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Life-Long Education for Sustainable and Green Economy: Adopting Innovative Technologies for Better Health and Quality of Life

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ABSTRACT

In this paper it has been proposed that there is a requirement of a foundation for International Network of Experts in New Transdisciplinary Areas of Biomimetic Green Chemistry (Environmental Biotechnology integrated with Human Ecology, Biological and Chemical Sciences). These would play a key role for the success of such human-oriented missions supported by experts in material engineering, architecture, IT and many complementary research fields, contributing to optimization of new inventions and discoveries. I would like to introduce a working hypothesis that will be starting point for solving these crucial problems. The next step would be optimization of sustainable design of innovative constructions as result of cooperation of experts in architecture, mathematical modeling and IT. The next step of this mission would be supplementation of new constructions resistant to strong earth-quakes, more and more common winds due to climate change that would include development of living houses with life support systems (a bit similar to circular bioeconomy recommended for long-term manned outer-space missions). We have to collect complementary achievements in biotechnology-based circular wastewater treatment and reuse them for adaptation to climate change as well as waste bio-management. This can yield bio-fuel and bio-energies useful for optimal climate conditions, for production of pollutant-free food, vegetables, mushrooms, algae, aquaculture products, fishes and their breeding. Such new concepts of underground centers. integrating modern environmental biotechnology with large-scale production of food for inhabitants of big cities - may be a significant contribution to urban agriculture in different regions of the world. Proposed solutions would be also useful all over the world for better adaptation to climate change, in particular for prevention of infections during periods of epidemics, and for sustainable labor market related to bioeconomy-driven over all sustainable development.

KEY WORDS: BETTER LIFE, BIOMIMETIC, SUSTAINABLE SOCIETY, CIRCULAR BIOTECHNOLOGY, INNOVATIVE TECHNOLOGIES, ADAPTATION, CLIMATE CHANGE.

INTRODUCTION

Tradition of human rights has to be focused on optimization of progress in different fields of science and technology for efficient prevention against common environmental health hazards. We have to focus on primary prevention of incurable diseases of civilization as well as against incidence of new mutations including viruses and bacteria and risk of pandemics. Priority is to work for promotion of sustainable management of the natural resources by dissemination of low energy and waste-free biotechnology based on renewable sources of energy. These are bio-energy from wastes, biomass from hydro-botanic, wastewater treatment plants, using large scale energy plantations in areas out of use. We must work on reclamation of deteriorated land and enhancement of assimilation of green-house using laser-photo-stimulated plants in linkage to climate change. [1-3]

We must follow good experiences of all generations contributing to the trans-disciplinary concept of sustainable development, as introduced by Prof. W Goetel from AGH-

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University of Science & Technology, Krakow, Poland adopted by IUCN long back in 1956. Prof. Goetel introduced basic ideas of a new science, Sozology supported by Open to All Seminars and gave key note lectures together with eminent experts in environmental health science and its management. The Pandemic Director of WHO Prof. Kostrzewski in 1968 had initiated, such programs, which were later led by me in the 1st National Summer School on Human Environment in one of the oldest model areas of Europe nearing the border park in the Pieniny Mts.[4,5]

To maximize the efficiency of common action of experts with the whole society focusing on better quality of life, I propose that it is it is necessary to provide inter-generation integration programs, (versus isolated action of only staff of experts or only separated young enthusiastic people). This has to be based on lifelong interactive learning, focused on common action for Nature-based solution of crucial problems including both better Adaptation to Climate Change and Circular Bio-economy-driven Sustainable Development, which is adequate to new current situations of the world. [6,7,8]

I could offer methodological experiences of over 50 years of voluntary training of scientific clubs (NGOs), voluntary teams of thousands interested students of more than 30 natural, social, technical and other subjects of studies. This includes graduates from different university centres from mainly European countries as well as other continents. They can focus on problem-solving along with of Technical Experts from Universities and Colleges, and inhabitants of different regions for lifelong learning, integrated with transdisciplinary case study and education of local society. Sustainable Development can be achieved with efficient protection of nature, culture heritages of some Polish, Italian, Spanish, French, English buildings and other parks, health resorts of historical cities like that of Krakow and Firenze with tourism, open for all education, which will be a great contribution to knowledge-based sustainable society. [9,10]

I have also useful experiences connected with long-term Open for all Seminars, and 25 years of activity in this field of AGH-University of Science and Technology Open University, Krakow, Poland, following my concept introduced in 1988 and started in 1989. This began as lectures and discussion on our common future planning, under my scientific leadership till 2015 in the University. We focussed on the background materials obtained from several International Schools, Workshops and about 15 International Conferences on Sustainable Development and Eco-innovation (Bio-economy) since 1989.

The team of experts from different countries (under my scientific leadership) have recommended good practices for dissemination via Internet and by International Workshops, Schools and Postgraduate Courses for talented leaders. The areas in particular are for young creative people - and contribution to the academic mission of education for improving human wellbeing and creative contributions with low investments. [1,2,3 5-11]

This can help in creating green jobs like tele-work, self-employment in innovative enterprises promoting sustainable biotechnology focused and inspirited by Leonardo da Vinci, Alexander von Humboldt and their contemporary followers. Biomimetic integrated with sozology is following the concept of Prof. Goetel and ecological engineering according to principles introduced by Prof. Siuta of Poland. Let us also take into consideration very basic philosophical and ethical problems related both to discovery of Copernicus and Nature-inspiration creativity of Leonardo da Vinci, as well as human-oriented activity making reasonable life of hero of Goethe's poem Faust.[3,4,5,6,11]

Let us discuss about modern concept of the International Centres of Sustainable Development and Circular Bio-economy and also survey the foundation of International Network of Experts in this field (including distance education for dissemination Know How and good practice in environmentally-friendly biotechnology and ecological engineering) for training by international and local experts. This will generate green jobs for different regions and countries (as creative contribution to international cooperation e.g. with the World Academy of Arts and Science), integrated with Life-Long Education of knowledge-based Society (including both voluntary teams of young people as well as mid and third age generation) focused on Common Action with Experts for Better Quality of Life as Action Open to All for Benefit of All. [7.8.9.10.-17]

Creation of the International Network of Experts as Scientific Leaders of Interdisciplinary Cooperation on Green Economy and Innovative Environmentally-friendly Eco-technologies including Data-Base of Good Practices from different countries, would be very useful for stimulation integrated training and education on this priority area - Sustainable Development recommended by e.g. the United Nations in 2015 as the world-wide priority.[3,5,7,9.12-18.]

Development of interned-based distance education on System Approach to Solving Problems of staff of experts and stakeholders (including progress in cooperation with mass media including IT modern tools)- seems to be a proper way for wide-scale international cooperation Postgraduate Courses (based in particular during pandemic period on distance training of experts staff both young people from developing and European countries) may be especially helpful for sustainable management of the natural resources and adaptation green economy to climate change

in developing countries including protection of biodiversity and health of local population. Let me mention about good cooperation for promotion sustainable development for 3.5 millions of students National Open University in India. [18,19,20-27]

Let us contribute to more efficient protection of Life, both at personal level as well as on the scale of the Biosphere, by the adaptation of human activities to Nature-based mechanism of protection. Homeostasis is based on negative feed-back system (learning from basic mechanism of homeostasis and ecological balance of the whole biosphere) as necessary condition for efficient protection of environmental conditions for Proper Reproduction of Biological Resources and Biodiversity) Let me recommend series of innovative interdisciplinary , international studies and related papers – including summary, focused on new trends in Computational Science for Better Quality of Human Life and Personal Medicine.

These studies opening new perspectives of application in different fields like exascale computing platform in the scope of the EU HORIZON 2020 project PROCESS for processing large data sets for based on satellite teledetection monitoring changes in plants vegetations related both to climate change and applied agrotechnology with potential linkage to management technology 3D. Such kind of modern computing services may be especially useful for innovative common action focused on both better life quality and protection biodiversity. Other application of this team study is related to early authomatic cancer detection increasing efficiency of therapy with linkage to personal medicine. Another good practice useful for wider dissemination is connected with advances of the Cloud Platform Delivered in the Infrastructure as e-Science on Distributed Computing Infrastructure a Service Model for the Polish-Grid Scientific Communities, including both generic architecture of the Open-Nebula-based Platform and enhancements connected with providing following needs of the users as well as the requirements of the platform.

Practical output of this team study based on developed numerous solutions, integrated authentication and authorization mechanism working with the standard project accounts, based on X-509 proxy certificates and a group synchronization solution as flexible way to accounts cloud instances dispite the need to conserve IPv4 resources either through Network Address Translation mechanism, or the Virtual Private Network.[(29)] There new perspective for wide scale scientific application is related to teams' evaluation by a broad analysis of cloud providers for biomedical applications with the VPH-Share Project , as very helpful for development research on computing and storage resources.[(27)] Some security problems are crucial in applications of cloud systems including linkage to management technology research [(25,37-30)].

Therefore very useful are team study related to storage and processing confidential data (including personal medical data used in scientific research, trade secrets, financial information) and propositions of relevant mitigation strategies. The team of experts proposed a set of solutions for ensuring data security, describing feasibility studies using cryptographic software facing with the scientific software.[(28)]

Let us recommend also the development of international cooperation on Open for All - Games for Better Quality of Life for All (with active contribution of representatives of all age and professional groups) related to cooperating regions (facing with similar problems e.g. historical cities, area for cooperation, rural or industrial regions, etc.) as well as common action focused on better adaptation to climate change and to sustainable transport e.g.by minimization of negative effects of motorization, greening cities in Europe.[19,20,21]

Recommendation for cooperation on Education for the 21st Century, including new pilot projects. Replacement of task-oriented training with problem-solving training, focused on system approach to the protection of homeostasis of all living systems from the human body in connection with personal environmental health to the Biosphere, based on interdisciplinary case studies with practical output for Common Action Open for All. Integration of training with the prediction of needs and trends in labor market; focused on promotion Green Jobs.

Underground Centers of Environmental Biotechnology integrated with Production of Pollutants-free Food-in big cities as subjects for discussion welcome any supplementation with complementary eco-innovations. Integration of future study with international online training course seems to be activity, promoting sustainable management of the natural resources, integrated both with improvement biodiversity and quality of environmental-nutritional health as well as with sustainable society and labor market.[19,21]

Integration of professional training with action-oriented Life-long Education of All Age Groups (including inter-generation linkage)is required for Common Action of Experts and Knowledge-based Society for Better Quality of Life for All. We have to use better applications of progressive society, in different (complementary) fields of science and technology. Supplementation of up-to-day knowledge with ecological culture, ethics, sense of common responsibility and stimulation of individual talents and creativity are required.

We can use the skills and efficient cooperation of multidisciplinary teams of scientists and practitioners from a knowledge-based society for more efficient solving

of crucial common problems. These can be adaptation to climate change and prevention of dissemination mutants of coronavirus pandemic and similar environmental risk factors for our health. Better understanding is needed among both producers, consumers and decision-makers of sustainable management of the natural resources (including renewable and clean sources of energy). This is the best way to permanently develop a sustainable society and circular bio-economy.[22,23,24,]

Improvement of socio-technological tools for better motivation of partners towards Common Action on local scale integrated with regional, international and global cooperation (reflecting integration of the natural environment and technological with bio- economical network on the global scale is recommended. Let me introduce the contributions, initiated by my colleagues, Prof. Belsare in India and Prof. Carioca in Brazil which has focused on improvement of quality of life by introduction innovative know-how in environmentally-friendly biotechnology. These contributions are significant for improvement of quality of environmental health and creation of green jobs in poor regions of the world, by adopting local needs and possibilities of bioeconomy-driven sustainable development.[3,4-9.]

Replacement of popular socio-pathogenic computer games with attraction for young generation like games promoting interactive education can help in stimulating the sense of common responsibility for better future. This can be based on green economy and team action, which is useful for dissemination of positive motivation, skills and abilities for sustainable management of natural resources. These can be adopted to different regions and human environment in buildings, green- habitants on local scale as contribution will be open to all. Games for better future of the humankind can make human life more reasonable and better focused for more effective protection of life. We can include bio-ethical aspects and common responsibility for better future.

Following my over 50 years of good practice and experiences from different regions of the world, let us start as soon as possible with IT based global cooperation focused on problem-solving transdisciplinary training of experts on global scale (focused on target regions very high rate of infections with SARS COV-2 virus and high mortality in developing countries like Brazil, India and Peru, following my experiences (including training experts in Sustainable Development supported by Eco-Innovation for also these countries). Let me offer coordination for such problem-solving transdisciplinary Trainings (related to life, social and technical disciplines) with Lifelong Learning for Common Action of Experts (from different countries) and local knowledge-based society) adopted to needs and possibilities of different regions of the world.

Let me also recommend series of innovative interdisciplinary studies and related papers – focused on new trends in Computational Science for Better Quality of Human Life and Personal Medicine. The Digital Twin paradigm in medical care has recently gained popularity among proponents of transitional medicine, there are quoted papers over viewing clinicians to make informed choices regarding treatment on the basis of digital simulations.

In this section of the paper with is presented an overview of functional and non-functional requirements related to specific IT solutions which enable such simulations - including the need to ensure repeatability and traceability of results - and propose an architecture that satisfies these requirements. We can propose a computational platform that facilitates digital twin simulations, and validate our approach in the context of a real-life medical use, for example case of bone strength applications.

Biotechnology for Better Adaptation to Climate Change and Sustainable Development on regional and global scale

Better adaptation of cultivated plans and consortium of soil microorganism to extreme environmental conditions connected with climate change requires additional energy. Empiric selected algorithms of laser photo-stimulation (of high energy density) is new cheap and very useful tool for enhancement of food, biomass for bio-energy production under suboptimal conditions including water deficiency. It can also be used for better reclamation of deteriorated areas out of use, for enhancement assimilation of greenhouse CO2 and for more efficient bioremediation and biodegradation of pollutants in contaminated soil. This technology can result in much more efficient biodegradation of carcinogenic PAHs in soil and water, connected with oil and natural gas exploitation. Consequently, there can be a better reclamation of areas contaminated by petrochemical pollutants, as well as these can be used for waste water bio-treatment and re-use of water, as well as for improvement of environmental health and better protection of our fast depleting biodiversity[7,8.9,13,19.]

Laser biotechnology was adopted by me and my students for worldwide promotion sustainable development of model rural areas in Brazil, China, Cuba, Georgia, India, Japan, Laos, Madagascar, Malaysia, Mexico, Myanmar, Nepal, Peru, Poland, Turkey, USA and Uzbekistan. Such eco-innovation is especially useful for prevention against both desertification and flooding as well as for creation during short time many new green jobs and promotion bio-based green economy in developing countries all over the world (e.g. in regions of high unemployment, semi-desert areas) including model International Center of Bioeconomy and Sustainable Development Adopted to Climate Change in Brazil and India. [19,21,23]

The above mentioned long-term experiences and my new concept of Underground Urban Agriculture could be a starting point for Interned based distance training of experts and for foundation of the International Network of teams of experts and innovative enterprises for wide scale applications of Laser Biotechnology and complementary eco-Innovations for sustainable adaptation of local biological resources to climate change (as modern Bioeconomy) and for improvement Quality of Life of millions of people including populations under risk of malnutrition and environmental born diseases (e.g. incurable Minamata disease and common infective diseases), (including e.g. Iron-deficiency anemia) and hunger on global scale. My long-term experimental study integrated with training of staff of new experts in laser biotechnology for sustainable development may be also useful for acceleration re-forestation as well as for more efficient greening of cities and their regions in linkage with Better Adaptation to Climate Change.

Possible are Expertise Opinions and Projects related to Innovative solution crucial problems of Sustainable Development for selected countries. Following are recommended priority tasks in Model Areas [including introduction of new Laser Biotechnology for Bio-based green economy and Sustainable management of the natural resources; water and soil in particular as well as system approach to improvement of quality of the natural environment and environmental health focused on better prevention of water-borne diseases and introduction of good practices for health and food and also for lifelong learning oriented towards development of sustainable labor market. Following are newly introduced concepts and experiences of Prof. J.W. Dobrowolski in applications for much more efficient production: -

1. Adaptation of Agriculture and food production to Climate Change by enhancement tolerance of stimulated by lasers plants to longer periods of water deficiency, salinity of soil and increase of crop yield of biomass of the plant cultivated under suboptimal conditions, including better management of semi-arid areas using local plants.
2. Better Reclamation of Deteriorated Areas (e.g. Post-industrial, Mining Oil /Gas and Metals Exploitation) and another areas out of use for enhancement of water retention and more efficient bioremediation of toxic trace metals, as well as biodegradation oil derivatives including carcinogenic polycyclic aromatic hydrocarbons PAH in water and land for primary prevention associated health hazard, focused on primary cancer prevention.
3. Development of Energy Plantations associated with increase of CO2 Fixation, Biomass and Bio-energy production as Renewable Sources of Energy [including new biotechnology for enhancement of gas production from timber from laser-irradiated bushes and trees].
4. Stimulation of formation and improvement of resistance to traffic output of the Green Areas in Cities [e.g. alongside main streets, surrounding parking places, residential districts etc] for reduction risk for health, nature and culture heritage of traffic output.
5. Acceleration of growth rate of seedlings and Reforestration process and Protection of Biodiversity especially in protected areas like National Parks.
6. More efficient Biological Treatment (using water plants, microalgae etc.) of Wastewater for re-use of Water also for Food Production as well as Better Prevention of Water-born Diseases connected with contamination of drinking water by pathogenic bacteria, fungi, viruses, etc. as well as for better bioremediation of metals and other pollutants.
7. Improvement of Quality of Food e.g. optimization of amount of Vitamins and biologically-active minerals in vegetables, fruits, and other cultivated plants. for contribution to nutritional health .
8. Expected Social Outcome of introduction of Innovative Technologies : New Know How Better Quality and Management of Water, Food, Human and animal Health, creation during short time many New Green Jobs both in developing and developed countries, including stimulation of international training and cooperation of experts with knowledge-based sustainable society .

The above-mentioned perspective of applications of sustainable development including laser biotechnology for improvement quality of the natural environment, environmental health and for promotion bioeconomy-driven sustainable management of the natural resources were taking into consideration within innovative projects and problem-solving training at the Team of Environmental Biotechnology and Ecology AGH University of Science and Technology in Krakow, Poland many interested diploma and doctoral students from different regions of Europe, America, Asia, Africa.

Integration of innovative biotechnology, ecological engineering and sustainable design and other complementary subjects could be a starting point for more efficient Greening Cities and Sustainable Development of Urban Agriculture and introduction of a new generation of eco-houses. These can include evergreen gardens and also Centers of Bio-treatment of Waste Water, Organic Wastes Management of Bioenergy. Innovative Underground Centers of Eco-engineering and Food Production would be in particular good for big cities all over the world [6.7.9.]

We have good experts in all needed discipliners for introduction of my concept into real life (e.g. in Interuniversity Team of Sustainable Development and Eco-Innovation in Krakow Poland), supported by International Team of Experts in Circular Bioeconomy and Corporate Social Responsibility.

Laser biotechnology integrated with sustainable design of green cities by significant acceleration of development green areas within cities. and support sustainable design adequate to climate change and optimal use of renewable sources of energy. The author would like to propose also to follow good 50 years of practice of problem-solving training of staff of experts in sustainable development based on interdisciplinary case studies in different regions of Poland, supplemented with Lifelong Learning. This can develop better environmental health with sustainable labor market, in different cities and their regions based on complementary experiences and inspirited by tradition and good practice of Greening Cities in many countries.

There are perspectives of elaboration Expertise Opinions (e.g. focused on introduction efficient, not expensive and simple Laser Biotechnology adopted to local conditions and possibilities) and Innovative Joint Pilot Projects in result of cooperation with local experts and educated society.Good Experiences and Perspective of Eco-friendly and Pro-Health Application of the Modern Beekeeping System, Api-pol for Sustainable Development in Poland, Sweden, India, Brazil and Many Regions of the World.

Modern beekeeping, based on more than 40 years of interdisciplinary research-developing studies and training staff of experts on national and international scale of the Polish Innovative Beekeeping Enterprise "Apipol-Farma" (supported by team of experts from complementary fields of biology, pharmacology, medicine, mechanical engineering, IT, etc.), corresponds by introduction innovative biotechnologies with the current ideas of Sustainable Development and Eco-innovation.

It helps to create jobs not only in farming areas but also in wide network system and in linkage with greening cities. In Poland alone, this labour market is estimated for approximately 1.5 million people. Dissemination of Good Practice could contribute to the promotion of Green Economy and creation of many millions of new Green Jobs all over the world (especially in developing countries reach in useful plants, including herbs). Integration of many complementary fields of technology (focused on innovative biotechnology) in modern apiculture (beekeeping) can contribute to improvement quality of the products and efficiency of production (based on cost-benefit analysis).

This system of beekeeping is based on biotechnological principles, which are environmentally eco-friendly (and could contribute to increase the biodiversity of flora and fauna (insects in particular) in many rural and protected areas. Thus the 'Apipol' biotechnology of modern beekeeping (supported by permanent control of quality of products in modern laboratories and interdisciplinary case studies based on new achievements in biological sciences and technology) could be recommended as useful tool for reduction of unemployment as well as for Sustainable Development of regions of National Parks, Reserves of Nature as well as not polluted areas for recreation and health resorts.

This modern and low-investment system produces top quality products which are very useful in prevention of malnutrition, and another field of preventive medicine including dietary supplementation (e.g. with some vitamins and biologically active trace elements e.g. vitamin C and iron very useful for nutritional prevention of iron-deficiency anaemia) as well as in the production of health-enhancing cosmetics, including royal jelly. Bee products used many years for medicinal purposes yield surprisingly beneficial results.

This observation led to the creation and development of a new medical discipline: Apitherapy based on interdisciplinary research and long -term application in internal medicine, surgery, dermatology, gynaecology, ophthalmology, dentistry, etc. Referring to basic and applied studies there are some guidelines for using bee products not only for prevention some common diseases (especially among children) but also for prolongation human life, as well as for ensuring dignity in old age (by retardation of the aging process of the human body).

The bee is not only the insect necessary for production of many components important in human nutrition, but also the only example of an animal which breaks records in producing an ample range of substances which are otherwise impossible to obtain (e.g. technical products as pastes and liquids for the preservation of wood and wood-related products would have been impossible to obtain without bees). Some of these products are used instead of synthetic chemicals which according to eco-toxicological evaluation are harmful to the natural environment (ecosystems function) and to human health.

By providing appropriate conditions for optimization populations and activity of bees in the natural environment, it is ensured that ecological balance is maintained and the environment is friendly and good for human health. Modernisation and restructuring of agriculture in terms of "cooperation" with bees is the source of benefits described in the Beekeeping Development Program Using ' Apipol ' System (tested for many years on national scale in Poland and since a few years introduced to Sweden).

The economy of farming is changing dramatically and farming chores turn into pleasure, as work results are beneficial to nature, economy and all people. This is the foundation of a stable eco-friendly economy which reflects the idea of sustainable development. The President of

Enterprise of Apiculture and Pharmacy Apipol-Farma, Eng. R. Tomaszewski, and Professor J.W. Dobrowolski, Poland in cooperation with teams of Professor Belsare from the Bioscience Department in Bhopal, India.

They have shown that products produced by bees propolis and bee bread extracts - used after the great ecological catastrophe in December 1984 – there was much improvement in health status of the numerous victims of cyanide poisoning compounds. Experimental investigations conducted by the team of Professor S.B. Vohora and his staff from the Hamdard University in New Delhi and Dr J.W. Dobrowolski in Krakow Poland, have shown that natural product propolis is very effective for elimination pathogens causing a range of common diseases, which frequently occur in subtropical and tropical countries in Asia, Africa and America.[2,3-11]

Joint publications were found as very useful in many developing countries interested in effective prevention and treatment common infective diseases. Indian experts and authorities have shown great interest in the introduction of modern production and processing methods developed by Polish Apipol Beekeeping Enterprise. It is a very useful tool for sustainable development of a biology-based Green Economy, as well as for prevention and treatment of many infective diseases combining traditions of natural medicine (ethno-medicine) with the new achievements in various fields of science (including medical and biotechnology.[2,3,11,24,18]

Eng. Tomaszewski of Poland, and his staff introduced very efficient (in terms of cost-benefit analyse) and good for nutritional health new generation of phyto-honey. In result of feeding bees with extract of different species of vegetables and medical plants they produce a large amount of phyto-honey (including both forest areas as well as semi-arid regions). Apipol's founding President, Ryszard Tomaszewski, and his team have developed a proprietary system for the development of modern beekeeping (apiculture) with respect to the sustainable development of the labour market. Their offer is aimed not only at Poland (for rural regions and protected areas) and another countries in Central Europe, but also at developing countries, such as India and Brazi[l.2,3,4,19,21,23,25,26]

Professor Belsare initiated in State of Madha Pradesh, an International Training Program in cooperation with Professor Dobrowolski, which is involved in preparation of the International Centre of Innovative Environmentally Friendly Biotechnology for Promoting Research-Developing Study in India and Pilot Projects integrated with Lifelong Education of Experts and Society for Promoting Bioeconomy-driven Sustainable Development.[10,11, 13,14,26]

Introduction of modern high-efficient apiculture (based on innovative biotechnologies (including introduction herbs-honey or phyto-honey and new generation of mobile beehives) supported by modern aquaculture (including efficient cultivation of microalgae) as well as eco-tourism and wide-scale ecological education; could increase financial situation of people living in forest areas as comparable to farmers involved in agriculture or breeding of animals. Such kind of eco-innovative-based common action could contribute to efficient protection the top quality ecological value on international scale[.4.6.8.9.10]

Laser biotechnology could also be useful both for photo-stimulation of physiological activity and growth rate of microalgae, as well as could increase amount of biologically necessary trace elements and vitamins in plants (as source of pollen, propolis, honey and phyto-honey as well). This way training on this new ecologically friendly biotechnology would be useful for higher efficiency of apiculture and aquaculture with very beneficial input of nutritional health as well as bioeconomy adopted to different regions.[13,19]

Integration of complementary eco-innovations with Lifelong Learning and Social Corporate Responsibility could contribute to better quality of life as well as to much more efficient protection of ecological value of the top quality primary forest e.g. in the model areas of Brazil and India (including better adaptation to climate change of very poor regions under high risk of overexploitation biological resources and ecological catastrophe connected also with dramatic situation of great number of people). Global recession due to corona virus pandemic require introduction innovative biotechnologies for efficient stimulation of sustainable development and labour market especially in poor regions of the world. This already tested innovative biotechnology may be one of useful tools needed for regaining stability after big financial crisis in developing nations. [13,19,20,23,25,26]

CONCLUSION

Recommended new concepts integrating modern environmental biotechnology with large-scale production of food for inhabitants of big cities - may be significant contribution to urban agriculture in different regions of the world (both in southern semiarid as well as northern for evergreen gardens especially attractive during long winter time). Proposed solutions would be also useful all over the world for better adaptation to climate change (in particular useful for prevention of infections at periods of epidemics) and for sustainable labor market related to bioeconomy-driven sustainable development.

Integration of innovative biotechnologies e.g. apiculture (modern beekeeping using mobile beehives) with aquaculture supplemented by large-scale macroalgae cultivation and complementary application of sustainable

forestry, agriculture and breeding of animals, focused on dissemination of useful complementary Know-How, which could play a key role for creation of millions of Green Jobs and for Hunger Prevention.

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