Energy Politics

delivering a framework for energy politics

Planck Foundation

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"What people need to hear, loud and clear, is that we're running out of energy in America."

May 23, 2001
George W. Bush

Energy Politics

Energy is Prosperity
Energy is Scarce
Energy is Decline
Energy is Capital
Energy is Currency
Energy is Geopolitics
Energy is War
Energy is Defence
Energy is Independence
Energy is Income
Energy is Insurance
Energy is Inflation
Energy is Direction
Energy is Unknown
Energy is Climate
Energy is Life
Energy is Vision
Energy is Technology
Energy is Science
Energy is Communication
Energy is Change
Energy is Courage
Energy is Policy
Energy is Legal
Energy is Infrastructure
Energy is Recovery
Energy is Transition
Energy is Efficiency
Energy is Nuclear
Energy is Carbon
Energy is GeoThermal
Energy is DesertTech
Energy is WindTech
Energy is PhotoVoltaic
Energy is Localization
Energy is Globalization
Energy is Urbanization
Energy is Democracy
Energy is Transport
Energy is Mobility
Energy is Food
Energy is Models
Energy is Open
Energy is Action

FOREWORD

This paper delivers a framework for both setting up energy politics as for energy finance.
It can be used local, regional, national, supranational and international.

It is written fully out of the economic perspective. There's not a leaf of green/red/blue politics facet in it.
It targets the transition away from the fuel based energy model, a transition that delivers a fuel-free model.

This paper advocates the opinion that rising energy/resources prices mainly caused the Credit Crunch.
Understanding the economic and financial effects of higher energy/resources prices is crucial.

Energy Finance is described as the bridge towards global sustainable prosperity.
The energy finance model components described can be instantly applied by any bank or nation.
All of them certainly delivers both economic/financial recovery and energy transition the same time.

We stopped publishing testimonials as that would take a FTE out of research to handle them.
Some of the old ones can be found on www.planck.org but this list is far from actual.
We also stopped publication of testimonials as we see networking the next phase after development.

Besides energy finance there's also a need for open energy technology that delivers the most output.
A model for this can be found on www.openfoun.org which targets to facilitate energy transition.
Also an advanced blank label demand concentration tool for governments/banks are also described there.

This paper advocates also different views on two controversial items: climate change and global population.
While delivering the needed political and financial tools to change the world.

Anyone in banking will understand the proposed energy finance models within a minute.
They are developed to meet the need of both energy transition and the current status of financials.
Not any new ideology, that we've enough of that already. We just need finance tools. Very effective ones.

Here they are as result of years of independent not sector /party connected research/development.
Usage feedback is always welcome. Both of the energy politics facets, as energy finance facets.

Our next project is the initiation and realization of Open Foundation (see www.openfoun.org).
It will support individuals, companies, (central)banks and governments by offering free data structures.

What's needed? Technology (available), Finance (this research) and Demand (will come automatically).

Let's create fuel-free energy model. The economics of it are better than of the carbon/fossil model.

SUMMARY

Energy Politics is about Energy = Technology
Advocating a fast/massive switch to a fuel-free energy system, to avoid 'hitting the wall in full speed'.
By this preventing companies, banks, pension funds, governments and currencies to collapse.

Energy Finance is about Energy = Currency
Advocating the financial tools that are needed for quick/massive energy transition investments.
By this preventing companies, banks, pension funds, governments and currencies to collapse.

The relation between energy and economy, governmental budgets and currency values is very direct.
Economic history tells us that energy availability/prices drives both economic growth and decline.

The survival of financials is very directly attached to the presence of economic growth.
This is not very well know, but nevertheless very true: loans are the driver of money creation,
If no new loans are issued, the money creation stalls and so no new money is created for interest payments.

The survival of governments and currencies is directly connected to economic perspectives.
No governmental structure nor currency value will survive economic meltdown.
Yet as we use energy for everything, rising energy prices will bring any economy on its knew.

Without change to a fuel free model energy, we break the back of our economies by expensive fossil energy.
Eating out the positive effects of every efficiency improvement, the fossil energy road will bring us down.
The fossil energy model is terminal: what has build our prosperity will break it if we decide to keep it.

According to the oil industry there is no problem. They don't like the development of alternatives.
In the perspective of the environmental movement energy is bad. They don't like prosperity very much.
Time to stop listen to both these double agendas and to start some independent thinking.

Those two papers (Energy Politics and Energy Finance) can save the future of both you, your children.
For free included: the rescue of your financials and currencies (savings and pensions).
And as also free bonus: prevention of governmental collapse (and all the nasty things that comes with that).

The choice: building a fuel-free future starting today, or repeating all the trouble of the 20th century again.
Building a future with Sustainable Prosperity for ourselves and our children based on 21st century realities.
Or starting with the currency + government collapse of the Weimar and the totalitarian waste after that.

New realities in high prices for energy, water, resources and food, plus in huge geographical changes in purchasing power will have significant prosperity effects. Economies that are mainly driven by cheap energy and former glory will 'slow down' severely by high energy prices and there other cost levels.

We need data structures that facilitates the changes needed for global prosperity the 21st century.

Yesterday.

20TH CENTURY WEIMAR WARNING

ECONOMIC COLLAPSE LEADS TO GOVERNMENTAL COLLAPSE LEADS TO CURRENCY COLLAPSE

ENERGY POLITICS

Energy Politics is about Energy = Technology
Advocating a fast/massive switch to a fuel-free energy system, to avoid 'hitting the wall in full speed'.
Energy investments will prevent companies, banks, pension funds, governments and currencies to collapse.

ENERGY is PROSPERITY

Energy is the invisible force behind and facilitator of prosperity. Cheap energy delivers high prosperity. Expensive energy delivers low prosperity. Prosperity needs besides cheap energy also stable capital, good/actual education (creating the equal changes), international peace/stability (war is just waste of labour and resources, both with or without destruction) and a stable/fair/transparent functioning legal system. Governments should realize this and protect all these five facets of prosperity. But is starts with affordable energy (or stops if that's no longer available). Just as governments has taken credit markets for granted (while every analyst knew that no trees every grow into heaven and the last growth spurts are the most toxic ones), they also take energy markets for granted (while every economist with a little knowledge on the basic supply and demand mechanisms knows that the times of cheap and abundant energy are over). We have faced the collapse of our credit/capital system in 2008 (we just have postponed it a year of so, by piling up more credit on by too much credit derailing models). We will facet the collapse of our energy system very soon if we don't act right now. You can credit yourself out of a credit crisis, by watering currency values. But you can't energize yourself out of an energy crisis. When energy becomes too expensive. Everything goes not smooth any more. Cheap energy is the lubricant of economies. Expensive energy just slows down economies by less fluidity of any economic movement. The prosperity motor slows down severely, as efficiency improvement couldn't cope up/against the price rise of energy/resources, which will lead to less actual purchase power and smaller sized economies. We have seen this with our very own eyes in 2008. The real reason behind the credit crunch was that too expensive energy/resources prices eat out the debt repay capacities all around the world. This iceberg came to surface in the weakest loans of the most credited markets of the world. Peak Energy is the point where supply goes down and prices therefore go up. We have faced PeakCredit, PeakEnergy, PeakResources and thereby PeakProduction, PeakMobility, PeakTransport and PeakGlobalization. There's an urgency that redesign our economies from a high energy / high prosperity model to a low energy / high prosperity model. We need sustainable prosperity in the new realities the 21st century will confront us with (expensive energy and resources). Both the Global Resources Analysis and the Global Future Analysis describes these problems and there solutions. They can be downloaded for free on the Internet. The US writer James Howard Kunstler describes perfect the positive growing effects of cheap and abundant energy on economies till 1992 (and also as contrary mirror situation the negative declining effects of expensive and scarce energy on economies since than). Taking care of the future of both ourselves and our children requires a new energy system. If we don't adjust to new these realities and our energy system collapses, our economic system will collapse, thereby our financial system will collapse, thereby our governmental system will collapse. The right time for some serious thinking/action on energy in not tomorrow, but today. Not for the environment, just for prosperity. Sustainable prosperity is what we need. We will have it tomorrow if we start today. Energy is Prosperity is a very valid statement.

ENERGY is SCARCE

Energy is a commodity we use as ingredient for every action everywhere any time and in large quantities. We total underestimate the energy consumption of our lives and economies. Therefore we have not a clue on the effect of higher energy prices on our lives and economies. This is caused by the fact that we have taken cheap energy for granted in the 20th century. We don't think much about energy availability and energy prices. This is strange as the impact of both are huge on our lives and economies and these two (availability and prices) are very strong interconnected in a free market where supply and demand makes the prices.. It's getting more strange the moment we really start to understand that our current energy system is totally based on finite resources and the spread between consumption growth and discovery decline becomes wider each year. It's getting even more hard to understand if we start to know that all new discoveries are much more harder to explore (which ends cheap exploration) and mostly are of not regular qualities (which ends cheap refining). The story behind this picture is called PeakEnergy: first we gets the easiest to explore and refine quantities, and as they are used, we go on the more harder to explore en refine quantities. We're somewhere in the neighbourhood of PeakEnergy. It's not important if this moment is coming somewhere sometime in the future or we've already passed it. When your operate an energy system fully based on finite resources PeakEnergy is inevitable. The curve of fossil energy exploration is not a gradual growing and declining bell curve as we wish for. The line is in reality quite different. The first part of the traditional PeakOil bell curve is right: a gradually year by year growing production line. But than the line flattens for a few years and goes very hard down. This issue of hard to explore and hard to refine of the second half is responsible for this plateau and than rapid decline. We never thought much on the economics of the second half of our energy system. We just assumed that the second 50% would be easy as the first 50%. We thought that the Western World was superior and that the East and South never would be developed, not even in a hundred years. But we start to realize that these two perspectives were huge misconceptions. The result of our laziness in energy exploring en demand scenario development? Fossil energy of $ 147 per barrel is something like that. An oil price of $ 147 per barrel has proven not to work for our economic behaviour that is completely designed in the early nineties by an oil price of $ 12 per barrel. Besides hard to explore and hard to refine there is another wild card that influences this energy situation very much. The fact that the emerging world emerges 'a little bit' faster that everyone ever excepted. Everybody who visits the cities of the former so called Third World knows sees that they outperform the cities of the so called First World very much. China is the largest car manufacturer and largest car consumer of the world. All these cars needs a fill up at least once a week. China is taking online a huge coal fired power plant every 2 weeks and all this power plants needs their huge amounts coal 7x24 hours a day. Coal will become the most expensive power generation fuel of the world. Just by the huge increase of coal fired power plants. Where all this coal must come from is not clear to anybody. All listed coal reserves are heavenly overrated. The coal can be there, but it's not economic for exploration and the accessible coal reserves deliver each year lower quality. This simple fact mathematically delivers much more volume to explore and to transport. Less quality needs more energy/cost input for the same amount of energy. Energy is a scarce commodity. We use finite resources if they are endless. We have no clue on real economic explorable reserves. We never thought about harder to find and more expensive to refine issue. We just don't think very much on energy. It's just there. A similar point of view we had on the credit issue. There we hit the wall severe and within a very short time frame, therefore hitting the wall is the right description of our awaking on credit. And the end of it is not even close To be honest we hardly no what has caused it and how it can be solved. Energy is even more important than credit and we're just ostriches that think that putting the head in the soil will change our energy situation automatically. Noting change automatically and certainly not for the best. The times of cheap and abundant energy is over. The new reality is that energy is getting scares very rapidly. Scarce due have used the easy to explore, easy to refine reserves first. Also scarce due huge demand growth. The old (fossil) energy model has had it best time. An energy system that's is based on finite fuels has no future. Once used, they are gone and we need to find new once to keep up with demand and that hasn't happened the last decades. Our energy experts are all people of the energy industry. Do you really think they want to see the reality? They will pick up any pink news they can get for several reasons. These are: a) getting employees and shareholders for the last hours of the fossil period than will become hard, and b) alternatives are competitors and no one in the world will stimulate the creating of competitors. We just listen to the bubbles of the oil/gas industry, while everybody in the world can do the math on a small napkin that energy will become very expensive due higher exploration costs, higher refining costs, higher transport costs and fast growing demand. The West just have some problems with realizing the concept that it's no longer the reference point of the world. That makes everything even harder. Plus we all (West, East and South) like our energy fairytale too much: it describes just the situation we like in our dream state of mind on energy. We need to wake up and do some independent thinking and research. Otherwise high energy prices will squeeze us out and we just don't know what to do than just economic decline (with all it turmoil). The awaking regarding credit by the the financial crisis hit us overnight (Lehman collapse). The response was simple: just printing more money. But higher energy prices will drain us slowly but certain in our 'not a cloud in the sky' energy dream. The solution of the energy crisis is not simple: Energy can not be printed overnight. Energy is scarce is a very valid statement.

ENERGY is DECLINE

It's no secret that the economies of the Western World are in decline, it's the outlook we argue on. The Western World has lost it productivity and compensated that by credit and now credit has reached it limits economic decline is evident. The Western World has an older population and the population is getting older each year (in the world only Japan has more worse demographics), the Emerging World has a young population. The Western World is spooled by less production and much credit, the Emerging Nations produce for the world. The Western World has debts, the Emerging World has deposits/surpluses. Now the credit bubble has burst and can't supply purchase power any more and the purchase power of the Emerging World increases in rapid speed. The Western World needs to reposition themselves, both for world market supply position (production prices) as for the world market demand (resources payment power) position. This repositioning of the Western World is delayed by neo-colonial heritage of the the Western World: the people with an other coloured skin 'are not intelligent' and just 'must produce'. But the reality is that the only thing the East and South misses right now is good 'italian' like design, 'japanse' organizational structures and 'american' marketing, but in all other facets they beat the West. Even in Ph.Ds. In China parents works very hard to give their kid an education. In the West the kids gets a scooter bought on credit from their parents. Technology is for sale and the have the money. Confucius his spirit is less present in the East. Competition by smart people was bounded by this. Innovation was bound/limited by Confucius. This delayed invoice for the West on its cultural and economic colonial heritage has a severe price. The world is changing and the West (due its neo-colonial misplaced superiority ideas) is losing both production and their purchase power while asleep in consumption on credit. The West is also facing huge problems by their already high prosperity levels (decline is more evident than growth). Economic growth is nice. Economic decline delivers economic and social stress. So the West has had it place in the global economic sun and now a) is too expensive for the world market, b) is burdened in debt, c) is losing its UPSs in rapid speed, d) has old non productive demographics, e) has huge loads of inactive people, f) is spooled by wealth on credit, g) lose the benefits of being having a global reserve currency, h) has created stress in its relations with several world regions, i) are rather narcissistic (G7/G20 etc) and this is no longer appreciated ion the world, j) faces severe economic/social stress due to decline (which will paralyse them in many other things) and h) have governmental budget funding problems, etc. Add to this long list of head wind facets the rising prices for energy and resources and you know the West is in serious trouble. The former and current status of the West can be best illustrated by a picture parable. Take as easy example an actress (like http://www.google.com/images?hl=en&q=Cybill+Shepherd): we we were Cybill 30 years ago and we're Cybill today. The phone is not ringing so often any more. The party is over. Time for some restructioning and recovery. But we don't understand it. We're just blind. We're just trust the old car to become as good as it was earlier, even when we have flattened the tires and forgot to control the oil levels and the gasmeter is broke (but we 'think' the tank will be full, as it always was). We're wannebees, not realists. We don't understand to our financial system is based on growth: the money for the payments of the interest of loans is only created by growth (as in: by no growth defaulting is mathematically evident). We don't understand that our efficiency improvements (that brought our wealth) are eaten by higher energy/resources prices. We don't understand too much what's happening, we just take everything of the past for granted. The future equals the past, only better. We don't get it at all. This whole misconception or the situation is based on four seven mistakes: 1) we have chosen in the past for growth by credit (and credit is stretched to its max), 2) we have forgotten that growth is based on actual production, 3) we thought that we were superior, 4) we thought 'they' were 'just stupid, just inferior' (but they are even smart and try/want harder). 5) we thought 'they' would never get prosperous, 6) we just forgot that finite resources are not a very good wealth foundation (certainly if 'they' suddenly 'the nerve' also to get prosperous and become also competitors on the energy/resources buying markets and 7) we forgot that mankind first explores the easy to explore/transport/refine resources and that the second half of the energy and resources reserves maybe are too expensive to explore at all. If we keep our current energy system, it will drain out our wealth even further by fossil energy imports. We're asleep till we awake. July 2008 was our wakeup call. Energy than got to expensive and starts to slow down every economic movement. The main cause of the Credit Crisis/Crunch is not subprime, but over-crediting in general. Over crediting based on cheap energy and hard working and not much consuming people in the East. As soon they also start to develop the cheap energy/resources flow was ended. Add to this the increasing costs of exploration, transport and refining due the fact that we took the easiest to explore/transport/refine and best quality grades first, you know we're in energy trouble. Energy confronts us. With our own limitations, with other people's possibilities, with the finiteness of resources. The West has to learn that prosperity is about production not about consumption, about assets instead of debts, about surpluses instead of deficits. Energy is Decline is for the former richest nations a very valid statement.

ENERGY is CAPITAL

The energy sector always has been a capital intensive industry. Even in the old on finite resources based model where the energy fuel had to be brought in from somewhere else. The old business model of finite resources based energy generation was facilities (CAPEX) + interest (OPEX) + fuel (OPEX) = energy (ROI). In renewable energy business models the fuel component is absent. The business model of renewable energy generation is facilities (CAPEX) = energy (ROI). From the perspective of an economist are renewable energy business cases there for very attractive, as there is no fuel demand and thereby almost no OPEX part in the cost price. Our current energy model is based on finite resources and therefore can't deliver sustainable prosperity. Our future energy system will be based on renewable resources and therefore can deliver sustainable prosperity. Importing finite fuels is just filling a bath with water if there's no plug in the drain. Importing finite fuels is just operating a capital (wealth/prosperity) drain. From the perspective of an economist, importing finite fuels is just harming the future economic health of a nation (as economic production leaks away). The old energy system only functioned well when energy fuel was cheap and abundant available, but definitely doesn't produce prosperity if the energy fuel becomes expensive and scare. Due the absent need of from somewhere else brought in energy fuels the new energy system is a full capital (and thereby credit) driven industry. Thereby Energy = Capital is a very valid statement. The new not base on from somewhere else brought in fuels based energy system just needs 1) good ROI calculations (equals good business cases) and 2) good capital (equals cheap interest rates). From the perspective of an economist the absence of fuel demand is very attractive, as fuel is the wild card in any old energy model business, as the cost price of the fuel is of an uncertain price level. Uncertainties (and certainly huge ones) are not good for business cases. What is the future of the fuel price? Is a projection based on historical price data a valid model? Let's do the math: More people on earth combined with more purchase power per capita delivers huge energy demand (for example: China has become in only just a decade a bigger cars market than the US). So demand is growing exponential. See the graphs. Supply is not growing in the same speed as demand in growing, there's a growing disparity between supply and demand. Any economist can tell you the effect on the price even while sleeping. On top of that supply is declining and exploration is becoming more expensive each year. Connect the dots: We're running out of cheap fuel and thereby out of cheap energy. The energy fuel based model is not a valid business model any more. Calculating the price of fuel on historical data is closed to stupid, is just showing don't knowing the pricing facets of fuel at all. In this perspective is it for example totally not logical to build a huge coal fired power plant. China opens each 14 days a new one and the energetic quality (mass to energy) of coal decreases each year: we're running our of the high grades. The old finite fuels based energy system doesn't make any sense to anyone that analyses it economics for more than hour. The new energy system (due the lack of fuel need) is much more attractive. Energy generation just equals capital investments in the new energy system. No wild cards. Just investments (CAPEX) and interest (OPEX). It's very sad that we don't have done this in the 80ties. In the 70ties we know that we have to do it. But we followed a Hollywood actor his economics. Just check the source was a too hard to get wisdom for us all. As result of that we used the energy reserves we had available and need for the transition time (Prudhoe Bay, Cantarell, Mexican Gulf, European Continental Shelf, etc, etc) in just one generation in one big unsustainable prosperity one-time-possible party model. Our attitude was something like 'Tomorrow will take care of tomorrow' or 'Our kids must figure it out by themselves'. On top of that we demolished our credit system gradually but effective as energy prices started to rise in the 90ties. This is where we are today: no more cheap energy reserves at home and a debt burden financial system. Quite a perspective. If we don't want to live in prosperity the next decades and we don't want to deliver what our parents have give us to our children. The fact that the capital system is broken is very serious for our energy perspective, as in the new energy model just capital was needed to generate energy. There is no economics nor viability left in the old from somewhere else brought in fuel based energy model. The new just capital based energy model is the only viable model. As said: from economist's perspective the new model is much more attractive. Just the business case needs to be good (see Open Foundation on www.openfoun.org) on the Internet and the capital must be available. Capital that is sure of a ROI in an economic ambiance where almost any other investment seems to be nearly vanished. Energy is Capital is a very valid statement.

So we obviously have a problem regarding the future energy supply and thereby regarding the future energy price. High energy prices equals less prosperity. But there's also problem regarding the capital supply, due a debt burden financial system, where consuming on credit replace good old fashion saving as economical concept. We have two huge problems. Energy and Credit are the oxygen and blood of each economy. Will we survive? Better said as: How can we fix these two foundations on which our economic building is build on? First of all: we need a new energy model. The old (on fuel brought in from somewhere else based) energy model is not valid for the coming years. It will completely drain all wealth out of any economy that depends on it. Of course any energy conservation will equal prosperity increase. The 21st century prosperity model is contrary to the 20th century economic model where energy use was equal to prosperity increase. Low energy use equals high prosperity economics in the 21st century economic model. But fixing a little one pillar doesn't save the building. So we need a total new energy model. Secondly: We need to fix our financial model. Why fixing it? We certainly don't want a new finance model by default of the old one, as this will lead us to total lose of all savings and pensions. Sure, we want to grow to a less leverage based financial model, but without a collapse of the old one. Collapse of the global financial system, leads to chaos. Chaos (besides that it delivers a lot of suffering) will deliver not very nice versions of autocratic leadership. Than we just will repeat the 20th century with all it troubles. Building wealth is a gradual process. The way back will not go the gradual way. Growing is easy, declining is hard, structural decline in a on growth based financial system lead to collapse of the banking sector. The reason for this regularity is the fact that by absence of growth the money for the interest payments on all existing loans not is created and with mathematically certainty defaults are appearing (of course by the bad loans first). See the Global Future Analysis for the explanation of the mathematical certainty of this. We must replace our energy system and we must repair our financial system. The said thing is that we not only spoiled the main (best/cheapest) part of our energy/resources the last 30 years. We also wreaked our financial system due a economic system that encourage to consume more than we earn as income. Now we need to change from a fuel based energy system to a capital based energy system we're stocked with a financial system that is forgiven of weak assets. When we need the financial system to change our energy system, it's out of order till further notice. So we have two problems and no solution? No. The beauty of all is that both processes are possible and even can be made complementary to each other and enforce each other. How? By the 'kWh as ROI' model. This model delivers the financial industry a hedge against declining currency values. Simple said: if the dollar declines, oil advances. Currencies and commodities are each other counter parties in value development/direction. That the value of currencies will decline is undoubted as long as governments don't see the structural developments that are taking place and think this is just an other recession. Buy this misconception they think that everything still is the same and just needs for the moment some stimulus. They answering the wrong question i.e. giving medicine for an other cure. First the stimulus packages has the bank bailouts forced the governments to go significant deeper into debt. After that the stimulus packages have done the same over again. This in a time of economic decline and by that less fiscal income. Combine this with large quantitative easing operations by the central banks (even for bad debt like the Maiden Lane I to V vehicles) and you understand that both the banking system, the governmental debt load and the currency values are under heavy pressure. Banks will face loan defaults as long as the economy will not grow again and the economies of the Western World will not grow ever again. They have passed PeakEconomy. This due to sharp rising energy/resources prices, combined with a moving geo-economic sun towards the East and South. Any economic revival in the Western World will directly lead to a new energy/resource price spike due to PeakX. Banks just need to adjust to this new situation without collapsing. The have the adjust to new (decline instead of growth based market conditions. This has nothing to do with any ideology, it's just plain economics. The high leverage type of banking is gone. The global type of banking is gone. Capital will stay closer to home and will take less risks. We need to take care of our energy system and our financial system. We need to transit them both to a more sustainable model. Sustainable prosperity is the goal of everybody. There is no political colour in it. It's just want people all want, regarding their background, location and preferences. How we prevent collapse of the energy system, the financial system and currencies? Just by massive fuel-less energy investments. Several very simple measures/models will help is by realizing this. The first one that needs to be activate yesterday (and not the day after tomorrow sometimes) is called 'kWh as ROI'. In this model lenders gets paid back in value gaining kWh instead of in value declining currencies. This make Energy as ROI based energy investments very attractive for banks, pension funds and central banks. The kWh output hedges their assets noted in value declining currencies. If banks, pension funds and central banks get this, they move massive into energy investments, as that insures them of higher future asset values. Energy investments will 'vacuum clean' all capital out of the market if this model gets used massively. Therefore quantitative easing by central banks certainly will be needed, but if this QE is just only in 'Energy as ROI' models, it don't watering down the value of the central bank issued currency or weakens it. No, it will re-power the currency, empowering it again, deflating it value, stopping the inflation. Giving it more instead of less future value. Governments could join this 'Energy as ROI' process, as they count on inflation regarding more easier payment of their national debts. As we have faced PeakCapital/PeakCredit, national governments will face

severe difficulties to fund both their budget overdraws/deficits (as in: the repayment of their debts). Energy investments will take over the capital feed that now goes into state debt bonds. State debt bonds will become very unattractive and states will need to balance their budgets completely as their access to the capital markets will be lowered by as PeakCapital is behind us and as pension funds will have more appetite for energy generating and energy transport investments. This decline of state bonds will be the gloom/gain of Energy as Currency. Smart states will combine currencies to the Energy as ROI concept and by this will be able to attract capital while other states will not be able to do so. Energy is Currency is a very valid statement.

ENERGY is GEOPOLITICS

As energy is crucial for each facet of production and society, is it a very crucial facet in prosperity of nations. Price rises of energy frees the entire economy (as energy 'takes it all'), thereby draws the banks down and dries the fiscal system and by that all jeopardise the governmental structures. This delivers a huge challenge to nations that are a) energy inefficient and b) have a fuel based energy system. In the old fuel based energy model there is huge difference in national perspectives based on that fact of a nation have energy fuel surpluses or energy fuel deficits. There's a direct link between the USA hitting her top of oil production (US PeakOil) in 1971 (only one year later than M. King Hubbert's in 1956 made exploration curve) and the Nixon Shock (unilaterally cancelling the direct convertibility of the United States dollar to gold) in 1971. The year 1971 marked the turning point in global dollar valuation and US global dominance. Producing is getting richer. Importing is getting poorer. Kissinger has fixed this problem artificially in 1972-74 by making some crucial oil/currency agreements with Saudi Arabia within the U.S.-Saudi Arabian Joint Economic Commission, these guaranteed that the oil market for the huge Saudi Arabia market share would be still nominated in USD even the USA where no longer the main oil supplier of the world (as they where before 1971). The old fuel based energy system drains the wealth gradual out of energy fuel deficit nation. The old fuel based energy system just transfers each year steady a certain wealth volume to energy surplus nations. Abandoning the road we all started to take in the 70ties had it's price. We should never let a Hollywood actor draft our economic future. Unfortunately we did and now we must pay the mortgage on both our financial system/party and energy system/party. We have partied a dream on credit. We have mortgaged our future and it's getting pay-time. We have not done any energy transition what ever. We're just a far as we where end of the 70ties. Now cheap energy is over and we have not build alternatives. There is certain value economies can pay for energy fuel. History (July 2008) has shown that $ 147 maybe is a too high price and such price levels poison our economic systems. This does not mean that oil prices can rise to $ 200 or beyond, nobody knows the maximal price of a barrel of oil. As demand grows and supply declines there will be market tensions that not can be solved by the price mechanism, as that would deliver too high energy fuel prices. On top of the market mechanism of supply and demand than a granting model will grow. Energy surplus nations will sell there energy fuel to friendly nations. This is where the bullies of the world will hit a wall, as nobody really likes the bullies. This process is (just in talk, not in action) already growing in South America. Nations that have military power and will not got energy fuel allotment grants will go to war. Direct in case of stable not willing to supply nations or indirect (funding resistance movements) in case of unstable not willing to supply nations. From the perspective of an economist the old fuel based energy system has many downsides: from a declining currency value that effects savings and pensions, by fuel supply availability uncertainty and fuel supply line uncertainty, to economic negative trouble in unstable regions. Exporters get more rich, importers gets more poor. This is not an opinion, just some elementary school math. Exported wealth is gone, it' can not replicated itself any more, nor can give economic future security. It just drained out of the system. For the specialists in economic statistics: this drain is commutative (year after year, after year) and delivers an exponential (hockey stick shaped curve). The history of the future will name the start of the fall of the Western World in just one word: Reaganitis. An Hollywood actor was our future designer. We had to know that it was a dream, but we like dreaming too much to escape out of it. This political movement of 'let's party now, and to hell with our children' marks the beginning of a 30 year period in which we wasted almost 50% of the economic to explore resources and demolished our credit system and currencies to the point of breaking. Due extending of or credit system we could hide the effects that rising energy prices had since the early nighties. The price is a structural economic crisis, a structural financial crisis and a structural governmental debt crisis. On top op this the phenomenon of emerging markets start to came to the surface of the world economy. The West laughed on it out of misplaced neo-colonial superiority. The West was and also will be the better part of mankind. But both China and India delivers each year more Ph.ds than Europa and the USA have in total. Everybody who has visit Shanghai is cured in one day of this misplaced western superiority pink painted dream. Emerging markets started not only to deliver to the global markets. They started to buy resources also. Based on an 10% annual growth figures. To be clear. This is about limited finite resources. Everybody who understands that supply and demand makes the market prices understands that huge price rises are inevitable. The race for resources has started in the '90ties and gets more traction each year. A race that gets more tensioned each year. The West used massive oil supply to to global markets brake the economic back/foundation of the USSR. The west won the Cold War by oversupply of oil to the global market, but but lost its future resources. A very similar case to funding the western funding of the Afghan Mujahedin in their fight against to wrong annexation of the USSR of Afghanistan, which delivers the world a new type of violence. The new energy system doesn't need foreign fuels. The new energy system reduces global tensions regarding energy very much. Global tensions often lead to global wars. We had two if them. We had enough of them: they're just a waste of labour and resources. Wars are contra productive. A choice for renewable energy is a choice for lees tension and more peace. Everywhere there are fossil energy resources there is tension. Only the new energy model can assure global tension reduction. Currencies are also geopolitics. Energy and currencies are very much interconnected. Energy is Geopolitics is a very valid statement.

G Lanch.

ENERGY is WAR

Something we often totally forget that government structures are mushrooms that grows on the feed on the real economy. No economy, no government income, no government. Governmental structures exist by the grace of economic production. When the relation between those gets reversed (as in: when governments think they can replace -partial or even fully- the creating power of the market) both the economy as the government will collapse, taking the currency that dominates the trade, loans, savings, loans and pensions in that nation with it down. The best recent example is the imploding of the USSR in the eighties and begin nineties. Nations that maintain their dependency on the old (from somewhere else imported) fuel system are playing with their future due to the wealth draining effect of this. If they get into certain situations (budget deficits with attached currency declines by declining economies due to too expensive fossil imports) where they can't pay any longer for this fuel (also due they have to pay for it with real money, a hard currency). Than everything hits the wall. The only option left than is war. War is a simple three character word, that changes everything for the worst. The attitude than will be: go and get it. The show must go on. Moral issues will be abandoned as luxurious. This war will not be like the wars we know. Wars get more dirty per cycle. No more trenches based man to man (WW I), no more tanks and planes (WW II), but just typing one character (just an ;) for the nations national internet domain in the global roots serves will do the job, or just an old fashion trade isolation lobby: works always in a global interconnected world. If this doesn't work, there will be biological warfare (viruses) or detonating an EMP (electro magnetic pulse) weapon that takes out all digital e equipment in a second. Iraq and Afghanistan has learned the world the lessons about 'how to do not' conduct a war. Both wars only have losers, no one can declare any victory or eat the fruits of that. History (like Germany in the past century) has showed that a nation can be propagandised into conducting war. This is one of the reasons a free press is so important, governments should honour free press: it delivers them a free insurance of good policy. Maintaining the old fuel based energy system is just ordering huge not very attractive global events. War is not good for any thing. War is just a wast of people/labour and resources. Any idea that war is profit is a misconception. War damages the productivity of a nation severely, war increases the governmental budget deficits severely (less income, more costs). As an economist I don't want to talk about the human suffering of war, but for sure there's a huge price also to pay. Conducting a war or suffering for war changes people and not for the best. War is just wasting everything that's valuable. War is the last option, the proof of wrong policies in the past. As I want this document to be accepted all around the globe, I don't want to mention actual energy driven wars or conflicts. But it safe to say that there where are resources there is by foreign capital fuelled unrest or war. One simple and safe/neutral example out of my own nation of birth (Holland). Under the soil of the remote province of Groningen was/is the biggest natural gas deposit of Europe. Bloomberg published a year ago a top ten of most exploited regions. Number one was Groningen, Holland. The region was global numbero uno in not benefiting of it resources. In Groningen (due the huge fossil wealth beneath it) this is not a real problem, so therefore it's a safe neutral example. The days of the the old energy system are over. Only nations that abuse democracy to keep small talking and don't change there energy system will hit the wall and therefore go (or support: no war happens without -political or actual- support). Don't ask the baker if bread is healthy, don't ask the Pope what's the best religion and don't ask the carbon companies advice on energy future. Independent thinking has become scares. This we must change. We must revitalize our governmental structures. Not only the USSR needed Glasnost and Perestroika. We all do. Our energy system (and therefore our economy, our governments and our currencies, better said: our future perspectives) is as weak as the economic model of the USSR. Time to change to a fuel free energy as income instead of energy as cost energy model. If we don't do that, it's very clear that blocks of nations will have huge contrary interests and thereby tensions will grow each day a little, until it got open en hostile. Let's face it: China, Europa en the USA are all there energy deficit in terms of the old on foreign imported fuel based energy system: they change to the new fuel-free energy system, or they will hit the wall en prevent sudden collapse by conducting wars. I don't mention the capital fuelling of social unrest in resources rich parts of the world. Everybody with a little knowledge of both resources and conflicts knows that these two global maps have almost the same hotspots. But unrest is not war. War is the last (and therefore only valid) option for nations that thought that the past was the blueprint for the future and doesn't understand the total game changing reality of PeakX. Change your energy system or get involved in wars in the near future. So simple is the blueprint of the 21st century. Energy is war is a very valid statement.

G Lanch.

ENERGY is DEFENCE

The most secure defence model/target is creating an global/regional environment where it's not needed. The new realities of the 21st century are quite different from the old ones of the 21th century. The heading above the 20th century was “Difference Economics”, the heading above the 21st century will be “Short of Resources'. Materials/Elements we can not harvest, we can only dig them up, use them and maybe recycle them. Water can be different: if we first address the energy issue, we can make sweet water out of seawater (at substantial higher cost than nature provides sweet water) and the water problem will cost us prosperity (condensing water is very energy intensive), but than will not lead to water shortages. Energy certainly can be different story. Regarding energy there are two directions possible. A passive (not choosing) or active (choosing) governmental choice for maintaining the old (fuel based) energy system, is not only a choice for wealth transfer to other nations, it's also a choice for a war on the last resources as last option for collapse. When the going gets tough regarding energy/resources prices/supply (due to wrong strategic choices in the past), war is the only way governments can hide their strategic failures and it the only valid option. Let's not be naïve on the characteristics of the next wars. Each war the war gets more dirty and develops itself each time around more nasty. The next war will be dirtier than ever. New wars always are different. From mainly man to man in WW I to tanks, plane and bombs in WW II. Always much more dirty. New wars will not be fought with rifles, nor with tanks, nor with planes, nor with 'normal' bombs. New wars will be about nations will dam/redirect rivers, so the water supply downstream is reduced to zero. The nations that doesn't get the water will poison the water they do not get any more. The dams will be opened and they will have poisoned themselves also. Don't think in old skool stuff like tanks, planes and warships, don't think even in new skool stuff like drones. Think in terms of targeting sudden economic collapse, abandoning of the national internet domain (can be done by just typing ; for a national toplevel domain in the root zone), think biological, think trade isolation, think cutting of the power, think oil/gas pipelines, think EMP. Do we want such a future? For ourselves, for our children? Still from 2015 on resources will be the only point on the international political agenda of every nation. The Club of Rome her first report and agenda was titled 'limits on growth'. It will be replaced by a second/adjusted agenda of 'Sustainable Prosperity'. The world van easily support Sustainable Prosperity for the current 6.8 billion people that it host, and the same can be said for the less than 9.0 billion people it will host as population will reach it top between 2030-2050. The earth can not host any number of people in the old unsustainable prosperity model. So the key to tension prevention (or better said: prosperity by international stability, often called: peace) is Sustainable Prosperity. Everyone who think the world can not host less than 9.0 billion people nor give these people Sustainable Prosperity, just look to the world without any understanding of technological innovation. Yes, there will be changes. We totally don't have any idea of the huge quantities of energy fossil fuel deliver to our current economic system. As long flying is about old skool technology in burning huge quantities of fossil fuel, aviation will become very expensive and thereby less used. The on cheap fossils based massive aviation period is only 20 years old and will not survive more than another 5 years. But their will be new technology developed, aviation technology that will cope with gravity and speed in different ways than by fossil fuel based jet-engines. The problem is: we're still in denial regarding PeakEnergy, nor have any clue on energy economics (we think emotional driven that cheap oil is a god given right that will stay by us for ever), so we're not searching for paradigmatic changes. The five most simple to implement today already fully available energy transition models are: a) efficiency b) model changes, c) photovoltaic, d) geothermal and e) deserttech. These are the best defences for a nation not to be sucked into any energy war. Each Ministry of Defence should allocate 50% of its resources to this. The Pentagon should do it, the Russians should do it, the States of the Middle East should do it, Mr. Hu Jintao of China's National Defence should do it, all the other nations in the North and South should do it. These five fossil alternatives energy models are so easy to implement that there's really no need to wait one month longer with rising these 5 models to official governmental policy in any nation of the world. If these five exits on the fossil highway are taken, global tension for energy will not be build up as tensed it will be build up without these 5. Not only hitting the fossil energy wall on the end of its dead ended street is something that would give war. The effects of the road to this wall (higher energy prices) is worse enough to deliver some severe tension. High energy prices equals no growth, no growth equals defaulting households, companies, banks and governments. High energy prices are the bomb under the economies, the financial system and the governmental stability and finally even under the currencies. The fossil energy related tension is already build up since fossil energy became the main economic driver almost a 100 years ago. Hitler is funded by the companies who thought this was the way to get their Caspian oil fields back from the communists. The USSR has ruined the democratic green leaves in Afghanistan in the eighties pure as protection that Afghanistan not would be the pipeline that would bring Caspian oil/gas to the High Seas. America has drawn the USSR into bankruptcy by flooding the market with cheap oil in the '80ties. The USA has gone into Afghanistan only for getting a pipe line from the Caspian Region to the High Seas. Smart military leaders understands this all and advocates instant start of the 5 above mentioned easy to realize energy transition exits of the dead ended fossil road. Energy is Defence is certainly a valid statement.

ENERGY is INDEPENDENCE

As nations seriously start to switch to a fuel-free energy system, they became not only stronger in capital terms, they became also less dependent on supply and transport they can't control ever. Energy independence is one of the holy grails in politics: it ensures wealth production and wealth security. This is why energy independence should be not only on the agenda of every politician worldwide, but on the top of it. Stop the export of Wealth is something the electorate certainly will appreciate. Less risk is an other one they certainly will be happy to vote for. Good policies attracts more voters. Voters are more smart than ever. Good policies also will attract the passive part of the electorate. Energy independence not only a wealth creator and insurer, it's also a strong force in global peace and stabilization. Nobody wants war, war is just good for weapon manufacturers and of course for a few conscience poor constructors who have chosen to be the cheerleaders of war and to whom human suffering is a business opportunity ('event driven' corporate model they say in their communication). Want wealth/prosperity/assets? Take guide all households/companies in your nation to the many energy independence exits on the current energy road, by just installing the signs to it. Want no global tension and/or war? Just place the energy independence signs on the economic road of your nation. Energy is Independence is a very valid statement.

ENERGY is INCOME

Energy is or alone a cost or a cost plus an income for nation. Much more clear it can be said that energy makes a nation poor or rich. This can't not be seen only from historical data perspective. This historical data view misses some vital new data like strong increasing cost of exploration, reduced nett energy exploration ratios, higher refining costs due less wanted types input, huge demand rise due to emerging prosperity in the emerging markets. Regarding this energy exploration ratio issue: energy production costs have gone from 1 barrel per 73 barrel in 1971, to 1 barrel per 9 barrel in 2009. By all this structural changes future energy prices can be calculated only on historical data. The new wild cards must enter the calculation. This is something nobody wants to do, although the need for it is very clear. This historical single sided data cost price of energy perspective is what brings us in trouble. We like to be blind for the new calculation facet because seeing them is inconvenient and we think that there's no solution, so wishing has become the main component of our energy policy. The old (fossil fuel based) energy system already makes nations rich or poor. These developments only will be enforced by the above facets. The new fuel less energy system will reduce this transfer of wealth. The only reason governments don't make serious work of national energy production is that their energy advisers are working in the fossil exploring of nuclear fission industry. Domestic energy production avoids energy imports, energy imports that will be more expensive each year. Energy conservation can also been seen as income: cutting in costs that otherwise burdens households and businesses certainly can be seen as income. Energy in not only income for the large energy surplus nations like Saudi Arabia or Iran, that was in the old fossil based energy model. In the new fuel less energy model each nation can become their own energy supplier: holding the still growing energy component of the economy aboard in stead of delivering it abroad. Energy drains or build economies. Preventing future capital draining is more than income, it's recurring income, delivering commutative over the years a huge capital earning model. Energy is Income is a very valid statement.

ENERGY is INSURANCE

Availability of cheap and abundant energy is an insurance for wide prosperity. Contrary is expensive and limited energy access an insurance for economic stagnation. As we already concluded: governmental income is growing or declining directly connected to the well-being of the economy. Governments are just like people: the spend more than they earn. An economic decline leads to severe lower governmental income. Thereby a severe economic decline equals per definition the recipe for a perfect storm: economy down, governmental income down, stimulus by tax cuts up, governmental spending up, banks down, bailouts up and by all this governmental funding and (super)national currencies under heavy pressure. Prosperity needs several conditions: water, energy, credit, legal and education are the most important needed conditions. Without those prosperity can't grow. If one of these comes under pressure prosperity will decline. In the 20th century fossil energy was the main prosperity driver. In the 21st century dependency on fossil energy will be the main prosperity suppressor. Fossil energy was just a phase in the energy life of mankind. Just like wood was before the fossils got dominance. If we want to secure our prosperity, we stop our dependency on fossil fuels as soon as possible, as otherwise this dependency will choke our economies. Fuel free energy generation (as in: renewable energy) is the best security delivering insurance for prosperity. We pay insurance for everything, we think people that doesn't are irresponsible, but with a change of our energy system as free insurance of our prosperity we have huge not rational problems. The problem is with in the word change. We all (conservatives and liberals) doesn't like change. Why? Change needs vision, plans, courage and actions. And we have a continuous shortage of those four. All of us. We pay a huge part of our incomes on third party covered insurance, some of us save also a substantial part of their income as do-it-ourselves future insurance for both ourselves and our children, but if we see that on of the foundations of our prosperity is defaulting more and more we don't do anything. Something that is quite unintelligible from rational perspective, as it not only will effect the future of our blood own children, but also our own. Life isn't pleasant in collapsed economies, with collapsed governments and collapsed currencies. That no way to spend the rest of your life. The answer is very simple: just get of an already creaked old energy system based on stuff that will have just only one price development: the only way is up for fossils (and if its the master driver of an economy the only this economy goes is down. We're such pink glassed wannabes. Thinking that wishing a car had brakes will stop a car. We need to hit the brake on fossils, and make speed on renewables. Not for the environment and certainly not for the climate. Just for prosperity. The whole environmental discussion has politicized the energy agenda. Environmentalists never had good PR consultants, they didn't know how to sell successful their agenda. The past message of the environmental movement was anti prosperity. They didn't know sustainable prosperity, because they didn't like prosperity at all. Still wondering why nobody wanted to listen, they have thought: the only option left is going in overdrive and they inflate their message to apocalyptic sizes. Green has a bad imago. Green is anti-pleasure, anti-life, anti-prosperity, just anti everything. The green case isn't round. The green case is also somewhat hypocrite. Green leaders don't practice what they preach. We need energy: don't complain if this costs somewhere somewhat nature or stop using it. We want to live and have houses: houses needs space: don't complain that that's not all right. E.F. Schumacher (one first thinkers on Sustainable Prosperity) was more a pro than an anti thinker. As an illustration of this pro orientated thinking he describes to opposition to a large housing development case in the sixties near London. His advice to both parties of the conflict: we have to build houses, so let's do it, farm land is just an old fashion type of biological mono culture, make the new development biological diversity and of course save the unique parts of nature within it. Green has become reactionary (against anything), green is no longer progressive. Green equals surrealistic emotional attachment to an unreal idealized past. Green has become almost anti-life. Green in the heart of it is just grey. Very grey. Borrowing and acidified people with zero communication impact or even opposite communication impact. The only reason people every change is because they feel the need for it in their prosperity perspective. Economics is the main change motivator. Nothing else. Just old cold hard economics. The year 2008 was our awakening. We understood all together that $ 147 per barrel oil was the end signal of the the fossil period in our energy system. The fossil way leads to a cliff. Keep on driving is it think the best way to make people, companies and governments awake. Just drive on. Just good old fashion ironic have more communicative impact than preaching nobody wants to hear. Preaching is trying to put something into another's mind. Ironic is just delivering the seed and walk away. People don't change by preaching, they even get resilient to the issue by it. Ironics and economics. That are the two main initiators of change, the main facilitators are vision, plans, courage and action. We can have a fuel free energy system, we can stop draining our wealth by energy imports, we can insure our prosperity. But we rather be blind, deaf and passive. We don't like further prosperity for ourselves too much so that we change directions. We don't care at all for the further prosperity of our children. We drive with 60 miles a hour to a wall and we smile to ourselves in the mirror and to our children in the backseat. We really believe that we have a fun ride into the future. We really do. Some stupid 'anyone else will change the direction when its needed' misconception has paralysed our brains while we ourselves are are holding the steering wheel. Do you want to spend the most of the time left in poverty? Just count of the near collapsing fossil energy system: it will give you this very interesting ride. Changing our energy system is insuring our prosperity. Energy is Insurance is a very valid statement.

ENERGY is INFLATION

Energy will cause inflation. Huge inflation. As we use energy for everything, everything just will get more expensive. The energy intensive products will rise more than the low energy products, this will of cause lead to a switch in product demand. Manufacturers should know the energy price exposure of their products (as this determines the further market chances of their products as the energy price rises. Why will energy be more expensive? The discovery costs increase, the exploration costs increase, the refining costs increase and the transport costs increase. By this all fossil energy will become more expensive. All these energy facet price rises are part of the cost price. On top of that comes the market mechanism surplus caused by increase of market demand and decline of market supply on the global market. On top of that the current full connection between the global market price and the local market price will be lost as the granting model will be installed on top of the global supply/demand sales system. Some nations just will have bad luck of not being able to buy as many as they like to do. Energy is inflation. Stagflation to be more precisely: higher prices in an economic situation that not grows but declines. Stagflation a the nightmare for everyone: everything gets more expensive and as there is no income rise that covers this, the purchase power of everyone declines. Energy will deliver unfortunately huge stagflation. Energy is Inflation is not a valid statement.

ENERGY as DIRECTION

People, companies and governments start to understand that their deposits, savings and their pensions make not only their own future security, but also shape the current and future generic economic model. The awareness will rise more and more. Both by just generic media coverage on the economy and financials, but also by economic change focus movement that promotes this concept. In the US and Canada the Credit Unions are very active. In the USA there even a fast growing movement promoting this concept (www.moveyourmoney.org). This development is feed by three major generic social/economic processes. First: the generic democracy wave that has grown the last 100 years and now reaching even the financial industry. Second: the generic transparency wave that has grown the last 50 years and now reaches it the last non transparent bastions. Third: The huge paradigmatic change of the media, giving a more pluralistic media landscape with ditto more diversity in news on the economy and financials. Fourth: IT makes it possible the manage own stocks trade and will make it possible to also determine the 'direction' of own deposits, savings and pension capital. Central in these new 'capital democracy' is energy. Energy is Direction is a very valid statement.

ENERGY is UNKNOWN

The huge impact of the energy price on every economic transaction is widely unrecognised. This is a huge problem. This lack of knowledge is also the reason that policy makers don't see that the times of cheap oil are over. There plenty of oil left, but it's not light, sweet and close to the surface. It deeper than ever (expensive exploration), heavier in structure and/or more sour than ever (expensive refining to remove the get the right products and/or remove the high sulphur contamination). Cheap oil is over. And only a few policy makers see this. Lord Hunt in the UK and several USA senators are positive exceptions. Why is energy its impact and availability so less disclosed and by this less discussed? The reason is that we see the oil industry as leading opinion maker on this subject? Does anybody believe that the oil industry would stimulate the transition to a new fuel less (as in: renewable) energy model? Will the butcher tell us to become a vegetarian? Will the goose advice the traditional Christmas diner? We're just naïve. Beyond any level. The knowledge on our energy system and it impact and perspectives is as good as we had knowledge on the financial system before 2007/2008. We're just that kind of people who likes to hit the wall. We hate GPS navigation in economics. Both in finance and energy. We trust the sector as we think that's convenient. History (2008/2009/2010) has showed that sector based mono type knowledge leads to collapse of the sector and that this specific sector takes everything down with it. We need independent research, we need independent thinkers/researchers, we need less mono type media, we need media diversity, we need political diversity. We needs knowledge. Independent knowledge. Otherwise we hit the wall also the energy wall (like we've hit the credit wall) without knowing what's happening. The DOE (Department of Energy) of the USA has asked in 2005 to R.L. Hirsch to head a research on the need for time energy transition. This were the two famous Hirsch reports of the DOE with content like "Six Major Factors in Energy Planning". Hirsch emphases very strong that after society at it whole sees the needs for a new energy system, that the actual transition will take at least 10 and probably 20 years. We most stop with giving any the oil industry any credibility at all concerning the subject of PeakEnergy. For exactly the same reason we should not trust the medicine industry regarding health promotion programs. For the same reason we should not ask the financial industry to regulate itself (as that brought us into deep trouble), we must not ask the oil industry to draw our future perspectives (as that will bring us into deep trouble). We must stop being naïve to the bone, just to cover our laziness in independent thinking and sector independent research. Each nation should realize a Ministry of Energy as soon as possible (as in: operational before the end of 2010). All financial media should list the prices of all energy commodities each day. Just like schools needs to educate on functioning and impact of the financial system, the should educated on the functioning and impact the energy system. Each elementary school kid should have an energy education kit as soon as possible: they will talk at home on the subject. It their future very much. They deserve the same wind fall we have had. Any Chamber Of Commerce should preach loud and clear to it's business members: cut on energy use, than your operations will stay in profitable. Any Minister of Economy and every Minister of Finance also (just to save the economy and by this the governmental funding and by this the governments). First we need to see the actual situation, not the historical, nor the wannabe situation. For readers: download and read the Global Resources Analysis and the Global Future Analysis on www.planck.org. For viewers: just take 15 minutes to watch this very compact and impressive video on the interaction between energy, finance and economy http://www.chrismartenson.com/crashcourse/chapter-18-environmental-data. Let's not repeat our passive attitude on finance again regarding the credit crisis. That passive attitude regarding our financial system has cost us all (also the financial industry) a lot of wealth and the damage of it is not even started yet, although the people wishful thinkers, with only historical and no structural change data already shout of the roof tops that the problems are over. We will see nations and currencies default and each default will lead to more defaults. We need knowledge on energy impact and on energy its actual status. Even manufacturers don't know the energy coefficient of their products, by this they don't know the further cost price of their products and by that they don't know the further market position of their products. Energy is Unknown is a very valid statement.

ENERGY is CLIMATE

There are reasons not to be friendly on the green movement. There are reasons not to be friendly on the oil/carbon industry. It's just time be to realistic and emphasize the need of changing the energy model very rapidly from the old fossil fuel based model, to the new fuel-free (as in : renewable) energy model. Not for environmental reasons (and yes: there are plenty of them), but just for economic reasons. If we don't change our dead ended old energy model, we come economic more and more of road in the mud. We must stop listen to the oil industry that tell us that everything is under control as long we don't create alternatives for their core business model. Someone who listen to the oil industry for wisdom on our energy system is as dumb as a drug addict who believes his pusher. But on the other end of the spectrum there is also a lot of economic dead ended street bla bla. The green movement has failed to picture/project/communicate a world of Sustainable Prosperity for each and everyone. As said earlier in this paper: the greens are more grey than green. Bitter and anti everything is the main imago of the gooders of the world. Not many people's cup of tea. In defence the greens has gone into over drive. Overdrawing the picture certainly would do the job must they have thought. And it did. Everyone got touched by it. But it was just preaching. No valid alternatives were presented. Just giving us a bad feeling and no concrete 'you can start here today' solutions. This overdrawing was the solution of last resort for the green preachers. But it's the nightmare for the environmental friendly alternatives developers. Sustainable Prosperity is not served by overdrawn CO^2 horror stories. The reality is that the CO^2 movement doesn't understand PeakFossil at all. The only way global fossil consumption will go is down, down, down, the way up is over. The economic explorable reserves are depleted. There is not enough economic to explore fossil carbon left to initiate any horror future. The CO^2 movement, just didn't do their homework very well. The CO^2 movement was not much at all about open truth searching scientific studies, it was more about a political agenda of creating a global CO^2 tax structure, as a by global taxation forced development fund for the non developed countries. The CO^2 movement had some severe stalinist characteristics: Science is about keep asking questions, not about Honecker's DDR. Politics is about consensus. Science and politics are natural enemies. Preventing critic scientists to publish their research is a scientific shame. The CO^2 movement has fallen into their own swords. Lets put some salt in the open wounds. Global climate (and by this its change) is driven by cosmic radiation and cosmic gravity. Cosmic radiation (like neutrinos: http://en.wikipedia.org/wiki/Neutrino) is also the main driver of the nuclear fusion process in the sun and of the nuclear fusion in the earth's core (and so of magma activities and so -with some delay- of volcanic activities). Cosmic radiation is the main driver of cloud development (just google on CERN+clouds+climate). Direct or indirect by magma influence on the atmosphere. The relation between surface water and magma and the relation between magma and cloud development is a matter of current research. The location of our solar galaxy in the universe drives the solar activity. Cosmic radiation is also the main driver of the nuclear fusion process in the earth's core. This fusion process drives the magma streams into the outer core of the earth. Cosmic gravity (which is also connected to the current place of our galaxy in the universe) also can also steer as a pump magma floods at the outer core of the earth. These magma streams drives ocean currents, as they are salt and sensible for this magnetic magma flow motor. The ocean currents distribute the equatorial heat to the poles. When large space objects of other galaxies pass they can change the magma flows very abrupt very significant and this can cause abrupt climate changes within short time frames. The tide of the ocean is the best visual example of cosmic gravity influence (in this case caused by the gravity of the moon). These magma streams also give the earth it's magnetosphere protection that reduces all unwanted high cosmic nasty radiation levels. Short overall information on both geophysical phenomenons can be found on http://en.wikipedia.org/wiki/Magnetosphere and http://en.wikipedia.org/wiki/Van_Allen_radiation_belt or by a google query for it. Conclusion: Our climate is made and changed pure and only by the location of our galaxy in the universe. The journey/travel of our galaxy though the universe is the driver of the former and current climate status and a cause of continuous climate change. More precisely: the current status of the universe makes this era's climate (with all kind of also direct effect slowing mechanics) and future climate will be made by the future location of the earth in the future setting and forces of the universe. The man-made climate change theory is a fable made up by green fundamentalists with not any knowledge on PeakFossil exploration and not a very deep love/devotion for the true nature of science (as in: always keep asking questions, or: the more you know only gives you an understanding on how much you don't know). Yes the climate changes, it always have and always will, this is something we don't like since we stop being hunters and became farmers and we certainly don't like since we build cities and nations, but it's just a part of existing in the universe. We had the medieval warmth period in the Northern Hemisphere. In this period Greenland was green. There were vineyards in London and the struggle for live was a little less tense (as in: there was prosperity). Most of the huge cathedrals of Europe find their birth in this period of feudal prosperity. To add this climate part to this paper could be seen as intellectual suicide (as the CO^2 movement is quite stalinist on dissidents), this is the reason why Planck Foundation has not mentioned it in the past. But as we deliver by this paper a total blueprint for energy finance, that covers all the needed facets, we think it's time to speak out on this issue. Our energy transition investment wave facilitating finance model delivers us the untouchable status needed for taking this stand. Without our energy finance models there will not be any energy transition investment

wave. So we're environmental heroes nevertheless our opposition to the CO^2 movement. We've worked hard for several years to develop a valid finance model for massive energy transition investment that's round (as in: no lose ends) and will do the required job. We did this without any governmental subsidies, nor corporate brides/grants. We just suffer and burned our own money to deliver this. The CO^2 movement are just a bunch of not very creative, not very much thinking and not very passionate, mainly political driven people. Now we can speak out loud on the CO^2 issue. We've delivered the finance model for energy transition to the world: just hit us for it. Sustainable Prosperity is our agenda: just hit us for it. Has energy environmental impact? Yes. Very much. Fossil energy use delivers lots of nasty air pollution the oil industry rather not want to talk about. Do we need the oil industry? Yes we do. Their business model is old and quite terminal, but it gives us the time to make them superfluous within 5 years. Nobody can says we're breast feed by the fossil energy lobbyists regarding our CO^2 statement. We think the oil industry doesn't care about economic collapse if they care deliver their energy promises any more. But you should do if they don't. Without affordable energy our economies will decline, our governmental deficits will grow, our governments and currencies will collapse. Do we need nuclear fission (the new high priest in the CO^2 church)? No, nuclear fission is just garbage science, half complete research with huge risks and downsides. The CO^2 movement want to avoid a non-existing problem by creating another one. An example of very good thinking. Forget the risks (as nobody want to talk about it: very hard to understand, but the truth), what about fuel? PeakUranium is not very much on the scope of the CO^2 fear sowing movement, they are blinded by CO^2. But the 235 and 239 isotopes of Uranium are very scarce. Do we want U 235/239 wars beside oil and natural gas wars? Another very valid facet in the nuclear energy alternative is the required time to build an nuclear fission plant: at least 10 years. Building more quick equals more risks. Do we want that? This long realization period alone is a huge downside on nuclear fission power generation. Another solution can be realized in 25% of that time budget. And why we don't use the nuclear fusion reactor the earth provides us by the heath processes in its core? Geothermal is just safe and sound nuclear without this risks: just drill some pipes and enjoy the heat of this reactor with sea water as heat transport expedient. Regarding the recent cheer leading of nuclear fission by the greens: Yes, we have a time budget regarding energy transition away from fossil fuel. Not by fear, but by economics. The economics of nuclear fission are a wonder in itself: cleaning the garbage and delivering military security is done for free by societies in the nuclear fission business model that now on every table due to the CO^2 movement. A good lobbyist is worth every dime he/she costs. What happened with about our common dislike of privatizing profits and socializing debts business models? Trade in CO^2 emission rights is an other miracle. This is literal trade in thin air. Vulnerable to scams as nothing earlier in history. Trade in emission rights dwarfs even the huge Tulip Mania scam in Holland's Golden Age. Mr. Gore his public investment advice: going long on CR (telling the CO^2 story is one thing, earning on it an other thing). Mr. Gore his personal investment strategy: liquidating the CR assets just before the collapse of the CR scam and than reverse it in going long on carbon (oil/coal) as they will be scare and prices high. But the CO^2 tax is just about global wealth distribution, that's still a operation right? No. Dig into nett outcome of taxation: global taxation just gives another far away remote governmental layer that needs budgets. Democracy and distance are contrary developments: democracy just has a limited reach, beyond that reach it's called democracy by name, but has in practice nothing in common with it. Both global taxes and global governments are not wise concepts: it just will give less income to the working man/women. National taxes are needed, but just like salt on a meal: to much spoils the meal. And for what's left of the CO^2 tax after the global government has taken its 'operational fee', what good will this 'global development fund' do? Just dig into the work of Dambisa Moyo (google/yahoo/baidu/yandex her, or watch http://www.youtube.com/watch?v=7Hpk5ZcajCI, or visit http://www.dambisamoyo.com). Aid practice between governments works contrary the targets: it supports aid receiving governments in doing nothing, consuming foreign/global aid and ignore the economic rise of their own nations. Does the poor needs development? Yes. But we need no strange of several misconceptions based global CO^2 taxation for this, we just need to install Open Foundation (www.openfoun.org) for this. Than they can develop themselves in rapid speed. More taxation is in its nature anti prosperity: it waters down earnings. We all think too easy on the prosperity effects of taxation in times of economic head winds by expensive energy prices. High taxation (over sized governmental layers) and sustainable prosperity are contrary directions. The two sad sides of the whole CO^2 polarization is that the environmental movement for the first time in it's history united is used/abused by the Carbon Right can-artists and the nuclear fission lobby. A very high unwanted price for good intentions. Open (as in: non-political) science would have prevented this. Influences energy environment? Yes, but only on local level! As last shot of salt in an already itchy open wound: What is the influence of CO^2 on climate? Zero. It's just an atmospheric fertilizer that feeds the flora on earth, who use the C in CO^2 for its growth to make much nice C^xH^x by H^20 (water) use and powered by sunlight. More flora growth: more water vaporisation, more cooling. Nature has often round systems with no lose ends: More CO^2, delivers where's water available more growth and more water vaporisation and the balance is levelled. Any marriage of science and politics is lethal for science. Influences energy the climate? Climate is more complex that just one facet ($CO^{2)}$, climate science is with its current CO2 focus in just one street of the town and really thinks that street is the whole town. Politics never should have taken narrow science as engine, as this delivers only very short traction. Science is too strong, too multiple sided to get limited in narrow visions. The last thing science needs in a global tax that could fund global governance. If that happens more narrow vision based 'science' will occur. Science

needs diversity to get traction in the direction. Mono science is low quality science. Science must resist any politicization of their research. Politics is about visions, science is about comprehensive views based on proven facts. Unfortunately for all the CO^2 line followers who have been attracted with the heading: Energy is climate is not a very valid statement.

ENERGY is LIFE

Life is good. Life is beautiful. Live is colourful. This is something you must learn by yourself, not as knowledge, but as experience. The environmentalists will not learn you this. They're just addicted to the dark side of any facet. As stated before: green is often no more than grey with a green coating. Greenwashing is not alone done by certain industries, it's also done by the 'grey is all we have to offer' anti everything movement. Green doesn't equal innovation. Green doesn't equal pleasure. Green doesn't equal high moral standards on delivering the truth (as an alibi for this is abundant available). Green equals grey, dark, long boring preaching, no valid alternatives. The green view on population is even darker. On this they lose every compassion they ever had. In their perspectives population is the worst gift we can give to both the earth and mankind. An good example of this view are the Georgia Guide Stones (http://nl.wikipedia.org/wiki/Georgia_Guidestones) where a maximal population number of 0.5 billion is mentioned (for the record: we're on 6.8 billion right now). Environmental theories can become fascistic and genocidal. Who decides who can live and who had to be eliminated? This dark side of environmentalists is not on purpose, it's just caused by a lack of ideas of mainly in cities living 'green' environmentalist, who never visit rural areas. The first time I visit Germany I was overwhelmed by the beauty and wideness of the country. By these magnificent views I didn't understand the call for 'Lebensraum' for the Germans by Hitler. Was this man besides crazy also just a prisoner of the overcrowded and in deficit of anything characterized cities? In my perspective it was impossible that he could give any sense to such a contradiction to reality. But he did. Unfortunately and with huge consequences. It would be wise for anti-population environmentalists to leave the (certainly) overcrowded cities where they live in for a while and exploring rural areas in their own nation and in other nations of the world. This will change them. The cities are overcrowded. The globe is not. Many rural cities and villages will welcome very much new/more inhabitants. Our view on population is not good. It's negative and it should not be that way. The earth easily can host all the current 6.8 billion of us and give us a prosperous life. But we mix our overcropping with overpopulation. As we see the whole earth from out the perspective of the cities (less than 0.00001 of the earth's surface). The earth can give certainly all proximal the maximal expected 9.0 billion that one time will live together on it. It's just doing things more intelligent, more efficient. Something intelligent people not will oppose. Yes, our cities are too crowded right now. But the mega city is a 19th and 20th century facet. In the 21st century the urbanisation will stop and go in reverse mode. Just because the cities will became huge concentrations of deficits of resources. The cities will become less dense. Rural areas less underdeveloped. Mankind will find balance between the city and rural areas. Life is good. The earth is rich. We do right to life when we stop any fascistic/genocidal/eugenic (http://en.wikipedia.org/wiki/Eugenics) theory endorsement and use our brains to make life beautiful. The theory of the Malthusian catastrophe is build on the perspectives at that moment, a phase in history where there was no technology available, technology in the missing wild card in this formula (http://en.wikipedia.org/wiki/Malthusian_catastrophe). A quote from that Wikipedia page: “Julian Simon was one of many economists who challenged the Malthusian catastrophe, citing a) the existence of new knowledge, and educated people to take advantage of it, and b) "economic freedom", that is, the ability of the world to increase production when there is a profitable opportunity to do so.” The reality is that the Malthusian time after time proved to be a misconception. It can be said that current day Malthusians see the world still like it was in 1798, with all the limitations of them. But the world has changed. Technology gave us the possibility to breakout the Malthusian Trap. But there's an other reality: we now face structural changes. We need to change our energy system otherwise Thomas Malthus his theory will hit us more than 200 years after he published it in 1798. If we stay on the carbon energy path, it will go into the bush and the Malthusian population formula at last will get reality in the next decade. But if we leave the dead-ended carbon trail a new wild card (renewable energy) is inserted, giving a total different outcome. No need to give any lecture on energy/resources waste: economics will teach us to handle everything more smart. No lectures on excessive meat consumption: everybody must just eat what the want to eat and is affordable for them. Freedom is good. Economics are the borders of reality. Therefore we must change our energy system to a fuel-free model. To be able to enjoy life more. Working for expensive energy and fighting for the remaining last fossil fuel energy, are not attractive concepts. Energy makes life more convenient. But we waste in by spending our life and resources in 2 hours traffic congestion a day. Like there's no time/energy efficient videocalling invented (that makes business travelling less needed) and remote office technology (that makes commuting less needed) is not available. Like Nicola Tesla always said: there's plenty of energy available, we're just to lazy to invent harvesting models for it. Life is beautiful. The human intellect is beautiful. We just need to get rid of the last remains of just dumb Reaganitis and lets get less bully and more inventive again. Sustainable Prosperity. That's what we need to achieve. No more drunken parties fully 'paid' on credit, no more mortgaging the future, no more huge hangovers of economic loss for everyone afterwards. And after some years on the edge mainly due to the financial crisis we value certainty more than ever. Sustainable Prosperity is something each and everyone of us wants for themselves and their children. Hard to realise target? No. Just a matter of a good finance model that facilitates a quick transition to new (fuel-less) energy model. A model that delivers us a fuel-free energy model and the same time save our financial system (and by this our governmental structures). Chaos and deficits are not nature events. They just

created or prevented by people. We can fix our energy system and by this prevent the collapse of our economies, savings, pension funds and governments. Let's do it. It's fun and on top of it those who want can make a earning out of it (change with no income model for the changers is bound not to 'fly'). Let's fix the energy issue. The water issue is coming and fighting a two front war is not a good thing. Energy makes life conditions much more better. Prosperity is delicious. Prosperity can deliver happiness and health. Energy is life is certainly a valid statement.

ENERGY is VISION

Anyone with some open perspective to energy data will see the derailing of the carbon based energy system coming. Due to declining discoveries, higher exploration costs and lower qualities. Operating a fuel system based energy system is from out the perspective of an economist not a very bright/wise concept. Energy transition away from fossil towards a fuel free will not be lead by a new breed of political leaders: their emerging takes to much time. It must be guided by the current political leadership. This is hard. Political leaders are like CEOs: continuous too occupied by the day to day agenda/system/organization/structures This is the big challenge for politicians in office. Knowing what matter and what's not that important. On top of this analysis of the urgency, vision is needed. Vision can't produced while running. This is the huge challenge for change: politicians have an instant need for the right analyses and the right vision. It will be delivered by the few politicians who stepped out of the themselves total consuming mill stairs and stop making some micro changes to the old energy model and lead their nations into the Sustainable Prosperity direction of a fuel free energy system. Politicians with an empty day to day more of the same agenda and a full national agenda. Energy is Vision is a very valid statement.

ENERGY is TECHNOLOGY

Anyone living within the fossil energy heritage will says: No, this isn't true, this is the gigantic big misunderstanding, energy is not technology, energy is a resource. They're right in case of the old fossil fuel based energy system. But in the new energy renewable energy model they're wrong. As much as James Howard Kunstler and his vision/books can be admired, he sees the new energy model out of the perspective of the old (fuel based) energy model. The first one that described the Energy is Technology idea was Nicolas Tesla (http://en.wikipedia.org/wiki/Nikola_Tesla), one of the technological fathers of commercial use of electricity. In his vision the Morgan/Rothschild/Rockefeller dominated oil cartel of his early days (before the legislation and implementation of the Sherman Act -http://en.wikipedia.org/wiki/Sherman_Antitrust_Act- was just a supplier of one type of energy (the fossil one) and mankind need to harvest other energy sources. From Tesla's mind perspectives we just need to discover new energy sources and explore them. This was what Tesla was searching for whole his life. Tesla resisted the nuclear fission models made by Einstein. Tesla didn't like uncontrollable environments and wanted always to practice his theories as soon as possible. Whole his life he searched for new energy sources that could tapped 'here and now' with relative simple existing or new technology. It's a pity we have Tesla not around this time. We need Tesla-like people now more than ever. Harvesting affordable renewable energy is just a result of research + technology + finance + business. What affordable actual technology we have currently available as valid alternatives to the declining supply of carbon fossil resources oil/coal/gas? The 5 today already fully available energy transition models are: a) efficiency, b) model changes, c) photovoltaic, d) geothermal and e) deserttech. All those 5 are relative simple to implement by the 'technology + finance + communication = realization' model. Open Foundation (www.openfoun.org) is based on this 'formula' as receipt for massive energy transition investments. Let's look closer to each of these 5 technologies. Efficiency: Energy Efficiency is about doing the same as before but due to new technologies it demands less energy. Home insulation is a perfect example of this. Fuel efficient cars also. Yet, although energy efficiency can deliver severe less energy demand with any prosperity decline (efficiency will compensate higher prices), it do not deliver new energy resources, but it's a to big 'source' not to mention. Model Changes: Model Changes are about doing things different than before. Examples: Skyscrapers can let in the cold night air in to lower the building temperature with several degrees. Buildings can be cooled down during the day by using geo-cold with a closed water pipe circuit as transporter. But also using videocalling instead of physical meetings, using remote office technology instead of commuting. There are plenty of examples. Although also Model Changes don't deliver a new energy source, it can be used as a 'virtual energy source' very effective. PhotoVoltaic: PhotoVoltaic is about harvesting the energy in sunlight. The perspectives of PV are enormously. Extreme (but also very clear) said: each man-made object should have an energy generating PhotoVoltaic skin. More relaxed stated: Let's do the roofs of every building in the next 5 years. The price of PV technology is lowered to something like $ 1.50 per PeakWatt ex-works and still declining, the price of oil/coal/gas is still climbing. So PV is a good case, certainly if by the in Energy Finance paper of Planck Foundation described models the interest will be lowered to a 5% annual rate. The beauty of PV is that's a decentral energy generating concept, giving more local power availability security and also releasing the grid somewhat, something that's very much needed as the market share of energy as molecules will decline and energy as electrons will gain severely. PV don't need subsidies. PV just need communication structures (the Open Communication model) and finance (the Open Finance model). Than everybody with a little energy knowledge will do it and the rest will follow certainly. Some math is simple: each nation has a) a national area a statistic figure b) a cultivate area percentage figure, c) a building coverage ratio figure. Take the average Peak Watt capacity per square meter figure and you've got the potential. GeoThermal: Geothermal is about harvesting the heat of the geo nuclear fusion reactor (the earth's core) by drilling pipes into the earth's core pimples into the earth's surface (the so called hot spots of the earth) where the drilling reaches hot rocks earlier than on the cold spots of the earth. Sea water is continuous injected and gets hot by this infinite heath resource and comes continuous as very hot pressures water to the surface where it vaporizes into stream that drives turbines that produce electricity. A side product can be significant supply of sweat water. A nation like Iceland for example can become a huge power supplier to both Europe, Russia and the USA. What's needed is a redundant HVDC network to it. HVDC wire that also contains fiber and by this will digital redundancy plus cheap energy and natural cooling the datacenters of the world will move to the North. Planck Foundation has made a proposition on the GeoThermal option for Iceland (http://www.planck.org/projects/iceland/geothermal) and a also a paper (http://www.planck.org/projects/iceland/geothermal/The-GeoThermal-Option-for-the-Economic-Recovery-of-Iceland.pdf). Iceland can be a showcase for successful massive geothermal energy exploration as it is one of the world's hotspot and has abundant quantities seawater nearby. There are two things that should be controlled away by geothermal: a) hot rock residues in the water and b) geothermal drilling should not perforate near surface underground water reservoir layers (as they are crucial for prosperity in the 21st century. DesertTech: Desert Tech is about harvesting the energy in sun light by warmth. It is solar thermal technology on large scale located in the deserts of the world (http://nl.wikipedia.org/wiki/Desertec). Sunlight is concentrated by mirrors to a central linear tube of high tower in the focus point of the mirror. Sunlight that transforms into warmth by hitting the focus point and pressured water is heated very much. When the

pressure is lowered it vaporize into steam, steam that drive turbines, turbines that delivers electricity. Planck Foundation has a different DesertTech model than Desertec. Desertec is based on remote component manufacturing. DesertTech of Planck Foundation is based on local component manufacturing. In the desert is sand abundant. Sand that can be transformed in glass and concrete and anything between these to. DesertTech of Planck Foundation is based on maximal use of silica technology. This reduces the CAPEX very much. DesertTech has thereby a lower CAPEX (easy funding) and thereby a better ROI (higher output). Other facets of DesertTech are sea water use, sweet water production, vegetables growth, frozen vegetables export. Of course Desertec and DesertTech both needs multiple redundancy in power lines to the continental networks of the continents. Parts of these networks should be transferred from HVAC to HVDC technology on existing lines (quickest realization). Desertec and DesertTech both needs strong bilateral relations between desert power producer states and power consuming client states. Real friendship, based on mutual interest. Desertec and DesertTech both needs non political both corporate intercontinental en continental power networks. Politicizing these lines only is creating trouble. Companies just serves the transport function and has no political agenda. These power transmission companies should make a good legal framework with each nation they operate in. The above 5 sectors aren't very much about 'rocket science', but typical sectors were competition drives the investments/maintenance ratio (in this case regarding energy harvesting economics). Open technology can help these industries very much, reducing the R&D costs significant and make new product and production technology very fast available, plus due the amount of feedback are dead ended streets much more earlier clear. For these industries there should also be open business models: making it for companies more easy to enter the sector. For these products should be easy finance models: finance is the key to market demand for capital intensive products: ask any banker or car dealer/manufacturer and they will conform this. Open Technology: cheaper production. Open Business: more production. Open Finance: demand facilitator. Open Communication: demand creator. As Energy is Technology the high tech industries of the world will jump on energy massively. The current weapon industries (as being very high tech) will start energy devisions. Google will start an energy corporation besides their internet operation. Energy is Technology is a very valid statement.

ENERGY is SCIENCE

We know the direction our energy system must go: the fuel-demanding model must be replaced by fuel-less/free model. An on fuel based energy system will not bring the world sustainable prosperity in the 21st century, contrary: it will bring the world economic decline and huge geopolitical and regional tensions. As energy transition towards an fuel-less energy model is about energy harvesting and energy transport technology, we need to focus our physical/chemical research on these two. This message has Steven Chu, Nobel Price Winner for Physics in 1997 and the current US Secretary of Energy (http://en.wikipedia.org/wiki/Steven_Chu) also has delivered to the world. Wide (blind) research is not needed on the facets where technology is cheap and abundant available right now. It's needed on the missing facets. There are on white spots on the map to cheap fuel-less (renewable) energy regarding storage (hydrogen or batteries), one white spot regarding transport (superconducting) and there's one possible total new direction (nuclear fusion). Regarding storage: we need an energy storage medium for free moving objects in mobility and transport that are not online in any power distribution infrastructure. Trains, trams, trolley buses and the subway are examples of moving objects that are during operation are online is a dedicated power distribution infrastructure. There are plans to make an induction based trail on public roads (starting with the intercity roads), but these plans doesn't understand both the massive energy use of mobility and transport (as in: the future will have less mobility and transport due to higher energy prices), nor the concept op PeakEnergy (we will have less and it will be more expensive, and by this mobility and transport will decline), nor the funding perspectives for governments (very difficult), nor the funding perspectives for private huge investments based on energy use (contrary to perspectives of private investments for energy generation). For all this we need hydrogen. Hydrogen is gas we get as we divide water ($H^2 0$) in 2 x H^1 and 1 x 0^2 by energy input. Energy is needed for this process, so hydrogen is not a source of energy, but a way to store/mobilize energy. A process that generates warmth as side product (which can be considered as energy waste). Are batteries no valid alternative? No, there's not enough needed material (currently: lithium) on the world to build a huge capacity battery for each car/truck of the world. Furthermore: planes and batteries are not a right combination due to the extra weight batteries would add to the body weight. But certainly there's also research needed for new battery energy storing material. The beauty of hydrogen is that is needs no specific material as it is a physical and not chemical based storage process (power as molecules versus power as electrons). Hydrogen needs micro production scale technology. Not only in volume (besides giant industrial installations there will be home devices using cartridge technology), but also in technology process (the micro process approach convert less energy in warmth and give a higher hydrogen output per kWh). The holy grail is besides micro sized core water technology (less resistance so less warmth, so more efficient) are also physical catalysts (reducing the resistance, speeding up the process) in the form of metals, but maybe also in the form of sound/wave vibrancy/frequencies, or light colors or magnets. A quick cold electrolytic process is the holy grail of hydrogen. Besides for powering mobile offline grid solutions, we need hydrogen technology also for power storage. Everywhere where there's a power surplus (as in: a temperately lower power price for buying or selling) hydrogen could be made, that could be used for mobile use of for converting back to power when there's a power deficit and prices will be high. Power prices will become dynamic in the near future, made out a compilation of supply and demand for each moment of the day, each grid will have its own price xml feed. Each power consumer (household of corporate) will a have digital management unit, that decides to buy, to sell, to use or to store. Offline and stored energy will always give less energy efficiency, but that's something everybody knows and the price of the benefits of both. Second: We need superconducting science. This because we need very much more power lines than we have today and this would drive the copper and aluminium (the two elements HVAC and HVDC power transmission lines currently are made of) to never seen levels. Superconducting has two mayor advantages: it lowers the pressure on the world demand for copper and aluminium and it reduces the power lost during transmission. Power transmission is just ROI economics: a calculation with lost, investment, interest rate, maintenance and years of operation. Like in any area of science: huge steps forward in one area is not done by tuning the current technologies, but by revolutionary new concepts. For superconducting the eyes of science current are a lot at graphene (http://en.wikipedia.org/wiki/Graphene) which has so resistance at all. Also HTS (High Temperature Superconducting) are explored. They use a cooled down very thin iron cable, cooling delivers a extra energy lost calculation facet (http://en.wikipedia.org/wiki/High_temperature_superconductivity). There are small projects operational (http://www.oe.energy.gov/DocumentsandMedia/cable_overview2.pdf). Third: Nuclear Fusion. Nuclear fission is just garbage science (delivering waste and operating by a privatizing profits and socializing loses business model). Fusion is the better/smarter brother of fission. The current fusion research is already decades just on the wrong road: the try to find materials that can resist super high temperature without to get burned in the process. The should start over again: based on a virtual electro/magnetic 'building' concept and research laser path steering by magnetics, to get a technology that bundles the power of cheap lasers into one intensive light path or by mirrors to one very intensive crosspoint. By these two technologies low cost fusion will will possible. The model is more extended described in the Global Future Analysis of Planck Foundation (http://www.planck.org/downloads/Global-Future-Analysis-Version-2009.pdf). But the current fusion technology community is as flexible as the Communistic

Party of the DDR. An perfect example of science that's turned into a believe. Open questioning (the key facet of science) is replaced by continuation of narrow/mono sighted visions. The international ITER Organization (http://en.wikipedia.org/wiki/ITER) will stay burning money in well paid jobs to the funding will be cut of, not considering the virtual building concept as they should do. The three above mentioned science fields are crucial. They need all new approaches. New approaches are the key. Out of the box thinking will deliver the solutions. Are solutions made on universities and in labs? No, this is one big huge misunderstanding. These sectors has claimed monopolies towards invention and innovation, but they are just institutionalized organization, where the organization has replace the purpose as main target. Universities and labs are important. We must cherish them: they can be birth places of new developments. But we can't outsource science completely to them. That's contra-productive, that over valuates organization over innovation. Innovation is done by free minds. People not happy in organizations. Freedom = Innovation. The DDR has a lack of innovative characteristics. See essay on the Future of Science by Planck Foundation: innovation comes from unique people. The best example of this is the theory of the drifting tectonic plates. Made by a biologist (who saw the biological similarity on both sides of disconnected plates). Geologists named his work a fraud, till they saw it also. Innovation and organization are contrary issues. Solutions comes from Blue Ocean thinking (http://en.wikipedia.org/wiki/Blue_Ocean_Strategy). Just for science reasons is why we at Planck Foundation advocates that only the bachelor years of universities should be fully paid for by states (or families). The master years should be done always in corporation with universities and corporations. Half paid for by the corporations. We at Planck Foundation don't like the corporate funding of professors or even whole faculties very much (it pollutes science and its headings), but financial support of students (university/corporate symbiosis) during the master period certainly will speed up both science and innovation, they will merge together and than have both better innovation and more science as result. When the universities starts to understand that the climate road is dead ended in terms of funding, the will switch massively to energy research. Energy is Science is very valid statement.

ENERGY is COMMUNICATION

As already earlier stated: The 5 today already fully available energy transition models are: a) efficiency, b) model changes, c) photovoltaic, d) geothermal and e) deserttech. So technology is not the problem. The finance can be solved (see Energy Finance). So the only missing link is demand. More specific: communication that delivers loads of demand of households, companies and municipals. Demand searches products and finance. Even project developers will use this communication environment in their tender process for products and finance. See it as a dating site between supply and demand, with selections (queries) based on profiles. The communication technology is based on the Open Social protocol, so everybody can integrate individual customized boxes based on this technology to his/her personal/corporate/municipal profile. Click, click, click ready. From micro, by mesa to micro. So: Ready to start an PV initiative for your street/area/town/company. For municipals: start an energy project. For project developers: Start a macro geothermal or desert tech project. Or on the supply side: offering the demand of choice prices/specifications. Digital social communication has a huge effect, both in volume as in impact. Energy is Communication is very valid statement.

ENERGY is CHANGE

The huge problem of energy transition is that fact that we have already an energy model. We know it's based on finite resources and has no future, we know it drains our wealth, we know it pollutes the air we breath, we know it will bankrupt us in the near future, but we have it, it's functioning. This addiction to a reality of the past is the mayor challenge in and barrier for energy transition. Change is always difficult uphill, till it gets traction and from that moment on volume/speed are downhill easy. Change needs soil to grow on. This soil is created by information that leads to awareness. Change needs tools, communication tools and even more: finance tools. The key to voluminous energy transition facilities realization is the possibility to make a profit by it on the sales, marketing and finance sides of the realization. Voluminous change has always economics (profitability) as engine. Then only a start engine is needed, the rest is driven by economics. All components of a model needs to economic (as in: give people income and/or increase the profit of companies). When the benefits are obvious, the early adapters start to change. The are the start engine that fires op the main engine. Change designs needs to have both a start engine (the believers) and a main engine (the profit searchers). Change only will happen if it has a design that the people/companies involved in it will make an earning on it. Otherwise it will not drive/fly/come. Profitability is the fuel of change. This must be the basic line in every energy transition model that targets massive (and not some small feel good) change. Energy is Change is a very valid statement.

ENERGY is COURAGE

Any one knows that fuel model is a dead ended street. Not many act. Acting is well-known roads is hard. Acting in new directions is harder. Unknown territories are difficult and uncertain. Courage is the main ingredient of change. Change is about losing security of the present. Change is about heading for new grounds. Changers are special breed of leaders: they can't function in rest. It the story of the general (the changer: heading for new grounds) and the emperor (builder on current grounds). Changers are no builders and builders are no changers. But they need each other. Certainly and the end of an old energy system. Change is not about exploring. A mega ship can't explore new seas. Changers needs explorers and developers. And if these two have done their job the changers can steer the mega ship of a nation based on this exploration of the explorers by use of the models of the developers. Has the mega ship changed it direction, the changer must resign the command of mega ship at once, as than the stable builder type is a better captain. See changers as pilots that guide ship during direction changes. The explorers and developers delivers the pilots (changers) the data and the maps. This why we have made this paper. Energy Politics is about exploring/sharing data/visions. Energy Finance is about delivering models. We need technology, finance and demand. In simple by everyone to understand ways/methods. "Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius -- and a lot of courage -- to move in the opposite direction." (E.F. Schumacher). Energy is Courage is a very valid statement.

ENERGY is POLICY

Regarding the Energy Crisis/Crunch, governments should act different than they did regarding the Credit Crisis/Crunch. Act is not the right word, sleep would be a better one. Anybody with a common sense knows that (although we want it very much) trees don't grow into heaven, but at a certain height stabilize in growth. Politicians have prove not to have this common sense regarding to credit and as it looks right now they certainly don't have it regarding energy. The smooth talk of the oil/gas/coal industry is eaten away like candy. Nobody thinks: these guys really don't want development of carbon alternatives on the market, but just want only an increasing size of the economic earnings. Tens of years of reserves left. Bla bla bla. The irony is that there is no global auditing method for energy reserves. Each carbon nation just sells air regarding carbon reserves, just to maintain their good credit ratings and by that attract investments and being able to loan for low rates on the global capital market. Do anybody that thinks more than 5 minutes on this issue really be convinced that the oil/gas/coal companies would like the development of alternatives? Or that carbon nations would tell the real story (with also the doubts) on their real economic explorable reserves. Let's them both start with quoting their reserves with a) a quality grade, b) a pollution rate (sweet oil is getting scarce) and c) a exploration cost price. Than we get some more serious data input than all the hot air balloons we get right now. There's carbon enough left in the world that's one side of the story. The other side is that we've taken the easy part first and now we stocked with the more difficult part that's left. The price of exploration, refining and transport (Caspian Bay > Afghanistan > High Seas) is increasing at high speed. That's our carbon energy story. We hear a lot of bla bla on major coal reserves left, but someone forgot to tell us the (yet never explored) depth and the quality (the good anthracite quality is gone, lower qualities are left) of these huge reservoirs. The carbon energy model has given us our wealth and is on they edge of taking it back from us. Unfortunately only a few politicians see this and even less think on policies to change our energy system to a sustainable (as in: fuel-free, or renewable) one. We take energy for granted and we don't understand that our prosperity is build on it (exactly like we did with credit). The credit market hit the wall with the Lehman collapse. The energy market will not hit a wall, but just will drain our economies increasingly and slow them down by that. Energy will eat up prosperity is an each year higher rate. Unless we change our energy system. Not for some vague CO^2 horror story, but just for preventing the get taxed to the knees by holding on to an energy system that is outdated by its costs. What to do? Stop all carbon fuel subsidies is numbero uno. This strange subsidies are still in place in several nations in the East and South. It's stimulating an economy to go in the wrong direction. Second. Install the Energy as FIC model. It is governmental budget neutral so that should not be a problem to do this even this year. Leave the own power production of other industries out of scope in this and take some time to communicate why a change of energy system is important for maintaining prosperity and get companies and households not only according FIC, but also become an active part of the transition to a renewal (as in: not on fuel import based) energy system. Win the banking industry for the Energy as ROI, Energy as Collateral, etc. models. Use the energy model transition for economic recovery and economic transition. Money (as in: earning wages and earning profits) talks, preaching would help. Install an Department of Energy with an Energy Secretary, like you must install a Department of Credit and a Credit Secretary. Just say: fossil will be expensive, so you better start doing things different right now by design instead of hitting the wall or get strand in the woods as the fossil road gets weaker. Be an example. Order electric cars for the government. Forget nuclear fission. It takes too long and the business model delivers security costs, waste costs, facility destruction costs and calamity costs to the nation. Nuclear fission unfortunately has a parasitical business model that privatizes profits and socializes costs. It's too slow, too expensive, too risky. A business model that only calculates half of its costs and operates without (a valid, not a fake) insurance is not a wise business model. Certainly when there are plenty of valid, faster and less expensive alternatives. Nuclear fission is advocated by people without knowledge on actual energy alternatives. Due to the CO^2 madness the environmental movement overcome all her resistance against nuclear fission, to combat the man-made fable of the CO^2 enemy. If we don't be alert, the nuclear fission lobby not only will use the environmental movements (something like Coca-Cola advices Pepsi Cola), but also will use subsidies the CR rights will deliver them. First make the lobby (the CO^2 movement), than arrange the funding (Carbon Rights) and than roll-out the garbage technology in a parasitical business model. Some one has done some severe planning. Only politician that don't wants to stay in office for decades will accept these kind of business models of one of the alternatives. Don't start advertising: advertising is just propaganda and will work contra-productive. If you need to advertise you have done poor communication. Just tell your nation the reality on the second half of the fossil reserves. They will understand. Talk with the governor of your Central Bank. Show him the finance models and the income that banks can earn on it. Never try to replace the market. No government can. Governments can tap the markets, never fuel them. Later-on (if needed) you can consider a guarantee model, but first see what happens when you just tell the cost reality on the (harder to explore, transport and refine) second half of the fossil reserves. If you issue guarantees do it by the Energy as Guarantee model (than the state gets income on this investment value adding). Prefer micro (building) and mesa (town) solution, but don't forget the need for macro (national) solutions. Separate energy budgets, don't use income taxes and exploration license income of fossil energy in the general budget, use them to transit to a fuel less

energy model. Give all the school kids an energy kit (several types depending to education level). Consider the communication than done. Kids likes their future and are not stuck in tracks yet like we do. Stop bailing out banks: give them by the Energy as ROI and Energy as Fee model new income. If there are too less liquidities, talk with the Governor of the Central Bank on Quantitative Easing (enlarging the money supply), but ask him to focus that on energy transition investments. By taking care of the energy supply you will support the economic recovery, take care of governmental budgets and prevent economic collapse, governmental budget collapse, governmental structure collapse and currency collapse. In short: The five most simple to implement today already fully available energy transition models are: a) efficiency b) model changes, c) photovoltaic, d) geothermal and e) deserttech. These are the best defences for a nation not to be sucked into any energy war or to fell of the energy cliff. Energy is Policy is a very valid statement.

ENERGY is LEGAL

Energy harvesting facilities their main purpose is producing electricity and delivering that to someone (direct users or to the grid or a combination of these two). Thereby all facets of energy facilities can have different owners. The facility can have a different owner than the building of land it's build on. The outcome can be sold to someone. The main purpose of legal is ensuring the location of the investment. For example: a housing project can have different owners, but have one roof based PV energy harvesting facility. It's import that in the land registry this energy harvesting unit can be registered as isolated part of the property. If this is possible (in Holland it is) than a sale of a building doesn't effect the energy facility location, nor it location rent etc. This insuring of locations is very important for the finance of the business case: without good split ownership by location insuring legal, financing energy harvesting facilities on not fully owned objects/soil is not possible. Legal makes it possible to have difference parties as land/building owner (property ownership legislation), facility owner (rental legislation), facility beneficiary (power output legislation). Energy is Legal is a very valid statement. Energy as Legal is about legal tools to building one single energy case with different market parties and insure the specific rights of all these parties (for each other, to each other, in protection to each other). It's about insuring location rights and output rights. Separation and insuring rights is something that's crucial for giving Energy Finance any traction. Good finance is based on a good legal foundation. Location rights by legalize/register the split of ownership and output rights by legalize/register the rights on output. Energy as Legal makes it possible to divide the rights of landlords and buildingowners, from those who own the energy facility, from those who has taken the output as collateral or ROI. It's about ensuring the rights of land/building owners (property ownership legislation), facility owners (rental legislation), facility beneficiaries (output collateral). It gives each party both rights/benefits and obligations. It's about the ensuring the place (land or building) of energy harvesting facilities, so the energy production will be continued regardless the current status or identity of the land/building owner. This calls for a change in property legislation. In Holland this is already take care of by property register legislation. In the land register installations build on the soil or on a building can be registered as a sovereign fixed right additional attached to this soil/building. This insures for free the existence of the facility location without the need to have ownership of the soil or building. This property attached facility gives the energy facility on third party property a legal status and thereby supports energy finance severely. It insures that the facility will be there regardless the ownership of the (land or building) property. This collateral record gives the energy output collateral a legal status and thereby supports energy finance severely. The second needed legal facility is a collateral record into the energy facility register. This should not be attached to the local/regional/national land registry, but attached to the local/regional/national grid operator, as this register already has a registration database of energy facilities. Adding a collateral record to this energy facilities register is simple. This collateral record gives the energy output collateral a legal status and thereby supports energy finance severely. Energy as Legal is a concept capable of generating a massive energy transition investment wave. Energy is Legal is a very valid statement.

ENERGY is INFRASTRUCTURE

In most nations the national grid is state owned and operated and has the obligation to connect each power generation plant to the national grid. In Holland this leads to a situation that power companies build huge coal fired plants far away from the cities and demands that the huge capacity transport lines to the cities will be build by the government. This is once again an example of the wrong 'privatizing profits, socializing costs' development of wrong corporatism. And even more strange: these coal focused power companies doesn't understand that coal will become the most expensive power fuel: Coal exploration gets more expensive each year. China is taking online each 14 days a new mega coal fired power plant. The coal market situation will be changed by the cost of exploration, transport and cleaning and the market mechanism of supply/demand severely. Energy infrastructure is a crucial facet in energy supply. First: Local grid operators should be independent and dedicated to two way power traffic. The right to deliver power to the grid should be guaranteed by legislation. No local grid operator should have the right to refuse return delivery. The local grid is a (semi) governmental task (as it is a monopoly and should be non discriminatory). The more actual decentral concept of / vision for / design of the grid. as replacement of the old mainly central generated distribution concept of / vision for / design of the grid. Second: The price of the connection to the local grid should not be socialized (as this will deliver parasitism by design). Third: The price power and the price of transport should be variable, determined by the market and available in XML data. This will give power a live price, which will be the basic concept behind intelligent power use/generation model for households and industries. Households their computers will start dish washers, boilers and washing machines based on this data. Industries will go to energy price based operation schedules for energy intensive processes (the aluminium industry already does this: operating at night on cheap power). Fuel based power generation will only be active when the prices are high (as they have the fuel cost too). Forth: The infrastructural connections between remote power generating locations and local/regional/national grids should be commercial. This takes out the political facet of it, making it a politic independent business model. Power lines and politics is asking for trouble, power lines and business is asking for steady operation regardless possible politic turbulences. The market are better than governments in demand recognizing and actual demand fulfilment by supply realization. Grids interconnecting power lines will operated commercial by an auction based model. Local, regional, national and continental governments could stimulate the realization of these grids connecting powerlines by the finance supporting tools as described in the Energy Finance paper of Planck Foundation. By this the can hedge themselves (their own operations) also against sharp rising energy prices. Local grids will be separate identities and will produce digital analytic data for the grid users. Regional grids will be separate identities and will produce digital analytic data for the connected local grids. Power will become more and more a local focused phenomenon. Power will be on the agenda of each city counsel. Power line redundancy in the year reports of each municipal. Energy is Infrastructure is a very valid statement.

ENERGY is RECOVERY

It's clear that importing fossil energy equals exporting wealth. In times of economic head wind is a energy model that structural exporting wealth not a very wise concept. As energy is technology, national industries and national sectors certainly would like to have the purchase power spend by them. This way the capital doesn't drain away (gone is gone), but 'stays in the house'. Capital that stays in the economy multiplies gradually further. Letting capital drain away by fossil imports is not only about that certain percentage leak, but is also about not having the 'further birth giving' facets of that capital. The only why to economic recovery is heading for a low energy / high prosperity economy, otherwise energy/resources prices will drain further wealth out of our economies (on top of all the other already present head winds like greying demographics and increasing competition of emerging markets). First we need to see that the old models have become outdated. This is crucial. We must stop any subsidizing of models of the past. The reason this done, is not understanding the current situation. This is not a normal recession. Things are changed. We have faced PeakCredit, PeakEnergy and PeakGlobalization. Subsiding old models is the wrong answer based on outdated analysis. The only way out is stopping subsidizing old models and building a future based on actual influential developments. This is no cloud that passes and than it's sunshine again. This is the 21th century, with new realities. The main ingredients of the second half of the 20th century were cheap energy, cheap resources, cheap credit, western superiority sovereign debt stability, currency stability and global stability. The main ingredients of the first half of the 21th century will be expensive energy, expensive resources, expensive credit, declining western influence, sovereign debt instability, currency instability and global instability. Quite a different setting. Thinking that the solutions of yesterday will adequate answers to the situation of today is not understanding the difference between the current and past situation. In this perspective is funding banks out of governmental budgets not very wise: our current banking system is based on a too high leveraged model and is on the moment the economic growth stalls in the red zone. Our current fractional reserves based banking system (often called the 'money growth based on debt growth' system) can't handle zero growth situations, as money creation is done by loan issuing and no new loans are issued and therefore with mathematical certainty defaults are occurring. This is why the banks has gone collective into over-crediting: to insure the creation of money for the interest payments. Till the system failed at this night of the Lehman collapse. So giving banks money to cover their loses is not something governments should do: they will be collapse themselves due the debts they must go into to this this. Bank problems must be handled by the Central Banks. That's the system we choose in the 20th century. We must not mix this. Than we get into the ambiance we're now into: privatizing profits and socializing loses: a system that has not much support in all nations. So we see things have changed (like banks that collapse), but we react if nothing is changed. We need to see that the basics are quite changed and we need to define new answers to this new situations. What we need to do? We need to save our banks (that are under hard stress), we need to save our governmental funding (that's under hard stress) and we need to save our currencies (that are under hard stress). We only can do these tree all together by the market. So economic growth is out of the question due PeakX and the market must solve everything? Is that contrary? No. We gone use a massive energy transition wave as tool to realize all these three recovery goals. The energy transition investment wave will give the banks an income. Not for continuing their 20th century business model, but for giving them time to find their 21st century business model (as in: contract in size and become or geographical or functional specialists again). See the Energy Finance paper for all the models that could be used by the banks (and giving them turnover and income) regarding energy transition investment finance. Even in times of Credit Crisis/Crunch these tools/methods will work: they are specially designed to perform in such times. The by these finance tools generating massive energy investment wave will re unload the governments from their bank rescue task they have given themselves. That is important because otherwise their own funding would collapse under the weight of this beyond their strength going and therefore no wise task. If governmental leaders would understand finance, than a) it was never come this far (due solid bank regulation that would have prevented this mash) and b) they will have responded differently (as in: not interfere, let the central banks sort it out and demand total openness/transparency on this of them). This massive income boost of the banks will last for 5 years and give them time to adjust to the new economic and legislation realities with defaulting. The last thing we need right now is more defaulting banks., that would postpone recovery severely as it opens news roads to lower depths. To be clear: the money is gone, that can not changed, but do we work it out by new income or laissez faire. This bring us from the financials to generic economic recovery. This massive energy transition investment wave will give the economy a very intensive new boost. This boost will last for 5 years and give companies, households and individuals the time to adjust to the new realities of expensive energy/resources with defaulting. Otherwise we will face not a V curve, but a Vv_v curve in economics due to the complex of factors describe in Energy is Confrontation. This massive energy investment wave give us the time to change our companies/economies without defaulting. By this the energy transition investment wave will also will give the governments severe new tax income for a period of 5 years and by this give them also the time to adjust to new (as in: growthless) economic realities. The times of unlimited growth of governmental layers/spending are over. Governments has done the same the accuse banks/household of: gambling on more growth in the future,

with no knowledge of PeakX, greying demographics and the (both supply and demand) world market competition of the Emerging Nations. We thought we were smarter, wiser, better and they will never develop. This all was a misconception. Is the future dark? If we don't act: Yes. If we choose the recovery road possible by massive energy transition investment wave: No. Than we will have a world without inflation that erodes our savings and pensions. A world without the casino gambling global capital model. The believe that there were no risk abroad (too stupid for words) and capital gives birth to new capital without control (even more stupid). The whole globalization of capital was in facto a dumb childish experiment: capital with control gets lost in risk, domestic and for sure abroad. Everything that isn't transparent and/or can not be easy audited will disappear. Too big risks will become just too big to take. We will have a world with less loses due to better regulation. We will control the use of our savings/pensions more: the financial industry will shrink to only 10% of its current size, as we will increasingly manage our own investments. The professionals has robbed us, by telling us that their were better, but they that was just sales talk. We will have governments that will produce budget surpluses and will not by default calculate in yearly budget deficits. We all (companies, banks, governments, households) have hit our head to the PeakX ceiling. Nobody is clean. This will be sometimes hard, but we will give ourselves a stable prosperity future and really take care of the future of our children. We will no longer export wealthy import of fossil energy, but change energy for economic leak (imported) to an economic power (domestic harvested). Sustainable Prosperity. Who will not like that? Energy is Recovery is a very valid statement.

ENERGY is TRANSITION

We not only have to change the origin of our energy (from fossil to renewable), we also have to reduce our energy use: in the 21st century we must gone do things differently than we did them back in 20th century. As energy will become expensive all products/services will become expensive and we will find ways to achieve the same results with less energy. Energy intensive products/services will price themselves out of the market. Energy intensive production models will be out-phased and replaced with less energy consuming production models. In this energy paper we just forget the impact of expensive resources/materials to make thing yet more complicated, but we all know that energy maybe can be solved (we can harvest it), but materials are finite resources, we just can replace them with alternatives (if these are available). Back to energy: We totally underestimate the massive load of energy fossil fuel delivers us each day. Totally. We have no clue at all. One simple example: Aviation takes currently 3% of the global energy consumption. The current aviation model is fully based on the massive energy supply that the availability of cheap oil us gives. When cheap oil disappears our current aviation model disappears too. Air transport will only be used for expensive components and air mobility will be reduced to (only the happy few) levels of the sixties. Or we must find a replacement for these massive energy load fossil jet-fuel delivers us with the same price and handling characteristics, or we must find other technologies to deal with gravity and speed (the two main facts of aviation): time to study Tesla's ionic models again. This is just one example regarding one facet that impacts both logistic and leisure. An other example: The current fertilizer production consumes 5% of all Natural Gas consumption and 2% of all global energy consumption. And these percentages rise each year a few points. When fossil energy gets more expensive fertilizer will become very expensive and by this food will become very expensive. This is a direct threat to global food production (as it is unsustainable in design). Furthermore it is a possible threat to global peace, as fertilizer production is getting rapidly concentrated in just 5 NG surplus nations. On Wikipedia you can find fertilizer information and the current production process on http://en.wikipedia.org/wiki/Fertilizer and http://en.wikipedia.org/wiki/Haber_process) or google or it So we need a new solution. With Planck Foundation we have designed a model where seed are coated with an algae/bacteria solution that makes fertilizer superfluous. Relocate the N production into the soil around the plants. Production on location without any energy demand. The algae/bacteria takes the Nitrogen out of the air and put in the soil around the plant (plants can't do this by themselves). This model delivers a huge energy conservation. In my opinion it should be part of the Global Redesign Initiative. The only danger is that they will be too active and poison the soil with Nitrogen. Isolation of the bacteria/algae and making them not to work too hard are the two challenges. The main visual effect of expensive energy will be a reach contraction: distance will be expensive. This will apply for every facet of every product/service and will lead to more to expensive energy adjusted production/service models. Global production has peaked. It will only be used for expensive products. Labour costs will no longer be the main production cost factor, energy will become the main production cost factor. The energy crunch will 'bring the jobs back home', just like the energy crisis has brought the (after loses remaining) capital back home. Higher energy prices will cause changes in every field. Global product brands will still be in place, but will get more competition from regional/local brands. Global production brands will stay global in development, but will continentalize, nationalize, regionalize or even localize in actual production locations. A practical example of this is the use of building installation stuff in construction. 10 years ago each construction company had its own construction installation stuff, today the hire it local: less assets on the balance sheets, lower transport costs and good quality without to operate an own maintenance department. Due to the cost of energy we will do any thing that uses energy different. Just driven by economics/pricing. Adjustment to new situations delivers changes. The reach of products and services will decline. Using less energy will be an important part of competitive market behaviour. Energy is Transition is a very valid statement.

ENERGY is EFFICIENCY

Efficiency is about improving devices that they will do the same job with less energy. Efficiency is mostly about technology, but also about organization. There are two types of efficiency: the gradually improving type and the huge steps forward type. The gradually improving one we get for free: every technology improves itself on time. The huge steps forward is about total different approaches that leads to real big improvements of efficiency at once. This type of efficiency improvements demands for free spirits that are not comfortable on the by every one taken roads. We need these people more than ever, but they are (due to their -needed- characteristics) also difficult to handle (as in bad in group culture and bad in communication). Still each company and each government must cherish these type of people, as they are the once that could explore whole new roads in technology/organization. The global economy/society is technological driven. Technology invents it selves continuously over and over again. Technology is 100% equal to self improvement. Specifications are all that matters in technology. This is the reason that efficiency grows each year. Higher energy prices will boost technology in a less energy using direction. Efficiency gives equal/more prosperity by less/equal resources. We all know that increasing efficiency mostly leads to more prosperity (use), than it leads to less energy use. But increasing efficiency is certainly a huge tool in the prosperity / energy balance. And we get this for free of technology. Energy is Efficiency is a very valid statement.

ENERGY is NUCLEAR

Current nuclear fission technology is just garbage technology, based on exploitation of a half ready technological concept and based on a half business model (we take the profits, you pay most of the costs, and we're not home concerning operational risk liability). It's only (not more and not less) a beta/development version of nuclear energy harvesting and a wrong detraction in this area. Creating waste in a state subsidized (security and disposal) environment is not something that will rise very much. Privatizing profits and socializing costs is something that will face wide resistance, furthermore no real insurance company wants to issue insurance on any nuclear fission facility, therefore this risk is also 'given' to the state for free. Fission is playing with possible pollution of whole continents. Therefore fission is certainly a no go zone for energy harvesting with too huge major impact disadvantages and possibilities. The nuclei can give us certainly cheap and abundant energy, but fission has got so much downsides that we must see it just as a quick to leave experiment and find the right way for exploration of nuclear energy. Any energy source that could damage the world at large scale must be abandoned: we looking for answers, not for new problems: we have already problems enough the next years. Each rich town that can afford it will start to build its own nuke facility and this way tries to extent the life time of the city with one of two decades, but building it will take a decade and the price of nuke fuel will be oil price connected. A lot of investment for nothing, only a few of all these thousands will be fully finished. Afraid of CO^2 horror stories? You should try U horror stories too: they are even more scary. Fission was the wrong detraction of the interesting road to nuclear energy. Uranium 235 is scare and production will be peaked in a decade or two: so it give no sustainable solution. The cost of Uranium 235 will explode, linear with oil prices (see the price development of coal and gas, that goes parallel with oil, or if you want to call it so: are oil attached). Only in 2007 there were several leaks in fission plants all around the world and in Sweden even someone of the maintenance crew was arrested while trying to enter with explosives in his bag. Fission is risks and we don't multiplying risks, we need multiplying solutions. We will be again bounded by foreign nations that will supply us and tap our wealth and we become political dependent once again. Just like our oil addiction drains our wealth now, and also force us to do business with regimes who operate not democratic and repress large parts of their people. Nuclear plants operate without insurance: no commercial insurer will give any kind of coverage. The first thing the fission based nuclear should do is initiating a joint insurance pool, that will be feed with 10% of their turnover. The fact that a whole very high risk energy just operates without insurance and just find this normal is very characteristic for the common attitude in the fission nuclear industry. The fission based nuclear industry has not so much a PR problem, they have more a severe attitude problem. There is certainly a connection with nuclear weapons of mass destruction (why otherwise are nations against the nuclear ambitions of other nations) and nuke side products (uranium dust) is also being used in anti tank weapons for mass increase and for it's burning specifications after impact. Nuclear energy is about just turning costs of problems and costs of waste and after operation on society, actual and on the bill of the next generation. We have damaged the interests of the next generation more than we should already. Time for sustainable prosperity. For us and our children. But there is more. Nuclear fission takes approximately a realization time of 10 years. This is no reason to start today with it, this a reason not to start today with it. There are much other energy investments that could give instant energy delivery without less risks. It strange that risks are just polished away by PR. The five most simple to implement today already fully available energy transition models are: a) efficiency b) model changes, c) photovoltaic, d) geothermal and e) deserttech. These are the best defences for a nation not to be sucked into any energy war. These five fossil alternatives energy models are so easy to implement that there's really no need to wait one month longer with rising these 5 models to official governmental policy in any nation of the world. By the whole CO^2 based man-made fiction (single facet, one perspective, not comprehensive thinking) based climate hoax, is capable of deliver us real treats to man made global climate change by stimulating massive deployment of garbage technology. Fission is just garbage technology: based on the privatizing profits and socializing costs model, we're all finished with. And now even subsidized by CR taxes. The CR model is also designed to subsidize nuclear fission investments, just as the whole CO^2 discussion is designed in the '80ties to make environmentalists (who at that time were anti nuclear fission) to change in to nuclear fission energy endorsers and propagandists. The CR model is based on a misconception: that CO^2 is bad. This misconception has much more to do with the size of Al Gore's feature movie attributes (the famous CO^2 ladder) than with the real effects of CO^2. CO^2 is nothing more and nothing less than an atmospheric type of fertilizer. The concept of CR is the wrong answer on the wrong question. It is not the surplus of CO^2 we should fear, it's the deficit of it. The end of cheap and abundant fossil energy that could cause our economies to decline and our financials and governments to collapse. Fossil energy will be expensive, we don't need the CR model for that: it's just a result of more expensive exploration and refining. We used by the law of economics the easiest to explore and to refine resources first, now we are approaching the more hard second half of the resources. This (that the second half is harder -and thereby more expensive- than the first half is something we don't understand very much as mankind. Just like we don't understand the increasing demand (as in: increasing purchase power) of the emerging nations. The west is quite narcissistic in their global perception. The new reality on purchase power is not landing at all in the west. This has neo-colonial

roots: the misplaced superiority feelings steers the Western World in dead-ended energy streets. Concluding: a) the CR model is vulnerable for fraud as it has no direct link (which the FIC model has), b) the CR model will be used to subsidize the parasitic nuclear fission industry (all costs of security, all costs of waste, all costs of destruction are for the society, plus they can get insurance, so pragmatic as governments are: they may operate without it). Germany has demanded from Vattenfall a corporate 'parent guarantee' for a nuclear fission power plant: that's smart behaviour that ends the wrong and not sustainable privatizing profits and socializing loses development. Do we need nuclear fission (the new high priest in the CO^2 church)? No, nuclear fission is just garbage science, half complete research with huge risks and downsides. The CO^2 movement want to avoid a non-existing problem by creating another one. An example of very good thinking. Forget the risks (as nobody want to talk about it: very hard to understand, but the truth), what about fuel? PeakUranium is not very much on the scope of the CO^2 fear sowing movement, they are blinded by CO^2. But the 235 and 239 isotopes of Uranium are very scarce. Do we want U 235/239 wars beside oil and natural gas wars? Another very valid facet in the nuclear energy alternative is the required time to build an nuclear fission plant: at least 10 years. Building more quick equals more risks. Do we want that? This long realization period alone is a huge downside on nuclear fission power generation. Another solution can be realized in 25% of that time budget. And why we don't use the nuclear fusion reactor the earth provides us by the heath processes in its core? Geothermal is just safe and sound nuclear without this risks: just drill some pipes and enjoy the heat of this reactor with sea water as heat transport expedient. Regarding the recent cheer leading of nuclear fission by the greens: Yes, we have a time budget regarding energy transition away from fossil fuel. Not by fear, but by economics. The economics of nuclear fission are a wonder in itself: cleaning the garbage and delivering military security is done for free by societies in the nuclear fission business model that now on every table due to the CO^2 movement. A good lobbyist is worth every dime he/she costs. What happened with about our common dislike of privatizing profits and socializing debts business models? Trade in CO^2 emission rights is an other miracle. This is literal trade in thin air. Vulnerable to scams as nothing earlier in history. Trade in emission rights dwarfs even the huge Tulip Mania scam in Holland's Golden Age. Mr. Gore his public investment advice: going long on CR (telling the CO^2 story is one thing, earning on it an other thing). Mr. Gore his personal investment strategy: liquidating the CR assets just before the collapse of the CR scam and than reverse it in going long on carbon (oil/coal) as they will be scare and prices high. Nuclear fission is just garbage science (delivering waste and operating by a privatizing profits and socializing loses business model). Forget nuclear fission. It takes too long and the business model delivers security costs, waste costs, facility destruction costs and calamity costs to the nation. Nuclear fission unfortunately has a parasitical business model that privatizes profits and socializes costs. It's too slow, too expensive, too risky. A business model that only calculates half of its costs and operates without (a valid, not a fake) insurance is not a wise business model. Certainly when there are plenty of valid, faster and less expensive alternatives. Nuclear fission is advocated by people without knowledge on actual energy alternatives. Due to the CO2 madness the environmental movement overcome all her resistance against nuclear fission, to combat the man-made fable of the CO2 enemy. If we don't be alert, the nuclear fission lobby not only will use the environmental movements (something like Coca-Cola advices Pepsi Cola), but also will use subsidies the CR rights will deliver them. First make the lobby (the CO2 movement), than arrange the funding (Carbon Rights) and than roll-out the garbage technology in a parasitical business model. Some one has done some severe planning. The two sad sides of the whole CO^2 polarization is that the environmental movement for the first time in it's history united is used/abused by the Carbon Right can-artists and the nuclear fission lobby. Tesla resisted the nuclear fission models made by Einstein. Tesla didn't like uncontrollable environments and wanted always to practice his theories as soon as possible. Nuclear Fission also don't can be used as Energy is Recovery. Fusion is the better/smarter brother of fission. The current fusion research is already decades just on the wrong road: the try to find materials that can resist super high temperature without to get burned in the process. The should start over again: based on a virtual electro/magnetic 'building' concept and research laser path steering by magnetics, to get a technology that bundles the power of cheap lasers into one intensive light path or by mirrors to one very intensive crosspoint. By these two technologies low cost fusion will will possible. The model is more extended described in the Global Future Analysis of Planck Foundation (http://www.planck.org/downloads/Global-Future-Analysis-Version-2009.pdf). But the current fusion technology community is as flexible as the Communistic Party of the DDR. An perfect example of science that's turned into a believe. Open questioning (the key facet of science) is replaced by continuation of narrow/mono sighted visions. The international ITER Organization (http://en.wikipedia.org/wiki/ITER) will stay burning money in well paid jobs to the funding will be cut of, not considering the virtual building concept as they should do. The three above mentioned science fields are crucial. They need all new approaches. New approaches are the key. Out of the box thinking will deliver the solutions. Energy is Nuclear is a doubtful statement.

G Lanch.

ENERGY is CARBON

First mankind had horsepower and sometimes slavery. Than mankind start to harvest windenergy in mills. Than they found began to explore the energy within coal and fuelled stream engines with it to power machinery directly, the process of 'implanting extra energy' in our economic system started. A while later Tesla can along and invented and further developed AC and the AC power grid and online power became the main indirect (remote) fuel for devices. Two decades later the combustion engine finds it way into earth based transport and mobility and after WW II the jet engine for air based transport find its way. Both are on location powered by oil. an energy source with a very high energy level can cheap and abundant available. Oil that first only was used for lightning (Kunstler: the oil lamp was the IPod of the Civil War), but by the invention and cheap production of both the combustion engine and gasoline/diesel got its boost into the global economy/society and the invention of the jet engine initiated real globalization. The development we called PeakOil is more about Peak than about Oil. PeakOil will be replaced by the Heinberg mentioned/designed word PeakX or PeakEverything. We're living on a limited planet and all finite resources (like oil) are as real finite as the word finite says. Oil became is the most popular kid in the carbon energy class due its easy logistical characteristics (non pressured, liquid, no physical left rest material). In the beginning of the oil age, the exploration energy balance was 1 to 100. Only 1 barrel oil was used to produce 100 barrels of oil. Now these days the energy efficiency of oil exploration is severe lowered to 1 to 5: 1 barrel oil used in exploration only gives yet 5 barrels of oil production. And this will change even more as 'easy oil is over' (quote of Jeroen VanderVeer, CEO Shell Corporation), so the current 1 to 5 ratio is not sustainable for the next 10 years. Energy ratio's will lowered once again severely. Oil exploration will become earlier economic to expensive than it become from energy perspective to expensive. It is no longer attractive by 1 to 3 ratio's (1 barrel oil used to explore 3 barrels), as investments and operational costs also take their piece of the price. Oil will still be available. But against much more higher prices and also more irregular. The current installbase of oil fuelled/powered devices (cars, trains, airplanes, tractors, machinery) will still be used, but will become more and more less economic in use due to the continuing rising fuel costs. The Hirsch report of the US Department of Energy on the installbase issue, sees this a huge economic problem (the economic waste/decline of a complete installbase generation). In reality all transport/mobility devices will just become to expensive to use. It's not an oil price/availability problem, it's an energy price/availability problem. Transport/mobility will become expensive and thereby less used. The history of oil is widen distances (by its cheap and abundant availability), the future of oil is shorten distances (by its expensive and irregular availability). Cheap oil has given us car based commuting, industrial concentration and production/travel globalization. Expensive oil will give us vibrant local prosperity. The oil of the future will come from stated controlled companies of nations that not want to sell it all now in a hurry and nor sell it now for a bargain price. The price of oil double each year. The price of the dollar drops 20% a year. Producing this year, what also could produced next year is 'own initiated robbery' and no state controlled company will do so. Oil nations will produce a little above current year budget and no longer for stockpiling dollars. Oil nations will reduce production more and more, giving them even more income in doing so. As oil will reach its maximum market price, the granting based distribution model will be placed on top of the price based distribution model. Nobody knows where that price will be, but it's proven that $ 150 per barrel oil was high enough to kill demand (car miles, airtravel and airtransport) severely, both active as in terms of repressing global economy. High oil prices burden our old economic model that was based/build on cheap oil/energy. We need a new economic model that produce high prosperity by low energy demand. Energy that has brought us where we are, now can break was is build, if we stay using the amount we used when is was cheap and abundant available. When the granting based distribution model will come of top of the price model, nations with no real friends will become serious in trouble as their supply will shrink to very low levels. Oil prices will go up, due to the market mechanism (more global demand and less global supply), due to exploration facets (higher exploration costs, lower exploration efficiency ratio's), due to distance facets (more crude oil miles, not enough ship capacity), due to extended refinery facets (new refineries needed for heavy crude types and sulphur polluted crude), due geopolitical facets (strategic less production and the fact that a tight market is more vulnerable for regional/global tensions. Very heavy crude will be gasified, instead of being refined. New refineries will be build. Export of crude will be stopped, crude will be refined in the crude origin nations. The oil of the future is very difficult (expensive) to explore and to refine. Shipment capacity will become a real problem as oil supply in Canada, Mexico, USA and Europe declines a high speed. Conclusion: the globalized cheap oil based economic model will be replace by the local prosperity expensive oil based model, as transport and mobility will become to expensive. Oil fields never can be explored completely, the production of each oil field peaks at a certain moment and then declines gradually. Peak oil field production can be extended by oil field injection methods (nitrogen or water), but the decline rated of injected fields is after the injections more progressive. The Mexican Cantarell field output, which peak is extended by nitrogen injection, declines now at a 15% rate a year. If Ghawar (Saudi Arabia) should start to decline, global oil production will decline with it from it's current extended peak. Ghawar is 'reconditioned' during exploration by massive water injections. Water injections that must be done wisely/slowly otherwise the output will become to much water polluted and the field than needs some rest time to let gravity split oil and

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water during time. The viscosity of oil is the reason this process takes a lot of time. It's one force (gravity driven by the higher density of water) against the other (higher viscosity of oil). Oil nationalism has pushed western oil internationals out of the center of the market. The future of western oil internationals is serving oil nationalism and getting squeezed by it, when the bucks start rolling. The business model of western oil internationals is outdated. They were the rulers, the hunters, now they're in the wind silence of the oil nationalistic storm. They will become the losers and the hunted. Their history works now against them. They have in the past no real friendships that achieved mutual interests, this is now working severely against them. Only oil internationals with a complete different attitude (as in: complete change of management and policy, by open communication on their history) will get new mutual deals in an oil nationalism dominated global market. Otherwise every lost will be accounted to them and every profit will be taken from them. Oil nationals versus oil internationals will be won by oil nationals. The oil internationals will be used this they are brook. Current strategy of oil internationals is paying dividend and purchasing own stock (to maintain high stock prices). Shell has recalculated/reshuffled their owned reserves figures, others will certainly follow. If BP will loose their rights in the TNK joint venture in Russia, almost 1/3 of their proven reserves will be vaporized overnight. Oil internationals will be split due to shareholders pressure, giving the shareholders double stock value and double dividends, as oil internationals has become to big and to divers to manage centrally. The split-up of Standard Oil (which make Rockefeller from borrower to banker by the by the split-up generated value) has proven both the value and the performance improvements of a split-up. Oil internationals that follow the US in the occupation of Iraq will be thrown out Iraq when the US leave Iraq. The nationalization of oil is a non reversible process. Oil in the 21st century is nationalized. Period. Making old times alive by invasion (or profiting of it) is just a way to ask to kicked out / shut off for ever. Alan Greenspan in his book "The Age of Turbulence: Adventures in a New World.": "I am saddened that it is politically inconvenient to acknowledge what everyone knows: the Iraq war is largely about oil." or an other quote of this former man of huge economic influence "The Republicans in Congress lost their way, they swapped principle for power. They ended up with neither." Some say these remarkable quotes of him are primarily done to swift attention away from the failures grown/matured during his economic credit/currency leadership. One other remarkable statement. This is from Fatih Birol which is Chief Economist and Head of the Economic Analysis Division of the Paris based IEA/IAE (International Energy Agency) of the OECD: "I think we should leave oil before it leaves us. That should be our motto." The actual coal reserves situation is much more worse than everybody thinks. In all coal reserves calculations are polluted by large quantities of total not economic exploration coal 'reserves'. This while demand is exploding. China opens a huge coal fired power plant each 14 days. Coal will become the most expensive power fuel. Going short on coal based power companies can become very profitable. Gas: Gas used to be a unwanted side product of both exploring and refining. This has changed. Gas is becoming to expensive to flame it of. It is harvested and piped away to nearby users (and as gas pipelines were initiated to also long distance users) or cooled down and/or pipeless shipped as LNG to foreign markets. In many nations there is a high density peripheral natural gas infrastructure installed in all the cities/villages. The US has plenty or natural gas for domestic use for decades to come. Europe has Norway/UK/Holland and will become more and more dependent on Gazprom of Russia. Norway has cancelled new gas production projects as they as they have calculated probably will reduce oil pressure in the same Troll field. New investments in gas production of the Troll field that reduce oil output where investments already were done, was wisely considered not economic. Gas is a very attractive energy source. Its logistics is invisible and relatively cheap, its use can be turned on/off in a second both by the enduser. In power generation it's a fuel that no needed a new infrastructure, burns clean, is suitable for decentral power production (and thereby rest warmth use in domestic heating projects) and gas-to-power plants can be turned on/off in very short time (making it a very attractive peak load targeted fuel). In the US T. Boone Pickens (a 81 year old oil baron of BP Capital Inc.) want to replace the gas that is used for 20% of the power baseload generation by windenergy. His plan can be found on www.pickensplan.com and gets attention of both presidential candidates (Obama and McCain). Australia is becoming the LNG export country of the world. The Middle East uses their gas for power generation. Russia and Iran have a huge gas surplus. Gas is geopolitics as it is an economic lifeline. Bombing out a gasline is putting a continent in the dark for several days. In the winter this will have even more impact. Nations seek both pipe redundancy and supplier redundancy. Russia and the USA understand energy politics. The rest of the world are the dummies. Georgia was a power interference between Russia and the US. Both Georgia/US (invasion independent region South Ossetia that wants to be reunited with North Ossetia) as Russia (nuking every military installation in Georgia to the ground as 'don't mess with Russia' signal) can be blamed for this conflict. The US want to supply Europe by a pipeline trough Georgia with Iraqi and maybe Iranian oil/gas. An invasion of Iran by the USA is no option any more as India, China, Russia and Venezuela support Iranian independence for their own interest) gas. Europe must find its own (constructive) way with Russia and leave the USA out of this discussion. Russia likes to gain friends. Real friends serving mutual interests. Medvedev is the bridge of Putin to Europe. Europe must offer Russia real mutual/friendship based deals. The business facet must become mutual. Russia is a water, food and energy surplus nation. Not the USA, not China, but Russia and Brazil will become the economic heavy weights of the 21st century. Russia has an authoritarian type of capitalism, that could easy to a healthy open free democratic capitalistic type of democracy. While Russia is turning down the KGB, the USA is building DHS.

The USA was the home nation of freedom. Freedom was in the US genes, due the history if both the nation and its immigrants. While Russia is building capitalism, the USA will socializing the financial, car and airline industry. Global production of fertilizer is moved to gas rich nations like Russia and Iran (due to the huge gas demand of the Haber-Bosch process), making by the current fertilizer technology Russia and Iran the bottleneck of our cheap food system. Fertilizer production by coal is possible, but requires much more energy (and is thereby more expensive). Algae and/or bacteria based fertilizing technologies are important for food independence of all nations of the world. Gas can be processed to liquid fuel. Due the process costs energy it is less energy efficiency, but still it's possible. Gas con compressed used as mobility fuel. In several cities in Holland the public mobility busses are fuelled by compressed natural gas. Tarsands: Tarsands are sands that contains hydrocarbons. It can be explored by mining (surface and underground) or by in-situ methods (mining and processing underground by underground drilling/heat technologies). Water is used a lot (as in: in huge quantities) in tarsand based oil production. The first reason for this is due the physical characteristic of water that it can transfer a lot of heath: water can absorb and provide back 0,5 MJ in a rise from 0 degrees Celsius to 100 degrees and back to 0 degrees. The second reason is that it can control a production process not to rise above 100 degrees Celsius, which is useful by tarsand production as higher process temperatures would cause a lot of oil lost due to these higher heats. But water is getting more and more expensive for the tarsand industry. The same way regional/national governments tries to strip the oil internationals as much as possible after they've done their investments (which is the future of the oil internationals in one line), the Canadian Administration for example has installed a Water Tax, that just tax additional (above all other taxes and fees) $ 15 tot $ 20 of each produced barrel of tarsand originated oil. The tarsand based hydrocarbon industry will abandon the water based production model (not for the taxes: it still is very attractive), but due the fact that the tarsand industry uses so many water that the water must be transported to the production sites over more and more long distances and will become to expensive. Water scarcity is the huge (and stupid) forgotten production facet in the current tarsand development/technology. Tarsands will be waterless burned (power) or gassed (gas). The waterless production processes will also more energy efficient (less cost and more sales). The underground based new high tech in-situ production model will gain enormous popularity: based on direct harvesting/using the energetic value of the vaporized gasses, or indirect by warmth pump technologies. The current tarsand model is just a beta version of the future tarsand model. A huge development in tarsand energy efficiency improvement will be if tarsand-to-power plants. They will become the most used model. This model requires an on-location power infrastructure. When hydrogen production energy efficiency could rise, that would also be an off grid location than. Oilshales: Oilshales are large solid stone/rock formations that contains hydro carbons. It holds of course less hydrocarbons than crude oil. In order to release these hydrocarbons from the shale stones, it needs to be heated, than they hydrocarbons vaporize and these temperately gas can be condensed to a liquid and than distillated in to oil products. The process use the vaporized gas also to fuel it's own heating process. Oilshales can be explored in surface mining, underground mining and in in-situ projects. The in-situ process extracts the oil of the oilshale without moving them, by creating of underground fire technologies and underground vaporized hydrocarbon harvesting. Water (as heat transporter and process temperature protector) is the missing/expensive part in old technologies based oilshale production models, new models will be waterless technologies. Gasifying will gain enormous popularity. Oilshales can be harvested with 25% to 33% energy lost: using 1 barrel equivalent to explore 4 or 3 barrels oil. A huge development in oilshales energy efficiency improvement will be if oilshales-to-power plants will become the most used model. Independent if the mining is surface/underground or in-situ. Based on direct harvesting the energetic value (air expansion in both production and burning) of the vaporized gasses, or indirect by warmth pump technologies. This requires an on-location power infrastructure/grid connection. When hydrogen production energy efficiency could rise, that would also be an off grid location than. Coal: The global coal reserves are severely over estimated, not in one country: in all countries of the world. They are calculated just on actual presence, regardless the technological chance/possibility and/or economic cost of exploration. Oversizing them with 50 till 75%. The global coal demand on the other will explode the next years. There is low-grade thermal coal (used for power production) and high-grade cooking coal (used for iron/steel production). Concerning the low-grade thermal coal: There were not so many coal fired power plants in construction as there are today. They were never bigger than the ones that are in construction right now: demanding all a complete coal train as fuel per day when they are in production. Even right now very bad quality (in terms of energy and chemical ballast) thermal coal finds it way to China and India these days. Coal and the climate discussion are contrary, but coal will win the dispute. Talking about CO2 reduction is easy, using less hydrocarbons is more difficult. Coal is a hydrocarbon fuel with a lower energy to power ratio and thereby not the favorite flavor of the Climate Change focused community of the world. But prosperity is something each and everyone wants, and prosperity is about affordable energy, so coal will win this dispute. The world should implement more coal technology. Not burning it, but gasification it. Cleaner (in terms of acid rain facets), more energy efficient (and thereby less CO2 emission) and by its higher energy efficiency cheaper. All the current in construction coal to power plants face the possibility of never or only sometimes been used, not due to environmentalists, but due 1) physical shortage of thermal coal (just no 'fuel' available), 2) economic outdated due the more efficient gasification based process (as coal prices rise, efficiency becomes more important facet), 3) relocating of power production to coal mining locations

(transporting electrons, instead of coal). Concerning the high-grade cooking coal. As China in June 2008 offers the iron ore miners a 100% price rise for iron ore in exchange for delivering guarantees, the future prices of cooking coal will be at least very soon double of the current price. Taking in calculation that 1) energy is more scarce than iron-ore and 2) cooking coal is a high-grade/scare/premium coal type, the chances that high-grade cooking coal will be tripled in price the next year would not be strange. The fact that coal reserve figures will be lowered next years to realistic levels, coal reserves more and more will been nationalized and energy demand will grow severe, the price of coal (and thereby the price of power and iron/steel) will be doubled each year the next years till it reaches it economic maximal point and than also for coal the granting distribution system will be put on top op de supply/demand exploration model, that already is on top of the exploration costs model. Coal will be as much geopolitics as oil/gas/uranium is these days. In-situ technologies (harvesting the coal energy underground) will rise. Coal to gasoline technologies will rise in oil deficit countries. Everybody with a sense for cost of investments and energy process efficiency knows without any calculation that the gasoline produced this way will not be very cheap, but the cheap oil/gasoline believers still got very much media attention. Common sense we've lost due to cheap oil addiction. Investors in coal-to-power plants are (like investors in each carbon based power generation plant) gamblers. Building a very capital intensive facility with no outlook at all for nor the availability of fuel and the price of the fuel, in a market perspective where both (availability and price) are problematic. Power generation is now a general activity. This will change. Coal-to-power will be done by total other type players than gas-to-power. The size is different, the geographical density is different, the fuel logistics is different and the fuel purchase is different. This availability and price uncertainty is a very uncomfortable situation by such mega investments. This will lead to this uncertainty solving strategic choices/alliances like that coal-to-power plants will or taken over by coal miners or will taken over miners. But more likely is that coal-to-power will be done on the coal locations, why carry around with such material as electrons are more easy and more cheap to transport by HVDC/HTS/LTS or maybe as hydrogen. Coal exploration can be done or in mining (surface or underground) or by in-situ (underground technology). The uncertainness of coal availability and coal prices will make for example solar based energy investments much more attractive: The availability of sunlight is in daytime 100%, each day, the sun doesn't strike or have logistical/political problems. The fuel price of sunlight is $/E 0, the sun doesn't invoice daily fuel costs. These two major advantages of renewable energy harvesting will hit both coal-to-power operations and investments. Coal-to-power investments will in the future only be done by economic gamblers with lots of equity (as banks will turn away from coal-to-power due the supply uncertainness and price uncertainness). An other issue is the low efficiency of old coal technology: this is the main reason why coal has such a bad name (old pollution technology that causes acid rain and old low efficient technology that has thereby more CO2 emission than more effective sources/technologies. The whole CO2 issue will be pushed to the background as energy scarcity grows. Market prices will change behaviour more than any preacher ever could. Clean coal technology (gasification) will gain enormous popularity. International power infrastructures will replace coal shipments. Miners will stop shipping coal and start producing power. Miners will co invest in HVDC/HTS/LTS powerlines (in combination with CSP -Concentrated Solar Poweroperators and producers). Miners will invest in hydrogen research as transport or energy multiplying technology. Miners will buy enduser contracts for creating a closed circuit. Miners will have joint venture with powerlines and with customer/enduser brands/contracts operators. Miners are the Gazproms of the future. Large cities and large factories will always be energy deficit. The big question is if there is market for large cities and large factories in times of expensive energy. Delivery contacts will become more and more important. Contact prices will become more and more flexible determined by global exchange prices based on supply/demand. Coal will profit from the price rises of other energy sources and the other energy sources will benefit from the price rise of coal. Iron will become very expensive due to iron ore and coal prices due to less supply and high demand. Iron will be replaced a lot by glass/silicon material technology. Aluminium also as coal prices will rise and make the in production lots an energy demanding) aluminium very expensive. Miners will become powerful energy players. Miners will be nationalized, making coal also part of geopolitics. Coal has also become a commodity that is confronted with state driven revenue sharing. Miners will be confronted with a kinds of new taxes/duties where an export duty on coal often is the first one (in China 40%) later-on there will be additional other special designed duties put in place. The purpose of these duties are: 1) Stopping export in countries with state ruled energy prices for the internal/domestic market. For example China needs the coal, but as the price of coal is state regulated low (as the state subsidize energy and therefore don't like much space between guaranteed enduser price and market supplier price) and the world market price is high Chinese miners prefer to sell abroad. 2) Sharing revenues by customized taxation between miners and the governments, additional to the in the mining contract mentioned state fee per 1000 kg, as the market prices are much higher than when the contract was signed between miners and government. Steel companies and miners also will make joint ventures, and/or steel companies will go into coal/iron-ore mining, and/or mining companies will go into coal and iron-ore, and/or mining companies will buy steel companies, and/or steel companies will buy mining companies. All just to ensure long term supply and/or enforce each other earnings. Commodities are the scarcities of the 21st century. Coal can be processed to liquid fuel. The Nazi airforce was completely fuelled by coal originated kerosene. Energy is Carbon was an almost 100% accurate statement, but regarding the future it is a very doubtful statement.

ENERGY is GEOTHERMAL

Geopower is a technology where hot spots in the earth are explored to generate power. This can be done by several methods/technologies. Closed circuit (so: warmth pump or warm transfer based) systems are likely to be the best option from environmental perspective seen. That warmth pump technology have good upside efficiency perspectives is very clear: to much companies are getting into this technology, something that certainly will lead to huge efficiency improvements. But new geopower technologies use of a closed circuit with a liquid with a low boiling point trough the earth, making even exploring semi hot spots possible with other than warmth pump based technologies. Due the warmth of the earth layers, the liquid gets hot/warm. When its above the ground de-pressurized it starts to boil. This can be used to power physical it's own pump. Or this massive volume increase can be used to drive turbines that generates power. There are several other ways to explore the geo hotspots into electrical power. Geo power can only be used in/nearby the hot zones of the world. For example is the whole east side of the US is a perfect geo power regio. One advantage of geothermal power plants, beyond the benefit of producing electricity from a low-carbon, indigenous energy source with no fuel costs, is that they provide base load power 24 hours a day. Storage or backup-power is less required due this severe base load. Geo survey research will become more and more important, from both energy as mineral perspective. Geothermal energy is not a limited/finite energy reserve (like oil/coal/uranium), but it has an unlimited (never ending) capacity, powered by the earth's core. The main benefit of geothermal is that it can provide a continue base load on power nets. In terms of base load geothermal is the winner in the field of renewable energy. In terms of kWh cost price is geothermal also the winner in the field of renewable energy. It's very important to understand that the geothermal capacity of the earth's core is unlimited. It's not a finite reserve, it's just an unlimited capacity, only limited by the exploration efforts. The earth's core feed has no limitations. Iceland is example of a global hotspot. Iceland's geographical position (on the edge of two tectonic plates) brings the earth core energy for free much more closer to the surface. On other geographical locations (like Continental Europe) 'tapping' into the heath of the earth's core requires miles deeper expensive drilling (the more deeper you drill, the more expensive the drilling becomes). By its geographical characteristics Iceland just has an unique geographical position. Iceland can become the Saudi Arabia of the North by exploring its unique geographical characteristics. Geothermal energy is not about exploring the limited presence natural geysers, this is a common misconception, that causes some resistance against exporting energy in Iceland. Geothermal energy exploration is about exploring the earth's core heath by artificial installations. Geothermal exploration has no other environmental impact than the factory buildings (which can be integrated in the landscape by natural roof design). The only possible environmental impact can be the ground water level (due to drilling), something that needs certainly ground water leaking prevention/research. For more information see for example http://en.wikipedia.org/wiki/Geothermal_power and/or http://en.wikipedia.org/wiki/High-voltage_direct_current for some more technological background information. If you're rather more a viewer than a reader, you can watch short video based explainations http://www.youtube.com/results?search_query=geothermal+energy+process. Geothermal is the in energy scenarios often forgotten renewable 'sun' (the magic word for the left wingers) or 'nuclear' (the magic word for the right wingers) feed inside the earth. Regarding to Iceland as a global example case: Geographical Situation. Iceland has a geographical unique location on the collision/edge of two huge tectonic plates: the European and the North American. Due to this the nuclear fusion driven endless heath of the earth core 'has a hot fold to the earth's surface' in Iceland. This creates possibilities to harvest geothermal on the low height parts of the fault. The tectonic fault is a line from north to south on Iceland. Iceland also is surrounded by the high seas, which can deliver abundant water need for the geothermal energy harvesting process. Harvesting Process. This harvesting is done by drilling 2 (redundancy is also here important for delivering operational stability) water injection pipes and multiple steam ejection pipes in (often) a circle around the injection pipes. The cold water input crushes the underground rocks due temperature change which automatically delivers small 'waterways' in a circle around the water injection pipe. If they reach the ejection pipes the circle is round and the hot water harvesting process can start. The only energy input in operation is the water injection pump, as the return path of the water is powered besides the earth internal pressure also is very much powered by the internal water pressure due to heat. The very hot (under pressure) water comes to the surface in pipes and due the lower pressure it vaporizes in hot steam which powers turbines, which delivers power. The process delivers both power and clean (condensed, thereby sweet) water. As water input salt seawater can be used. Concentrated rest water can be injected again into the wells (or if they have only NaCl: into the sea). This process of harvesting geothermal energy delivers the cleanest/cheapest power in the history of mankind. Another very beautiful facet of geothermal energy is the fact that it delivers a continuous base load, it depends not on daylight like solar energy or on wind like wind energy. It a 365*24 continuous process that delivers each second of the year the steady same amount of kWh as it designed for. Geothermal energy is harvesting an endless infinite fully renewable energy source, which is very clean and has no impact on the local environment and global climate. Transport Process. Power can basically be exported in 3 ways: 1) In products (moving energy intensive industries like aluminium, but also silica crystals to Iceland). Each product has an energy component and of some product this energy component is very high. These products

can be used as in products captured energy export method. 2) As fuel (power > hydrogen). The power to hydrogen process with the current technology status delivers a severe energy lost. Still is a perfect method to benefit of not used energy in every energy model. As hydrogen becomes more common/voluminous the technology to realize it more cold (warmth is now the unwanted process by-product) and there by with better output ratios. There is no hydrogen transport and distribution infrastructure yet. Hydrogen is a not very compact gas, so it transport demands more transport capacity than of other fuel gasses like LNG. 3) By wire: New power transport technologies delivers only an approximately 3% lost per 1000 km (i.e. approximately only 5% per 1000 mile). HVDC, LTS and HTS are these new technologies, where HVDC (High Voltage Direct Current) have taken the leadership in new energy transport wires as they have the best ROI, successful and voluminous install base. Inside de cables there also optic fibre cables for data transport. Making it possible for the very energy intensive data centre industry to move 'north' where a) power is cheap and b) cooling (in the south responsible for +70% energy demand per data centre) can be done by nature. Wires needs to be multiple redundant, as accidents may not harm more than some per cent of the total transport volume. Redundancy makes wires also not attractive as war/terror targets. Wires needs also a hydrogen backup component on both sides of the wire for maximal power ROI on the sending side and maximal power security on the receiving sides. An other (local everywhere applicable) possible use of geothermal is geocold. The earth's core on the surface has a stable low temperature. Instead of the current cold delivery by aircondition in houses, offices and factories this could be done by 'cold nets'. The transported water circuit gets cold again by piping it in closed circuits in this cold layers of earth's crust. In coastal cities (and the biggest cities of the world are almost all coastal cities) the potential is huge and can even be driven by physics instead of by pumps (with the cost of more corrosion at the pipes and possible salination risk) by use of deep cold seawater. Geo cold cold unload a huge peak demand (warm weather = power peak demand) and therefore has the additional benefit of reducing the need for expensive peak demand only power facilities. Energy is Geothermal is a very valid statement.

ENERGY is DESERTTECH

Sun concentration, more often called CSP (Concentrated Solar Power). A set of technologies that are completely developed and ready to use. As said by harvesting energy out of sunlight, sun concentration could also play a role in PV technology by use of special window glass that mirrors some light to the edges of the glass where PV technology is installed, that due this concentration technology can produce severe regardless it small surface measurements. But sun concentration also has a huge future on its own. Using curved mirrors that point/concentrate the sun light to one point/line. On this point/line is the sunlight absorbed and thereby transite in temperature. The temperature of that point/line can be as 'low' as 100 degrees Celsius and high as even 800 degrees Celsius depending on the factor of concentration and the throughput of a warmth absorbing and transporting coolant. Salted water has a higher boiling point and thereby can absorb more energy before pressure problems occur, it also give a protection against night cold. So this harvested warmth can be absorbed by water and used to power a huge central located turbine. The attractive by-product can be sweet water, if ocean water is used to be heated. There are also waterless technologies that just use the hot air of the concentration point, based on the concept of the completely developed almost 100 years old concept of the Sterling motor. The huge benefit of al these sun concentration technologies is that there is no new yet to develop technologies needed: all the needed technologies are already for decades in place and fully well developed. The water based technology uses huge fields of curved mirror rows pointed to a water pipe in the centre of the mirror. The waterless only hot air based solutions is more done in dish type of settings, with the sterling motor in the centre of it. The waterless disk solution is a standalone solution that can be used anywhere space and sun is available. The water based solution is only applicable in huge fields in desert like settings. The Middle East and North Africa can become the power exporters of the world. Only 3% of the Sahara soil could deliver this way the world the power it needed (without transport/mobility). There are 4 problems: Geopolitical, transport, initiative and finance. 1) Geopolitical: Nations doesn't like the idea of a new dependency on foreign power just as they are starting to worry about their dependency on foreign oil/gas/uranium. 2) Transport: The in deserts generated power is not needed in the desert but in the global cities. The power must be transported to these cities. New cable technologies (HVDC, HTS and LTS) facilitates power transport with only 3% lost per 1000 km. Technological power transport is made economic possible. HVDC used cooper and new cooper infrastructures are very expensive due the very high (and still climbing) cooper price. Cooper is scare and therefore expensive and the global demand for it is huge as 3 billion people enter the consumption class globally and they all need power lines/devices locally installed causing a huge demand for cooper for these local wires and devices. HTS/LTS (based on cooled super conduction technology) use not scare materials and thereby will have a greater future. Cables are terror targets, so cables must be made so redundant in geographical design that terror has no impact. This requires more cables and is expensive, but gives in return also technological continuity. Hydrogen is also a possible energy transport medium, although currently it has not good production/transport/use efficiency ratio's. These needs to be improved first. The huge advantage of hydrogen is that is spreads geopolitical risks. The huge disadvantage of hydrogen is that is very explosive, giving lots of possible dangers. There is also no hydrogen infrastructure and no hydrogen installbase, so wired power transport is preferable. An other way to export power is product enclosed. Virtual power export. Fertilizers and aluminium are perfect examples of this development. The manufacturing/processing takes so much energy that both are only done in energy rich/cheap locations. 3) Initiative. CSP is a whole new industry based on a composition of completely trough developed mature technologies. New industries are not born overnight. The CSP business model is more complex than it's technology. It demands space in foreign countries (demanding good legal and political frameworks) and transport (huge off-site investments). CSP needs bilateral/multilateral mutual interest focused relations between countries, between customer, transport and producing nations. There is a very good initiative alive for some years: The Trans-Mediterranean Renewable Energy Cooperation (TREC), supported by many states and supported by both DLR (German Aerospace) and the King of Jordan. But this initiative is too wide setup and has thereby to real initiating power by the law of diffusion, but is more a promoting than realizing organization. Real initiatives needs entrepreneurs/companies/corporations. 4) Finance: Financing CSP is only possible under state and customer warranties. Of all the concerned nations (producing, transport and consumption) and of all the customers. With this guarantees, financing CSP is easy. It takes the financial power of the users into the production and cover political operational risks by state warranties. All capital and desert rich Middle East nations will start CSP very soon, just to cope with their own exploding power demands first (saving carbon energy for export purposes). But the second phase will be that they will start to export this. Wire infrastructures also has fibre infrastructures attached to it: this will connect Africa and the Middle East with the old economic concentrations in the world. Mexico and some South American nations will also start CSP. Chavez is very interested in funding the infrastructures (as they also can used to export power generated by very heavy crude and Venezuelan tarsands to all Americas. The investment price of CSP can be lowered severely by building first them with local produced components. Sand enough in the desert, providing not only silicon for production of the needed mirrors, but also the structures/pipes/roads could be made of glass/silicon technology locally. This reduce the investment level severely. Aluminium structures are to expensive for CSP. The right CSP model is build in the desert, out of the desert, with minimal imported resources. The for CSP required Finance Model is one of the Models

G Lanch.

that Planck Foundation has created. The is also a low tech solution: The cooking dish: a parabolic disk that cook food in the center of the dish very hot. If the ancient Sahara habitants had that device several thousand years ago, the Sahara still will be greener today, as no wood was harvested to cook. Energy is DesertTech is a very valid statement.

ENERGY is WINDTECH

The wind is also a huge energy pool that can be harvested. Wind is just an other derivative of solar energy: the sun hits the earth (continents or oceans) and air gets warmer and rises, cooling down and descent to lower levels again. Where air rises there is low air pressure, where air descents there is over air pressure, wind is just air that moves from over air pressure or to under air pressure or flows from over to under air pressure the same time. Roofmills, standalone mills, windparks and highrise attached windfunnel structures with internal fans. These high rise air wind funnels have also huge positive air flow resistance effect on high rise structures. If high rise structures for living and office has a future in a post carbon area is certainly a valid question. High rise structures will be energy deficit. They have a too low solar energy production capacity for living, therefore they are energy deficit, therefore living there will be expensive due the needed energy purchases caused to this energy deficit of the high rise, therefore only affordable for the wealthy, or the current operators must first go bankrupt and then offer double apartments for the price of a single so that the energy production and food production per unit will be higher. High rise structures for office use will become useless due the fact that commuting to the office will become to expensive. All office space operators will face bankruptcy by a high energy price as organizations will grow from physic structures to digital organisms. Large parts of the current high rise structures will be used for growing food by use of the Grow|OS technology. High rises will have vertical windmills all around the building surface. These will be attached to the building core structure as current high rise surfaces mostly are only carpeting the outside of the building. On the top of each high rise there will one huge horizontal operating windmill of several huge vertical operating windmills. Concentrated industry areas (which are per definition energy deficit, regardless the achieved conservation technologies) will install huge windparks to power their plans/factories. Each village and city will have multiple windparks (if the wind is good). Their will be huge remote windparks at sea, in the deserts and everywhere were the wind is good. An example of such a plan can be found at www.pickensplan.com: a huge onshore wind plan in the heart of the US. Only T. Boone Pickens can say “we have good wind” the way he does. This man needs to be honored for his achievement on his age. An open minded oil specialist that has become a general energy specialist, 81 years in age, who’s fighting for the energy security of his country, with a very clear plan to replace the natural gas component of power generation by wind energy with a concrete plan. 20% of the power in the US is generated by natural gas. One of the presidential candidates has already talked with him and knows since than more basic data on energy. Energy is something both presidential candidates are not very strong in, while it hold the economic future of the US. Governments needs to address the transport infrastructure of remote windpark locations. They can do that by issuing legislation and guarantees as more extended described in the transport paragraph below. The beauty of wind tech that is can be deployed by everyone: it can be deployed on the micro, mesa and macro level, it can be a part of energy independence of households, companies, municipals, regions, nations and continents. It also can be a source of proud related to independence. The problem of wind tech is that is faces heavy natural forces, is based on a moving parts concept (with by this both wearing out problems and sound problems) and that it visual polluted horizons. Wind energy is commercial by oil prices above $ 100. Wind energy can be tuned economically very much yet. Both in CAPEX and ROI. Better wind tech locations gives multiple ROI by the same CAPEX. Use of other materials (instead of iron) will give much more lower CAPEX and by that higher ROI. Silica (glass or iron) instead of iron will lowers the CAPEX very much. Carbon tech that can not be torn apart will deliver more strength by less construction weight. Constructions than can be done by airships or helicopters. Water chambers in the wings can be used as extra dynamic weight/mass surplus. Wind tech will become more and more dynamic in mass, so that it can harvest every wind (even slow and very fast winds). Turbulent winds will never be harvested by large units: the powers on it are than too heavy. Wind tech can be part of economic revitalize rural areas, not only in terms of energy production, but also in terms of industrial activities that want to be close to energy harvesting facilities. Wind tech will be able to contribute substantial to the energy diversification, regardless the unstable supply of it as downside. But it variable supply also delivers power in expensive power hours, that's something that will compensate the irregular supply. Peak top demand supply always will be done by expensive (fuel driven) energy sources and will have always a high price. Wind tech will become an important part in each energy independence planning. Wind tech will also be used on houses, offices and factories: the horizontal long wind to power harvesters on the top of roofs. Companies will certainly have a wind mill on their premisses. Energy is WindTech is a very valid statement.

ENERGY is PHOTOVOLTAIC

Sunlight gives according to the World Meteorological Organization an average of 1367 Watt energy per square meter (average is based on day/night cycle, sun distance cycle and average geographical location). Sunlight can be transformed by Photo Voltaic (PV) technology. Solar energy harvesting technologies in laboratory settings has already reached 40,7% efficiency. Solar energy therefore is very capable of providing the energy needed in households and offices. The carbon oil/gas/coal companies are not interested in PV, because it's an one time investment type of sale (the energy after the sale comes for free) and their business models are based on selling/providing daily/weekly refills. They also don't have the location space to install PV and are not very much active on the power generation and power sale markets (missing the power market will be their historical mistake in the future history books). The power companies have a complete different approach: they use a two path strategy (both the old central power plants model and the new decentral PV model) trying to seduce households and companies to install PV capacity on their own buildings by finance and exclusive grid connection contracts signed by the households/companies. This way they both have them as customer for a long period and build (off-balance third party signed and financed) a huge decentral power generation capacity that they can sell and doesn't need expensive carbon fuel. The next years their will be an explosion of these virtual decentral PV focused power companies (just contract/billing engines). PV was historical more expensive than carbon generated energy. This is changing as PV prices per square meter goes down, PV output per square meter grows and oil/coal/gas/oil/uranium prices go up, up and up. PV was only available in panels and could only be made from expensive to produce mono-crystalline silicon that was cut into wafers, but this both limitations in use (flat panels) and production (crystal based) will also change. Second generation is no longer difficult to produce. No longer expensive silicon crystal wafer based, but based on much more cheaper thin films, using much cheaper PV generating materials, that are brought onto the film by cheaper technologies. Second generation is by this all much more cheaper in production. Film based is yet less powerful (currently average 15% PV effective, but increasing each year) than silicon crystal wafer based (currently average 38% PV effective) technology, but the investment efficiency ratio (due the lower investment price) is already much more better and if the efficiency of film based production will increase the way wafer based production had done (from 10 to 40% PV efficiency in 10 years). PV technology will be improved in lowering production costs and increasing the efficiency. PV technology also will be approved in applicability: integration with roofs, walls, windows and objects (streetlights, windmills, etc.). The PV technology of the future is just a cheap produced thin (maybe even clear see trough) flexible film with a negative layer on the bottom and a positive layer on the top making it possible to just glue it to any object. Production will be done very cheap by vaporizing (or even by just printing) materials to the film. After the film phase the multi layer paint phase will arrive (and than is even offset printing PV panels possible). Window based PV technology will also boom. Or in it's concentrated vision by special glass full with invisible small mirrors that redirects some light to one side of the window where a small PV strip is located. Or by a clear film technology. Double and triple glass windows with PV technology will replace al current windows if energy prices rise further. Window based PV is very easy to install and very invisible. Two major benefits. Much more cheaper to produce, buy of invest/finance and much more easy to integrate: that's the future of PV. PV will be thin film (or maybe even paint) based and could be taking in design of each object that is out there in the sun: road lightening columns, windmill blades, roof tiles, wall bricks, bus stops, traffic lights, car bodies, noise reduction installations beside free ways, etc, etc, etc. Garden lightening is a perfect example of it: just free light in the garden by cheap PV without wires. Any industrial manufactured object will have build-in PV in de near future. Concentrated PV in double or triple glassed windows will boost the PV capacity enormously. A part of the light is by invisible internal glass structure rerouted to one glass edge, where a small PV line is installed. These small PV lines get concentrated solar light and perform by that very effective, delivering high capacity/efficiency. PV will lead to an enormous decentral electricity generation, changing the grid demand severely. This is the reason some power companies try to sell their carbon based power plants, grid assets and even customer base and want to reinvent themselves as facilitator/financier/installer of PV potential. In Holland the power company Eneco wants to sell all carbon fuelled power plants and infrastructural grid transportation assets, and wants to concentrated on central and decentral carbon free energy. In Holland the power company Nuon has bought the largest installation service organization in the market, for being on the first row (first in priority) as installation work will boom and also for getting a huge load of customer contracts. When power companies of this size help companies/people practical/financial by installing PV power generation potential with a contract to buy the over capacity, they take a piece of the cake of each installation which is installed on the property of others and is paid (by finance) by others. It's a lottery without any 'no cards' for them, and very attractive in times with very increasing carbon based fuel prices and uncertain carbon based supply. This is the reason that virtual (third party property based in both location and finance) PV power companies will boom and that each bank/financial also will have it's own. The 'old' traditional sunlight use (as in light: avoiding artificial power based light) will also boom due to window based PV technology in combination with 3 or glass layer windows: house of the future will have a lot more windows to harvest the light, warmth and PV of the sun maximal. In the near future will PV surfaces also harvest sunwind and other types of cosmic

radiation (popular called: dark light). Mainly driven by the particles that the sun sends to the earth at daytime and less but still significant by cosmic radiation at night time. Due the fact that sunwind devices needs harvesting surface, sunwind technology will be researched as separated units, but after that fully integrated as separate layer under the PV technology (as these particles go straight to the first PV layer). Also will PV technology (as it's temperature increase due to sunlight will be cooled from it's current 40-50 degrees Celsius daytime operational temperature by a closed watersystem to the lower more best performance temperature of 15-30 degrees Celsius: using both the PV technology side effect of warmth creation and PV surfaces (when light hits an object it is partial converted to warmth) also in a sunthermal way to warm water for domestic use (for cleaning, washing, showering and maybe partial -by prewarming- heating), the same way traditional sunthermal boilers are used these days. Energy is PhotoVoltaic is a very valid statement.

ENERGY is LOCALIZATION

Localizing our economic system is the best/biggest/easiest energy source we can tap on. The truth is that we don't have any alternative for both kerosene (air mobility and air transport), diesel (road transport and rail transport) and gasoline (daily commuting and leisure travel). The energy that cheap oil has provide these 3 products can not be equaled by anything we have available right now. Cheap oil is over and by that the role of cheap oil is over. Oil was an economic blessing that gave us growth, it has become an economic curse that will bring us stagflation. The only post-cheap-oil economic alternative we have is vibrant local prosperity: cutting out as many transport and mobility as possible. Otherwise only the energy surplus nations will have a vibrant economic perspective and all other nations just works for tax and energy, without any prosperity at all any more. Let's call our current economic system Global and our future economic system Local. Local = Vibrant Prosperity. Global = Foreign Taxation By Energy. We can't pretend that cheap oil is still there. We must have a new look, a new perspective on the distance facet of our economic model. We act in times of expensive oil like we did in times of cheap oil. Not very wise. We must stop fly daily many planes full of one type of flower from all of the world to Amsterdam, auction them there in small quantities per type, distribute daily many planes full of many types of flowers from Amsterdam to the world. This model was designed in times of $ 10 per barrel oil. It just doesn't work anymore in times of $ 150 per barrel oil. We need local flower production anywhere in the world. Than every man can bring home an attractive priced bouquet beautiful flowers each Friday again. This easy to understand example applies to almost all products. In the US the average food mileage is 1500 miles (2700 km). This is designed in times of cheap diesel and cheap kerosene. But that is history, oil isn't cheap anymore. We must reduce food mileage severe to maintain cheap food supply. We must start to produce everything we need local. Transport will become to expensive. We must start work in our hometown: commuting will become traffic congestion free, but eating out 50% of our wages, due energy costs. We need new location independent office technologies and new distributed production models. Production that is global designed by brands, but manufactured as close to the markets as needed. The Nike production of the near future takes place on at least 1000 locations. Global and local will find ways to contribute to each other in symbiosis. It's a psychological miracle that we somehow just stay acting if our was cheap and this way demolish our prosperity severely. There's nothing to gain by this, only much to loose. In some strange way we doesn't want to except that cheap oil had left us and that we must start to do things different just to maintain our prosperity. This is a huge deficit of all our economic/politic leaders. They doesn't points the way to the future, but even try to extend the future in a changed environment, with all its damage. Sure there will be electrical cars/trucks and we have electrical trains. But cheap abundant electrical power is made by cheap abundant fossil/carbon energy and that's no longer available. The whole new electric version of our transportation/mobility dream is just a fake idea: nobody knows where the power for this dream must come from. People really doesn't understand (severely underestimate) the huge energy load that carbon energy supplied us with. Transport/mobility will leave us for economic reasons, till we find new cheap and abundant energy sources. It's not hard to understand, we only don't want to understand it. That's the problem. We just hope that we could stay doing the same in an other economic environment. But just economics tells us that there is some severe price adjustment of one resources we use a lot. Something we accept and work around or we get smashed by to the wall (Simmons). Energy is Localization is a very valid statement.

ENERGY is GLOBALIZATION

The current massive globalization wave was driven by the cheap oil of the 80ties and 90ties. We have faced PeakGlobalization. The most global influential change of the 21st century will be the energy system, the finance system, the water system, the governance model (possible global government) and the currency model (possible global currency). Or supranational states will be fragmented of the will merge together to one big global super state which will end constitutions and democracy. Energy, water, materials, capital, governance and currencies will be the six leading facets in this huge choice for mankind. From energy perspectives global governance will not happen. Due to more expensive energy the globalization process in currently in reverse mode. From energy perspective we've faced PeakEnergy, PeakReach, PeakProduction, PeakTransport, PeakMobility. Expensive energy contracts the reach of people and products. PeakMaterials (often called PeakResources) is an another influence: that just makes any industrial manufactured product lots more expensive, it doesn't effect the above mentioned reach of people and products: it's just a global everywhere the same price effect having facet. The 20th century was characterized by a bi-polar global political system. The 21st century will be characterized by a multi-polar global political system. In the 20th century the polarity was about ideology. In the 21st century it's about energy/resources competition on global level, about governance/currency issues on global level and about water competition on regional, national, local level. If the economic growth of the East and South keep track (and will consume more energy/resources each year), transport, mobility, temperature control and power generation based on the old energy model will become very expensive (as in: not economical) . And the East and South will grow: they have the all benefits of being new, young, strong, committed. The West is no longer the economic centre of world, something that doesn't land very easily in the West. The Western World will face all the down sides of the 21th century, contrary to all the up sides the Western World have enjoyed in the 20th century. The West will suffer a lot of globalization in the 21th century. The West just has become to expensive for the global market. A mayor background driver of the globalization that has taken place the 20th century was neo-colonialism. These 'inferior' (in the eyes of the West) nations where the workshops/factories of the 'more intelligent' part of the world. The West has made this misconception already once with Japan and they made it the last two decades. China and India delivers both more Ph.Ds each year than there are Ph.Ds in total in Europe. The big dreams of a knowledge/innovation driven superior Western World is just based on neo-colonial quicksand, not on actual facts. The Western World is not more clever, just more expensive and more spoiled. The West has debts, the East and South have assets. The West is poor, but lives rich and the East and South are rich and going to live more richer than they have done. It's all a matter of purchase power. The purchase power of the West is totally based on credit. This quicksand will not last very long. Regarding energy/resources (which the West is using very much) the East and South will become the first in line (due to their purchase power). The economic/cultural critics of globalization (that is was about the right of the strongest and about draining cultural heritage) can rest: globalization is in reverse and this development have not even get the traction it will get later-on. We have faced PeakTransport and PeakMobility. Air transport for flowers, fruit and vegetable is over. Air mobility will be reduced. Tourism will stay closer to home. Immigration of economic weak new inhabitants in the social security states of Europe will cause huge problems. Globalization of capital will not only shrink, it will vanish. There's a direct relation between distance and risk. This is something we're forgotten. Increased distance equals less control equals more risk equals more loses. The global capital market will disappear. It was just a big experiment with other peoples savings/pensions and fires up by the dumbness of gold-leases delivered by Central Banks. Globalization will not shrink in a similar way as it has risen. It will collapse. Due to energy prices. Due to capital loses. Read 'Shock Doctrine' of Naomi Klein to be able to steer in turbulence without further damage of crucial basic economic values. Energy is Globalization is a doubtful statement.

ENERGY is URBANIZATION

All the scenarios for the 21st century predicts a continuous increase of the urbanisation development. All these predictions lack the input of several new wild cards. The first is PeakX. Our current view on cities is that space is almost the main deficit of it. This will change severely. Our view on cities will change 180 degrees, from concentration of supply to concentrations of demand. Cities are concepts based on cheap and abundant available energy and resources. These times are over. This will effect further city economics. Cities will become expensive places, by this the attractiveness of cities will decline. City populations will be severe lower than today and by this space will be available in abundance. In many facets the 21st century is a mirror of the 20th century. The second facet is the current development in IT. In the past the cities were the centres of knowledge and attracted knowledge based businesses. By the Internet this driver of urbanisation is over. In the past cities were the centres of trade and attracted by this all type of companies (from trade, to resources, to production, to transport). By the Internet trade has gone digital and doesn't need the city as geographical location any more. In the past cities were the hubs of transport. But the driver of the hub based transport model was mainly a shortage of demand. These days are over. Hubs in transport are an outdated concept. One other battle lost for the cities. Everything is economics. When the cities become too expensive, too crowded and too unsafe , they lose a lot of their natural attraction. Cities has a cultural abundance, the possibility to start all over again in anonymity, these advantages cities will keep always. Culture will become the only USP of urbanisation. Demand concentration delivers more market for more diversity, plus cities will still be the physical windows of a nation to the world. Foreigners, tourists, foreign companies always will prefer the cities of a nation. But all the other competitive advantages (beside the cultural one) the cities will lose. The 21st century will not be the age of urbanization, but the age of suburbanization. Rural life will be much more cheaper than urban life. Rural production always have been much more cheaper than urban production (the main driver behind secondary cities growth). The very much quotes American culture critic James Howard Kunstler has made many remarkable visions on city and suburb development in his book 'The Geography of Nowhere'. He plead for liveable city design. In his view the skyscrapers will be the first casualty of de decline of the mega cities. One thing is sure: tenants will be offered space for severe lower prices than it is today. This will of course (by economics) compensate the attraction of the cities somewhat. Mega cities are designed without any knowledge on PeakEnergy, PeakWater, PeakCredit, PeakTransport and PeakGlobalization. In the East and South cities will less decline than in the West, but also in the East and South reaches urbanization very soon its peak. Energy is Urbanization is for sure not a very valid statement.

ENERGY is DEMOCRACY

If the old -fuel based- energy system fails and we haven't pushed it gradually aside by the new fuel-less energy system, the economies of our nations will slow down continuous. This will deliver intensive economic (and by this: social) unrest. If the middle class will be wiped out, they will tear the stones out of the street and don't spare the window glass in any governmental building. Democracy is the fruit of growing economic rest. Growing economic unrest delivers in most cases autocracy. In growing economic unrest democracy is not very safe, nor glooming, but just almost unprotected. Democracy and turbulence have proven not very much compatible, in the '10ties, '20ties and '30ties it went wrong, only in the '60ties it was strong enough (but the '60ties had turbulence due to economic growth, not due to economic decline). Turbulence due to decline brings democracy in to the danger zone. The chances of the rise of a dictatorial type of governance rises with each level that social/economic unrest increase. Democracy has no build-in auto-defence system for economic decline. The impact of economic decline is after WW II totally forgotten in the western world. Democracy is made by the mix of population and by circumstances. Democracy glooms most in the phase between unrest and rest (in both the upside and downside move). In economic unrest there's autocracy, in economic rest politicians get their own agenda more and more (as in: serve themselves more than the people who vote for them). People are the force behind democratic growth, other powers are the force behind democratic decline. Politician don't make democracy: the practice it as a choosing type of short time elite. It's safe to say that power needs contra forces to stay integer, this applies to all types of power. Power without contra power derails very easy. This is not a political statement. Just a law of nature (action > reaction). We need good government, the 21st century will be a bumpy ride. The choice between pro-democratic or pro-autocratic is a political one and will be made by each nation on it's own. There's another (unknown, but even important) choice/contradiction in the field of governance: the geographical distance between people and government. There's short distance representation versus long distance representation. The shorter the distance between people and the highest governmental layer, the more integer the government is. This is not a political statement: it's just a matter of control/audit. Control/audit delivers quality, everywhere, also in government. If we like the fruits of stable government, and we like democracy, we should take care of our energy model. As the old -fuel based- model with its steady increasing fuel prices will 'eat' every economic efficiency improvement, our economies will go into irreversible decline. The same force (energy) that let us grow, than will take us down. Therefore must phase out our old energy system. Not only for maintaining prosperity, or facilitating growth, but also for preventing governmental collapse. As stated before: economic decline has some severe nasty effects: governmental spending up, governmental income down, systemic bank failures with ditto bail-outs, huge pension fund collapses with ditto bail-outs and by all this watering the currency values down (less foreign purchase power) or even currency collapse. This all heavy turbulence and will put some severe pressure on governments, pressure they only can resist by good honest leadership of by repressive force (and it will probably need both of these). The West felt superior due the collapse of the USSR, but the West forgot to see (and treat) it's own possible weak points. Any system needs self-critic, self-cleaning. As we have a financial system that by design defaults when growth disappears, and we want to prove the world our system was the right one, we postponed any severe cyclical decline by delivering year after year more cheap credit to the market. This californification (every day sun and never winter) of economic policy don't removed the rot in the system, but let grow further, on credit of course. Our hedonism wreaked our production (production = earned wealth, services = wealth on credit) and our financial system. Add to it the coming energy price rise and you've got the perfect storm that can wipe out the financial sector, brake the back of governments and make total irrelevant the value of former strong currencies. The price of Reagantis is huge. Reaganitis was just a combination of hedonism and energy/credit stupidity: everybody full partying: the bill of the caterer is for later. Not fun at all. The be more concrete: do we start today with implementation of the new fuel-free energy system or do we want to create a situation where a 21st century Stalin that just declared whole regions with no sheep-like population dead by just switching of the power? We don't understand the impact of central facilities/utilities like power, clean water, waste water, natural gas on our lives, nor the connection between these and the governmental facilities transport, law and order. Power down is the end of the story for a city, a region, a nation. Cities with power down become just a bunch of buildings with the law of the jungle and a life expectation of less than a week. Anybody who likes fair and open societies: you better change your energy system starting not tomorrow, but today. The Energy Finance model of Planck Foundation delivers the finance tools for it. Plus it repairs the financial status of the financials in no longer economic growing nations, buying them time to contract to the economic declining realities of the 21st century for the West. Energy prices and democratic structures are connected but contrary developments. Energy is Democracy is a very valid statement.

ENERGY is TRANSPORT

The enormous energy use of our transport system is widely under-estimated. This is caused by a long period of cheap and abundant oil which is coming to an end now. The effects of these period of cheap oil was an each year more globalized production model. Our whole current production model is based on cheap transport due to cheap oil. Without cheap oil globalization was never happened and China never would have developed as fast as it has. If cheap oil is over, globalization will decline as the main driver of it. Than we're stocked with a no longer adequate global production system which has been developed in the last 30 years and is not suitable for the coming 30 years. For products that are capital and labour intensive, the global production model will stay in place. But also the material cost will rise sharply as it did in 2005-2008. The global production process is a dance between energy for RD/IP/design/marketing, production costs, material costs, production costs, energy for transport costs, transport costs, insurance costs, import duties and labour costs. The factor labour was the leading fact in this dance, but that will change: PeakEnergy and PeakMaterials will 'bring the jobs back home'. The global production model (and by this it's voluminous transport need) will decline. This influence of higher energy and material prices on the global production model will also influence the regional production model. Production will be done on smaller scale, more in the neighbourhood of the markets. James Howard Kunstler draws this line further and says that many of the products we have today will not survive this 'contract of reach'. This is a questionable vision. New production models will occur that are build on these new realities for energy and materials. The virtual global factory model of Planck Foundation (global research/design, regional/local production) will give as a good example a new digital IKEA and new 'virtual' global produced car brands. But energy will effect transport severely. We've faced PeakTransport. Only the capital intensive products will stay in the long distance production model. Energy is Transport is a very valid statement.

ENERGY is MOBILITY

We totally under-estimate the massive energy use of our current mobility. This due to the still low gas prices on the pumps and low priced aviation tickets. The year 2008 has showed us that this perception is very fragile. In 2008 suddenly we saw the energy use of our mobility. Mobility = Energy. Today we again totally don't get the loads fossil energy give us against low prices and therefore we think mobility is just mobility and are forgotten than mobility is just loads of energy. Due it's historical low price of energy we used mobility abundant. There work related and leisure related car mobility. There is work related and leisure related air travel. As energy prices rise air travel is the first victim (due to the fact that it consumes a lot of jet fuel per trip). Regarding to leisure air travel: Decline it will not harm the rich regions (more purchase power is not exported, but less spending of foreigners), but will harm the poor strong on tourism depending regions in the world. Regions with mainly on air travel based tourism will face severe economic decline. Regarding to business air travel: the internet will take over a lot of the former business related airtravel. Conventions are typical 20th century, the internet in all its wideness has deliver a lot of cheap/faster/better initiatives (email, msm, facebook, skype, webpages, etc). Videocalling /videomeeting will replace a lot of the one-to-one and small group meetings that earlier demand on business air travel. The Western World has passed its PeakEnergyUse momentum and both increased efficiency, low energy alternatives, economic decline and increased on premises renewable harvesting will result in each lower the energy use each year. The Western World has passed PeakMobility. China has become the biggest car manufacturer. China has become the biggest domestic car market. China has purchase power. The Western World has debts. For the Western World it was really a party, but the party is coming to its end (Richard Heinberg: http://en.wikipedia.org/wiki/Richard_Heinberg). Several opinions tells us that the travel time has stayed the same, but we just keep searching housing and work at a time budget variable that differences by personal preferences. Mobility is just about purchase power. Travel times will reduce as traffic congestion will decline due to higher energy prices. In the times of cheap oil the distance home/work was just a matter of daily time budget considerations. This will change. The price of mobility will rise sharply due to sharp rising energy prices. We will travel a lot less due to more expensive energy prices. Mobility = Energy is true. We just will have less energy, so we will travel less. Mobility demand involves the reverse sum of energy prices. We will seek alternatives. We will videocall, we will videomeet, we will use remote desktop technology (or it better, newer brother XML based office technology), we will go on holiday without planes. Higher energy prices will reduce distances/reach. Energy is Mobility is a doubtful statement.

G Lanch.

ENERGY is FOOD

As for all other main facets of today's life and economy: we don't have any clue on the huge driving force of cheap abundant oil behind it, nor of the consequences if they driving forces gets slowed down due to gradual month after month rising energy prices. Energy = Food. We use energy to grow it (the current greenhouses are very energy intensive), we use energy to fertilize it (the current production of fertilizers is very energy intensive), we use energy to coil it (longer transition times increase the cooling costs each day), we use energy to transport it (vegetables from Kenya for Europe delivered by airfreight is only possible by cheap oil). A price rise in energy will give a quadric price rise in food. This is something only a few people realize. Food is not a luxurious surplus life demand, but just a daily need. To make the impact of higher energy prices more clear. Economies will decline, unemployment will rise to never seen levels and food prices will rise sharply quadric to the energy price rise. Sounds like a concept for some turbulence in the streets. Not in far away countries, but on your doorstep. Are their alternatives? Yes. Seriously de-energize the food chain should be something everybody working in the food chain should working on. There are three huge steps that could be made forward: 1) algae/bacteria based fertilizer production in the soil, 2) introduction of energy efficient bio-physical greenhouse technology, 3) massive introduction of air moisture harvesting condensation irrigation models and 4) increased localization of production and trade. First: Fertilizers should be replaced by Nitrogen from the air capturing bacteria and algae as soon as possible. Algae/bacteria based fertilizer production in the soil: Fertilizer takes 2% of the fossil energy consumption of the world (as in: 5% of the natural gas consumption) and these percentages rise each year a few points. Now the fertilizers manufacturing industry is concentrating in the 5 natural gas abundant nations of the world. We must prevent that the governments of these 5 nations will decide who will eat and who don't. Making fertilizer (see http://en.wikipedia.org/wiki/Fertilizer and http://en.wikipedia.org/wiki/Haber_process) can be done also with coal or oil, but due to the extra needed processing the outcome is 20% less per Joule energy than by use of natural gas. This is the reason the fertilizer industry is moving to the natural gas abundant nations rapidly. An new approach on would eliminate the energy consumption of the current fertilizer production. This huge energy consumption of current fertilizer production method is a direct threat to global food production (as it is unsustainable in design). Furthermore it is a possible threat to global peace (as fertilizer production is getting rapidly concentrated in just 5 NG surplus nations). We have designed a model where seed are coated with a bacteria solution that makes fertilizer superfluous. Relocate the N production into the soil around the plants. Production on location without any energy demand. The bacteria takes the Nitrogen out of the air and put in the soil around the plant (plants can't do this by themselves). This model delivers a huge energy conservation. In my opinion it should be part of the Global Redesign Initiative. The only danger is that they will be too active and poison the soil with Nitrogen. As you probably know: I'm not a fan of genetic manipulation (to be more clear: it think its the atom bomb of the 21st century). So scientists has three challenges: isolating this algae/bacteria, getting them produced in volume and make sure it only replicate in certain conditions. But the last facet is difficult as life always adjust to circumstance very easily and rapidly: therefore the last challenge is the toughest. Still: the biological N production on location is a good model and yes it needs lot of evaluation and some bordering before exploring it. The model is right and could serve mankind severely. We have asked for the endorsement of the model by the Club of Rome. Secondly: Introduction of energy efficient bio-physical greenhouse technology: Last year we have stopped temperately our investments in www.growindus.com, with the plan to make it open source later-on. This agricultural model delivers a very viable bio-physics alternative for bio-chemics and bio-genetics. Bio-chemics pollutes both the food chain as local water resources and bio-genetics is about cocaine for stable evolutionary processes. Bio-Physics is about using technological driven/controlled physics to influence the growth process of plants (or fish: there bio physics is used already). Bio-Physics has no down sized like bio-chemics and bio-genetics has: Several agricultural universities could endorse this model as an unique USP (often in cooperation with poly tech universities). We're strongly in favor of bio-diversity and honouring evolutionary processes that have worked out in millions of years. We think bio-physics could save lots of energy and water can speed up grow processes significant and can be the technology to grow food in underground structures in and nearby the cities (delivering fresh vegetables, fruit, herbs, flowers and fish with also less transport energy use). We have asked for the endorsement of the Club of Rome of our bio-physical open source model. Third: Massive introduction of air moisture harvesting condensation irrigation models: Water is gone be the next problem for food production. The old concept of irrigation was surface water based, the actual main concept is a combination of surface water and well exploration. But those two models (surface water and well water) are limited in their renewable capacity. There's a unlimited renewable sweet water resource and it's called air moisture. This can be harvested during the night by cooling pipes more than the surrounding soil by pumping water though a closed circuit that is cooled down under the earth surface. If these pumps are powered by renewable energy the energy price doesn't influence the water price also not any more. Fourth: Increased localization of production and trade: Food suppliers are smart when the know the energy consumption of both growth, storage and transport. By this data they will manages these all 3 down. Ensuring their own economic future in terms of turnover and profitability. Energy is Food is a very valid statement.

G Lanch.

ENERGY is MODELS

Models are virtual tools/machines/channels. Models make change more easy as they deliver the roads for new directions. Models is using a word processor instead of writing one yourself. Models amplify change. Models multiply effects. Models channel effort, giving faster, more and better outcome. If we know we need a new energy system and we have the courage/leadership to do that we still in the woods: where to start (policy) and how to succeed (models)? Models is about don't wasting resources/energy/time by transition efforts. If you want to go to New York NY, going to Key West FL is a waste of resources/energy/time. Models delivers the shortest 'roads' to 'destinations'. Models also delivers 'roads' into these new destination. No need to develop one yourself: there is already one developed (and it's open to use, to change based on your own experience, knowledge and situation). This being open is very important ('roads' not 'rail roads'): tomorrow will add new experiences and new knowledge to the models and the models will face new situations. Models delivers roads where otherwise everyone would be working themselves through the swaps to arrive at new directions. Models are the attached steering wheel on situations. What are model exactly? Models can the best described by examples: Propose: You're mayor of a city and you want to give your city own energy generation instead of 'imported' energy dependency, as you think that is better for the future of your inhabitants and companies. The City Council agrees with you and now you must start. You know only the heading, you don't know the roads, nor the tools, nor the 'weather conditions'. The only thing you know is that you want to get there as soon as possible with the less costs and by the highest quality. You can't depend on your staff. If they we're brilliant they should have worked in companies. City clerks are not well-known for their creativity, nor invention capacities, nor their appetite for change, nor their appetite for doing things. They are (and that's good) regulators and controllers. Leave them that way: you need them that way. What you need is models. Models for everything that must be changed. Models that give you a comprehensive plan for everything you need. Models that you can give to your city clerks. Models they can 'localize' (adjust to the local situation) and implement. For example: the public street lighting bill is getting to high: just take the public street lighting model and you have a general plan that you could change to local needs/demand/wishes. Are models communistic? No. Models are capitalistic. They just help to realize things faster/easier/smarter/cheaper/better. They deliver severe cost/time reductions. How? By the use of smart brains and proven results/failures all around the world. Open models are a blessing for everyone that wants to change anything and by this has to go into new/unknown territories. Models give the whole picture comprehensively, give per facet the variables and user experiences, covers everything (from initiation, via design, via finance, via realization till maintenance). Models make change easy. Models channels energy/time/resources to maximal efforts and fastest reach of goals. Models needs to be Open. Energy is Models is a very valid statement.

ENERGY is OPEN

If we want to change our energy model in a short time, we need to facilitate this by open models, everybody can both improve and use. The open source movement in IT has showed that this model delivers the best innovation, at the highest speed, on the right track. To facilitate this there should be initiated an Open Foundation. This is one of the main targets of Planck Foundation. Open models put the knowledge, the intellect, the action and the economics of each person, business and government in the centre of change and offers facilities to support these. Channelling the own power of each and every person, business and government gives more speed and effect by the same effort. Open Foundation: Open Foundation (www.openfoun.org) facilitates in data structures the changes needed for global prosperity the 21st century. New realities in high prices for energy, water, resources and food, plus in huge geographical changes in purchasing power will have significant prosperity effects. Economies that are mainly driven by cheap energy will 'slow down' severely by high energy prices. Open Science: Open Science is about facilitating scientists by wiki collaboration in very easy registration of new developments for open use. These publications will make it harder for registrants of closed science to conquer earlier OS driven research output. The 21st century challenges needs a lot of new science. Closed science delivers only fractional the progress OS can deliver. Open Technology: Open Technology is about an applied basic science collaboration wiki, combined with actual experience into new advanced open product technology/models. OT delivers inventors that are dedicated to open technology a similar business environment as open source has given to the software industry. OT is about ready to use open product design. Open Education: Open Education is about facilitating the creation process of education programs that can be used both online and offline. Users of the education material can comment on it, surgest changes or correct educational errors. OE also delivers test structures and certificate issueing structures. Education, certification and testing actual knowledge will become easy. Open Content: Open Content delivers a data structure content producers (scientists, technies, writers) to publish their work out of the regular copy right barriers. This in done in a structure that allows user comments. By this the producer gets his work distributed and gets feed back. Open Content is a modern facilitation of the peer-review concept. Open Finance: Open Finance is about using Quantitative Easing fully for energy transition investments and stopping the use of QE for governmental and corporate debts. Using QE for correcting the past, crushes the monetary future. Using QE dedicated for energy investments enables the economic future. Without energy transition, prosperity will fade away in the 21st century. Open Government: Open Government is about democracy 2.0. OG is wiki collaboration based and about transparency (something the 20th century has not given). Big government equals less transparency. Government should not be far away from the people/companies they represent. The farther government is away of people and companies, the less it is effective and the more it gets polluted. Open Social: Open Social is about an online software protocol (API) that's supported by Google, Drupal, Linkedin, Yahoo and many others. The personal web page will become the user desktop and collaboration will become the leading IT model: OS will become the winning standard in modular online IT. By its modular design OS will push in rapid speed all big both open and closed source IT projects aside. Open Local: Open Local is about realizing sustainable prosperity in local communities. OL is wiki collaboration based and describes local focused plans for sustainable prosperity for cities, towns and villages. Everywhere to realize solutions for local sustainable prosperity. From high tech (datacenters) to low tech (windmills). OL is about local less dependent more sustainable economies. Open Business: Open Business is about creating instant to use business models in a collaboration wiki. They are a turn-key combination of science, technology, organization and markets. Facilitating people who want to operate a business in their home town, but are not able to research all for this needed facets by themselves. OB is about empowering people. OB is about stimulating local economies. Open Action: Open Action is about cooperation in adjusting the new realities of the 21st century. Based on Open Social API tech. OA is about facilitating people and companies in there energy transition, which is needed to maintaining prosperity in the 21st century. OA is also about demand stimulation and concentration (making investments possible against lower prices). Publications: Open Foundation its reports have been downloaded, forwarded, distributed and read all together more than 3.000.000 times worldwide in the last years. Click here to download them and learn about the impact of expensive energy, resources and capital on your prosperity level and how conserve your national prosperity in the new reality of the 21st century. Testimonials: Open Foundation and its publications and projects have attracted a lot of support worldwide. Click here to read what officials in government, universities, institutions, corporations and organizations have written about the publications and projects of Open Foundation. Advisory Committee: Open Foundation is currently installing an Advisory Committee. Several bright people with substantial intellectual baggage and economic experience will be asked to contribute in advising the Management Board by its realization of Open Foundation and the to be started OS, OT, OE, OC, OF, OG, OS, OL, OB and OA subsidiaries. Controlling Committee: Open Foundation is currently installing a Controlling Committee. Several bright people with substantial intellectual baggage and economic experience will be asked to contribute in controlling the Management Board by its realization of Open Foundation and the to be started OS, OT, OE, OC, OF, OG, OS, OL, OB and OA subsidiaries. National Governments: Open Foundation's analyses and models are free to use for everybody, also for National Governments. In reality besides

analyses and models, NGs need customizing, initiative and realization. For bridging this huge gap between theory and practice, they can ask Open Foundation to provide initiation/realization or management/control responsibility for energy finance models. Central Banks: Open Foundation's analyses and models are free to use for everybody, also for Central Banks. In reality besides analyses and models, CBs need customizing, initiative and realization. For bridging this huge gap between theory and practice, Central Banks can ask Open Foundation to provide initiation/realization or management/control responsibility for energy finance models. Energy is Open is a very valid statement.

ENERGY is ACTION

Enough talk. Even more papers. No change. That's the current status on energy transition. Everybody with an IQ of 100 and above sees the need for change and the consequences of no change. But talking is easy. Writing/reading also. Action is the hard one. Why? Action needs models to channelize the efforts to maximum efforts. There aren't not too much explorers that just go and find new roads. Action is risky. Action needs courage and that's a scarce commodity. Certainly in politics. Therefore we need models: they bring in knowledge, experience, data, intelligence, creativity. These models only bring these items if they are open. Open Foundation (www.openfoun.org) wants to facilitate this models. We need technology (available), we need finance (see the Energy Finance paper for all possible models/facets/tools), we need demand (demand is a result of supply, finance and communication) therefore maybe it's better to say: we need technology, finance and social media type of structures. The impact of social media in realizing energy transition will be higher than everyone is expecting: Fix technology, fix finance and create social media 'containers' (a technological model within the Open Social Protocol) and social media will take care of realization by people/companies/governments. We need Open Foundation to realize this. Open Foundation needs you to realize itself. If we can realize these structures, we will empower people/companies to do the change. They will become the motor. The hard work for change than is done. Getting change is about being smart. Using the power/wishes of people/companies and let them change their own future. Just facilitates them. If we can realize this. Action will be everywhere. Realising change is about making technology available, making finance available and then let people/companies do their thing. This is the only method that really will give paradigmatic change. We need paradigmatic change. Energy is Action is a very valid statement.

CONCLUDING STATEMENTS

The old fuel based energy model is based on fuels that are finite and face an increasing price of fuel every year. An new energy model is based on renewable energy and needs only capital.

The Western World has had it time in the sun. Their wealth levels are too expensive for good competition in an open global market, they have relatively more old not productive demographics and on top of this (or by this?) they can't absorb strong price rises of energy and resources by more efficiency. The best the Western World can do in the 21st century is maintain there current levels of prosperity. This Sustainable Prosperity (often called Economic Adulthood) they only will enjoy if they a) change their energy system, b) prevent a collapse of both their financial sector, c) prevent a collapse of the governmental income and d) prevent a collapse of their currency values. If they can't do this four they will not get Sustainable Prosperity and go into Economic Decline. Bla bla bla on western superiority is just bla bla bla, it's just a self overrating wannabe misconception with neo-colonial roots of the Western World. China and India deliver more Ph.Ds each year than the USA and Europe have all together. The Western World just has become too expensive, too less productive, too credit burdened. Low production and high credit often goes together. Credit than is used to compensate the low production (as in: for consumption and bubbles) instead for production facilities.

Our current fractional reserves based banking model functions only in growing economies. In economies with zero growth and in declining economies it will not survive and lead to defaulting banks and collapse of the financial sector. The reason why fractional reserves based banking not works by less/no growth and by decline is that the money for the interest payment on loans not is created by the economic output. By less/zero/negative growth with mathematical certainty defaults will appear. In no growth economics only 1:1 banking is possible, and an overall fractional reserves based banking model impossible.

We have to prevent a collapse of the energy system, of the economic system, of the financial system, of the governmental finance/structures and of currency values.

The 'Energy as ROI' model has the capability to fix bank balance sheet ratios, pension fund coverage ratios and currency values. Plus it gives the financial world income during their transition to 1 to 1 leverage ratios as they faced the fractional reserves based banking unfriendly economic phase on zero growth or even decline.

The 'Energy as Fee' model has the capability to fix bank bank balance sheet ratios. Plus it gives the financial world income during their transition to 1 to 1 leverage ratios as they faced the fractional reserves based banking unfriendly economic phase on zero growth or even decline.

The 'Energy as Fund' model has the capability to use the international capital market for huge macro investments and the same time will deliver national guarantee funds that allows banks to issue energy harvesting facilities finance on the local/nation level to persons/household/companies/municipals.

It has been said that there are three types of people:

Those who make things happen.

Those who watch things happen.

Those who wonder what happened.

2010-2015 ENERGY WARNING

ENERGY COLLAPSE > ECONOMIC COLLAPSE > GOVERMENTAL COLLAPSE > CURRENCY COLLAPSE

CURRENCY COLLAPSE WIPES OUT SAVINGS/PENSIONS AND LEADS TO HUGE SOCIAL UNREST

HUGE SOCIAL UNREST LEADS TO TOO STRONG LEADERSHIP AND POSSIBLE RISE OF DICTATORS

Planck Foundation

Gijs Graafland

May 2010

Amsterdam Europe

There is one everything covering only 16 minutes short video everyone should see:
http://www.chrismartenson.com/crashcourse/chapter-18-environmental-data
Contrary to the title, it's not about the environment, it's mainly about the prices of resources.

The main target of Planck Foundation is developing and realizing models that delivers normal economics driven Sustainable Prosperity for the full approximately 9.0 billion people that will live on planet earth.

http://www.planck.org/downloads/Global-Future-Analysis-Version-2009.pdf

http://www.planck.org/downloads/Global-Resources-Analysis-Version-2009.pdf