

## Chapter 3 Why climate change agreements are not working

*“Good things of day begin to droop and drowse;  
While night’s black agents to their preys do rouse.  
Thou marvell’st at my words: but hold thee still;  
Things bad begun make strong themselves by ill.”*

The UN Climate Change Conference (Conference of the Parties, COP) met in November 2012 for its eighteenth round of talks. At the end of another depressing round of annual talks Christiana Figueres, UN executive secretary, proudly summed up progress with the statement<sup>1</sup>, *“the current pledges under the [second commitment period of the] Kyoto protocol are clearly not enough to guarantee that the temperature will stay below 2 deg C and there is an ever increasing gap between the action of countries and what the science tells us.”* With these words, she told a world sitting on the edge of the climate change abyss that the conference was a total failure. No event in human history has been as important. Her words should have sent a bigger chill down the spines of the world’s population than Neville Chamberlain’s declaration of war did to the British in 1939. The destruction to be unleashed will be many orders of magnitude greater. Yet no warning was given that this would meltdown the planet. There was no apology for inaction; no plan to go back to the drawing board and try again; no great screaming of panic and impending doom from the world’s press. In comparison with the scale of failure, nothing. In its place was self-congratulation that the world’s governments had been persuaded to agree to the flawed and inadequate process of the second Kyoto agreement and that they would reconvene next year.

It is time to ask fundamental questions about the whole process. Why do all the participants agree to mutual suicide by ignoring the clear evidence from the science of climate change especially when the evidence on the ground is now so unmistakable? If the climate talks have failed eighteen times, does this indicate there is a structural failure in the process and should we conclude that it will continue failing irrespective of how many best wishes and hours of toil are expended in the future? Should we give up on the current process and try something completely new in the short time still left to us?

The situation is deadly serious and the current mode of operation which allows failures to continue cannot be tolerated. The world is struggling with these failures against a ticking clock and time has run out. It is a situation quite unlike the Cold war stand-off where it appeared that both sides could effectively stay stuck in an indefinite stalemate. Unfortunately, nothing in any of the discussions or agreements that have emerged from previous conferences gives even the slightest glimmer of hope that substantial greenhouse gas emission cuts can be made in time.

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<sup>1</sup>Doha closing briefing by Christiana Figueres  
[http://www.youtube.com/watch?v=XB\\_IYP3SM\\_U](http://www.youtube.com/watch?v=XB_IYP3SM_U)

In fact, the opposite is the case as the saga with the Durban Platform illustrated<sup>2</sup> which was the main output from the seventeenth round of talks. Like all other climate change agreements, it was made in the closing hours of the conference. It was just the sort of thing the press loved, a story of victory being clutched heroically from the jaws of defeat and so it was heralded across the world that we could all sleep safely as a solution to climate change would be soon be forthcoming. The pinnacle of its achievement was the statement, “*The Ad Hoc Working Group on the Durban Platform for Enhanced Action shall complete its work as early as possible but no later than 2015 in order to adopt this protocol, legal instrument or agreed outcome with legal force at the twenty-first session of the Conference of the Parties and for it to come into effect and be implemented from 2020.*” This is an unbelievable statement; by 2020 it will be too late. The exponential growth curve that the world’s economy followed over the last 10 years has led to the same damage being inflicted on the ecosystem as that has been inflicted for the past one hundred years. If left unchecked in the next 10 years, the damage inflicted will be so extreme there will be no chance of any ecological recovery. As well as working at too slow a pace, it studiously avoids the hard targets the world should be collectively working to. To acknowledge these would be too controversial so the conference self censors its own conclusions to keep its show on the road.

As well as being unable to provide even the barest idea of a target for the world to move towards, the Durban Platform did not even discuss the type of legal framework needed to ensure agreements are enforced. The history of the first Kyoto agreement demonstrates sticks are needed as well as carrots. USA, China and India all refused to sign up. Subsequently Canada withdrew to pursue their tar sands developments along with Japan and Russia. Most recently, Australia elected a government headed by Tony Abbott who believes climate change is “crap.” Serious measures are needed to stop these sorts of transgressions in the future and it will be far harder to agree these than a bland document that says all parties will agree to a legal framework.

The Durban Platform is the ultimate document that mankind’s future is to depend upon, yet in the absence of any discussion on the sticks that will be implemented, it offers so little. It is so weak that it is hard not to come to the conclusion that it is simply part of an ongoing attempt to maintain business as usual to the bitter end rather than a serious attempt to address climate crisis facing the planet. This is not to criticise the people who toiled for many hours preparing this document, instead it is to challenge the process and framework against which climate change agreements must somehow be achieved and acknowledge that the annual round of climate change talks has become a ceremony that has outlived its usefulness.

To understand why climate change talks continue to fail, we must consider them in the wider context of a world split into nation-states. These must all

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<sup>2</sup>Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action  
<http://www.theguardian.com/environment/interactive/2011/dec/12/durban-climate-change-conference-2011-global-climate-talks>

compete with each other for their individual survival. That competition is economic and military and there is a symbiotic relationship between the two. A strong economy can develop a strong military, which in turn can be used to secure minerals, energy resources and markets to allow continued economic growth. A strong economy is also essential to ensuring that the population is fed either by ensuring that food can be secured from abroad or energy can be secured to maintain local food production. In a world where access to scarce resources is increasingly critical to the economic and military survival of individual nations, then it is imperative that individual nations remain highly competitive both economically and militarily. If a nation cannot be militarily competitive, then it must be able to secure military alliances with someone else whose interests are similar. It ultimately amounts to the same thing, the use of military force to protect economic systems; thus in 1991 the US went to war to liberate Kuwait because it was in the US interest to do so, and previously the US supported Iraq in its war against Iran because it was in its interests to do so. As well as the US benefiting, both Kuwait and Iraq also benefited economically from these ad-hoc military alliances. However, maintaining the ability to compete requires more critical resources such as oil and minerals which are becoming increasingly scarce and so a downward spiral quickly ensues as the attempt to secure these creates more insecurity and demands more competitiveness. The downward spiral engulfs all nations whether they want to engage in the competition or not as they are all forced to compete at increasingly levels of intensity for the same scarce resources. Thus the strong and expanding economies that nations must create to ensure international competitiveness, and which politicians explain as being vital to the security of the nation, paradoxically reduce global security by forcing all nations into increasingly bitter rivalries for scarce resources.

It is instructive to look at recent conflicts through this perspective.

The most traumatic conflict of modern times with the most far reaching impacts has been the second Iraqi war. This was an event that totally traumatised the Iraqi population as well as demonstrating to much of the US population that their highly principled founding ideals of democracy and liberty had been smashed apart. It led to the destruction of the critical infrastructure of an entire country and plunged an entire region into permanent civil war. The motivating reason for the war was to ensure that critical oil supplies would be delivered to the biggest consumers from a trusted supplier, even if this was not explicitly said so at the time. In 2001 the US was at the height of its super power status, held there by virtue of its huge energy consumption but facing the destabilising prospect of rising oil prices. It was facing two interconnected challenges; its economic power and that of its allies would weaken while that of rogue competitors such as Saddam Hussein would strengthen.

In the calculus of George Bush and Tony Blair they knew that delaying the war was not possible. A delayed war would mean at the commencement of hostilities their economies would be too weakened by rising oil prices and Saddam Hussein's would be too strengthened for that war to be waged successfully. So they struck when they still had the strength to do so using a concocted story about weapons of mass destruction for justification. Tony Blair acknowledged

this in the Chilcott enquiry when he said, “*It is at least surely arguable that he [Saddam Hussein] would have not changed, been there with a lot of money and the same intent.*” From a war fighting perspective, this proved to be the right decision. Oil prices started their anticipated rise in 2004 immediately after the conflict, rising from about \$30 a barrel at the time of the war to \$120 in 2008. The stranglehold this caused to the world economy led directly to the banking collapse of 2008. It is absolutely inconceivable the US and its allies would have felt strong enough to wage war against this background of financial collapse. Despite the destruction caused and the overwhelming view in world opinion that the war was a disaster, an interesting question to raise is what would have happened if the war had not be fought. Perhaps an emboldened Saddam Hussein in receipt of billions of oil revenues in a world where weapons of mass destruction are cheaply available and high technology conventional weapons are available to he who has the most resources could eventually become another deadly challenger to a weakened Western alliance at the same time as other challengers emerge around the world. The US and West would also have faced punitive costs encircling Iraq and their permanent presence in Saudi Arabia would further have inflamed Islamic extremist opposition. The militarily engagement with Iraq would have to come concurrently with food riots breaking out around the world as climate change and resource shortages eat into the fabric of society. There is little doubt that the Iraq war was ultimately fought for oil but more ominously it represents something more than just an oil war, it is the first war to demonstrate that the global systems of governance are collapsing under the combined weight of climate change and energy shortages. The fact that it was started on a lie and illegally by those governments that have committed themselves to upholding truth and justice indicates the extent to which the global systems have already failed.

Though short, the intensity of this war was on a scale that had never been seen before. It is estimated by the American Petroleum Institute that in the first three weeks of hostilities, the same amount of fuel was used as by all the allies in the entire First World War. A logistics bridge was built across the world that surpassed the Atlantic convoys. New weapons systems based on depleted uranium which is only available to nations with nuclear industries led to the total destruction of the enemy and his environment leaving swathes of Iraq plagued by birth deformities. The total cost to the US will probably never be known, but estimates now put this at up to \$6 trillion<sup>3</sup>. Ultimately this war will cost the USA even more than the Second World War. More seriously unlike most of America’s previous conflicts, the Iraq and Afghanistan conflicts have been financed almost entirely by borrowed money that sooner or later must be repaid<sup>4</sup>. This can only be repaid through economic growth which requires more scarce fossil fuels which were the cause of the war in the first place. These accumulating debt commitments of the US due to its war fighting exploits make

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<sup>3</sup><http://www.reuters.com/article/2013/03/14/us-iraq-war-anniversary-idUSBRE92D0PG20130314>

<sup>4</sup><http://www.independent.co.uk/news/world/americas/war-on-terror-set-to-surpass-cost-of-second-world-war-2304497.html>

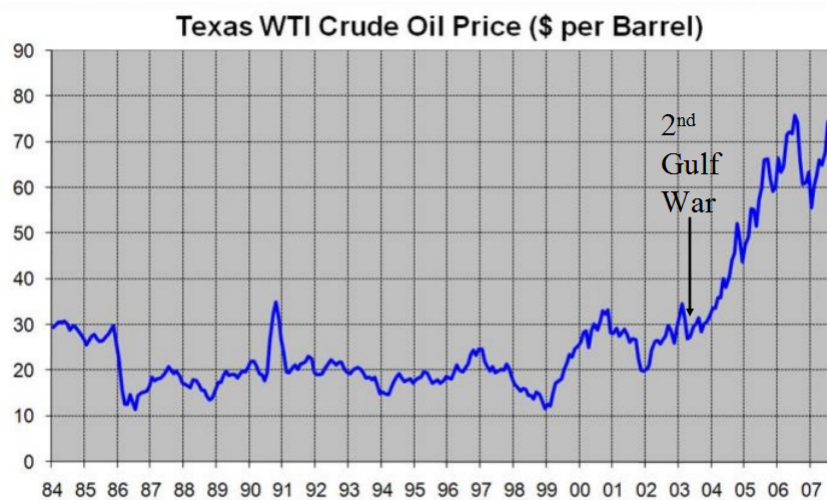


Figure 1: The price of Brent Crude and the Timing of War

contracting its economy to the zero carbon model needed for survival impossible. They are driving the US exploitation and development of unconventional oil sources such as tar sands, shale gas and shale oil.

In a consumerist economy the past, present and future costs for the military can only be paid for by expanding discretionary expenditure across the whole economy which is the ultimate source of tax revenues. This applies to the US and every other market based economy on the planet. Put simply, if everyone opted for a zero carbon life style and consumed just enough for their daily survival by growing their own food, producing their own energy and walking to work there would be zero taxes raised and existing debts would never be paid, in particular government debts. It is to avoid this apocalyptic financial collapse that we are encouraged to spend and borrow to excess. It means governments must encourage people to fly from new airports on holidays that they don't need, to buy cars far bigger than they ever need and to keep consuming to excess. The governments of all industrialised nation must support the same policies to deliver increasing levels of consumption. It is this unnecessary excess consumption that prevents the economies from collapsing. Each one of these acts adds its own environmental cost through additional carbon emissions to the atmosphere and damage to the planet through the extraction of fuel and resources along with associated human rights abuses. This unsustainable environmental cost is what we must pay to keep financial system intact. It is easy and fashionable to blame bankers for the crisis that we are in and they are certainly worthy of considerable blame. However, the stupefying cost of the Iraq war which was started when the US was already in debt and the illogicality of having to maintain an expanding consumerist economy in a collapsing world indicates a much more profound and unpleasant systemic failure driving the problem. This is the increasing need to

remain competitive in a declining world.

This problem is about to get a whole lot worse. All the UN P-5 nations are upgrading their nuclear weapons programmes at enormous expense which will reinforce competitive engagement. The pinnacle of this are the continuous at sea deterrents. The UK government claims its replacement of Trident with a like for like replacement will be in the order of £20billion. This carefully avoids its ongoing operational and decommissioning costs. The anti Trident campaign groups have taken Greenpeace's cost estimate of £100 billion which does include ongoing operational costs and the costs of other military assets which must be dedicated to defending Trident such as antisubmarine warfare ships and planes. However, even this more realistic cost excludes the decommissioning costs so is still likely to be an underestimate. What neither side in the debate acknowledge is the additional excess consumption that the economy must maintain to raise the taxes to pay for Trident over and above that needed for the basic survival associated with a zero carbon economy. With UK tax rates, approximately £500 billion unnecessary economic activity is needed. This excess consumption needs energy from fossil fuels that are increasingly scarce and already being fought over on a destabilising global scale. The paradox is that if this dangerous discretionary spend is not maintained at an exponentially increasing level, then the competition costs of the military cannot be funded. Maintaining this is the antithesis of what is needed to tackle climate change. It means that once the decision is made to proceed with Trident it becomes impossible to agree to climate change agreements. The same argument applies to every other nuclear weapon state.

It is against this environment of life and death competition where nations are caught between increasing competition costs and crippling penalties such as invasion or loss of access to critical markets and resources if they fail to compete effectively that they must paradoxically co-operate to tackle the mutual threat of climate change. This puts all nations in the horns of a dilemma. They can either co-operate with other nations in cutting greenhouse gas emissions to tackle the mutual threat of climate change, or they can decide to continue building competitive advantage against other nations to maximise their own prospects of survival in an increasingly dangerous environment.

The fundamental problem is that making large cuts in greenhouse gas emissions requires large cuts in fossil fuel consumption which weakens the economy. Despite all the best hype, no nation has been able to transition from a fossil fuel based economy to a renewable and zero carbon economy. This is not because of lack of will power, it is because it is impossible to make the transition and the numbers simply do not add up. Though it is true that much of electricity consumption can come from renewable sources, that is not the totality of energy demands. Large sources of reliable energy are still needed for manufacturing processes, fertiliser production, domestic heating, transport, manufacturing and operation of the military. David McKay's book *Without Hot Air*<sup>5</sup> amply demonstrates that although the energy potential of renewables is high,

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<sup>5</sup>Without Hot Air, David McKay, <http://www.withouthotair.com/>

even in an ideal world free from planning considerations it is not as high as the total energy demands of an industrialised and growing economy. To make matters more focused a nation using entirely renewable resources would be unable to compete against other nations either militarily or economically. In an increasingly competitive world the subsequent inability to compete will result in economic impoverishment of a nation as it loses both markets and secure access to resources.

As no examples exist where a major industrial nation or trading block has made a successful transition from fossil fuels to renewable power for its economy and defence, it is sensible to look at examples made in reverse that do exist and where nations went from entirely renewable wind power to fossil fuels. This is what happened in the 19th century during the industrial revolution with the advent of coal powered steam engines. It caused the biggest transformation to society and politics the world had ever seen and it is a transformation probably greater than anything that has been seen since. As well as transforming society, it also transformed the ability to wage war.

It was also a transformation that was blisteringly quick. In 1860 the English Seamanship manual which was the official text book for naval officers said “*Engines and machinery liable to many accidents may fail at any moment, and there is no greater fallacy than to suppose that ships can be navigated on long voyages without masts and sails.*”<sup>6</sup> Yet by 1870 the UK was stealing a lead on the rest of the world with the launch of the world’s largest battleship, HMS Warrior<sup>7</sup> heralding the development of its steam powered Navy. Having successfully built this, the industrial machinery was in place to build many more such ships and between 1870 and 1900 warships went down down the slipways at an unprecedented rate with each one improving both engine technology and weaponry over its predecessors. At a single stroke the Royal Navy extended its competitive advantage over all other nations and the wooden ships being laid down at the same time were sold as firewood. No nation that could be targeted by the Royal Navy opted to respond to this security threat by improving the use of wind power to avoid reliance on dirty and finite coal, an argument often used today to support the transition to renewables. Instead of a global research programme to improve the efficiency of wind power, universities around the world sought to understand the thermodynamics and metalurgy needed to capitalise on coal fuelled steam power. Every nation that was potentially at the receiving end of the British Navy was forced to develop their own steam-powered equivalent battleships and an arms race ensued based around both weapons and the industrial bases needed to build them. In Europe, it was initially between Britain and France but then every other industrialising nation across the globe was sucked into the same race.

China offered itself as a demonstration of what happened when military competitive advantage was not maintained. In the early 1800s while Britain was in the first stages of establishing itself as a potential leader of the industrial

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<sup>6</sup>Modern History of Warships, Hovgaard, 1920

<sup>7</sup>HMS Warrior which has now been restored in resting in the Portsmouth Maritime Museum

revolution it had already firmly established itself as the world's leading drugs baron. Its protectorates in India were growing opium on an industrial scale for shipment to China through the port of Hong Kong. So successful was this venture that large parts of Chinese society were destabilised and the government was forced into trying to stop it militarily after diplomatic persuasion failed. In 1836 China's navy consisting mainly of junks was set against the first iron clads of Britain's Royal Navy in an attempt to stop the opium trade. It was blasted out the water for punishment. Britain then continued profiteering from selling drugs to its expanding Chinese market, sued China for war damages, seized Hong Kong, attacked Peking in 1860 with the help of the French, subsequently suppressed the population in the Boxer rebellion and allied itself with Japan against Chinese interests setting in place the sequence of events that ultimately lead to the Pacific War of 1942-1945. The pre-eminence that allowed this exploitation to continue for almost a century was not just in the battleships needed for the day of destruction, but in the embryonic military-industrial complex that the Victorian industrial revolution spawned allowing Britain to project its power across the planet and which in turn was funded by the economic resources from the British Empire that its naval might secured.

As we face today's necessary transition to renewable power, then the lesson in the last transformation from wood and wind to steel and coal sit subconsciously in all nations. Despite the best hype that governments offer about being committed to climate change they know that if a single nation decides unilaterally to continue fossil fuel consumption they will achieve competitive advantage by securing markets, food supplies and maintaining an effective military whilst the effects of their greenhouse gas emissions will weaken any nation that is making the economic sacrifices that are necessary to cut greenhouse gases.

This scenario is being played out perfectly today. The European Union has made some effort to reduce emissions, though still far below the size of cuts necessary to tackle climate change. As a consequence of legislation imposed to reduce CO2 emissions various coal fired power stations are either not being built or are soon to be taken out of service leaving countries such as the UK with potential energy short falls in the future and rising energy costs today. This places the economy in a dangerous position in an internationally competitive environment. Even if demand today can be met with reduced energy production through efficiency savings and renewables, it almost certainly means that the economy cannot grow in any significant way. This is disastrous for a debt based financial system which relies on the prospect of future growth to pay off accumulated debts. Meanwhile Chinese, Indian and Middle Eastern emissions continue to rise dramatically as they refuse to sign binding cuts in CO2 emissions allowing their economies to continue growing and attracting wealth from European nations. Thus despite the best intentions of the European Union, global emissions of greenhouse gases still continue to rise exponentially as other trading blocks continue to develop their economies. As a result, the EU remains exposed to climate change impacts through rising sea levels and global food shortages and now lacks the economic strength to cope. The result is that in Europe national bankruptcies are sweeping through the continent as nations



### Prisoners Dilemma

	Stay Silent (cooperate)	Speak (compete)
Stay Silent (cooperate)	c,r 2,2	c,r 1,10
Speak (compete)	c,r 10,1	c,r 8,8

Figure 2: Pay off matrix for a 2x2 game

struggle to maintain domestic spending in the face of rising food and energy costs with the more inefficient or corrupt nations going down first and reverting to dangerous levels of nationalism. Meanwhile, land grabs in Africa for food production and mining are being led by China and Middle Eastern states whose economies are being expanded through fossil fuel consumption against the evidence of climate change and further restricting the opportunities for European nations to obtain cheap food and resources.

This dilemma that nations find themselves trapped in can be analysed by game theory and in particular the famous prisoners dilemma. In this scenario two prisoners have been arrested at the scene of crime and are being held by the police in two separate cells. In the cells they are each given the same choice. If they both confesses to the police they will both get 8 years in jail. If one confesses to the police and the other stays silent, the confessor will get only 1 year as an encouragement, whereas the other prisoner who stays silent will get 10 years. If they both manage to stay silent, then they will get only 2 years each as there will be insufficient evidence to gain a full conviction.

We can represent the situation with the pay-off matrix in figure 2 where the first entry in each cell is the prison term for the column player and the second entry is the prison term for the row player. Thus (10, 1) tells us that the column player will suffer 10 years in prison for staying silent and the row player 1 year for confessing.

We can now imagine the decision making choice from either one of the players, illustrating this with the column player who wants to minimise his prison term. When he decides if he should speak or stay silent he needs to first think what the row player will do. If he reasons that the row player will stay silent, his best option is to speak in which case he will get only one year in jail. If on the other hand he thinks the row player will speak to the jailers then his best option is also to speak in which case he gets eight years in jail instead of ten. So, irrespective of what he thinks the row player is going to do the best way that he can reduce his prison sentence is to always speak. The rational strategy to adopt is the paradoxical approach of always avoiding co-operating with the

other prisoner and competing against him.

The row player will go through exactly the same thought process and come to the same conclusions. The result will be that both players will always settle on the worst solution of both speaking to the jailers and both getting eight years in jail instead of the optimum of two years. This worst case solution of both sides deciding to compete against each other is the “*stable saddle point*” of the game. By contrast the optimum solution of both sides deciding to co-operate and getting only two years in jail is the “*unstable saddle point*.” It is an outcome that can be achieved but the slightest perturbation which results in a loss of trust for either partner reverts the game’s outcome back to the stable saddle point with both players competing and settling on the worst case.

The ultimate way to think about the stable saddle point is that this is what happens when there is no law in place and the players are free act in their own interests. The corollary of this is that to maintain the unstable saddle point, a law needs to be imposed that forces the players to both stay silent.

The Prisoner’s dilemma model is a perfect analogy for climate change negotiations. The only thing that now needs to be done is to change the titles on the pay-off matrix to represent the respective strategies that nations must take towards climate change. Instead of confessing to the police, a player now continues burning fossil fuel. Instead of staying silent a player now can cut CO2 emissions. In all other respects the matrix can kept exactly the same.

It can be considered thus: if two countries both cut emissions together they both incur a cost of £2 billion or what ever other units are used. This could be as a result of developing renewable infrastructure, loss of economic opportunity, etc. If they both continue to burn fossil fuel they will both suffer equal economic loss of £8 billion due to pollution damage such as rising sea levels and riots from food shortages. If one country cuts and the other does not, the country that makes the cuts will not only suffer the costs of transforming the economy to a low energy economy, but will also still suffer rising sea levels and food riots and at the same time be at a disadvantage to the other so its costs rise to £10 billion. The dynamics of the prisoner’s dilemma results in both countries taking the paradoxical position of continuing to burn fuel together to their maximum capability, even though the resultant costs to each other will be far worse than the costs of stopping burning fossil fuels. It makes no sense for them to do otherwise. This is the simple maths that has stalled the COP talks to an eighteen year standstill. In the absence of a law that defines nations behaviour a free for all exists resulting in the stable saddle point of continuing to burn fossil fuel at at unsustainable levels.

It does not actually matter what numbers are chosen in the matrix. All that counts is the relative size in relation to each other and it is impossible to envisage any reasonably sustainable scenario that can alter the relative size between the cells. The only thing that truly differentiates the prisoners dilemma from the climate change talks is that in the prisoners dilemma prisoners will be released from jail after their eight year sentence. In the climate change dilemma, the worst case £8billion cost is replaced with the death penalty. Remarkably, even this does not guarantee a change in decision making, as now both columns in

the pay-off matrix simply have the same maximum, the death penalty, and if the optimistic view prevails in all parties that the death penalty will not apply they will fall back on their previous decision making processes.

Though the game is easy to state it is very difficult to implement in practise. Firstly most games are played repeatedly through round after round and the climate change negotiations are no exception. At the time of writing they have just completed their 19th round. The results from each round effect the results for the next. Thus if no co-operation has been achieved in one round the players do not have the confidence in each other to co-operate in the next. The other aspect that makes the game more difficult is when multiple games are being played together.

In a simple experiment I carried out in one of my maths classes, I played three games concurrently with two players in each game. The game consisted of giving each player two cards, one which said "I love you" and the other said "F\*#k you buddy."<sup>8</sup> The payoffs were the same as in figure 2. Instead of minimising years in prison the objective was to minimise the cost of your love. Thus if both players played the "love you" card the cost of their love was £2 each and if both played the "F\*#k you buddy" card the cost of their love was £8. If they played different cards then the costs each were £1 and £10 according to the pay off matrix. A prize of £2 in real money was to be shared amongst the class if they could get the combined cost of their love down to £60 over five rounds, which meant that in every round every player in each game had to choose the "I love you option." If they couldn't there was a bar of chocolate to the winner with the lowest cost of love. The bar of chocolate was selected to cost less than the £2 combined prize, so collectively they would do better co-operating but individually do worse. It quickly became apparent to the players that they would not be able to co-operate sufficiently to get the combined £2 prize as it only took one player to mistrust the others or to be tempted by the reward of the bar of chocolate which was of greater value than a share of the combined prize. Once this happened all the games defaulted to the stable saddle point of each player playing the "F\*#k you buddy" card, thus effectively it became a free for all. It has disturbing analogies with climate change talks. Once one nation feels that the fight on climate change has been lost and the incentive to co-operate has been lost, it makes it almost impossible to expect co-operation to be achieved by the remaining parties and a free for all is guaranteed. In today's world, with CO2 emissions rising to 450 ppm and methane releases increasing from the Arctic, many negotiators will conclude that the fight for climate change has been lost and so be even less willing to agree on the scale of actions that must be implemented to save the planet, despite the evidence of the increasing necessity to do so.

The only way the destructive saddle point can be avoided is to abandon the game. Doing this requires the nation state system of governance to be scrapped or at least make the nation state system redundant, alternatively a law must be enacted to ensure that all parties move to the unstable saddle point position of

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<sup>8</sup>Named in honour of John Nash

agreeing to cut fossil fuel burning. For a law to be effective, it must be backed up by force with a legal institution that has the monopoly of legitimate violence. Either of these solutions challenge the fundamental concepts of nation states. These are that the nation state is the custodian of legitimate violence which it dispenses through its judicial system and all nation states must provide security for their populations by remaining competitive in relation to other nation states.

At the apex of the economic competition is the ability to create wealth to ensure critical resources such as food and energy and securely supplied to the population. At the apex of the military competition is the ability to destroy an enemy using nuclear weapons. One supports the other. The flip side of this is that unless security and access to critical resources are shared in a secure environment, nations will always be forced to compete militarily and economically for survival irrespective of the costs of that competition.

This brings us into a new paradigm. Splitting the world into nation states was a suitable model for developing the world economy since the start of the industrial revolution. In the event of war, nations or blocks of nations with the most powerful economies achieved decisive victories. Historically, the free world has had best access to resources and energy enabling it to prevail in both economic and military conflict. The very freedoms it was based upon allowed resources to be exploited to the maximum advantage. However, in a declining global economy facing the mutual threat of climate change, the nation-state model is wholly inappropriate as all nations are ultimately forced to fight with each other using the last scarce resources on the planet to secure the last scarce resources needed for economic sustainability. In this environment, the ideals of democracies are no defence against the tyrannies of dictatorships; it is the dynamics of the prisoners dilemma that is the ultimate arbitrator of decisions as America and the UK demonstrated with the decision to start the second Gulf War.

With the benefit of hindsight, the structure of nation states, which was laid down in the 1814 Treaty of Vienna set the planet on the road to destruction. The idea of nation states is ultimately predicated on the idea of each nation being able to grow indefinitely through industrialisation by ignoring the warnings that have been handed down repeatedly through history from Malthus to the Club of Rome Limits to Growth warning and finally to climate change warnings. The idea that we can agree massive cuts to our greenhouse gas emissions voluntarily within a free for all structure requiring all nations to secure economic and military advantage is folly. But it is this folly that is being pursued at the highest levels of governance.

Instead, worthwhile climate change agreements can only be made by challenging the structure of the nation-state and the competitive advantage that all nations are forced to seek within this. This is the elephant in the climate change room that no one wants to talk about. While this is avoided, there will be no climate change agreements other than the superficial. The very things that determine national status are the first things that must be traded in negotiations on climate change - these are military and economic advantage.

The full ramifications of this needs to be considered by all - from Presidents

and prime ministers, to the negotiators at climate change talks, to the people in the street. We explore the implications of this in the following chapters by pursuing these arguments to their logical conclusions and considering the mechanisms by which the solutions that flow from these must be implemented.

The nation state concept was bad begun, and has made itself strong by ill. More significantly, the longer it continues the more embedded it becomes and the less chance there is for agreeing the urgent cut backs in fossil fuel consumption and economic contraction needed for survival.