciers move south even faster.

The strong evaporation extracts so much water from the polar sea that a trough is developing there, into which the Gulf Stream is so to speak **sucked in**. There, the saltier and heavier water is falling by about 2.000m into the Fram and Eurasian (partly also into the Canadian) basins and flows back as concentrated current through the deep-sea channel between Greenland and Spitsbergen into the North Atlantic. As long as the Gulf Stream is

carrying enough heat along, the “snow machine” will stay stable and so will the Ice Age. Only if the ocean level has been lowered too far, will the flow of the Gulf Stream will be impeded and so will the heat transport into the Arctic Sea. This will be the start of the next Warm Age. We are just at the end of the last one.

The arctic evaporation area comprises about 5 million km² during the Ice Age. Due to the strong North-West storms with dry polar air, we assume an evaporation of 0,5m p.a. and a melting rate of 50% so that a net inflow of $5 \times 10^{12} \times 0,25 = 1,25 \times 10^{12} \text{ m}^3 = 1,25 \times 10^6 \text{ km}^3$ water p.a. is required to replace the evaporated water, transformed into ice. Due to these losses, the sea level will be lowered by about 250m, until the inflow of warm water will be cut off. With the net evaporation above, and the relation of the evaporation area of $5 \times 10^6 \text{ km}^2$ to the ocean area of $360 \times 10^6 \text{ km}^2$, we arrive at a time interval of 72.000 years for the growth of the Ice Age glaciers. This is in good agreement with the average duration of the last Ice Ages of 90.000 years each.

As we are now in the 12th millennium of the last Warm Age (average 10.000 years) and the arctic region is apparently getting warmer, we are with great probability at the beginning of the next Ice Age with serious consequences for the Northern Hemisphere.

At a thickness of roughly 1.000m the glacier ice is exerting a pressure of 95 bar, causing a water layer to form at the bottom upon which they begin to float. As they are slightly tilted south, the glaciers started sliding south, so that the glaciers reached the 52nd latitude (North Germany) during the last Ice Age.

As the huge glaciers in North-Eurasia release enormous icebergs into the arctic sea, they release vast amounts of light sweet water near the North-pole, while moving north and melting. This layer of sweet water, with its higher melting temperature, will grow a solid ice layer at the North Pole (North 80° altitude), increasing the air pressure at the pole and the wind speed at the surface of the open waters (between 70° and 80° altitude).

However, there exists additional proof: During the 1960-ties, Russian archeologists had begun to dig up ruins of highly developed towns in the South of Novaja Semlja, the name of which is “Tula” in Greek and “Thule” in ancient German. They dated the age of the eldest towns at 3.000 a.C., being surprisingly similar to towns of the Indus Culture (2.200 a.C.) with well- developed sewerage systems.

They found that, in 10.000 a.C., the inhabitants had suddenly left without trace. There is only one explanation: The dense population in the towns had lived from agriculture, as there was no permafrost (warm waters around) until 10.000 a.C., when at the end of the last Ice Age the permafrost started again, because the warm Gulf-Stream had stopped.

This coincides directly with the end of the last Ice Age. It is intriguing that the Aryu, as near relatives of the Teutonic race are maintaining in the Old-Indian Vedas to come originally from a country where the sun did not subside in summer time, and that Teutonic tribes see the island Thule as their original home, especially mentioned in the Friesian sagas.

It is very important to note that the Ice Age in the Northern Hemisphere was caused by the warm Gulf Stream and not by global cooling. Svante Arrhenius was in any case mistaken by seeing the cause for the Ice Age(s) in a global deficiency of CO₂.

G. The “Constant” Sun

1. Direct visible Solar Radiation:

The direct solar radiation is without a doubt the main source of heat energy at the earth’s surface. The surprisingly low variation of the solar constant of only 0,1% coinciding with the change of

the sun's surface temperature has many climatologists tempted to believe that they could work with a real constant and forgot that a change of 0,1% in temperature means a change of 0,4% in intensity, according to Stephan-Boltzmann's law which, compared to the other variables, is quite relevant, especially if positive feedback mechanisms are involved. But still, solar radiation is in the IPCC-accepted computer models acting only as a constant.

2. Sunspots and Solar Wind

About 4.000 years ago Chinese scientists did already mention sunspots. Recent scientific publications showed conclusively that sunspot activity and hotter climate are directly related over the last 5 centuries as opposed to CO₂ content and hotter climate! This is a further proof of § B.1, the fact that CO₂ contribution to IR-absorption (Global Warming) is negligible as compared to water vapor. We learned in the last century that sunspots are the cone-like centers of huge whirl-like plasma eruptions (protuberances) from the Sun into the direction of the Earth which due to their rotation form strong magnetic fields that are interacting with the magnetic field of the Earth, being the cause of aerosol increase in the atmosphere.

3. Cloud Formation by Aerosols:

It is not widely known that auto-condensation of humid air does only take place at 120% relative humidity, whilst condensation will take place at 100% relative humidity, if condensation kernels are present. If the sun's strong magnetic field supports the Earth's magnetic field, the high-energy intergalactic radiation will be deflected by that field so that the corresponding high energy quanta and particles cannot ionize cascades of particles in the atmosphere. If the combined field is weak, many ionized particles are present in the ionosphere, causing enhanced condensation and cloud formation whereby the ionized particles are particularly

effective due to the strong dipole moment of water molecules.

These dense clouds (condensed water vapor) in the troposphere have a very high albedo (reflectivity for visible light) at their top, changing the albedo from 30% (desert soil) to about 70%. The strong cooling effect below these clouds is much stronger than the change of 0,4% in intensity of solar radiation. Despite its great contribution, this effect does also not appear as a variable in the IPCC-accepted papers but as an insignificant change in the sun's constant power supply to the earth's surface. Thus, the IPCC-accepted papers do neglect solar-induced temperature variations of great significance.

Another source of airborne particles is the quickly advancing large-scale soil erosion and desertification of large regions for instance in China (40% arable soil lost in the last 60 years), India, Kazakhstan, Africa and Brazil, where the bacterial glue in the soil has been lost (1.000 Gigaton C plus!) and the fine particles have been washed out or have been blown away which are now floating in the atmosphere as fine dust, contributing to haze (warming) and solid cloud formation (cooling). These effects which will, in future, become much more pronounced and important but did just not find their way into the IPCC's climate models and forecasts, which again renders these models useless.

4. The Albedo Effect

After having shown that water vapor is by far the strongest "greenhouse gas", most people think that the more water is in the atmosphere, the hotter it will become and eventually end up in a run-away climate catastrophe. Indeed, the IPCC climate models do forecast this very scenario, which is hardly understandable from people with their five senses still intact. We all have learned at school that from a relative humidity of 100% water will start condensing, eventually forming clouds which will reflect visible solar radiation, thus increasing the albedo and reducing the

temperature below the clouds. We add here, that condensation is not impossible without condensation kernels, but that auto-condensation does only take place at 120% relative humidity. If the cloud formation is strong, for instance in a thunderstorm, hail can fall and temperature at ground level will easily drop by 20°C within 20 minutes. How can it be that this worldwide occurring phenomenon did not find its way into the climate models of the IPCC which treat the albedo as an averaged constant? These climate models are from the start, so incorrect that accidental errors can be excluded!

H. IPCC Statistics, Climate Models and Forecasts

In the “Arte” trailer about climate change of the German State Television of 27.11.2015 an IPCC mathematician explained how one can, with the aid of statistical models and super-computers, find out the main cause for climate change with the highest possible probability, despite the system being highly complex and multi-causal through interdependent climate factors and can thus establish CO₂ to be the main cause for climate change and in fact the climate killer. The mathematician of IPCC fame, who had before done bets on soccer play offs with a great number of correct forecasts, explained his method as follows: He had made a statistical model of the different qualities of soccer players (speed, dribbling etc.) and calculated the results with different methods which gave him very similar curves. He then took the different qualities out one by one which gave him not the same but similar curves with the same shape until he took out the transfer sum of the players which totally distorted the whole graph. From this he deduced that this factor was the decisive one. He thus placed his forecasts on the sum of transfer cost paid by certain clubs and was in most cases right.

He continued by explaining that he had done the same with the

different climate relevant effects and found that taking out CO₂ as a climate component the whole model ended in distortion and chaos, so that the CO₂ was the decisive driving force of global warming. Though this might, at first glance, sound convincing, a closer look shows logic flaws and dirty tricks:

A first basic flaw was that his statistical method could only be applied to independent variables, but that the transfer value was by no means independent from the other variables but was indeed the sum of those. It showed that the best combination of good factors gave the best result which was mirrored in the transfer sum. Any normal person could have told him that straight away without complicated computer models! Logically speaking, he had in fact precluded what he tried to prove. In the CO₂-case he did exactly the same!

With his IPCC colleagues he started with some supplementing trick: By taking the different solar contributions as constant values (0,4% variation in radiation intensity, the much higher variable contribution through ionized condensation kernels, the albedo as function of water vapor and indirect function of the variable solar transmission) the solar contributions were not taken as the most relevant variables but falsely as “constant factors”. The dynamic role of the sun was automatically sterilized and so was the role of water vapor in the atmosphere by assuming a fixed standard albedo. As these “fudge factors” were open for interpretation “as reasonably” constant contribution by the sun and albedo, even the overwhelming contribution by water vapor was thrown away so that only CO₂ remained as a variable and thus as the only possible cause of warming. With these tricks the influence of CO₂ was inflated by orders of magnitude and the role of CO₂ as the decisive climate factor was falsely established. Taking sun and water vapor with all their independent and interrelated effects into full consideration, CO₂ plays an insignificant role and is the consequence and not the cause of global warming. Hence the extremely expensive computer calculations can only be seen as an extremely expensive smokescreen which appears to have

something to hide.

In connection to these computer simulations the suspicion of fake data and rigged computations has now reached the courts, as Michael Mann, the author of the infamous but widely acclaimed Hockey Stick curve with the inevitable rise in world temperature, is being trialed before an US court for misrepresentation and fraud in connection with public grants.

The pretension of Global Warming through man-made CO₂ is thus scientifically not tenable, so that industrial CO₂ gas cannot form any threat to the climate. But the worldwide deforestation, Nitrogen over-fertilization and the consequent soil erosion and desertification pose a massive threat to mankind and its food supply, which has been camouflaged by the IPCC's unfounded alarmism.

I. Obscene Profit Margins and Obscene Marketing

1. Who is behind the CO₂-Alarmism and whom does it serve?

Incidentally, there was a vociferous organization in the past heralding the same scenario as the IPCC, i.e. the „Club of Rome“, which was according to its own publications financed by the Rockefeller Foundation. Contrary to general perception this foundation is not a humanitarian organization but the most gigantic tax-saving scheme in the world, which does allow the so called “seven sisters” and its present follow up organization n.l. the real oil cartel (not Opec) to hide its huge profits without being taxed. Exxon Mobile is for instance one offspring of the Rockefeller Company. The only difference between the „Club of Rome“ and the IPCC is that the latter is a semi-governmental

organization which makes it even more influential. Certain IPCC-related scientists are even today members of the “Club”.

2. Profit Margins and Marketing Strategies

As 40% of the present crude oil production is coming from the Gulf, one should look at the production cost including depreciation (in this case drilling cost for new oil). These costs amount to one US\$ per barrel, whilst the average selling price during the last 20 years was around 70 US\$ per barrel which brings us to a profit margin of 7.000%, a real obscenity, only comparable to drug trafficking. But these fantastic profits right at the beginning of the value-adding chain make it virtually impossible for any of the big Western Oil Companies to show losses in their balance sheets, but indeed they do and are avoiding trillions of Dollars in tax money. How? The only way is that these profits find their way into non-taxable foundations, i.e. the Rockefeller Foundation and its ramifications. We can now understand, why the “Club of Rome” did already in 1973 adamantly herald the “fact” that by the year 2000 Bangladesh would be submerged by at least 10m in the ocean, if the CO₂ emissions were not dramatically curbed. But despite the fact that emissions grew further Bangladesh’s surface area has risen in the meantime due to heavy silting during the annual Monsoon floods of Ganges and Bramaputra.

This shows that the secret oil cartel (seven sisters, not OPEC) is behind the „Club of Rome“ and the IPCC, who are trying to condition the end user to pay ever more money for ever less fuel/oil, pretending that this would be the only way to avoid a climate catastrophe. Indeed, this marketing strategy deserves the name “obscene”.

3. Coal, the cheap Competitor of Oil

The crusade against CO₂-emissions has another profitable side effect, as coal as the cheapest fuel for power stations with the

highest CO₂ footprint can be branded as “climate killer” and can thus be driven off the market by expensive carbon certificates. This crusade has already taken such grotesque forms that for instance the German Government and most faithful follower of the IPCC apostles is now trying to eradicate “the dirty coal” completely from the German power grid so that oil can get rid of its strongest competitor. One consequence is that due to the artificially inflated power price the world’s biggest recycling project, nl. steel manufacturing from 90% scrap iron in power-intensive induction furnaces in Germany is now ending for power being too expensive. Against this background the coercive climate alarmism of the IPCC must be seen as economic sabotage.

4. Bio-Fuel

One of the most dangerous consequences of the IPCC’s climate alarmism is the substitution of “climate killing” fossil fuels with “climate neutral bio-fuels” from maize or oil palms which act in direct competition to human food production in a world of hunger and are thus a cynic perversion. The main problem is, however, that the industrial production of bio-crops causes soil erosion and droughts by over-fertilization and cutting of the rain forests. A sad side effect is the advancement of deserts and even the desertification of whole regions like for instance in China which has lost 40% of its arable land during the last 60 years due to erosion.

J. The real Threat to Climate and Human Nutrition

1. Albedo as a Variable

The fact that the IPCC-related scientists treated the albedo, i.e. the reflection of visible sun light back into space, as a constant factor is not only a grave mistake but shows that these nerd-scientists are rather acting as lemurs in front of a PC monitor without ever having a look at the sky with its ongoing variation of sun, haze and clouds, directly showing them that the change of the albedo is the strongest possible short and medium-term cause of energy input into and temperature variations of the atmosphere. To understand this better we have to realize that water vapor in the gas state will fully transmit visible light (optical window in atmosphere), haze will partly transmit, partly deflect (Rayleigh deflection) and partly absorb visible light (small droplets) and water drops in dense (cumulus) clouds will overwhelmingly reflect light at the top surface. This reflection is so strong that passengers have to close eyes whilst their jet airplane is just breaking through the surface of the cloud.

Depending on aerosols in the atmosphere the difference between clear sky, haze and cumulus clouds might only be 1% in relative humidity and is thus extremely sensitive to tiny changes in water vapor or aerosol concentration. The albedo at the surface of cumulus clouds is 70%, whilst it is about 30% over land and sea. Hence, if the cloudiness over land rises by 10%, the albedo reflection rises by $0,1 \times 70/30 = 23\%$ over land and 6,9% over the globe (70% ocean surface). This means that a 1% change in water vapor concentration over 10% of the lands surface changes the energy entry towards the globe's surface by 6,9% which is an incredible amount. This effect can be caused by higher vapor concentration and/ or higher aerosol concentration both originally caused by the sun whereby we omit fine dust from increasing soil erosion and shall later come back to it. To sum up: Treating sun or

albedo as constant factors shows the IPCC's climate models to be fundamentally wrong.

At first glance the higher humidity in the air might cause a greater greenhouse effect during night hours but this is not certain, as the daily clouds might come down as rain or dew thus depleting the air of water molecules, as night cooling causes additional condensation.

2. The Influence of Plant Growth on the Albedo

The former president of Brazil, Mrs. Dilma Rousseff claimed that the desertification of the Western parts of the Amazonas rain forest area was due to "global warming" and received great acclamations by the IPCC. What she did not say was that during the last 70 years the Amazonas rain forests in the whole East were cut (50% in total) and eventually replaced by low yield pastures. Whilst the former rainforests had an extremely high re-evaporation of nearly 100%, the pastures had less than 10%. As the eastern trade winds are transporting rain westwards and as rain from the West cannot pass the 5.500m high Andes, the low re-evaporation in the East does carry only a fraction of the original rain to the West which is the real reason for droughts and desertification in the Western Amazonas area. This shows that a dense, highly evaporating plant cover can dramatically increase cloudiness and thus the albedo without enhancing sea temperature over the oceans.

Bad for Brazil: The original re-evaporation over the Eastern Amazonas rainforests was so high that a lot of water was transported to the South at great heights which rainfall has so strongly decreased during the last 30 years that the big dams around Rio de Janeiro and Sao Paulo have fallen dry leaving Brazil with a terrible shortfall of power and an economic growth rate of minus 6% in 2015.

But this is not the only example of a large-scale decrease of dense clouds and albedo and thus increasing solar radiation reaching ground level. Large-scale desertification in many countries like China, India, Indonesia, Kazakhstan, East-Africa etc. has led to a general decrease in albedo and thus to a warming effect. And this decrease in albedo has greatly been man-made, like in Brazil. **This dramatic increase in soil erosion and desertification is at present the greatest threat to food production, as is the next Ice Age which is just advancing.**

The bad news is that this large-scale soil erosion is at present a non-reversible effect, since the fine sediment, required for the growth of the necessary soil bacteria, has been blown away or washed out, also minimizing the necessary water retention. Tree cutting and present day mineral fertilization cause and accelerate soil erosion at an alarming rate, especially with industrial farming of bio-fuel crops. It is thus the frantic and senseless war against fossil fuel CO₂ emissions which has become the greatest contributor to global warming. If we look at the present, quickly increasing share of desert area on the continents, we should really be concerned about entering a “hot period”.

This process started long ago in Roman times and even before, when North Africa was still the bread basket of Rome but the trees at the South Flank of the Atlas Mountains were cut for shipbuilding and never replanted. Today the Dry Savanna of the old days has changed into a dead desert landscape covered by coarse sand dunes at the end stadium of eroded soil. Can we reverse this development with conventional means? The sad answer is simply „No”!

According to the WEF in Davos we have only 50 years left to stop and reverse the increasing soil erosion, which, if not stopped, will reduce rainfall, cloud formation and albedo so that a dangerous mutual feedback between soil erosion, desertification and droughts will develop until a new equilibrium at higher atmospheric temperatures will be

achieved and increase global rainfall which has definitely happened in the past!

How much higher will the temperature be? A conclusive answer cannot be given at this stage due to the high complexity of the world climate, which was hidden by the simplified statistical models of the IPCC. So, do we have to wait for the unavoidable? And if not, why?

K. There is a Solution in Sight!

1. Can the Albedo be altered?

As we have seen at the beginning, the albedo is the decisive factor for how much visible solar radiation will reach the earth's surface which is the primary contribution to the earth's temperature. If we would be able to get fertile soil back into the desert areas and to irrigate these desert regions we could indeed **start intensive agriculture and thus enhance the albedo by rainfall multiplication**. One of the problems is, where do we get the water from, for instance for 10% of the land area = $510 \times 10^6 \times 0,1 = 51$ million km^3 . With 1.000mm p.a. (good rains) we would require $51 \times 10^6 \times 10^6 \text{ m}^3 = 51$ trillion m^3 of fresh water, a gigantic quantity, to be desalinated and pumped over thousands of kilometers. This sounds impossible.

But before we give up we should go back to the rain forests of Brazil where the trade winds from the East bring water-saturated air from the Atlantic and cause rain in the coastal belt. The 100% re-evaporation of the former rainforests evaporated the water back into the air so that rain was continuously falling at the leeward side further West and so on until the last moisture was off-loaded as heavy rain at the Eastern slopes of the Andes after an average passage of 6.400km. The question is, can we repeat this trick which would require less than 0,5% of the water calculated

above. For that the re-evaporation rate should be near 100%.

If we apply this example to a plant belt at the southern slope of the Atlas Mountains from Morocco into Tunisia with a length of 4.500km and a width of 25km, it would lie across the North-West Wind drift in winter time and its rain would drift South East into the Sahara where it is repeatedly evaporated. It would require $112.500 \times 10^6 \text{ m}^3$ water of 0,5 € per m^3 or €56 billion p.a. but could green an area of more than 23 million km^2 , if this rainfall would time and again be re-evaporated at nearly 100% by aid of humus. If one would spread the project over 50 years, the annual amount of only €1,2 billion p.a. would be affordable. Top humus for fertile soil could be imported and produced gradually in the countries themselves **Greening of deserts in Africa would at the same time cool the Gulf Stream by the trade winds increasing the cloud cover in the hot regions of the Atlantic!**

2. What is required?

If 25% first-class humus by volume is added to the desert sand to a depth of 1m, the soil would not only have maximum water retention but also the highest possible fertility and thus, via plants, the highest possible evaporation. If the project is spread over 50 years, it could in theory be done. Hence **one needs a very cost-efficient desalination, cheap first-class humus and cheap sustainable power for desalination and pumping water to the surface.**

3. Solution: The TerraFuture Technology Compound

The right technology compound has arrived in 2014, after 20 years of development, and has been continuously optimized ever since:

The **TerraFuture Turbine** produces the **cheapest power** on

the globe exactly when it is needed due to its huge controllable hot water storage ponds and uses the sun as emission-free and in-exhaustible energy source. Due to its modular built-up it can be built nearly anywhere and is extremely efficient in sun-rich countries. Due to its revolutionary heat and infrared insulation it is the most advanced heat engine with maximum reduction of heat losses

Through a small modification the TerraFuture Turbine can use the full impeding solar energy for **water desalination** and recover it completely for power generation thus supplying the cheapest sweet water in the desert areas which is a necessary prerequisite for large-scale desert agriculture with high evaporation

TerraFuture Humus is a unique, complex organic compound with the highest known fertility (1m root growth in 3 days). As it is not formed by nature in arid or tropical areas it must there be manufactured in special, program-controlled high-temperature humus reactors. Residual plant matter from the TerraFuture agriculture or other organic materials will be composted in these TerraFuture Reactors and then applied to the organic, pesticide- and GM-free TerraFuture Humus Agriculture with the highest known yields and highest quality of food.

As TerraFuture Humus is thermally and chemically extremely stable, it fixates huge amounts of CO₂ permanently as humus in the soil, once it has been ploughed in. As long as the IPCC's CO₂ hysteria does persist, large-scale CO₂- emitters can obtain cost-free carbon certificates, if they invest in TerraFuture power plants with a sequestration of 15 million ton CO₂ per Gigawatt p.a.

As it possesses an extremely high water-retention and the highest known fertility, only TerraFuture Humus can rehabilitate destroyed rain forests and eroded soils instantly and at affordable cost. It is thus indispensable for cultivating desert soil, greening deserts, creating fertility, producing rain, increasing food production and **increasing the albedo**.

4. Result: Mankind can escape Famine and undue Climate Changes:

- a) Mankind can instantly stop and reverse world-wide erosion and desertification.
- b) Mankind can triple arable land (deserts) and multiply food production at least ten times (high yields of humus agriculture) and at the same time increase rainfall.
- c) Developing countries can, due to very cheap power, mine and process their natural resources and start fast economic growth.
- d) Migration pressure in developing countries will end due to strong economic growth.
- e) Developing countries in the sun-belt can export cheap power and finance the (re-) cultivation of their desert regions from power revenues.
- f) The higher inland water content in the air reduces infrared radiation cooling at night.
- g) A greater albedo cools the continents at daytime and diminishes global warming.
- h) The combined effect equalizes temperature differences and reduces extreme weather.
- i) A higher CO₂ content in the air will accelerate plant growth and desert greening.
- j) If the Sahara will be covered by a green plant layer, evaporation will rise and the North-East trade winds will, according to the planetary wind system, carry many clouds from the Sahara and will strongly increase the Albedo over the Atlantic. This will cool the Gulf Stream and ease the effects of the next Ice Age which is just advancing.



L. The TerraFuture Compound can avoid Famine and mitigate Ice Ages

- **Power from the sun, cheapest power from in modular pressurized turbines (see picture);**
- **Controllable, integrated energy storage in water + rock, day and night full power supply;**
- **Very cheap, high yield, organic humus agriculture, GM + pesticide-free, many jobs;**
- **Many spin-off technologies like the cheapest water desalination etc.**

Industries and mineral recycling, becoming more and more important, are in need cheap power. TerraFuture Turbines with the world's cheapest power of 1,5€/kWh in the solar belt (30° North/ South) and 2,0€/kWh outside (transmission) will make economies extremely competitive and solve the problem of migration from Africa, since developing countries can now beneficiate their minerals themselves and build up follow-up industries. In Northern Latitudes the TerraFuture Turbine can triple the efficiency of natural (earth) heat power stations and can reduce power prices, also by fixation/ sequestration of CO₂

emissions from coal-fired power stations in humus, as their cost of power is not inflated by carbon trading.

Power must be available at the very instant when it is needed. Erratic power supply from renewable energies, which constantly need back-up power from fossil-fired power stations or has to be dumped abroad during times of over-production, multiplies the generally too high generation cost. Non-aligned energy stores are expensive and lose much energy per cycle (fuel cell 50%!) so that the already too high cost of power is further multiplied. Thanks to the integrated energy stores TerraFuture Turbines do supply power exactly when it is needed, do not waste energy and stabilize the grid at no extra cost.

The optional, integrated TerraFuture water desalination does also not lose heat energy, thus supplying the cheapest sweet water (0,3€/m³) in dry areas which is urgently required for agriculture, industry and human use. Strategic plant belts can generate rain in desert areas and transform them into gardens.

TerraFuture Humus will save and increase World Food Supply

The most pressing world problem is at present the worldwide soil erosion and desert expansion, which has mainly been caused by the annihilation of soil bacteria through mineral over-fertilization and tree-cutting. GM seed is an additional threat to the natural habitat and especially to human food cultivars. TerraFuture Humus is the only means to instantly bring soil bacteria back into the soil, to restore the natural fertility and to improve it dramatically (1m root growth in 3 days), whilst deserts will be greened and cost of agriculture will strongly be reduced.

Greening Deserts in Africa will mitigate the next Ice Age

During the last 600.000 years a regular pattern of consecutive 90.000-year ice phases followed by 10.000-year warm phases has developed at the Northern Hemisphere. As the end of the last warm phase of 10.000 years has arrived, we should expect any time the advance of a new Ice Age. Though there would be no escape, according to present-day climate alarmists, fact-based scientific reasoning tells us that the greening of the African deserts will have the side-effect that, following the trade winds, clouds from the “green deserts” will increase clouding and albedo over the Atlantic Ocean and thus cool the Gulf Stream. The cooler the Gulf Stream entering the Arctic, the larger will be the cover of drift ice in the Arctic sea between 70° and 80° latitude, and the smaller will be evaporation during winter time. Hence, glacier formation in the Eurasian and American Arctic regions will be considerably reduced, so that a much smaller area will be covered by ice during winter time. Very probably will the agricultural parts of Eurasia and America only slightly be affected, so that human nutrition will not decrease but strongly rise in future due to humus agriculture. However, since the equilibrium of evaporation in the Arctic Sea is very delicate, additional research is required to make quantitative predictions possible.

To waste time by waiting can be detrimental, since greening the Sahara will realistically take at least 100 years and a significant cooling of the Gulf Stream will take several hundred years, as we can see from the past Ice Age cycles.

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