

The Three Crises: EEE (Energy, Economy and Ecology)

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INTRODUCTION

Economic and policy aspects

Energy is one of the main emergencies of the European Community even if Europe itself continues to appear being in middle of an economic, ecology and political crisis that produces *apparently* a lack of reciprocal helps, friendship, equity and fair play among Member States. New approach to European Member State sovereignty has begun to be a problem for some of them such as France, Italy and generally south European Countries. The Europe of the bureaucracy is not the Europe of the people. Two main offices must be reduced to just one: Brussels, otherwise European people waste too much money and too much bureaucracy is used. In no way, for no reasons European people have to accept German Leadership, even Angela Merkel leadership. In the meantime, the English position toward Europe appears a little bit funny: they do not belong to Euro European Community, but, it seems, they want to influence and condition its behaviour. English never change!! One "Good Point" for Europe should be, **as a minimum**, to delete the English language from the European approved ones, at least until UK would execute the forecast referendum for remaining or not in Europe.

The European money unit, Euro, appears to be a non-democratic construction too. The transfer of the balances (fiscal compact) on permanent basis to a European Central Unit would be very difficult for each single European Member State i.e. to each black box unit of antidemocratic intern State agreement. Reciprocal influences should be avoided peculiarly during political election time. During these periods, Europe has been mainly dominated by economic "spread emergency" and financial speculations led by international financial power and a little bit by energy (such as gas, oil, coal emergency, nuclear energy emergency and so on).

People speak of "Rating Golpe" in many Member states such as Italy, even if recently some decisions coming from the BCE top management appear to reduce the "spread emergency" mainly due to EURO vs. Dollar reduced rating comparison. However, people need a sort of parenthesis United States of Europe and the past financial «rating golpe» do not help in continuing to build Europe and its inherent equity. European people cannot accept the "*clerks and business as usual*" approach priority placed by FMI and/or BCE to each single Member State limiting the proper sovereignty.

Further, European people realize that the World is in the middle of a big economy, energy and climate crisis that is managed, basically, by the international financial power. System approach imposes the application of all the aspects of the system by starting with safety and pollution aspects standard organized and managed by economic limitations. Actually, Fukushima, Libya, Arab Spring, Macondo, Elgin, Iran, Philippine floods, earthquakes have scared policymakers, economists and pundits upsetting them about the market pattern concerning oil peak, import dependence, security of supply and so on. New migration problems across European borders (first of all, Italian borders) and relative terrorisms aspects are upsetting people.

The fear of shortage of energy is a sword of Damocles on top of the European people heads. The global energy system is still working only and only due to the standard business laws and market. The logic based upon elementary arithmetic bargaining: shortage produces increase of price, demand and supplies adjust automatically with trade, price negotiations, fuel substitutions and innovations and so on: *business as usual!*

For underdeveloped people all over the World, economy improvement does not resolve at all the ecology and energy crisis. The ecology crises superimpose to the energy and economic ones. The sacrifices of the rhetoric of apocalypse "climate change", simply measured in "2°C" increase of temperature, appear a very limited approach even with the health implications predicted by some European (German, Italians and so on) medical research results.

Natural factors are more than 30, but the IPCC approach reduce the overall mixing factors climate effect to the increase of global Word temperature equal to 2°C maximum. No environmental artificial factor has been considered in the analysis.

No artefact system is designed to survive only and only to the "2°C" climate variation. Human artefacts have to survive to the combined effects of almost 30 natural factors that could be interfaced each other in thousands of ways. IPCC considers temperature T as a unique indicator of the climate change, but this is not really acceptable. There is a big difference between Climate Change involving 30 factors and weather (tempo, tiempo etc.) change implying almost three factors (temperature T, Humidity H, Pressure P).

However, the average worldwide temperature trend appears to be considered as an essential indicator by the major part of the Ecologic Scientific Community.

The next figure diagram given in Fig. N° 0.1 has been processed by NASA representing the average temperature trend from 1950 to 2013. Many subsequent forecasts and

prediction have been deduced by doom catastrophists enlarging the prediction to the next

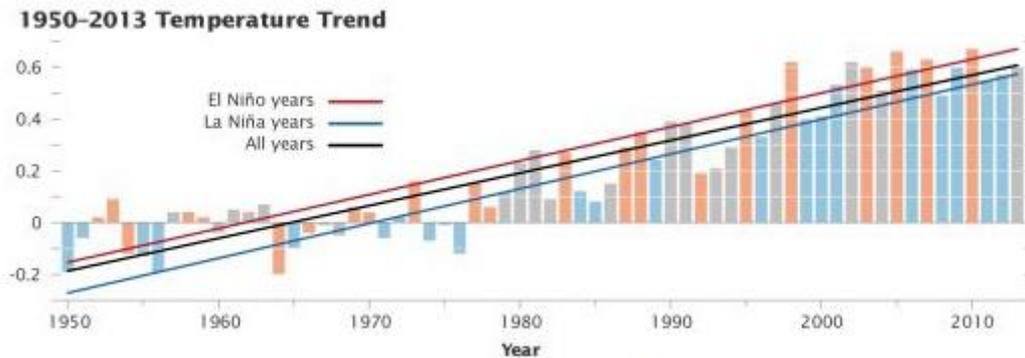


Fig. N° 0.1 Average Temperature Trend by NASA

2060 years with consequent increase of temperature of almost "6°C" producing a lot of catastrophes for the mankind. However, as above mentioned, other lines of thinking in ecology, have predicted a new "little cold age" implied corrections to the Earth movements and radiation due to Sun parameters changes. This solar system research has been executed by English and Russian group of researchers. The main results – Helen Popova (Ref. N° 54) – are a sound reduction of solar radiation reaching the Earth due to a change in number of sunspots, a change in sun magnetic field, a change in number a change in the Earth angle of declination and others This implies a sound reduction in the average Earth temperature that will oompensate the relative temperature increase due to pollution (CO₂, CO, PM10, PM25, Benzene and so on).

Mixed Aspects

IPCC approach reproves that all economy, energy and climate change aspects (Fig. N° 1.1 where first number is this relative formula number and second one is the chapter) nowadays are dominated by big cyber-attacks producing deception, counter measurements, surveillance, jamming and disturbing information dissemination. People and industries including engineering, medical and science works are subject to continuous cyber-attacks that perturb all the business and other works. We are in the middle of a real energy cyber-war; this implies the need of cyber security against cyber disturb but also direct cyber weapons (various levels of detection, denial, deception, disruption, degradation, protection, and destruction).

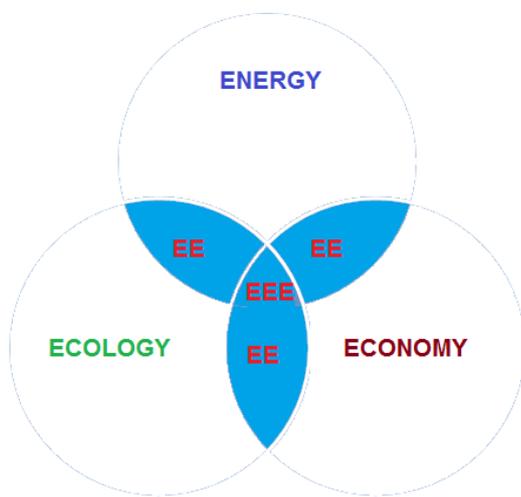


Fig. N° 1.1 ENERGY, ECOLOGY and ECONOMY
3E INTERFACE

The main purpose is to try to present scientific solution by taking into account these new and modern aspects of the concurrency plus, considering the brand new interferences of the other power such as the religion one. Recently the new Catholic Encyclical: “Laudato si” has been issued by Pope Francesco Bergoglio and devoted to the topic of Climate Change of our “Sister

Earth: the House of all the people in the World” (Ref. N° 45).

At the moment, Mother Earth is sick, abused and poisoned appearing to be transformed even more in a big and giant waste deposit. The sacred ecologic directive is finalized to rebuild not only the planet climate balance but also the social ones disturbed by the human avidity, by the market cynics and corrupted and short vision politics. The hope of conserving the planet climate avoiding the collapse where and when the equilibrium is defeating is the first lever to be used to influence an eventual “worldwide government”. This should be finalized to reach good politics and fight and reduce the predatory and cut-throat finance. According to Pope Francesco Encyclical wording: *the technology is strictly linked to finance!* However, it should be clearly stated that, by definition, religion topics are out of this book but some very short references will be reported at least for sake of clarity, for sake of the rights of information disseminations but also for sake of possible cyber-interferences and deceptions.

A European Economy and Geopolitical Digression

Europe needs a clear pattern to the political unification. Member States economies do not converge and do not focus each other to the same scope. Only finance and euro-bureaucratic people seem getting power. Apparently, European internal diseconomies are increasing. Unchanged young people unemployment is one of the main indexes; the second is no economic recovery. At the moment, even if the hypothesis of Greece output from Euro is almost overcome, the UK output from Europe is under judgment in term of a real referendum. In the next future these two events will be implemented with simple referendum and other bureaucratic means. Those are some the most important aspects of the limitations and sickness of the structural system of the monetary union defined in Maastricht. The need for efficient reforms and governance instruments and tools appear has now arrived to the end of the sustainability and has got the main priority.

From other paramount and in the International exchequer Europe is oriented to be more and more alone since the USA are giving priority and interests to the Pacific part of the strategic geopolitical zone. It appears that Europe lacks the power to face the observed mess around Europe itself: at east with the Ukrainian and Crimea events related to the Russian power, in south-east or middle east with a lot of hotbed of wars, at very south with the migration tensions, with the loss of the democratic hopes of the Arab springs and, again, with other war hotbed. Security and safety problems involve all Europe that has to become more active in these matters assuming - somebody says - a strong producing position. This will help in the exploitation and a better integration of the European common defense system too.

In the Global World, the people that count are the Continental ones: China, USA, RUSSIA, INDIA, and, to some extent, Brazil. Only and only a very strong politic European unification could place Europe in the position to belong to this very limited set of Continental Countries. The UK request of European integration reduction is fully out of time. The 28 Member States constituting the Euro zone have to render their integration much more active and deep either in terms of Euro money and Bank asset either in terms of balance, stability and political proposals. European people have to get in a quick and efficient European Zone a part form UK but leaving the open gate to their rethinking. Specific tools (Lisbon Treaty, safety and security tools, stable negotiations, economy governance tools, migration flow control, and so on) are studied and implemented daily all over the 28 State Members. Energy, Climate Change and appropriate European resources governance are fundamental aspects of the European policy. New modern asset of the Banks and of the Monetary Founds, Stability Mechanisms and soon have to be reformed in a better implementation for all the 28 Member States giving up an European Treasure managed by the top political responsible people but not by the same European Treasure Top Management. No European Country accepts the leadership of any other one by starting with the German one and continuing with the French one. In this fame, UK is right and fair in trying to go out of Europe.

In other words, new directions, new approaches, new patterns have to be conceived to implement Europe.

THE BEST ENERGY: the Italian approach

Italian energy scenario weights no more than 1% of the worldwide one. As part of 28 Member States Europe the weight should reasonably increase in terms of the above

mentioned extent of a unified and new Europe. In any case, from statistical view point the 1% Italian energy weight is really very poor for influencing the World energy and climate change approach.

From a general paramount, the 2015 year comes up with big oil price variation peculiarly decreasing: new oil games are arriving, new players are fighting: *business as usual again*. The Italian energy scenario is changed with apparently increase of alternative energy such as solar, wind, geothermic and so on. At the present time this is also supported by the apparent COP21 results out of Paris.

Since nuclear has been cancelled the overall mix is going to change only and only in terms of improvements of those alternative, renewable energies. There is a funny story on it. The most important Italian ecology movements include also energy produced by water plant systems in the alternative and renewable ones. This is funny, no true and risible statement since energy production by antique water plants is effectively the oldest means of energy production. In other words those water plants cannot be included in the alternative and/or renewable energy sources. The antique men have produced energy by the four primary elements: fire, earth, water and air. This is an old story; no point in continuing.

The so called dummy catastrophist ecology parties are stressing, in Italy, the production of all the kind of new tools such as smart grid, smart meters, solar photovoltaic panels and so on. According to one of the more representative political men all those energies should than reach the 18% if the Italian national needs in this year. No question, but he (or they) cannot add to this percentage the 20% water energy production with old types of water plants. This topic will be deeply considered later. However, it should note that research and applications in these low level intensive alternative local energy sources is very followed in Italy. SMI and other similar organizations are trying to account specific small patents concerning alternative energy sources, tools and instruments (smart grid concepts, smart meters, and so on). In other words, it appears that a lot of Italian brains (in SMI and bigger ones) are devoted to this kind of small energy plants new conception. These appreciable kinds of works lead to the observation that all those researches seem to be part of a proper its own garden game. Italians are going their own local, limited way. They remain in their own garden!

Let call those people *the Italian ecologist gardeners*.

However, in higher level management approach, as above mentioned, the main statement of the high level European and Italian energy representatives, during the last years, has been: *the best energy is the chipper one*.

Due to two past energy referendums against nuclear, the Italian approach is one of the most important energy topics in Europe independently of the German ideas and criteria. Anyway, it must be cleared that Italy energy needs are only 1% of the overall worldwide needs, so it cannot be considered a good, efficient index of what is going to happen in the overall World. The Italian scenario represents a scenario with a low level confidence.

A typical simple example

By visiting with Google in Internet the site of the Italian Academia dei Lincei, anybody can read:

"The Academy of the Lincei, founded in 1603 by Federico Cesi, is the oldest scientific academy in the world; counted among its first members Galileo Galilei. Maximum Italian cultural institution, or local authority, ranked among the bodies of the first level "Bodies of great importance", since July 1992, scientific and cultural advisor of the President of the Republic, who recently, *motu proprio*, has granted the patronage permanent. Federico Cesi (1586-1630) was a Roman patrician Umbrian-founded (along with John Heckius (Italianate in "Ecchio"), the Marche and Umbria Francesco Stelluti Anastasio de Filiis) the Accademia dei Lincei to which they gave the name for the exceptional sharpness of eye attributed to lynx, a feline's still not extinct species, taken as a symbol of the company of learned scholars".

As a matter of facts, over the centuries, decades, and in recent years, the Academy of the Lincei were held the largest Academy, the largest and most important Academy that have highlighted the solutions of problems with years or decades in advance: results and confirmation of the long view of its "lynxes" (Lincei). Unfortunately, recently some "lynx" declared or discharged and proved as Galilean instead has been shown to behave as a "mole caeca": an animal with limited view and short offset by smell and hearing very developed but still extreme opposite of the lynx.

On January 22, 2015 at the headquarters of the Academy of Lincei, Rome it has been held a Conference titled: "Energy for today and tomorrow". Two main interventions have been given: the one by Prof. Carlo Rubbia: "New technologies for the future of energy" (pdf, 35.6 MB) and the one by Yves Bréchet on "Energetic problems: from the energy mix to the energy material problems".

The Rubbia presentation has been very smart, updated and open minded at the beginning when the general energy approach and the relative IPCC ecologic and climate change approach has been given and wonderfully described as a real big master. In the last part

of the presentation Carlo Rubbia, Nobel Prize laureate, described his present research plan on the decarbonization by means of clatrates and/or methane hydrates, $\text{CH}_4 \cdot 6\text{H}_2\text{O}$ and relative methods. Consequently his main proposal is some methods for decarbonization ($\text{CH}_4 = 2\text{H}_2 + \text{C}$) with submarine clatrates as part of alternative energies (solar, wind, geothermic, biomass and so on) and to decarbonised fossil energies. This clatrates processes should be able to produce methane for 1000 or 2000 years as minimum (If this will be true, Sen. Rubbia will be considered a “linx”).

But nuclear energy is outside this scenario and perspectives (this would not define rubbia as a linx).

During the post presentation discussion, on demand Sen. Carlo Rubbia has answered to this request asserting that he is against nuclear energy due to the original sin of bomb proliferating capability. To avoid this opportunity, Sen. Rubbia proposes to use thorium fuel instead of uranium just because – he says – nuclear reactor technology is stopped at the '60 years of the last century.

It should also been pointed out that this last Rubbia statement is not right at all, because of the continuous research that the *worldwide nuclear system* (AMS, ENS, Russian Organizations and so on) is running in the field of nuclear reactor science and technology. Just consider the researches going on from the advanced third generation (inherent safety NPP) to the IV generation Nuclear Power Plant (NPP). Further, it could be possible reduce nuclear proliferation also by implementing IV generation Nuclear Power Plant (NPP). All this applies without considering nuclear fusion (hot and/or cold) where research is very deep and extremely enlarged all over the world (ITER Caradache etc)

Actually according to (my) standard vision, the proliferation problem mentioned by Rubbia is not anymore of first priority due to the following reasons:

1. Italy is a very peaceful Country without any intention to proceed toward proliferation.
2. In the last two or three decades, due to SALT Treaty (Non Proliferation Treaty: TNP) the amount of nuclear bombs all over the World has been reduced from almost 13.000 (apportioned between USA and RUSSIA, but somebody count much more...) to approximately an amount of 3000 bombs almost equally distributed between the above two Countries (Fig. N° 2.1). However, to this number of residual nuclear bombs it is necessary to add a lot of other arsenals belonging to other Countries (UK, France, Israel, Pakistan, Iran, India, China and so on). Further, it appears to exist a real market of nuclear bombs.

So, to some extent, Rubbia fear could be a little bit substantiated by an increased number of nuclear bombs in the World, even very little against the number of NB existent during the '70 years of the past century according to the quotation of Gen. Sen L. Ramponi at the past “Cyber Intelligence” Congress in Rome. Non mention, there has been a big reduction in number of nuclear bombs.

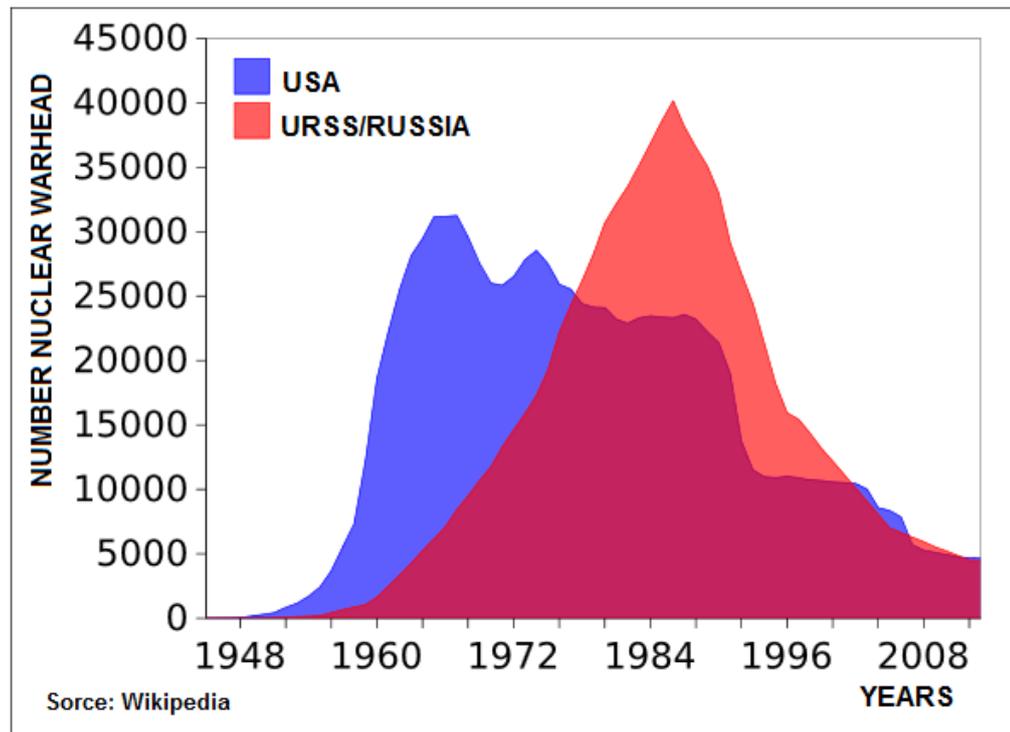


Fig. N° 2.1 Nuclear Warhead in time

The reduction has been obtained mainly by reprocessing enriched uranium and plutonium for civil electric energy production in special NPP peculiarly designed and implemented. The resulted fuel has been used in standard third generation civil NPP. This capability to convert nuclear bombs in civil nuclear fuel is used all over the world to power up civil nuclear power plants. [Please read References by OSDIFE plus other recent ones]. However, there are Countries in the World that do not obey to this simple law and that could persecute different objectives such as terrorisms in a large sense. In any case, Sen Rubbia opinion is very questionable and need major analysis and deep discussion

3. All over the World, most of the Countries are going towards nuclear power plant (NPP) implementation without having any intention to proceed to war applications but just to produce electricity. Just consider the very recent China order of 100 advanced third generations AP1000 NPP to Westinghouse.

4. Actually, energy direct arms (EDE) are nowadays most important and interesting than nuclear arms. According to Nuclear Handbooks, and generally speaking, Nuclear Weapons System Survivability is concerned with the ability of nuclear deterrent forces to survive against the entire threat spectrum that includes, but is not limited to, nuclear weapons effects. The vast range of potential threats include: conventional and electronic weaponry; nuclear, biological, and chemical contamination; advanced technology (direct energy) weapons such as high-power microwaves and radio frequency weapons; terrorism or sabotage and initial effects of a nuclear detonation. (Ref. Handbooks).
5. The Rubbia energy source selection criteria given at the end of the presentation is: *the best energy is the less expensive one*. To some extent, if applied to the simple end user (normal standard family) of electric power furnished by utilities, it could be a right and reasonable criteria. However, if the criteria is applied to the nuclear power energy company providing electric energy to Government Organizations, the relative prices of one KW (for example) has to be compared only to one provided by other (fossil, alternative and so on) direct power Producer. Consequently, nuclear power cannot be eliminated and discharged due to its inherent reasonable prize. This simple economic criteria selection is limited to clerk approach but not to physics and/or research approach. In an open mind environment, this simple clerk approach is substituted by the “cost-effectiveness” approach that compares performances satisfaction to the relative prizes. If two kinds of energy sources are compared at equal performance production level, then the less expensive one is selected. On the contrary, at the same prize, the best solution is the one that satisfy better the customer requirements with better technical performances. In this frame, the criteria suggested by Rubbia appear limited, over simplified, unacceptable, inapplicable and fully slaved to financial power. Applying the naturalness principle, local energy sources are preferred even if they are not less expensive. The final purpose is to reach a *balanced “mix” of energies privileging the natural local ones, i.e. from a fossil-fuel dominated energy mix to a more diverse energy mix in the future*.
6. Furthermore, after a very brilliant presentation on energy and climate change based upon the IPCC guideline, Sen. Carlo Rubbia focused his attention to the production of de-carbonization process as the priority one to maintain the energy «status quo» with oil and alternative energy primary sources. In other words, the chemical

processes (clathrates processes to fix CO₂ in terms of graphite, and so on) remain first chemistry energy production priority independently of the random, intermittent and unreliable renewable (solar, wind, geothermic and other sources) energy sources implementations with no mention of nuclear energy.

Later, Yves Brèchet gave his lecture on “Energetic problems: from the energy mix to material problems”. The global approach to energy mix presented by Brèchet suggested rational balance and harmonization of all the energy sources opportunities including the nuclear one. It was a rational and harmonized presentation on energy future. Oil pick, shale gas, natural gas and shale oil have been threatened for obtaining the energy solution optimization even if many different opinions are still asserted and followed. Main question regards is to proportion of oil to natural gas reserves that can be used to reduce climate change. The told scope is to limit, with a 50% probability, the global average temperature increase to «2°C» (Celsius) versus average temperature of the preindustrial levels in the next 40 years (Fig. N° 0.1). To reach this objective energy system should renounce to burn a big part of the present coal, oil and natural gas.

The doom Italian ecologists approach

Contemporarily, the need of electric intelligent and smart energy networks has been tackled together with relative materials needs starting from nuclear ones. This is in fully contrasted with the progressive increase of the Italian mentality to say “no” to any kind of climate change and energy change measurements. Energy production, water depuration and/or remediation, waste destruction with circularity processes and so on appear to be a real paradox in Italy while some part of the population exercise a sort of excessive use of resources and a relative high level of remorse waste. It should also be added the devastating work of so-called "prophets of doom" i.e. the so-called environmentalists, opinion makers, comedians, actors, singers, porn dive and so on. These people do not face scientifically and technologically the problems (peculiarly energy problem) but spread the subculture of waste regardless of any technological applications and often promoting more or less "spontaneous" committees, and accusations in order to slow down or block any public work of some importance - to some extent - helped by byzantine legislative procedures. Least but not last the lack of rigor, honesty and technical scientific preparation of a large part of the Italian political class over the complete lack of public information or, or, worse, the donation of misinformation, deception, misunderstanding and so on.

In the end of the day, the Italian People (poor, middle class, low level management class)

are all very worried with the big amount of cost of the unit of energy that is simply bigger than the 40% of the main European Countries (Germany, France and so on). Further In Italy, some sectors of the politics and economy have invented a new idiomatic expression for describing this economic phenomenon: the *happy decrease* (La decrescita felice). According to this proposed guideline, people should accept happily their economic decreasing to avoid further strong, unimaginable events implying very high limitations of the quality of life that could end with a lot of artificial catastrophes including wars, pestilences and caresties/famines.

These arguments are part of a lot of talks and discussions in political circles, in various environmental circles and energy conferences. Civil society, political parties, local governments and media have to face the importance and urgency of the debate and action on energy, ecology and economy issues.



Fig. N° 3.1 NPP distribution around the North Italian border

In the meantime, updated discussion on Italian nuclear seems to take into appropriate consideration the potential effects of the failure and peculiarly catastrophic failure of one of the NPP surrounding the Italian borders around the Alps (see next Fig. N° 3.1)

The Italian Minister of Economy (MISE) seems to have validated this need of possible

opportunity of catastrophic failures effects.

As above mentioned, conferences, seminars, debates, workshops, demonstrations and actions have animated the discussion on energy, ecology and economy crisis. Let remember Kyoto Summit, Earth Summit of 1992, Social Summit for Social and Environmental Justice in Rio +20, UN World Summit on Sustainability Rio +20, Assembly of Social Movements at the World Social Forum meeting held in Porto Alegre in January 2012, a lot of Italian Development Ministry speeches and many others. Italian Technical Ministries made a lot of declarations on the emergencies. In the end of the day, the Italian National Energy Strategy (SEN) has been issued by the Italian Technical Economic Ministry in 2012. No updating has been provided but, at least, there is now a basis of discussion to state a next Energy Plan.

In Italy, after the second Italian anti-nuclear referendum, the word "nuclear" has been substantially prohibited or simply cancelled and removed in the most part of the spirits of the Italian people. Out of the percentage of 54% of Italians that voted against the nuclear energy, a sensible percentage (more than the 10%) seems to have changed ideas for supporting, now, the building of a limited number of NPP.

Peculiarly in Italy, this phenomenon of funding and incentives to solar fields on land and at various wind farms densely distributed in some regions of Italy lasted for 5 famous "energy bills" before seeing the end after that the various governments have become the largest accounts speculation of solar fields and, above all, the great reduction of arable land throughout the peninsula.

Unfortunately, alternative energy, mainly solar, wind, geothermic and biomass, cannot assure the energy independence because of the volatility, unpredictability, intermittency and incapability to satisfy schedule production. Against the COP21 approach, this new energy is only supplementary and not alternative in the broad sense, it needs at least as much energy produced continuously from classical sources such as gas, coal and/or oil or nuclear source.

Everybody shows that, historically, in a percentage ranging from 60% to 80%, the Italian energy comes from fossil fuels. In addition, Italy purchases from France, Switzerland and Slovenia electrical energy produced by nuclear power sources for a percentage share of almost 18% of national demand.

These strange figures of improvised pseudo-ecologists that propose only solar and wind power, with a huge fear of nuclear energy and a sacrosanct respect of the classical energy from fossil fuels, continue to make alarmist campaigns to induce the people to fear and to

return to the Middle Ages. They preach "*happy decrease*", a kind of claptrap of the brain of people with roots in the dogmatic dictates of the various religions of the past "Middle Age". People talk a lot about the great contribution of the gas, if possible Russian, while only recently, the United States of America have entered strongly in the gas market with the specific production of "shale gas": gas produced from hydraulic fracturing of shale rocks. These rocks sedimentary rocks formed from depots of mud, clay, silt and organic matter. The process of hydraulic fracturing consists in pumping of water mixed with chemicals at high pressure into a well that has been drilled. The high pressured fluid creates fractures in the rocks from where gas gets out. Meanwhile the amount of events and ecological phenomena are multiplied daily by proponents "catastrophic environmentalism". The number of so-called ecological magazines constantly increases, with a type of alarmist truly exceptional articles that are intended only to draw the attention of the reader on the adverse effects of the various production processes taken into account. The purpose of these "journalists" is not only alarming, but also to convince the people that any minimum perturbation element is against Nature and is considered anti-ecological. But on closer scratch is deduced only barely concealed desire to sales pitch and misinformation in the classic approach to Mac Luhan. Basically it is an antinuclear strategic choice that is strongly polarized by shameful, unspeakable economic interests highly centralized in the hands of a few industrialists and classic international financiers that role the "**rating golpe**" *happened in Italy few years ago*.

GLOBAL THREATS AND EMERGENCIES

At the beginning of the 21th century, one cannot avoid being afraid and threatened by the emergencies that affect Europe and the overall World. In some European Member States people are reacting accepting new type of economics and, first of all, the one based upon reduction of growth by reducing request of welfare and of the number of working hours per day. All these topics are quickly changing in such a way to render impossible, inconvenient and not useful to follow them. The tentative of discussion should be limited to invariants in the space-time reference focusing to paramount scenario of any topic decrease and/or development, peculiarly in the energy field.

In the past decades, energy and climate change has been treated in many types of council, workshops and many congresses all over the World by starting with the ONU World Climate Change Congress (Kyoto, Lima, COP21 and so on).

New researches in the various field of energy are growing up quickly including tentative of

advanced fusion reactor plant including cold nuclear fusion plants (LENR plants).

Out of the three main emergencies [economy, energy and ecology (EEE Emergencies)], the last two emergencies (energy and ecology) are related each other because almost 80% of the energy consumed in the World is obtained burning fossil fuels that largely emit greenhouse gas. Energy problems should be always to the top of Government interests. Technical reports issued by big oil and gas companies describe highs and lows of global energy tides. Yet overall out coming long-term picture is a gradual change and underlying stability of energy market. Despite the spread economic crisis, somebody affirms the global energy growth has been a solid 2.5% and market will cope with it. Statistical changes and reviews indeed support business as usual with fascinating new developments and important long-term consequences independently of the RIO+20 results (up to the recent COP21 results too) along the European Countries Government agreements and policy trade-offs. Among these lines let remember the European Commission Environment Directorate-General LIFE program; “The Financial Instrument for the Environment”, a programme launched by the European Commission and coordinated by the Environment Directorate-General (LIFE Units - E.3. and E.4.), Nature 2000, India 2012, Lima-Peru 2014 with some calls during the COP21 in Paris.

However, the lack of spikes, of quick changes along oil company approach appears a little bit too optimistic. In recent years international cooperation in energy markets has been strengthened all over the world. A general and simple classification of the most part of the European Member States is simply transcript in terms of some new statements, even if fossil get always the major percentage and priority. Such transcriptions define: “non-nuclear and windy Denmark and non-nuclear and windy Norway, plus little-nuclear and windy Holland, against non-nuclear and little windy and solar-geothermic Italy; most intensive nuclear France and mostly intensive nuclear Sweden and so on. Basically, this wording is used directly by CIA “The World Factbook” and deduced from it.

(<https://www.cia.gov/library/publications/the-world-factbook/>;

<http://datahub.io/it/dataset/cia-world-factbook>).

After earthquake and tsunami Fukushima disaster, the Japanese government affirms that there were no casualties at Fukushima that can be attributed to nuclear failure. Similarly, U.S.A. government states that no casualties happened at all at Three-Mile Island. As for Chernobyl, Russian government confirms that processed casualty count is not something too low. In any case, the nuclear power problems remain on top of the interest not only in Japan but in all the Europe and the World. Many Countries as UK, Japan, Finland, Poland,

USA and others have decided a limited restart of Nuclear Power Plants building. After the American solar energy 40% reduction in production, President Obama (2014) has decided to start new nuclear power plant: 5 (five) AP1000 by Westinghouse. So, nuclear energy sector contributes to afford the above mentioned emergencies just because it produce electricity i.e. energy.

Germany have decided to reduce the number of Nuclear Power Plans (NPP) whilst China, as above mentioned, has ordered one hundred and India have ordered more than 30 NPPs. According to China top management many hundreds of NPP will be necessary to eliminate the carbon pollution in China. In the meantime, new small scale nuclear power plants (NSS NPP) are going to appear in the worldwide market.

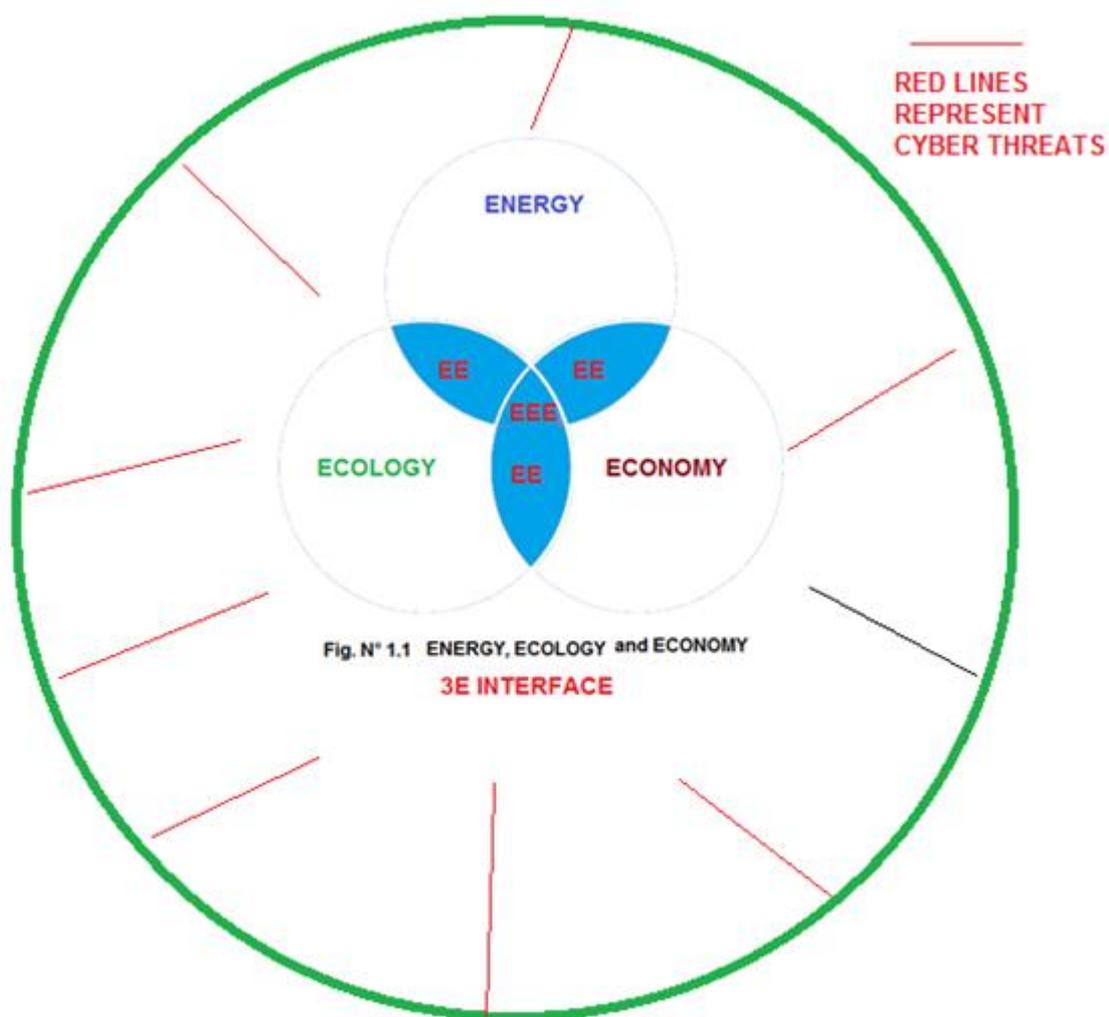


Fig. N ° 4.1 REPRESENTATION OF THE CYBER THREATS ONF THE EEE APPROACH

Actually a lot of alarms and treats are normally applied to condition and affect the EEE interface peculiarly applied to NPPs. Consequently, a part from all Europe, it is not clear what the Italian people really feel and if they are interested and impressed by the need for energy planning. Present standard and technical Governments have tried to resolve this

planning problem giving priority to renewable energies as per COP21 directives and guidelines.

ECOLOGY CRISIS

All those discussions were mainly focused to ecological crisis as priority against energy and economy crisis because of the current applicable growth models unable to implement proper sustainable development of justice in harmony with the physical limits of the planet. According to the statements and the truths expressed by the Group of the “Limit to the Growth”, issued during the '70 years of the past century, it is just poor and normal people to suffer for the crisis. Normal and standard people who suffer energy crisis have defined “heroes” by some of the Italian Trade Unions.



Photo N° 1.1

Emphasizing the centrality of the ecological crisis in the current energy, economy scenarios and spreading campaigns, sometimes theoretical people involved in the various above mentioned “Summits” loose the capability to show concrete proposals to address the solution of the crisis by using only the lens of the environmental and social justice. Development propositions seem to come! Energy crisis remains the base for ecology and economy crisis in the World. At the moment, a wrong energy policy and plan in Europe and in Italy could only lead to an enormous blow to the Country and/or Member States. The most coherent and real hope to overcome the economic crisis is just waiting for a pragmatic solution in the middle or long terms. In the meantime, cyber-attacks against energy, economy and ecologic infrastructures are daily continuing either punctual or persistent (Advanced Persistent Threats – APT) threats such as Trojan, Worms, Sniffers, Rootkits, Defacement, DoS, Stuxnet and so on.

A little digression appears necessary across Europe borders according to well informed energy policy observers.

In the meantime, geopolitical tensions and high and quickly changeable oil prices to public people are rising and continuing to help renewable energy find favour among investors and politicians. People place the problem of how much faith should they place in

renewables to make up the shortfall in fossil fuels?

COP21 results support this question.

SCIENTIFIC APPROACH TO ECOLOGY

The scientific approach to ecology is the most important answer. This approach has been updated in the new version, the fifth, by the International Report IPCC (Intergovernmental Panel on Climate Change) [the so-called Fifth Assessment Report (AR5)], developed by 800 scientists and researchers selected from the international scientific community, organized into three Working Groups (WG = Working Group).

In relation to energy topic, the scientific basis of ecology demonstrates quite simply that the ecological thinking, healthy and rational, opposes and collides with what the environmentalists doom to the bitter end. These pseudo-environmentalists appear people without practical common sense, respect for autonomy and the "etiquette" that relieves life and makes it interesting.

Good taste, freedom of thought and respect for the opinions of others do not allow you to forgive environmentalists doom to the bitter end that are highly distorting and reducing the economic and industrial life – all over Europe and World - with their use of counter measure, deception and counter subversive, essentially committing cybercrimes and, to some extent, cyber terrorism.

The strong push to alternative development, proposed by these strange ecologists, during the past decade has been based on unlimited funding and strong incentives for alternative energy (solar, wind etc.), the so-called “renewable”, which only work intermittently and are not programmable.

It was a big "bluff" in the usual wise guys that have been able to take good advantage in the face of the people who paid, with the offering inscribed on the monthly electricity bill, funding a few sharp operators tricking of the first moments.

At the moment, as a matter of example of the European Member State approach, in Italy some unmentionable information sources claim that the energy produced is half (50%) source alternative (i.e. solar and wind) and half coming from fossil fuels (and particularly "gasiform").

This economic approach has clouded the view of the European and peculiarly, the Italian people who became duped and, frightened and dazed, waived the ancient Italian tradition, from Fermi on, for the revival of nuclear energy. Nothing exceptional and everything for granted in a Country – Italy - now facing the industrial decay that has abandoned all forms

of battle skills in the field of production and metalworking. Few industries advanced remained standing, and many are now in the hands of industrialists from other European Countries and/or other Countries. Italy is giving to its former production capacity to address and take the path of "happy decline". The waiver of an Italian manufacturing industry will be a big blow to the Italian history and the Italian company, regardless of the type of industry dismantled, whether Montedison, or Fiat or Olivetti, or Ilva etc.

The increase in youth unemployment is rampant. In the history of Italy has never seen a level of unemployment so high. Meanwhile, Italy imports of low-level labour and exports "brains" prepared in our universities funded with our tax money.

On the other side, scientists and engineers request themselves if science could really solve World, European and Italian energy problems, and which sectors offers the best hope for World energy future? An energy integrated model is reasonable? What is the cyber intelligence contribution in this business?

ONE ENEA APPROACH

Recently, according to ENEA (source: oscar.amerighi@enea.it and other information www.milesecure2050.eu), EU consumes about one-fifth of the energy produced in the World, despite having a very small percentage of World energy reserves. In fact, the EU buys oil from OPEC countries and from Russia plus imports gas mainly from Russia, Norway and Algeria, for an annual energy bill of over 350 billion Euros.

As far as concerning the climate change, the 28 EU Member States have agreed a 40% cut in emissions of greenhouse gases, the increase of renewables to 27% of final energy consumption and energy efficiency targets to 27% by 2030. Consequently, the definition of a common European policy for energy purchasing security meets many obstacles, as the overall approach of this book tries to demonstrate.

Furthermore, according to the here developed 3E approach, the reduction of these problems to only "purchasing security" is a very limited and blind approach lacking of all the system approach that the "energy topic and structure" needs; a part from seasonal price variations.

This simply economic accounting clerk ENEA way places the Economic Crisis at the top level versus the other two crisis the energy and ecologic ones. In the same frame it must be placed the Carlo Rubbia statement: *the best energy is he less expensive one.*

Rational people cannot share this simply rough impolite approach.

However, new European approaches have been negotiated among the Member States.

Peculiarly, the "New European Agreements on Climate" dated 23-24 October 2014 has been issued for disseminating harmonized balance among the European energy and climate efforts. Today, the most European pressing energy issues are intermittent sources (solar and wind plus biomass and geothermal). Due to geographical position, Nature suggests to Italy to satisfy the alternative intermittent energy source production. In the meantime, the new European agreements request to Italy to cope with this intermittent energy issue, increasing its production at the maximum. Contemporarily, other European Countries that depend less than Italy on oil are exempt according to the guideline of the European agreements. However, they have to respect the naturalness principium according to which local natural energy sources are privileged against the other ones. However, this approach will further aggravate the Italian energy disadvantage compared to European Countries (Member States) like France and, to some extent, England that still now continue to steal a huge slices of the Italian work. Synthetically, the European Member States energy vision could be described –as above mentioned - in the following easy way. Two States – France (75% nuclear) and Sweden (50% nuclear with the lowest cost and price of electricity in the world - are still strongly nuclear oriented whilst, as above mentioned, others are no-nuclear windy Denmark; no-nuclear windy Holland; partially no-nuclear, but windy and oil-coal oriented Germany and Poland, and Ceca Republic. As above mentioned, Italy is quite different situation: the word "nuclear" has been cancelled, and "local green people" lying affirm that 38% of Italian energy comes from alternative sources. Actually, they include hydraulic energy that is the oldest energy of the history of mankind and cannot be considered an alternative energy. Further they do not consider the random and variability aspects of the solar and windy energy.

Paramount vision concerning UK gives a much more complex energy system balancing fossil, nuclear and alternative sources. At the moment, official statistics report the news that England has the highest employment rate of all its time starting from the very first year – 1971 – of detection processing. In the meanwhile, the Italian employment rate appears to be the exact opposite. Actually UK, that strictly is not a European Member State, has the lowest rate of intermittent sources in Europe, without having the need to increase it just for the above mentioned reasons. Generally, energy, ecology and economy severe crisis are looming all over the World. To illustrate those aspects or at least two of them let rephrase a little bit the wording of Dr. Kent Moors given in the following link:

<http://pro.moneymappress.com/ECLURN15/EECLR318/?email=pierangelo.sardi%40multiwire.net&wemail=sti&a=8&o=121642&s=127596&u=1592488&l=521745&r=MC&q=0&h=true>

WORLDWIDE POLITICAL and ECONOMIC POINT OF VIEWS

To cope with the actual energy political aspects based upon the 3 EEE crisis and peculiarly the economic one, exploded in all the World and not only in the Western Countries, a strong intercourse digression is considered necessary. Too many opportunities are available to write on this subject and report in the scientific book political approaches. The main point remains the priority of the economic aspects vs. the other two ones. Obviously, scientific method and people of science do not accept, by definition, the priority of economic - clerk priority - in particular when the subject is energy and pollution producing risky climate changes for humanity. However, there are many other points to be added to this analysis, at least from social and political viewpoint.

For the purpose of this paper, one guideline has been evaluated as very interesting: the Kent Moors "Considerations on Global Energy Dynamics" (Ref. 53). First result in next figure:

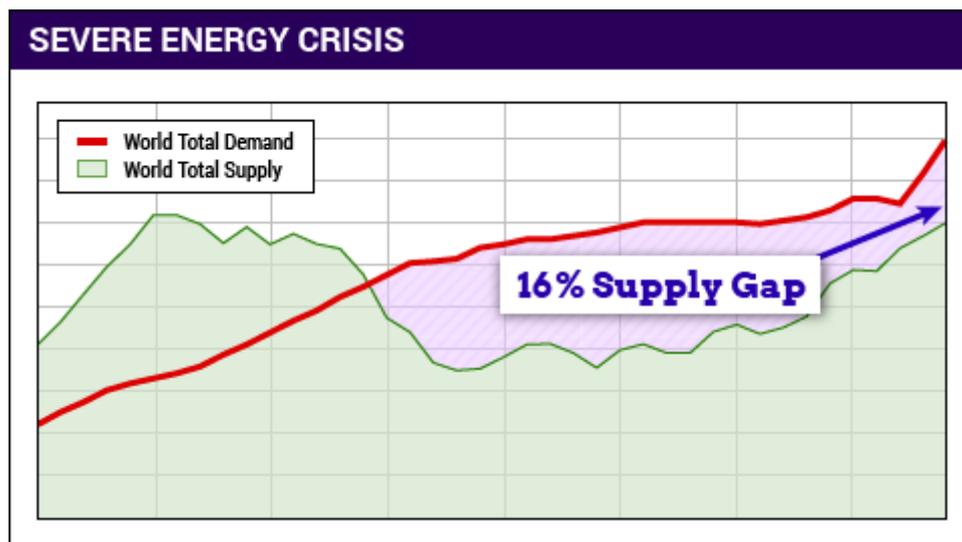


Fig. N° 5.1a Severe Energy Crisis (source Kent Moors)

Remarks on the topic

According to his statements, Dr. Kent Moors is a commentator on energy policy on CNN, BBC, ABC, Bloomberg TV, Fox Business Network, or other major media outlets and has been and is advisor to 27 world governments (the U.S., Russia, China, Iraq, Australia, and Kazakhstan and others) on global energy dynamics. In addition, He has advised every major agency of the Federal Government on energy matters... not to mention numerous U.S.A. states and governors; plus, just about every major energy company on the planet. In fact, he is a consultant to six of the world's top 10 oil producers, and He is currently

helping seven global oil companies restructure their businesses. Plus, just about every major energy company on the planet, he affirms to be a consultant to six of the world's top 10 oil producers, and he is currently helping seven global oil companies restructure their businesses. Bottom line: He knows the most important people in the industry – the world's biggest buyers and sellers of energy... and the policymakers who make the rules.

Actually Dr Moors recognizes that, right now, a severe energy crisis is looming...this has happened twice before in the history of energy. He says also that he has been tracking this situation for eight years waiting for the right moment to get in. And He can tell you without *a doubt: **the pendulum is starting to swing and the upside is going to be huge.***

While all these aspects are discussed all over the World, in USA, the American Keyston XL Pipeline construction is under evaluation for a quick decision. In brackets, it needs \$ 3,4 Trillion move could ignite \$1 stock...turning every \$ 1,000 invested into \$1,304,000 in 2015. Anyway all these energy approaches need:

- Energy plan
- Climate plan
- His budget plan and forting policy.

As above mentioned, he nuclear reactor fuel is uranium. Nuclear power meets all the request checklist that solar and wind's can't:

- Reduce costs
- Cuts carbon emissions
- Capable of powering entire countries.

The Washington Post reports: "*Climate Change is forcing environmentalist to support nuclear power*".

Market Moving Event N°1 states that, by June 30 2015, Japan had restart its Nuclear Reactors, Actually, Japan Government sources did say that the first two will go online by June at latest. This decision had and it will have a huge psychological impact on the energy markets: in fact, fear climate change is forcing dramatic global shift from fossil fuel to nuclear energy all over the world even against the COP21 directives in favor of alternative renewable energies.

Actually, IEA Organization said that for the world to meet its climate reduction goals, "**nuclear power need to double**". This pact requires adding 1,000 Giga Watts of zero carbon energy. In turn, than it requires a total of 1,000 new nuclear reactors (NPP).

That means the need of more than 150 nuclear reactors (NPP) than currently exist (LMOST 450) in the entire world. On January 25. 2015 President Obama pushed through

a “*nuclear breakthrough*” with India as part of the climate talks.

The present prediction defines the production development of 80 new nuclear reactors, supplying electricity to a subcontinent of 800 million people; 70 reactors are under construction,,,183 are being planned... and 343 are under proposal.

Recently a greater agreement has been signed by President Obama with the China president: more than 100 third generation advanced AP-1000 NPP.

The current number of the online reactors is going to reach a 136% boost. This implements a great number of reactors in construction since 1970s, when the first uranium super-cycle kicked off. Almost in the meantime, Russian President Vladimir Putin seized a monopoly of the World’s uranium supply. Actually, Russia owns 50% of the global uranium stockpile and controls 45% of the global supply.

Consequently, Kazakhstan is World’s N° 1 uranium producer, mining 40% of the current supply and Rosatom (the Russian energy company) is the bigger exporter of nuclear energy, building nuclear power plants in 13 countries.

However, that’s not the worst part because Russia is now the largest owner of America’s uranium deposits. The potential for a severe local and/or worldwide uranium supply disruption in 2015 or some years later seems inevitable. Generally speaking, do not exist any ideological problem with nuclear, but deal could be made unless the price is right vs. the other sources of energy. However, if World energy need would be satisfied with nuclear energy, it will be necessary have a number of NPP included from 10000 to 15000.

Comments to the Dr. Kent Moors considerations

Most part of the Dr. Kent Moors considerations are simply energy comments very useful for common people and standard politicians but appear banalities to scientific, technological people such as physicists, chemists, engineers, technicians and economists. However, a part from the use of friendly American slang just for politicians, many considerations on global energy topic and business have a deep meaning that, really, politicians should follow. His approaches try to substantiate and let appear to people and politicians the applicability of the famous statement (repeated and approved also by Nobel Prize Carlo Rubbia): **the best energy is the cheapest one**. In this way Dr. Kent Moors follows and runs the clerk mainstream even if he tries sometime to apply political, geopolitical and cost-effectiveness arguments but very rarely, ethical and social reasons.

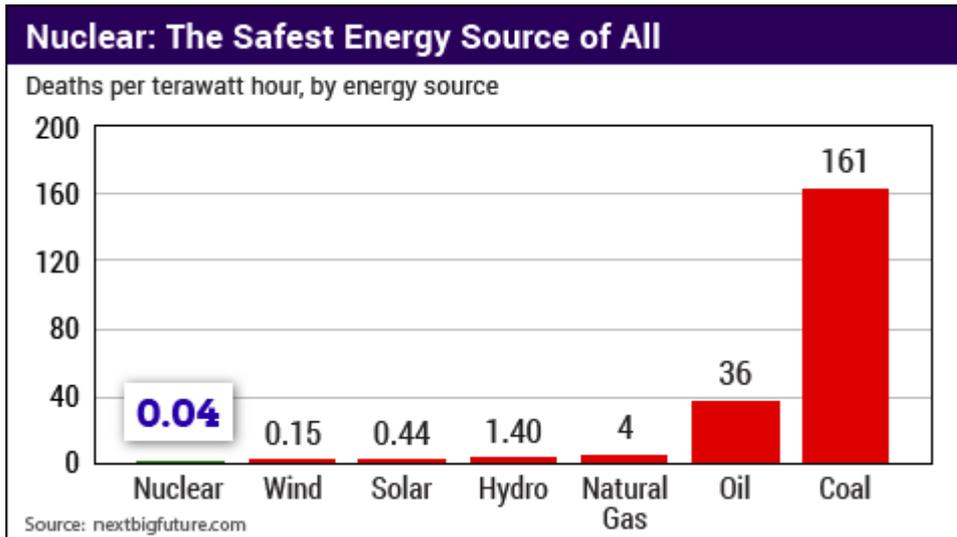


Fig. N° 6.1 (Source Kent Moors)

Not only is nuclear power safer than oil, natural gas, and coal...But it's also safer than wind, solar, and hydro! When it comes right down to it, nuclear is the ultimate power source. No wonder some countries, like France, rely on nuclear power for over 75% of their electricity. Imagine what would happen to them if nuclear power got knocked off the grid...France is the fifth biggest economy in the world... \$2.7 trillion!

Look at the Japan scenario, the need for Nuclear Power Plants (NPP) rise up due to the lack of any other local energy source alternative: a structural geographical reason due to lack of natural energy resources, then a consequent political one that, in the end, results in an economical reason; other reasons (moral, ethic, social, intellectual, artistic, safety, security, safeguards and so on) are neglected or just roughly mentioned.

Just devoting another comment to Dr. Kent Moors approach, it should be noted that he is a little bit too much USA oriented! In other words, it appears that he takes too much cares only and only of the American interests.

But, a part from this, the three EEE crises are more difficult to face than the only energy one. Ecology problems will rule worldwide the economic power and the energy financial approach to energy. In the end of the three EEE days, the standard antique three values have ruled all the worldwide facts until the modern "ecologic age":

1. Wars.
2. Pestilences.
3. Caresties and famines.

Those aspects are part of the social sustainability considered in other part of the book. A new terrific factor – the number 4 - has to be added:

4. The ecologic and/or environmental catastrophes.

However, due to the last ecologic approach to climate change effects procured by the environment catastrophes foreseen and predicted by the dummy ecologists leaders belonging to the most impotent Ecologic Organization such as WWF, Green Peace, Lega Ambiente and so on, it is necessary to add the abode forth category of Worldwide population balance: the ecologic and/or environmental catastrophes (Giuseppe Quartieri).

European/British digressions

British vs. European new energy policy is focused to the British referendum to joint Europe or not that could be declared by the English Conservative Party (the Winner one). Let see a meaningful bracket of the very English approach.

Until 2014 the modern British new energy policy has been presented by the UKIP party (a minority one). In only 17 short pages, a very simple new approach to energy has been issued by the UKIP, the party of Nick Farage (that has resigned on 2015), by issuing and editing this poster. Its topics have been joined by the Italian party M5S representatives who sit in Brussels. The poster demolishes the totem of environmentalist thought and tramples on the struggle of the cornerstones of the No-triv, No-no-tap-tube, and so on. The same topics used to be the endemic supporters of the Environment Movement.

As above mentioned, this policy has been accepted and shared by the Italian political party M5S (Movimento 5 Stelle) sitting also in Brussels. This policy is based upon the following topics:

1. Priority to the gas.
2. Nuclear essential.
3. Coal to be rediscovered.
4. Just subsidies to renewable.
5. Shale gas full steam ahead. The dangers of fracking are an urban legend. And again: climate change, everything to prove. Let's stop to consider CO2 a nightmare of every citizen conscious but rather a natural gas atmosphere beneficial for plants and life on the planet.
6. Demolishing the totem of environmentalist thought and tramples on the struggle of the cornerstones of the No-triv, No-no-tap-tube, and so on, the endemic supporters of the Movement.

Let us review a little bit these policy management aspects and topics.



Photo N° 2.1

Actually, nobody knows if anyone of the staff of M5S has read the document drafted by Roger Helmer, a seventy degree in mathematics at Cambridge with an elapsed between the Tories until 2002 when they dropped to adhere to UKIP. Welcomed with open arms in view of its membership from the first hour in the Better Off Out campaign to support Britain's to exit from the European Union, Helmer became responsible for energy and environment of the first political force in England. If people do not boast the science curriculum by Bjorn Lomborg, the enfant terrible of environmentalism subversive, Helmer will exceed, for provocation, the sceptical positions. So much so that the title of the poster is already a duel to conduct eco-responsible interjected now every Western citizen: "Let the lights".

The paper is an amalgam that does not shine for scientific rigor: actually, it contains certain statements that do not make you squirm just as few of the 23,121 voters in the online consultation among the members M5S: they chose to ally with Nigel Farage in Europe. Some examples highlighting their approach are the following:

- "For every green job created they destroy four".
- "We delete immediately any subsidies and feed-in tariffs for renewable energy."
- "We check quickly if there is a potential for shale gas in the United Kingdom and let not escape".
- "Nuclear waste is not a problem because in a couple of centuries we will have technologies unimaginable today."
- "The fracking that pollutes groundwater, which triggers earthquakes? It is found that the last of the mourners of environmental catastrophe."
- Just stopping with this insane promotion of wind turbines to the bitter end.

EU respond spades and requires the English people to turn off within the next year their coal plants. So, Stumble Farage affirms in the manifesto that he is convinced that with the sacrifices of the rhetoric of apocalypse "climate change", British families are forced to allocate at least 10% of the family budget to keep warm, light and run appliances. Energy poverty affects 6 million households compared with 4 million of 11 years ago estimated the document. The "socialization" of incentives (to draw many to give a few) to renewable

ballast bills of the users and the lack of energy independence exposes Britain to the fickle balance of geopolitical forces her to undergo fluctuations in the prices of oil and gas prices. The UKIP manifesto is a cold shower for the orthodoxy of thought-energy-environment of various parties (including M5S and so on). Let just observe that, in alliances with the European Community representatives, Italian M5S had discarded - not without grumbling of the base - the Greens because they posed "too many vetoes." Now there is also the risk that in Strasbourg, with its touches maybe support the strengthening of the European network of terminals for gas (to the delight of the Mayor of Livorno Philip Nogarin that soon will find, in his hands, the hot potato of Livorno regasification plant). Indeed, people could think that in the future, the Parma incinerator is no longer a disgrace but it becomes a medal for the mayor Science fiction?

Social vs. Growth Sustainability

In the modern knowledge and information society developed after the short period of the "nuclear society" quickly appeared and declined after Second World War, one main aspect is remained: the "risk society". This topic extents and expands all over the other aspects of the society permeating the three crisis EEE. The knowledge and information society has invented a general methodology to face the "risk": the so called "*social sustainability vs. the growth one*". With a very human old cunning approach, risk is faced limiting humanity activities, tasks and actions to "sustainable" levels. Sustainability comes in shaping development and growth. According to "Common Sense", when referred to a man and eventually to a weight that he has to support, "sustainability" has no scientific meaning because it changes man by man.

Further, «Common Sense» associates to «growth» and «development» similar but not equivalent different meanings. Before coming to discuss "sustainability" let define and distinguish the concept of development from the growth one. In 1972, the Club of Rome processed that famous report entitled "Limits to the Growth". According to this report "growth" means expansion of material goods (real, concrete goods: bread, shoes, wine, cars, building, pizza, dresses and so on) to improve standard of life. Instead "development" is the improvement of the quality of life. During old time, both development and growth concepts use to be measured with peculiar indexes. For example, old standard economic definitions of "development" use to include and be measured by the GDP (Gross Domestic Product, in Italian PIL) and/or BES (Aqueous and Sustainable Welfare). Subsequently another index called MES has been created at European level.

In the modern development definition, the concept of quality of life is the central and main part. Actually the value of quality of life implies the introduction of all immaterial values (ethic, safety, reliability, spirituality, and intellectuality, social relationships, eventually religions, love and so on). Quality is a complex system, and consequently, by definition, implies the applicability of system approach. In brackets, this also underlines the big difference between quality and life standard. So quality of life Q_l (Giuseppe Quartieri) depends upon the above mentioned concepts:

$$(1) \quad Q_l = f(D_s, G_{sd}, G_{wds})$$

Where: D_s = Social Development

G_{sd} = Growth with Social Development

G_{wds} = Growth without Social Development

The processing of this equation requires a lot of working, time and tests.

In the frame of these definitions, two models of society organization born almost naturally, the «development sustainability society» defined by the Brundtland report and the “*growth sustainability society*” defined by the Club of Rome. In Europe, the Maastricht Treaty finalizes the economic ratio to a balanced and correct trade-off between men and natural resources. According to the article N° 2 of the Treaty, by relating and comparing economic growth to *sustainable development* a new term has been created: “sustainable growth”. Just considered the above mentioned clarifying definitions, this new concept of “sustainable growth” appears mostly misleading on respect to the “development sustainability”.

This implies naturally to examine and reflect on the meaning, the naturalness and the level of scientificity of the concept of “sustainability”.

According to the economist Mathis Wackernagel, executive director of the Global Footprint Network at Oakland, the notion of “sustainable development” is not an ambiguous and vacuum concept but a well-defined scientific one even if a dimensional as it is the above mentioned “quality concept”. Wackernagel asserts that the idea of sustainability of the development can be measured with sufficient accuracy in the field of the economic, social and political actions. Actually, it cannot be measured at least in terms of a physics magnitude inside the international measuring system based upon the three main primary parameters: Mass, Length and Time and, later, to deduced physic parameters. In other words being inherently non-scientific, “sustainability” does not respect the rules of the fundamental properties of the physics metrology and generally of the Galilean science. In other words and a part from the Galilean scientific rigorous, sustainability can be

measured in the sense of an applicable “mathematic or algebra” defining rules and mathematics properties and performances to be satisfied. In this context, Wackernagel substitutes and enlarges the concept of “sustainability” with concept of “social sustainability”, fully different, parallel and distinct from “ecologic sustainability”.

The above mathematical artifice allowed Wackernagel to become able to compute and measure the social sustainability Country per Country.

However, to afford new demands placed by the ecology, energy and economy requests, recently another new index has been defined by Wackernagel, the Human Development Index (HDI), that is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices in these three dimensions. The results of the calculation are a number included between 0 and 1. So HDI is a dimensional magnitude that should express the people and Countries social requests. In other words, the human development should be measured by means of the HDI index created by Mathis Wackernagel, more 25 years ago. Also the economist Amartya Sen - Nobel Price for economy - had approved and used this index HDI together with his co-operators inside ONU Organization projects. Further, Wackernagel has applied the measures of sustainable development to various Nations during the period from 1973 to 2003, obtaining the big result that the HDI index is increased during the same period maintaining itself always less than the 0.80 figure. Consequently this figure 0, 80 has been chosen by ONU to represent the level of threshold between an average social development and a high one. In this way, Mathis Wackernagel has proposed this 0.80 value as the sustainability threshold. Basing his ideas on the implementation of this HDI concept, Mathis Wackernagel, again, created and introduced the new concept of *ecological imprinting*. This parameter defines substantially the global human pressure on the environment. Deduced upon Mathis Wackernagel and his co-operators measurements and analysis, it results that the *ecological imprinting* is increased in almost all the States of the entire World. The classic example is shown by the effects of the carbon dioxide CO₂ emission increases in the atmosphere and in the entire biosphere. This increase does not trend to diminishing but it becomes worst even more.

In the end of the three EEE crisis days, the standard antique three values will rule all the worldwide facts and events:

1. Wars.
2. Pestilences.

3. Caresties and famines.
4. Ecologic and Climate Catastrophes.

The mathematical models

Many mathematical models have been developed to describe this ecologic behaviours just starting with “The Club of Rome Growth Model” developed during the '70 years of the last century. At that times, the ecologist and climate researchers use to limit the analysis to the concept of “social growth” and not of the “social development” to investigate the sustainability limits. After this Club of Rome mathematical model, the widespread concern of the current trend in un-sustainability of the resource-use had increased biasing on the possibility of overshoot and collapse events happening. Actually, during the human history after the rise of a civilization usually collapse had happened frequently, followed by centuries of economic, energetic, ecological and intellectual population decline. Part of these naturalness social problems and events has been included in the Club of Rome Mathematical model, but many other have been not tackled at all. Actually, human population dynamics model has to include so many parameters (wealth, economy, energy, ecology, resources and so on) that also present and current high level mathematical models present limitations to explain rise and collapse of civilizations that full and complete explanation is still elusive.

Some of these many models to be mentioned are the following:

1. Predator-Prey model of human and Nature.
2. HANDY (the Human And Nature Dynamics) model.

The processing of this model has many alternative scenarios result. For example, possible resulting human society's scenarios are the equilibrium society (with no elites), the egalitarian society (soft landing to optimum equilibrium with cycles of prosperity, overshoot, collapse, and revival), equitable society (with workers and non-workers), and unequal society (with elites and commoners).

Actually, “unequal society” is the scenario that most closely reflects the reality of human world today. Authors did find it in the third group of experiments where it is introduced the economic stratification. Under such conditions, collapse is difficult to avoid showing that economic stratification is one of the elements recurrently found in past collapsed societies. Very important and interesting is the unequal society scenarios. In this case, the solution appears to be on a sustainable path for quite a long time, but even using an optimal depletion rate and starting with a very small number of Elites, collapse comes up due to

the fact that the Elites eventually consume too much, resulting in a famine among Commoners. Famines eventually cause the collapse of society causing also a loss of workers, rather than a collapse of Nature. Despite appearing initially to be the same as the sustainable optimal solution obtained in the absence of Elites, economic stratification changes the final result: Elites' consumption keeps growing until the society collapses!

The Mayan collapse – in which population never recovered even though Nature did recover – is an example of this type of collapse (Type-L collapse). According to the researchers (Ref. N° 117, and Essay Ref. N° 31 Chapter N°1) during the collapses in the Easter Island and the Fertile Crescent Nature was depleted (This is an examples of a Type-N collapse). Many other scenario have been developed with a larger depletion rate the so that the decline of Commoners occurs faster, while the Elites were still thriving, but eventually the Commoners collapse completely, followed by the Elites.

One of the fundamental idea on which these mathematical models are based, is reported in next Fig. N° 7.1 based upon classic static set theory, even if event theory can be overlapped and integrated.

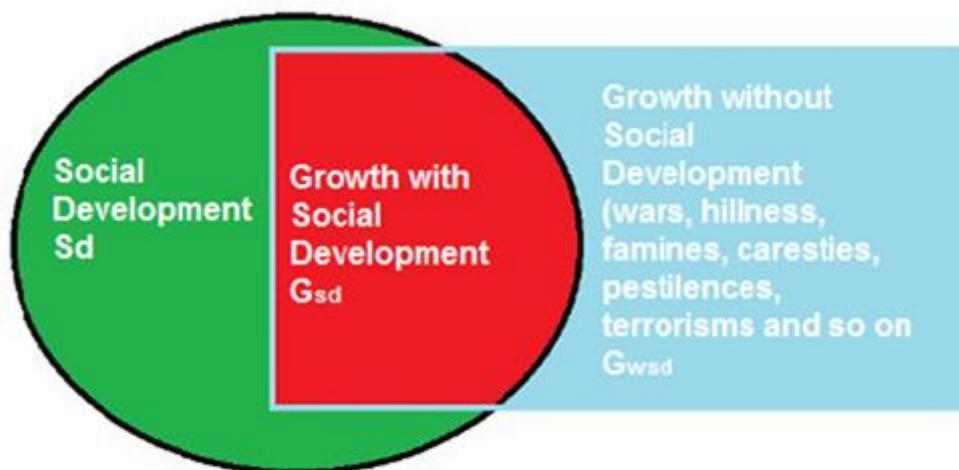


Fig. N° 6.1 Social sustainability and growth

In the end of the three EEE days, the standard antique three values will still rule all the worldwide facts:

1. Wars.
2. Pestilences.
3. Caresties and famines.
4. Environmental catastrophes.

CONCLUSIONS

The EEE crises are analysed inside the European Member States trying to point in evidence the difference among the States. Italian approach is analyzed. Actually, the alarmism of doom catastrophists for the fear of the increase of average temperature first of "2°C" is terrific even if partially verified and validated by present strange and tragic events. However, according Carlo Rubbia and other physicists views the average temperature T in the world is always changed whilst the humanity has increased number and welfare. The usage of only one monitor - the average temperature T - has to be mediated and weighted with the other 29 natural parameters plus the artificial pollutants. The crises are ongoing and the last primary meeting on Climate Change - the COP21 Paris – has concluded to give priority to classic renewable alternative energies whilst the nuclear option has not been considered even being in silence crying in all the meetings in the plenary or in specialized ones. Poor judgement can be given to big physicists such Carlo Rubbia, which continue to oppose to nuclear options due to correlation with proliferation of nuclear warheads. However, this topic is very articulated and complex even if big Countries such as China, India, Russia, USA, France, Sweden and so on are continuing to build up NPP for civil electrical energy production. Further, Rubbia asserts that in field on Nuclear Power Plant, no research is continued and the search has been ended to the years '60. This is really false because there are a lot of pacific research experiments and laboratories working all over the world. In the meantime, people are terrifically feared by these doom catastrophists plus unreliable scientists. So Dr Moors ideas are reported to highlight and improve the nuclear system vision in Italy, Europe and all over the world.

Prof. Giuseppe Quartieri, IUSR, "Physics Department, IURS "Santa Rita", Via Flaminia, 45, Roma, Italy".

President of the Scientific Committee of Environment Cycles, President of AIDI and Jacques Benveniste Award.

Ps: Please visit the Internet links reported also in the References of the first Chapter.

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