

From the Death Throes of Oil.....

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The Princeton Professor Harold James in a recent article pointed that just as the price of oil acts as a thermometer to the health of world economy, it can also act as a barometer for measuring the intensity of approaching geopolitical storms. Probably it is acting as a barometer of something much more significant. The death throes of oil may be covering the birth pangs of a new age being ushered in upon our planet. It is probably signaling not only a change in our energy consumption patterns, but along with it, changes in the character of our socio-political institutions and institutional processes also.

Professor James pointed that a rising oil price acts as a brake on growth and had led to global recessions in 1973, 1979, 2000, while economic slowdown in turn leads to falling oil prices, like it did after 2008, when oil prices had plummeted in anticipation of economic stagnation, only to recover from the strong growth in demand from the emerging markets. With the slowdown in all emerging economies except India's, the current drop in oil prices was not unexpected.

The plunge in the price of a barrel of crude from nearly \$150 in June 2008 to only \$30 now has badly shaken not only the world's energy and commodity markets, but also the major oil economies like Russia, Saudi Arabia, Venezuela, Nigeria, Iraq and other Gulf countries, which are predictably in turmoil. With Iran joining the fray after the lifting of sanctions imposed on it, the price is expected to plummet further. Sinking oil has presaged not only financial instability, but also social and political instability. Russian economy has been thrown into deep recession, as oil and gas account for 70 percent of its export earnings and half its budget. Russia loses about \$2 billion in revenues for every drop of \$1 in oil prices and the Russian rouble had sunk to its lowest point ever, despite a steep hike in the interest rate to protect the troubled rouble.

Low oil prices are not just squeezing Saudi Arabia's domestic budget for 2016, imposing austerity measures unheard of in the country and drastically cutting subsidies for water, electricity and petroleum, Saudi Arabia is also contemplating to impose income tax for the first time. Nigeria, Africa's top oil producer, finances about 75% of its budget from sale of its crude, and unemployment has soared in the country to 9.9 percent in the third quarter of 2015. Venezuela, where inflation has soared to a surreal level of 720%, loses about \$700 million annually for each \$1 drop in oil prices, and that means less financing for health, education and housing that had brought Hugo Chávez to power and has kept and his successor Maduro there till now. Iraq has been experiencing enough bloodbath and turmoil from its ceaseless spiral of internecine

violence, but it is now poised precariously. In the cash-strapped country, dependent on oil for 95 percent of its budget, falling oil-prices had led to huge public debt eroding the government's capacity to pay its security forces which are fighting not only internal turmoil but also the sinister Islamic State, and both will now become harder.

On the other hand, plummeting oil prices may have helped stabilize the fragile Eurozone countries and also contain India's fiscal and current account deficits. But overall it appears to be causing an income redistribution, from the rich oil exporters to middle and low income importers, which may still spur an acceleration in the overall global growth. For predictable reasons, neither the OPEC countries nor Russia are willing to cut production, for fear that they will lose their market shares permanently to US and other countries.

But there is a more serious threat to our fossil fuel - coal and oil - based society from concerns of climate and environment. At the 21st Conference of Parties (COP21) attended by 196 countries in Paris last December, the World had recognised the dangers and agreed unanimously to curb the emission of greenhouse gases. Next to power plants, oil and gas are the most prolific emitters of these gases. The world economy will now have to restructure itself in response to this agreement, leading to the use of cleaner sources of energy, through higher investment and technological innovation in renewables. It will also upend the geopolitical landscape very seriously, sparking political instability and greater demands for freedom and democracy in oil-producing countries.

Thomas Friedman, in his book "Hot, Flat and Crowded", noted a strong and interesting correlation between the price of oil and the pace of freedom and democracy. Between 1979 and 1995, as oil prices continued to fall, democratic movements around the world gathered strength and momentum, especially since the fall of Berlin Wall in 1989. In 1993 Nigeria privatised its first oilfield, and in 1997, Iran called for a dialogue between civilizations, displaying a rare openness. The same Iran, in 2005, when oil had reached \$70 a barrel, had elected Mahmoud Ahmadinejad, who called Holocaust a myth and demanded the destruction of Israel. The 2016-Iran has already elected a moderate Parliament. Saudi Arabia is relaxing some of its draconian religious, especially anti-women, laws. This is not difficult to explain. Weakening oil prices undermines the authoritarian regimes that control the major oil-producer nations, in which oil revenues have corrupted the political system. As prices fall, the tyrants who have ruled these countries with iron fists are automatically destabilized and forced to let loose their vice-like grip on power.

Energy is the driver of civilizations, and progress of civilization has been synonymous with higher use of energy. Jeremy Rifkin in his 1980-book "Entropy: A New World View" had suggested that the nature of our civilizations is conditioned by the kind of energy that we use. The demand for more energy reduces the period between each new energy watershed. It took millions of years

to exhaust the environment that supported the hunter-gatherer societies to make the transition to agricultural civilizations, but it only took a few thousand years to make the next transition to an industrial society. Coal power triggered the first industrial revolution in Europe between 1750 and 1850, centred around factory-based manufacturing, starting with the mechanisation of the textile industry. The second industrial revolution that took place between 1870 and 1914, based on advent of assembly-line manufacturing technology, was powered by electricity, mostly coal-based, and ushered in the era of mass-production, beginning with the automobile industry. Automation of manufacturing heralded the third industrial revolution, based on electronics and information technology in the 1970s, powered again by fossil-fuel-based electricity. At each stage, as old processes were weeded out by newer technologies, large scale disruption and tumult were experienced along with radical economic and societal changes, and people who failed to adapt had perished. But the energy base of non-renewable fossil fuels had remained unchanged. Now as our store of fossil fuels is running out, the entire economic superstructure built upon it is beginning to crumble. The Great Depression of the 1930s, the oil crisis of 1971, sub-prime crisis of 2008 and the consequent global economic meltdown were not mere accidents, but manifestations of this process, not its cause but effects. Not enough of old energy left to mend all the cracks that had appeared in our energy superstructure. Transition to a new energy base is imperative, probably within a generation, before we become hostages to obsolete technologies.

Before coal, wood was the major source of energy. Pressure of expanding population needed more land under cultivation for food, which could only be claimed from the blanket of thick forest covering the continents. By the middle of fourteenth century, population had outstripped the energy sources – and energy-watershed was reached. Clearing of forests had reduced the available wood supply, and society had to shift to coal. But it was not as simple as replacing one form of energy by another. The changeover necessitated radical uprooting of an entirely wood-based existence. Steam engines were designed to facilitate the mining and movement of coal. The need for transporting coal to different locations led to the invention of railroads and steam locomotives which laid the basis for industrial era. It also ended the community and kinship-based agricultural existence. Towns were built around mining centres. Joint families gave way to nuclear families who moved to these centres. Dealing with machines needed specialisation, hence education system became specialisation-based. Any changeover in the energy base necessarily leads to socio-economic and political changes. Communism and socialism were offshoots of this changeover.

Social and economic institutions, like machinery, are transformers of energy. They facilitate the flow of energy through cultures as designers and coordinators of new technologies. Any transformation of energy into products and services and exchange of energy between various groups create disorder. As technologies multiply, these disorders mount, impeding the energy flow and reordering the system, which enlarges the institutions. Being forced to absorb the rising

social and economic disorders, they swell and sometimes burst. Our caste-based social and economic orders today are bursting at the seams, seriously upsetting the societal equilibrium. When these institutions become so large and complex that they require more energy to maintain themselves than they can deliver - when instead of facilitating the flow of energy through society, they become a drag upon it, then they start disintegrating. We are today witnessing unmistakable signs of such disintegration all around us.

Today a fourth industrial revolution is staring at us as we are reaching the new energy-watershed. As Klaus Schwab says in his book "The Fourth Industrial Revolution", this is going to be fundamentally different, characterized by a fusion of technologies that is blurring the lines between our physical, digital, and biological worlds, impacting all disciplines, economies and industries. The resulting disruptions offer both great promise and equally great peril. As billions of people get connected to digital networks, putting their energies together, it may dramatically improve the efficiency of organizations, help regenerate the natural environment and undo the enormous damages caused by previous industrial revolutions. The peril is that society may not be able to adapt easily to the new technologies that will be powered not by fossil fuels, but by renewables, or a combination of these. Measurement of the flow of energy that characterises the industrial age will be replaced by examining the flow of interconnected phenomena. The external world will be examined not as a series of isolated causal relationships, but as a web of interrelations for movement and change. It will be a much more holistic and harmonising transformation of our world into an intricately interconnected entity encompassing the entire humanity, where nation states will slowly lose their appeal and fade away. In the death throes of the oil age, we can discern the faint signals of the coming age.