

DESERT ICE PROJECT

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Resume:

DIP tries to summarize briefly what we know so far for the climate, the changes we witness, and looks for possible solutions.

Solving the climate riddle is not up to the climatologists only, but a matter of industry, agriculture, transport, economy, politics, etc.

In general DIP is a global greening project. An operation aimed to green part of the desert areas with water delivered via using part of the drifting in the polar latitudes icebergs multiplied as a result of global warming. A multilateral project aimed to tackle global, complex problems (environmental, political, social, and economic) with global and complex measures.

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Prerequisites:

We know that there are giant climate cycles: global warming / global freezing, existing long before human appearance. These processes (and forces, that caused them and influenced them, like: cosmic rays, solar activity, Earth's core activity, etc.) are not completely studied and understood. The biosphere is changing all the time, as we do – a process we know as an evolution or adaptation. But now all these changes tend to happen in very short periods of time, which wouldn't allow many species, incl. people to adapt to them.

Due to the progress of our civilization many natural balances were violated, including correlation CO₂-O₂. Reduced number of trees, respectively leaf, and phytoplankton, is unable to absorb increased quantity CO₂, which accumulates in the atmosphere. This “carbon dioxide-sphere” does not allow the reflected heat from the Earth to go back in space. The global average temperatures raise and the consequences seem to shake our lives. There is another consequence of the air pollution – it is called Global Dimming and it refers to the reduced quantity of sunlight reaching the Earth surface, because of the increased number of particles, soot, dust and other dirt that flows in the atmosphere during the energy production. While the greenhouse gases add to the warming, particles reflect the sunlight back and add to the cooling, so both processes keep some equilibrium. This must be taken into account when we talk about clean technologies, because if we work in one direction only, we could face catastrophic results.

Other theories on what may cause Global Warming:

- Periodically increased sun activity;
- Increased volcanic activity on the ocean floor, which heats up the ocean;
- Melting glaciers - remains of the last Ice age, give the impression of intensive warming.

Just like in solving an equation we must base our assumption on what we know already. But in the same time we are speaking about not a simple equation but about one of the most chaotic mechanisms on our planet. It may look chaotic at first sight, but in fact it is very complex causality system. Since there is lot of unknown quantities, this is why this research is a hypothesis still.

So, we step on the negatives, to use them as premises.

The water element

As a result of global warming there are more calving icebergs – drifting freely in the ocean. These icebergs decrease the white area that reflects the sunlight back, then the sun warms more the dark water, which leads to chain reaction – more melted and broken icebergs, more heat, etc.

Second damage is the breaking / melting icebergs that contribute to ocean level rising. This tendency threatens a lot of countries, such as Bangladesh, Netherlands, Japan, England and many other low, coastal lands, meaning possibility of massive immigration wave.

Third damage is that melted icebergs change the saltiness of the ocean water – thus disrupting ocean's natural streams – a complicated process ruled by the saltiness and temperatures in different layers. Eventual distortion of the currents could baffle the spread of the warmth and to bring global cooling, which could be fatal for many species as well as people.

Ice stores CO₂ – 20g per square meter approximately. When glaciers melt, they release accumulated CO₂.

Ocean's surface is a natural habitat for many microorganisms (part of the food chain), that live through photosynthesis / absorbing CO₂. A drastic change in their environment (temperature, saltiness, acidity, etc.) could disrupt their behavior, thus worsening the entire circle.

There are more than 720 oil platforms in Atlantic Ocean, only. Not to mention the increasing shipping traffic all over the world. Collision with an iceberg still remains a threat, especially today with the growing interest towards huge oil and gas reserves in polar regions cleared from retreating ice. To prevent this today Coastal Guards use radar and visual surveillance, satellite photos, radio buoys, etc.

This is just part of the things that happen in the oceans. Some of the things we know, in some we participate/influence, and some are yet unknown, but the scientists enlarge the circle of knowledge every single day.

The Earth element

There are 7 continents on the Earth. On every one of them there are deserts (excluding this one in Antarctica, because of the constant temperatures below freezing). These deserts cover more than a third of the land on Earth. In Australia alone they cover around 70%. Deserts are expanding all the time, even right now; while you're reading this, they take new territories. Sandstorms as well as the advancing sand dunes interrupt civilized life – they kill the plants, respectively – the cattle, respectively – the farming, and so on – thus making human presence there very hard to survival – a premise for immigration wave.

Another negative process on the land is the accelerated mountain glacier melting. This threatens the habitats in the lowlands in two ways:

- In short period - by floods and landslides because of the fast melting,
- After few years - with devastating drought, because these very same glaciers now provide the vital moisture for people, plants, and animals, as well as energy for many hydropower stations.

The mass logging (for wood trade and taking more land for agriculture) bares the soil, leading to erosion, landslides and drought. Intensive, profit-chasing agriculture exhausts the soil. Intensive industrialization poisons the soil. In one way or another, this reflects to the other elements of the biosphere, including people.

Latest tropical temperatures in the zones considered so far as temperate, may stimulate the spreading of diseases and insects-infectors, typical for the near equatorial latitudes. And since the local people have no immune system prepared for such attack, this is a premise for epidemic.

These sharp climatic changes may kill many species that will not have enough time to adapt. There will be disrupted the migration routs of many birds, the generative cycles for many sea habitants, fish, turtles, etc. And since all of them are connected in one common life chain, there is expected a big disturbance, which without any doubt will affect humans too.

Another problem is the extremely low level of the major rivers/channels, which becomes serious problem for the shipping, respectively for the business. Very serious consequence as part of the domino effect is the lack of water to power the hydroelectric power plants, and sometimes – even to cool the nuclear reactors. When this is combined with the higher needs of electricity for the cooling installations and

conditioners, the result is more burned coal in the coal powered electric stations, respectively more CO₂ in the atmosphere.

Satellite scanning and historical traces (ancient rock drawings) show that many years ago Sahara was fruitful, green savanna. So, today we can reverse desertification in some parts of the deserts in order to secure better environment for our needs.

The atmosphere

The third element – the air is nonetheless affected by the climate change, and critical towards the climate formation. The latest data confirms the accelerated growth rates of the greenhouse gases quantities. Lesser number of trees, respectively – leaf leads to less absorbed CO₂, respectively – thicker “blanket” and higher rate of global warming. Higher average temperatures mean higher vaporization rates, meaning more water vapour (greenhouse gas N₁) in the atmosphere, this way adding to the “greenhouse” effect.

Because of the higher average temperatures and more evaporated water there are more water droplets in the atmosphere, meaning more rains and more intensive rainstorms. The statistics detects larger losses from hurricanes, tornadoes, and blizzards.

Temperature extremes take many casualties, often overload the power grids and devastate the agriculture. Except overloads and blackouts these temperature extremes bring also an energy “hunger” - for cooling in summer and heating in winter, thus demanding more energy production – in today’s methods this equals to even more released CO₂.

The “fire” element / “energy-CO₂” connection

More than 2 billion people have no access to energy. On the other hand global energy demands are expected to grow by 60% over the next 25 years. Provided that we will continue to use mainly the traditional methods and technologies for energy production, even shaped by the latest international agreements regarding the emission demands, this will cause a significant increase in greenhouse gas emissions.

Nature gives us so many clean, non polluting, renewable energy resources: still hypothetical lightning driven water decomposing on hydrogen and oxygen (harnessing the power of millions volts and amperes into giant electrolysis process), or already working, proven and effective solar cell panel fields, windmills, river powered turbines, ocean waves generators, livestock farm flatulence, bio-diesel, etc. The coin has two sides:

- The methane from the stock flatulence adds to the greenhouse effect;
- The same is expected if the changing ocean temperatures will alter the methane hydrates lying on the ocean floor;
- Lightning is considered as lethal, so far;

On the flip side every one of these “perils” might be considered as energy source.

They offer endless energy for H₂ production/extraction (meaning stored, accumulated energy for later use), or electricity for direct consumption. These renewable resources are the alternative/replacement of the fossil fuels, which are in

the final phase of their cycle – either by realizing that they are the main greenhouse gases “producer”/global warming “generator”, or because they are not endless, and we are about to finish them in the foreseeable future. Unlike the limited oil reserves, unlimited hydrogen supplies surround us – the rivers, the seas, and the oceans. The second part of the equation is the energy needed to extract that hydrogen from the H₂O/CH₄/other compounds. It is also unlimited – the solar power / wind power / geothermal energy. So, in order to achieve clean and economically efficient H₂ extraction, perhaps the most appropriate method today would be water decomposition powered by electricity delivered by some of the above mentioned methods. Third part of the equation is the transport infrastructure and safety issues. Many wealthy countries set aside reserves for the future generations, especially the oil producers, which mark enormous profits lately and store them for the future. If part of these resources is harnessed for solving of the above mentioned equation, this could determine the Energy issue in general, allowing mankind’s progress into another era, just like the steam rapidly accelerated the society development two centuries ago.

The fifth element – the human factor

Advancing sands and raising water levels limit the size of the appropriate habitable zones. On the other hand urbanization expands because of the growing population and immigration (better work perspectives = better life possibilities). Increased density brings problems like diseases, social, ethnic and religious conflicts, etc. Another factor is the enormous number of unemployment people – they have very limited means of livelihood, respectively incomes. Misery leads to illiteracy and embitterment, which is the foundation for religious fanaticism and violence.

In many poor countries wood industry / poaching is the only way of survival for the locals. There is continuous mass felling / exotic animals killing in the tropical rain forests / savannas, which can’t be stopped with hypocritical accusations and advices to the poor – “Yo, amigo, don’t cut those trees”, or “don’t kill these exotic species”. These people need a job, respectively an income for livelihood. And many of those “concerned” often happen to live in homes with expensive exotic wood furniture, to wear expensive fur from a rare animal, or to have dinner in restaurants with exotic and rare animal species, meaning that they actually tolerate this destructive behavior.

As you know there is a world paradox, which becomes bigger – due to the modern technologies less and less human labour is needed for producing a unit of any given product, so more people are unnecessary as workers and more are necessary as consumers. But how to consume when you don't have a job, which would give you the income, which would allow you to consume? The scissors open more and more and one day the cord will tear down.

Exclusion of the above mentioned trend is the forestry and agriculture – traditional labour-intensive sectors, which fits to Desert Ice Project’s doctrine – combining environmental care with care for people – greening + producing food + giving job to thousands of low qualified workers, etc.

Another paradox – while the abundance of free, clean energy surrounds us from all sides, humans became so addicted to oil in just one century – a dependence cleverly milked by few benefiting companies/countries, and sometimes used as an instrument for political/economic dictate.

Third paradox: while fifty thousand people die every single day of poverty-related causes, two-thirds of the Americans are considered overweight. While a lot of poor

people literally starve, many developed countries' citizens fight obesity by search for "smart" weight loss solutions (often with more added value), such as insane and often life-threatening diets, chemically treated food and beverages (with reduced cholesterol, sugar, etc.), electro-mechanical gizmos promising fast good body shape without sweat, etc. We see the same unbalanced picture, just like the situation with the sweet water – excess in one place (millions of tons of food waste each year in developed countries) and shortage in another - huge surplus of food and in the same time - a lot of hungry people. A lot of work to be done, and a lot of unemployment people.

Fourth paradox – nature gives us nutritious and tasty vegetables (of course not so good looking like those in the ads), but clean. The rich prefer to produce clones to those vegetables - bigger, shinier, better looking, but with plastic taste. In many developed countries this plastic production is cheaper, while the Eco-shops sell their natural products on much higher prices. There are entire generations that don't recognize the taste of real fruit or vegetable, but accept the "chemical" tomatoes as the real ones. In the same time Third world farmers could produce clean green food, not only for themselves but also for the rich counties citizen, which eat chemistry. Of course there is a clash of interest – with the subsidized farmers and the corporations targeting the ultimate profit with "instruments" like GMO, hormones, fertilizers, etc.

Poor people run away from the misery, famine and wars in their homelands. In search for better life, they are flooding the rich countries, where they contribute to accumulation of problems like unemployment, diseases, crimes, etc. Governments spend a lot of money to reduce this immigration wave, to settle those who slipped in already, or to handle with the problems they or the hostile anti-immigration locals create. If people have proper living conditions (not luxury, but normal) at their native places, they wouldn't risk their lives to jump over barbed wire, to live in humiliating camps, to work in miserable conditions for miserable payment without any right for objection, to trade themselves for slavery or prostitution, or to sell their organs.

The proposed project will hold more of these people in their homelands, by giving them suitable conditions to live, work, develop. In the same time it will discharge the rich countries' overloaded social systems, by reducing the number of those in need, thus alleviating taxpayers.

But, is the rich world really ready to give up on the cheap labour, and who will do the dirty job, that no one of the locals wants (for this money)?

There builds up economic, social, political and environmental pressure. 21st century's civilized society, what we are pretending to be, supposes a different approach, rather than just waiting for natural way of releasing the pressure – by some enormous cataclysm, mass disease, or destructive war.

Summary:

- We have threatening water excess from one side and nonetheless threatening water deficit from another.

- We have lots of opportunities for clean, endless, cheap energy, and in the same time we choose to engage to the one that is expensive, polluting, and with limited supplies, inadequate to our necessities.

- We have a growing economy, expanding infrastructure and urbanization = bigger investments, and in the same time the hurricanes cause much heavier financial losses.

- Large part of human population is starving and living with less a dollar per day, with no access to energy, to clean water, and sanitation. We spend huge financial aid packs, which are not too efficient obviously, judging by the enormous contrast between misery and wealth, within the Third world, and beyond.

According to USAID analysis for year 2004 less than 50% of the aid actually reaches designated population. The rest is spent for administrative costs, transportation costs, etc. Governments try to kill two birds with one stone – to help the poor and to support their own farmers/transport companies by granting them the execution of this aid program. While many people in many places literally starve to death, in some other places there is surplus of food, an overproduction, and subsidies and quotas aimed to limit the yield. Add to this 7:1 ratio between subsidies for own farmers and foreign aid for the anonymous starvelings. Wouldn't be better if there was direct support for the poor people to develop their own farming, meaning production of their own food and export? Of course this means also a healthy competition (one of the main principles of the free market economy) for the now existing market leaders – are they really ready to fight with the cleaner production of the Third world, or the “free trade” is just a slogan? That seems to be the real helping hand rather than the current political balancing tricks.

- There are many suffering economies with bad qualitative and quantitative indices like budget deficit, high unemployment, low consumption, recession, soaring inflation, etc. In the same time this project offers huge investment opportunities that are about to bring liveliness in the entire world economy.

- There are many poor people, which due to their ignorance and deadlock are forced to turn to crimes and terrorism. World governments spend huge amounts of money to fight this crime/terrorist network and its consequences, instead of the cheapest way of providing education and better life conditions in general. **Prevention instead of responding to emergencies.**

These and other misbalances accumulate in the time to result in a critical mass of problems and respectively – in an event that will shake the entire system and set it into new static state (for some time).

Objectives / expected benefits:

By turning the negatives into advantages Desert Ice Project suggests complex solution of multiple vital problems. Whether the water for the greening will be delivered by iceberg movement or by massive appliance of powerful desalination stations distributed widely on the coastal lines (let the best method win), it should improve the situation for all the above mentioned sides:

- Stabilized global average temperatures should decrease the process of polar ice melting/calving and the quantity of water that “overfill” the oceans;
- Stabilized temperatures should also reduce the mountain glaciers melting, thus avoiding massive valley floods from one hand, and the danger of drying off the main water sources for the life in the lowlands;

- It should stop further deserts enhancement by green belts, green, humid zones that not allow to dust and sand to flow in the air, and to form destructive sandstorms; to prevent the drought and erosion by keeping the moisture into the soil and roots of the plants;
- Increased CO₂ quantity in the atmosphere combined with the higher temperatures in these tropical latitudes (intended for greening), as well as the artificially delivered water, results in accelerated metabolism in the plants, meaning accelerated growth of the trees, respectively in the agriculture – a bumper harvest = more own made food for the locals;
- It reduces the acidity and intensity of acid rains, which destroy leaves – so it will help to restore forests capacity to absorb CO₂.
- It compensates (to some degree) the underground water level, which is disrupted by people – we pump too much water from beneath, without giving a time to restore the natural levels, accumulated there after thousands of years;
- When parts of the watered terrains will be planted with biofuel plants (sugar cane, maize, switchgrass, etc.) for producing ethanol, this renewable energy source will lower additionally world's oil dependence, respectively prices. The sown fields should be changed after few seasons in order to prevent soil exhaustion.
- By greening desolated territories, DIP intends to increase air cleanness, thus allowing more of the reflected heat to flow freely in space; to soften the storm-related negative effects and financial loses, by reducing storms/ tornadoes/ blizzards/ deluge intensity;
- It reduces the danger of collision with an iceberg, for shipping and oil industry;
- Some economists and other experts suggest that the mankind should concentrate spending money on social and health projects like fighting AIDS, malaria, etc.; and leaving the legacy of Global Warming to the future generations. The supporters of the idea assume that the effects of climate change wouldn't happen before let say 100 years, so instead of thinking of unforeseeable, we should spend money on the apparent problems, for instance – making Third world richer. This sounds good, but first of all, the Climate is not a static system that will start to alter after 100 years, it is happening all the time (we don't feel the Earth's spinning either, but this doesn't mean that the Earth is still, right?); and second – we should help poorer of us by giving them a job, not just cash – give poor man a net, not a fish...
- Once adopted by the leading governments, this would lead to announcement of large public tenders for assessing and implementing the project. Its realization demands increased production of specialized machinery, equipment, infrastructure, services, etc. These tenders will force the market players to mobilize their best – to use their reserves, to take new credits, to employ and qualify new people, to reconsider inventions and strategies considered so far as non-perspective... This will bring liveliness to the domestic markets and the world economy – a cure for budget deficits, unemployment, and economic recession.
- On site – it will open lots of working places for many people, opportunities for many businesses. Such big and versatile operation, as well as the engagement of so many work forces will redirect huge cash flows; it will generate huge incomes, which will result in higher consumer / business activity. The higher standard of life, education and literacy will make local residents supposedly more calm, confident, and unsusceptible to fanatical religious suggestions – less terror and violence, more security. More practical knowledge, less religious dogmas. Educated people are more aware in terms of medical care or safer sex, they

know how to preserve themselves from different diseases, including AIDS, malaria, hepatitis, dysentery, etc. – meaning decrease in mortality and uncontrolled population boom. When the aid is not cash (often deviated by the local leaders for personal enrichment), but specialized equipment, machinery and other hardware and know-how, this could be an instrument limiting corruption.

- First there comes the business / technologies, then the laws, and then – the society (single citizen's consciousness / behaviour); so once the process is in implementation mode, this would be the most natural way of bringing the basics of democracy, transparency, ethnic and religious tolerance, human rights, etc. into these societies.
- The experience gathered in this operation – using ice, making greenhouse effect to green/enoble large territories in extreme conditions – incinerating heat by day and freezing cold by night, could be priceless in mankind's future expeditions to Mars.

Humans appeared as a result of change that brought suitable conditions for them to live and develop. New species appeared while others disappeared. So, there is nothing dramatic about the climate change. Moreover the retreating ice sheet reveals new opportunities for some industries – shorter routes for ships; new territories for fishing, oil drilling; soften permafrost allowing digging for minerals, coal, oil, etc. However the drawback is that the current change is happening too fast, not allowing enough time for adaptation. Many species will be extinguished. While they are part of a food chain, this will disrupt the entire biota. People, as part of the same system will give many victims as well.

So, realizing that we have not enough time to evolve in a natural way, we must take precautionary measures to prepare to the changes in searching the crossing point between what we must do and what we want to do (how we used to live).

Nature hints again a possible solution – create life and more complex forms. Contradistinctions: highly organized structures vs. entropy; oasis/forest/city liveliness vs. desert deadness (of course there are some life forms well adapted to live in the desert, but in general this is a hostile environment for humans). We should green, re-forestate degraded lands and bare hills. **Except the photosynthesis – a remarkable physical-chemical reaction, when leaf / seaweed assimilate CO₂, using it as a food, and exudes oxygen and moisture, the plant also:**

- keeps the soil,
- prevents erosion,
- preserves air moisture,
- makes the weather milder,
- creates wind- and noise- barrier,
- makes shadow,
- gives food to human and animals,
- gives lifesaving medicines,
- gives material for making clothes, houses,
- gives energy to warm up and cook, etc.

Every human invention in that tenor is far more expensive, unilateral and not so effective, for instance – the artificial CO₂ sequestration in coal beds, emptied oil cavities in the ocean floor, or other geologic reservoirs. Recent research revealed that this technology is not that safe as it was thought to be in the beginning; that CO₂ actually dissolves the minerals that suppose to act as reservoirs. So, more research and time are necessary.

Another study shows that young trees absorb up to 10 times more CO₂, compared to the mature trees, so we can use that – planting, growing, and when the tree comes to a certain age where exudes more CO₂ as part of the respiration, it can be used for material, and the cycle repeats. The nature does the same – forest grows through the years, a lightning triggers forest fire, and then new life arises from the remains. However, the word “afforestation” is essentially connected with the word “irrigation”, respectively “water” – another very painful problem, so...

The Project

If people suddenly start harvesting ice from the polar caps, this could have awful reflections on Earth’s climate, for at least two reasons:

First of all, the ice caps support (in many ways) temperature equipoise on the planet, and their vanishing could be devastating.

Second, the weight of both ice caps, balances the Earth’s position and tilt in her orbit around the Sun, and change in these angles might be fatal.

That’s why in these territories any industrial activities are prohibited, by international regulations like: [Protocol on Environmental Protection to the Antarctic Treaty](#) (1991), [The Convention for the Conservation of Antarctic Marine Living Resources](#) (1980). The issues of mineral development were “frozen” for 50 years, except for scientific research.

Few years ago, in order to save decreasing fishing population the Canadian government reduced fishing industry in the area of Newfoundland and redirected unemployed fishermen towards other activity: iceberg capturing, towing it to the shore, and then – producing 99,99% clean water and even authentic [Iceberg vodka](#) made from pure iceberg’s water. In fact this is a legalized and subsidized “hunt” for icebergs.

The Three-North Shelterbelt Development Program known as "[China's Green Great Wall](#)" is the biggest ecological program in the world. Since 1978 the government has injected more than 3 billion US dollars into this program. It is intended to last for more than half a century. This massive afforestation project aims to block desert sandstorms and further desertification, to stabilize the soil, to preserve the moisture, temperature and soil nutrients. Not to mention economic effects – prevented loss, new jobs, self-sustained local communities, etc.

These two examples show regional measures aimed at regional local targets. DIP suggests broader range of use: as a distance, and as an application - not just drinking, but also watering for intensive, massive afforestation.

In 1998 [PSA Peugeot Citroën](#), Franco-Brazilian NGO Pro-Natura and the Office Nationale des Forêts (ONF) initiated the "Carbon sink" project in Amazonia. PSA invested 10 million Euro in order to replant a zone one and a half times the size of Paris, and to sequester 7 million tones of CO₂. Symbolically, a car maker uses part of the profits in an operation for capturing the CO₂ exhausted by the very same cars.

Three separate projects, from three different places – if / when integrated in one chain, they will represent Desert Ice Project’s stages. The experience gathered there would be an important step in project’s further consideration.

There is few other massive tree planting programs around the world. By awarding with Nobel Peace Prize the leader of one of them: [Green Belt - Wangari Maathai](#), the jury showed actually that recognizes this initiative and its multiple effects.

DIP suggests exploiting part of the icebergs, which are about to melt in the ocean. Through extrapolating from reckonings regarding melting level, prior to industrialization and meantime, there could be calculated the “extra” quantity. Drilling geologists and historians could give a reliable evaluation. Bigger (industrial) exploited volumes of ice increase the saltiness of seawater; lesser or none extracted ice conduces to more rarefied seawater, thus decreasing its saltiness. In general saltiness influences the ocean currents / Gulf Stream, respectively influences the climate formation.

In order to avoid tragedies like Titanic in 1912, people applied different methods to destroy icebergs with:

- Explosives;
- Black paint;
- Warm water;

Today the ships/oil rigs in the area use maps constantly updated with satellite / radar surveillance. Powerful tug-boats draw away the icebergs, which are on dangerous collision course.

Instead of helplessly watching the accelerating mixing of fresh and salty water, or even more - destroying icebergs purposely, this “surplus” of ice could be pulled up on the ground, transformed into liquid water and used for irrigation and forestry, at least for preventing further desertification – 100 sq. kilometers per day, reportedly.

There were already few attempts to tow icebergs into dry lands, but only for direct consumption, not considered for long term, strategic usage. In 1977 and 1980 conferences were held to investigate the possibility of moving Antarctic icebergs to places where water shortages are frequently acute, e.g., Australia, California and Saudi Arabia. This controversial project, however, has not yet materialized.

What happened since then, to force the reconsideration of the idea?

- For these years we have increased population (1980 – 4.4 billion, 2009 – over 6.8 billion, 2020 – expected 7.5 billion), with the same or even smaller water supplies (counting the pollution) – a problem that is about to harden even more (which is valid also for food, energy, raw materials, etc.).
- For these 30 years we have significant technological advancement, for instance – GPS that ensures optimal transportation; much more efficient engines – more economic and clean, and more powerful; there is remarkable progress in communications, shipping, infrastructure, agricultural science, gene engineering, etc.
- Deforestation is the second largest CO₂ emitter after energy sector, i.e. we don't use the full potential of green mass.
- Asia's greenhouse gas emissions will treble over the next 25 years, according to a report commissioned by the Asian Development Bank ([ADB](#)). Some Kyoto Protocol country members cannot fulfil their CO₂ quotas. Despite the protocol and other restraining efforts, greenhouse gas emissions still grow, which probably will be followed by nature's response, so perhaps we should spend more time, money and endeavours to prepare territories / reserves for eventual refugee wave.

- Ocean level is raising (about 3mm/year), while the deserts are expanding;
- Polar and mountain glaciers melt with increasing speed.
- Nature extremes (drought, cold, sharp temperature amplitudes, hurricanes, floods, landslides, etc.) hit harder business / infrastructure and people;
- While the energy dependence deepens, there is growing interest to renewable energy sources, including more fields with bio fuel crops.
- Food & water crisis in the poorest countries, poverty and diseases are not defeated by the current aid programs; Western European and US rich governments try to push away the illegal immigration waves by laws, walls, night vision cameras, and other barriers. However, fighting the syndrome is not like fighting the problem beneath.
- [Kyoto protocol](#) extends to 2012. [EU's Common Agricultural Policy](#) extends to 2013. After these deadlines there must be signed new international agreements – more comprehensive, more harmonic, more efficient.
- Economists, insurers, financial markets start to show understanding of the links between seemingly “non-related” processes. [British Government's chief economist](#) describes the climate change as the “greatest and widest-ranging market failure ever seen” and concludes: “spending 1 per cent of gross domestic product each year on tackling climate change would save 5 to 20 per cent of GDP by the end of the century”.
- While the complex problems accumulate, there are not too many alternatives for adequate response. Conservation couldn't catch up with the growing consumption; so more freshwater could be delivered through desalination, or by icebergs utilisation. It is only a question of time.

In Antarctica is concentrated 90% of world's ice, 2/3 of world's sweet water supplies! Around both ice caps there are wide zones with drifting icebergs, varying from small pieces of ice, to huge blocks with the size of few stadiums, all of which are about to melt.

With 9/10s submerged below the surface and density ca. 920 kg/m³ at 0° C, these icebergs represent hard packs of clean fresh water.

The hardest part - transport from “cold” latitudes to a chosen place in the desert – by pulling/pushing entire multi million tones icebergs (just like towing huge oil platforms to the point of extraction), in shortest directions, trying to use [cold streams](#). In order to minimize engine-powered transport (and related risk of pollution), the iceberg should be towed to the nearest continental land, and then extracted water should be piped – implementing the Ancient Rome's experience – the aqueducts, some of which are still on service today. The same way we transport oil and gas – other goods of vital importance. Water has the highest priority.

Perhaps the best tugboat will be powered by nuclear reactor. Except its enormous thrust, it will be the less polluting transport, because the available ships could stultify the plan by producing too much CO₂.

The drawback is the risk of nuclear catastrophe. However, this risk cannot stop the use of nuclear energy in shipping – it is applied in many vessels – military, trade, etc., and its opponents use the same arguments as on the land – the threat of next Chernobyl. Every energy source has its opponents – gasoline and coal – because of

the GHG emissions, atom – because of the possible radiation pollution; even windmills make some people unhappy – because of the “visual / noisy” discomfort and “lack of aesthetics”. Perhaps we must acknowledge that we are near [Hubert's peak](#), so from now on, there will be constant receding between growing energy needs (in developed and developing countries) and depleting oil reserves. And because this growing gap can not be compensated so fast by the renewable energy sources, this role is taken by the nuclear power – “cleaner”, “cheaper”, much more efficient.

On the other hand today's “cheap” nuclear power will become expensive soon, with the non-stop raising quantity of nuclear waste, and expanding problem where to store radioactive materials for thousands of years – repeating the scenario with the fossil fuels and their accumulated waste one century later.

Sun, water, wind, geothermal and biomass – they are endless and they do not pollute. Because they are free, and on every place on the globe there is access to at least one of them, this means end of energy dependency and equal energy conditions for all.

Of course if there is chosen a massive appliance of desalination plants, the issue of nuclear powered transport will be avoided.

As the ice transport is more a question of precise logistics, perhaps there could be considered the use of other vessels with empty return leg in order to achieve optimal efficiency - between business interests, iceberg towing and minimal contamination.

Recently, news came from New Zealand - few broken icebergs drifted very close to the New Zealand shore. The nature is actually “helping” us, by cutting the transport expenses - the main drawback in Desert Ice Project. As a result of climate change there are more broken Arctic and Antarctic icebergs that drift freely. Instead of watching indifferently their melting, or to make these few icebergs near New Zealand a tourist attraction, or to make vodka from icebergs as they do in Canada, we could use these vast amounts of fresh water, especially when they are so close to a place in need. Given that Australia (with 2/3 covered by desert) suffers from severe drought, which threatens not only the farmers but the cities as well, this is really a “hint” by the nature how we can deliver fresh water comparatively cheap to a place where the water is very scarce, and use it not just for consumption, but also for starting massive greening operation.

On the ground:

After the water is delivered to the designated place of irrigation, the dry, chapped or sandy ground is absorbing the moisture. Hypothetically, after some time, there should be created some humid layer on the surface (like after flashfloods). This layer must be immediately and intensively treated with seeds, compost and fertilizers as a basis, as a ground for some sustainable sorts of grass, bushes, duckweed, moss, lichen, algae, etc. for keeping the humidity. Thus, step by step will be created a humus and soil appropriate for wheat, corn, rice, soya and grain, as well as soil for forests, certainly small from the beginning, but with very fast growth in warm, humid (artificially supported), tropical conditions.

Alternatives / parallel methods of producing / delivering water into severe drought suffering areas:

Desalination. The most appropriate alternative so far. Instead of iceberg transportation from distant latitudes, there could be build desalinating facilities around the coastal lines, and then pipe the obtained sweet water in inlands.

Methane. Just like the icebergs - depending on the utilization this gas could be considered as a threat - greenhouse gas, or as an advantage - energy/H₂ source. 10 to the 9th tonnes of methane are flared off by oil wells each year. Anyone who has taken elementary chemistry can calculate how much water is produced in burning that amount of CH₄. In order to condense it out one must cool the exhaust, and the best way to do that is to evaporate sea water, which when added to the water condensed from the burnt methane gives much more than 10 to the 9th tonnes of fresh water.

Weather modification: Dispersing silver iodide in the sky through planes or rockets. The moisture from clouds forms droplets around the small particles, and this leads to raining.

DriWater. This is very progressive technology that transforms liquid water into jelly. Then certain quantity of this jelly is placed near the stem, and the roots of the plant thus securing its constant irrigation. Because of the consistence of the jelly the water is not absorbed at once, but in certain period of time, defined by density and quantity.

Dehumidification of air - trial phase.

Meteotron: a factory of clouds. Russian project GACAR, Israeli project Geshem (rain in Hebrew), and few other research groups work on this promising technology. In experimental phase still.

Bio-membrane: A Norwegian project, in which a powder is dispersed over the soil after sowing. The membrane reacts as a sponge that absorbs water and nutrients, which are absorbed by the plants afterwards. This layer can play different roles – to absorb more sunlight or to reflect it back, this way regulating the soil temperature.

By cargo ships: Summer of 2008 – part of Barcelona's fresh water is delivered by ships from Marseille. Meanwhile the city builds a channel from the nearest mountain, and a desalination plant, in order to solve the hardening problem with water scarcity. The same happens in Cyprus – in a port nearby Athens ships are loaded with drinking water, which is delivered to the Greek part of the island, that suffers from devastating drought and insufficient rain. Only five months earlier this suggestion was rejected as "science fiction".

Deviating river: Turkey and Bulgaria negotiate over the border river Rezovska – considered as partial solution for Istanbul's growing water needs.

All these and other water delivering methods require price and ROI calculation, as well as comprehensive computer simulation. Each one of them could be considered as too expensive in one point of view and most preferable in another. That is why perhaps the best way is to use combination between all of them, and to apply the most appropriate one in specific situations.

Few words about the composting:

Composting is a very perspective opportunity for natural restoration of organic products – it reduces chemical pollution and closes the circle: land - consumers - land. Moreover, in the developing countries some of which are positioned in the deserts, the percentage of organic garbage – compost is much higher than the one in

the developed countries, which are consuming mostly ready goods, and the garbage is mostly chemical, because of the packing (bottles, paper, PVC, etc.). Ironically the richest countries value more the organic compost – they have better “garbage management” and recycling programs. The poorer literally “walk on organic assets”, but they have not the knowledge, the technology, which would allow them to extract-produce-feed-profit. In DIP this will be the cheapest way for land nutrition. The combination of water, warmth and organic material – constantly humid and warm environment, will initiate processes that should give fruitful results similar to those of Nile delta region fat land, after the water levels go down and the silt is ready for farming.

Lacking variables:

How much does the ship cost to rent/lease/hire for such a journey?

How much fuel does it consume in a transport of say 6000 miles (3000 miles each way)?

Is there anything useful (and huge) that would make use of the return journey (in case of specially created / prepared ships)?

A "medium size" iceberg creates what kind of drag compared to an oil-drilling platform? 10x as much? 20x?

Any rough calculations about the amount of CO₂ being pumped into the atmosphere by industrial countries vs. the amount of greenhouse gases that would be taken out of the atmosphere by planting trees in significant numbers?

First steps/calculations to be done:

Political part:

- Preliminary intergovernmental political agreement;

Economic part:

- Motivation of major investment funds is a crucial factor, as well as creation of some kind of “Project Management Center” – responsible for maintaining the synchronization of all activities.
- Financial analysis - team by accountants able to figure out all the expenses, as well as COI, ROI, etc.
- Calculation of the optimal routes, between glaciers, polar ice territories and deserts, thus aiming the shortest ways for the ice transportation;
- Equipment of the science team with: places to live and work – infrastructure, catering, IT & Communications support, recreational facilities, security, etc.

Scientific part:

- Preliminary computer simulation of the scenario, made by powerful mainframes;
- Climate changes – meteorologists and climatologists;
- Soil and water – geology, hydrology, hydro-geology and soil structure; they have to tell when and where the soil won't react like a sieve; also to regulate dead sands transformation into fruitful soil;

- Agriculture, forestry, flora, fauna – agronomists, botanists and zoologists; agro-economics; pricing;
- Genetic changes – genetic engineers and microbiologists; Manure management; wetlands restoration;
- Landscape and terrain; Satellite surveillance: photo scanning, cartography and groundwater search;
- Need from permanent irrigation / drainage / hydro-technical structures – constructors, architects, etc.
- Experts in glaciology and cryogenics – responsible for extraction and transportation of ice blocks;

Engineering part:

- Engineers to ensure the effectiveness and safety of construction works;
- Building or preparation of towing ships.

Although all the points in this list look like problems to overcome, in fact they are opportunities for many scientists as well as entrepreneurs / companies / businesses for further development in their professional area, as well as for additional international commitment.

DIP does not mean to cut off all the drifting icebergs - it makes no sense by destroying one area, to develop another, neither to erase at all the deserts from the world's map - their place in the nature and in the climate is evident; but to ennoble parts of such big areas, to make them much comfortable places for living and work (according to the historians, in the past there were rivers, verdure and more vitality in general, hence - it is possible today – isn't it that the same logic that we intend to apply on Mars?), as well to allow some places from deserts, to stay natural as parks, and to keep their natural life. DIP thinks of words like moderation, succession, precaution, responsibility, far seeing, and of course: "Think globally, act locally!" although in this case the action is global as well.

What to expect

There is no doubt, that in the beginning the prejudiced skeptics will predominate, but once people have seen that something actually works, they are much more likely to accept the change, so, sooner we start, sooner we may feel "the wind of change". "First things first" principle is invalid this time, because we can't afford to solve all of the above mentioned problems one by one. A complex solution is necessary. May be the answer is exactly this one, or may be not – we won't be sure, if we won't try, so: once the cycle starts, growing plants -> evaporation -> condensation -> precipitation, etc., and if the method works properly, the consequences should be:

The positive side: see the objectives

The negative side:

– Still unknown – we shall learn in the process of research. However, it is for sure, that we must keep ourselves from being overzealous – to dash in other extremes, for instance – breaking up natural icebergs' balance; or spending more energy for ice

transportation, respectively – release more CO₂ than the quantity expected to be eliminated. The road to hell is paved with good intentions...

Above all is positioned the political understanding for cooperative work (realizing that we are all in the same boat), instead of neighbor countries fighting for a river, or how to use its capacity. There are already conflicts for water, now hidden behind religious or some other reasons, but these wars will become bigger and worse if we won't start hold these water forums and summits (ecological – in general) as a regular meetings with obligatory resolutions for all.

Parallel measures:

– Increase ecological requirements (standards) towards the manufacturers.

Few examples:

1. Double-hulled tankers – reducing the risk of oil spills;
2. Making aviation more efficient through: planes, routes, scheduling;
3. Applying mandatory environmental technologies in construction: solar cell roofs, better insulation (for example - the [Merton rule](#) in UK/ [LEED](#) in US), “passports/certificates” for every new building...
4. Just like the authorities in Formula 1 shape the racing cars by different technological demands in certain periods if time, similar requirements should be imposed to the normal cars, for instance: every single car class should meet stringent demands on exhaust emissions / fuel economy: for small town car – let say: 3l/100km max; middle class – 5 or 6l per 100km, limos/SUVs – up to 8-9l/100km, etc. This is related to improved overall efficiency – optimized ignition (start-stop) systems, integrated solar cell panels into the roof and using the brake force for batteries recharge and small supporting electric motor, etc. After all, what is the point of this horsepower race madness, when the rising number of the killed on the roads and overcrowded highways result in more speed limits, speed cameras and police control. More power without possibility to use it is pointless. Let's concentrate on the more pragmatic issues: safety, cleanness, and economy. There must be used the full potential of excise and tax incentives leverage system; [CAFE](#) standards in US/ [EU Directive on Fuel Economy](#).

– Everybody (both consumer and manufacturer) knows that the days of the “liquid” gold are numbered, so we should keep looking for and develop new, effective forms of clean energy, like energy from wind, ocean tidal waves, fuel cells, biomass remains from agriculture and households, geothermal, solar, nuclear fusion, and energy efficiency. The combination of broader use of alternative energy sources and conservation will lead to drop in oil prices.

– Separate garbage and recycle (paper, glass, metal, plastic), instead of exploitation of new limited recourses. This includes water re-use (just like the full water cycle in a space ship) – people should realize that there is no “new” water – it is the same water – the planet has one defined quantity of this stuff, and we should conform to it.

– Severe sanctions to be imposed on polluting companies and on the other hand - adequate stimulus's for innovations - a precise mechanism, that will determine environment conservation behavior in all society members by their

economic thinking for grown-ups, and education of environmental ethics for children.

- Suggesting to schools (managing boards), that every child in certain age (class) plants a tree. The consequences - so many children multiplied by so many schools mean hundreds of hectares of new forests. While children grow they could watch the growth of their first "kids", they could learn the meaning of giving life, of being responsible, and at least a little bit to suppress the consequences of their and their parents' consumerism. While the studying of maths, history, physics, etc. is indoors, planting a tree is an open-air action, followed by few more visits for cares like watering, and for observing how your own creation grows. Hypothetically, as a chain reaction this could influence upon the older members of the community, or at least on the parents.

- Keep trying to decrease greenhouse gases, CFCs and soot from burning oil and coal - once through improved engines and production lines; twice - with sophisticated filters and cleansing installations; This must be done by including all countries (poor, developing and developed) in the new [post-Kyoto contract](#). All participants should apply same set of rules and standards, which does not allow one to take unfair advantage compared to the others;

- Optimizing the ineffective water distribution system and irrigation, mostly, for which purpose are used more than 3/4 of the world's water supplies. Applying more drop irrigation, GPS, and other technological solutions.

- Controlling the number of wildfires, by using latest technologies for early warning systems, prevention and firefighting. Each wildfire destroys for few days, the multi year endeavors of lots of people, and releases enormous quantity of CO₂. These fires must be controlled as a remedy / cleansing / rejuvenation of the forest.

- “Declaring” war (genetic / chemical) to grasshoppers, sun pest, etc.

- Taking any decision with compliance with a long-term comprehensive strategy - [UN Millennium Development Goals](#).

- Independent Media should be more deeply engaged in this human / ecological “Renaissance”, instead of the easier and much comfortable role of a “billboard” for ads, vogue and vanity.

- Above-mentioned steps require an “upgrade” in politicians / decision-makers way of thinking – a matter of adaptation, again. They should cease this practice of thinking till the next elections and pleasing their voters / shareholders only, and to broaden their views – to think more globally – in terms of interests and priorities (international and domestic).

The Global Warming consequences won't distinguish between poor and rich nations. Bangladesh will suffer from floods as well as Netherlands, Japan, USA, and so many others. “This isn't my problem” is not only an immoral answer, but not a solution or protection either. We are all involved in this – as guilty and not enough responsible participants, as greedy businessmen and insatiable consumers, and on the flip side – as potential victims, or victim's relatives.

Mankind is in water crisis, which is deepening! The traditional water sources are already insufficient. Agriculture, industry and households have growing needs. Population increases, economies grow, so the consumption does. On the flip side, the drought affects more regions.

Conservation is mandatory, but not enough, neither the infinite prices rising, which by the way, will lead up to deepening the abyss between poor and rich. The only

alternative for the above mentioned method aimed to reduce water shortage seems to be much more powerful, reliable and cost effective method for ocean water desalination. That's why any researches in this scientific area are crucial.

About pro and con

There is continuous argumentation between the supporters and opponents of the idea of manmade global warming, but even if we put aside global warming (and who is to blame for), could anyone propose instead of greening, a better way to stop desert enhancement; to fight erosion, drought and landslides; to give the poor habitants in these areas an opportunity for managing their own lives, but not depending on aids and credits?

Moreover, after so many centuries of scientific and technological development, do we really admit that the best of what we can do with icebergs is vodka?

When a disaster happens, we cannot simply accept the loss (as we did it so far) – “This is a god's decision”, “That's the mother nature's will”; but we must take some precautionary steps – not only saving people by evacuating them preventively, but to learn to harness this enormous energy, to make it work for us, not against us. We are talking already about [terraforming](#), meaning adapting planets to our biological necessities, in order to further settlement; so even if today these words sound heretically, tomorrow this will be real.

First steps are done already – as a result of the unprecedented tsunami disaster in South East Asia that killed almost a quarter of million people from many nationalities, the world got united and took unprecedented measures for relief and restoration, as well as unprecedented initiative for Global warning system. We must ask ourselves: should we take painful lessons every time, or we can learn from the past?

In conclusion

Desert Ice Project is supposed to unite the efforts of the different:

- Governments and political bodies;
- Science branches;
- Environmental agencies, movements, NGO's;
- Media: press, TV and radio stations, Internet, etc.
- Conscientious citizenry around the globe;

Desert Ice Project is supposed to concentrate interdisciplinary science, technology and determination towards the achievement of more complex solutions in order to resist the more complex challenges of the day. The project is aimed to solve part of the most exigent problems, without intending to terraform all the deserts on Earth.

Of course the iceberg movement is very expensive. But the sum of single solutions for all these problems (melting glaciers; raising sea level; advancing sands; deforestation; food and water shortage; unemployment, poverty, misery, inequality and illiteracy as a foundation of terrorism; etc.) is much, much more expensive. When the problems are complex, global, then the solution should be complex and global too. The water excess for one could be vitally important irrigative resource for another. Bottom line: DIP aims effectiveness by greening small parts of dry land with small part of the "excess" of sweet water in the ocean, thus giving the local residents

better conditions to live there, and to feed themselves alone, with clean (no chemical / hormonal treatment) green production – an agriculture resembling more a natural ecosystem, rather than a high profits chasing corporate structure; and sequestering large quantity of CO₂ at the same time.

Personally, every one could contribute by:

- Planting a tree (at least one);
 - Walking or riding a bicycle for short distances instead of car driving (meaning better health and saved time and money on doctors and pills),
 - Using public transport;
 - Recycling;
 - Drinking filtered tap water (whenever is possible), instead of the “lifestyle symbol” of plastic bottle;
 - Using energy efficient appliances.
 - Applying pressure to the representatives and government to take environment into consideration in every solution they make.
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