

Chapter 8 What happens next?

The words written in this book describe a planet moving to the edge of the abyss were the momentum carrying it there is in excess of the braking ability that the systems of governance, which have evolved to support economic growth and manage its consequences, are able to apply. It gives no pleasure to argue these points. The arguments in this book are emotionally hard to comprehend and challenge many of the concepts that we have taken for granted, but the facts are unavoidable - atmospheric CO₂ has reached such a high level that our ecosystem is in uncharted territory and yet more CO₂ continues to be added; the new generations of nuclear weapon systems entering service and the proliferation of nuclear weapons to the most unstable parts of the planet are keeping the dreams of a nuclear weapons free world more distant than at any time since the height of the Cold War; the financial crisis of 2008 warned that the global economy was inherently unstable yet this has been masked by printing money, keeping interest rates artificially low and forcing the weakest into further poverty through a myriad of actions such as spending cuts, welfare cuts, student tuition fees, carbon trading and inflation. All this is against a rash of increasingly violent wars amongst the people fuelled by ecological collapse enabled by easily available technologies and a globalisation system that provides the tools for bad as easily as those for good.

It is hard to reconcile these facts with the normality of day to day life. Today, I can cross the road from my house and enter a superstore full of food at any time of the day and I never go to bed hungry. I come home and switch the lights on and never have to worry about electricity. I go to work and teach our next generation the pleasure of mathematics and they leave my care hopeful of jobs as satisfying as those that their parents had. The shops are full not only with food, but with new technology that would be in the realms of science fiction only ten years ago. The casual talk from my friends of their holidays at the other side of the world has normalised the technological miracle of aviation to the mundane. We can marvel at the latest scientific discoveries in quantum mechanics and string theory and peer to the beginning of time using the internet to connect to the latest images from the latest telescopes. We can be transported with music and literature to times and places that we can never get to physically. And if this is not enough, we can go our local woods, forests or nature reserves and relax in the comfort of what nature provides for free. It is hard to believe that all this richness is at risk, but it is and we need to acknowledge it for what it is - a society at its height and primed to fall. Jarred Diamond provided a stark warning in his book *Collapse*, where his research on the anthropological records of past civilisations came to the stark conclusion that they collapsed at the peak of their power and when it came, it was nearly always rapid. We would be naive to think that the exponential growth we have accumulated since the beginning of the industrial revolution has not taken us to an unprecedentedly high and unstable peak.

When standing at the top of this peak and surrounded by the trappings of success it is easy to be infected by hubris, and this comes out in the approaches

that we adopt to the converging crises we face. Instead of taking action on climate change, we hear deluded arguments such as mankind's inventiveness and strive for progress will ensure technological solutions emerge to tackle the CO2 overload in our atmosphere and all that is needed are market incentives to make it happen. Unfortunately, this is a false interpretation of human history. Virtually no sustainable technological developments were made until the start of the industrial revolution. Life in the 7th century was not significantly different to life in the 17th century and so the overwhelming history of mankind is not to innovate, but to remain stable. The explosive development that we benefit from today only started at the beginning of the industrial revolution and was based on the exploitation of the large reserves of energy that had built up under the ground over eons. Every single technological advancement and innovation since then has been reliant on exploiting this easily available energy, something we can no longer take for granted. Initially this was supplied entirely by coal, then supplemented with oil and now other extreme energy sources are having to be added to the mix, merely to preserve the status quo, much less to drive economic growth. These now include energy intensive and destructive projects such as tar sands, fracking for gas and nuclear power. None of these are sustainable and they all add to the climate change overload, either directly or indirectly. So we should dispell the idea of technological innovation to resolve the crisis. Likewise, with the power the market. The market is blind, uncaring and unforgiving. Introducing policies such as carbon trading simply ensures that the poorest remain priced out of society. To believe in the fallacy of technology and markets providing the solution, is to argue for inaction.

The arguments for inaction are also supported by many who claim to be environmentalists by peddling the myth that current model of business and politics as usual can be continued with a green economy powered on renewables. This is little more than a mythical construct as events around the world are proving today. Despite the success of developing renewables such as wind, demand for fossil fuel continues to strengthen and more importantly are the wars amongst the people requiring industrial warfare responses that are breaking out repeatedly. This happens at even the highest level, Christiana Figueres who heads the UN Climate Change conferences falls into this category and is probably one of the most prominent advocates of preserving the status quo today - despite her warning on climate change and remit to achieve a global agreements on climate change, she has never once allowed security considerations to be considered in a serious way at the talks.

So today we trapped in a state of paralysis on the edge of the collapse, but unlike unlike societies of the past which did collapse, we do have things going for us. We now have the internet which provides a level of interconnectivity that allows nation state borders to be hurdled with ease and were everyone can access expert information on any issue they want. It equips populations with the intellectual tools needed to challenge the destructive status quo and allows the populations of competing nations to set up their own dialogue by-passing the narrative of governments bent of war and competition in support of the pro-growth market states. In amongst this, is the incredible rise of so-

cial media providing a constant news feed that is freer from the strictures of the main stream media which needs to secure advertising revenues and satisfy the customs of the societies it operates in. But this interconnectivity has an equivalent dark flip side. It can equally be used to distract through trivia, to subvert through advertising, to enable further unsustainable trade and to spread messages of hate and intolerance. Without the internet, the most destructive multi-nationals would be unable to operate and Al Qaeda would not be able to hold the most powerful military forces in the world to protracted stalemates. Nor are the pro-growth market states allowing the challenges that the internet and associated new technologies can facilitate to go unchallenged. The NSA releases from Edward Snowden have shown the extent to which these can be subverted. It is not just in the US that this is happening; virtually all other industrialised societies have had to introduce something similar using what ever means necessary. China, Russia and the United Kingdom even used the cover of the Olympics to introduce part of their mass surveillance systems, which is ironically one of the biggest symbols of the pro-growth market states¹. The danger we face is that without a vision for structural reform of our society we will not reap the reward of this interconnectivity that we have invested so much to achieve and it will be used destructively in the favour of the pro-market states.

At the time when we face this dilemma, it is also the first time in the history of humanity that we have had such precise knowledge of our fate. We know precisely how fast greenhouse gases are building up in our atmosphere and we know precisely how much higher today's levels of gases are than at time in the last one million years, even if we do not want to acknowledge this truth. We equally know that the population growth predictions for the planet are not sustainable and will be even less so in the future as climate change reaps its whirlwind of destruction which will reduce the planet's carrying capacity when it is already over populated.

Humanity must now grasp the magnitude of the crisis by using the knowledge available to each of us to appeal to reason and altruism rather than assuming all people are too selfish to implement the changes we need. This has been the foundation upon which civilisation has been built and which humanity has looked to in times of past crisis. There can be no more powerful example of this than the legions of young American servicemen who died on the beaches of Normandy in the D-Day landings to prevent the evil of fascism triumphing.

The changes that lie ahead are as daunting for our society as the D-day landings were for the Allied soldiers, but what many long-in-the-tooth campaigners have found is that often it takes only a couple of people with a strong vision and commitment to drive change. This is especially so if what they are advocating is right as events that people believe in start picking up a momentum of their own. In moments of doubt we should take inspiration Jean Giono's legendary fable, *The Man Who Planted Trees*. In his allegorical tale a single sheppard

¹<http://www.newyorker.com/online/blogs/elements/2014/02/sochis-mini-surveillance-state.html>

devotes his life to transforming an ecologically desolate wilderness by planting one tree at a time until over his lifetime a full forest is established from which food, water, shelter and hope become freely available to the local communities. As well as a beautiful tale of the importance of preserving and enhancing our natural heritage it is also a tale of how much one person can achieve. To put it in perspective, the anti-aviation campaign groups in the UK total little more than a couple of dozen key influencers with next to no funds. Yet, their well targeted strategies jammed a stick firmly in the spokes of the wheels of the aviation juggernaut and stopped the development of the third runway at Heathrow. A much bigger stick now needs to be jammed in the existing systems of governance that allow the COP climate change agreements and nuclear non proliferation talks to continue indefinitely.

The plans that we must now consider can easily be dismissed as extreme, but we are in the most extreme of circumstances, so it should be no surprise that extreme plans are now needed. In our globalised, energy intensive and indebted world economy, if we do nothing the only thing in abundance will be nuclear weapons on hair trigger alerts. We prepare for this future against a background of CO2 emission growth that has risen faster every year since the start of the industrial revolution. Not only must we stop CO2 emissions, but we need to find ways of sequestering CO2 from the atmosphere. This limiting factor to our economic development forces us to bring the nuclear weapons race to a close along with the industrial machinery and economic systems that supports it. Ironically, in these difficult times the best place to look for guidance on how to do this is at the events that led to the start of the race currently ongoing nuclear standoff.

In 1946 with the dust settling around the world from the Second World War the United States was in a supreme position. Not a single bomb had fallen on its mainland, yet the rest of Europe and Japan lay in ruins. Its industry had benefited from the huge injection of investment that the Second World War had brought transforming a nation that only ten years before was blighted by the great depression. Its oil and coal production were increasing year on year and injecting energy straight into the arteries of its economy. The economy was also making the difficult transition from war to peace. On the world stage it was the sole atomic power and the two hundred thousand dead in Hiroshima and Nagasaki were proof that the Americans were prepared to use it in war.

From this high vantage point, President Truman had the foresight to see that the combined power of the new atomic weapons and the military industrial complex could push mankind onto a path to oblivion. Ideas were already coming off the drawing board for combining the power of atomic weapons with the new technology the military industrial complex had learnt to deliver. A multitude of examples lay on the desks of policy advisers. In the United States, jet engines were about to revolutionise aviation and push strategic bombing into a new era. The new B-47 bomber design was coming to fruition which combined with the atomic bomb and the mass production abilities of the American industrial machine ensured the Soviets could be bombed back to the stone age if required. Simultaneously, the rocket technology of Nazi Germany was being mated with

the miniaturisation of the atomic bomb allowing for intercontinental ballistic missiles. What the Americans could do, Truman thought, the Soviets would eventually also be able to do. He rationalised that the world faced a decision; embark on an arms race the like of which it had never seen before or curtail it before it got going.

Truman commissioned Baruch, then the US ambassador to the United Nations, to sketch out plans for the latter option. He proposed to the United Nations in 1946 that the entire nuclear industry be put under the control of the Atomic Development Authority, from the uranium mines to future power plants. Under this scheme, the possession of atomic bombs would be made illegal as would interference with external inspections. Violations would lead to the seizure of facilities. The Atomic Development Authority would answer only to the Security Council, which would be charged with punishing those nations that violated the terms of the plan by imposing sanctions. The Baruch Plan would have stripped all members of the United Nations Security Council of their veto power on sanctions against nations that engaged in prohibited activities. Once the plan was fully implemented, the United States was to begin the process of destroying its nuclear arsenal.

Alas, the Baruch plan came to nothing. Despite being of noble intentions it was fatally flawed.

The Soviet Union could not agree to placing its embryonic nuclear weapons programme under an international body. Stalin had just lost 25 million in the Second World War and justifiably feared further foreign attack especially with a nuclear capable US on its borders. Stalin had already cemented his place in history as one of the most psychopathically evil world leaders and his continuing control on the country was based on terror rather than legitimacy. The terms of Baruch plan would have meant that any nuclear developments of the Soviets would have to be turned over to an international community and be bound by legitimacy, something that he was actively engaged in undermining at home and abroad. The Soviets were not much inclined to have foreign visitors on its soil, let alone nuclear inspectors probing all the manufacturing bases of their military industrial complex. The plan also called for the personnel of the authority to be recruited on a basis of proven competence, which at the time meant that it would be made up exclusively of Americans.

From the American perspective things were not much better. They had just spent billions on the Manhattan project and were not willing to give up their lead lightly, especially if that meant sharing their new technology with a psychopathic dictatorship for promises that could not be guaranteed. The Baruch Plan committed the US to disarm, but only once the Soviets had committed to giving up their pursuit of nuclear weapons - the Americans would thus maintain their nuclear lead so long as there was any prospect of a threat and the Baruch agreement was structured to ensure this happened. Given that there was little chance of the Soviets agreeing to the main propositions in the plan, this final stipulation doomed any prospect of their acceptance. As well as debating the merits of the Baruch plan, there was much debate in Truman's cabinet about how long they expected the Soviets to take to build their own bomb, some

reckoned on 10 years some on much less. In the face of uncertainty, Truman's administration played for caution and set the American industrial machine to the task of building not only more atomic bombs but the hardware to deliver them and fight the conventional wars that would be fought as a substitute for going to full blooded nuclear war. To ensure the message was clear to the Soviets, the Americans commenced their atomic bomb testing programme in the Pacific immediately after the Second World War. From a Soviet perspective, this action made the prospect to agreeing to the Baruch proposals impossible.

What the Americans did not know at the time was that Soviets were a lot closer to their own bomb than they thought. In 1949 the first Soviet atomic bomb was test fired and with it the hopes of the Baruch plan lay in tatters. The Cold War started in earnest and both sides embarked on the massive arms build up that future survivors on the planet plagued with its legacy will wonder at its stupidity. The race brought the world to the brink of nuclear war, both deliberately during the Cuba Crisis and many times accidentally. Today, the competing military blocks remain locked in suspicion and competition making the co-operation we need on climate change impossible.

The starting premise of this book is that nuclear weapons must be "*put on the climate change negotiating table*" and failure to do this will doom the planet to either runaway climate change, nuclear war or both. Putting nuclear weapons on the climate change negotiating table will be a modern day echo of the failed Baruch plan, so will the things that caused it to fail in 1946 prevent it from working today?

Its failure at the beginning of the Cold War was in an environment that is very much different to today's. In 1946, there was optimism of a grand new technological future and nations wanted to be free to exploit their differing visions of this. The excitement that the opportunities new technology could bring lasted into the 1970s and populations were indoctrinated with this from cradle to grave. Excited children watched Thunderbirds were benevolent super technocrats who had converted a presumably uninhabited tropical paradise into a rocket base were on standby to solve any crisis anywhere. At the same time, adults were denied information of the emerging catastrophes such as Britain's nuclear disaster at Windscale and Russia's nuclear disaster at Mayak while simultaneously being told that nuclear power would provide electricity too cheap to meter. Corporations rushed to capitalise on the myriad of new opportunities that technology would unleash from jet powered aviation, to the green revolution, to nuclear power and everything in between. Today we live with the consequences of the blind optimism and the subservience that was essential to early industrialisation.

It has left us with a future were we face the mutual threat of runaway climate change, and despite the failures of technology the only solutions being offered are Thunderbirds style technological fixes such as renewables, nuclear power and electric cars. While all these may have a place in the final solution they are not solutions themselves. The reality is that if these were as good as their proponents claim them to be, society would have completely migrated to them by now and the big energy companies would be powerless to prevent

market forces from driving decisions to create a zero carbon economy. Despite the promise of these technologies, the global fossil fuel consumption continues to rise convincingly proving that the solution to our crisis cannot lie solely in technology. People are perhaps coming to realise this, and there is a mood for change that did not exist in the past and the age of innocence has now passed. Populations are increasingly cynical about technological solutions as they increasingly find themselves at the mercy of its unintended consequences ranging from radiological pollution, to local environmental degradation to global environmental collapse. This has driven society to a place that could never have been imagined in 1946.

The final question for those still convinced the status quo can be maintained by our advancing technology is why did the global finance markets collapse so dramatically in 2008? Despite all the day to day noise, their job is to price the expectation of future growth and they generally do a good job of this. Our society relies on then doing this so returns can be made on investments. A crash of the size that happened strongly indicates that the myriad of sensors contributing to its assessment of future growth had indicated this was impossible.

While the mood is becoming increasingly cynical and the outlook darkening, large proportions of populations in competing nations are realising they have more in common with each other than they do with the parties that govern them, democratically elected or not. Thus the anti coal demonstrators in the US, Australia and elsewhere find a strong kinship with their counter parts in China who staged protests of a size that only the Chinese can manage against further coal fired power plants. In all major industrialised nations, the environmental movements are the centre of true government opposition. This can be seen from China to the US where environmental organisations can be equally branded as terrorists or criminal. This shared realisation of the fragility of the environment and the common goal to preserve it is an essential prerequisite to success that a modern day Baruch plan can capitalise upon. By contrast with 1946, the global population was still recovering from the aftermath of the Second World War and had been indoctrinated on a diet of nationalism to sustain the fight over previous years. This is by no means a guaranteed conclusion; as has been argued in previous chapters nation states in the process of collapse will be seduced by nationalism with its false promises of security. One of the best ways of preventing this is to have a common vision of an alternative, at present there is nothing.

So there are many questions before us today. Could a modern day Baruch plan create a strong and credible enough vision to counter the pull of nationalism? What would a Baruch Plan look like today? What parts of the previous plan are essential and what needs to be added to take into account the new realities of today which are the huge legacy of nuclear weapons, the military industrial complexes which have become essential parts of the global economy, runaway climate change and an unstable finance system that cannot equitably distribute critical resources? It is a much more difficult landscape today than in 1946, but these same difficulties also make implementation of the plan more likely now because there is now no other option as everything else has demonstrably failed. The interconnectivity of issues also means that the modern day

equivalent to the plan must tackle climate change, nuclear disarmament and financial reform simultaneously. This time the bullets loaded into the breach of the climate change gun and the ticking clock to which it operates mean that the process must not be allowed to fail.

As well as the 1946 populations and governments still being relatively immature in the learning process of industrialisation, the other reasons why the plan failed was that its implementation was to take place on a big bang basis. This was despite the text of the agreement saying that it “*should proceed by separate stages, the successful completion of each of which will develop the necessary confidence of the world before the next stage is undertaken.*” Unfortunately no clear stages were stipulated, nothing was offered in return at each of the stages and the political system would stay as per the status quo allowing for unfettered industrialisation competition. Despite the intent of the words, it was an all or nothing option being proposed in the midst of tensions brought about by the race between the Soviets and United States for the possession of the atomic bomb and moral superiority. In today’s world with many nations nuclear armed a more precise phased introduction is necessary which allows confidence to be built up as nations move to a clearly articulated end vision and which offers something in return at each stage while preserving security as they make their way along the difficult journey to the new paradigm needed to tackle the climate change crisis.

We suggest the following phases:

Stage 1 - Signing a No First Use agreement on nuclear weapons.

It is proposed that all nuclear weapons states sign a No First Use (NFU) Agreement to minimise the risk of accidental nuclear war in the event of increased international tensions brought about by climate change.

During the Cold War, the Soviet Union and China both claimed to operate NFU policies, in contrast to NATO which held the position of being prepared to use nuclear weapons in response to a large and overwhelming conventional attack in Western Europe. However, since the ending of the Cold War war the situation has become more serious. With Russia taking over from the Soviet Union, it has dropped its commitment to a NFU policy. China’s position has become ambiguous with their white paper on defence making no mention of a NFU policy² and much publicity on the expansion and development of their nuclear forces. USA, UK and France continue with the cold war stance and refuse to commit to a NFU policy. This is reflected in the technology of the nuclear weapons systems being deployed - the Trident system is considerably more accurate than its predecessor, Polaris, allowing smaller nuclear warheads to inflict precision destruction on military targets, making it a perfect first strike weapon.

²The Diversified Employment of China’s Armed Forces
http://news.xinhuanet.com/english/china/2013-04/16/c_132312681.htm

The situation is no better with the new nuclear nations of India and Pakistan. Both refuse to sign a clear NFU policy and both are prepared to use nuclear weapons first. India's commitment to only use nuclear weapons against another nuclear armed nation, which means Pakistan or China, offers little reassurance.

As previously argued in a world plagued by nuclear proliferation and where attacks can be launched that cannot be traced back to any single nation state, not having NFU agreements dangerously escalates the risk of nuclear war. Given the common mode impact of climate change it is likely that tensions will occur simultaneously around the world, significantly increasing the risk of miscalculation.

Any nation that refuses to agree to a NFU policy should be subjected to high profile, but not necessarily economically damaging sanctions. These could include bans from Olympic games and other high profile sporting events and curtailing cultural exchanges.

Stage 2 - Cessation of strategic military exercises, removal of weapons systems from high states of readiness, development of joint climate change plans

All signatory parties must agree to prohibit the staging of strategic military exercises using bombers and rocket forces capable of delivering nuclear weapon systems against each other.

As well as being provocative, history has shown that these are also prone to misinterpretation. The NATO Operation Able Archer in Western Europe in 1983 was so realistic that the Soviets thought they were under attack and placed their nuclear forces on high alert, bringing the world almost as close to nuclear war as during the peak of the Cuba Crisis. At roughly the same time, Americans were flying the F-14s off aircraft carriers over the Kamchatsha peninsular and other spy planes were flying on the edge of Soviet airspace to monitor Soviet missile tests. These events increased tensions and nervousness to such a degree within the Soviet military that when a Korean 747 strayed off course it was immediately shot down. Even at the height of the Cuba Crisis with the world on the brink, both the USA and Soviet Union conducted missile tests which more by luck than good judgement were not interpreted as hostile attacks. The list of near disastrous misunderstandings as a result of misinterpretation exercises goes on.

Despite the ending of the Cold War and the litany of disastrous misunderstandings that have resulted from past military exercises, all the world's major nuclear armed nations continue with provocative exercises that have the potential to be misread by either side. As climate change drives global tensions up and the military environment becomes dominated by stealth technologies this risk is greatly increased.

As part of the initial phase of this agreement, strategic forces must be stood down by all parties as their proactive peace time use is covered under the guise of military exercises. Thus all nations would keep ballistic missile submarines in

port, nuclear capable bombers grounded and intercontinental ballistic missiles would be taken off alert.

If states feel threatened by rogue nations that do not sign up to the agreement, then forces can be kept on standby subject to inspection by other signatory nations to ensure that they are not being targeted.

As well as defusing tensions, this demonstrates serious intent to engage in the mutual cooperation needed in preference to protecting self interest, and this is the primary objective to be achieved. Complying with these is a far more effective demonstration of real intent to take action on climate change than negotiating climate change agreements that up to now have been false promises obfuscated by complex jargon.

During this period nations must commit to publishing auditable plans for making substantial emissions cuts of greenhouse gases and proposals for how the environment can be restored to allow the sequestration of CO₂. These plans need to cover how fossil fuel extraction is to be brought to an end, over consumption curtailed, how debt based finance systems are replaced with stable means of exchange and how environmental protection and restoration becomes the primary goal of nations. To achieve these objectives, industrial contraction will be needed which is the antithesis of the economic growth politicians vie for today. The initial proposals that nations make at this stage to achieve these objectives will form the basis of future progression through the next stages.

Stage 3 - Implementation of a new security council and form of global governance

The initial Baruch plan proposed a supra-national security council that would oversee compliance with the agreement and have ultimate control of all nuclear materials. Implementation of a similar council must form the basis of an equivalent plan today, but it needs to reflect the reality of today's world which is far more complex and interrelated than that of 1946.

It is proposed that the Permanent (P-5) Security Council of the United Nations is disbanded. At present the P-5 members of the council are all nuclear armed, they have the largest military expenditures, the largest industrial complexes and are the largest sellers of arms abroad. Maintaining these interests is totally contradictory to the actions needed to tackle climate change. It has forced all these nations to use their power of veto in the UN security council at various stages to support their interests or those of their closest allies against the interests of the rest of the planet and natural justice.

This group also does not reflect the make up of the planet. There is no representation from the African nations because they were not industrialised at the end of the Second World War despite African nations such as Egypt and Libya being the scene of some of the most destructive fighting. There is no representations from the Indian sub continent because they were under British rule at the end of the Second World War and even the mass famine they suffered during the war did not qualify them for a seat. Equally seriously, there is no representation from global indigenous communities who have always been

in the vanguard of the fight on climate change and environmental destruction because to acknowledge their rights would be to curtail industrialisation and economic growth. The P-5 is a group whose purpose is to preserve the power in perpetuity of the industrialised groups that won the second world war. As such it fundamentally anti-democratic and racist. Thus the group that determines the legitimacy of the possession of nuclear weapons has no legitimacy itself and so there is no argument that can be made to demonstrate that the nuclear weapons they hold are legal. In a supreme irony, which is little commented on, is that permanent membership to the world's most elite legal club is guaranteed by the possession of nuclear weapons systems whose use and possession is illegal under any circumstance.

Membership of the P-5 drives perverse incentives as Britain and France both demonstrated with their race to acquire nuclear weapons. Britain's race resulted in the Windscale disaster, the irradiation of Aborigines in Australia and thousands of conscripts on Christmas Island during the atomic bomb test programmes. The French programme was as bad. Atomic bombs were tested in Algeria and the Pacific releasing large quantities of radiation in other countries. To defend this programme against legitimate protest they sunk the Rainbow Warrior in New Zealand with a terrorist attack ordered from the highest level killing one of the crew members and then threatened New Zealand with economic sanctions when they attempted to bring the captured French agents to justice. The spoils of this terrible race have been granted in perpetuity to both Great Britain and France. Perverse behaviour continues to this day with the British government using membership of this group to justify its decision to replace the Trident missile system.

Thus as the P-5 group is constituted, it has no legitimacy to claim moral leadership of the planet. Each member of the P-5 has failed to curb CO2 emissions and have implemented policies that either directly or mendaciously have ignored the science of climate change. The P-5 has outlived its initial purpose of preventing large scale nation state warfare and it is no longer relevant to the main security challenge of today which is preventing ecological collapse and ensuring fair access to increasingly scarce staple supplies. On the contrary, its very existence is an impediment to the progress that is needed. It encourages other nations who aspire to have an equal say in world politics to acquire nuclear weapons and is thus inherently proliferatory. It embeds racism and nationalism into the world's political system providing the fuel for racist and nationalistic elements to emerge at local levels.

It is therefore vital that an alternative group replaces the P-5. Its primary purpose is to represent the interests of the global population rather than the interests of the nation states. It is proposed that this group will be appointed by popular election and its remit is to ensure the environmental integrity of the planet. To avoid a single large nation having too much power, the constituencies would be based on a given population size, say 500 million. They may require a single constituency to span several national borders to achieve the population sized needed, or a single large country such as China or India may have to have more than one constituency within its borders.

The remit of this group is to ensure that interstate disputes are resolved through due legal process, to prevent despotic and tyrannical regimes from emerging as climate change intensifies, to ensure co-ordinated responses to the humanitarian and environmental crises that will emerge from climate change, to take control of the entire nuclear supply chain and to have ultimate control of military forces.

An essential part of the climate change solution will be to introduce alternatives to the current debt based system of finance for resource distribution, the solution that participants could choose could be carbon rationing, carbon taxation, some hybrid of the two or something entirely different. A key objective of this group is to ensure that it is extended equitably to the entire population that is represented by the security council.

Stage 4 - Bringing nuclear weapons under legal control.

With very few exceptions it has proven impossible for nuclear armed nations to give up these weapons. Only South Africa gave them up voluntarily, Iraq gave them up after its infrastructure was blown apart in the first Gulf War and Libya gave them up after having seen what happened to Iraq in the second war. As discussed previously despite the pressure in Western countries for unilateral disarmament, not a single campaign has been successful and all nuclear armed countries retain nuclear weapons on permanent standby and ready to launch on warning.

It is proposed that once nations have stood their nuclear weapons down as per Stages 1 and 2 of this agreement, the remaining weapons systems are put under joint command answerable to the security committee as envisaged by the original Baruch agreement and which would be answerable to the elected group replacing the P-5. This would see nuclear submarines, bombers and missile silos with international crews drawn from signatory nations. As per the initial Baruch agreement it would be illegal for any nation to maintain nuclear weapons under its own command.

As well as significantly reducing the risk of an accidental launch, it will provide protection against any rogue nation that does not sign up to the agreement and sets about pursuing its own nuclear weapons programme. Once no threat exists then these weapons systems must be taken from service.

The original 1946 plan stipulated that all nations would be subjected to full inspection rights to ensure no violations are made, this would be incorporated into any equivalent agreement today. This has already become an accepted part of the the global political landscape for all signatories of the NPT. The only nations not abiding with this are those that have failed to sign the nuclear non proliferation treaty such as Israel, North Korea, Pakistan and India.

Stage 5 - Decommissioning the military industrial complex

All signatories would have to start decommissioning the industrial infrastructure they use to build strategic weapons and other weapons of mass destruction.

These are deeply embedded into the the global economy and the decommissioning will result in loss for shareholders, governments and staff.

Of particular concern is the impact that this causes to existing staff and there is a basic humanitarian objective to ensure that the transition they are forced to make is made as smoothly as possible and they and their communities are given help and support as necessary. There is also a serious security issue to ensure that this is done. The collapse of the Soviet Union provides a warning of the dangers when highly skilled technicians were forced through poverty to sell their services to any state or non state agents desperate to get their hands on weapons technology ranging from rockets, nuclear warheads, chemical and biological weapons.

The decommissioning process must initially focus on infrastructure and operations that have no dual civilian use such as nuclear submarine building facilities, nuclear weapons fabrication sites, submarine bases, rocket manufacturing facilities and nuclear warhead manufacturing facilities.

Following this industries that have dual use would be subject to international regulation to ensure that their output is strictly controlled. Any military hardware that is subsequently built must be done under the control of the security council.

Many nations will be unwilling to dismantle these industries as they are strategic and once dismantled will be virtually impossible to resurrect. However, as has already been argued in this book these are incompatible with a zero carbon economy. They require huge amounts of energy to operate, they must be subsidised with contracts in the civilian sector forcing expansion of this sector and they require an expanding economy to raise the taxes. Thus, their continued existence is incompatible with the concept of a zero carbon economy and the elimination of these industries is essential so nations can make the transition to this safe from the threat of warfare.

It is not enough to hope that these industries will disappear into obscurity by a renewable energy economy taking hold and eliminating the need to fight wars in oil producing regions. If we want to break free of the hold that they have on the economy proactive steps must be taken to break the hold they have on the world economy.

Military expenditure is a parasitical drain on an economy. It delivers no societal benefit in the same way that health care improves the health of the working population and education provides an educated work force. Military expenditure only drain nations economically and destroy other nations that it is used against. On the basis that there has been no successful application of military force in the new era of war amongst the people that we find ourselves in, then we must do all we can to curtail its impact on the environment.

Stage 6 - Introduction of Mutual risk management programmes

As climate change takes its toll on the planet ecological disasters will happen with increasing rapidity and frequency. As these happen societies will be

weakened economically and the tipping point will arrive where the magnitude of the disasters is greater than the ability of a nation to recover from it.

Massive hurricanes such as Sandy are warnings of what is to come on a destabilised planet and this is something that almost all thinking people are aware of. However the problem of climate change disasters is likely to become much more serious than even this great natural disaster.

As sea levels rise, many of the world's main cities and population centres will be flooded forcing mass evacuations. More seriously as sea levels rise and flood these areas, the huge industrial facilities such as oil refineries, nuclear power plants and other dangerous chemical plants will be simultaneously inundated. If left unaddressed the pollution they cause will destroy what life is left in the oceans and leave society without the critical infrastructure, resources and energy needed to function. At the same time these are the very things that societies will be in desperate need of to allow adaptation to the crisis.

It is therefore proposed that the signatory nations should agree to come to each others aid in the event of natural disasters following a similar model that is used within NATO where an attack on one nation is considered to be an attack on all.

The aid that nations can provide can include logistics support, energy supply, food distribution and a safe haven for environmental refugees.

Agreeing on population targets.

The global population is too high and is projected to increase further to over 10 billion. The impact of this is measured in a myriad of yardsticks, such as rising atmospheric CO₂, collapsing fish stocks, tropical rain forest destruction, resource depletion, soil erosion, habitat loss amongst many others.

Any one of these can be used as a gauge to estimate what the sustainable population of the planet is, but the best and most comprehensive is the rising CO₂ levels as everything ultimately feeds into this. These were already rising in 1958 when accurate measurements first began at the Manu Loa observatory in Hawaii. At this time there was less than 1 billion people living in the industrialised world and the energy consumption per person was less than today. Since then much of the planet's ecosystem has been severely degraded reducing its ability to sequester CO₂. Thus the long term sustainable population of the planet must be less than 1 billion if there is an aspiration for the benefits of an industrialised society to be shared by all. This is a hugely uncomfortable but unavoidable conclusion. It raises the frightening prospect of a population contraction coming through war or famine if nothing is done to reverse the catastrophic population expansion facing the world today.

The situation is only set to get worse the longer we stay at the current population and consumption levels forcing to us continued ecological destruction. This lowers the long term sustainable population and increases the pull that natural forces will exert to make a return to equilibrium.

It is simply not possible to avoid the crisis of over population and what cannot be sustained will not be. Every person on the planet requires energy and

causes CO₂ emissions and the more industrialised the society that the supports them, the more the CO₂ emissions. Because so much of the ecosystem has been destroyed everyone is increasingly forced to live an industrialised lifestyle. The few indigenous communities left in the world have either been forced from their homelands or have had their food supplies destroyed by the encroachment of others who are backed by industrial strength. Their survival in most cases relies on assimilating themselves into the industrialised world. As a result it is increasingly difficult for the global population to avoid transitioning into a higher carbon life style. Compared with 1958 when CO₂ measurements were first recorded, many billions are now living in industrial societies.

Even if the best case future scenarios emerged of a completely successful transition to a zero carbon economy there is still no evidence to suggest the planet would be able to sustain a 10 billion strong population for any length of time. A zero carbon economy would mean limited travel and distribution of essential goods. In this environment it will be more difficult to alleviate the effects of famine in one area of the planet by distributing food from other areas that have an abundance and a 10 billion strong population living in a zero carbon economy with no industrial fertilisers, depleted soil and a polluted ecosystem makes localised famines inevitable. The impact of these coming crises can be minimised by constraining individual liberties to make excess energy and food consumption impossible, but once the constraints on individual liberties become too great a functioning market based economy is impossible.

But our political systems are not even geared towards a zero carbon economy and certainly not geared to constraining liberties. At present there is nothing to stop the carbon savings that an individual makes being squandered on luxury holidays around the globe, or even worse the carbon savings that someone makes can be squandered by someone else. By contrast our society positively encourages this sort of feckless behaviour.

Some would argue that this need not be a problem, after all in some countries population is at or below replacement levels. This is especially so across many European nations, from those that are financially successful such as Germany to the those that are bankrupt such as Spain. In Japan, the urge to procreate has reduced to such an extent that the young people of Japan have given up sex, the sales of incontinence pads exceeds nappies and the population is set to fall to a third by 2060. It is no coincidence that Japan is also one of the most overpopulated and ecologically destroyed countries in the world and the disaster of Fukushima is making this far worse.

In China the one child per family policy has prevented its population explosion from the 1960s having even more devastating consequences which would have necessitated further coal fired power stations and African land grabs. In a nation where the air condition is already so bad that it is difficult to have any positivity for the future of a new born child, keeping the population growth in check takes on an added sense of urgency. Ultimately, it may be that the forced one child policy may not actually be necessary as diminished future prospects caused by pollution does the job that state had to do.

Russia is also facing its demographic time-bomb. The life expectancy and

birth rate is one of the lowest in the developed world driven by industrial pollution and a radiological legacy from nuclear accidents such as at Chernobyl and Mayak along with atomic bomb tests. Life expectancy had become so bad prior to the end of the Cold War that the figures were a state secret.

For those that continue with the argument that the population will control itself and we need not worry, it is tragically clear that it will and this is already starting to happen, but they are wrong to suggest that we need not worry. For it is the combination of ecological and economic collapse driven by the over reach of industrialisation that is the predominant way population growth is being constrained. It is the Hobson's choice of birth control by allowing ecological destruction or birth control by coercion. It makes a mockery of the optimists claim that populations can be brought under control simply by better education, literacy programmes for women, improved child health care and economic development. These are the very things that drive industrial development and force societies up to and past ecological limits of sustainability. Nations such as Saudi Arabia, the African nations and India that have not yet choked themselves under clouds of industrial smog or irradiated their countryside are still in the midst of population growth despite many these social improvements. The lessons of other nations would suggest that their population growth will only slow once destructive levels of economic growth have been achieved. After this point there is no going back as the resulting destruction of the ecosystem is unrecoverable. It is stating the obvious to make the statement that populations need to be controlled before these limits are breached.

It is therefore a tragedy that the governments of nations with declining birth rates are doing all in their power to reverse the decline and return their population back to previously unsustainable levels. Nations such as Russia and Iran fall into these categories and some European nations are trying to do likewise. The reason given is nearly always the same, that the smaller numbers of young people in the future will not be able to support the needs of the elderly. But another problem also exists, declining and ageing populations are not able to compete economically and militarily on the world stage.

The final problem comes when a society decides to limit its family sizes to below replacement level, yet others don't. This can occur within a nation were one group, normally religious, encourages larger family sizes, or were a nation with birth rates that it cannot sustain sees the problem solved by the surplus people emigrating to nations where the people are attempting to keep their population under control. This is happening in the United Kingdom. The indigenous population of the UK have moved towards having lower birth rates, yet they see no benefit from this sacrifice as immigration continues to remain high and first generation immigrant families tends to have larger family sizes. The result is increased tensions between the various communities along with the rise of extremist political parties such as UKIP in the UK and the equivalent elsewhere in Europe. Ironically, these right wing parties that climate change forced immigration is fueling are the least receptive to cooperating on climate change.

Despite the evident problems of overpopulation and its intimate link with

rising CO2 levels our response has been to largely ignore it. Even groups such as Population Matters shy away from giving a target that we should aim towards; instead they give only a bland statement that “Our vision is of a global population size enabling decent living standards and environmental sustainability.” Likewise, the climate change talks (COP) have yet to raise the issue and agree on any targets. The only response that governments make to the population crises facing them is to impose increasingly harsh immigration policies with virtually every industrial nation going down this route while ignoring the root cause of the problem.

It is therefore vital that nations signing to the modern day Baruch plan introduce polices that the support population reduction based on the observance of human rights and women’s rights in particular and this needs to be part of the agreement. Key aspects of this will be educating on the realities of climate change and ecological collapse, the provision of the birth control in particular permanent solutions to young people enabling them to make the option of remaining childless viable. This is increasingly becoming a lifestyle choice for many in the industrialised world as societies adjust to the realities of collapsing ecosystems. If encouraged, along with disincentives to have large families, it could result in fast population reduction.

These policies must be extended to other nations that have high birth rates and which are the source of immigration. As a minimum aid for for climate change and famine relief should be matched with equivalent support for in family planning.

Control of Disruptive Technologies

Disruptive technologies are those that cause a paradigm shift in society and drive political change. Past examples are James Watt’s invention of the condensation chamber for the steam engine which propelled Great Britain and the rest of the world into the industrial age and latterly the development of the internet which has revolutionised not only our economic landscape but the political landscape and the means by which we wage war.

It is difficult to know what disruptive technologies are on the horizon, some may appear to be beneficial in humanities quest for survival against climate change and other may cause more problems than they solve.

Fusion power may turn out to be one of these technologies. The ITER project is already a model of global cooperation and even if it never produces electricity it would be been a success for this. However, the range of factors acting against the ITER project makes it doubtful that it will ever truly contribute towards the global energy mix within the time scales needed. Even if it is made to work, the intense radiation it develops will require much of the reactor vessel to be replaced within a short period of operation and there is no secure supply of tritium to enable a global roll-out.

There are claims of other break throughs such as a Lockheed Martin’s claim of being able to develop a new type of miniaturised fusion reactor that does away with some of the ITER design problems. However, little has been released

to substantiate these claims. If this does turn out to be successful or another solution materialises which does provide the nirvana of limitless cheap energy then far from assuming that all the world's problems will be solved we should consider carefully how this technology will be applied in a world racked by climate change. The danger is that its development would simply encourage further unsustainable population growth along with the associated problems of mineral extraction and food shortages.

It will be for the Security committee to oversee the implementation and exploitation of any new technology such as this to ensure that it does not solve one crisis by causing many other bigger ones.

Final remarks

Some of the ideas written above will be dismissed by many, especially those whose livelihoods are dependent on the existing status quo, as idealistic fantasy. They are not. The fantasy lies with those that believe the existing system can carry on when all critical ecological limits have been exceeded and we continue to go further past them. The evidence that the existing system cannot deliver is the litany of failed summits on climate change, nuclear weapons proliferation and a financial systems that incentivises ecological destruction at a time when when it is overwhelmingly obvious that we need to do the opposite.

Some nations have reacted with concern on climate change and their governments have responded with progressive climate change legislation. There was much global excitement when Australia introduced a carbon taxation system and the UK government introduced legislation to make a legally binding 80% cut in CO2 emissions which ultimately led to environmental levies on utility bills to fund low carbon energy supplies. However, both nations subsequently behaved exactly as the prisoners dilemma predicted. Australia elected Tony Abbot's government on a mandate of claiming that climate change was crap and carbon taxes would be scrapped. Even in the grip of a massive heat wave with Sydney surrounded by forest fires, Tony Abbot could still not accept that climate change was a problem he should deal with. The UK government's response was similar. Amid a predictable fury of increasing utility bills, the British government is now proposing scrapping environmental premiums. These two actions taken almost simultaneously at opposite sides of the world perfectly demonstrate the failure of the existing political system. An economy and political system based on interstate competition will never makes the changes required.

We can debate endlessly about the power of corporations to impede change, about how they protect their self interests and profiteer at the expense of the planet. Though this is true it misses the bigger picture which is that it is the competitive structures we are all trapped in that nurtures them. Targeting corporations is also an easy target, they are big and impersonal. It is easier to say that climate change is all the fault of BP or Shell rather than the fault of the millions of people that continue flying, driving and consuming unnecessarily. It is also easier to target the fossil fuel companies rather than the challenge the basis of the nation state structure. But unless we do this, we will be permanently

at the mercy of the corporations because the system of governance that we have accepted needs them.

Ultimately what this book is about is recognising the different phases of industrial evolution and considering the industrial fabric as a living being going through the normal phases of infant-hood, adulthood, old age and finally death.

The birth of industrialisation upturned societies around the world as the global economy transitioned to steam and coal. Like any infant whose neurons are still plastic learning is quick and new ideas that are assimilated set the personality for the future. So it was with early industrialisation. Mathematicians in Paris and elsewhere developed the basics of thermodynamics upon which the industrial world would be based. Philosophers and poets pondered the danger that the industrialisation combined with hubris could do with great works such as Samuel Taylor Coleridge's *The Rime of The Ancient Mariner*. But like any child, learning also happens by painful accidents. The first big accident for the infant industrialised world was the First World War which demonstrated that the power of the newly formed military industrial complex could become so powerful and its dynamics so unstable that nations could be forced into destructive wars against their collective will.

After this, industrialisation went through the troubled teenage years. The mathematical and scientific foundations already laid down paved the way to the nuclear age and the advancement of military technologies in the 1930s. But this was soon to be shadowed by the disaster of the Second World War where the battle for the best form of industrialisation either democracy, nationalism or communism, was fought at massive cost.

And then industrialisation moved into adulthood. Just as an adult reaps the rewards of childhood learning then so did society. New technologies based on society's accumulated learning in the early days of industrialisation opened up advancements for civilisation and many became more tolerant and open. The pain from past accidents was mercifully learnt and further world wars were avoided, though sometimes from luck than judgement, but perhaps the lessons of past had been sufficiently learnt so the balance of probability just about favoured peace rather than war. But like an adult that does not look after their health well arteries get clogged with cholesterol and pollutants build up in the body, and so industrialisation has done the same to the ecosystem that supports it.

And finally we must prepare for the old age of industrialisation and probably its death, for if we do not kill the current model of industrialisation it will kill the planet. If the last couple of years have taught us anything, it is that our industrialised society is unsustainable and unstable at its current level and the problems that we face today will magnify as the population soars towards the predicted 10 billion. Preparing for old age is a different challenge than progressing through childhood and early adulthood. It is a time of consolidation where the lessons and experiences of the past are drawn down. It is a time when extra care needs to be taken of the body which is no longer as resilient as it once was. If this is not done and childish behaviour continues, the end is brought forward very much quicker. It is also a period of richness if time is spent with

loved one and sharing the accumulated rewards of life.

But the trauma of the death of industrialisation or the death of the planet is far more difficult to reconcile than the death of a person, even if it is a loved one or yourself. Death is normally reconciled with the knowledge that space has been made for birth and the circle of life continues, but the death of industrialisation offers no such hope. However, if we accept that the death of industrialisation is inevitable then we can at least prepare for it and hold off the moment of reckoning for as long as possible and perhaps preserve life on the planet. This is not a good note to end on but this book is about reality, not false hope and false promises. If we can carefully dismantle the structure of destructive industrialisation, then possibly life may continue on the planet and humanity can continue as the consciousness of the universe, for this planet is the only place where we know life exists and it came to intelligence by a set of unimaginably remote coincidences. If we have learnt anything with our experiment of industrialisation it is that intelligent life on earth is far more fragile and precious than we ever dared to realise at its start.