

Yugant: End of an Era and Transition Series: 1

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Capitalism, Global Warming and Peak Oil

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Capitalism, Global Warming and Peak Oil

Yugant means end of an era. Two crises have come together that have endangered life on our planet and have spelt an end of the capitalist era. The first is global warming and the second is peak oil. Global warming, since it threatens life on earth, demands, on moral grounds, to reduce consumption of fossil fuels immediately. Peak oil, as we show below, brings down consumption of fossil fuels. Both will spell an end of capitalist era.

The system we live in today is called capitalism. Large part of the world, notably North America (USA and Canada), Europe, Japan, Australia and India are the main followers of this system. Many other countries like Russia, China and Vietnam who call themselves socialist also follow this system in a modified form. This system is based upon exploitation of the working classes and natural resources, resulting in creation of immense wealth, huge inequalities and environmental disaster.

Industrial revolution and capitalism began in the 18th century with the steam engine; that is, conversion of heat into motion. This heat primarily came from burning fossil fuels. Initially it came from coal but in the 20th century oil and gas were added to it. Fossil fuels have concentrated energy stored in them by degradation of plants slowly over millions of years. Because of its high density of energy, it is possible to control ownership, mining, processing and selling of fossil fuels by a small class of capitalists. Capitalism as a system depends on availability of fossil fuels, which run all the transport and generate most of the electricity.

Capitalism is beset with several crises. The first is the contradiction within its own class due to competition. Second is the contradiction with the working classes which are exploited and oppressed by it. Many other poor people are also directly and indirectly affected by it and are increasingly opposing it. The third is the over exploitation of natural resources, particularly fossil fuels.

Growth is a necessity for the capitalist system. That is why we constantly hear of GDP (Gross Domestic Production, which is an over all indicator of growth of the country), in the newspapers. Now growth requires consumption of resources. This consumption of resources occurs at a 'compound rate' (like with the compound interest rate that we learn in school) with respect to growth rate. A good way of understanding the relation between growth rate and consumption of resources is to find out that at a given growth rate, how many years it would take to double the consumption of resources. A simplified (but fairly accurate) formula is:

70/growth rate = No. of years in which the consumption of resources doubles

Thus if we have 1 percent growth rate, in 70 years it will double. If we have 2 percent then in 35 years it will double and in 70 years it will be 4 times! If the growth rate is 10 percent it will double in 7 years - like our fixed deposits used to double in 7 years when the interest rates were 10 percent. Thus capitalism has resulted in an enormous consumption of resources. Also this growth results in using up/ corporate takeover of commons resources that the poor are dependent upon.

However, the actual amount of resources consumed depends upon the rate at which you are already consuming them. Thus, say an advanced capitalist country consumes 100 units whereas a developing country consumes only 10. Doubling for the former means 200 units whereas for the latter it means only 20 units. That is why the developing countries aim at a growth rate of 10 percent or so whereas the advanced countries cannot hope to have growth rate of more than 2-3 percent.

Another factor about doubling the consumption of resources is that with each doubling the consumption is greater than the **sum total of all the consumption** that has gone before it. Let see how this happens. The doubling means a series like 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024 and so on. Now each successive term is greater than sum of all the previous terms. Thus 8 is greater than $1+2+4=7$. Similarly 1024 is greater than $1+2+4+8+16+32+64+128+256+512=1023$. As one can see, with each doubling the total increases to bigger and bigger number. So after a time it will be astronomical. The total quantity of fossil fuels and other mineral resources available is finite; and with time, a crisis must come. With the growth imperatives of capitalism, the crisis has come now. This consumption of

resources have given rise to the two crises:

1. Global Warming and Climate Change and 2. Peak Oil

Global Warming

The main cause of Global Warming is burning of fossil fuels in astronomical quantities by the auto mobiles and coal based thermal power plants. The consequent release of greenhouse gases (GHGS), mainly Carbon Dioxide CO₂, is so huge that it far exceeds the earth's capacity to absorb them.

This consumption of fossil fuels is not evenly distributed across the globe or among the people within a country. An average American puts into the atmosphere 18.5 tons of CO₂ emission per year as compared to a mere 1.8 tons by an average Indian. These averages hide the fact that most of the carbon output is contributed by the 20% rich of these countries and that the poor consume far less energy. Thus, there are extreme inequalities in GHG output within and across countries.

This level of release of GHGS is relatively a new phenomenon. For tens of thousands of years, humanity has existed by slowly changing the natural environment and ecology to meet its survival needs. However, human activities of the present day that lead to increase in greenhouse gases are very specific. They do not pertain to the tribal or community- based village life that humanity led in the past and which even today billions of poor people lead. Emission of GHGs is the direct consequence of coal-based steam technology that led to the Industrial Revolution and mass production of goods. In the 20th century, oil replaced as well as supplemented coal, causing further pollution and Global Warming.

The capitalist system has consumed so much coal and oil in such a short time that we are close to a critical point at which Global Warming becomes irreversible. If that happens, much of life on earth will come to an end. Many experts believe that we have only 10 -20 years left to stop it. All attempts within the capitalist system have failed miserably and there is no alternative but that this system itself be dismantled. As we have seen above, since the growth imperative is inherent in capitalism, this crisis cannot be solved within capitalism. So on moral grounds, to

save ourselves and life on earth, capitalism must come to an end and it is our moral duty to bring it to an end as soon as possible. (1)

Peak Oil

At the same time, the other crisis, that of 'Peak Oil' makes the end of the capitalist system imminent. Although wide scale use of petroleum and its product has a history of only about 100 years, it has become central to the very existence and functioning of modern societies. This is mainly because transport and power are essential for modern societies. Moreover, there is always an annual increase in the demand for fossil fuels, because the system survives through constant growth. Any decline in the supply of oil threatens the very basis of modern societies. Peak Oil does exactly this and leads to the collapse of the system.

What exactly is Peak Oil? At the present rate of consumption, all available oil will be used up within this century. But Peak Oil is not about when we run out of oil, but rather, when the production of oil starts to decline, and this has already happened (2005 - 2008) and we are witnessing the effects in a global dysfunction of capitalism which manifests as 'economic recession.'

Peak Oil crisis starts with a rise in petroleum prices. In 2008, it reached USD 147 per barrel of oil. This was one of the major factors in ushering in an economic crisis; a recession in North America, Europe and Japan. This crisis is leading to a worldwide collapse of the global economic system. Since the 2008 recession, capitalism has been beset with one global crises after another. The three traditional bastions of capital, USA, Europe and Japan are in a permanent crisis. The new powers China and India are plunging into a crisis this year. Within a few years the whole capitalist world will plunge into a crisis. (2)

The Coming Famine

Global Warming and Peak Oil have combined to create a famine in the world. Due to Global Warming the summers are getting hotter and hotter. the summer of 2012 has been so hot it has burnt crops in the USA, Canada, Russia and Australia.

Due to Peak Oil, a large area of the world's farmland is being used to produce biofuels. And again, due to Peak Oil, the inputs to agriculture: fertiliser, pesticide and farm machinery - all dependent on oil - have become prohibitively expensive. This is in turn driving up food prices all over the world.

As is well known, famine is caused both by decrease in production as well as increase in prices, which pushes food beyond the reach of the poor. Famines do not just happen on their own account. They are perpetrated as the result of policies that privilege the rich and powerful, and, by implication, harm the poor. By the end of this year and the middle of next year, large scale famine is expected all over the world. (3)

The capitalist system is imploding and collapsing. Whether the collapse comes in a couple years or a decade, is not predictable. There are too many fast changing variables, the most important being the people's struggle against it and the vision of an alternative society. But irrespective of when it happens, the world has to face either chaos or prepare for the transition into a society based on lower energy and equity. Such a society will have different forms in different parts of the world, depending upon their history.

Chaos or Transition

Many scientists believe that the time for action is over and we are facing 'Apocalypse Soon!' A recent article in *Scientific American* outlines the possibility of such a scenario.

'Four decades ago, a Massachusetts Institute of Technology computer model called World3 warned of such a possible course for human civilization in the 21st century. In *Limits to Growth*, a bitterly disputed 1972 book that explicated these findings, researchers argued that the global industrial system has so much inertia that it cannot readily correct course in response to signals of planetary stress. But unless economic growth skidded to a halt before reaching the edge, they warned, society was headed for overshoot - and a fall that could kill billions. Dennis Meadows, professor emeritus of systems policy at the University of New Hampshire who headed the original M.I.T. team and revisited World3 in 1994 and 2004, has an even darker view. The 1970s program had yielded a variety of scenarios, in some of which humanity manages to control production and population to live within planetary limits (described as 'limits to

growth). Meadows contends that the model's sustainable pathways are no longer within reach because humanity has failed to act accordingly.'

"We're in for a period of sustained chaos whose magnitude we are unable to foresee," Meadows warns. He no longer spends time trying to persuade humanity of the limits to growth. Instead, he says, "I'm trying to understand how communities and cities can buffer themselves" against the inevitable hard landing. '

When will collapse occur? Global Warming theorists talk of 2040 - 50, whereas Peak Oil theorists talk of as early as 2015! (4) What does this imply for human society? Without doubt, there will be chaos and a scramble for remaining resources - the best high density fuel remaining is charcoal. Whole forests will be burnt to make charcoal to serve the ruling class. Evidently, the poor will resist and attempt to survive the crisis, and a period of lawlessness can occur. It will be a grim period lasting maybe several decades, but once humanity exhausts itself fighting over shrinking resources, a recovery may occur. It is difficult to say how this scenario will unfold, but it will definitely take place in some parts of the world and unfortunately it might happen in large parts of our country too.

What else can happen during this period? With the arrival of Peak Oil, the curtain has closed on Act 1 of the drama Petroleum Man. What will happen in Act 2? Chekhov said, 'If there's a gun on the wall at the beginning of the play, by the end it must go off.' In the world's nuclear arsenal there are many guns on the wall. If life copies art, will there be an Act 3 in which the players, having learned their lesson the hard way, live sustainably? So if we do face a nuclear holocaust then we may have a situation where the 'living shall envy the dead.' However as humans, we are optimistic, so let us look at some of the more cheerful scenarios.

Transition

The concept of transition implies that we should go through a period of transition where we bring forth changes in our community/country incrementally, so that a smooth transition occurs towards a fossil fuel free society. **Three things must happen if anything worthwhile emerges out of all the chaos and suffering that these crises will cause. The first is the end of capitalist/industrial society, the second is a transition to a society, based on equity, scaling**

down of energy use and local self sufficiency and the third is to change humanity's attitude towards nature. In this, we have two paths or models before us - one is Cuba, the other is that of Transition Towns.

Cuba

It is possible that in some countries social revolution can occur with an explicit aim of equality and of reducing energy consumption. It is not an impossible dream. There is already a living example of it: Cuba.

Cuba is a small country in the Caribbean, with a population of about 11 million. In 1959 they had a revolution led by Fidel Castro and Che Guevara. The original revolutionary agenda, like that of most socialist revolutions - like that in Soviet Union, China, Vietnam etc. was industrialisation with equity. Cuba too took this route, but because of the US embargo on trade, the Soviet Union was the only source of oil for the country. But in 1989, something happened.

In 1989, the Soviet system had begun to collapse, and Cuba stopped receiving petroleum from the USSR. That is, 'Peak Oil' hit Cuba in 1989, though in an artificial manner - because in the world as a whole, there was no shortage of oil. The year 1989 ushered in the 'Special Period' in Cuba, where the country had to manage with extremely limited supplies of oil, a scenario that has begun to hit the rest of the world now.

It began with a nation-wide call to increase food production by restructuring agriculture. It involved converting from conventional large-scale, high input monoculture systems to smaller scale, organic and semi-organic farming systems. The focus was on using low cost and environmentally safe inputs and relocating production closer to consumption, in order to cut down on transportation costs. Urban agriculture played a significant part in this effort.

When oil supply stopped in 1990, transportation ground to a near halt. There were no cars running; public conveyance collapsed; and the streets were empty. People walked. Around 1993, Cuba imported 2,00,000 bicycles from China. To begin with, trucks were converted to buses by simply welding steps to the back. A skeletal frame of rods and a canopy were added. The concept was refined into the Cuba's mass transit bus the 'Camellone' (The Camel). Built on a

long chassis vehicle, it can accommodate 250 persons. For shorter distances there were cycle and auto rickshaws. In smaller towns, horse drawn or even mule drawn 'cabs' were to be spotted. Car-pooling and ride sharing is common in Cuba. There are designated government officials in yellow uniforms who have the right to pull over even government vehicles and seat people in need of transport.

Cuba provides us with a 'live experiment' where we can observe the whole cycle of Peak Oil, economic crisis and recovery. Even with regards to Global Warming, which has become a major crisis now, Cuba has achieved all the goals of reducing its carbon emissions. Thus Cuba has lessons for all on how to meet the present challenge. The Special Period in Cuba is like a real time model that has proved viable on a large scale, which other countries too could follow (5).

Cuba is the only country which has consciously and successfully met this challenge of transition. Its ultimate success depends whether the rest of the world also follows this road or plunges into a world war.

Meanwhile local initiatives are also coming up in many parts of the world to meet this challenge. The Transition Town Movement represents one such initiative.

Transition Towns

As we said above, **Three things must happen if anything worthwhile emerges out of all the chaos and suffering that these crises will cause.** In Cuba only two conditions were fulfilled, those of **end of industrial society, and transition to a society based on lower energy.** For fulfilling the third condition, **to change humanity's attitude towards nature,** we have to look at the work done by the Transition Town Movement.

Transition Towns is a more recent phenomenon. It is a grass roots network of communities that are working to build resilience in response to Peak Oil, climate change, food insecurity and economic instability. Transition Towns is a catchword for environmental and social movements founded upon the principles of permaculture. Today Permaculture has come to mean a whole life system encompassing various strategies for people to acquire all those resources, including access to land needed to evolve self-financing and self-managed systems to provide for all their

material and non-material needs, without depleting, polluting and destroying the natural resources of the biosphere. The Transition Towns brand of permaculture uses David Holmgren's 2003 book, *Permaculture: Principles and Pathways beyond Sustainability*. These techniques were included in a student project overseen by permaculture teacher Rob Hopkins at the Kinsale Further Education College in Ireland. Two of his students, Louise Rooney and Catherine Dunne, set about developing the transition towns concept and took the far-reaching step of presenting it to Kinsale Town Council, resulting in the historic decision by councillors to adopt the plan and work towards energy independence. The Transition Towns movement is an example of socio-economic localisation.

The idea was adapted and expanded through 2005, 2006 and beyond in Hopkins' home town of Totnes where he is now based. The initiative spread quickly, and as of May 2010, there are over 400 communities recognised as official Transition Towns in the United Kingdom, Ireland, Canada, Australia, New Zealand, the United States, Italy, and Chile. The term *Transition Towns* has morphed into *Transition Initiatives* to reflect the range and type of communities involved - e.g. villages (Kinsale), neighbourhoods of cities (Portobello, Edinburgh), through council districts (Penwich) to cities and city boroughs (Brixton). It began with a nation-wide call to increase food production by restructuring agriculture. It involved converting from conventional large-scale, high input monoculture systems to smaller scale, organic and semi - organic farming systems. The focus was on using low cost and environmentally safe inputs and relocating production closer to consumption, in order to cut down on transportation costs. Urban agriculture played a significant part in this effort.

Central to the transition town movement is the idea that a life without oil could in fact be far more enjoyable and fulfilling than the present: "by shifting our mindset we can actually recognise the coming post-cheap oil era as an opportunity rather than a threat, and design the future low carbon age to be thriving, resilient and abundant - somewhere much better to live than our current alienated consumer culture based on greed, war and the myth of perpetual growth."

An essential aspect of transition in many places is that the outer work of transition needs to be matched by inner transition. In order to reduce our dependence on energy we need to rebuild our relations with ourselves, with each other and with the natural world. That requires focusing on the heart and soul of transition. (6).

Towards a Fossil Fuel Free Urban India

India has an urban population of 30 crore, which is equal to the U. S. population and greater than that of any country except China. This urban Indian population lives in a total of 400 urban agglomerates. Of this urban population, more than half (18 crore) lives in 35 cities that have a population greater than 10 lakh. The two metros/mega cities, Mumbai and Delhi have more than 1 crore residents. Bengaluru, Hyderabad and Ahmedabad have more than 50 lakh people.

It will be easier to tackle the problems of the 12 crore people who live in 365 urban agglomerates of less than 10 lakh each, and many of the success stories will first come from them. On the other hand, many groups and individuals in bigger cities are more aware and have resources to start alternatives. They can help groups and residents in smaller towns.

It is only in the metro and mega cities that restructuring to suit cheap fossil fuel has occurred in a significant way. Road widening, tarred roads, suburbia etc. has occurred in these cities. Even there, it is not complete. Pockets of slums - with as much as a third of the population living in them - which have small lanes continue to exist. So changes required to initiate a fossil fuel free society are far easier in India and in other developing countries than in the developed countries. On the other hand, public awareness on these issues is low, which makes it difficult to influence governments or even local bodies in terms of transition-friendly policies.

Whatever changes that are occurring now, are happening only as remedies for acute problems that people are already facing, and which are part of the same crisis. These include: rain water harvesting, fuel (for cooking) and fuel efficient stoves, urban agriculture for perishable foods like vegetable and fruits which are becoming expensive due to transport costs, transport based on non-fossil fuels—bicycles, cycle rickshaws, horse, donkey, camel and bullock carts. Solid waste management is probably the only area where city wide policy intervention has come about.

Roof top rain water harvesting is a widely discussed topic these days. Many state governments have passed laws making it compulsory and have published booklets to help people how to do it. Organisations like Centre for Science and Environment in Delhi train people in it and have also carried out prestigious projects. However, in terms of implementation it is still slow. It is

the most promising area of activity for creation of green jobs and green entrepreneurship. Rain water harvesting is not limited to roof tops alone. It involves tree planting in cities, restoring tank and ponds and in general what is called 'water shed management,' which can apply to all areas, whether urban or not.

Fuel efficient stoves have been around since the 50s, starting with Magan Chulha, which has a built-in chimney and is designed for 2 or 3 pots. There are others, which produce charcoal as a by-product or are based purely on charcoal as a fuel, and finally there are solar box cookers. The problem is that they are a bit expensive, need maintenance, and require some knowledge to operate. The real answer is to increase equality in society and have plentiful fuel wood by planting trees that would meet this need. Charcoal produced from wood should become the main high density fuel for artisan/industrial use.

The urban garden movement - which mainly produce vegetables - too is catching up with relatively educated and affluent city people, because they want their food to be natural and chemical free. Most cities have e-groups, training programmes and books promoting it, apart from outlets that sell local and organic produce. Bangalore and Hyderabad have fairly well established shops which also serve as spots for people interested in urban gardening to meet and exchange ideas. Poor people, on the other hand, grow whatever is possible. In smaller towns, where there is a bit more space and people are more linked to the rural hinterland, this happens much more.

In Vellore in Tamilnadu a zero waste management programme has been successfully carried out. Several municipalities all over the country are trying it out. This coupled with anti-plastic movement is slowly changing the face of urban India. (7, 8).

Bicycles and cycle rickshaws (particularly in North India) are making a genuine come back and a large number of towns are seeing a revival, backed by better equipment and support organisations. Bangalore has recently opened cycle lanes in its suburb of Jayanagar as a pilot project, while Nanded in Maharashtra has lanes for cycle in several streets. On the other hand, urban planners are still governed by fossil fuel age thinking and the influence of fossil fuel lobbies. As a result, urban infrastructure and transport policy is based on the convenience of private vehicle users. (9).

Kinwat: A Holistic Approach

Kinwat is a small taluk level town in Nanded district in the Marathwada region of Maharashtra. Here a small group is trying many of the approaches described above simultaneously. Kinwat was consciously chosen, based on the understanding that the crisis would hit small towns first, and therefore, where changes too would be accepted readily. So far, these assumptions have proved correct.

Kinwat is located on the banks of river Penganga and is surrounded by small hills and forests. It has a population of around 25,000, which consists mainly of Muslims, Dalits, fisher folk and gypsy communities. The town is predominantly middle to lower-middle class, the majority of them engaged in farming, fishing, pottery and collecting forest produce. It has a small upper-middle class that either have large land holdings or are engaged in commercial activities. It also has a small middle class consisting of government employees and teachers of the local degree college. The town's municipal water supply depends on a nearby dam as well as ground water sources located a few kilometres away.

While the group has achieved success in every thing it tried, the quantum is still too small to make a significant dent in local life and politics. However, its rain water harvesting activities are commercially viable and have an unlimited demand because the town has a serious water problem. All types of improved, fuel-saving stoves promoted by the group too have proved successful, and so has the seeds program for vegetable gardens. The group has undertaken several other activities, including a library and a bookshop. The group now is prepared to launch a big awareness programme on Global Warming and Peak Oil. This will also strengthen the team and bring more young people to the group. (10)

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