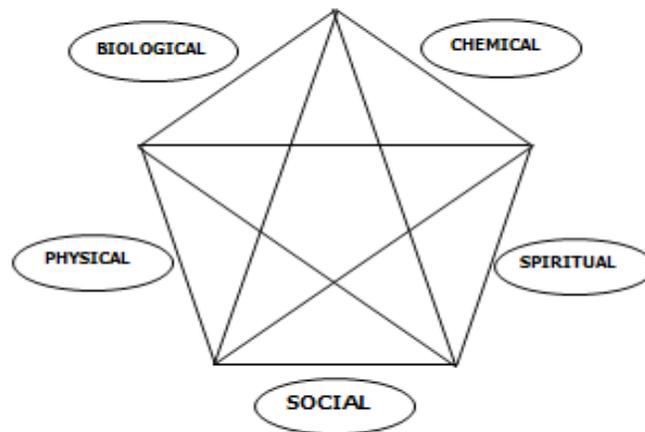


Health and The Environment: The Intimate Connection (Towards Sustainable Agriculture and Food Security)

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Discussions about sustainable agriculture, food security and “green economy” unavoidably lead to issues on environment and health. However, there is hardly a reasonable level of understanding of health as it relates to the environment. There is a generally poor appreciation of the highly complex ways that prevailing institutions, power relations, policies and practices, including those related to sustainable agriculture, food security and “green economy”, exert their impact on environment and health. Health has always been understood narrowly by most people as “absence of disease”. Even the somewhat broader and globally recognized definition by WHO that health “ is a state of complete physical, mental and social well-being and not only the absence of disease or infirmity” does not give an adequate recognition of the intimate relationship of environment and health.

Environmental problems are also health problems. This fact has been tragically demonstrated repeatedly in the recent past – Love Canal, Chernobyl, Minamata, Bhopal, among others. The earth is a living organism and it has a continuity with the human being through various processes (physical, chemical, biological, psychological/spiritual and social) that maintain life . The human being is an integral part of the living earth, our living environment. Nature, the dynamic expression of earth’s life, is not just a passive entity external to humans waiting to be explored and

exploited for material benefits. Nature is an extremely intricate and immensely complex active web of various entities, habitats and processes; ecosystems that provide the conditions for life and its sustainability (Lovelock J, 1979; Leviton R, 1991; ScienceDaily, 2012). It is also a social construct with economic, political and cultural dimensions. It is not simply a natural space or a feature of the natural environment but a place where a group of people collectively establish their own human organization and integrity, their landscapes reflecting unique human activities and interactions. They combine elements of space and time, and represent political as well as social and cultural constructs. Individuals subjectively perceive and categorize their social and natural environment in terms of symbols and meanings. They define the situations in which they are located. These situations constitute reality for a people with shared meanings. When an environmental change occurs, for instance, the intrusion of oil palm plantations, people negotiate the meaning of the environmental change as a reflection of their changing definitions of themselves and their landscapes, including their health. When society addresses diverse environmental issues, knowledge of the groups with vested interests becomes a factor in clarifying subsequent events. This knowledge enables people to understand who influences the definition of the situation and how this influence is accomplished, as well as how the definitions of the situation reflect the groups' definitions of themselves. This framework provides a vehicle for understanding the use of power and political conflicts that emerge around the issue of environmental change (Greider T and Garkovich L, 1994; Berger, P. and Luckman, T., 1966; Rolston III H, 1997). Peasant communities, for example, struggling for survival against the aggression of corporate agriculture and "economic development" are also struggling to protect nature and their social integrity. Any assault on their landscape is an assault on their social integrity. The integrity of the human being, therefore, is largely determined by the integrity of the environment and good health is the state of harmony between the individual and the environment.

Illness is then the result of disruption of the harmony between the individual and the environment. Disruption comes in several forms:

1. Disruption by Toxic Chemicals

Over the past fifty years, the chemical industry of the Northern countries has poured billions of tons of toxic chemicals into the world's ecosystems, aggressively promoting their use in practically every facet of everyday life. Global sales for pesticides, for example, continue to rise, reaching up to US\$49.935 Billion at the manufacturer level in 2012 (Beer, A., 15 March 2013). Many of the pesticides sold by giant agrochemical corporations in the South are banned, unregistered, or restricted in their home countries. This has been documented by the Foundation for Advancements in Science and Education which estimated that the U.S. has been exporting pesticides forbidden in the U.S. at the rate of 14 metric tons per day (Smith C, 2001). This has resulted in widespread environmental pollution and extensive poisoning of wildlife and human populations. The Third World, inevitably, is the most vulnerable. Every year, an estimated 25 million people suffer from pesticide poisoning and countries of the South account for 99% of pesticide related deaths even though it uses only 20% of the pesticides produced globally (Jeyaratnam J, 1990).

Industrial chemicals and toxic chemical by-products of various industrial activities, most of which can be replaced by relatively safer technologies, significantly contribute to the toxic burden on the environment. Dioxins, furans, ozone depleting chemicals, and other highly toxic, persistent organic pollutants are seriously threatening the survival of all living organisms on earth (Weinberg J, Nov 7, 2008; Weinberg J, Jun 9, 2008).

The chemical industry continues to produce millions of tons of synthetic chemicals, incrementally exposing people globally to various types of toxic chemicals. In the US alone, more than 70,000 industrial chemicals are registered with the Environmental Protection Agency for commercial use (USEPA, 2001) and more than 2,000 new chemicals are introduced yearly into the market (Zeeman M, et al., 1996). Only a very small fraction of these substances has been adequately studied to determine effects on humans before being sold (Roe D, et al., 1997). Like the pesticides, they cause cancer, immune system dysfunction, endocrine disruption, reproductive abnormalities, developmental anomalies, degenerative diseases and various other illnesses in both wildlife and humans. Several classes of chemicals, particularly the persistent toxic substances such as organochlorines and heavy metals, are the object of serious global concern because aside from being highly toxic to humans and animals alike, they have the tendency to persist in the environment, travel long distances, bioaccumulate in food webs, and disrupt biological processes even at low doses. Residues of toxic chemicals can now be found in air, soil, water, and food webs even in the most remote areas of the planet. All humans are now exposed to synthetic pollutants in consumer products and in their immediate environment including homes and the workplace (Thorton, J., et al., 2001; UNEP, 2003).

Other chemicals consumed inappropriately such as tobacco, alcohol, illegal drugs, and inessential pharmaceuticals are also major sources of disruption of our environment. Tobacco, by itself, is naturally occurring and when used appropriately within a cultural setting essential for social harmony (such as in peace rituals), is essentially innocuous. However, when aggressively promoted and sold for profit and used with no meaningful social purpose by self-indulgent and pleasure seeking individuals, tobacco becomes a disruptive substance. Similarly, alcohol, when used on a profit seeking and self-indulgent manner outside an appropriate cultural practice, becomes disruptive of the individual's internal chemical balance and disturbs the integrity of the immediate physical and social environment.

Inessential pharmaceuticals and similar medicinal products are also of significant concern. It is important to deal with the issue of irrational and hazardous pharmaceuticals since they flood the market and figure in the prescription of most medical practitioners. The adverse effects of commonly used pharmaceutical products, which are often more serious or more likely to be fatal than the symptoms or diseases they are supposed to cure, are becoming more and more frequently encountered problems in most medical facilities and even in the general population (Null G, 2003; Last W, 2007). Rather than relying mainly on our natural capacity of healing, we rely on the "magic bullet" promises of pharmaceutical monopoly corporations that are more interested in profit than in responding to the real medical needs of the people. Instead of trying to understand the relationship of symptoms and diseases to our being's intricate balance with its environment and despite the signals that our body is attempting to convey to our consciousness, we are mesmerized and misled by the false and misleading advertisements and promotions that repeatedly bombard our unenlightened "self". We are made to believe that "sound science" and modern technology are behind the products we buy and consume rather than the obvious profit motive.

2. Disruption of The Biological Environment

Probably the greatest threat now to our biological environment is the threat posed by genetically modified organisms or GMOs. Never before has the internal ecology of life, meticulously and systematically laid down by nature through eons of evolution, been subjected to such an invasive technology as that of genetic engineering, particularly as it is applied in agriculture. Genetic engineering is not just simply a natural progression from traditional or existing technologies of growing crops, breeding animals, brewing beer, or making yogurt. It is a radically new and invasive technology- altering traits of living organisms by adding genetic material that has been manipulated outside of cells. Forced and haphazard insertion of exotic new genes into the genome of completely unrelated species is creating an unprecedented spectrum of environmental and health hazards. Mutant organisms, potentially infectious virus vectors, antibiotic resistance genes, exotic toxic chemicals, potentially allergenic novel proteins, many of which are yet unidentified and uncharacterized, threaten to swamp the biosphere and disrupt further the already fragile balance of our biological environment. Genetically engineered herbicide tolerant crops which constitute 70% of all cultivated GMOs today have already resulted in the increase of herbicide use and consequently, increased crop residues of herbicides that are associated with endocrine dysfunction, immunotoxic effects, and cancer. Additionally, genetically modified crops have been shown to affect monarch butterflies, lacewings, essential soil bacteria and other organisms critical to the maintenance of a balanced ecology. And the impact of gene pollution through horizontal gene transfer is just beginning to be recognized (Wan Ho M, 1998; Smith J, 2007).

Genetic engineering is being promoted as the solution to world hunger mainly by the same agrochemical corporations that sell pesticides and other toxic chemicals. This was the same argument used more than 30 years earlier when they were promoting the so-called "Green Revolution" which introduced the monoculture system of hybrid crops dependent on toxic chemical inputs that they themselves sold and which shifted the balance of control in food production from the small, largely self-sufficient farmers in favour of big and corporate farmers. Today, the agrochemical giants want to consolidate further their monopoly control through the genetic engineering technology, the latest phase of corporate-driven strategy of restructuring national economies, global trade and finance primarily for the benefit of big business (ETC Group, March 2013). The aggressive promotion and imposition of genetic engineering technology, primarily by the U.S., plays a central role in the WTO strategy of opening up markets and ensuring the continued flow of profits to global corporations (Dawkins, K., 2003). As such, genetic engineering disrupts not only the biological environment but to a large extent, the social environment as well.

The usual biological threats by infectious agents such as viruses, bacteria, parasites and other microorganisms also continue to be a serious concern. It has become clear that there is an intimate relationship between changes in the environment (largely brought about by humans) and the occurrence, emergence and spread of infectious diseases. The scale of the problem together with the many interconnections between the various factors involving health and environment present unprecedented challenges not only to the health experts and policy makers but also to the general public (WHO, 1999; WHO, 2012; Joseph, NS., August, 2007). Even more alarming is the emergence of new infectious diseases which are poorly defined, of mysterious origin and therapeutically problematic (Coker, R., et al., 2011; Tukei, PM., 1996). The global burden that these

biological threats bring on to humankind is aggravated by the sad fact that the mainstream health establishment and political leadership often fail to appreciate the social and environmental factors that largely determine the vulnerability of human populations that fall victims to these various infectious scourges. Officially prescribed approaches to these biologic threats are largely inappropriate and laden with vested and conflicting interests of dominant powers and institutions (Global Health Watch3, 2011; Farmer P., 1999). Such domination results in unrestricted exploitation and disruption of many of the world's ecosystems and biosphere harmony. The resulting adverse changes to the natural environment are threatening the very foundations of human health and survival. Additionally, recent occurrences of extreme weather events in many countries are also causing more frequent and more severe typhoons, flooding, drought and other disasters that facilitate the emergence or spread of infectious diseases. Climate change also adversely affect food availability and global food prices, thereby increasing poverty and poor nutrition resulting to compromised immune function and susceptibility to infectious disease (WHO, 2012). These adverse environmental changes and increased risk of infectious disease also aggravate power disparities locally and globally resulting to increased wealth and health inequalities.

3. Psychological/"Spiritual" Disruption

Health is not just the state of physical wellness but also psychological/"spiritual" well-being. Health does not just mean the physical well-being of the individual but refers to the social, emotional, spiritual and cultural well-being of the whole community. This is a whole of life view and includes the cyclical concept of life-death-life. Health services should strive to achieve the state where every individual can achieve their full potential as human beings and thus bring about the total well-being of their communities. For indigenous people, health is holistic. The determinants of good health include a wide variety of structural, environmental, economic, social and biological factors-such as the right to live in permanent, safe houses, have access to a clean water supply, to participate in the employment market and the education sector, and the right to live without experiencing racism. (Üstün & Jakob, 5 Dec 2005; National Health and Medical Research Council, 1996 ; University of California Riverside, 2012).

Spirituality has been defined in numerous ways. These include: a belief in a power operating in the universe that is greater than oneself, a sense of interconnectedness with all living creatures, and an awareness of the purpose and meaning of life and the development of personal, absolute values. It may also include humanistic ideas on qualities such as love, compassion, patience, tolerance, forgiveness, contentment, responsibility, harmony, and a concern for others. It is a path where one finds meaning, hope, comfort, and inner peace in life. Although spirituality is often associated with religious life, spirituality can be outside of religion. Even atheists can have spirituality. In most healing traditions, concerns of the body, mind and spirit are intertwined. Certain beliefs, attitudes, and practices associated with being a spiritual person influence health. A growing number of studies reveal that spirituality plays a big role in the healing process. Spiritual practices tend to improve coping skills and social support, foster feelings of optimism and hope, promote mental health and healthy behavior, reduce feelings of depression and anxiety, and encourage a sense of relaxation. Spirituality can positively influence immune, cardiovascular, hormonal, and nervous systems (Ehrlich,

S., 13 Oct 2011; Dalai Lama, 1999; Koenig, H., 2012; Dell'Orfano, S., Oct 2002; Keng, S.L. et al., 2011; Vasegh, S., 2012; Lynn Rew, Y. and Wong, J., Apr 2006).

The psychological/"spiritual" dimension is an integral element of the human being. The individual human being at the same time is an integral element of the social environment. The psyche and/or the "spirit" of the individual must therefore be in harmony with social reality if one is to be healthy psychologically/spiritually. Whether anchored in scientific reasoning or religious beliefs, psychological/spiritual harmony cannot be achieved if social realities are ignored and separated from the conscious appreciation of the meaning of life since the psychological/spiritual dimension inevitably extends to the social environment. Selfish and arrogant behavior, apathy and lack of social consciousness, silence in the face of social oppression, ignorance, subservience and defeatism in the midst of injustice and violations of human rights; all these are symptoms of a disrupted psychological/spiritual being. Again, this is intimately linked to the underlying causes of disruption of the social environment. The same forces that undermine the social environment are at work in undermining the psychological/"spiritual" environment. Through various forms of social control (control of mass media, control of educational and scientific institutions, cultural aggression, control of food systems, control of financial systems, etc.) social realities are distorted and misrepresented such that the psyche/spirit becomes externalised and the individual victim fails to recognize the ethereal dismemberment that occurs. He/she then becomes susceptible to the blandishments of pseudo-religious leaders with disempowering promises of salvation and deliverance from poverty and suffering, to the enticement of experts in behavioral conditioning through advertising and promotions, to the glittering attractions of irrelevant celebrities who create blinders to social inequities through escapist entertainment and temporary pleasures, and to the dehumanizing isolation through imposed pre-occupation into routine, robotic work. These, not lack of religiosity, are the real threats to the "soul" of the human being.

4. Disruption of the Physical Environment

Disruption of our physical environment also contributes directly and indirectly to health problems. Industrialization, urbanization and modern technology have made tremendous impact on our physical environment. Mass production of goods has put millions of workers into various kinds of occupational hazards. In the rush to economic growth, big business and governments often sacrifice the environment and its people.

Building of dams to supply irrigation water to corporate farms and to provide energy to industrial zones has displaced entire communities, particularly indigenous communities. As a result, many community members die off from poverty, disease, and hunger and the survivors, if any, could hardly retain their indigenous way of life because of complete change in their habitat. The building of large dams has caused massive displacements, loss of livelihoods, food insecurity and ill health, especially among indigenous peoples. Still, governments, with the encouragement of international financial institutions such as the World Bank and Asian Development Bank, continue with their plans to build hundreds more of large dams across Asia and other developing countries. These projects, however, pose very serious threats to the environment and the continuing survival and wellbeing of millions of indigenous peoples. The human costs of large-scale dams is appalling, yet, it is considered as "green technology" under the Clean

Development Mechanism (CDM) of the climate change convention (AIPP Foundation, 2012; International Rivers, Nov. 2008) .

Similarly, corporate mining has been a major source of large-scale destruction of indigenous peoples' lands and resources. Mining companies have scraped-off entire forests and mountains in the name of economic growth, in the process, devastating the ancestral domains of tribal communities and destroying irreversibly local biodiversity that is the source of livelihood and medicines for the local indigenous people. Land grabbing by mining corporations and governments has resulted in millions of indigenous peoples who have been physically displaced and who have lost their livelihoods due to the destruction of their land, forest and water resources (Kalikasan, 2008; AIPP Foundation, 2012; Fields, S., Oct., 2001). Mining operations has also resulted in environmental disasters such as land slides, toxic pollution from mine tailings, fish kills, and other types of devastation. Inevitably, these have also led to various types of illnesses and health-related problems, including heavy metal (mercury, arsenic, etc.) poisoning, neurologic, respiratory, hematologic, gastrointestinal and skin diseases, impaired reproductive health, spontaneous abortions or deformed fetuses, and many other ailments (Kalikasan, 2008; Cortes-Maramba, N., 2006; Ilagan, KA., 2008; Leung, A., 2007; Chaterjee, P., 1997; Donoghue, AM, 2004; Driscoll, T., Sept., 2007; McClure, R. and Schneider, A., 2001). Mining operations have also destroyed sacred sites and further weakened socio-cultural systems and community cohesion. The destruction of traditional values and customs that sustain the community has led to increased incidences of alcoholism, drug addiction, gambling, and infidelity and domestic violence against women. Very often, the divide-and-rule tactics of mining companies lead to conflicts, marginalization, and a sense of helplessness. Mining companies also resort to harassment filing of strategic lawsuits against public participation (SLAPPs) against environmental advocates. The use of military and paramilitary forces to protect mining operations has also resulted in massive human rights violations such as extrajudicial killings, torture, arbitrary arrests, and detention of indigenous peoples, as well as sexual violence and abuse of indigenous women (Kalikasan, 2008; AIPP Foundation, 2012).

Many more so-called development projects result similarly in the destruction or disruption of the physical environment that is vital to the maintenance of health and well being and survival of local communities. On another domain, urbanization has produced massive congestion of humans in squalid conditions in slum communities. Forced to leave the rural areas because of poverty and landlessness, the urban poor have no choice but to stay in cramped dwellings in sewage canals and garbage dumps competing with vermins and stray animals for whatever available space is left in the crowded metropolis. Hunger, illness and premature death become as common as being out of work.

5. Disruption of the Social Environment

This is probably the greatest factor that contributes to ill health in the majority of populations all over the world. The economic, political and cultural disruption brought about by colonization, development aggression, debt crisis, structural adjustment programs, and corporate globalization has led to the deprivation of adequate and appropriate nutrition, safe and adequate drinking water, safe and adequate food, pure air, and other basic physical and biological needs which serve as the foundation of a healthy society. Concentration of power and resources into the hands of a few create poverty and

oppressive conditions for people throughout the globe, which in turn, results in ill health. The root causes of many health problems afflicting poor communities worldwide can be traced back to issues of power and inequality. The primary reason why there is widespread avoidable death and disease among the poor majority of the human race is not because of scarcity of resources, overpopulation or lack of competitive drive as the corporate elite would like to believe but, rather, a systematically imposed pattern of social dominance and control. This unjust social system where a privileged class exert a hegemonic dominance and control over land, labor, capital and the social structures and institutional power that perpetuate this dominance is the main reason why there is widespread violation of the basic human right to health. The social impacts and health consequences of Western capitalist activities in the Third World are well documented (Navarro, V., 1981; Stock, R., 1986; Hughes, C., and Hunter, J., 1970; Cox, F., 17Sept.2007). These impacts change over time as society and the economy are progressively transformed, from outright colonial conquest, to semi-feudal, semi-colonial relations, to predatory corporate globalization and to hegemonic "terror wars" and "Disaster Capitalism" (Klein, N., 2007).

Even with the so-called "independence" of former colonial states, Third World countries continue to be under the effective control of hegemonic structures imposed by former colonial masters, thus, perpetuating their chronic dependency, underdevelopment and poverty (Chossudovsky, M., 2003; Ontario Physicians Poverty Work Group, May 2008). Health is necessarily linked with underdevelopment and resource exploitation in the Third World. Health is affected in various ways. New modes of production are introduced in agriculture and industry, including mining and other environmentally destructive industries, bringing with them various health problems. Indigenous people, local farmers and producers are often forcibly displaced from their land and forced to seek work in plantations or enterprises controlled by the very corporations that displaced them. New demographic and geographical patterns, particularly the growth of crowded and unsanitary population areas, as well as much increased travel and human migration, favored the spread of infectious diseases (Grenough, M.,ed., 2003; Navarro, V., 1981).

The resulting social disruption has often led to the establishment of dictatorial governments, militarization and internal armed conflicts fueled and abetted by vested interests of global powers. Vast powers and means of control have been monopolized by a few, primarily the global transnational corporations, and are further being entrenched through the imposition of global instruments and institutions such as the GATT-WTO, IMF and World Bank (Grenough, M., ed., 2003 ; Navarro, V.,ed., 2007; Labonte, R., and Schrecker, T.,On behalf of Globalization Knowledge Network, 2008; Legge, D., 2009; Sen Gupta, A.,2009). Backed-up by the economic, political and military might of the rich countries of the North, primarily the U.S., the global TNCs and multilateral institutions push a development model that aggravate debt and dependency and increase the widening gap between the few rich and the immensely numerous poor.

Hegemonic dominance and control has resulted in the the deprivation of fundamental human rights as defined by International Human Rights Laws and Instruments: civil and political rights, economic, social and cultural rights, including, among others, the right to health, the right to education, the right to gainful employment, right to safe working and living conditions and a healthful environment, and the right to live in human dignity, free from exploitation and oppression (Grenough, M., ed., 2003;

Chapman, AR.,2009; Pollis, A., 1981; Elling, R., 1981). Specifically, in relation to health, hegemonic dominance and control of poor countries by the powerful corporations, states and global institutions, constitute a violation of the fundamental “right to the enjoyment of the highest attainable standard of health of every human being ...” (WHO, 2006). The right to health has been defined as the ‘*right to the enjoyment of a variety of facilities, goods, services and conditions necessary for the realisation of the highest attainable standard of health*’ (CESCR, 2000). The progressive weakening of public health systems, the growing privatisation of health care and the erosion of universal access to health care are phenomena seen across the globe. The health sector globally is still dominated by vertical and techno-centric approaches, often supported by ‘public-private partnerships’ active at several levels. There is thus an urgent need to replace this dominant discourse by a process aimed at universally achieving the ‘right to health and to health care’ as the main objective to achieve more equitable health care systems in both developing and developed countries. To counter and reverse the tide promoting ‘health care as a commodity’, there is a need to establish a global consensus on ‘health care as a right’(Schuftan, C., et al. 2009).

As neoliberal market forces are let loose and as disparities and inequities worsen, more disruption of the social environment will inevitably occur and will eventually exert its impact on people’s health. No amount of modern technological fixes, including esoteric medical procedures, devices or drugs, can compensate for the resulting ill-health that would ensue.

How then, should we respond to this situation? Given the interconnectedness of health and the environment, it is clear that the western reductionist approach to health care is inappropriate. Neither will alternative medicine be adequate if it ignores the various disruptive factors that operate in the causality of ill health in relation to the different environmental dimensions. All the disruptive factors discussed above are all interrelated and play significant roles in undermining health through various mechanisms. Obviously, there are overlaps, as depicted in the diagram, and there are no clear boundaries among the physical, biological, chemical, spiritual/psychological and social disruptive factors. The social dimension is probably the more fundamental element among all the factors that affect health but the interconnectedness is multi-directional. Physical disruptive factors, for example, will eventually affect the chemical, biological, spiritual/psychological and social dimensions that influence the over-all consequences to health. At the same time, the chemical, biological, physical and spiritual/psychological disruptions cannot be addressed effectively without confronting the root causes which are social and structural in character. The various healing practices and modalities that attempt to alleviate human illness must recognize the role of environmental disruptors and address them accordingly. The affected individual must himself/herself recognize and address the same, since in large measure, health rehabilitation is a self-healing process. This process of healing involves: awareness raising and re-education; change in lifestyle and norms of behavior; appropriate use of alleviating remedies including drugs, medical, and alternative procedures; elimination or avoidance of toxic substances and similar environmental disruptors; rebuilding of social relations at all levels based on justice and equity; and , finally, humbly submitting ourselves to the collective wisdom of an enlightened and empowered people that comprise the majority of the society to which we belong.

Necessarily, the approach should be wholistic, multidimensional and liberational rather than individualistic, tubular and palliative. Our methods should be within the context of rebuilding the mutually supportive connections with the multidimensional environment. The environment and us are one. What we do to the environment, we do to ourselves. We must recognize and respect the wisdom of the living earth which has developed various forms of ecosystems, including agro-ecology and gene ecology. We must rediscover, rehabilitate, and enhance our sustainable relationship with nature and our environment, restore the homeostatic mechanisms among various living organisms, and re-establish the self-reliant agricultural systems rooted in biodiversity. We must re-cultivate egalitarian communal relationships and struggle for the fulfillment of fundamental human rights and the attainment of social justice and equity.

To be meaningful and effective, therefore, discussions pertaining to sustainable agriculture, food security and “green economy”, must be equipped with a thorough understanding of how environment is intimately related to health. Studies, dialogue, policy formulations, educational and other interventions about a range of interrelated issues of agricultural knowledge, science, technology, sustainability, food security, socio-economic and other issues will suffer serious inadequacies if health and environment impacts are not adequately taken into account. Power relations that drive the systems, policies, and practices emerging from political, economic and cultural interaction across all domains and sectors, in reality, will ultimately determine what is "sustainable development", "food security", and "green economy". This will shape how issues or problems are perceived and will direct the solutions that are offered. Political determinants will set the rules of participation. Since outcomes are determined largely by actors with the most power and vested interests, health and environmental considerations fall by the wayside and alternative options, no matter how reasonable and appropriate, will tend to be marginalized. For example, the Agreement on Agriculture of the World Trade Organization was basically driven by powerful transnationals and developed countries with the main objective of expanding markets and, supposedly, increased income and well-being for all. Improved economic status for the poor, better health outcomes and sustainable development were just assumed and health and environment were trumped by the over-riding consideration of liberalized trade. The reduced competitiveness of small-scale farmers and the lack of small-farmer participation in shaping the agreement was starkly evident from the very start but with the collaboration of the powerful national elite in developing countries and the "bulldozing" of dominant powers, the agreement came to pass with the predictable consequences of worsening poverty, food insecurity, malnutrition, environmental degradation and ill-health for most people of developing countries. This example illustrates that a policy with no clear health and environment related protective provisions will be detrimental to society in general.

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