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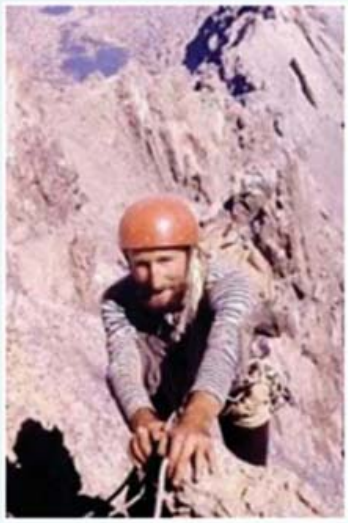
Global Ecosphere Paradigm: India & Himalaya's Region



Holistic "Sustainable Development of Ecosphere"

In current discussions concerning regional and global environmental security, an idea as an imperative of the day arises: to build the world system at the level of UNO for minimizing social-economical human risks caused by dangerously immensely growing natural and anthropogenic hazards of planetary scales. Really, amount of facts shows an escalation of geophysical, climatic, technical and environmental cataclysms initiated with global transformations of life on the Earth. E.g., from 965 to 2010 year, general human loss has been estimated as 6.4 billions of victims, while a relevant economical loss as 1.250 billions of US dollars (Sulakshin, 2016). Regarding future, authors of the annual report on global risks (http://reports.weforum.org/global-risks-2014/) noted that dominating factors of industrial-environmental hazards consists of growing amount of technical catastrophes and natural hazards (Sun's anomalies, geomagnetic storms, earthquakes, volcano's eruptions, fires, tsunami, floods, hurricanes, etc.), extending human illness caused with low quality (or lack) of fresh water and extreme weather/climate. Besides of that one may not ignore a global danger of space origin (asteroids and meteorites). Unfortunately, to realize that idea with forces of one country only impossibly due to an insufficient integration of scientists, technologies, economical and human potentials at a level of state and inter-states.

Also, let us point out that it is impossible to realize in the frame of a current well-known paradigm of "sustainable development" (SD) of humanity (https://en.wikipedia.org/wiki/Sustainable_development). In accordance with the SD concept, all developing countries (first, India and China, then Russia, etc.) must damn their industries for "balancing human necessities with a possibilities of nature" and "environment protection". A special role in "background" of the SD concept is given to incorrectly interpreted phenomena of "greenhouse gases", "global warming" ("abrupt climate change"), "ozone holes", etc. (See, e.g., F. Dyson's interview at http://e360.yale.edu / content / feature.msp?id=2151 and some our selected papers listed below). Now, one may easy find that missing atmospheric water from considerations of IPPC leads to a fantastic overestimation of "anthropogenic CO2" (directing to a known Kyoto's convention). While assigning "ozone holes" to refrigerator aerosols and other anthropogenic gas exhausts is based on a blind ignoring real natural mechanisms of regulating ozonosphere (with "deep planetary degassing" from internal Earth's geospheres); but it leads to a Montreal convention, etc. Combining both incorrect suggestions, one can get an amazing pseudo-phenomenon of "global warming" (now "abrupt climate change"), etc. (Syvorotkin & Smorodin, 2010; Smorodin, 2011-2014, etc.).

Today, inconsistency of attempts to justify the SD paradigm by the Intergovernmental Panel on Climate Change (IPCC), Roma's club, Meadows' group is clear for major thinking people in world's society. The factual impotency of the SD paradigm was clear demonstrated at the United Nations Conference on Sustainable Development (UNCSD) at Rio-de-Janeiro 2012, where main concluding recommendations concerned human depopulation and lowing a quality of life at the Earth (https://en.wikipedia.org/wiki/United_Nations_Conference_on_Sustainable_Development). Therefore, in fact, the SD concept presents the "3D program" (deindustrialization, depopulation and desocialization) for second-grade countries. Obviously, impossibly to construct any "sustainable development" based on incorrect or mythical assumptions since it leads up a blind alley and must be dropped and revised.

Instead of the failed SD paradigm, we propose an alternative holistic paradigm of "Sustainable Development of Earth's Ecosphere" (SDEE) developed in a series of our papers and presented earlier at Delhi's, London's and Moscow's summits on global sustainability and global studies (Smorodin, 2010-2014). Here, the "Ecosphere" (as a notion) means a sum and result of interaction of three planetary hyperspheres: Geosphere, Biosphere and Anthropotechnosphere (or shorter, Anthroposphere). The Ecosphere presents a whole system (as a human "space shuttle") which "sustainable development" must be considered, investigated and established. (Obviously this term is wider than conventional "Environment"; the last one excludes human beings). Then, ecologic (environmental) approach we define as accounting all consequences in human economic/technical activity onto Biosphere. It returns us to a genial definition of "ecology" by its

founder E. Haeckel (1866): "Ecology is economy of nature"! A main (financial-economic) core of our SDEE paradigm presents an advanced "environmental economy" based on honest and responsible scientific methods combining novel climatology, unique environmental protecting technologies and pioneer financial mechanisms of environmental insurance and management. As we believe, it brings a new methodological light onto our human reality and opens immense economic and social perspectives for peaceful development of humanity in future.

Today, the most important task of world society must be a creation of system of connected regional, interregional and global net infrastructures (centers) for minimization/preventing both natural and anthropogenic hazards and affective holistic management with a sustainable development of ecosphere (environment + society) in the frame of the SDEE paradigm.

Here, we would like to propose developing such a (inter-)regional center in India. It can be realized on a basis of proper existing institutions at the Himalayas environmental region, in view of representative importance of the country, accounting its geodynamic and geopolitical aspects. Both exacting the goalsetting of such a system and solving this task, as we believe, has to be done in accordance with an "International Strategy for Disaster Reduction" of UNO with focusing on a risk management (https: // www. unisdr. org/ who-we-are/international-strategy-for-disaster reduction).Structurally-functionally, this system consists of two interrelated subsystems: (1) a risks monitoring, forecasting and alerting one, and (2) an infrastructure for preventing/minimizing risks of potential natural/anthropogenic hazards based on results of forecasting. At its realizing, one need in clear holistic understanding of universe and adequate models for forecasting of Ecosphere's functions and dysfunctions.

As a short introduction into a matter and some argumentation of our proposal, let us first make a brief review of major global and regional (India and Himalayas' ecosystem) environmental problems related with extreme meteorological hazards, natural disasters, and water precipitation/resources, as well as ways of their possible realistic solutions.

Major environmental problems of, Himalayas' mountain ecosystem

World food crisis

Currently, problems of financial crisis and economic recession in leading economy of the world have removed a food problem (concentrated now in the poor countries) on the second plan. Such oblivion can lead to a sharp aggravation of hunger and from here – to new civil and international conflicts. The disturbing situation has developed in India and some other regions (the Near East, the Africa to the south from Sahara, and the North Africa). Even in India, despite its big economic successes, the sizes of undereating increase (increase at 24 Million population or 11. 6 %). To the international confrontation in the field of agriculture conduct intentions of some countries to stimulate manufacture of ethanol from vegetative raw materials that will aggravate crisis of world food balance. In April 2008, a Secretary General of the United Nations has founded and headed a special working group on the crisis of world food safety (High Level Task Force on the Global Food Security Crisis). In 2009, a reduction of world grains production (in comparison with 2008) happen, in accordance with the FAO forecasting. Mostly, this is caused with improper weather conditions: there is a deficiency of precipitation in India, while in China 50% of the winter wheat crops have been suffered from a drought (From: Assessment of the World Food Security and Nutrition Situation. Committee on World Food Security, 34th Session, Rome, 14-17 October 2008).

Water crisis

In the world, in average, the agriculture takes about 70 % in annual consumption of fresh water (the industry – 20 %, households – 10 %). In 2030s irrigation will demand some more water, than is at the disposal of thirty developing countries. The UNO predicts that in quarter of the century the problem of deficiency of fresh water begins to torment 3 billions of people. Scarcity of rains in droughty regions forces peasants to use underground waters for an irrigation of fields. But it conducts to fall of horizon of underground waters on 1-3 meters a year. To restore these levels, centuries are necessary.

In India's economy, agriculture is one of the most prominent sectors. Agriculture and allied sectors like forestry, logging and fishing accounted for 16.6% of the GDP in 2007 and employed 60% of the country's population (Nash, 2002). About 43% of India's geographical area is used for agricultural activity. Two-thirds of people are farmers. Without new farming technology or irrigation, monsoons provide quite critical moisture.

Drought in India. Drought in India has resulted in tens of millions of deaths over the course of the 18th, 19th, and 20th centuries. Indian agriculture is heavily dependent on the climate: a favorable southwest summer monsoon is critical in securing water for irrigating Indian crops. In some parts of India, the failure of the monsoons result in water shortages, resulting in below-average crop yields. This is particularly true of major drought-prone regions such as southern and eastern Maharashtra, northern Karnataka, Andhra Pradesh, Orissa, Gujarat, and Rajasthan. In India, millions are literally praying for rain.

Forest fires in India. Fires are a major cause of forest degradation and have wide ranging adverse ecological, economic and social impacts. India has about 1.7 million ha of productive coniferous forests with such valuable timber and pulpwood species as fir, spruce, deodar, kail and chir pine. Estimated growing stock of these forests is over 200 million cubic meters, the monetary value of which could be estimated from Rs. 40, 000 to Rs. 60, 000 million, i.e. US $ 900-1,350 million (Bahuguna, 1999); source: http: // envfor.nic.in / unccd / book01 / desert. htm. Lightning is one of major natural causes of massive forest fires that can happen during rain storms, additionally to a human factor.

Rainwater harvesting in India. One of the solutions to the fresh water crisis and the best way to recycle water is Rainwater Harvesting - capturing the runoff. Rain water harvesting is an ancient concept, the implementation of it does not requires any major technology and the cost is even low, as compared to the benefits cost should not even be considered. Very rarely one can meet a politician, especially in India,

who will not emphasize the importance of water. The real problem is that hardly any of them know how to solve the water problem. Read Atal Behari Vajpayee's address the parliament on NDA's action plan for the nation. Vajpayee said that if there is one thing he would do in five years of his rule was to ensure that all villages will get drinking water. Rajiv Gandhi went beyond rhetoric to actually set up a drinking water mission. Raincenters are a network of permanent exhibitions that seek to spread water literacy among urban Indians. They are yet another milestone in CSE's campaign on Jal Swaraj. CSE is in the process of setting up raincenters across the country. Local NGO's and citizen's groups are identified in towns and metros as partners to launch the campaign to spread water literacy. (http: //www.rainwaterharvesting.org/Crisis/AA-on-drought.htm).

Flood and landslides in the Himalayas mountain eco-system

The recent landslides served to remind us that ecologically, the Himalayas are dying the death of a thousand clearcuts. Recurring landslides have afflicted the Uttarakhand Himalayas for decades now, engraved in the memories of the survivors who lost loved ones, homes, and livelihoods. The death toll due to landslides had surpassed the past record and followed a very intense winter and hot summer in the hills. Furthermore, the deforestation has led to soil erosion and lowered water retention. Indeed, the Chipko movement was motivated in large part by the tragedies of landslides that had by the 70s become an ominous threat to the difficult hill life of Uttarakhandis. A recent editorial in the Times of India lambasted successive state and central government policies that have undermined the fragile Himalayan ecosystem and geology.

China. The heavy rains this year have caused havoc throughout Asia, as seen in China, where the Yangtze floods have been the worst in over 30 years. There too, heavy deforestation all along the river banks has allowed water to flow unhindered, sweeping all before it. Three thousand people have died there, and millions have been left homeless.

Bangladesh. Furthermore, the crisis in Bangladesh is at its most severe in living memory, with over 60% of the country under water. Much of the flooding were caused by the overcharged rivers flowing from the denuded Himalayas to the Bay of Bengal. The floods have swamped 30 million people, destroyed millions of dollars in crop land, carried off livestock, and caused enormous damage to the country's infrastructure.

It is possibly only a matter of time before the Ganga similarly rages through the plains of India. Indeed, a thousand people have already lost their lives, and hundreds of thousands made homeless by floods in UP and West Bengal. As such, the country is possibly verged on a Himalayan disaster, one that will need Himalayan solutions to prevent (http://uttarakhand.prayaga.org/landslide.html).

Fast melting glaciers in the Himalayas

The factor could lead to water shortages for hundreds of millions of people, as the conservation group WWF claimed (http: // news. bbc.co.uk/2/hi/science/nature/4346211.stm). The Himalayas contain the largest store of water outside the polar ice caps, and feed seven great Asian rivers. In a report, the WWF says India, China and Nepal could experience floods followed by droughts in coming decades. The group says immediate action against climate change could slow the rate of melting, which is increasing annually. "The rapid melting of Himalayan glaciers will first increase the volume of water in rivers, causing widespread flooding," said Jennifer Morgan, director of the WWF's Global Climate Change Program. But in a few decades this situation will change and the water level in rivers will decline, meaning massive environmental problems for people in western China, Nepal and northern India. The glaciers, which regulate the water supply to the Ganges, Indus, Brahmaputra, Mekong, Thanlwin, Yangtze and Yellow rivers are believed to be retreating at a rate of about 10-15 m (33-49ft) each year. Hundreds of millions of people throughout China and the Indian subcontinent - most of whom live far from the Himalayas - rely on water supplied from these rivers. Many live on flood plains highly vulnerable to raised water levels. Nepal, China and India are already showing signs of climate change, the WWF report claims. Water level in China's Qinghai Plateau wetlands has affected lakes, rivers and swamps, while India's Gangotri glacier is receding by 23m (75ft) each year.

Impact of El Niño on regional weather

All such episodes of severe drought correlate with El Niño-Southern Oscillation (ENSO) events (Kumar et al, 2006; Caviedes 2001). El Niño-related droughts have been implicated in periodic declines in Indian agricultural output (Caviedes 2001). Nevertheless, ENSO events that have coincided with abnormally high sea surfaces temperatures in the Indian Ocean - in one instance during 1997 and 1998 by up to 3 °C (5 °F) - have resulted in increased oceanic evaporation, resulting in unusually wet weather across India. Such anomalies have occurred during a sustained warm spell that began in the 1990s (Nash 2002). A contrasting phenomenon is that, instead of the usual high pressure air mass over the Southern Indian Ocean, an ENSO-related oceanic low pressure convergence center forms; it then continually pulls dry air from Central Asia, desiccating India during what should have been the humid summer monsoon season. This reversed air flow causes India's droughts (Caviedes 2001). The extent that an ENSO event raises sea surface temperatures in the central Pacific Ocean influences the degree of drought (Kumar et al, 2006).

The international scientific supporting the Himalayas mountain ecosystem

Climate change and globalization have an increasing influence on the stability of the fragile Himalayas mountain ecosystem and the livelihoods of mountain people. For supporting and developing an economically sound mountain region, the International Center for Integrated Mountain Development (ICIMOD) at serving the eight regional member countries of the Hindu Kush-Himalayas (Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan) has been founded in Kathmandu, Nepal. The ICIMOD declares supporting regional programs through partnership, facilitating the exchange of experience, and serving as a regional knowledge hub to sustain vital ecosystem services for the billions of people living downstream. Despite of the ICIMOD activity, numerous unsolved problems need in urgent attention.

Summary: From problems towards solutions

The extreme weather events and corresponding hazards (as one

believes, in the Himalayas mountain eco-system and its neighborhood including India) are partially due to the El Nino-related disturbances combined with possible global warming-induced climate extremes to aggravate the situation. Today we may affirm that we are able to clarify both suggested causes of extreme weather variations provoking disasters in the Himalayan (India's) region. It consist of the El Nino mechanism in its relation to weather in India's region and the real driving forces of "global warming", alternatively to hypothesis on the "anthropogenic greenhouse gases" effect. Based on our novel geo-ecosphere concept of the weather-climate-environment interrelationship we may explain, forecast, and propose real solutions to prevent and/or mitigate meteo-environmental hazards (see, in part, Syvorotkin & Smorodin, 2009, 2010; Smorodin, 2008-2012, etc.).

One the most recent achievements that can advance the fruitful idea of the rainwater harvesting is promoting the artificial rain precipitation (atmospheric precipitation management, in general) by applying the novel effective "cloud seeding" and "cold fog seeding" methods and relevant programs developed recently in the USA (in part, in the frame of "Weather, Climate, and Environment Management" (WCEM) program).

In the frame of our initiative programs, we have realized preliminary advanced research and their partial marketing for a few environmental protecting directions: (1) advanced research of mountain glacier system in their connection to climate, environment, and water resources, (2) a technical project for preventing winter "icing rains" at a regional scale, (3) a projects for suppression of massive forest fires, (4) a project for rain water intensification, etc.

We would like to address some of our achievements to the Indian area of the Himalayas ecosystem (via relevant institutions). For more dynamic promoting our initiative there, we believe, the best way is to create the new coordinating regional center in India ("Ecosphere-India"). After that, focusing on India's region, we could establish collaboration with the ICIMOD in Nepal, on favor of effective supporting the livelihoods of population.

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Quotes

Disruption

"Disruption is at once a method, a way of thinking, and a state of mind. It is a manner of questioning the way things are, of breaking with what has been done and seen before, of rejecting the conventional. For those who refuse to sit around, who strive to move forward and beyond, disruption can give birth to new ideas. It is a three-step process: convention, disruption, and vision. You start by identifying impediments to clear thinking (conventions), and then you throw them into question with ideas that are radically new (disruptions). This is done with a sense of where you're going, an intuitively divined direction (vision)."