Memorandum on Climate Change

The necessary reforms of society to stabilize the climate and solve the energy issues

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Introduction

The man-caused global climate change with its far-reaching and manifold catastrophic consequences has become known to both the public and the politicians. Fighting the causes which brought about the recent situation by introducing fossil fuels is being discussed on the political level, up to the global climate conferences. At the same time measures are being searched for to mitigate both already existing consequences as well as those to be awaited in the future.
Apart from introducing renewable sources of energy, establishing new methods of saving energy and increasing energy efficiency other measures are being introduced such as building of dykes for coastal protection, adapting the crops to the changing climate conditions and afforestation to enlarge natural CO_2 sinks.

However, one of the fundamental climate regulating factors is still being overlooked. It's high time to pay close attention to this fact in all climate protecting strategies. If this factor were duly considered it would to a large degree relativize a whole range of existing climate change strategies, among others approaches to nuclear energy and CO_2 sequestration.

The measures, which are used by governments nowadays and which are based on the currently discussed climate model, have proven too short-sighted.
We keep forgetting the enormous importance of the water cycle and the vegetation.

This can be seen for example in the fact that densely populated cities around the world report an average 2-4°C temperature increase, as opposed to green landscape. In deserts with no vegetation or water, temperature levels are life-inhibiting levels and have higher fluctuation rates.

Preventing a climatic catastrophe is now a trade, with dry greenhouse gas emission certificates (mainly CO_2 and CH_4) traded on a national, European and global scale, aiming to meet the quota set by the Kyoto protocol. This political counter-measure however, although purposeful in itself, only has minor effect on eliminating the mechanisms and interactions involved in the climatic processes, and focuses all of its power on the climate with no regard for climate change and its effects.

This memorandum aims to describe some of the important relationships between climate change, its effects, and its possible remedies, the ultimate aim being to spark the specific political decisions necessary to preserve the environment as the "Backbone of society".

Box 1: Climate and Energy

The global model simulating the atmospheric climate is based on global radiation balance data and on the research of Svante Arrhenius, who published a study in 1896 concerning Carbon Dioxide and its "greenhouse effects". Arrhenius had no knowledge of the physical and biological relationships as we know them today owing to our scientific progress in the 20th century. He specifically knew nothing about the dynamic concept of self-organization of life processes and organisms as energy-dissipating structures, which was developed by Prigogine.

There is no doubt in the world of physics that energy undergoes continual exchange between material objects and can only be observed in the dynamics (mass times acceleration) of those objects.
The following applies for energy:

Materials divide energy as much as possible and thereby lower the energy flow. Given two objects with different temperatures, there will be a strong tendency to attain equal thermal qualities. The warmer body acts as an energy source and the cooler body is an energy sink. Without such cooler material sinks, energy could not be emitted.

Chances of an exchange induced by electromagnetic radiation decrease with the root of the distance between the objects.

Any two objects cannot exchange more energy than is permitted by their respective specific heat capacities.

In the energy relationship between the Sun and the Earth, it follows that the Sun is the source and Earth is the sink. The Earth cannot lose any energy if there are no cooler sinks nearby. If it were not like this, all planets would have long since lost all their generic heat.

It should be described how the energy from the exchange between the Sun and the Earth is distributed in the form of acceleration (dynamics) among earthly substances in such a manner, as to achieve the lowest possible temperature given the highest possible stability (durability). Any and all useful energy (exergy) is transmitted via water to the various physical, chemical and biological processes, i.e. the energy is divided in space and over a given period of time. As a result, the given conditions all of a sudden gave rise to a life-encouraging environment, which is sustained with the help of the indicated dynamic processes.

A central role in the whole process is played by water and vegetation and their ability to transmit energy. It follows that the "feedback-loop" water and substance cycles, and therefore any vegetation and all the soil types that it created, on which we are living and thriving, are benchmark characteristics of our climate. The dry greenhouse gases, Carbon Dioxide and Methane, only play a minor and unimportant role in the whole process, because their contribution is only about 1 % in the pool of the substance cycles (processes) distributing and consuming energy.

The aspects of the dynamics of the water and water vapour cycles on the continents with their vegetation and on the oceans are the most important factors in the process of the physical dissipation of the Sun's energy, and they are therefore superior to any effects of the greenhouse gases. They are however seldom taken into account in climatic models, because their simulation is virtually impossible.

Even without a global model, it is however possible to clearly identify negative influence of past and present destruction of the vegetation-covered areas and their cooling effect (evaporation). We could also specify the measures needed for

regenerating the vegetation. Only ecologically intact areas and an appropriate land-use can ensure a life-encouraging environment in the future.

Following is a description of the individual mechanisms involved in climatic processes. The necessary conclusions for increasing the chances of human survival will be drawn. We will call the reader's attention to the fact that the situation is even more critical than how it is portrayed in the debate on climate.

Water, mineral and nutrient cycles, and the temperature-controlling vegetation are being destroyed in the long-term perspective due to

• repeated deforestation and economy-oriented transformation of the forests,
• landscape draining,
• dam construction on rivers and a decreased flow rate,
• moorland cultivation,
• centralized drinking water sources and
• opencast mining

and therefore also due to

• landscape leaching,
• growing mineralization of organic water-retentive soils and
• diverting the nutrients from the top soils to the ocean through central water cleaning facilities,

and last but not least due to local substance cycles degradation. The consequences are already beginning to appear, and so is the fear for the future. This fear will be justified, if there will be no measures introduced that would re-instate the environment. The damaged cycles must be repaired, and there must be effort to replant the necessary vegetation on the densely populated and cultivated continents. Thus, the desertified continental areas must be reclaimed for re-population with the help of a stable vegetation cover.

A “Re-introduction of a resistant nature” must start on the level of individual regional units (“cells"). Spreading and enlarging these units constantly to re-introduce a resistant nature will enable us to solve the problems of our climate and nature. With global reductions in greenhouse gas emissions and with trade of emission certificates, it is certainly not possible to reverse the degenerative development of our climate. Indeed, what purpose should a reduction of CO_2 emissions alone serve? Yes, it can achieve a more delicate approach to non-renewable energy sources use; but, if such economic efforts are left without an effective method of repairing the regional climate in the managed areas, who will profit from that?

A shocking and unexpected phenomenon are the visible small-scale climate changes, that arise due to a re-introduction of forests and vegetation that supports the local water and other substance cycles. A systematic effort to spread such

temperature controlling units onto greater areas would certainly have a large scale positive effect on climate change.

This fact has only been acknowledged in Australia, and only on a small scale (using *Natural Sequence Farming*), where Peter Andrews, a farmer, could show over the past 10 years, that although the soils in Australia are heavily deteriorated, one can build units that created their own water cycle, healed the vegetation, improved the soil quality, and therefore were able to change the local climate. The government was convinced by this example that applying measures in a bottom-up system was indeed the approach they should take. In 2006, the government initiated a series of broad-range measures and projects to spread the vegetation, soil and climate regeneration.

In Austria, model conditions were discovered in one mountain virgin forest (Albert Rothschild's Wild Reserve) on an area of approximately 3.5 km^2, and they were used to create a singular climatic template: The local water cycle had an exchange rate of water vapour of one day or less; the precipitation (melting snow) was low on emissions with a pH value of 6-7. The water there has near-distilled-water properties (conductivity of 2-8 Microsiemens / cm at 20°C). The recorded climate data was very similar throughout the day and the night, with optimal temperature control.

The fact that nature, given an appropriate resource use, can create a life-encouraging environment in a local unit on a step-by-step basis must be interpreted and directly utilized in regional policies.

However the autonomous regions, in terms of climate and economy, can only be managed as de-centralized, using integrated economic measures to ensure a common resource pool that could be developed and managed by the local inhabitants.

The processes and structures for energy distribution

A basic characteristic of the environment, that enabled life to flourish in all its forms, is the dissipation of the Sun's energy on the surface of the Earth. Energy dissipation has created temperatures suitable for the development of life in large areas of the Earth, where fauna and flora can develop and survive. Temperature control on the Earth rests on water and the structured temporal and spacial division of its phases (liquid, gas and solid). In the atmosphere, the flux of water vapour is approximately 100 greater than the flux of CO_2. Without water, there would be no atmosphere, life on land would not exist – be it fungi, plants, animals, or man. On the hemisphere of the planet exposed to the Sun, the temperature would be extremely high, and vice versa.

Temperature spread on the Earth's surface occurs due to the dissipative characteristics, meaning the characteristics of water to do with energy dispersion; these are of physical, chemical or biological origin. A physical dissipation process is evaporation and condensation (rainfall, snowfall or ice buildup) occurring analogically to the energy division processes in a typical refrigerator. Chemical dissipation

processes are the processes of compound and salt dissolving in water, and the deposition of substances in the oceans. A biological dissipation process is water splitting and its subsequent re-composition within a living cell with the help of photosynthesis and breathing. All of these processes lower the overall energy income and are carried out on the continents primarily with the help of water.

These processes in their interaction create structures for energy absorption (dissipation). Using continuously created structures, nature attains the lowest possible temperature by energy exchange and energy division, given a total energy inflow. Fauna, flora, the ecosystems, the atmosphere, and the climate are all results of these energy-absorbing processes.

Box2: Dissipative Structures

Dissipative Structures are substance exchange structures that are in a state of dynamic equillibrium with their respective environment. They are temporary structures and their components are replaced faster than the structures themselves. They are therefore able, given limited surroundings and an energy impulse of the lowest dynamic agitation (lowest temperature), to attain self-organization and to prolong their life span; they maximize the stable cyclic processes and minimize the irreversible linear processes.

The parallel cyclic processes with a prolonged life span (lowered frequency) and a relatively uniform amplitude division create the necessary conditions for a dynamic birth of nature, which is created so that with the structures of the lowest temperature, their durability increases with lower linear system loss (the linear irreversible losses breach the spatial and temporal system boundaries and therefore set the subsystem durability with the availability of resources). The faster socialization of organisms in the form of no-loss interaction on a small area into subsystems describes further optimizing measures in the process of "Nature". Bonds and the faster created "feedback-loop" bonds in themselves create a more stable and more independent socialization process (internalization of processes). This also applies to human forms of organization.

The human society, fauna, and flora can only exist in an environment of harmony between water, vegetation, raw materials, micro-organisms, animals and the atmosphere above the ground. The most important cycles are bound within the local or regional units. Whenever any components of these processes are removed, especially when the removal is to fast to be compensated by nature, all the cycles break down, and with them, the stability of the system.

The destruction of the pillars of life occurs mainly in water cycles, vegetation, and soil; it has been strengthened by our past use of fossil fuels and nuclear energy. Soils are continually exploited with the destruction of a stable ground water system and with excess soil compaction, fertilization and crop protection. We have changed the vegetation so much that it can no longer fulfil its original long-term purpose, the regulation of the climate, using evaporation control and ground water systems.

Today, we stand before the worldwide collapse of the functions of nature and of the cycles that are crucial for maintaining life on the planet. Examples include alterations of ground water systems, i.e. enlarging the non-water-saturated areas, lowering the average water level, draining the moor lands, leaching the nutrients out of the top soil layers and their transfer into outflow rivers, and their transport to the ocean. Therefore,

the flow of the necessary soluble minerals that are required by vegetation, are up by a factor of 50 to 100 as compared to the values of a self-organized nature. On the other hand, it is possible to create singular units with an integrated functional cycle system. Through enlarging and spreading such units, large-scale effects can slowly be attained.

Box3: Temperature Control Using Energy Division (Dissipation)

The whole climate energetics cannot be simplified into several atmospheric processes. The dissipation of energy occurs principally directly on the Earth's surface on the distributed phase boundaries through an increase in the dynamics when extreme values are lowered. The energetic processes arising from the Earth-Sun interaction according to these rules cause a change in the dynamic equilibrium. This becomes apparent in the decrease of surface temperature and in the decomposition of more stable substance exchange structures given an increasing durability.

Physical Dissipation

The most effective dissipative „Cooling process" (temperature lowering process) on the Earth is evaporation and condensation of water through tree vegetation. Evaporation (cooling) occurs mostly in water-rich or water-retentive areas. Plants, especially trees, can increase the evaporation surface area of the continents so that they are then larger in area than the oceans. A prerequisite for a high continental evaporation rate is, that there is enough water available locally so that it can undergo surface condensation and be quickly stored in the ground, that the ground contains a sufficient amount of minerals, nutrients, and micro-organisms that are required by the plants, and that the plants are given enough space to grow, when necessary, resulting from optimal landscape policies. In this context, landscape management is very important.

Man, in his intelligence, still has the possibility to use an integrated thought-through resource management policy to secure all the functionalities of nature in the areas that are still available today and that must be managed. That way, energy, water, nutrition, and a processual nature protection would be secured for mankind. Nature is dependant on the processes that run periodically at maximum energy consumption within the appropriate local structures, and therefore are very long-lasting.

Especially in the last century, we have greatly affected this "long-lastedness" by creating densely populated areas of any size and layout with no opportunity left to allow a re-emission of substances, and by using the technology connected with adapted landscape management systems, e.g. extremely large deforested areas with artificial fertilization and irrigation that greatly affect water and landscape management. We therefore have no choice, but to start regulating the processes in an intelligent way, so that they can reset themselves on the path to long life again.

Chemical Dissipation

The energetics of the transformation and the diffusion of substances in water is measured as partial charge distribution in water-dipole as dissociation (pH), which is used as a measure for the rate of chemical reactivity. If this charge distribution leads to processes in water, the processes are active in energy dissipation and they affect the distribution of energy. An example of this is salts, which dissolve in water until saturation is attained and then crystallize again when evaporation occurs. During dissipation, the change of the chemical bonds and the resulting heat increase or decrease are then used by other processes.

Biological Dissipation

A small proportion (roughly 1-3%) of the absorbed radiated heat is used in plant cells to split water. A larger proportion is used in plant cells to physically control temperature or to transport the water. During the process, energy is stored in the form of carbohydrates or other organic substances until respiration

occurs. This energy is stored in e.g. fossil energy deposits and can be transformed by oxidation, in another time or place, into useful energy again. The historical fact that non-renewable energy sources were created speaks against a precisely balanced radiation in and outflow.

The Most Important Water Cycles

As air pressure decreases, more water vapour rises in the atmosphere. At a given point, depending on air pressure, humidity and temperature, the vapour condenses and it rains. The rain then to an extent replenishes the water content in the ground, depending on the local conditions. The ground binds enough water, using vegetation, to keep the water cycle running. The whole process is very efficient, i.e. run in the best possible way, thanks to the harmony between water, soil, micro-organisms, nutrients and animals in nature. We call this the “short-circuit water cycle“, describing a cycle occurring in an intact area over one or a few days. In a primeval forest, the cycle occurs in less than one day. This cycle can only be measured with difficulty, as it does not show wholly in the measured data and due to its frequency can only be grasped indirectly. Measurements of condensation in the form of dew and the measure of evaporation depending on structures with varying surface energy (moss, lichen, herbs and bushes, trees, field vegetation, meadows and pastures) are very limited.

Of course, water also flows out of a landscape, collects in lakes and rivers and runs to the sea. A natural landscape however is able to hold enough water and nutrients. In a „large water cycle“, condensed water is returned from the oceans in the form of clouds back into a vegetation-cooled landscape acting as an “attractor“. The large water cycle (ocean - land - ocean) is initiated by the short circuited evaporation cycle of dew build up and it is carried out based on pressure and temperature values, taking several weeks or even months. Certainly, there are bridges between the short-circuit and the large cycle.

The local short-circuit cycle (evaporation and condensation) lowers the temperatures during the night so that they are lower than those of areas with less or none vegetation. There is therefore a decrease in air pressure creating a local pressure trough. The low pressure draws clouds on air currents from the ocean and replenishes the water that left the system through the water network (there is a net import of water from the ocean to the continents).

In a non-disturbed landscape, it is nature itself, who stabilizes these cycles, i.e. who can sustain this process over longer periods of time. It follows that the large water cycle becomes the more effective, the more cooperation there is between areas with an optimal temperature distribution. In favourable conditions, a high degree of local autonomy can be attained for limited periods of time and for limited areas with the help of the short-circuit local water cycle.

Common misunderstandings concerning the nature of energy (misinterpretations and mixing of the concepts of “potentials” and “dynamics”) lead to irrelevant evaluation that can be found even in today’s models of the climate. It should be repeated at this point, that heat energy requires a material basis that arises from the molecular and atomic

dynamic principles. The radiation energy on the other hand rests on the electro-dynamic concepts of the charge carriers (protons and electrons). The common characteristic is that the energy flow (at least in the observed and studied area) can only take place between sources and sinks. This either happens on a mechanical basis, like for example in friction, pressure, etc., on a basis of heat conduction, or the energy flow is induced by electromagnetic processes, for example in light and heat radiation and their constant conversion into mechanical energy.

Whether the „average temperatures“, as they are calculated in models of the climate, have some predicative value is a question, taking the fact into account that the surface of the Earth is composed of various materials with variable heat capacities and heat conduction abilities. (The heat capacity of a substance is the measure of how much energy is required to raise the temperature of a given amount of the substance by one degree.) For example salt solutions or living organisms have, due to a limited temperature range, the highest heat capacities, i.e. they show the lowest temperature increase given a high energy absorption. This can be seen on the various surface temperatures which can for example be obtained from satellite images.

How Can We Model the Global Climate

We see, that our climate is greatly affected by the processes of dissipation occurring on the surface of the continents and at phase boundaries. It is the water vapour in its interaction with the vegetation and its surface area, and the surface area energy that is nature's primary regulatory tool, not the dry greenhouse gases Carbon Dioxide and Methane. The concentration of CO_2 in the atmosphere is the dynamic result of the biological composition and decomposition processes, especially of the process of interaction between vegetation and the water cycles and the division of the two on the land. It is reasonable that the climatic (change) processes bound to the surface and to water cannot be modelled effectively using just CO_2 in the atmosphere.

The life-sustaining energy processes of our planet are not in the atmosphere, but are bound to the planet's continental surface and its vegetation structures that are continually able to renew themselves. With each leaf, the vegetation increases the surface area of the continents and regulates the temperature and pressure distribution throughout the atmosphere and the export and import of precipitation: More vegetation uniformly covering the surface means a lower temperature and a more balanced climate. Less vegetation and fewer water cycles results in higher temperature differences on the land, an over-heated ocean surface, chaotic atmosphere dynamics and the melting of the glaciers.

Glacier Melting and Glacier Build-up

The high melting rate of glaciers in mountain ranges, like the Alps, is not a consequence of an increase in average temperature, but is most likely to happen, when there is an insufficient glacier build-up at a constant rate of glacier melting, where melting processes continue to proceed in direct sunlight and also at very low

atmospheric temperatures. The missing evaporation and the low quantities of transported water vapour in the form of snowfall due to water management, drained valleys, and managed forests are the two main causes of the ever more striking processes of glacier melting.

If the cooling from evaporation only occurs on a more reduced scale on the continents, primarily concentrated on the northern hemisphere, the offshore winds will warm up the ocean surface. It follows, that the melting of coastal glaciers and of the north pole ice cover are not consequences of the CO_2 gas, but rather that they are consequences of a devastated landscape and of water management, which cause the collapse of an efficient water cooling process on the continents and a dislocation of the cooling process caused by the evaporation on the warmed-up ocean surface.

Only by reintroducing a continuous surface vegetation cover and by introducing an evaporative organic and water-retaining soil to the valleys and mountain ranges will the evaporation and water vapour transport reach such levels, as to re-initiate the process of glacier build-up.

Dew formation and water retention in the soil can be seldom taken for granted today, and an efficient evaporation cooling over the continents takes place on a ever smaller scale. The original temperature control helped by water and vegetation is replaced by "air-cooled“ continents. This leads to a considerable increase in wind activity over near-desert areas. Enough evaporation forming clouds can only take place over the oceans. The created clouds however dissolve again over low-vegetation high pressure zones above the continents, and they can only precipitate in the lower pressure zones that are constantly moving towards the North Pole. The once humid and vegetation-rich landscapes “dry out”. Smaller life forms that survive thanks to dew disappear and take larger and larger sections of higher fauna with them.

Evaluating the Climate Consequences, and a Climate Policy without a Global Atmospheric Climate Model

Although modelled calculations have proven very useful in industrial processes, whose components can be easily grasped, any such calculations in nature are effectively useless, because there are "infinitely many“ dissipative processes with constantly changing dynamic boundary conditions and they cannot be evaluated in time and space given their distribution and feedback looping.

An evaluation of climate consequences without an atmospheric climate simulation model could be successfully carried out with the help of satellite observation of the continents that can help us to create a structural template based on the changes observed in time and space. The changes and their processual analysis lead to a creation of long-term management forms. It would be useful from a political point of view, if the constantly managed areas were managed and evaluated in a manner of an “integrated justice“, based on the achieved output.

A society moving towards the limits of development will only have perspectives for the future, if it accepts a strategic plan of changes concerning landscape management reforms. This should be clarified by the following analogy from nature:

Nature always took to evolutionary jumps if the populations, in their evolution, reached the limits of development, or if they had to change from a purely production-oriented strategy to a new socialization strategy. The result was always greater species diversity and an improved cycle system in autonomous unit structures, where the efficiency of each unit was improved. A better growth of autonomous unit structures was enabled each time by attaining better substance cycle conditions. In the original area, due to the cyclic systems, the efficiency in resource use was greatly increased and the originally most productive pioneer organisms were replaced again and again by a variety of functionally diverse species in their self-optimized regulatory circuits.

So, whenever there appeared spatial limits to development in nature, nature reacted with an evolutionary jump and a change of strategy, i.e. the evolution was proceeded by a jump-like change. Today, man, as an intelligent manager, has the task not to push nature to its present set limits, not to walk into a catastrophe, but to sustain himself with the help of an intelligent cycle management system. The quality of policies and the intelligence of the new society will have to be measured based on the ability to introduce and manage such strategic changes.

As an intelligent system director, man must close the local cycles and avoid the irreversible substance flow out of the land into the ocean – especially by creating the conditions for greater evaporation and by the cooling that will result therefrom. Substance losses must be reduced everywhere on the land using the newly created substance collectors. The efficiency of our natural frame will thus be increased. Due to improved resource management, the sustainability of the processes will increase according to the template that is nature.

As of today, nothing is lost! Political regulatory instruments must be created without fail. The money coming from pollution rights and ecological taxes must be used as output-dependant transfer payments for climatic-stabilization area management. That way, a fast and lasting repair of the dissipative temperature dampening systems, i.e. of the water system and the vegetation cover, can be carried out. That is perhaps the only strategy that is available to us now that we could use on all continents. A local build-up of integrated and adaptive resource management in simple commune-sized or small regional units and their continuous spreading is our task number one.

The Regional Integrated Management Model

In today's society, concepts like the basic aspects of human life, civilization or culture have deteriorated, and to a certain extent no longer exist. The reason for this are the daily necessary exploits of nature done by each and every person (water, atmosphere, food, raw materials, and the protection of the necessary functions of nature, like the atmospheric functions, the climate, or the fertility of the soil) – summed up, the

subsistence that is to a great extent endangered. Only after subsistence is secured for man, can he ask himself: What other services, products, social organizations or cultural functions can be deduced from it? In this category belong for example: the processing of solid waste and waste water, or the formerly announced expensive attempts to force Carbon Dioxide into the ground.

Climatic change is currently the only aspect of the overall destruction of our living conditions that is felt as a threat on the part of society and to which the highest priority is attributed.

The climate is a component of the biosphere that had resulted from millions of years of evolution and had led to an optimal harmony of water, vegetation, animals, soil and micro-organisms. In this harmony, in this reciprocal dependence, the components are bound together in a very complex feedback network. If one component is changed or taken out of the process in a short scope of time, the whole system is destroyed.

Spreading deserts, decreasing sweet water supply on all continents, depletion of non-renewable energy sources, extreme temperature distribution, and the ever more frequent catastrophes may indicate that the collapse of our system is dangerously near!

The Most Important Aim

Our most important aim must be to locally repair the water system and to reinstate vegetation in the respective regions. This can be achieved by soil cultivation and the spreading of vegetation. Such repairs must be carried out everywhere and with the goal of strengthening the “natural framework“. These measures are also the only ones aimed at restoring the concentration and dispersion of CO_2 and CH_4 in the atmosphere as fast and as dynamically as possible.

When observing the effects of Methane in the atmosphere, we can begin by the fact that in a humid area cooled by evaporation with a dense vegetation cover (similarly to the problems with fine dust), its half-life is very short. Such landscape creates the necessary conditions for Methane-oxidizing bacteria that take care of a very fast return of Methane into the bacterial biomass cycle. The large humid regions and moorlands of the past that produced large quantities of Methane were seldom responsible for a discernible contribution to climate problems.

Repairing the Water System and Distributing the Vegetation Must Come Before Area Management

The dangerous developments of the climate can only be reversed by new integrated resource management policies for the planet’s surface. The policies must contain reforms of agriculture, forestry, water management, substance management, energy management and a functional concept of nature protection. Concerning climate protection, the quality of the land is of key importance to the entire social system. The

quality of the land plays the central role in answering the following question: Under what conditions can the necessary life processes on the continents be retained? How can we achieve independent and sustainable subsistence within one state?

The Discrepancies Between the Current Resource Management and the Limits of Nature.

There are dangerous discrepancies building up between the current resource management and the limits of nature. The fact that the importance of landscape is locked out of the minds of politicians and the public puts us in a situation, where the survival of our descendants is no longer guaranteed.

Mankind, over the past 200 years, has been seduced by the considerable liberties arising from the use of non-renewable energy sources, developments in natural sciences, technologies, and industry. These liberties are being practiced in a manner that cannot be sustained in the future.

The ability to see nature as a whole and to be able to evaluate its limits has been forlorn. Only from climatic change does the public recognize the enormous danger closing in, that is the direct consequence of climate change.

A Cultural Approach Is Unavoidable

A change in the fundamental approaches is unavoidable. Man must re-evaluate his approach with respect to the understanding of nature and to the use of resources. In view of the energetic composition of the bonds between its individual components, nature cannot be successfully observed, understood or studied in distinctly separated research areas.

The increasing fragmentation of the research areas and their relevant fields and the ever increasing division of labour has passed the optimum in industry and research, the optimum that was the original cause of division of labour. In an integrated resource science, an effort to create a central sector must be completely abandoned. The unavailability of a de-centralized research across fields and competences, or of planning or discussing, can above all be witnessed in the insufficient communication between the individual sectors, between the different areas, or even between the individual universities.

Nature can ensure mankind’s survival in terms of a direct evolution only if man gives it the chance. And that will only occur, if man allows nature to perform the processes that are necessary for biosphere development and that have been "working“ for millions of years. Only then can man be sure that nature will produce the necessary “surplus” that will allow his survival.

The Autonomy of Communes

Nature has organized and sustained the biosphere in the form of autonomous units with internal (internal to the individual units) subsistence functions. When more units began to form, they always cooperated at tasks too complicated for them as individuals. This development was enabled by the water-bound substance cycles and water cycles. This type of structure can and must be created in the human society as well – namely in small integrated cycle management on the level of units and communes. The development must be appropriate to the integrated functions, so that it works on a long-term basis, in terms of incorporating all the resources of an area or a state and integrating them into a complex process of cooperation.

Such autonomy can be attained in a variety of ways; it is dependant of the local given conditions. To ensure ist good purpose, the assured subsistence of the citizens must be as large as possible within one unit, i.e. within a commune. Small units should be self-subsistent with respect to the physical subsistence of their inhabitants. The degree of subsistence will be limited mainly by the cost of transport and the possibilities of cycle management.

Food and energy will be produced and consumed at a communal level, wastewater and solid waste (especially faeces) will be retained in the area as resources. A necessary prerequisite is that the area of the communes can, using an appropriate vegetation structure and vegetation care, realize its functional tasks, especially the communal sustainability of the water cycle, climate improvement, and the renewal of soil fertility.

Using such subsistence, autonomy can spread to other services and products without any negative impact on the citizens. Their quality of life could actually increase quite considerably. The degree and the type of autonomy attained through subsistence lies in the decision of the citizens who create and use their own integrated resource management. They must however receive an opportunity for a multi-aspect and integrated education. They will receive such an opportunity only if there is a degree of self-administration created that is based on competence and responsibility.

At complex tasks, e.g. energy supply, several communes can join to form a pact. But the key to cycle management is that inter-communal bonds are only created when they are necessary from the point of sustainability.

With a growing autonomy, food transport and the transport of other goods that are being moved around the world for aid or other purposes will slowly diminish. If we were to continue in our present efforts, nature would not suffer us much longer.

Communal autonomy can be developed step by step. It can reach very far, supposing consumer goods are produced within the commune, and social services are provided by locals. In this respect, local money cycles can be created.

Self-sufficient (“autarkic”) or partly self-sufficient communes can have the flexibility to react to large-scale crises. The balance between communal autonomy and state independence then becomes an important component of regional and state policies.

The Most Important Aspects of Commune-Internal Cycles Creation

- Only local cycles allow for easy and sustainable creation and management.
- Local cycles increase security in case of a crisis.
- Local cycles supplant and supplement the national and global solutions, whose introduction is preceded by long periods of idleness and whose effectiveness cannot be or is hard to prove.
- Local cycles can be created easily and in a democratic fashion thanks to their step-by-step introduction.
- The effectiveness of measures involved in the creation and the running of local cycles can be evaluated based on the fast local “feedback-looping”, enabling secure and rapid optimization of the cycles.
- Groups of communities can resolve large-scale issues, being more responsible than central large-scale solutions.

A Simple Area Control System

A control system can basically focus on measuring and evaluating the two following parameters:
• The quality of an area with respect to the water system, that can be described as the local dampening of the surface temperature, that can be measured using high-resolution satellites observing the Earth in space and time,
• The improved retention of minerals and nutrients that are required by the vegetation can be precisely measured in time in the rivers of the given area.

The evaluation does not concern the respective momentary state, but the relative changes of substance loss in the given area.

Output-Oriented Rewards for Area Managers

Area management must be given a degree of importance in the policies, that is appropriate to its importance for the services output of nature (water systems and substance flow). Area managers are responsible for central tasks in the society; they secure a constant supply of food, energy, water and renewable raw materials in connection with the regulatory functions of the climate, atmosphere and the functional nature protection; therefore they should be rewarded accordingly, based on their output, by the society members that do not take part in these processes.

Initial Financing of Area Management

Area management could be successful from the very beginning, provided the fees for climate certificates, and for wastewater production and the ecology taxes to do with

transport based on frequency and specific areas were diverted to it. Generally, the interests of an area must serve and be regarded as an appropriate social base for all political measures. Local area management must be integrated into the more common social institutions with all the respect it deserves.

Area management as an integrated resource management is the more successful, the more spread and enhanced its cycle management is. Areas with planted vegetation will ensure cooling and regeneration of the soil. It will be a mixture of plants, in which the production of the nutrients and raw materials that can be used in renewable energy processes can be integrated (Agro-forest-management). All “waste products”, especially waste water and bilge water must be purified as to not contain poisonous substances and they must be retained in the cycle. Cycle management will be the more enhanced, the more the products of the area are recycled or “upcycled” and retained in the local cycles (low-transport resource retention).

Removing Market Contortion

Today, food costs are subsidized in many ways, e.g. by a partially tax-financed transport infrastructure. They are not competitive on the world market as long as non-renewable energy and tax-funded infrastructure of the market will be used. Subsidies for cities and industry coming from politics and interests (even in the context of the EU) have a near-irreversible deteriorative effect on the market, which on the one hand enables the today’s prices of food, but on the other hand increases the cost of labour. The prices damage the basic life requirements in the producing countries, that are left to export without having a possibility to attain their own cycle of food and raw materials, and they damage our own country, where they have devastating effects on the land and water management.

When the real costs of extra transport and over-developed transport infrastructure were reflected in the market prices in the sense of broken durability, the evolutionary adaptation of the society would be prevented.

The Social Issues of the Current Transport System

Without getting stuck in the details of structural changes, it can be said that enormous financial assets could be made available, if transport companies would compensate their own costs (including the damage inflicted by transport). At the same time, the consequences of energy deficiency could be solved. The thereby initiated structural change would also cause a shift towards a more economic and a more long-term lifestyle, to which we will be forced sooner or later, without a profound drop in the quality of life, possibly solving dangerous political crises.

Challenging the Politicians: A Publicly Open Legal Framework

When asking: “What should we do?“ or: “Where can we begin?” we must start with a policy, which is within the legal bounds, and with which the following relevant presuppositions relevant to the communes can be realized:

- Area management as an integrated resource management is the main aspect of our society; when it comes to repairing the climate, subsistence and survival must be assured.

- Because of insufficient capacity for key-process modelling, the processes can only be created, observed, understood, controlled, and used on a small scale in small units of the size of communes or small areas. For these purposes, there are model regions that are standing by ready to serve us.

- Greater number of autonomous units can create greater area changes under evolutionary conditions.

- Area management as an integrated resource management allows for system-oriented interdisciplinary research and education, which holds the replacement of non-operative knowledge with operative processual understanding as its central thesis.

- Local area management must be trusted with the central important role of landscape management as an integrated resource management and the backbone of sustainable development. As the important pillar of the social framework, it must regain its lost self-esteem. It must therefore receive new education possibilities in the appropriate structures as well as the appropriate financing.

- Together with social responsibility, de-centralized citizens must receive the competences and the authority to carry out their social tasks and to create their own self-management.

- The enormous financial assets that are being wasted today as subsidies for the market, either direct or indirect (e.g. building and repairing of an over-developed transport infrastructure) must be transferred to area management, which must take over the important tasks within the society again.

- A large-scale task of a future-oriented government is the build-up and use of simple and transparent control mechanisms, which would ensure a fair use and distribution of public finance to area management as an integrated resource management based on tasks and output evaluation, which in turn would enable the society to quickly reach the goals it sets out to complete. National economy must again become a system superior to economy as a whole.

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