
MAKING PEACE WITH THE EARTH

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Making Peace with the Earth

1. Wars against the Earth

When we think of wars in our times, our minds turn to Iraq and Afghanistan. But, bigger war is the on-going war against the Earth. This war has its roots in an economy which fails to respect ecological and ethical limits – limits to inequality, limits to injustice, limits to greed and economic concentration. Even though both economy and ecology have their roots in Oikos, our home, the planet

The global corporate economy has become a permanent war economy against the planet. The means are instruments of war; coercive free trade treaties used to organize economies on the basis of trade wars; and technologies of production based on violence and control, such as toxics, genetic engineering, geo-engineering and nano-technologies. Here we have just another form of “weapons of mass destruction” which kill millions in peace-time by robbing them of food and water, thus poisoning the web of life.

This war also reflects a permanent war in a paradigm and worldview which defines the entire world as an “enemy” to be exterminated.

The present global war is the inevitable next step for economic and corporate globalization; a handful of corporations and a handful of powerful countries seek to control the earth’s resources and to transform the planet into a supermarket in which everything is for sale. They want to sell our water, our genes, our cells, our organs, our knowledge, our cultures and our future. The continuing wars in Afghanistan, Iraq and onwards are not only about “Blood for Oil”; as they unfold, we will see that they are about “Blood for Land”, “Blood for Food”, “Blood for Genes and Biodiversity”, and “Blood for Water. By extrapolation, the rules of free trade, especially the World Trade Organisation’s (WTO’s) Agreement on Agriculture, are just another kind of weapon in the food wars. Biodiversity and genes have been called the “green oil” of the future; water is frequently referred to as the “oil” of the 21st century. Oil has become the metaphor and organizing principle for all resources in the world of corporate globalization. Wars and militarization are an essential instrument for control over these vital resources, along with free trade treaties and technologies of control.

Every vital, living resource of the planet that maintains the fragile web of life is in the process of being privatized, commodified and appropriated by corporations. Militarization is the shield for corporate globalization, both nationally and globally. At the national level, militarization is becoming the dominant mode of governance, whether through laws regarding “Homeland Security” in the U.S or operation Green Hunt in India.

2. Mining As War

The images of the war against the Earth and against life on Earth, including human life are everywhere. The toxic red mud flowing through Hungary which affected 7000 residents and killed nine could be bloody images from a war. And it is war. The red mud is the blood of the Earth. I have witnessed the blood of red mud being squeezed from mountains of bauxite to transform into alumina at Vedanta’s Aluminum Refinery in Orissa. Alumina is then transformed into shiny aluminum. Most people would not connect the toxic red sludge to the shiny white metal. And they would not connect it to green hills of Niyamgiri, the sacred mountain of the Dongria Kondh, the mountain that upholds the sacred law.

The mountain that upholds the law was pitted against a corporation that does not know what law is. Vedanta must not be allowed to mine Niyamgiri at any cost. This is an epic contest between the Rights of Mother Earth and Earth democracy on the one hand, and the illegitimate self assured rights of a corrupt and greedy corporation on the other. The most significant contribution of the bauxite hills like Niyamgiri is provisioning of

water. One river and 32 streams originate in the Niyamgiri Hills. The Indravati rises from the bauxite hills. Tributaries of the Mahanadi rise from these hills.

It takes two tons of bauxite to make one tonne of alumina. The rest accumulates as pollution. Each ton of alumina generates 1 ton of waste and needs 250 kilowatt hours of electricity. And smelting 1 ton of aluminum consumes 13,500 kilowatt hours of electricity, emitting an average of 13.1 tons of carbon dioxide and other greenhouse gases such as fluorocarbons. One tonne of aluminum uses 1200 tons of water. While using huge amounts of water, the aluminum industry destroys the very sources of water in the bauxite hills. Vedanta is destroying water at 3 levels. Firstly, if the bauxite is mined 32 streams will go dry, ruining the agriculture and food security of millions. Secondly, the aluminum refinery and aluminum smelter are already diverting millions of litres from agriculture. The 30 Km long Upper Indravati dam has diverted water from the Indravati river to the Hati Tel river through a 4 km tunnel at Mukhiguda. Vedanta is then pumping the water from the Tel river to its refinery in Lanjigarh.

Vedanta's Burkhmunda smelter in Jharsuguda is getting water from Hirakud dam on the Mahanadi. 200 kms of the Indravati have been killed by the upper Indravati dam. And the diversion of water from agriculture to industry has already led to major farmers' protests. Groundwater level is falling. And double crop land is being converted to single crop land due to decline in availability of irrigation water. Thirdly, the water released by the refinery and smelter is toxic, destroying what remains of the rivers and groundwater.

It involves a war against the earth both in the transformation of living mountains of bauxite that support life in abundance into dead raw material for making aluminum, as well as in the dumping of toxic waste which is killing ecosystems and people.

It is a war against people because this scale of mining, industrial production, and dumping of waste can only take place by violating the rights of citizens and communities. This is why the Dongria have been resisting the mining of Niyamgiri.

I celebrated World Environment Day with a gathering of 7,000 tribals and peasants of Niyamgiri and surrounding areas. Niyamgiri means the mountain (giri) that upholds the laws of the Earth and the Universe (Niyam). It is sacred to the Dongria Kond who live in its upper reaches. And because of the sacredness, the biodiversity has been protected. Niyamgiri is a sanctuary for the tribals and diverse species. The biodiversity of Niyamgiri is not a museum. It is the foundation of a living economy of abundance. The tribals had organized a mango festival to celebrate World Environment Day. Coming from the land of the "dusheri" and "Kalmi" I was humbled by the taste of "Jharan", "Tota", "Mandao", "Sundari", "Baigan pali", "Medhanur".... The roads are lined with mango trees which are hundreds of years old. The villages are surrounded by mango groves. In fact the World Environment Day meeting was held in the shade of giant mango trees.

The forests provide food and fibre and medicine. As Lavanya Gowda said "The Earth and Forest gives us everything. All we have to get from outside the forest is salt." And they shared generously with the abundance received from nature. It is this local living economy that the tribals are defending along with their sacred Mountain.

While the biodiversity supports the economy of the mountain, the water from the bauxite hills supports the economy for miles around.

The laws and rights of Mother Earth are being undermined by the misrule of greed and corrupt power, driven by Vedanta, the company which has set up an aluminium refinery at Lanji garh at the base of Niyamgiri. Its plan is to mine Niyamgiri's bauxite. So far it has not been able to because of people's resistance. The refinery is bringing bauxite from Chattisgarh.

Bauxite, like limestone, holds water in its cavities. It is therefore, a vital aquifer. People need the bauxite to stay in the mountain. However, corporations like Vedanta want to mine the bauxite for super profits. Vedanta has unleashed a reign of terror in Niyamgiri. It is using the administration to appropriate land and attack people. On April 1, 2003, Lingaraj Azad a local activist was arrested. Even on 5th June, 15 Dongria Kond were arrested for a few hours to prevent them from attending the rally. On 27th March, Suren Majhi was run over by a truck while walking back from a meeting. Two tribals were arrested when coming to Delhi to attend a conference we had organized.

On January 23, 2004 police forced the Konds of Kinaru, Borabhats, Sindhaballi and Kotduar out of their houses. Bulldozers wiped out the ancient villages for Vedanta's refinery. They now live in a concentration camp called "Vedanta nagar". The alumina from the refinery is taken to Vedanta's smelter at Jharsaganda. Both the refinery and smelter are already creating massive pollution, killing animals and people. Vedanta is illegally spreading its red mud ponds into villages and forest land. Rivers are dying. And with them the communities the Rivers support.

If these costs were internalized, bauxite mining, aluminium smelters would be uneconomic. It is more beneficial to leave the bauxite in the mountain, to produce the water and biodiversity.

If the destruction of water and biodiversity are internalized, Vedanta is creating a negative economy of death and destruction. It is in any case based on an economy of loot – looting land and natural resources from the tribals, looting mineral resources from the people of India.

In 1983, the Supreme Court of India stopped limestone mining in Doon Valley on the basis of a study we did for the Ministry of Environment which showed that the limestone left inside the mountain contributed more to the economy through providing water than the mining of limestone.

And because we could collectively and systematically show that what Vedanta called "development" was in reality the violation of constitutionally guaranteed rights of the tribal communities the government was compelled to withdraw the mining clearance to Vedanta. In our small place, for our small community, we were able to help make peace with the Earth.

Everywhere, people resist ecological destruction. And everywhere, militarized force is being used to clear the way for exploitation of the earth and dispossession of earth communities. Limitless exploitation of the Earth's Resources for limitless growth and limitless consumption is based on ecological violence against the earth's ecosystems and processes, and militarized violence against those who struggle to protect the earth and people's lives and livelihoods.

Mining is Australia's biggest economic sector. The world's biggest mining company BHP Billiton is Australian. It would have been even bigger if its acquisitions of Rio Tinto and Potash Corporation had gone through. Rio Tinto's Ok Tedi Copper Mines had devastated Papa Nav Guinea, and the indigenous communities forced the mine to close.

The indigenous communities of the Hazaribagh District of the tribal state of Jharkhand have stopped 52 coal companies from mining in their region.

While people belong to a place and have an identity with the earth, corporations have no home, no citizenship. Look at BP's Deepwater Horizon oil well which exploded on April 20, 2010 leaking 4.9 million barrels of oil. The estimates of the oil spill increased from 1000 to 5000 barrels per day on April 29th to 12000 to 19000 barrels per day on May 27 to 25000 to 30000 barrels per day, on June 10th to June 15th between 35000 and 60000 barrels per day. The rig was built by South Korean Company Hyundai Heavy Industries. The production casing was

being installed by Halliburton Energy Services. It was owned by Transocean, operated under the Marshallese flag of convenience and was under lease to BP from March 2008 to September 2013.

BHP Billiton is in Brazil, Mozambique, and Indonesia. Vedanta is a U.K company owned by an Indian. And an Indian company, Gujarat NRI is mining coal in the Murray Darling Basin, which is already suffering severe water stress. For the local communities in Murray Darling, this is “coal mining on steroids”. And as they say “coal companies are stealing our rivers”. Where does this hubris come from? Who gives the license for the war against the earth?

3. Wars in the Mind : The Violence of Reductionist Science

The war against the Earth begins in the mind. Its seeds were sown when the living Earth was transformed into dead matter to facilitate the industrial revolution. Reductionism replaced holism, monocultures replaced diversity and complexity, “raw material” and “dead matter” replaced a constantly renewing and vibrant earth, Terra Nullius replaced Terra Madre.

According to Bacon, called the father of modern science, “the nature of things betrays itself more readily under the vexations of art than in its natural freedom.’ The discipline of scientific knowledge and the mechanical inventions it leads to , do not ‘merely exert a gentle guidance over nature’s course; they have the power to conquer and subdue her, to shake her to her foundations.’

In *Tempores Partus Masculus* or *The Masculine Birth of Time*, translated by Farrington in 1951, Bacon promised to create a blessed race of heroes and supermen’ who would dominate both nature and society.

The Royal Society inspired by Bacon’s philosophy, was clearly seen by its organizers as a masculine project. In 1664, Henry Oldenberg, Secretary of the Royal Society announced that the intention of the society was to ‘raise a masculine philosophy....whereby the Mind of the Man may be ennobled with the knowledge of solid truths.’ And for Glanvill, the masculine aim of science was to know ‘the ways of captivating Nature, and making her subserve our purposes, thereby achieving the Empire of Man Over Nature.’

Robert Boyle, the famous scientist who was also the Governor of the New England Company, saw the rise of mechanical philosophy as an instrument of power not just over nature but also over the original inhabitants of America. He explicitly declared his intention of ridding the New England Indians of their ridiculous notions about the workings of nature. He attacked their perception of nature, ‘as a kind of goddess’, and argued that ‘the veneration, wherewith men are imbued for what they call nature, has been discouraging impediment to the empire of man over the inferior creatures of God.’

The death of nature in the mind allows a war to be unleashed against the Earth. After all, if the earth is merely dead matter, then nothing is being killed. As Carolyn Merchant points out, this transformation of nature from a living, nurturing mother to inert, dead and manipulable matter was eminently suited to the exploitation imperative of growing capitalism. The nurturing earth image acted as a cultural constraint on exploitation of nature. ‘one does not readily slay a mother, dig her entrails or mutilate her body’. But the mastery and domination images created by the Baconian programme and the scientific revolution removed all restraint and functioned as cultural sanctions for the denudation of nature.

Modern science was a consciously gendered, patriarchal activity. As nature came to be seen more like a woman to be raped, gender too was recreated. Science as a male venture, based on the subjugation of female sex provided support for the polarization of gender. Patriarchy as the new scientific and technological power was a political need of emerging industrial capitalism.

The exclusion of non-reductionist, non-mechanist systems of knowledge has narrowed the knowledge base of our actions, it has shrunk our intellectual capacities to adapt. Australia is poorer in excluding the wealth of knowledge of indigenous communities on how to live lightly on a fragile continent.

The mechanistic and reductionist world view involves violence against science and knowledge itself. Quantum theory has taught us that the world is not a machine, and there is no separability. The new biology of complexity, self-organization, epigenetics, points to the inter relatedness of life. The violence of the mind begins with fragmenting that which is whole, separating that which is connected, thus violating nature and the web of life. Mechanistic science also violates women and non-western societies and indigenous communities by denying them a status as knowing subjects. Today this violence has taken the form of biopiracy. We have challenged and won three cases of biopiracy of Neem, of Basmati, of Wheat. Violent ways of knowing dominate by violently destroying non-violent alternatives.

Making peace with Earth must begin in our minds, by changing our paradigms and worldviews from those based on war with nature to those that recognize that we are a strand in the web of life. It involves a shift from fragmentation and reductionism to interconnectedness and holistic thinking. It involves a shift from violence, rape, and torture as modes of knowing to non-violence and dialogue with the earth and all her beings. It involves inclusion of biodiversity of knowledge systems – of women, of indigenous communities, of our grandmothers.

4. Industrial Agriculture as an Extension of War

Violent thoughts shape violent actions. Violent categories construct violent tools. And nowhere is this more vivid than in the metaphors and methods on which industrial agriculture and food production is based. Factories that produced poisons and explosives to kill people during the wars were transformed into factories producing agrichemicals after the wars.

Industrial agriculture treats soils as an empty container for industrial fertilizers. After World War I, manufacturers of explosives, whose factories were equipped for the fixation of nitrogen, had to find other markets for their products. Synthetic fertilizers provided a convenient conversion for peaceful uses of war products. Howard identified this conversion as closely linked to the “NPK mentality” of chemical farming.

The feature of manuring of the west is the use of artificial manures. The factories engaged during the Great War in the fixation of atmospheric nitrogen for the manufacture of explosives had to find other markets, the use of nitrogenous fertilizers in agriculture increased, until today the majority of farmers and market gardeners base their manorial programme on the cheapest forms of nitrogen (N), phosphorous (P), and potassium (K) on the market. What may be conveniently described as the NPK mentality dominates farming alike, in the experimental stations and in the countryside. Vested interests entrenched in time of national emergency, have gained a stranglehold.

After the Wars, there was cheap and abundant fertilizer in the west, and American companies were anxious to ensure higher fertilizer consumption overseas to recoup their investment. The fertilizer push was an important factor in the spread of the new seeds, because wherever the new seeds went, they opened up new markets for chemical fertilizers.

This is how industrial agriculture was introduced as the “Green Revolution” in India in the 60’s. However, replacing soil fertility with chemical fertilizers was neither green nor revolutionary. It was a recipe for destroying soils, eroding food security and increasing green house gases which contribute to climate change.

Fertilizers came from explosive factories. In Oklahoma and Afghanistan, they were retooled to make fertilizer bombs.

And fertilizers are implicated in the violence against the atmosphere N_2O – 300 times more deadly as a climate changing gas than CO_2 .

Rachel Carson's Silent Spring woke the world up to the connection between pesticides, which were war chemicals, and the silencing of the bird song.

The war mentality underlying military-industrial agriculture is evident from the names given to herbicides which destroy the economic basis of the survival of the poorest women in the rural areas of the Third World. Monsanto's herbicides are called "Round Up", "Machete", "Lasso". American Home Products which has merged with Monsanto calls its herbicides "Pentagon", "Prowl", "Scepter", "Squadron", "Cadre", "Lightening", "Assert", "Avenge". This is the language of war, not sustainability. Sustainability is based on peace with earth.

Pesticides are made to kill. That is why when the pesticide plant of Union Carbide leaked in Bhopal in 1984, 3000 people were killed immediately and 30,000 have died since then.

The green revolution has been sold to us as a miracle which increased food production. However, the green revolution did not produce more food, because food includes cereals and pulses and oil seeds and vegetables, not just rice and wheat. And the diversity of crops was destroyed to create the chemical monocultures of rice and wheat. Overall, nutrition per acre went down, and toxics per acre went up. The green revolution myth is based on hiding both the food production lost, and the costs of the burden of environmental toxicity that Punjab carries to provide toxic food to the nation.

Today, Punjab is the toxic capital of India. The monocultures of rice and wheat are a perfect breeding ground for pests. And the use of toxic pesticides has kept escalating in Punjab. While pests are not a problem in ecologically balanced agriculture, in an unstable agricultural system; they pose a series of challenges to agronomy. The metaphor for pesticide use in agriculture then becomes war. As an introduction to a text book in pest management states -

"The war against pests is a continuing one that man must fight to ensure his survival.

The war story described some of the battles that have been fought and the continuing guerilla war, the type of enemies we are facing, and some of the maneuvers for survival."

However, seeing biodiversity as "enemies" which have to be killed with lethal chemical weapons is wrong for two reasons. Firstly, it fails to control pests. Secondly, the toxics boomerang to harm humans, since humans are part of the food chain.

Poison for Profits

Pesticides, which started as war chemicals, have failed to control pests. They have in fact led to emergence of new pests, and emergence of resistance in old pests, requiring increased pesticide use. Pesticides create pests by destroying the pest predator balance.

Having destroyed nature's mechanisms for controlling pests through the destruction of diversity, the 'miracle' seeds of the green revolution became mechanisms for breeding new pests and creating new diseases. The treadmill of breeding new varieties runs incessantly as ecologically vulnerable varieties create new pests which create the need for breeding yet newer varieties. The only miracle that seems to have been achieved by the Green Revolution is the creation of new pests and diseases and with them the ever increasing demand for

pesticides. Yet the new costs of new pests and poisonous pesticides were never counted as part of the 'miracle' of the new seeds that modern plant breeders had gifted the world in the name of increasing "food security".

Genetic engineering was supposed to provide an alternative to toxic chemicals. Instead it has led to increase in use of pesticides and herbicides. It has failed as a tool to control and has instead created super pests and super weeds because it is based on violent tools that rupture the resilience and metabolism of the plant and introduce genes for producing toxins or tolerating higher doses of toxins. There are so far only two tools used to transfer genes from one organism to another – one is the use of a gene gun, the other is the use of a cancer infection. This is biological warfare at the genetic level.

Besides perpetrating violence against the genetically modified plant, genetic engineering also unleashes violence against the environment and health. Genes for herbicide resistance and Bt. Toxin spread to other plants through pollination, creating a new form of pollution which we have named biopollution and genetic pollution. And instead of compensating farmers whose crops were polluted, Monsanto uses pollution to claim "intellectual property" and accuse the farmers of "piracy". This happened to Percy Schmeiser of Canada. The toxins in Bt. Crops are killing butterflies and bees, soil organisms and animals. The spread of herbicide resistant crops has destroyed biodiversity and is causing birth defects. GM crops have been found to lead to allergic reactions, and affect fertility.

When independent scientists bring these impacts to public knowledge, they are hounded out of their jobs and institutions as happened with Arpad Putzai. This is a war against knowledge and science.

Genetic engineering has also unleashed a war against farmers.

Instead of controlling pests, Bt. Cotton has led to the emergence of new pests and a thirteen fold increase in pesticide use. The farmers suffer twice over. Costly seeds and costly chemicals push them into debt trap, and debt pushes them to suicide. 200,000 farmers have committed suicide in India since 1997. Most of these suicides are concentrated in the cotton belt, and 95% cotton is now Monsanto's Bt. Cotton.

On 8th September 2006, nine farmers' unions of Punjab organized a Public Hearing on Farmers Suicides. I was invited as a member of the citizens' jury. The Diwan Hall of Gurdwara Haaji Rattan was over flowing with a sea of women – all widows of suicide victims. The farmers' organisations had collected information on 2860 suicides, and mobilized family members to give evidence at the public hearing. This was building on an earlier Public Hearing organized by Navdanya on 1st and 2nd April 2006.

42 year old Sukhbir Singh of Chak Sadoke, block Jalalabad, District Ferozepur ended his life on 26/10/2003 by jumping into a river because he was unable to pay a debt of 1.9 million inspite of selling seven acres. He left behind him a widow with two children.

21-year-old Harjinder Singh of Ratla Thark who lost his seven acres to moneylenders ended his life by consuming pesticides. 60-year-old Jeet Singh of the same village burnt himself to death.

28-year-old Hardev Singh of Urmmat Puria in Hoga drank pesticide on 12.07.2002 when he could not clear his loan of Rs. 0/7 million even after selling eight acres. 26-year-old Avatar Singh of Machika Village died on 28.03.06 after consuming pesticide. 48-year-old Jagtar Singh of Doda in Mukstar left behind a widow and daughter after drinking pesticide to end his life. He had sold two acres to partially pay a debt of Rs. 150,000.

28-year-old Raghubir Singh mortgaged four acres, could not clear his loan, ended life on 28.04.04 by consuming pesticide. His mother, widow and two children are left to struggle. There are several cases of farmers' suicide

and to show how farmers are paying corporate led globalisation with their lives, Navdanya brought out its report "Seeds of Suicide".

One by one the women came to share their pain, their loss, their tragedy. The names were different, the faces were different, but the tragedy was one, the avoidable tragedy of poisoning farmer's fields and farmers lives for profit.

Suicide by drinking the lethal and debt creating pesticide took the lives of

Gurjit's husband Budh Singh

Baljit Kaur's husband Thail Singh

Karamjit's husband Bhola Singh

Manjit Kaur's husband Sunder Singh

Gurmeet's husband Gudu Singh

Paramjit's husband Pritpal

Gurdayal Kaur's husband Jarnail Singh

Sukhpal's husband Gurcharan Singh

Jeet Kaur's husband Gurmeet Singh

Malkeet's husband Nishatar,

Tel Kaur's husband Nirpal

Sarabjit's husband Prem Singh

Jagat Kaur's husband Balbir

Surjeet Kaur's husband Dilwar Singh

Kulwinder Kaur's husband Sindoo Singh

Manjir Kaur's husband Chattar Singh

Amarjeet's husband Pappi

Jasbir's husband Nirpesh Singh

Sukhdev Kaur's husband Birpal

Paramjeet's husband Pappi Singh

Sukhdev Kaur's husband Balwant Singh

Daljit Kaur's husband Sumukh

Harbans Kaur's son Gurmeet

Baldev Kaur's son Mewa Singh

Beant Kaur's husband Jailer Singh

Tej Kaur's husband Buttu Singh

Jasbir Kaur's son Jagga Singh

Tej Kaur's husband Mitti Singh

Jasbir Kaur's husband Kishan Singh

Charanjeet Kaur's husband Mahadev Singh

..... and there were thousands more than them. The pesticides, which had created debt, also became the source of ending indebted lives.

As I heard the unending stories from widows of how they had lost their dear ones, their land, their hopes in the vicious cycle of debt, my mind went back to 1984 when I started to ask questions about the Green Revolution

because of the violence of extremism and terrorism that had overtaken this prosperous and proud land of five rivers ("Punj" is five, "ab" is river)

And those who survive suicide in Punjab are dying of cancer. There is a "cancer" train that leaves Punjab for cancer treatment of villagers from Punjab in a charitable hospital in Bikaner. This toxic economy is the "gift" of the green revolution. And this toxic gift was also behind the tragedy of Bhopal. Pesticides are designed to kill – and from Punjab to Bhopal, they have killed thousands.

Our bread basket in Punjab does not have to be an epicenter of toxicity. The people of Bhopal did not need to die. There is a non-violent alternative to the violence of the first green revolution and the second green revolution. The alternative is biodiverse organic farming which we practice and promote through Navdanya. Contrary to the propaganda, biodiverse ecological systems produce food and nutrition more than chemical monocultures.

It is time to give up the false model of food security which is killing our children through malnutrition, killing our farmers through debt, and killing people from Punjab to Bhopal because of the unnecessary use of toxic poisons in farming. We can be free of both hunger and toxics.

There are alternatives to Bt-cotton and toxic pesticides. Through Navdanya we have promoted Organic Farming and 'Seeds of Hope', to help farmers move away from Monsanto's "Seeds of Suicide".

Organic farmers in Vidharbha are earning Rs. 6287 per acre on average, compared to Bt-cotton farmers who are earning Rs. 714 per acre on average. Many Bt-cotton farmers have a negative income, hence the suicides.

Technologies are tools. When the tool fails it needs replacing. Bt-cotton technology has failed to control pests or secure farmers' lives and livelihoods. It is time to replace GM technology with ecological farming. It is time to stop farmers' suicides.

5. Soil Not Oil : Climate Wars and Climate Peace

As I have shown in my book Soil Not Oil, 40% of all Green House Gas Emissions come from the same industrial, globalised food and agriculture system that is pushing species to extinction and poisoning the planet and our bodies, creating hunger, and pushing farmers to suicide.

Industrial agriculture contributes to climate change through the direct use of fossil fuels and the emission of CO₂, as well as through the use of fossil fuel based nitrogen fertilizers which emit nitrogen oxide, which is 300 times more damaging to the climate than CO₂.

Organic farming and organic soils contribute to mitigation of climate change by –

- a) getting rid of agrichemicals like synthetic fertilizers
- b) Sequestering carbon in the soil.

Sustainable soil fertility comes from organic manuring which adds organic matter to the soil. And soil rich in organic matter is a major carbon sink. Since the beginning of industrial agriculture, soils have lost 1 – 2 % of soil organic matter in the top 30 cm. This is equivalent to 150,000 – 250,000 million tonnes of lost organic matter. If we were to manage to put this organic matter back into the soil, we would take 220,000 - 330,000 million tonnes of CO₂ from the air. If we were to rebuild this organic matter in the soil, we would take 220,000 – 330,000 million tonnes of CO₂ from the air. This amounts to 30% of excess CO₂ in the atmosphere.

Besides contributing to mitigation, soils rich in organic matter also contribute to adaptation. In organic systems, water retention and drainage capacity of the ecosystem is enhanced and the risk of floods or droughts is reduced.

Molecules of soil organic matter can absorb upto 100 times as much water as those of dust, and they can retain and later release to plants a similar proportion of nutrients. Organic matter also creates soil aggregates which protect the soil from erosion. These are the soil qualities that allow soils to absorb rain and slowly release it to lakes, rivers and plants. Organic soil is a major water reservoir. By increasing soil organic matter, soil management techniques become water management technique. Organic soils contribute to ground water recharge, an environmental service that protects the whole ecosystem.

Navdanya's study based on a study of ten farmers in four agro-ecosystems shows increased water holding capacity in organic soils.

Increase in water holding capacity due to organic agriculture*

Ecozones	% increase over chemical farming	
	Range	Mean
Arid	2-9	5.3
Semi-arid	3-16	7.2
Sub-humid	4-15	6.9
Humid	3-17	6.8

* average of 10 farms in each agro ecosystems

The results clearly showed that between 5 and 7% increase in water holding capacity in each agro-ecosystem due to organic agriculture. As water holding capacity of the soil is the key for improvement in soil health, microbial growth, nutrient recycling and ultimate crop production, organic agriculture had definitely improving in soil environment than conventional farming. Increase in water holding capacity may also help in better maintenance of soil temperature, to mitigate climate change.

Putting more pollution in the atmosphere than the earth's capacity to recycle it is at the roots of climate instability. This is a war against Gaia's self-regulatory systems which gives us a stable climate. And it translates into a war against people as more intense and frequent cyclones, floods and droughts kill thousands and displace millions.

In 2010 there have been fires in Northern Russia because of extreme heat. Floods in Pakistan killed 2000 people. Floods in the high altitude desert region of Ladakh in India killed 200. And in my region in the Himalaya, extremely heavy rain combined with Tehri dam induced disasters has displaced millions. /floods in Australia devastated cities and farms. Climate disasters are not something that could happen in the future. They are taking place right now. And they are taking lives.

Making peace with the Earth was always an ethical and ecological imperative. It has now become a survival imperative for our species. Societies can extend the age of oil by a few more years – drilling under the ocean and causing disasters like the B.P. Oil spill in the Gulf of Mexico, squeezing oil out of the tar sands or gas out of the shale rocks or squeezing biofuels out of food grains. Corporations, mechanistic scientists and politicians will try to extend the war against nature to deal with climate change by geo-engineering the planet, creating artificial

volcanoes, putting giant pipes in the ocean to pump up cold water, pumping sulphates in the stratosphere to block the sunlight, putting reflectors in the sky to reflect the sunlight, as if the sun was the problem, not the source of life on Earth. They will offer genetic engineering as a climate solution hiding the fact that they have pirated the traits for climate resilience from crops bred by farmers over millennia. Rich countries, led by Australia, rejected mandatory disclosure requirements for bio-patents to prevent biopiracy at the Nagoya Conference of the Convention on Biological Diversity. Stealing the knowledge and biodiversity evolved by the poor is not innovation, it is biopiracy. That is why I see patents on life as part of the arsenal in the contemporary war against the earth and her people. And that is why in 1987 I started Navdanya to protect biodiversity of the planet, and the rights of the communities who have conserved and evolved it. We save biodiversity as a commons and have set up 55 community seed banks.

The salt tolerant rices in Navdanya's community seed banks have helped communities rejuvenate their agriculture after cyclones and the tsunamis. The drought tolerant crops have flourished in Eastern India in the past two years when the monsoons failed.

6. Recovery of the Commons

Protecting the commons is vital to making peace with the earth, and maintaining peace within and between communities. Privatisation of the Earth's resources is leading to wars – privatization of water is leading to water wars, patents are leading to biodiversity wars, corporate take over of land is leading to land wars. Corporate take over of the atmospheric commons first through pollution which gave us climate change and then through the pseudo solution of emissions trading is creating wars over the atmosphere. These wars over the atmosphere are what led to the collapse of the climate treaty in Copenhagen and its replacement with the Copenhagen Accord – an accord to continue to pollute the atmosphere.

I have described this as a contest between eco-imperialism and earth democracy. Eco-imperialism expands control by the powerful over the earth's resources violating the rights of the earth and people. Earth democracy is the democracy of all life, and it is based on the rights of the earth and the rights of all people.

Sharing the earth's gifts equitably, and using them sustainably is the path for planetary peace. Making peace with the earth goes hand in hand with the recovery of the commons so that all beings and all humans can enjoy the earth's fits to provide for their sustenance. That is why for me reclaiming seed, biodiversity, water as commons is vital for the defense of natures rights and peoples rights and for building Earth Democracy based on living economies and living democracy.

Just as land was declared "empty" as Terra Nullius during colonialism, it is being declared empty again fuelling the land grab that is leading to land wars. Biodiversity is being declared empty during corporate globalization as the new colonialism and the new enclosures. Having destroyed the climate because of excessive use of fossil fuels, the oil industry is now joining up with agribusiness and genetic engineering industry to convert the terrestrial living material that supports ecosystems and poor people's needs and livelihoods into oil. BP, Shell, Total, Exxon, Cargill, ADM, Dupont, BASF, Weyerhaeuser, Syngenta have joined hands to control the biomass of the planet. They aim to commodify the 76% biomass that is not commodified and is used by nature and people. The war against the earth and her people is being pushed to the final frontier of life itself. Defending life, defending the resources vital to life is now at the heart of building earth democracy for peace, justice and sustainability.

7. Creating Real Wealth and Well Being

The ecological and economic problems we face are rooted in a series of reductionist steps, which have shrunk our imagination and our identity, our purpose on the earth, and the instruments we use to meet our needs. We

are first and foremost earth citizens. And our highest duty is to maintain the living systems of the earth that support our life. Earth citizenship needs earth centered cultures, earth based democracy, and earth centered economies.

However, society and culture have been reduced to economies, and economies has been reduced to market economics, and market economics has been reduced to finance and finance has been reduced to abstract instruments like derivatives, securitization, collateral debt obligation.

Simultaneously, humans as earth citizens, with duties and rights have been replaced by corporations, with no duties to either the earth or society, only limitless rights to exploit both the earth and people. Corporations have been assigned legal personhood, and corporate rights are now extinguishing the rights of the earth, and the rights of people to the earth's gifts and resources corporate rights are premised on maximization of profits.

There are two tools corporations use to maximize profits. The first is the use of technologies that transfer production from local communities to distant corporations, substitute biodiversity with toxic products, and reduce everyone to be consumers of toxic, non-renewable products whose cost is high but price is cheap.

The second instrument is the creation of tools for wealth accumulation. These tools include measuring wealth as capital, ignoring nature's wealth and society's wealth. They also include measuring wealth as growth of GNP and GDP. At the core of the second instrument of profit maximization is the privatization of the earth's gifts – of biodiversity of water, even the atmosphere.

More often than not, the tools of technology and economic tools of wealth appropriation go hand in hand, reinforcing each other. Thus genetic engineering goes hand in hand with patents on life and privatization of biodiversity. Dams for long distance water transfer go hand in hand with water privatization.

Both ecology and economics have emerged from the same roots -- "oikos" -- the Greek word for household.

As long as economics was focussed on the household, it recognized and respected its basis in natural resources, the limits of ecological renewal. It was focussed on providing for basic human needs within these limits. Economics as based on the household was women centered.

Today, economics is separated from, and opposed to both ecological processes and basic needs. While the destruction of nature has been justified on grounds of improving human welfare, for the majority of people poverty and dispossession has increased. While being non-sustainable it is also economically unjust. While being promoted as "economic development", it is leading to underdevelopment, while projecting growth; it is causing life threatening destruction.

The dominant model of "economic development" has in fact become anti-life.

The resource demands of the current model of the economy are leading to resource wars – oil wars, water wars, food wars. There are three levels of violence involved in non-sustainable development. The first is the violence against the earth, which is expressed as the ecological crisis. The second is the violence against people, which is expressed as poverty, destitution and displacement. The third is the violence of war and conflict, as the powerful reach for the resources that lie in other communities and countries for their limitless appetites.

The health of people's sustenance economy is not measurable by money. People can have more money but experience more poverty because food, clothing, shelter, health, energy, education are all more costly because of privatization. More money can go hand in hand with increased material poverty, with people having less access to basic needs such as food and water. The fact that in spite of economies growing, one billion people

are without food and another billion are without water are indicators that money does not measure well being. India now has 8% growth of the economy, yet India is now home to one third of the world's malnourished children. In fact when economies are measured only in terms of money flow, inequalities grow, the rich get richer, the poor get poorer. And the rich might be rich in monetary terms – but they too are poor in the wider context of what being human means.

People can have immeasurable financial wealth and be socially impoverished – without love and companionship, without solidarity and community, with an empty soul in spite of overflowing bank accounts.

Money growth is usually measured in terms of Gross National Product. However, GNP fails to measure the decay of nature's economy and the social economy. In the definition of measuring growth is the destruction of the self-sufficiency, self-provisioning of people's sustenance economy. If you produce what you consume, you do not produce. That is the assumption underlying growth. That is how rich ecosystems and rich cultures are destroyed. Resources and labour must leave an ecosystem or household to contribute to "growth" measured in terms of money. Ecological growth is not counted; in fact ecological destruction contributes to increase in GNP. Social growth of individuals and societies is not counted, in fact social decay and disintegration contributes to GNP.

This is why countries like Bhutan have adopted the Gross National Happiness in place of Gross National Product as their measure of well being. Even economists like Joseph Stiglitz and Amartya Sen have admitted that GNP does not capture the human condition.

I have witnessed again and again that as people's resources are commoditized and people's economies are commercialized, money flow does increase in society, but it is mainly outflow from nature and people to commercial interests and corporations. The money economy grows but nature's economy and people's economy shrinks.

Money has become a mismeasure of wealth and well being for two reasons. Firstly, money does not reflect the ecological and social destruction that is an externality of "growth" as measured in terms of money and financial resources. Secondly, money no longer reflects the resources, goods and services it commands. Money has taken on a life of its own; it can reproduce itself and multiply, totally separated from the real wealth in nature and society. More than 3 trillion dollars move around the world daily in a global financial casino and this is fifty times more than real resources in the world.

Joel Kurtznian of the Harvard Business Review estimates that for every \$1 circulating in the productive world economy, \$20 to \$50 circulates in the economy of global finance. And it is this financial bubble that burst in September 2008, creating a global financial crisis and economic slowdown. Money has become totally unassociated from real value, but those who accumulate financial resources can then stake claim on the real resources of people – their land and water, their forests and seeds. "Hungry" money is predating on the last drop of water and last inch of land on the planet. This is not an end to poverty. It is an end to human rights and justice. People are being made disposable in a world where money rules and the value of money has replaced the human values that lead to sustainability, justice and human dignity.

Rarely is the increased cost of living and cost of production or the displacement of people from their land and livelihoods taken into account when "growth" is measured in terms of money flow and financial transactions. When ecological internal input farming is replaced by purchased inputs, the environment is destroyed and farmers are dispossessed. However, there is more "growth" when measured in increased purchases of chemicals and costly seeds. When corporations patent seeds, 1 trillion dollars of increased money will flow as royalty, but the farmers will be poorer. When water is commoditized and water markets of a trillion dollars are created, corporate profits explode, GNP increases, but people are left thirsty and poor.

There is more money in markets and stocks of “developers” and real estate corporations grow, as land of peasants and farmers is appropriated for luxury, housing and “special economic zones” in China and India and land of tribals is taken over through violence by corporations mining for coal, bauxite, iron ore. In India’s tribal heartland, land wars are taking place with the States military might supporting the corporation to flush out the tribals from their homes through “Operation Green Hunt”. Mining companies make 80% profits. The more they mine, the richer they become. But every mine is the death of a forest, a river, an indigenous culture. And control over money becomes the basis to take over control over land, which supports millions.

When every aspect of life is commercialized and commoditized, living becomes more costly, and people are poor even if they earn more than a dollar a day. On the other hand, people can be affluent in material terms even without the money economy if they have access to land, their soils are fertile, their rivers flow clean, their cultures are rich and carry traditions of producing beautiful homes and clothing and delicious food, and there is social cohesion, solidarity and a spirit of community.

Trade and exchange of goods and services have always existed in human societies, but these were subjected to nature’s and people’s economies. The elevation of the domain of the market, and money as manmade capital, to the position of the highest organizing principle for societies and the only measure of our well being has in fact led to the undermining of the processes that maintain and sustain life in nature and society. The richer we get, the poorer we become ecologically and culturally. The growth of affluence, measured in money, is leading to a growth in poverty at the material, cultural, ecological and spiritual levels.

8. Earth Rights are Human Rights

The mechanistic, reductionist, limitless growth oriented paradigm has created a false perception that human progress needs environmental sacrifice and peoples sacrifice, that if we respect the rights of the Mother Earth, all her species and earth communities, the progress of humanity will suffer.

The opposite is true. The more we respect the Earth, the more she provides for our needs. The more food we give back to the soil in the form of organic matter, the more fertile the soil becomes and can produce more food. The more water we return to the hydrological cycle, the more water there is in our wells and rivers to provide for human needs.

Pitting humans against the earth, and placing them outside the earth community is an outmoded, fossilized legacy of capitalist patriarchy and mechanistic thought that gave us fossil fuel based industrialism and colonialism and is now imposing militarized growth on communities. If our species is to survive, we must re-imbed ourselves in the earth and become part of the earth community. We must reawaken our duties to protect the earth and our rights as earth citizens to a fair share of her gifts. For this we need to revisit our concepts of growth and prosperity, we need to change the assessment of technologies to include the impact on the earth and on society.

After all this violence to the soil, to biodiversity, to water, to atmosphere, to farmer, a war like food system is unable to feed people. One billion people are hungry. 2 billion suffer food related diseases.

Our work in Navdanya shows that we must make peace with the planet to address hunger. It is only when soils are fertile and biodiversity and water are abundant, will food also be abundant, diverse, nutritious and healthy. Healthy soils are the basis of food security. And the more biodiverse a system, the more nutrition and health per acre, and more wealth per acre for farmers, it is able to produce. Biodiverse systems also increase resilience in times of climate chaos. That is why we save seeds and protect biodiversity. The industrial model must destroy biodiversity to increase production of commodities. Our biodiverse ecological farms protect nature and produce

more food, nutrition and health. We need biodiversity and ecological intensification, not fossil fuel and toxic intensification.

I have built Navdanya over the last two and a half decades to create an agriculture and food system that is at peace with the earth. At Navdanya, we do not grow commodities, we grow the Earth community, in the mind, and on the land. We feed the soil organisms, and they feed us. We grow diversity which supports diversity. And the pest predator balance this creates helps control pests. We have no need to spray poisons. We grow as much organic matter, and return as much as we can to the soil. The organic matter in soil is the alternative to the violence of fertilizer factories and violence of large dams.

The more biodiversity we grow, the more species we protect and more food we grow. Non-violent farming that protects species also helps us grow more food. And it produces better food, thus ending the war against our bodies which has led to the diseases of obesity, diabetes, hypertension and cancers.

The same technological and economic systems which violate the earth also violate the rights of communities to her resources – the land, the biodiversity, the water. When land, biodiversity and water are reduced to tradable commodities and privatized not only are the rights of nature violated, the rights of communities are also violated.

Making peace with the Earth begins with a paradigm shift from the mechanistic ideas of the earth as dead matter to the earth as Gaia, a living planet, our mother.

We need a new paradigm for living on the Earth because the old one is clearly not working. An alternative is now a survival imperative for the human species. And the alternative that is needed is not only at the level of tools, it is at the level of our world view. How do we look at ourselves in this world? What are humans for? And are we merely a money-making and resource guzzling machine? Or do we have a higher purpose, a higher end.

I believe we do.

I believe that we are members of the Earth family – of Vasudhaiva Kutumbkam. And as members of the Earth family, our first and highest duty is to take care of Mother Earth – Prithvi, Gaia, Pachamana. And the better we take care of her, the more food and water, health and wealth, we have. “Earth rights” is first and foremost the rights of Mother Earth, and our corresponding duties and responsibilities to defend those rights. Earth rights is also the rights of humans as they flow from the rights of Mother Earth – the right to food and water, the right to health and a safe environment, the right to the commons – the rivers, the seeds, the biodiversity, the atmosphere.

I have given the name Earth Democracy to this new paradigm of living as an Earth Community, respecting rights of Mother Earth.

We need to create measures beyond money, economies beyond the global supermarket to rejuvenate real wealth and authentic well-being. We need to remember that the real currency of life is life itself.

The mountain State of Bhutan whose Prime Minister invited me to help them go 100% organic has given up Gross National Product as Gross National Growth as measures of human progress and replaced it with Gross National Happiness.

Ecuador has introduced the Rights of Nature in its Constitution and people of the Andes have resurrected “Sumak Kawsay” (good living or living well) an ancient concept with contemporary relevance.

In India, the Bhoomi (Earth) movement is rising across the country in defense of Mother Earth, to stop land grab.

Earth Democracy enables us to envision and create living democracies. Living democracy enables democratic participation in all matters of life and death—the food we eat or do not have access to; the water we drink or are denied due to privatization or pollution; the air we breathe or are poisoned by. Living democracies are based on the intrinsic worth of all species, all peoples, all cultures; a just and equal sharing of this earth's vital resources; and sharing the decisions about the use of the earth's resources.

Earth Democracy protects the ecological processes that maintain life and the fundamental human rights that are the basis of the right to life, including the right to water, the right to food, the right to health, the right to education, and the right to jobs and livelihoods. Earth Democracy is based on the recognition of and respect for the life of all species and all people.

Ahimsa, or nonviolence, is the basis of many faiths that have emerged on Indian soil. Translated into economics, nonviolence implies that our systems of production, trade, and consumption do not use up the ecological space of other species and other people. Violence is the result when our dominant economic structures and economic organization usurp and enclose the ecological space of other species or other people.

The rights of corporations extinguish the rights of the Earth and all her children, including humans. The economy as currently structured is centered on corporations and corporate profits. Corporate profits are based on destruction of the earth and dispossession and uprooting of people.

The technological and economic systems that impoverish the earth, also impoverish local communities.

The rights of the Earth are ultimately intertwined with the rights of the people. The rights of corporations to appropriate or contaminate the earth's resources undermine both the rights of the Mother Earth and the human rights of people to livelihoods and basic needs of food and water. That is why the rights of Mother Earth are the very basis of the human rights of people to land and natural resource, food and water, to livelihoods and basic needs.

Earth Rights are the basis of equity, justice and sustainability. On Earth Day 2010, the President of Bolivia, Juan Evo Morales Ayma organized a conference on Rights of Mother Earth. The idea was to start a process for adopting a Universal Declaration of the Rights of Mother Earth on the lines of the Universal Declaration of Human Rights. Without Earth Rights, there can be no human rights. It is time to deepen human rights by deepening the recognition that humans depend on the Earth.

Earth Rights are Human Rights.

Humanity stands at a precipice. We have to make a choice. Will we obey the market laws of corporate greed or Gaia's laws for maintenance of the earth's ecosystems and the diversity of her beings?

The laws for maximizing corporate profits are based on –

1. Privatising the earth
2. Enclosing the commons
3. Externalising the costs of ecological destruction of hazards

The laws for protecting the rights of Mother Earth are based on –

1. Respecting the integrity of the earth's ecosystems and ecological process

2. Recovery of the commons
3. Internalising ecological costs

Defending the rights of Mother Earth is therefore the most important human rights and social justice struggle of our times. It is the broadest peace movement of our times.

Let me leave you with an ancient Indian prayer for peace with the Earth and all her elements and beings.

*May there be peace with space and the skies
Peace with the atmosphere
Peace with the waters
May there be peace with the earth
May there be peace with the herbs, plants and trees
May all the divine beings pervade peace
May the peace that pervades all creation
Be with you.*