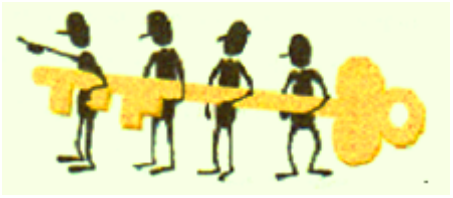


What's missing in our Environment?

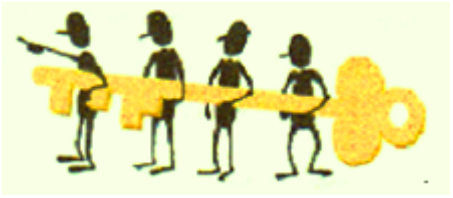
A Participation of Information Science, actually very fortunately in Ecology.

Franz Plochberger
Information Scientist

http://www.plbg.at

… together with Universities and Researchers, worldwide …

Vienna in Austria, in August of 2019

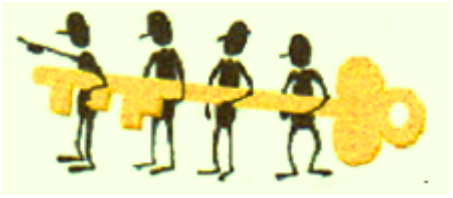


Ecology belongs to Human Being like his food.

This science has widened its observation area and rose to global dimension. We shouldn´t write pessimistically. We need positive hope for the future of our Earth Climate (2019).

The Author

… for my daughters Clara and Isabelle …



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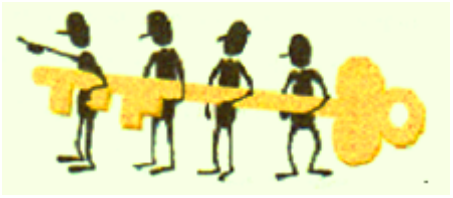


1. Abstract

Ecology, as science of our Environment (Old-Greek: „oikos“ = the house, „logos“ = the word, the science) is with Human Being since his first appearance. What makes us today so clairaudient or even anxious is the knowledge, that the Human Being has developed technical abilities too efficient and without thinking about evolution and resources of our Nature.

The soft ability of getting Information shows certainly our errors in last decades. Fortunately, our Ecology is able to fix clear sources and creators. We realised that we have generated our Climate Crisis by our own. We know already how we can prohibit bad dangers out of our heating of our Earth Environment.

Even some, artificial created new materials (f. i. Plastic) are longer usable then the evolutionally developed ones of our Nature but we can’t recycle them without problems. So „Microplastic“ makes broad pollutions in our seas. Fishes eat them and die because that’s no food for them, some eaten chemical elements may have toxic follow ups as food for Human Beings.

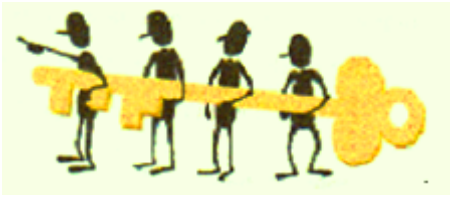
That are – genuine journalistic-commercial – the actually most horrifying catastrophic messages. Till now Ecology can´t start effective, worldwide strategies against Climate Change.

Whole our Humanity – we have to think in that dimension – will start a common strategy only the last moment. A worldwide or even regional consensus is actually starting.

We are bound to our descendants. Irresponsible or single persons only don´t care about this. The Human Being is in rare cases suizidal.

2. Key Words

Ecology, Environment, Population, Humanity, Globality, Food, Resources, Sustainability, Production, Waste, Earth as System, System Theory, Simulation of Eco-Systems, Information Science, Computer Science



3. Why do we have this topic here?

The reason is the singular situation of all global and planetary parameters. Its existing a necessity, paired with a challenge for a new, till now not known proceeding.

The source of this greatest danger we ever had is yet well known, we have scientific proved results. We know we have “polluted” our global atmosphere of our home planet Earth by heat-reflecting gases. The too much carbonised air over us can’t keep low the average temperature. The temperature balance to outer space is disturbed. Especially by CO^2 „contaminated“ air layers stop the by Earth reflected sunbeams already since some centuries. They can’t send back their higher energy to cold space. At beginning of our industrialisation this balance was existent. So, atmosphere of our Earth is warming up. Even the **Climate of our Earth** is disturbed so much that we have to fear for first time since existence of our Earth a global catastrophe of our climate which we then can’t remove immediately. As an example, we can measure already the widening of Sahel Zone in Africa.

As Scientists of Information we are actually bound to act in responsibility for our future and that of our children.

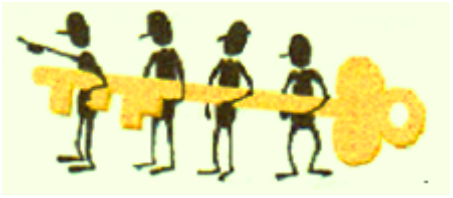
4. A general view, backwords, first

Ecology as own serious science is nearly same aged as Information Science. This fact is typical for both. The systematic, term orientated way of thinking in the structure-science Computer Science is a fitting base for spreading their results fast and elegant all over the world. This Information exchange is accelerating a global finding of results and brings positive hope on coming synergies.

Regional wrongdoing is already known since second half of 20th century. These cases were singular and had no follow-ups.

In table of literature, added at the end of this report, you can find the book „Wie reguliert sich die Natur“,1979. After p. 91 you can read attestations and documents. Here 2 of them are pointed out:

- **Bison Hunters in 19. Century in the prairie of Northern America**: All wild living Bison’s were killed in front of the local living Indians by White Settlers. They wanted their pelts - for selling only. The Indians had no guns and had no chance for defending their nature for saving their food. They had knowledge for using all parts of these animals and killed only that amount they ought for eating. Today, we would say: they had a perfect and useful ecological system. So, the White Settlers left a prairie full of rotted and stinky meat of buffaloes only.



- **London 1952**: A first, new form of an Ecological Greenhouse System, a „Thermic Inversion“ was documented. It arose over whole London, because of: till that time not known pollution of air. This phenomenon was called „Smog“, a new word out of „smoke“ and „fog“. A high situated, warm layer of air hindered the exchange of temperature between Earth and space, in the same way as today – but worldwide and global – our well-known CO^2. At that time 8000 Human Beings died, because the society only could wait till the climate over London got clear by his own.

One significant symptom is viewable:

The Human Being of Industrial Society is responsible for all Ecological Errors. Our Nature creates by its own a generally balanced, local or global Eco-System – but over hundreds, thousands or millions of years. Till now we can’t do the same.

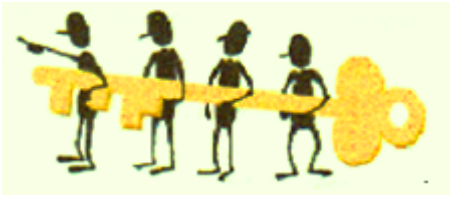
The Human Being, to narrow in his commercial goals thinking, isn’t pationed or careful enough. He/she wants to narrow minded busy results in short time only. So, we have to learn deeper and finer structures of the found term Evolution. Nature builds the best Ecological System we know – by his own. We should respect and learn its laws. Our Industrialisation since middle of 18. Century has brought too specific and efficient results. These are now detected as globally errors, as at the whole hurtful.

What did we learn till now?

→ We have only one Earth. We can’t travel in a simple way to the Moon, Mars or even other Planet System, as we could explore another Continent in time before.

→ If we want to leave our planet, we have to create a human like area for surviving. We have to research the possibilities to do so, before. Till now we have found singular systems for transportation (spaces) to that extra-territorial, celestial bodies - not more. We have mobile robots and unmanned transport systems which can send us data about all extraterritorial surroundings. But the flights for themselves and the dangers for live of Human Being are actually main objects of research. All that has to be organised and made financially possible. If we want to build up a „Village on the Moon“ for instance we have to bring up money and have to build ethical and moral foundations for that.

→ In centuries before we had on Earth enough free space for living for us and whole Nature together. We were less and moved by and on our feet and in best way on the backside of horses or camels. We had not so much exchange of direct Information between us, we didn’t know each other.



→ Today the amount of Human Beings is rising because of knowledge about Human health. So, we have to survive on this terminated globe Earth peacefully. The difference of knowledge and the cultures of single continents bring grate challenges. We don't want additional, global wars or other hurting's. So, we have to teach other continents and their habitants to keep their growing of populations under control – in a cultural and moral-ethic way. Europe and Western Countries have already solved this problem – but not yet China, India or Africa.

→ Ecology is necessary for surviving of Humanity – more than at any time before.

5. What are kernel elements of actual Ecology?

This question is not answerable without a hint to books in table of literature: „**Die Grenzen des Wachstums**", 1972 and „**2052 Eine globale Prognose für die nächsten 40 Jahre**",2012.

The author tries to excerpt the important terms and sentences out of these **Reports to the Club of Rome** - in a compounding way. Additionally, own findings are written down too:

→ Population of the Earth, global Rates of Dying and Births

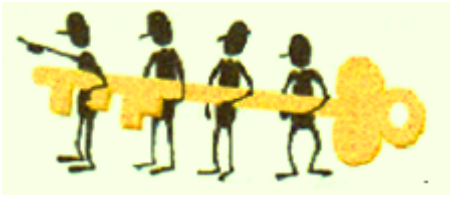
That's a long-termed topic. We know in actual experiences in Europe, that the numbers of inhabitants of our continent was going down by growing, materialistic wealth. Medicinal results of Birth Control have diminished the number of Human inhabitants in a peaceful way.

That's for our Climate generally positive. But for long termed surviving of our continent by immigrants only – a danger. We live today more and more besides invading amounts of foreign peoples. That arises Nationalism by nature. We have to learn to integrate that immigrants for our own save. Sometimes their Climate enforces them to leave their home – they have Climate Catastrophes and by Greenhouse-Effects sourced droughts in their homelands.

→ Limitation of too fast growing populations

The important difference between Western Industrial and Development Countries is the medical knowledge of possible birth control - f. i. measuring the temperature according KNAUS-OGINO or die chemical Anti-Baby-Pills. In Europe we have learned to live with that control moral-ethically.

China had traditionally highest growth of population. But since about 2000, they tried



to reduce that number too. The results couldn´t be reached immediately, but slowly they are steerable in that way too.

In India and South Asia these growing of populations are still real. There no successful social revolutions could be organised. They need cultural and moral-ethic ideas by themselves.

Especially in Africa we have nearly no solution too. The number of births is only controlled by the rate of dyeing children. Unfortunately, are there Religions, Cultures and ethnic bindings very often sources of genuine wars. By numbers, Africa has actually the highest growth of population – before India, South Asia and China.

Therefore, a not yet released border against uncontrolled invasion from that continents is an inhumane fact. Europe or USA have to find wider solutions for the continents in their South. Europe and USA have started that invasions by their commercial intervention in the last centuries.

That are grate challenges of our time. We can't solve that problems in a short time and humane. But whole Human world got involved in that problems.

A small result is the correlation between growth of population and reducing by wealth. We need a worldwide cultural, moral-ethic recognition of our medical propagations of birth control.

→ **Raw Materials, Winning, without Exploitation**

Sadly, greed for profit is still reigning that field of Industry. The selective knowledge for using machines and the selective ability to use them are the sources of rough social differences between the local living inhabitants and foreign possessors and users of that machines. Even Industry Countries are the main sources of these inhuman facts. We need a worldwide solution (f. i. a World Government) to bring law and order in these regions. Till now we have no Human laws and no order.

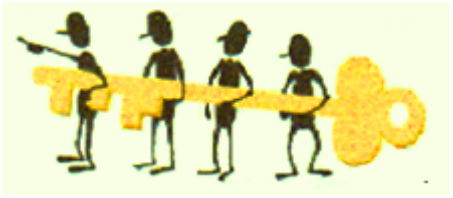
A proposal of a worldwide, binding organisation (a „legally binding UNO") is said more and more but isn't yet real.

→ **Food, coming out of animal and nature corresponding Agriculture**

This topic is even known since a long time, its evolutionary and direct reigned by Human Being.

Till now the Human Being had - roughly seen – always found food - as much he/she aught. When nature catastrophes arose, the Human being found by instinct always ways for survive.

Today, after learning lot of corresponding facts in our worldwide society, we know about errors caused by too much Technics in connection to Nature. The Human



Being has in a specialised, too narrow-minded research found too narrow and specialised results. He/she forgot long termed evolutions in Nature. F. i. his chemical-biological research results are in parts damaging our own Nature. Found facts are Synthetic Materials, which are in some cases longer usable the legacy one but they can't be recycled into elements of nature. Chemical Fertiliser brought the death for many useful bees, intensive Mass Animal Farming grew to Cruelty to Animals.

→ **Industrial Production, based on Human gainful activity**

That's one real origin of our Greenhouse-Effect. In main parts CO^2 in the atmosphere of our whole globe. We know the gases which pollute our atmosphere, but we don't know how to clean it. To give own mental, scientific power, is in actual time a duty for all responsible thinking and acting people all over the world. Our young people bring already the necessary motivation.

→ **Professional Services for Human Being, as new Occupation Group**

Latest innovations in Medicine of Industrial Countries have enlarged average lifetime of Human Being – even in these populations. We expect such a growth in future.

Human Beings live longer but need also more people to nurse them. This is a new source of necessary services. Besides these jobs are really Human. Additional social bindings get more important.

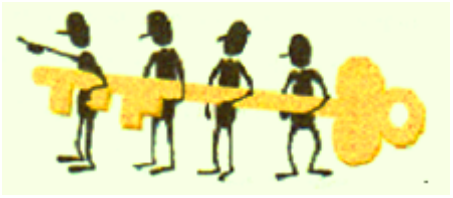
The states have slowly realised that and starts to organise that new structures. We need real new way of learning this new profession in a fundamental way.

→ **Healthy Environment and furthermore needed jobs**

To keep our Environment healthy, will create a lot of new jobs. We need the living and intelligent Human Being in our Nature. We actually lose on the other side, jobs in Industry. That jobs are necessary in keeping our whole Nature healthy – in a sustainably way. We didn´t care on that till now.

As practical example can be seen f. i. the schooling of African wild hunters into official employees in new protected Nature Areas. We have successful results already all over the world. These native persons are very much motivated and reliable.

Even in Europe – in a quite different organisation of ownerships - we have successful areas of private occupations for protection of retainable evolution of Nature and ability to survive by taking care of own Nature for inhabitants.



→ **Real Pollution of Environment**

The most hurting actor is actually **Coal Industry**. Till now coal was a necessary resource, now we know, we have won too much. We don't lose that raw material; we have to stop winning only. That´s a great social challenge because a lot of states (f. i. Poland) have a basic Industry in that field. On the other side we have f. i. Great Britain which has a reduced Coal Industry already. We can look at this country.

In the same way of thinking we can act in using **Mineral Oil**.

In this area we have created a new, important branch of Synthetic Materials. In last time we recognise, we forgot the recycling of that. We have created too much of Plastics in our Environment. The not collected and burnt down amounts are polluting our Nature – in sea and land. The into micro bodies diminished particles (**Microplastic**) are a basic toxic danger for our Food Chain. These chemical substances can change their properties and can get dangerous, even toxic. We have already examples for creeping degeneration of our living system (f. i. fishes). Unfortunately, we have to sign out Microplastics as basically unhealthy – even the new usages in Human Cleaning Industry (f. i. teeth brushing creams). If we use it we have to give additional Recycling rules.

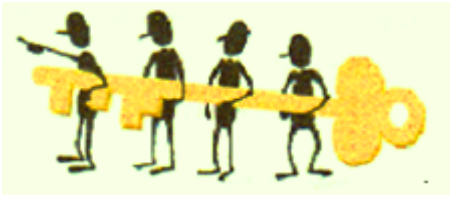
A new danger is based too on our usage of plastic in our Industry of Cloths. That clothes lose permanent little fibres which break down to that Microplastic too.

Finally, every **Reduction of traditional Rain Forests** (without reforestation) must be seen as damaging of our healthy Environment. Local, unsocial, economic interests are the main reason for it. The till now there living Indigenes lose their legal right to steer their home area. This people only have learned to live in that nature in the right way. We need a worldwide building of meaning for these people and have to rise their rights. We need it and we can do it - by new Internet. We and these Indigenes need a dignified solution of this problem. Otherwise wealthy Nature is destroyed in a rude way. We can read about this error made already in 19th century in Northern America above (chapter 4.).

→ **General, global**

Actually, we fear mainly the global pollution of our atmosphere by CO^2. It's clear, we have to reduce mainly that gas in the air of our Earth - immediately. Otherwise, we go direct into a **global Climate Catastrophe**.

That's actually the most important challenge for whole world. It's much more important than global economy or local politics.



→ **Possible corrections of these bad errors**

We can row the most important direction signs on this world in a political way:

a) Balancing the growth of Human Population – worldwide

b) Afforestation of trees, where it's possible. That's the most easy and doable counteraction

c) Winning of Coal has to be reduced to minimal necessaries

d) Winning of Mineral Oil has to be reduced to the same amount

e) Control and Organisation of our Synthetics-Production, so, that we get retainable, recycled end products, if they a are not used anymore. We already can't rebuild Evolution of Nature; we are to narrow minded. We produce till now bad follow-up´s by our own.

f) Research and Use of our Seas. They are our resources of food and the origins of our life (f. i. growth of Algae, Microbiology in the top layers of water)

g) Finally, direct, chemical transformation and possible storage of gases like CO^2 or CH4 (Methane). F. i. synthetical copy of chemical Photosynthesis of plants should be researched too.

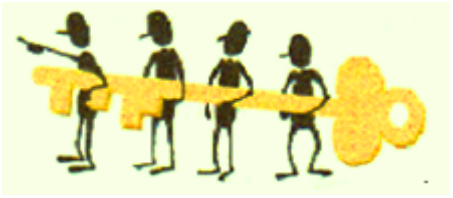
→ **Global, not yet enforced acts of reorganisation**

We have to row these too:

a) **Information of global, leading forces. They have to come into state of alarm.**

b) **These have to know that further tactical manoeuvre only makes no sense.**

c) **Building of Action-Communities and enforcing actions all over the world. We need a global, steering centre with the right to punish not obeying forces.**



All of these terms and topics have ben and still can be bound to a new instrument in Artificial Intelligence – so called **System – Simulations**. These can build a Software-System including all these already known, specific elements, constellations and relations. Involved data for steering of these Simulations are latest measured data. This method isn´t and can´t be definitive - but dynamically changeable.

Every seriously interested reader may search in Search machines by using these Key Words above.

6. What brings Information Science into Ecology?

6.1. What brings especially, legacy Computer Science?

Computer Science was founded in the middle of 20th century. Since the finding of book printing (about 1450) by Johannes GUTENBERG, it was an even same important cultural and social revolution. Since about 1943 (by Konrad ZUSE, first programable Computer) our society was changed fundamentally again. Since about 1990 even all people spoke about a new age – the Age of Information. In last year's we speak about a **Digital Age** – since our children learn to use and live with Computers and their IT (Information Technology) - Systems from beginning of their conscious life's.

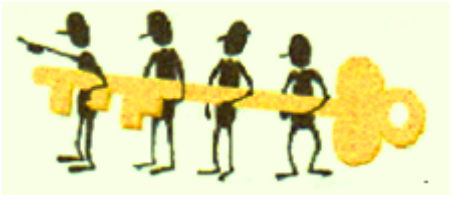
Informatics, as an artificial new word, coming from *Inform*ation and Mathe*matics,* has based a science for electronic counting-machines. Today it´s one of many new scientific branches in that area.

We can divide this whole new area in three main parts:

a) **Hardware** (electronic, physical, in last time even quantum-theoretical devices),
b) **Software** (steered by not materialistically algorithms and - programs) and
c) **Data** (machine-adapted, definitely structured, stored Information).

IT-Systems and very special, even worldwide networked and cross-linked connections for Information-Exchange have created an easy usable entry by **local and mobile computers**. All Human Beings can so exchange their personal and professional messages all over the world. Human knowledge can be stored and entered worldwide in an easy way. New created and stored Software Applications (Artificial Intelligence) make possible to steer systems in any complexity level we need. The Human Being has to know only what these systems do and can use them – only by clicking – always in the same, fast way.

That´s a great advantage for science. In last decades we worked by specialisation and differentiation of our nature-scientific and biological knowledge. We have enlarged the whole knowledge of Humanity in huge amounts. We have created a big treasure and have to learn to organise and structure it – step by step.



Besides, we have lost the whole view over our Earth and didn´t care on it. We need a coordination of all results. F. i. our „society of production“ is creating too much. The amount of our Raw Materials decreases irretrievably. A lot of waste can´t be recycled to its basic elements by nature – we have toxic rests.

We are proud on our new materials. We called them Synthetics, based on Hydrocarbons (Organic Chemistry). What we didn´t care was, how we can reduce these new materials back into evolutional Nature. We fight actually immense against the huge amount of Plastic Waste. We have noticed these errors but have no global concept against it.

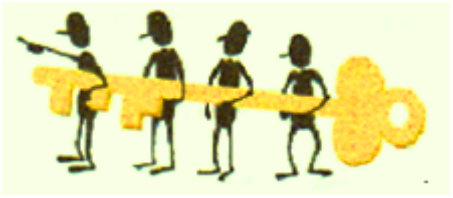
Industry and Nature are not balanced by value, Nature is more important for long terms and necessary for surviving of Humanity. First time in our history of Evolution we see our global errors. We are the source of them and they bring danger to us in our Climate and Food Chain.

Computer Science is a not neglectable tool and medium to communicate between all Human Beings worldwide. We would be dreamers if we would believe in getting an ethical or morally better Humanity. But now we can communicate easier and faster between each other. So we can give easier a message about „evil spirits (=egoistic hurters)“ and „real good minded persons (= useful and orientated to balance)“.

An already classical example, how Computer Science can be useful in Ecology, are Simulation Systems. They can rebuild all systematically relations of our Nature. They never will be an exact copy of Nature but they show us main elements and relations. We can adopt all these parameters by measuring their real, actual values and use that as data. So, we can get a basic Software System. A legacy example may be our already established weather forecasting in TV and Radio. Also, many Geographic Simulations of valleys with landslides, falling rocks or avalanches are documented and visible.

Globally, for first time at MIT, Massachusetts, USA a Computer pioneer created such a graphical simulation. **John W. FORRESTER (1918- 2016)** mentions this world model in his book **World Dynamics (1971)**. He used in it more than 90 terms and relations between them. So, we have a document for useful Computer Science in Ecology. You can search these Key Words by Search Machines an get so latest results.

Even, we have to notice seriously, that we can´t document the whole world as a definitive system. An IT-Specialist can in best cases „feed“ his simulation with actual, real data. But our Earth Climate is too complex to make it definitive usable like a mathematical formula. Evolution of Nature isn´t simple. Climate may change in many cases. Then we only can make a historical documentation. We have to be happy that we can use simulations more and more fine in future.



6.2. What brings „common and wide“ Information Science?

Computer Science is an established Structure Science and part of Information Science.

So, Information Science is a leading forward, common science. The origin base is Computer Science but it’s an abstracting and theoretical science, up till to Philosophy. It includes all sciences around the **word and term Information**. Look at the publication of the author **Franz Plochberger, Informationswissenschaft,** in added register of content. Most are in English and German. All of his publications are Open Source managed and are gratis to all seriously interested researchers.

Human Being is better used to the word Information than to the word Computer. Already Romans knew the word *informatio* – as a well-known, philosophical term.

But at the end of 20th century it was used in very different forms and meanings, so the author started as one of the first, worldwide, to fix this word as reorganised, actual term. He used a naive way: all in- an outgoing recognitions and messages of a Human Being. That’s in first view not fascinating, but finally the only possible one:

a) **Human Being is necessarily involved,**
b) **all perceptions of his surrounding,**
c) **all of his treating’s of that and**
d) **all of his messages backwords.**

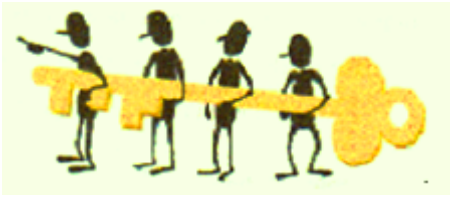
The opposite direction is possible too, but the Human Being is necessary in the Centre.

The generated **Data** can be defined very elegant as „stored Information or living Knowledge“ (books, pictures, graphics, Electronic Data or Human Memory).

So, we have the “simple” but basically **Axioms for Information Science** (Franz Plochberger, 2013).

Now, we have a serious duty for Information Science. It has to communicate the knowledge about our Nature, worldwide and fast. We have to promote the new topics **Sustainability and Endurance of Evolution of our Nature** in scientific Ecology.

We know, we made errors in Environment of our Industry. We have to correct these bad facts actually without any delay. Otherwise, we have to live in future with a noncontrollable World Climate. We have to motivate all people on the world – but fortunately we can do it by Information Science in an easy way.



7. Which ecological goals are actually urgent and do we have to reach, necessarily?

Generally, an enforcement of research activities is an important announcement. We have to start correction of actual, broad, damaging trends in Ecology.
Afforestation's, new chemical methods, Decarbonisation and Diminution of CO^2 are some important topics.

Actually, the greatest, proved error out of Industrial Age is the Greenhouse Effect. Ecology knows already definitive, that this is a real, pure danger. We know, we have to fight against it, all together.

Look at the corresponding Report Treibhauseffekt (2012) and the started actions Drawdown (2017) in added content of Literature.

→ **worldwide Making of Opinions and Information**

It´s necessary to declare the immediately coming danger of Climate Change for the whole Earth. We have to bring this seriously in the heads of all people on the Earth. This duty is huge but not hopeless.

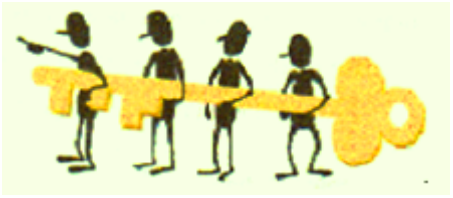
→ **Encouragement for coordinated actions in Social Media**

As motivating, positive example following video in added Content of Literature as signal out of Brasilia: English, 2017, **Hoffnung aus Brasilien**. Unfortunately, in 2019, the Brasilien, political situation changed. So, the worldwide society has to start an Information action to fight these latest wrong activities in Brasilia. We can show how it works. We can enforce Brasilia to stop the deforestation of their Rainforests! We have to **enforce Afforestation of every finished Deforestation!**

→ **political opening of points of views and reasons of single, deciding Politicians**

We are used to deciding's of our voted Politicians, but they even changed their way of reigning in our Digital Age too. They started to think in periods of political votes and say only that what people want to hear. They don't think sustainably. They try to hide their sources of money, their Lobbying. So, the Open Digital Society has to enforce and communicate the sustainable, healthy truth. Politicians will react only if these actions succeed.

Genuine Sustainability can be started by the involved people only. Scientific background can and will be given by independent, objective scientists. Politicians react on strength of power of public Information only. But Digital Society has new ways of communication and needs only some impulses to act, when that new ways - besides legacy used, political parties - have success. The real necessary action will be recognised – even more and more, worldwide.



→ **Marking of all which don't work together with global, correct actions, even f. i. USA, China or Russia. In these big world powers is the meaning not always so as they want to show it worldwide. Their people can build their own meaning by their singular, own new media.**

Modern Media (Social Networks) can build more and better own opinions of people. Worldwide only some great blocks of Economies arose: Europe, USA, Russia or China. It´s necessary to get influence into these areas. **We need sustainable, worldwide care of Nature of our globe.**

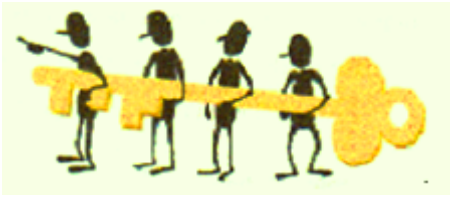
Europe can be informed nearly easy but not all at once and together. The other power blocks have to be enforced in any global, not yet definitely known way.

EU as Union of European States needs already first common victories. EU has still problems to build one, main valid opinion. In actual political organisation it´s not easy to come to one solution. The only positive signal of EU to whole world is the existence of their political democracies. So, it´s a sign to whole Earth, that democracy is possible and is a positive base for peace.

→ **coordinated, worldwide building of opinions, up to global punishing of egoistic escapees**

We already – in EU and worldwide – have to learn this. We need this new political strategy for peaceful, global solutions. Till some years ago, we couldn't imagine that f. i. USA can be economically enforced. But new blocks of power like f. i. China or even EU will have to show a common profile.

Finally, we have to remark, that globally no power is as trustful as EU. USA, as leading ethically, trustful power lost his first position in last years.



8. What do we have to propose for the future of whole humanity?

→ possibilities to force globally not cooperating people

One way may be to create a financial fee. This has to be paid by that, not on environment caring organisations. That can be:

- **financial tributes for to much growing populations**
- **taxes for Cole production and not – promotions**
- **CO^2: financial tributes for hurting the environment**
- **financial tributes for deforestation without afforestation**
- **financial tributes for not recycled Synthetics (Plastic)**
- **financial tributes for not clean energy (atomic deposits)**

→ creation of an executive, global Office for Global Environment

This organisation needs the right to force it´s decisions. No exception can be given by it. We need it to make our environment healthy again.

→ Promotion of scientifically Ecology

Certain percentage sets of upper tributes have to be given to that organisations in order to find ways of correction and control in our actual ecology.

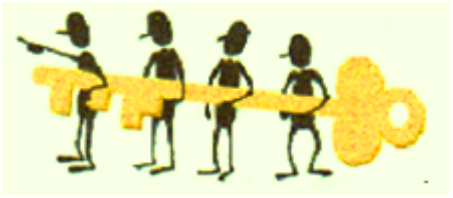
→ Further extension and usage of Media in our Information Society

This postulate will be satisfied by our actual Digital Age. We will extend our digital activities per se. Perhaps we have to take care on:

a) who wants to have better conditions and

b) who will have to pay.

But we can be sure our Information Society has got very informative and will do it more and more. A balancing, worldwide, human justice between all people stays a not yet reached goal. F. i. extreme poverty or hunger can be cleaned out, theoretically. In our time we know we can do it but we don’t have it till now. So, let’s intend it for Gods and our own Save.



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