*'Civilisation is a natural and inevitable consequence – whether good or evil I am not prepared to state'* Robert E Howard *(1930)*

DIALOGUE 3: The Inevitable Consequences

Interviewer: After a refreshing lunch, we are now back out in the garden with another pile of diagrams and maps spread out on the table, to talk about the next component of the 'real' Model – the *Inevitable Consequences* (IC's).

FN: Yes . . . and as the first figure shows the IC's are divided into three categories: economic, political and social, at a number of levels.
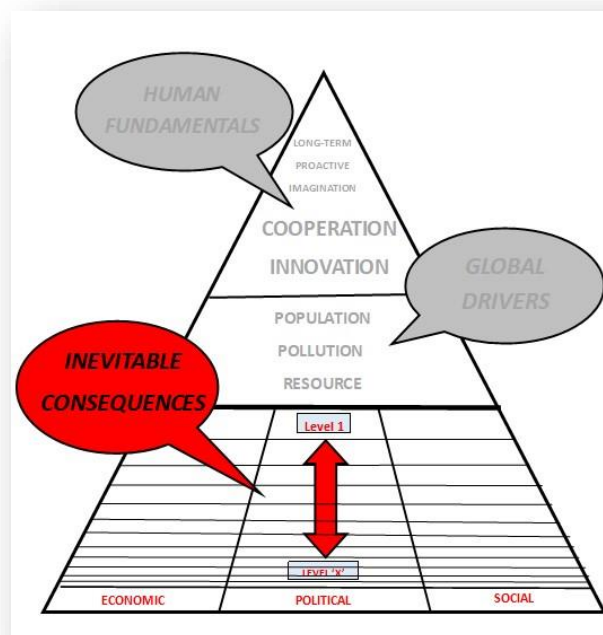
Figure 1: **Hierarchy of Consequences**

Interviewer: What determines the level of the IC?

FN: Recorded scope and impact.

Interviewer: Recorded?

FN: All IC's in Version 1 of the Model are *Level 1*. They are parameters that are regularly reported on a global scale and have a significant impact on the parameters in the other categories. There is also a clear link between them and the parameters representing the Global Drivers and the Human Fundamentals making up the Matrix.

Interviewer: OK starting with the **ECONOMIC** category of IC's, I see we begin with Methuen Pryce's favourite subject, **economic growth**.

FN: As we discussed this morning, concerns over economic growth have been around for many years - most notably the project that the Club of Rome commissioned the Sloan Management School at MIT to undertake in the 1970's.

Interviewer: Is the decline in economic growth they predicted, reflected in the actual global economic growth numbers, since then?

FN: Interestingly, even though the various components that make up the Limits of Growth prediction are on track (*Guardian 1st September 2014; Turner and Alexander*) – a linear trendline through global economic growth over the past thirty years, shows no sign of overall decline. Have a look at the figure below.
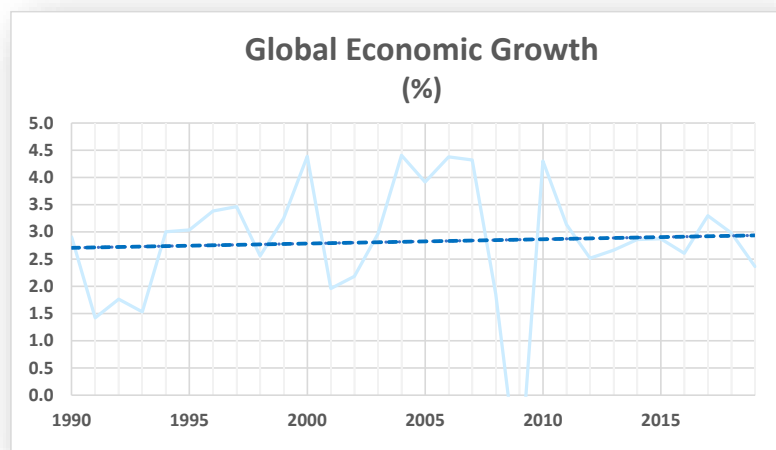
Figure 3: **Global Economic Growth 1990-2018** *(IMF World Economic Database)*

Despite the massive dip during the GFC (the 2008/9 Global Financial Crisis), a linear trendline through the data since 1990 is almost flat at around 2.75 to just under 3%. Only in the last few years has there been a slight dip that we will discuss later.

Interviewer: So, what happened to the huge growth rates in China and India during that time . . . were they *coincidentally* balanced-off by much lower growth elsewhere?

FN: I would like to answer that after we have looked at the other major economic measure: Here is the figure showing **global inflation** over the past ten years.
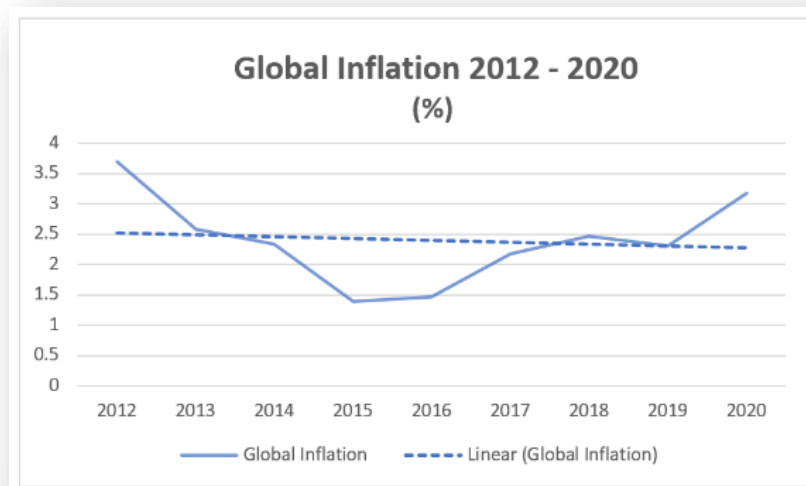
Figure 4: **Global Rate of Inflation** *(IMF World Database 2020)*

Once again, a trendline through the data is flattish with the level of global inflation falling only slightly from 2.5 to 2.4 %. global inflation.

Interviewer: So what is the explanation?

FN: Financial agencies such as the IMF and many central bankers would claim this reflects the positive impact of disciplined monetary management over a prolonged period, reducing macroeconomic volatility; keeping inflation at a relatively low level and maintaining economic growth. In the US it is termed *The Great Moderation (Stock and Watson 2002 NBER Macroeconomic Annual 17)* as the next figure shows.
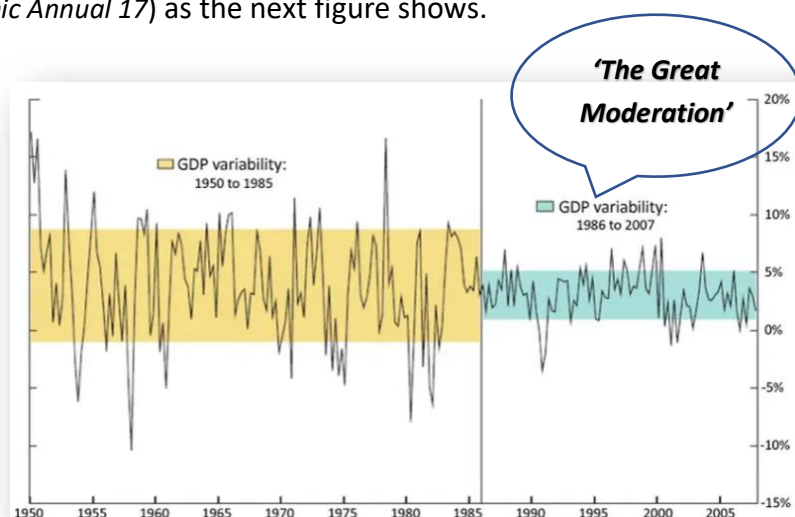

Figure 5: **Variability of Real GDP Growth in the US** *(Bureau of Economic Analysis)*

If this global control is correct, it is a very positive story. It suggests that we have the capability to manage the global economic framework – something that, in the Emergent

World of the Model, extends to many other areas of human activity. The main means of achieving that has involved the control of money supply, in particular, creating facilities that allow countries to borrow money on a massive scale—

Interviewer: Another economic parameter?

FN: Without doubt. Debt is based on an assumption that the future goods and services it enables will be sufficient to repay the interest and capital sum of the debt. If economic growth is failing because of the lack of innovation, debt is a good way to stimulate it. That raises some interesting questions: What would world economic growth have been in a debt free world, and more pertinent, over time, how does debt remain an effective stimulant for growth. On the last point, a plot by Gail Tverberg *(ourfiniteworld.com, 2020)* for the US economy - showing the additional dollars of US debt required to add USD 1 to the US GDP, suggests that over time debt loses its effectiveness.
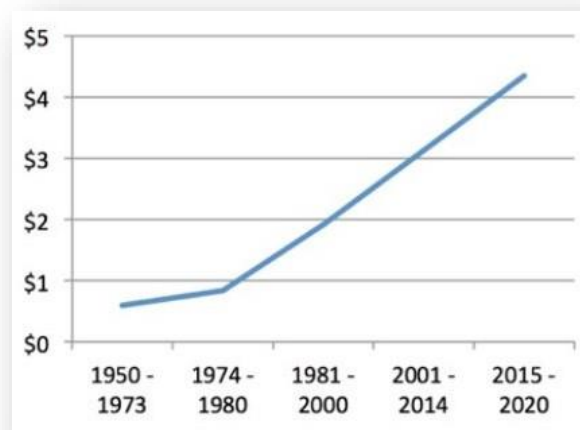
Figure 6: **Dollars of additional US debt required to add USD 1 of additional GDP** (*after Tverberg 2020)*

Interviewer: But in that situation both lenders and borrowers – in fact, the whole financial system – is in trouble.

FN: Yes . . . and that is the great concern. The rising level of Total Global Debt as a % of GDP is clearly unsustainable. With Covid adding another USD 24 trillion in 2020, Total Debt is now at an all-time high of USD 281 Trillion – equivalent to 355% of global GDP *(Institute of International Finance 2021).*
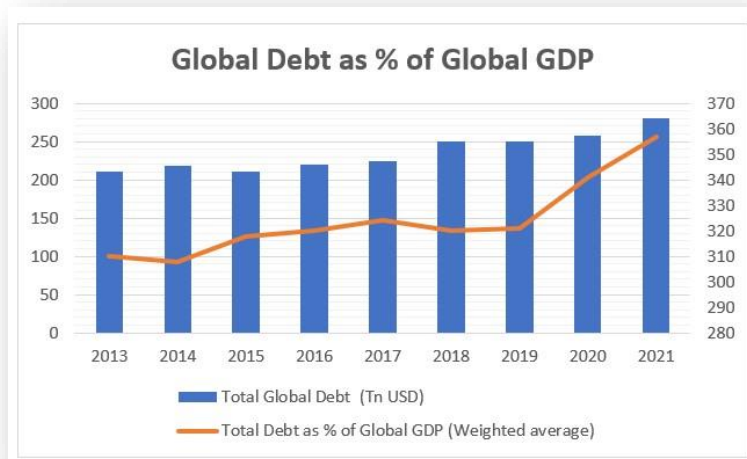
Figure 7: **Total Debt to GDP** *(Institute of International Finance 2021)*

Interviewer: So . . . is Total Debt one of your modelled parameters?

FN: It could be, but for now I have chosen a subset of that, 'sovereign' debt – the debt that governments hold—

Interviewer: Why is that – surely there are many other forms of debt that are equally troublesome?

FN: Indeed . . . but sovereign debt - or more specifically, the capability of governments to fund the interest payments required to furnish the debt – are well recorded and their importance is on the 'squeeze' they exert on the funds that Nation States have available to support living standards—

Interviewer: So how have you modelled this?
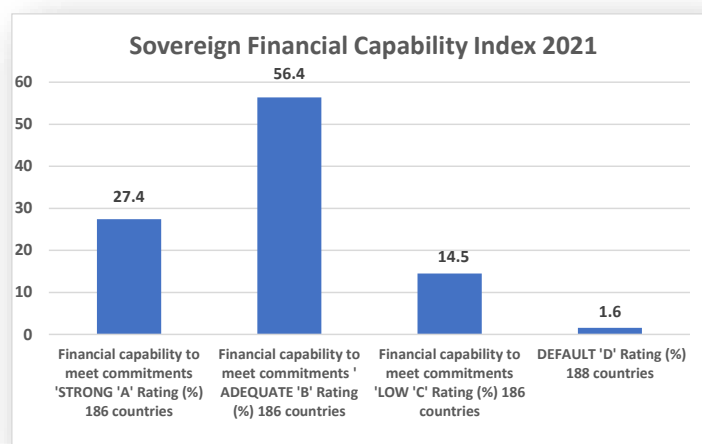
FN: Have a look at the next figure.

Figure 8: **Sovereign Financial Capability Index** *(Wikirating 2021)*

5

I have created a ranking of sovereign debt per country (averaged from five global credit agencies) to show the profile of **sovereign financial capability** based on 186 countries. In most, the cost of sovereign debt is still manageable, but this relies on the very low levels of inflation – and therefore interest rates - we have seen over the past ten years. Were that to change then the financial capability distribution shown in *Figure 8* would also change dramatically.

Interviewer: The next parameter on your list is **Corruption** – doesn't that fall, more, into the social than economic category.

FN: It certainly reflects on the moral standards of Humankind in 2021 - and that after a period of relative prosperity! But the consequence of Corruption on other economic parameters is profound. A recent paper by Kim et al (*Sustainability 2017*) came to the remarkable conclusion that: 'the effect of public debt on economic growth *is a function of corruption* . . .' with it having a severe *negative* impact in the least transparent, most corrupt countries.

Transparency International - an organization that seeks to stop bribery and other forms of public corruption - publishes an annual global **Corruption Perception Index**. A country's score can range from zero to 100, with low numbers indicating high levels of corruption. Here is a plot showing five levels of corruption over the past eight years.
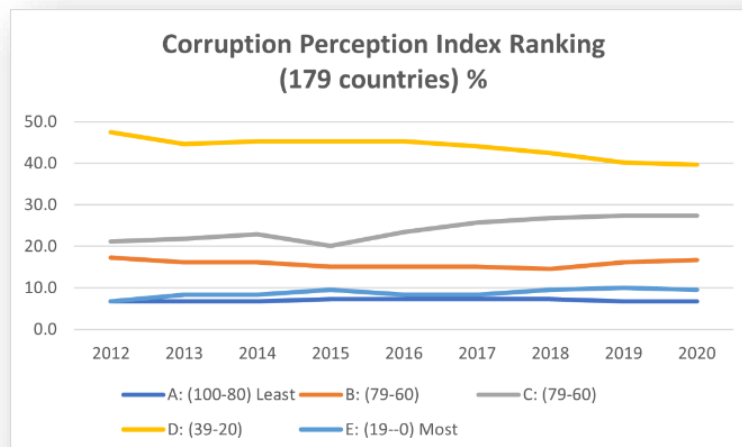
Figure 9: **Corruption Perception Index ranking** *(Transparency International 2020)*

Today, the 'Low and Least corrupt 'category accounts for only 20% of the 179 countries surveyed - although it is worth noting the recent improvements in the middle ranks of those 'most to moderate corrupt'.

Interviewer: The figures are staggering and, if the imapct you mentioned is correct, the effect on global growth must be considerable.

FN: Indeed . . . and we will look at this again when we consider the role of govenance on prosperity.

Interviewer: The next parameter is **global trade**, which I recall declines sharply as the Fully Segmented World in Book 1 begins to emerge in the 2040's.

FN: The human desire for wealth and power has been incessant and led to a sucession of globalisation waves – largely linked to technology developments. The first wave in the 19th Century, was ended by World War One and the rise of nationalism; the second started after World War Two, when innovation dramatically lowered communication and transport costs and the hydrocarbon age took off. This is clearly shown in this figure based on a ten-year moving average of trade growth rates over the past 120 years.
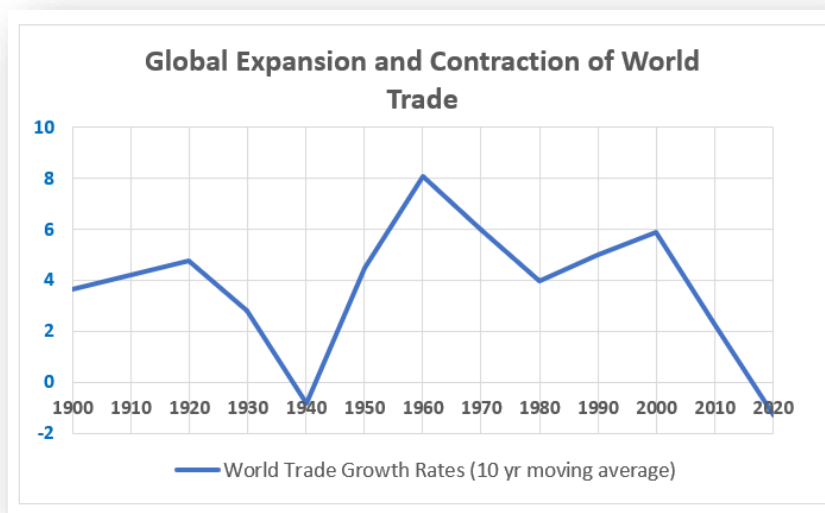
Figure 10: **World Trade Growth Rates** *(after Federico et al 2016, World Trade 1800 -2015 VOX, CEPR Policy portal)*

Dao et al (Illinois Wesleyan University, 2014) states that there is a 'positive and significant relationship between level of trade and economic growth'. Reduce global trade and economic growth falters.

Interviewer: How is global trade measured then?

FN: Have a look at this figure. It shows what is called the *Trade Openness Index* (the ratio of total global trade versus GDP) since 1990.
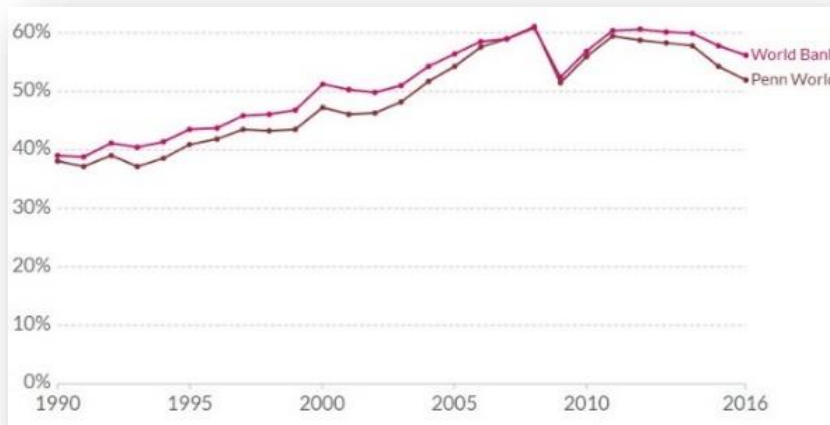
Figure 11: **Trade Openness Index** *(World Bank 2020; Penn World Tables)*

The flattening off since the GFC may relate to the deceleration in China trade growth but others regard it as something more profound. Lewis and Monarch *(US Federal Reserve, 2016)*, for example, recently concluded that the slowdown should be regarded as the 'new normal' and that 'we do not foresee a return to the rapid pace of growth observed in the years prior to the GFC any time soon.'

Interviewer: And your interpretation would be that this reflects the end of the second wave of globalisation - as the impact of the three Global Drivers begin to change the economic and political landscape?

FN: Yes . . . and this is also recorded, globally by the *asymmetry of trade*. In other words, how the levels of, non-trading; bilateral trading and unilateral trading has changed over time. As this figure shows, since the GFC there has been a distinct flattening-off in the growth of bilateral trading.
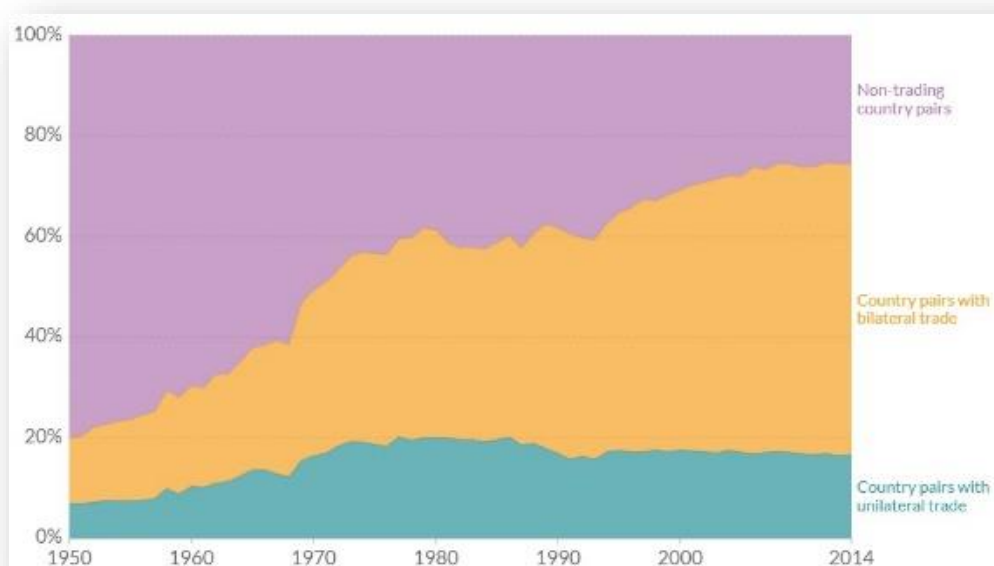
Figure 12: **Share of bilateral and unilateral trade partnerships over time** *(OWID 2015)*

Interviewer: In the first dialogue we talked about the growing importance of cross border issues that you argue will act as incentives for global cooperation. You have mentioned and there are also pandemics, but shouldn't *International trade* be added to that list?

FN: Absolutely. History demonstrates that as political tensions and distrust rise, trade declines. China today, for example, will not become the pre-eminent power it was in the 1st Century BC, if global trade falls off . At that time, with a stable dynasty (Mongol Empire), the Silk Road opened up, encouraging Marco Polo to make his journeys into China and triggering a new period of international trade. This raises the question for the many autocratic leaders around the world, to question their protectionist tendencies and consider the merits of adopting a more more cooperative stance. We will talk about this a lot more later.

Interviewer: The next three parameters, I see you have figures on - infrastructure repair, military spending and debt interest payments - are more *fiscal* than economic, aren't they?

FN: Yes . . . going back to *Figure 1* you can think of these as 2nd Level Inevitable Consequences. When economic growth is expanding and inflation low, these additional costs can be absorbed by higher revenue, but during a downturn the general populous is affected – as we discussed earlier, meaning that the funds avaiable for Support spending has to be cut.

Interviewer: 'Support' spending?

FN: Well we briefly discussed this before in Dialogue 1. **Support Spending** is the modern-day equivalent of Juvenal's 'bread' (*'Give them bread and circuses and they will never revolt' The Satires 2nd Century AD)*. It is used to describe the portion of government revenue spent on services of direct benefit to the population, notably education, health and social care – the latter including employment benefit. Over the past twenty years this has been steadily rising, globally, in line with the increase in government revenues.
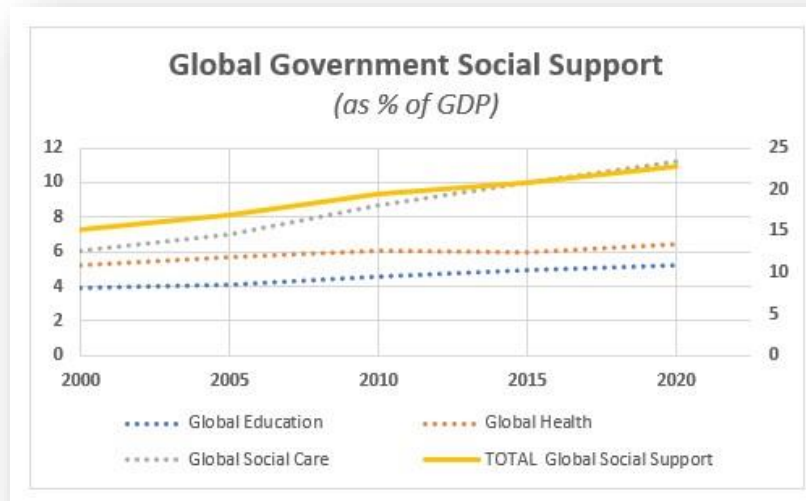
Figure 13: **Global Social Support Funding** *(partly after OWID, OECD Library)*

But this will not continue. The increasing cost of (1) repairing and replacing infrastructure damaged by climate change; (2) the unrelenting burden of servicing debt and (3) the need in an uncertain world to maintain defence budgets, all make urgent demands on Government Revenue, that limit the funds available for Support. No one is happy when they are requested to pay higher taxes and then get nothing extra in return that tangibly benefits them! Therein lies the political turmoil and civil unrest Juvenal alluded to.

Interviewer: So what is the current status of these three *growing* costs?

FN: Infrastructure degradation is already a global problem. We have built so much *stuff* that we are coming to a point where we can't afford to maintain, let alone replace it. The problem even has a name: **maintainence capital cost** – capital being existing bridges, railways etc. Now, this ageing infrastructure, is being exposed to ever greater weather extremes induced by climate change - as the next figure illustrates.
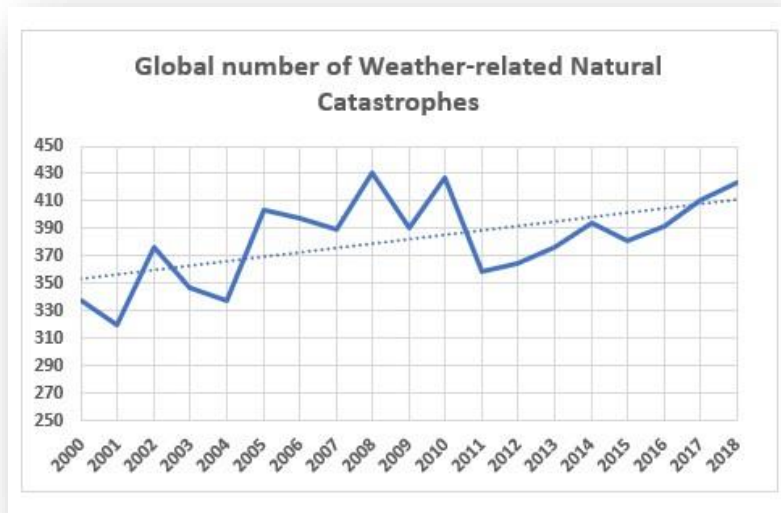
Figure 14: **Weather-related Natural Catastophes** *(Aon's 2020 Weather, Climate and Catastrophe annual report)*

Some estimates suggest that *protection costs* against climate change-related events may already be reducing global GDP by 1% and that that may rise by another 2% if emissions are left unchecked. (*Orlik et al, Bloomberg, 2020*). One measure of this is the increasing insured costs of weather events.
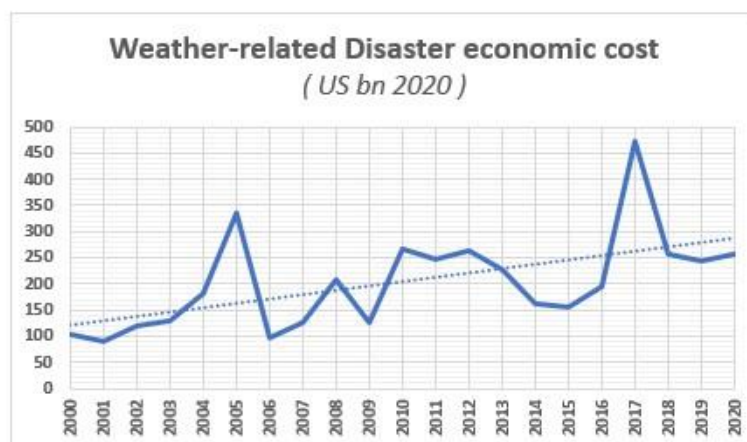

Figure 15: **Cost of Catastophic Events globally** *(Aon's 2020 Weather, Climate and Catastrophe annual report)*

Interviewer: But if these events are insured doesn't that reduce the impact on government budgets?

FN: Ah, but outside of the US and Europe, most of the damage caused by these type of events is not insured and relies on funding from Foreign Aid and charitable donations to step in. But it's also important to note that even when insurance is available, the increased premiums work their way through the system, adding to the factors that are driving up global inflation.

Interviewer: So what metric can be used to measure this particular government cost?

FN: For now, I use an 'indicative' measurement, the *cumulative Weather-related Economic loss*. The plot for 2000-2020, based on AON reporting, is shown here.
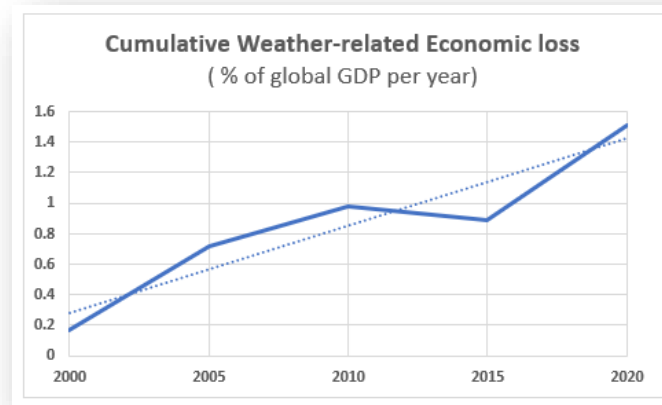
Figure 16: **Cumulative, Weather-related Economic loss** *(using Aon's 2020 Weather, Climate and Catastrophe annual report)*

Interviewer: Why cumulative?

FN: The sensible approach for governments when dealing with this type of unavoidable risk, is to act immediately. But that doesn't happen - even in an affluent country like the US. – the cost accumulates. A recent report by the US Army Corps (*Failure to act: Economic impacts of Status Quo Investment across Infrastructure Systems: US Army Corps of Engineers Report Card, 2021),* showed the US (with Biden's original USD 3.5 Tn Infrastructure Bill) would still only be paying about half the 'infrastructure bill just to standstill' for the period up to 2029, with the investment gap rising from USD 2.1 Tn to over USD 2.59 Tn over the previous ten years.* *Cumulation* gives a more realistic presentation of the problem the world faces, than assuming complete repair or replacement every year the damage is incurred. The *consequences* in economic terms - GDP reduced by USD 10 Tn; exports by USD 2.4 Tn – not to mention social consequences - 3 million jobs - are eye watering, in the US alone. Well-functioning infrastructure matters!

*(STOP PRESS: As of the 6 November 2021, that gap rose to USD 5.4 Tn as Congress only improved USD 0.5 Tn infrastructure spend).

Interviewer: The next of these 'fiscal' economic parameters - **military spending –** I imagine you have firmer numbers on?

FN: Yes . . . after the end of the Cold War - when there was a niave view that the world was a safer place - a lot of focus was placed on the proportion of government spend allocated to security—

Interviewer: The view was that the spend would decrease, I recall.

FN: As a percentage of global GDP, military spend appears to have remained flat – at around 2.3% - as this next figure shows. But this is misleading because, during that time, global GDP

increased by 170%, wiping out the so-called 'Peace Dividend' accrued at the end of the Cold War and increasing in absolute terms the amount spent globally on 'defence'.
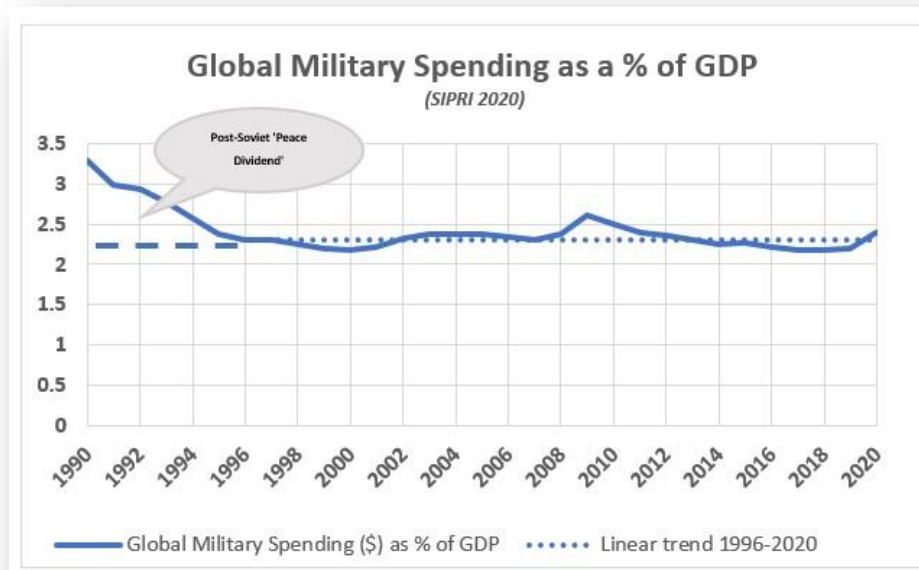
Figure 17: **Global Military Spending as % of GDP** *(SIPRI 2020)*

The tensions arising from a **Full-up world**, along with the new technological developments in warfare (i.e. nuclear, cyber and biological) have demanded greater rather than less spending on the critical role of protecting national borders.

Interviewer: Unlike infrastructure repair and military spending that have the merit of creating employment along with the associated innovation positively impacting on economic growth, **interest payments on debt** only offers upside to the lenders.

FN: Yes . . . and despite a benign inflationary environment, the percentage of government spend on interest payments have been rising steadily since the GFC, as borrowing to support economic growth has increased.
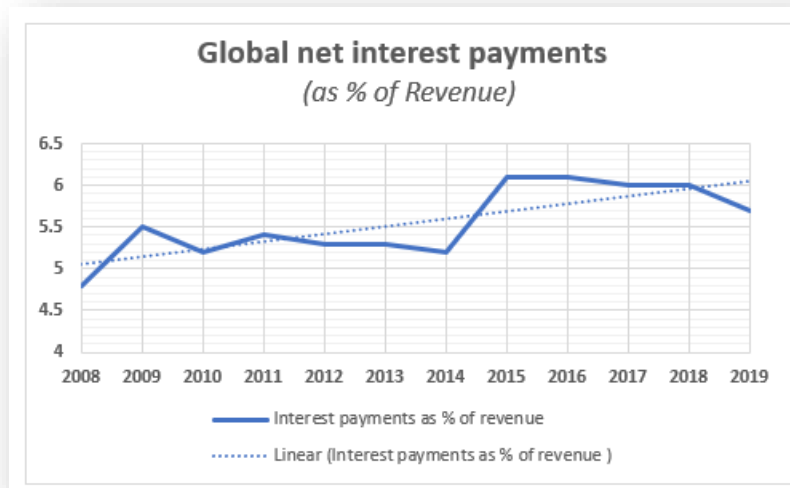
Figure 18: **Global interest payments as % of global revenue** *(World Bank, IMF 2020)*

Interviewer: The next category of *Inevitable Consequences* you call **POLITICAL** - another huge area, how do you select the representative parameters?

FN: Politics is the way we organise ourselves to solve and manage the many problems we face. Each nation state has their own solution, tailored to their particular circumstances and embedded in their history and culture i.e. *the way we do things*. Today, the nation states of the world come together in various political groupings – the most influential of which are those from the advanced economic countries: G7, G20 and OECD.

But another, currently unconstituted, group is emerging that I call the **Powerblocks**. Their combined global importance can be clearly seen in this table.

|	POPULATION	POLLUTION	N. RESOURCE	N. RESOURCE	ECONOMIC	ECONOMIC	FISCAL	POLITICAL
Global % (as of end 2019)		*Global emmisions*	*Post-peak minerals*	*pre-peak, widely used*	*% of global Growth rate*	*GDP % World*	*Military Spend*	*Govnt. Type*
GLOBAL (2019 actual)	7.67bn	100%	ALL	ALL	2.8	87.55Tn US	1.917 Tn US	68:32 Autocratic: Democratic
CHINA	18.5	28	RICH	RICH	15.9	17.31	14	Autocratic
EU	5.8	6	POOR	POOR	15.9	15.4	9.7	Democratic
INDIA	17.76	7	POOR	POOR	3.3	7.09	3.7	Open Autocratic
RUSSIA	1.89	5	RICH	RICH	1.8	3.07	3.4	Autocratic
US	4.26	15	POOR	POOR	24.3	15.93	38	Democratic
Powerblock TOTALS	48.21	61			61.2	58.8	68.8	

Table 1: **Powerblock characteristics 2019**

How they cooperate from now on will be critical in the direction the 'actual' world takes across the GC-FI Matrix.

Interviewer: So, are the political parameters for the 'real' Model, Powerblock or Global-based?

FN: They are Global, but I have a separate Model in draft that details how the Powerblocks develop under the four scenarios over the next thirty years – in particular their five year budgets over the next thirty years.

The first parameter I have selected, I call *Governance Type* that is plotted in the next figure.
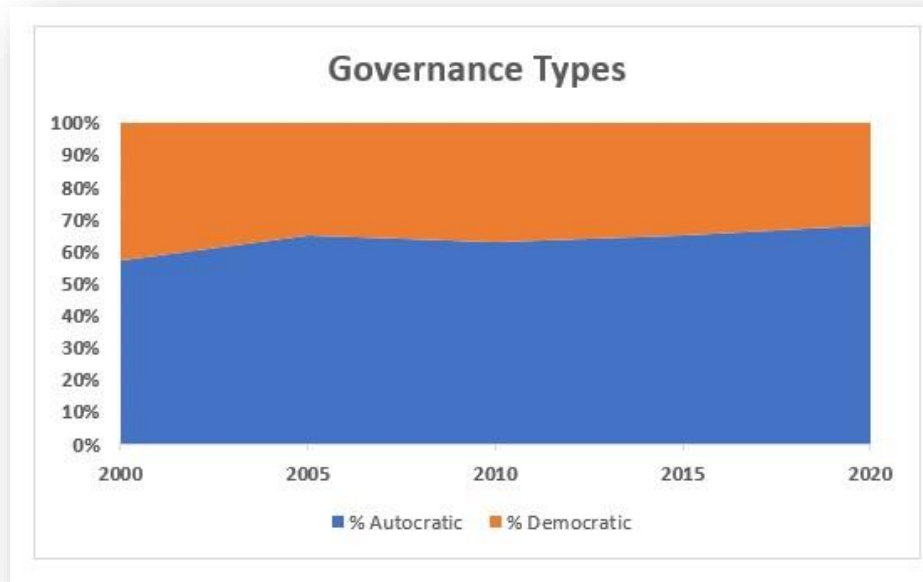
Figure 19: **Governance Types** *(based on V-Dem Report 2021)*

Globally, the countries of the world, in past few years, have become more autocratic, with two-thirds of the world's population now living in closed or electoral autocracies. The next figure shows the current situation, using the nomenclature of the V-Dem Institute.
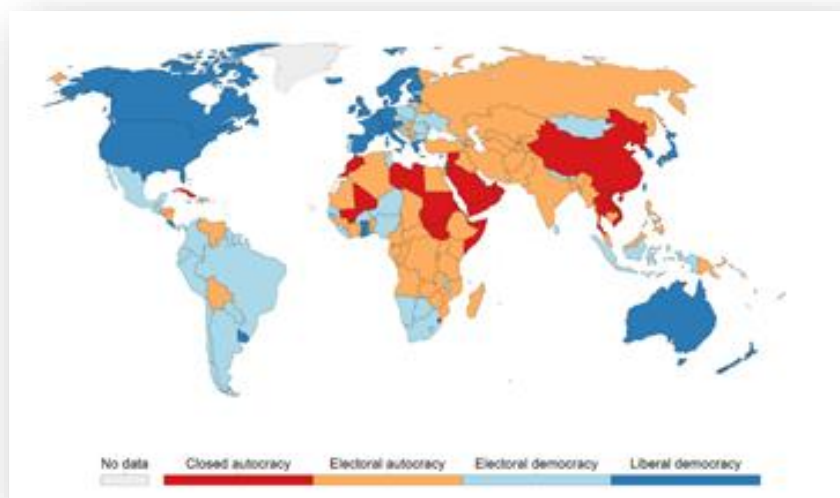
Map 1: **Political Regimes in 2020** (*after OWID, based on Lurhmann et al 2018 and V-Dem Ver. 11-1)*

This trend toward greater autocratisation was something also recorded during the great global change from 1920-40's – matching the dips in declining Trade growth noted earlier.
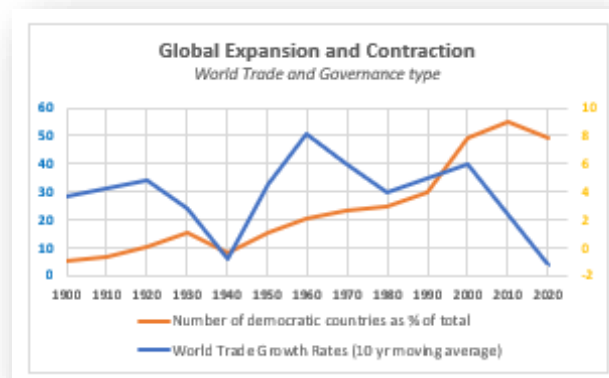

Figure 20: **Global Trade and Degree of Autocratisation 1900 – 2020** (*after various sources, including V-Dem Institute and World Bank*)

Monitoring the progress of the Autocratisation process will provide an important insight to the global, political reaction to the new paradigm of the **'Full-Up'** planet described in the first Dialogue.

Interviewer: But won't this increasing autocratisation translate into lower levels of Global Cooperation - moving the world towards the **Divided** or, even worse, the **Stagnant** World.

FN: Not necessarily. As we move forward, the cross border issues we have already discussed - climate, pandemic, global trade collapse - will increasingly impact everyone, requiring even the oligarchs that control the authoritarian states, to come to the table and talk.

Interviewer: But these *closed* autocratic states not only allow self-serving, short-term, ideologies to flourish, they also reduce the size of the global brain available to solve the huge problems we've been discussing. Wasn't that one of Elizabeth's straplines that caught Methuen's attention early on: 'the global brain still able to move the global hand'?

FN: Oh yes! I'm not denying that there is a great challenge ahead of us – if we want to focus the whole of the global mind on resolving the problems associated with the Global Drivers. Have a look these three figures. They show the scale of the challenge that already exists with regards to creating the type open society where the *global brain freely moves the global hand.*
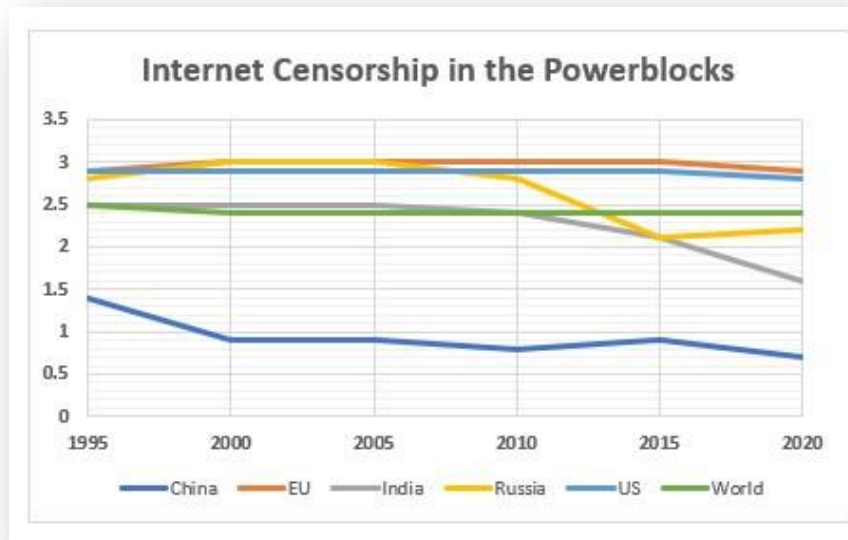
Figure 21: **Internet Censorship*** *(based on V-Dem Report 2021)*

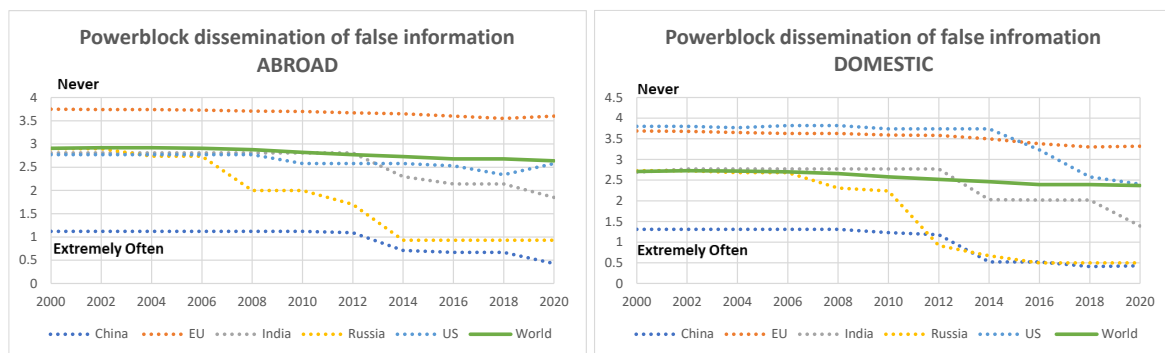**Does the government attempt to censor information (text, audio and visuals) on the Internet?*

Figure 22: **Powerblock dissemination of false information: Abroad and Domestic *** *(V-Dem2Institute 2021*

*How often do governments and their agents use social media to disseminate misleading viewpoints or false information to citizens (1) abroad (2) domestically

These figures are taken from the draft Powerblock dialogues, I mentioned earlier. For the global perspective, however, I have used another V-Dem parameter: ***The Freedom of Expression Index.***
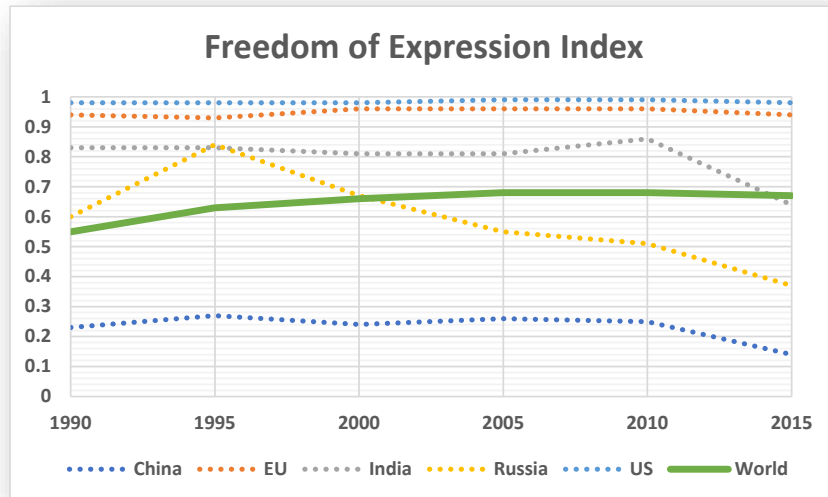
Figure 23: **Freedom of Expression Index*** *(V-Dem; Svend-Erik Skaaning and Jan Teorell)*
*To what extent does government respect press and media freedom, the freedom of ordinary people to discuss political matters at home and in the public sphere, as well as the freedom of academic and cultural expression

It's worth noting that when all the other monitored countries are included (177 in this data set), the global picture is more positive with a less pronounced fall in the Index than just observed in the Powerblocks.

Interviewer: And you have one other political cooperation, parameter, I see.

FN: Yes, one obvious measure is the ***degree to which political bodies support the UN and other apolitical global entities*** - such as the UN, IMF, World Bank and WTO. Current UN Total funding (Assessed and Voluntary Contributions) was USD 40 Bn in 2017 which is equivalent to 0.02% of global GDP. As this plot shows, underfunding by late payment has always been problematic.
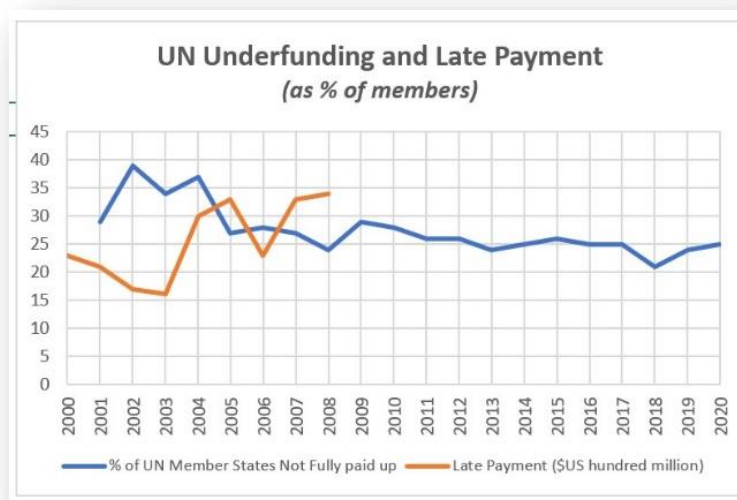

Figure 24: **UN Underfunding and Late Payment** *(Global Policy Forum Klaus Hufner, 2017)*

18

Funding as a % of each countries GDP also lags behind, causing further difficulties.
This is shown by considering the contribution to *all,* apolitical, multilateral funding agencies
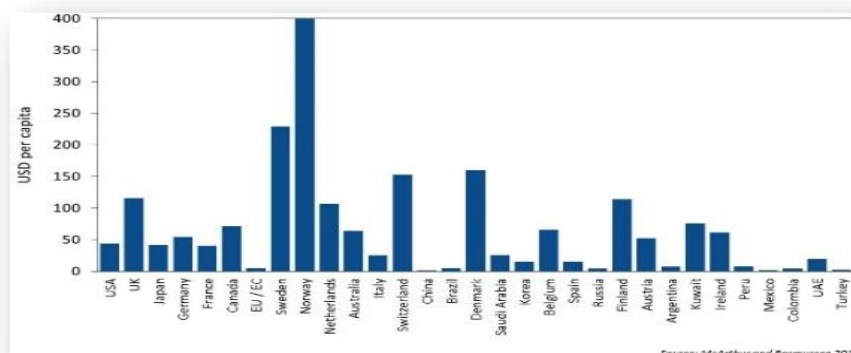per country on a per capita basis, for the period 2014-16.

Figure 25: **Funding of all global agencies per capita (USD) for 2014-16** *(McArthur and Rasmussen 2017)*

Interviewer: So funding for global agencies is not only a miniscule part of most countries GDP at present, it is also highly skewed toward Western countries.

FN: Were every country committed to contribute, say, 0.1% of their GDP to these global agencies over the next 30 thirty years, (equal to about USD 870 bn in 2019) it would provide the level of funding required to achieve the UN's 17 SDG's. The current funding is clearly inadequate and for that, China, Brazil, Russia many EU countries and India must take responsibility.

Interviewer: The final set of *Inevitable Consequences* you have labelled **SOCIAL**. That's an even vaguer category – what is the main focus?

FN: We must go back to Maslow Hierarchy of Needs – since 'Social' refers to the **peoples' welfare and well-being**. In other words, 'How does the outcome of the parameters selected to represent the Inevitable Consequence of the Global Drivers, affect each of us personally? To understand that we have imagine ourselves inside the triangle.
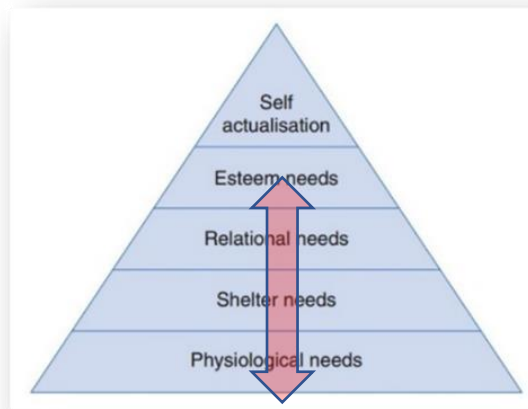
Figure 26: **Maslow's Hierarchy of Needs** *(A Theory of Human Motivation 1943)*

Interviewer: From what we've been discussing, I imagine everyone will be falling downwards.

FN: Certainly *living standards* will (and must) fall for the vast majority of people over the next thirty years—

Interviewer: Except the super wealthy!

FN: Well . . . let me rephrase that, the *quality of life* will fall for the vast majority, including the super wealthy, over the next thirty years. For many that will be difficult and demotivating although I suspect there will also be those, perhaps from younger generations who have grown up in the new paradigm, who will rise to challenge, find a new purpose in their lives and move up the triangle towards Self Achievement.

Interviewer: But not for those classified as impoverished!

FN: Of course not . . . and that sector of global society should be a great concern to everyone. As we are learning from the Covid pandemic, an open, Full-Up world, requires us to take care of those beyond our national boundaries. The same applies, even more so, to the scourge of poverty. Today, over 85% of people earn less than USD 30/day and at the far end of that statistic is ***extreme poverty*** - those with an income (based on their consuming purchase power) of less than USD1.90/day.

Interviewer: But I read somewhere that since 1990, those in extreme poverty have declined, as a result of the UN campaign to eradicate world poverty by 2030.

FN: Yes, it's a great acheivement and I don't wish to undermine it, but it is important to note that much of that gain was achieved in two Powerblocks (China and India) as this next figure shows.
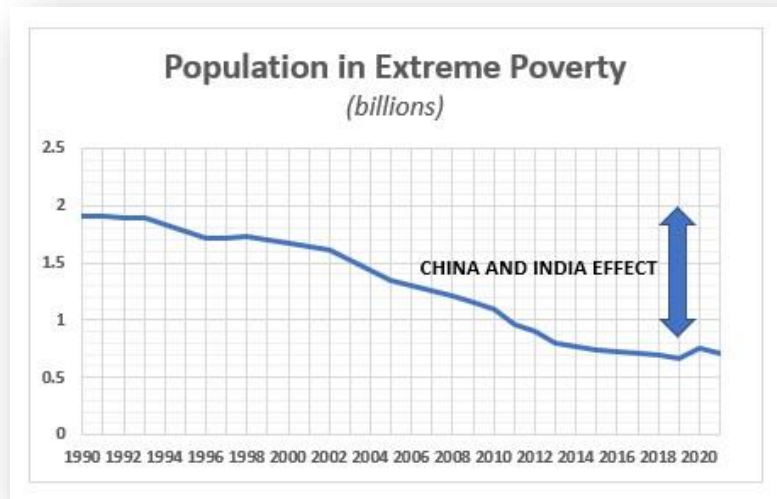
Figure 27: **People Living in Extreme Poverty** *(World Poverty Clock, OWID, World Bank 2020)*

Examining the numbers where China and India are excluded, a more worrying trend emerges, with a slight increase over the past thirty years - coming largely from sub—Saharan Africa.
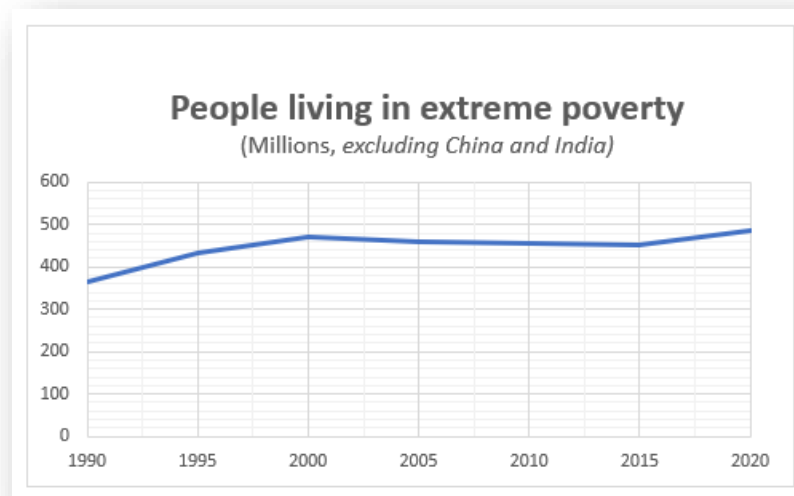

Figure 28: **People Living in Extreme Poverty excluding China and India** *(World Poverty Clock, OWID, World Bank 2020)*

Interviewer: Another *physiological need* covered under the UN's Sustainable Goals Programme, is Zero Hunger' (SDG 2). How is that being achieved?

FN: Globally, there is, again, a reason to be optimistic although, once more, in areas such as sub-Sahara Africa (including Sudan) there has been a recent reversal in this trend.
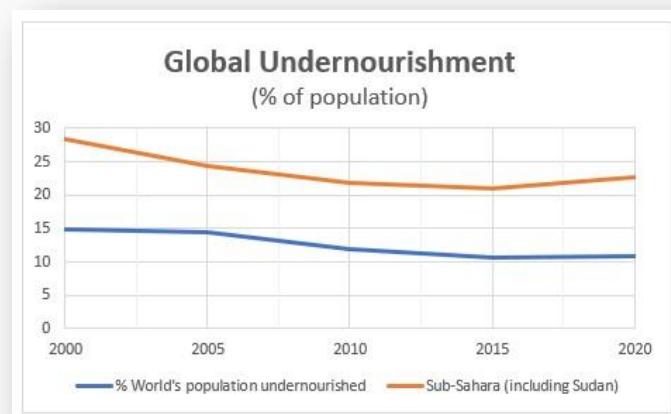
Figure 29: **People with a calorific in-take less than their basic requirements** *(FAO 2020, OWID)*

Interviewer: What about further up Maslow's Triangle – SHELTER; how is that monitored?

**FN:** Indirectly, through access to electricity - which is a widely recorded parameter with the same trend as before
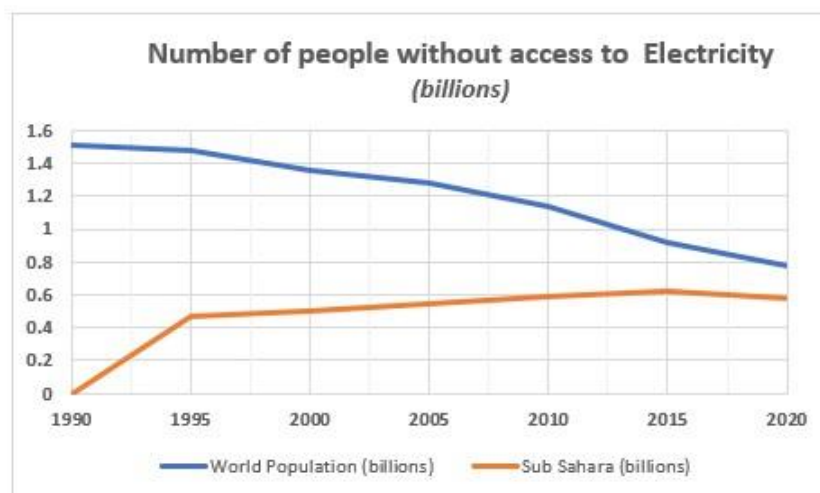
Figure 30: **People without access to Electricity** (World Bank 2020, OWID)

I should mention that, in order to keep the Model manageable, the Undernourishment and Electricity parameters while they contribute to the scenario charting, they are not included in the tracking of the 1st Version. This is partly because they are reflected (and therefore represented) in the Extreme Poverty parameter. This may change over time and so parameters like this will still be monitored and considered as candidates for Version 2.

Interviewer: What about those higher up Maslow's Triangle. How do you measure aspirational needs of RELATIONS and ESTEEM – let alone the SELF ACHIEVEMENT that you mentioned earlier.

FN: This, of course, is not the focus of the UN or other global agencies, but it is important because when the middle class, in any society, is unhappy that is when rapid change occurs - for the better or worse. Have a look at this plot that shows *'The share of people who say they are happy'*.
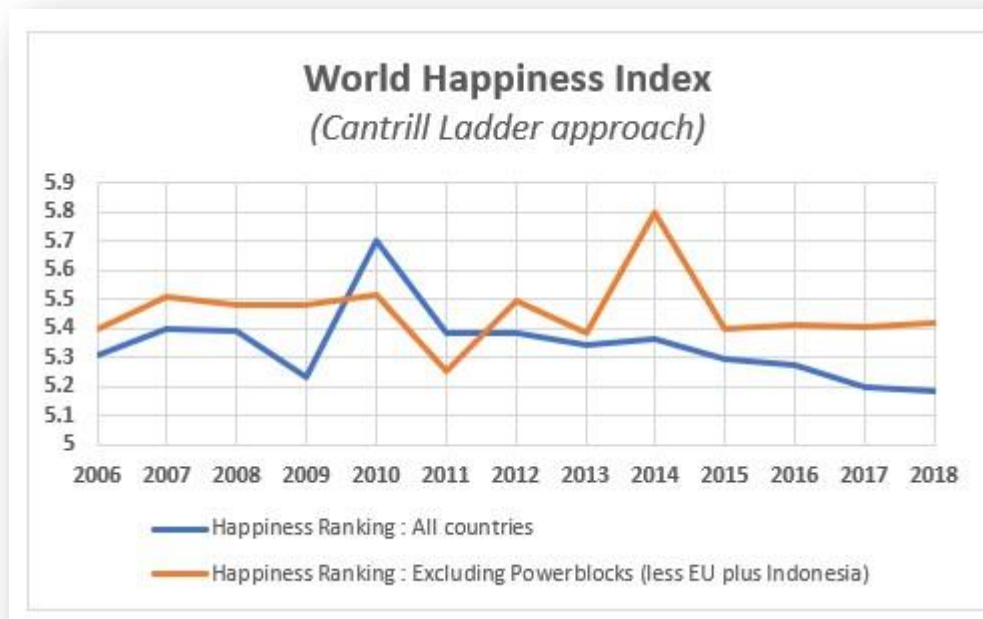
*Figure 31:* **Happiness Ranking** *(World Value Survey, 2014; Gallup World Poll; OWID plot)*

The *World Value Survey*, that regularly publishes data in three-year tranches, will provide a consistent basis for observing the global as well as regional (e.g. Powerblock) response to the evolving Segmented World. The downward trend over the past sixteen years in the 99 surveyed countries is clear, although, as you will see, when data from four of the Powerblocks is excluded, the Index rises slightly.

Interviewer: But the Powerblocks are those with the higher living standards—

FN: . . . but also with the highest expectations. This is could be seen as a measure of the *unpreparedness* of much of the affluent world for the changes that are to come.

Interviewer: But what about those severely impoverished - and the additional two billion people that the UN Median Variant predicts will be added before 2050?

FN: Well, for them, experiencing the increasing threats posed by climate change and potential fall-off in Foreign Aid – not to mention those living in Conflict Zones - there is little choice – *they have to move*. That brings us on to the last two parameters concerned with Migration. Have a look at this map.
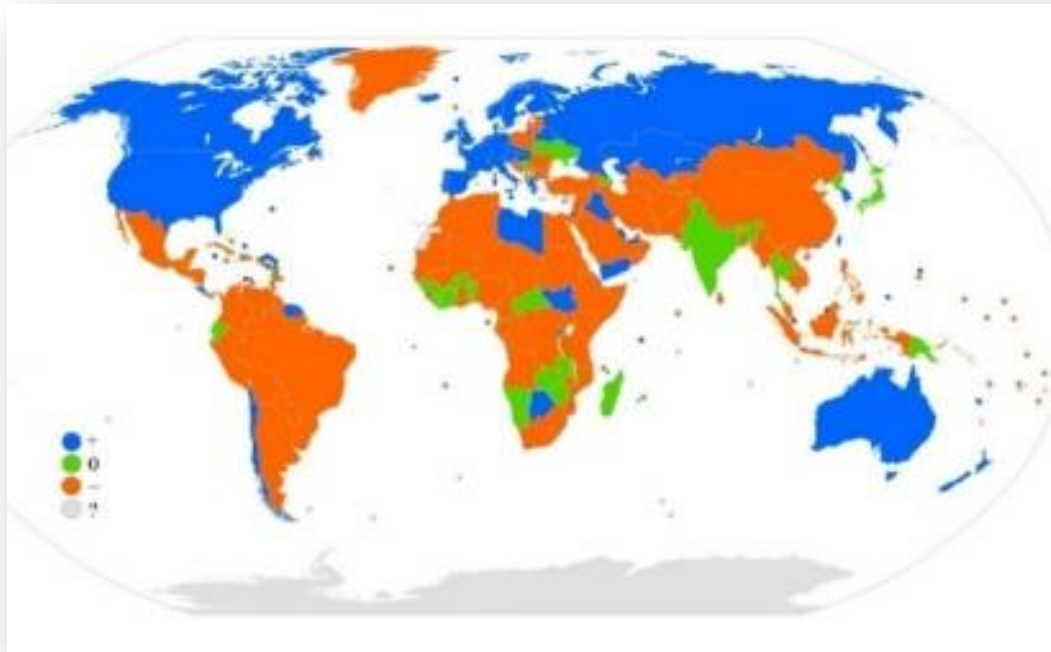
Map 2: **Net migration-in (blue) and net migration-out (orange)**. *(Wikipedia 2019)*

Mass migration is already occurring on global scale from the impoverished south to the affluent north: sub-Saharan Africans toward Europe; populations of former Soviet Union countries into Russia (and even a substantial number of Chinese into the Russian Far East) and Hispanic people moving through Mexico into the US - to name the major ones.

Interviewer: But Migration *per se* is not necessarily a bad thing.

FN: Of course! Positive net immigration softens the demographic dilemma of ageing populations in many mature countries, while remittances to the migrant's country of origin help to re-distribute wealth. Wikipedia notes that: '*Studies show that the elimination of barriers to migration would have profound effects on world GDP with gains ranging between 67 and 147 percent'. . . 'Reducing barriers to labour mobility between developing countries and developed countries would be one of the most efficient tools of poverty reduction'.* The next figure shows the level of net migration and remittance per year – and it's worth noting that the IMF recently commented that this recorded level of remittance is probably a 'gross underestimate'.
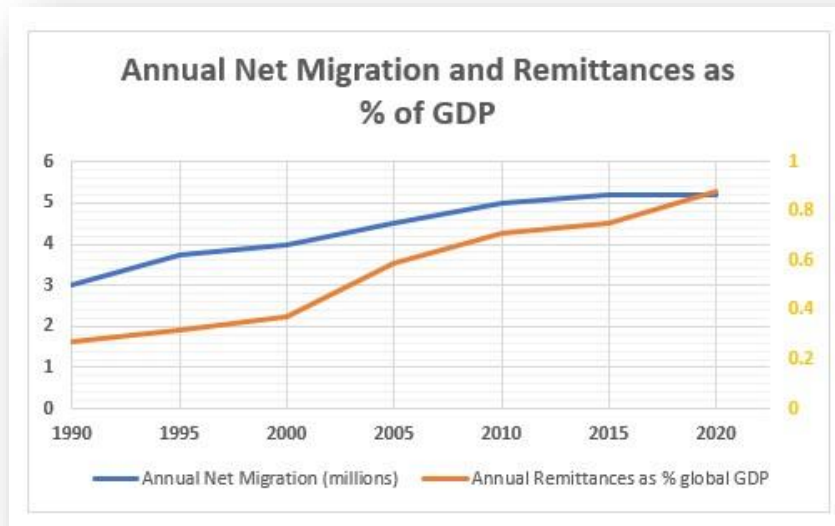
Figure 32: **Annual Net Migration and Remittances** (*UN Economic and Social Affairs 2019 International Migration Report and IMF 2020)*

Interviewer: But what about those that have no choice, who are *forced* to leave? Those displaced by conflict, natural or environmental events, chemical or nuclear accidents, let alone famine and development projects.

FN: Yes . . . and that is the focus for the 1st Version of the Model. As the next figure shows there has already been a strong upswing in the numbers being forced from their homes, year on year.
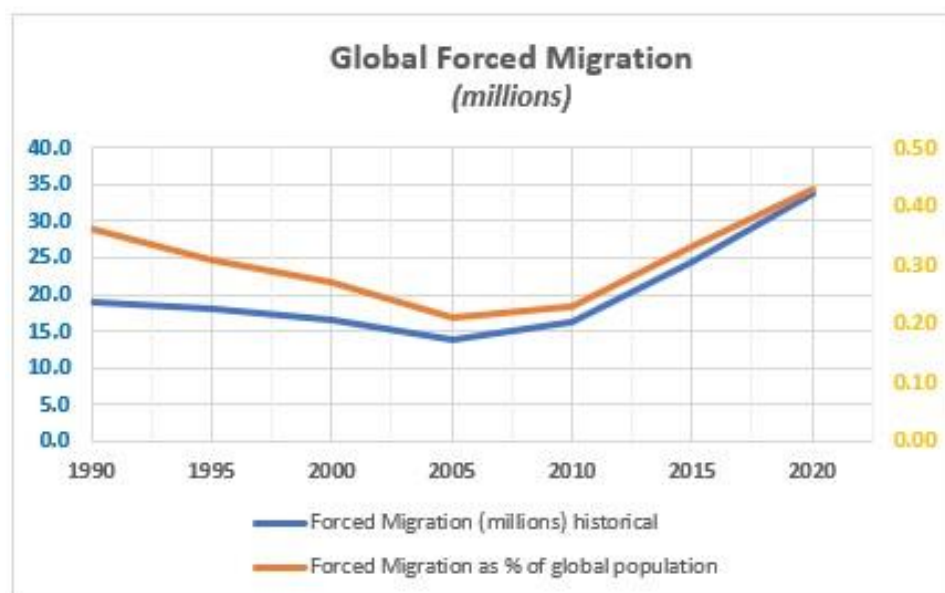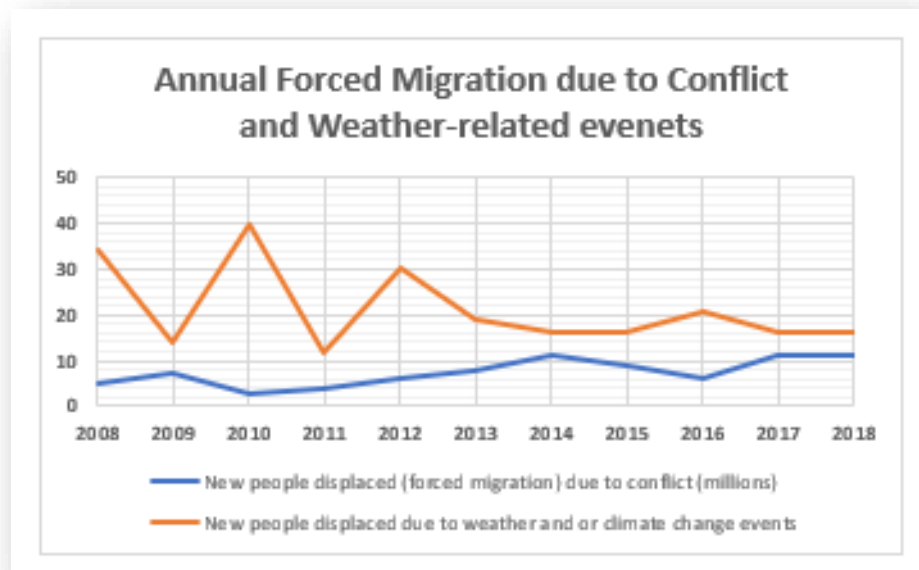

Figure 33: **Estimates for refugees and asylum seekers since 1990** (*UNHCR and UNRWA WIKI Human Migration).*

When the cause for this 'forced migration' is examined, *Conflict* and *Weather-related* are the two major contributors as shown in the figure below.

Figure 34: **Estimated annual forced migration due to Conflict and Weather-related events since 2008** *(IMO World Migration Report 2020).*

Interviewer: In Book 1 this movement expands into a worldwide-phenomena, that Methuen calls **The Resettling**. How would you measure that?

FN: Being *obliged* to move house will, I expect, be reflected in the World Value Survey *(Figure 31).* But were the scale of movement to match what is imagined in the book series, then new datasets will become available that will allow something akin to a comprehensive Global Resettling Index to be defined in the future.

Interviewer: I see you have no figures left on the table, so I assume that completes the historical status of the parameters used in Version 1 of the 'real' Model.

FN: Yes . . . now we have to move on to examine how the 'real' Model predicts the selected parameters, over the next thirty years from the four world perspectives.

But before that, how about some tea and a piece of that rather delicious looking sponge cake you bought with you!