



Paris 2050 Smart City Project

Urban futures 2050

On the 4th Dec 2017 I was asked to take part in the Human Environment Urban Futures Project, a think tank gathering information as part of the Ministry of Defence Strategic Trends – Out to 2050 publication.

The following reflects my thoughts and perspective on potential futures for humanity in 2050 in the light of those discussions.

It is abundantly clear to me through my work as part of the Envisionation team that anthropogenic impacts are exponentially exceeding the resilient capacity of the biosphere's stabilising systems. Without dramatic changes in societal responses to these impacts, business as usual is going to lead to catastrophic consequences for humanity by 2035 and possibly much sooner. These impacts will manifest themselves as multiple extreme weather events, drought, flood, wind, and rapid swings in temperature, causing a global food and water supply crisis which will lead to competition over dwindling resources resulting in massive numbers of refugees, war and famine.

This will trigger a collapse of the derivatives market which could in turn precipitate a collapse of the global financial systems. As that happens further sets of devastating feedback loops will be set in train as humanity, struggling to survive, burns every last tree and eats every last living thing. Billions of people will die and in a rapidly heating world only a few small pockets of humanity will be left hanging on in the higher latitudes by the end of the century.

Fortunately, I have far greater faith in humanity and believe that we will follow an alternative path even if we leave the decision to take that path until the very last minute.

That last-minute may be as close as 2025.

Thus, our management of anthropogenic impacts, climate change and environmental degradation, form the framework for everything we do moving forward.

The question is how will our response unfold and where will it lead?

To understand the extent of our problems one needs to appreciate how the Earth system works and the true amount of damage that has already been done to it. Anthropogenic impacts have disrupted the natural patterns of nutrient cycles in the biosphere which drive the biological life support system. Our actions have already reduced the total biomass to less than half of what it was just 7,000 years ago, and the decline is in ongoing acceleration.

Restoration of the whole Earth system requires:

- An increase in the total amount of living biomass, measured as living carbon atoms of around 600 gigatons, enough to return atmospheric CO₂ levels to the preindustrial 280 ppm. This can be achieved by growing plants on land, restoring soils and in the oceans restoring nutrient cycles to recover plankton and other marine bio-mass.
- Radiating vast amounts of surplus heat out of the oceans and into space.

All of which we have the capacity to achieve.

Humanity is going to have to recognise several truths:

- that the planets elemental resources are currently finite
- a sustainable future requires a sustainable level of human population
- that we must take active control of the climatic systems (a descent into the naturally occurring next ice age cannot be tolerated, we should acknowledge that we have already succeeded in preventing this)
- limitless renewable clean energy is available to us
- that our intellectual ingenuity is limitless, and our wealth is directly linked to knowledge
- we are wholly reliant on a healthy biosphere for our ongoing existence
- biosphere restoration and the retooling of humanity's energy infrastructure are now our highest priorities

Two Roads

"Business as Usual Road" which leads pretty much directly to Armageddon; the path we are currently on, this includes all existing climate change mitigation commitments. They are simply wholly insufficient to arrest the warming.

A "Sustainable Future Road" that we have yet to crossover onto. To persuade humanity to make the crossover we need to promote the destination. That requires we define an attractive and wholly believable goal. The United Nations Sustainability Goals outlined the direction but need to be more ambitious and expanded around a plan that details how they can be achieved, within the available time frame.

Presently there are numerous interconnecting pathways between the two roads but as time goes on those pathways become increasingly difficult and eventually impassable.

I believe it is highly likely that at some time during the next seven years one or more catastrophic events will persuade humanity collectively to cross to the sustainable future road. However, for that to happen the road must be mapped. This surely would be a worthwhile task for the futures project.

Urban futures

Human society is wholly reliant on a stable biosphere for its existence. Recognition of this will lead to the acceptance of the necessity of urban areas contracting with rural areas for the provision of essential biosphere services.

Increasing mechanisation and artificial intelligence is going to greatly reduce the need for human labour, especially within the major urbanisations. As essential biosphere restoration and maintenance is highly labour-intensive and as urban dwellers start paying rural dwellers properly for those services, vast numbers of people will move back into the countryside.

To make this come about substantial investments will have to be made in the biosphere services. This will have the impact of delivering on the UN Sustainability Goals and go beyond them, bringing 2 billion+ people into the global financial system. Smart phone mounted banking systems will enable people to be paid for the services they provide, atmospheric management, soil restoration, carbon drawdown and food production.

With that income, populations will be able to pay for low-cost renewable energy, education for the children and better housing. This creates enormous new markets for the goods that are created in the major urbanisations. Lifting 2 billion+ people out of extreme poverty also has the impact of stabilising population growth and solves the climate refugee crisis. Removing pressure over resources and enabling populations to have confidence in a viable future for themselves, greatly reduces sources of conflict.

Many of the climate change impacts which have been put in train are likely to be unstoppable, certainly within the next hundred years. Humanity is likely to have to adapt to at least a metre of sea-level rise and possibly as much as 3 to 4 m by the end of the century. By 2035 we are likely to have a much better handle on the figure, but whatever the situation we are confronted with, there is going to be a colossal requirement for coastal adaptation. The clean-up alone as we retreat is a mindbogglingly large task and it's going to be labour-intensive.

As climate change bites, market forces will respond, much of the job creation will occur in countryside areas, reversing the flow of people to the city's and this will end the shantytown problem.

Wealth generated by mechanisation and artificial intelligence along with the free time created, will mean that governments are forced to provide populations with basic incomes (if only to ensure that a market for goods is created). Governments will be able to manage population movement by determining physically where and how much basic income is paid.

Adaptation to committed climate change impacts, will turn out to be the greatest economic opportunity ever, requiring massive construction projects and new city

development all over the world. Retooling energy infrastructure and the development of the integrated global energy grid will drive huge market changes.

Governance

As we respond to and implement the necessary changes, societal organisation based on existing nation states will become increasingly irrelevant. Global corporations taking advantage of web-based crypto currencies will be independent of existing governmental structures. Administrative powers will reside with major cities that start setting up their own trading agreements based on where that trade is occurring and common efficiency.

As Global corporations realise that their entire asset bases are at risk, they will start forcing through the necessary climate change mitigation projects, the major reinsurance companies I likely to play a leading role in this.

Existing Governmental structures hampered by consensus-based decision processes that lead to an inverted appreciation of risk, are simply too ponderous to react to the existential threat that we face in a timely manner. So, a coalition of global corporations and finance houses will come together to outflank the existing societal structures.

These new structures will work, if Governments take a position of managing and enabling. Setting the ground rules within which the major urbanisations and corporations operate. Business plays the game, government sets and referees the rules. Rapidly escalating climate change impacts over the next 10 years will highlight the need for integrated global governance. The first critical step along the way towards this, I anticipate and hope, will be the addition of the crime Ecocide to the Rome Statute. Followed by the replacement and/or total restructuring of the Security Council to a new body that will be made up of multinational representatives that better reflects the collective nature of humanity and is able to take decisions based on overall planetary requirements.

The 2035 valley of death

Just 17 years on from now,

- Carbon rationing will be in place, carbon markets will be taking over as the foundation of international currency
- very extreme weather events will be commonplace, the average global temperature will to 2°C above the preindustrial norm and be increasing fast
- melting ice packs and rising sea levels will be noticeably increasing the number and severity of seismic events
- recreational long-haul flights will become prohibitively expensive
- recreational use of hydrocarbons will be heavily taxed
- recycling will be a major growth business
- regional climate management systems will be becoming commonplace, especially emergency cooling for cities with aerostat's producing highly reflective clouds, rainmaking in many areas and albedo altering measures for planetary cooling
- several mega disasters will have already taken place, annual deaths to climate change related impacts will be in the hundreds of millions
- the world will have officially been in a global food crisis for at least five years, with no let-up in sight

- work will begin in earnest on biosphere restoration, small-scale trials in all areas having been successfully completed and approved by the newly emerging global governance structures

For humanity to successfully cross this valley of death is going to require a certain amount of luck. The biosphere's resilience will have continued to reduce and our exposure to a major volcanic event that causes short-term cooling, a further increase in weather extremes and then a very rapid heating as the ash clouds clear might well trigger runaway heating beyond anything we can ever hope to control.

The fact is climate change is now on an exponential accelerating curve and the odds against us are climbing rapidly the longer we take to start adequate action.

Perhaps what is required is an early mega disaster to give us the wakeup call.

However, there is also a carrot and that carrot is the goal of a brighter and more prosperous future for everyone. So those that understand the peril that we face, may be well advised, to highlight the opportunities in order to encourage crossing over to a sustainable path.

If we make it, by 2050

New technologies will emerge that will allow:

- very rapid cost-effective drilling enabling; geothermal power, borehole reactors, water transference over great distances and subterranean hyperlinks
- transportation aboveground to become increasingly airborne, making roads and railway lines as obsolete as telegraph wires
- newly built towns in the rural areas that much better integrated into the natural landscape
- humanity to move towards taking full climatic control, allowing vast new areas will become habitable due to their now more benign climates.
- desert areas to be quickly pushed back, more than making up for lands lost to sea-level rise.
- the UN Sustainability Goals to be fully implemented and exceeded
- Emdrive systems to greatly reduced the cost of getting into space so that we can begin mining resources from the rest of the solar system
- recreational travel and tourism to take off again, using benign transport systems all
- natural ecosystems to be highly prized and have great value
- new cities to be far green and much healthier to live in
- many old cities which have been largely deserted to be gradual demolished and in the case of coastal cities, compacted down to make new higher ground to rebuild on.

It is possible that the pain we will have to go through to get to this brighter future will cast a dark shadow over much of the past greatly reducing concerned with historic preservation and turning human consideration to the development of a much brighter and positive future.

Many thanks to all who took part it was a great pleasure meeting you. I found the whole event greatly stimulating.

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