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## ECO REMEDIATION AND THE CLIMATE CHANGE SYSTEM IMPACT

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“Eco remediation and the climate change system impact” has been prepared by: Prof. Dr. Timi Ecimovic, Dr. Renate Lavicka Radha, Prof. Barbara Dobrila, Prof. Dr. Slavko Dolinsek, Prof. Antonio Imeneo, Prof. Dr. Danijel Vrhovsek, Hon. Riccardo Di Done, and Sir Prof. Dr. Roger B. Haw for The World Peace Summit, March, 2008, Wellington, New Zealand.

Eco remediation<sup>1</sup> technologies are a part of humanity’s sustainable future. Eco remediation is an integral part of the protection of nature, space and the environment towards a sustainable future for humanity or for the harmony of our civilization with Nature (Ecimovic, 2005).

The climate change system<sup>2</sup> is a novel approach for understanding the natural sciences. The climate change system is *not*: climate change, global warming, destruction of the ozone layer, the green house effect, etc.; instead it is part of the nature of Planet Earth. The climate change system is a natural system with many systems working within it, and yet other systems working outside it. It is located somewhere within the Planet Earth system (i.e. the whole) of which its biosphere system has three fundamental parts: the terrestrial, water and air systems of our living space. The climate change system is maker, provider, holder and guardian of the living conditions within the biosphere of Planet Earth.

The sustainable future of humanity<sup>3</sup> or the harmony of our civilization with the nature of Planet Earth is the only option for humanity if we are to survive the approaching impact of the climate change system on Earth’s biosphere.

Eco-remediation is the use of technologies and techniques of natural and co-natural prevention and treatment applied to nature, space and environmental pollution/protection issues. This

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<sup>1</sup> Eco remediation has been the scientific and applied research and practice of Prof. Dr. Timi Ecimovic and Prof. Dr. Danijel Vrhovsek since the end of 1980. The book on this subject, »Ekoremediacije« (in Slovenian language), Vrhovsek, Vovk-Korze, ISBN 978-961-6656-054, was published in 2007.

<sup>2</sup> The Climate Change System is an innovation reported in the book »System Thinking and Climate Change System (Against a Big »Tragedy of the Commons« of all of us)«, Ecimovic, Mayur, Mulej, 2002, ISBN 961-236-380-3

<sup>3</sup> The sustainable future of humanity was discussed in the book »The Sustainable (Development) Future of Mankind«, Ecimovic *et al*, 2006, ISBN 978-961-91826-2-8.



definition is not complete without taking into account a complex supra/multi-disciplinary approach to the specific issues of land, water and air use, re-use and pollution prevention/treatment. Contemporary, classical and applied research is taken into consideration on the one hand and, on the other, so is the cooperation of the local community which is the main user and beneficiary, while also being the fundamental unit of humanity on Planet Earth.

Planet Earth's natural system has been maintaining itself for more than 4.6 billion years (4.600.000.000) with many ups and downs with respect to possible living conditions. With the evolution of humanity's environment (human eco system), the natural system has recently come under stress, and changes in the quality of living conditions are consequently taking a new turn. The natural system is using its system qualities and quantities as its permanent practice under the rules of independencies, interactions and co-operation. We cannot change living conditions but we may or may not fit into them. When we explore and gain knowledge of how the natural system and its ceaseless 24-hour processes operate, we will have a chance to properly understand the good and bad impacts of our society on its operation.

Planet Earth is not our civilization's personal playground, and it does not belong to us. In fact quite the opposite since we (our civilization as a whole) are only one group of living creatures living on the globe's surface (mainly the terrestrial part). We have been, and are trying, to accommodate ourselves very well to the quality of living conditions during our civilization's time. But recently (during the last 200 – 300 years of the industrial and subsequent era) our impact on the biosphere has been triggering a reaction from the natural system. The resulting new conditions do not benefit our civilization, but rather the contrary. And this is the main reason for contemporary, classical and applied research, and for the introduction and use of natural and co-natural technologies and techniques for eco remediation and for the prevention and cure of environmental pollution in the terrestrial, water and air systems of the biosphere.

The impact of our civilization could be summarized in the following way: Our civilization's first settlements were built some 14,000 years ago, as a result of the social life-improvements of pre-antiquity humans. The first settlements on European lands were built in swampy areas for security reasons, and the population consisted of up to 10,000. This was a result of the changed conditions within the biosphere which evolved after the last ice-age, which ended some 60,000 – 16,000 years ago. Since then the climate change system conditions on Earth have been of almost the same quality right up to the present time. Changes have, of course, occurred but not as extreme as the ones we face now. The difference between today and 200 years ago is due to the extreme input of our civilization's output into biosphere including all sorts of waste, the side-effects of nuclear technologies, synthetic chemicals, the human population explosion and its consequence which can be seen in the destruction of the biosphere due to the ways that human needs have been met.

The climate change system as an integral part of the Earth's biosphere has a bigger influence on our civilization than humans think or believe. In absolute terms the climate is provider, holder and guardian of the living conditions which make our life possible. But we humans are doing our best, through our "modern" relationship with nature and each other, not to appreciate this fact. Instead we harm the climate change system as much as we can, yet fortunately not as much as we think we may.

It is *not planet Earth* that is the home of our civilization, but *the biosphere*, which is itself only a tiny part of planet Earth. Vulnerability of the two is separate issues, and they are not even comparable.



At present we face a large toxification of the biosphere with synthetic chemicals. This is a consequence of a lack of consideration of both the complexity and complicatedness of our (only!) biosphere.

Due to an exaggerated growth in the needs of our civilization (drinking water, industrial consumption of water, etc.) and the demand for agriculture and food production, water sources in nature are becoming insufficient. Many innovations have been used to solve this problem, of which many have had an impact on biospheric systems. Let us mention here the exaggerated use of fresh river/lake waters resulting in the destruction of underground aquifers combined with a lack of understanding of the physics of underground water deposit systems, etc.

At present we face a large deficit in fresh water sources, and the quality of present sources is questionable due to pollution from synthetic chemical compounds and their long-term effect. Recently, also the influence of hormones and hormone-like substances is becoming more and more important. Today we do not have a clean, fresh water supply, but only a supply of fresh water of a quality which falls within allowed limits of toxication by synthetic chemical compounds and other pollutants. From a water supply viewpoint, our future does not look good.

Our civilization's settlements in the near past and present (evidencing an over-concentration of people and the self-creation of a fragile environment – mega-cities, etc.) are causing the pollution of all waters in such regions, including areas to which the polluted waters travel. Actually, pollution has been a combined effect of city life (countless toxic substances – natural and synthetic chemicals, etc.) and the waste-waters from individual kitchens and sinks, toilets and sewage systems, and from “natural” river flows. Secondly, present agricultural practices intoxicate the land and ground waters and this extends to areas reached by their run-off. Finally all this discharges into coastal seas and ocean waters which are now at various stages of pollution/toxification.

Our civilization has used rivers as a sewerage transport system. To protect human settlements, property, and civilization's achievements against flood risk, huge hydro constructions were introduced. In fact, by our civilization's actions, we have straightened natural river flows and so have destroyed their natural/biological “filtering” properties. We achieved a rapid off-take of river water, and this only because we did not protect human civilisation and its achievements against floods. In the long-term the floods are still there, but with a far more damaging effect. The majority of rivers now need eco remediation to restore their natural ability to host life and the other qualities destroyed by our civilization.

A further topic having a comparable destiny is our estuaries and coastal waters, which in many cases were developed to accommodate businesses, settlements, and tourist resorts with poor natural biosphere characteristics. These are opening up new frontiers for the pollution of coastal waters and as a consequence our oceans/seas are becoming increasingly polluted by synthetic chemical compounds and other contaminants.

Today, a larger share of the human population than ever lives on littoral coastal lands. The pollution of coastal waters is taking place and in them we shall soon see the results of our continuous and damaging actions.

With on-going human development, more and more land is being changed in its natural characteristics. At present in Europe land use distribution is: 47 percent agriculture, 36 percent



forestry and 17 percent construction and development or sealed<sup>4</sup> land, lost forever to Nature/Biosphere.

Present pollution on a global scale (nuclear technologies, CFCs and like substances, pesticides, genetically modified organisms, hormone-like substances from synthetic chemical production and medication, technological impact – combustion and other engines, transport equipment, armaments and other war equipment, PCBs with impacts on gene structure, etc.) reflects our civilization's short-term thinking and action. What we need for our sustainable future is long-term responsibility for our civilization's impact within the biosphere.

**Present practices on the Earth such as:**

- **The destruction of nearly all terrestrial waters by synthetic chemicals, bio and air (rain-induced) pollution,**
- **The destruction of air by land, sea, and air traffic, and synthetic chemicals,**
- **The destruction resulting from war,**
- **The destruction of the ozone layer,**
- **Destruction of soil fertility by present agricultural practices, including erosion and desertification,**
- **Global warming, and of course**
- **The explosive reproduction of humankind,**

**should be managed in such way as to assure humanity's long-term civilization on Planet Earth.**

**Literature:**

- **“System Thinking and Climate Change System (Against a Big “Tragedy of Commons” of all of us)”, Ecimovic, Mayur, Mulej, 2002, ISBN 961-236-380-3.**
- **“Our Common Enemy (The Climate Change System Threat), Ecimovic *et al*, 2006, ISBN 961-91826-0-x.**
- **“The Sustainable (Development) Future of Mankind”, Ecimovic *et al*, 2007, ISBN 978-961-91826-2-8.**
- **“Ekoremediacije”, Vrhovsek, Vovk-Korze, 2007, ISBN 978-961-6656-05-4.**

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<sup>4</sup> Sealing of lands is the process of establishing a human ecosphere; i.e. constructing and building living environments for humans and livestock, constructing infrastructure, industry, churches and religious centers, education and sports facilities etc.