

Climate Change – An opportunity that knocks after a million years

Madhav Mehra

A bureaucrat turned social entrepreneur, Madhav Mehra, currently the President of the World Council for Corporate Governance, became the first elected Chairman of the World Quality Council in Chicago in 1996. He is the President of the World Environment Foundation, UK registered charity and Managing Trustee of SM Charitable Trust, which runs hospitals and schools for slum dwellers in India. Educated in India and the UK Madhav has served government of India in various capacities and resigned as director of Indian Railway Board's Efficiency Bureau to found several national and global institutions such as Quality Management International, Institute of Directors, the coveted Golden Peacock Awards, Quality Times and journal of Corporate Governance. Described as a "Guru of Substance" by Economic Times Madhav has trained over 50,000 professionals through his director workshops and programmes. He has authored and edited a number of books including "Making Corporate Governance Work for the Poor" and "Making a Difference Through Corporate Governance".

Oscar Wilde is supposed to have defined a pessimist as someone who complains of noise when opportunity knocks. Rocketing oil prices should be music to the ears of climate change industry. It has brought a sense of urgency to even a country like India, thus far insensitive to the impact of climate change. It has accelerated the pace in developing alternative energy options. There is now a sudden awareness of opportunities in harnessing renewable energy. Solar energy has been found to be the most promising of all alternative options. India has so much of it. If only 2% of the land area were to be used to harvest energy from sustainable the power generated will meet our entire energy requirement. Yet it was starved of investment in R & D thus making it an expensive option. It has now become a hot bed of innovation. Costs are falling, making solar energy accessible to common man. India has allocated Rs. 600 crores in the 11th plan for R & D in photovoltaic technology and also set up a Solar Energy Commission with a spend of \$10 billion.

It was Einstein who said that the significant problems that we face today cannot be solved at the same level of thinking as we created them. Once we are able to adopt new perspective the global warming turns an opportunity and the kind of reductions in CO₂ that governments are bickering about look infinitesimal. Telecommuting is one such solution. Anyone who commutes to office in any of the hundreds of metropolitan towns around the world knows the huge quantities of GHG formed through the traffic jams caused by commuting rush in the morning and evening. Why, with enormous advances in wireless technology, governments all over the world are not providing a free wifi service in every habitat to enable employees to telecommute? Why corporations are not staggering office hours and introducing flexi time? This would improve productivity, help housewives to join the work force & stop traffic jams. Companies should subsidise purchase of

computers for the staff to encourage and enable them to work from home or local hubs instead of commuting.

Winning companies are already getting their staff to telecommute. This step alone can cut down the CO2 way below the requirements of Kyoto. Fight against climate change simply needs a will to transform business as usual. Benefits are far too profound to make the change worth the pain.

Climate change is an opportunity similar to one this planet experienced millions of years ago when extreme drought forced homonids to adapt to new environment and brought humans with larger brains into being. According to the projections made by futurist-physicist Michio Kaku, oil prices will keep rising globally and are forecast to reach \$200 per barrel. At the same time the price of solar – hydrogen power will keep falling thus ushering in a solar hydrogen age.

The failure of Bali negotiations shows that governments with diverse constituencies are ill equipped to solve problems so cataclysmic and so urgent as climate change. That climate change is real, catastrophic and man made is indisputable. That it is unjust in the severity of its consequences is irrefutable. Billions living in South who have never switched on an electric bulb face the worst consequences while North which has caused climate change and controls vast cold deserts may even be better off in the short run with global warming. The overriding issue therefore is of the impact of climate change on the sharpening inequalities which already pose the greatest threat to security. Poverty and hardship seem more insidious when juxtaposed against abundance and opulent consumption. People can stand poverty but not injustice. It is the perception of this injustice that becomes the breeding ground for all forms of terrorism. Even more so in this connected world.

None realises the importance of stability and security more than the global business. Business is the greatest beneficiary of globalisation. It understands the power of renewable technologies such as the wind power and solar energy to redress the global imbalances. It understands the importance of balanced scorecard to serve different constituencies – combat climate change, alleviate poverty and create value for company. Business is more adept to a holistic approach to adopt multiple agenda by tapping the formidable power of technology. It realises that oil supplies are limited. Though forecasts of oil supplies are dodgy because oil supplies, oil exploration, oil extraction or oil reserves have never been subjected to audit, experts believe oil production may peak this decade itself. At the same time energy requirements are rising with a vengeance. It sees the huge potential in serving the needs of hundreds of millions of people who are yet to switch on power.

The social responsibility of the business even from the days beyond Milton Friedman and Adam Smith has been to make money unabashedly. In the knowledge economy of today the route for making money has changed. It now passes through social agenda and environmental uplift. The corporate social responsibility today has turned out to be corporate business opportunity. Businesses are burning midnight oil in proving who is socially or environmentally more responsible. While governments are struggling to cut CO2 by mere 7% below 1990 levels, some smart companies have achieved spectacular results in their bid to drive a low cost economy.

Lee Scott, CEO of Wal-Mart and Stuart Rose, CEO of Marks and Spencer both admit that they started their sustainability drive as “a defensive strategy”, but it has turned out a cash cow creating value for both customers & company in an unprecedented way while protecting environment.

HSBC bank & ITC claim they have offset their carbon impact and become carbon neutral. M & S claims they will soon become zero waste and have grossed a billion pound profit on the back of their sustainability, “Fairtrade”, organic food, and zero waste slogan “Just as our sandwiches disappear in your mouth so does our packaging.”

DuPont claims to have reduced GHG emission by 50%. Dow Corning has made \$1 billion through eco-embedded innovations. Ford has boosted productivity and saved money by rebuilding its River Rouge plant in Detroit ecologically, installing skylights and a ‘living roof’ that reduces toxins. Several companies have followed suit. Genzyme Corporation uses waste steam for heating. The New York Jets stadium was designed to use solar cells and wind turbines to reduce energy. It now sells excess energy to the city’s electrical grid. UPS & FedEx are equipping vans with hybrid and fuel cell engines to reduce fuel costs & pollutants. Starbucks claims it saved \$36 million in 2001 through CSR and sustainability projects that helped keep employees loyal and cut down turnover costs.

Nine leading UK companies are signing up for carbon foot printing standards to address global warming in partnership with Carbon Trust, DEFRA and British Standards Institution. These include Cadbury Schweppes, Coca-Cola, The Cooperative Group, Halifax, Kimberly Clerks, Muller Dairy and Scottish and Newcastle – producer of Fosters Lager and Bulmers Original Cider. They will work with Carbon Trust to explore the best way to measure and communicate the carbon impact of their products.

The evidence shows that industry is aggressively responding to environmental challenges with a wave of innovations in alternative energy. Brazil is already meeting 40% of its transportation requirements from ethanol. Bio fuels can be produced without sacrificing land for food crops. India’s 600 million tonne agricultural waste can generate equivalent of 80,000 mega watts of electricity, ie 60% of its installed capacity, and empower the rural India by creating 30 million new jobs. Radical advances in energy conservation are taking shape. Hybrid cars, solar panels, windmills, ethanol plants, nuclear fission, desalination, biofuels, organic farming, precision farming and bioengineering are but few examples. Light Emitting Diodes (LEDs) are saving 90% of the energy wasted by incandescent lights. The experts of TechCast project directed by Bill Halal, Professor of Innovation and Technology at George Washington University detail “scores of new fuel cell technologies developed to create H₂ directly from biomass. Photosynthesis is offering the prospect of converting sunlight into energy as plants do, at 100% efficiency.

Tidal energy is being harnessed in Manhattan, France, and Nova Scotia. Geothermal energy is producing the first hydrogen economy in Iceland. Cold fusion is being re-examined because of new supporting evidence. Researchers at the University of California are converting the biggest problem in global warming - CO₂ - into oxygen and carbon monoxide, the primary feedstock for plastics and other products. Wind turbines are being developed that ride 10 Km up in the jet

stream to capture 100 times as much energy, which is transmitted to Earth on supporting cables. The U.S. military and India are studying the use of solar satellites for producing energy.

The trend is unmistakable. California Edison increased its use of renewables from 1% in 1985 to almost 30% today, and California now requires 20% of its energy to be renewable by 2017. Maine now derives 30% of its energy from hydroelectric plants and other renewables. Hawaii, and other states aim to produce 20% of all energy from renewables by 2020. The U.S. DoE thinks renewables will reach 28% by 2030, and the EU expects renewables to reach 22% of energy use by 2010."

Melting of glaciers is reducing the water supply for future generations. Water promises to be in the 21st century what oil was in the 20th century. Gangotri glacier the font that supplies fresh water to millions in India is receding by 23 meters every year. Desalination technologies will change the equation. According to TechCast studies, innovations in desalination have brought down the overall desalination costs from \$20 per gallon in 1950, to \$6 per gallon in 1960. The cost is now approaching 1 cent per gallon. Ovation Products claims it can distill water contaminated with anything into pure drinking water for 1 cent per gallon.

New business models are emerging which are material efficient and service based. The classic example is Interface Corporation, a \$ 1.1 billion company that provides "carpet service" rather than selling carpets. They learnt to recycle carpets and found recycling makes carpets last four times longer and uses 40% less fabric while reducing the amount of replaced carpeting by 80%. This resulted in 35 fold reduction in overall use of materials. Ray Anderson the CEO says: "Sustainability doesn't cost. It pays. Our costs are down. Our products are the best they have ever been. Our people are motivated by a shared higher purpose. And the goodwill in the marketplace is astonishing. Doesn't it feel good to have this kind of commitment made by the company that you are part of? Don't you feel proud?"

Smart companies are not following piecemeal approaches to climate change. They realise that modern technology can give multiple benefits. The intimate interplay between a DNA molecule, the IT power, atomic matter, bioengineering has driven commercial innovation through the roof. Bridgestone, the Japanese tyre company no longer sells tyres in Europe. They charge customers on "pay as you use" basis. Tyres have sensors to track their usage. So instead of proliferating models, the company focuses on improving the durability of tyres. Because customers pay on usage, even the poor can afford thus the company enhances its market, improves its sales and boosts social inclusion. Lots of other companies operate similarly multiple agenda that improve their bottomline, alleviate poverty and save the planet.

Corporations are greening their businesses at an astronomical pace. Greentech could be the greatest business opportunity of 21st century. Cleaner energy companies that attract 1% of venture capital before 1999 are now getting 8% of all investment. The world market for pollution control was \$500 billion in 2000. It is expected to rise to \$10 trillion in 2020, larger than automobiles, health care and defence.

Ever since the collapse of the dotcom bubble, investors have been searching for a new El Dorado. Climate change could be the exciting new frontier with dramatic potential. In India

Suzlon, a lacklustre company so far, has generated Rs 13700 crores for its promoter Tulsi Tanti through a recent IPO. Wind-turbine companies which had mini-busts in 2000 and 2004 are roaring today.

Investor interest is switching to companies that develop the enzymes which break down plant matter and turn it into fuel. "Novozymes, a Danish company, was considered a boring old specialty chemicals company until the enzymes operation was recognized," says Ronnie Lim, head of sustainable investments research at Morley, a fund management group.

The wind market today is the most developed. Three of the four largest environmental companies by market value (Suzlon from India, Gamesa from Spain and Vestas from Denmark) are wind groups. According to Impax, Turbine manufacturers should prosper in 2007, says Bruce Jenkyn-Jones, Impax's director of investments; 28 different countries are growing wind capacity, which means that turbines are sold out to 2009. So manufacturers can push through price increase. Wind turbines will, from now onwards be subject to only incremental improvements: they will become a bit more efficient, a bit cheaper to install, and a bit cheaper to build.

Solar, on the other hand, is ripe for breakthroughs. The material which forms the basis of the vast majority of today's solar cells, silicon is expensive and cumbersome. There is no compelling reason why new materials of a tenth of a twentieth the price of silicon could not be used. Eventually thin-film technology will prove a cheaper replacement. However, there may be other solar opportunities through these cell technologies. Stephen Mahon of the Low Carbon Initiative, which recently launched a £44.5m (\$82.5 m) environmental fund, says it is investing in Heliodynamics, a company which use mirrors to focus the sun's rays and thus increase the power generated.

But nanotech can provide plastic solar cells at \$0.20/watt and increase efficiency. Nanosolar Company is mass producing solar cells at far less cost by simply printing them, and expects to increase the global supply 20-fold. The world's largest solar power plant, located in the Mojave desert, is 30% efficient. The CEO says that "11 square miles could produce as much energy as Hoover Dam." The consensus is that costs will become competitive with other energy sources about 2012 to 2015, and some experts estimate solar and wind power will reach 10% of U.S. energy by 2013.

Nuclear fission produces no pollution, has a sound safety record, and compares with oil on cost. New designs like the pebble bed reactor are immune to meltdown, and waste can be stored safely if coated in glass or socked away in stable mountains for 200,000 years. A "fast breeder" design recycles spent fuel to reduce radioactive waste from 95% to 1% of the fuel used. Worldwide, the number of nuclear power plants is expected to grow from 435 today to 600 by 2010.

Organic farming is making the planet and humans both healthier. It uses less resources, improves the soil, reduces drought and erosion and improves profit through higher yield. Studies also show that organic foods produced a "dramatic and immediate" drop of pesticide levels in the bodies of children. "Free range" chicken, and grain-fed beef have less fat, less cholesterol, less

vitamin A & Omega Acid compared to 'factory raised' chicken or animals. Vegetables also lose nutrients when grown with chemicals. Surveys show 90% of the public favors organic produce.

Innovations in precision farming are unfolding new opportunities of profits for companies with improved soil productivity, healthier people and healthier planet. It involves the computerized control of irrigation, seed distribution, fertilizer, and pesticides to suit variations in land identified using GPS and geographic information systems. Twenty percent of farmers in the U.S. are adopting these practices because PF reduces the amount of costly chemicals needed, raises yields, and protects the environment. A farm equipment manufacturer said, "In 10 years, every farmer will use this technology."

The most controversial area is that of carbon credits, which requires energy producers to buy permits to emit greenhouse gases. In 2006 the European Union's emissions-trading scheme was crippled by the over-allocation of permits by member countries, prompting the price to plunge by two-thirds. But James Cameron, a founder of Climate Change, is optimistic. He has raised an \$830 m fund to invest in carbon trading and says the scheme "is the best chance we have of reducing large amounts of greenhouse gases at relatively low cost".

The auto sector has been the most lethargic in innovation due to the resistance from incumbents . Each day a modern car burns fuel derived from 100 times its weight in ancient plants; yet a mere 2% of that fuel moves the driver. Tripled-efficiency, ultra light petrol-hybrid SUVs designed in 2000, are paying back in one year at European and Japanese fuel prices or two years at America's much cheaper pump prices. This year the Automotive X Prize is starting to move such designs to market just in America, they will ultimately save 8m barrels of oil a day – equivalent to finding a new, secure and inexhaustible Saudi Arabia under Detroit.

Toyota is emerging the leader in superefficient plug-in hybrid cars; electric for short commuters, petrol-hybrid for long trips. This could double the already doubled petrol efficiency of a Prius. It is using technology to make it ultra light so its petrol efficiency redoubles. If it could be biofuelled , the efficiency can be quadrupled thus raising it to 30 times today's norm.

As we multiply our energy needs to power our homes, offices, factories and vehicles for the 8 billion people in the next decade, the innovations in alternative energy will begin to lay visible foundations for a richer, cooler, fairer and safer world. Yet these advances merely reflect the tip of the iceberg of potential of innovations triggered by climate change.

Stabilizing the earth's climate would turn out not costly but profitable in more ways than one. It would unleash a new trajectory of unifying and inclusive growth. People will start questioning our obsessively acquisitional, excessively consumeristic and emotionally destroying model of growth that clutters the planet with proliferation of unneeded products that are dangerous for health and disastrous for ecology. This in turn will release another explosion of innovations and multiply business models of the Interface Corporation of US and Bridgestone of Japan as well as that of Disney which makes huge profits through enhancing enjoyment of experiences. As Daniel Kahneman , the celebrated Nobel economist says people cherish experiences far more than commodities. They love "doing" more than "having". Business will discover new potential in moving economy from this acquisitional to experiential mode.

As Madonna's recent jaunt to Rajasthan culminating in joy rides on camel's back and discovering the quaint and the unbeaten tracks has confirmed, the wet dreams of rich and famous are not acquisition of masserati objects but go for outlandish experiences that add to their brand of uniqueness – being one and the only one to have done it. With the rise in technology the luxury is becoming commoditised . The growth economies of India, China, Brazil, Russia are adding millions of HNIs (High Networth Individuals) and hundreds of billionaires each year. It is no fun for the status conscious to own things that millions of Joneses do. They are looking for lusty experiences which are also emotionally gratifying. Businesses that create such experiences reap the moolah without damaging the planet.

World economy is fueled by 2 billion teenagers whose value system is vastly different from their parents. A study of their shopping behaviour reveals they punish companies with poor record on environment and social issues and reward those who champion these issues. They are the ones who are clanking the tills at Marks and Spencer and Wal-Mart egged by the social and environmental promise of these companies. There never was a better time to be good and make money.

Climate change is an opportunity for social change that we have been waiting for. Its great potential lies in bridging the North South divide by empowering the rural poor. Climate change will revolutionise the fight against poverty and shape the future of business as never before. It will power unprecedented growth through new business models based on low carbon, zero waste and dematerialized growth that emphasizes and enhances the human experience on this planet. A robust response to climate change offers not only the biggest business opportunity of this century but also hope to the world's poor that their misery may soon come to an end.