Planning for the Future - in a world of constant change

Introduction

Understanding the future and the relevant time horizon is the starting point for any plan. Without it the plan is a waste of time. Whilst this might seem an obvious "no brainer" many government projects and city plans are based on political aspirations and a rosy future based on the most optimistic projections of business as usual, denying risks and gloomy outlooks that could sink the plan. Views that contradict this narrative are often ridiculed and labelled extreme and never included, even as worse-case scenarios.

For example, ***In his book The End of the World is Just the Beginning,*** **author and geopolitical strategist Peter Zeihan maps out the *next* world: a world where countries or regions will have no choice but to make their own goods, grow their own food, secure their own energy, fight their own battles, and do it all with populations that are both shrinking and aging.** This means a new level of self sufficiency in nearly everything in our interconnected world - how we manufacture products, how we grow food, how we keep the lights on, how we move stuff about, how we pay for it all - is about to change.

A more sobering view was proposed many years ago by one of Australia's most respected climate scientists, Prof David Karoly, who was concerned to find a town that resembled Melbourne at the end of the century. We found one he said – you travel to Perth then drive up the coast several hundred Km, then go inland a bit. The trees there are not tall – it is very hot and dry. That is what Melbourne will be like in 2200 – if we are lucky but it could be worse. In this scenario one needs to ask: how would Melbourne survive as a city? Where would the water and food come from? How many people would be supported and what kind of jobs would have value?

Whilst it is true "Melbourne had the fastest growing population of any Australian capital city for more than a decade this growth has to a large extent been the result of federal government policy which has used immigration as a tool to promote economic growth. This growth may continue in the short term but it is not a natural phenomena and its continuation is dependent on government policy and maintenance of business as usual.

History tells us that business as usual has never been a sound basis for long term city planning. It also tells us that change is a constant. Some of these changes are well documented and reflected in ABS Census data as listed below in 2011 and 2021 Census, Industry of employment.

Industry	2011 jobs	2021 jobs	Change
Video and electronic media rental	7551	162	-98%
Cigarette and tobacco product manufacturing	1685	28	-98%
Directory and mailing list publishing	3989	445	-89%
Steel pipe and tube manufacturing	3670	590	-84%
Retail commission based buying and/or selling	1601	269	-83%
Paging services, satellite station operation and telecom reselling	1469	286	-81%
Navigational measuring or scientific equipment Manufacturing	8019	1971	-75%
Reproduction and recorded media including Tapes, CD-Rom software, CDs DVDs and Video tubes	1947	501	-74%
Petrol refining and fuel manufacturing	5500	1475	-73%
Dairy produce wholesaling	3536	971	-73%

These changes have not been sudden but reflect a response to a changing technological and economic environment. Changes of this nature can and should be expected to continue but more fundamental and profound changes can also be expected. These can occur suddenly without warning, the result of wars, pandemics, social change, technological, economic, and environmental factors. These had major impacts on human communities in the past and can be expected to do so in the future although timing and impact of many of these will be difficult to predict. This has been demonstrated by the Covid pandemic which has had a significant social and economic impact, affecting many people's lives and the functioning of the city itself.

External factors like those mentioned above have occurred frequently throughout the course of human history. Technological advances created the industrial revolution which enabled human societies to exploit the planet's natural resources, facilitated increased production of food which in turn supported a growing global population. The discovery of oil became a catalyst for further technological innovation, accelerated further economic activity, including the "Green Revolution" and more population growth.

But technological advances and population growth has also resulted in overexploitation of natural resources and ecological breakdown leading to the demise and ultimate collapse of civilisations. This has occurred frequently throughout the course of human history. Some of these were triggered by a single factor, but often multiple factors were involved which became mutually reinforcing. Many were local, as in the case of the Maya in central America between 800 – 1000 AD but some were triggered by broader climate changes such as occurred during the Little Ice Age, particularly in the early part of the 14th century.

The Little Ice Age followed the Medieval Warm Period from 11th – 13th century during which time the European population almost doubled from 38.5 to 73.5 million, facilitated by the availability of more food producing land and longer growing seasons. But this changed very quickly with the onset of the Little Ice Age, starting early in the 14th century. This resulted in famines, wars, increased crime, even cannibalism and widespread break down of civil society, only to be followed by the bubonic plague which resulted in 75-200 million deaths throughout the Eurasia Mediteranean world.

Whilst the Little Ice Age had a profound impact on human societies, the climatic change that occurred during this time was small compared to environmental changes occurring today and what scientists are predicting in the future. Nevertheless, its impact was profound, particularly during the early stages of the transitory period, ie from 1315-1318 resulting in the Great Famine. It was particularly catastrophic because medieval people who had lived through centuries of favourable weather were not expecting such harsh weather and had great difficulty adapting. This should serve as a warning today because this scenario is likely to be repeated. It is of particular relevance because our climate is changing, becoming less predictable with increased frequency of extreme weather events and modern societies are poorly equipped to respond.

Despite their significance, none of the factors mentioned above and the threats they pose are reflected in our city plans today. Whilst recent city plans acknowledge the existence of environmental change and the need to create a more sustainable city, there is little, if any understanding of their potential impact on the city. Our planners talk about "sustainability" but with little understanding of what it means let alone what is required to achieve it, assuming this is possible in the first place. In short, our city planning is proceeding without any understanding of the future it needs to plan for.

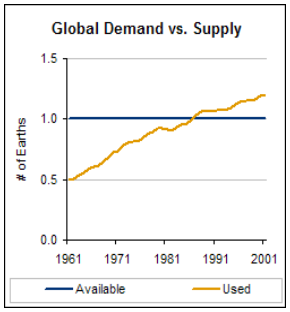
Scenarios to Plan For

It has become increasingly obvious that our rapidly changing world presents a growing list of threats of all kinds. There is increasing agreement about what many of these are, summarised in the table below.

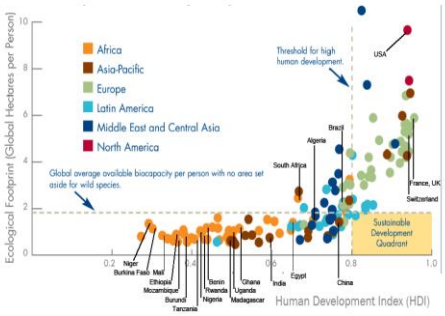
Top Ten Global Risks next ten years World Economic Forum	Top Ten Global Risks next two years World Economic Forum	Megathreats Nouriel Roubini	A banquet of consequences reloaded Satyajit Das
• Climate action failure • Extreme weather • Biodiversity loss • Social cohesion erosion • Livelihood crises • Infectious diseases • Human environmental damage • Natural resource crises • Debt crises • Geoeconomic confrontation	• Extreme weather • Livelihood crises • Climate action failure • Social cohesion erosion • Infectious diseases • Mental health deterioration • Cybersecurity failure • Debt crises • Digital inequity • Asset bubble burst	• Mega debt – the mother of all debt crises • Private and public failures • The demographic time bomb • The easy money trap and the boom-bust cycle • The coming stagflation • Currency meltdowns and financial instability • The end of globalisation • The AI threat • The new cold war • The uninhabitable planet	• Post war booms and busts • Causes of the global financial crisis and the great recession • The power and impotence of economic policies • Factors driving secular stagflation • Resource and environment constraints on growth • Globalisation in reverse • The rise and fall of emerging markets • Economic Apartheid - The impact of rising inequality on growth

It is expected all of the above will be mutually reinforcing. Whilst many triggers will be social, economic or political in nature, environmental factors will dominate and future scenarios will ultimately be determined by the way humanity lives on planet earth. The most likely scenarios are simply explained by the diagrams provided below.

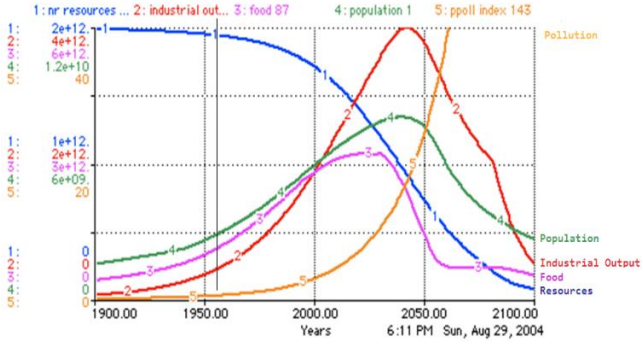
As indicated below the global footprint of the human enterprise on planet earth increased from half a planet earth in 1960 to more than 1.2 planet earths by 2000 and is now approximately 1.75. Clearly humanity is living well beyond its means and doing so by mining the planet's natural resources. This has been described as a state of "overshoot".



But that is only an average. Only the poorest countries are living within the means of planet earth.

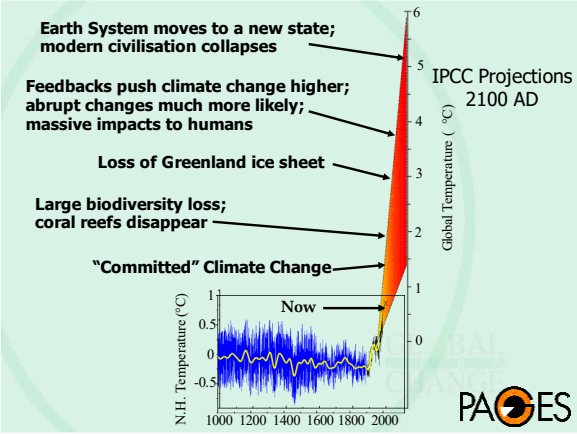


"Advanced" countries require many planet earths to maintain their lifestyles. The US requires about five and Australia is not far behind.



Limits to Growth
Projections for 1900 -2100
Source: Richard Meadows (2004) for The Club of Rome

This thinking is reflected in limits to growth projections made in the first report to the Club of Rome in 1972. Based on the "standard run" or business as usual, the global population will peak before 2050 and rapidly decline to less than a third within about fifty years. According to the Potsdam Institute for Climate Impact Research in Germany, that figure could be much less and the peak may occur earlier. Limits to Growth projections do not include the impact of climate change, the projections of which are shown below and make the planet increasingly less habitable and support fewer people.



Source: Prof Will Steffen,
Sustainable Cities Sustainable Transport Forum 2009
Note – the global temperature has increased since to more than 1.1degree – almost 1.2 degrees

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Current predictions indicate the prospect of limiting global warming to 1.5 or even 2 degrees is no longer achievable and there is only a 50% chance of limiting it to 3 degrees. But warming of 3 degrees is only a global average. For large land masses like Australia this will result in higher temperatures - approximately 4 degrees resulting in conditions that will be almost unliveable. Even a 2 degree warming will be problematic for growing food, but this will be accompanied by increased variability and unpredictability.

Whilst population growth may continue in the very short term, under the business as usual scenario, it will quickly dissipate, stall and become negative. Responding to this challenge will require a very different mindset to the one that exists today. Key issues that will become increasingly critical for all cities in the future will not be economic growth or even living standards but some of the fundamental factors we take for granted such as

- liveability
- The capacity to provide residents with food, water and essential services
- resilience and capacity to maintain social and community cohesion and
- capacity to provide leadership and sound governance to achieve these goals in the face of increasing stress.

The ability to maintain the above will be challenged by megathreats listed above.

Despite these risks, they are largely ignored at a government level. There is

1. No action on our footprint and the need to live within the limits of planet earth - in fact the global population is still growing and has just reached 8 billion
2. No acknowledgement of the finite resources of this planet and limits to growth. As far as Australian governments at all levels are concerned, one of their key objectives is to promote economic growth and use population growth as a tool to achieve it. The Victorian government is still planning for a population of 8 million for Melbourne
3. No targets to restore the biosphere, reduce pollution, environmental degradation and species loss and the situation is getting worse.

The only targets the federal government has set are for emission reductions but

- Targets are grossly underwhelming even below what many countries are seeking to achieve and these are not being met anyway[1]
- Mechanisms for achieving this are dubious, largely technology based, and ignore the need for behavioural change
- However many targets will become binding, supported by legislation, trade agreements and legal frameworks [2]

[1] Global carbon emissions from fossil fuels will reach a record high this year after the COVID-19 pandemic, with no sign of deep reductions urgently needed to tackle global heating.
Preliminary data for 2022 shows a slight increase – about 1 per cent – in carbon emissions from fossil fuels relative to 2021, according to the Global Carbon Project, a network of dozens of researchers around the world that has tracked carbon emissions for 16 years. This increase was primarily driven by the growth in oil consumption from the return of aviation following the COVID-19 lockdowns.

[2] Environmental laws are being passed which are designed to improve energy efficiency. The case against Royal Dutch Shell in the Dutch court is an example of legal and trade levers used for this purpose. Some have legislated the phasing out of new fossil fuel vehicles, increasing production of EV's. Some countries have imposed restrictions on airline flights within

Australia's commitment of a 43% reduction in greenhouse emissions by 2030 and 100% by 2050 is woefully inadequate. But even achieving such a modest and underwhelming target will be a challenge. Some of the barriers that need to be overcome include

- distractions such as wars, more pandemics, financial crises or extreme weather events
- political issues – ideology/resisting vested interests with political influence, even corruption
- unforeseen or underestimated environmental, social/economic costs
- greenwash and overstated claims by industry[3] and technology failures, particularly for technology such as battery and hydrogen powered plant and machinery including motor vehicles
- unaffordability/market failure (inability of markets to supply, finance), particularly during hard times/recession etc, or for poor countries/communities which lack the ability to use it in the first place
- shortages for supply of critical materials, componentry, products[4]
    - due to market disruptions
    - disruption of supply chains
    - power shortages and the absence of a strategy to manage the transition away from the fossil fuel based economy, particularly oil which underpins all modern societies today to a zero emission economy.

With respect to carbon capture, impacts for mechanical capture whilst scientifically proven will not be achieved at scale and must be discounted. Carbon sequestration by regenerative agriculture, reforestation and so on is achievable and critical but there are many barriers to overcome. These are political, economic, social even cultural in nature and are unlikely to compensate for huge losses of carbon sinks caused by deforestation – particularly in the Amazon basin, bushfires, increasing methane emissions from permafrost etc, the impact of extreme weather events and loss of biodiversity required to re-establish natural carbon sinks and die off caused by global warming and climate change.

The need for a transition plan away from fossil fuels which underpins the global economy is critical, but there is no evidence of a proper plan. [5] It is easy to forget the extent to which fossil fuels

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Europe.

[3] There is much talk about renewable energy and how Australia will become the energy powerhouse of the world, but all sources of energy require energy to harness the source. Solar, wind, hydro, hydrogen, battery power all require energy. Whilst further improvements in energy efficiency are possible none will achieve zero. In the case of battery powered vehicles, energy is required to mine the ores, process and transport, manufacture, maintain and recycle as well as operate during its economic life. The calculations must include energy required to construct, operate and maintain supporting infrastructure such as roads and rail tracks. The planet does not care where emissions come from – it simply reacts to the build- up. Providing an alternative energy source ie transitioning from fossil fuels to renewable sources will backfire if it enables societies to continue with business as usual and not address the environmental imperative to reduce humanity's demands on the planet- our footprint and the conditions that supports life on this planet.

[4] Global supply chains are already tight and becoming more concentrated. Increased tension and the possibility of war between US and China (which dominates the renewable energy industry) increases the risks of massive disruption and market failure.

[5] Without it there is the risk of

- social and political push back, loss of credibility and support for environment programs more generally, may result in program modifications which severely reduce their impact or abandonment either temporarily or permanently. For example reinstatement of coal power stations in response to severe power shortages in the EU today instead of accelerating the process of decarbonisation

underpin the global economy. Almost all jobs depend, directly or indirectly on fossil fuels, but there is no discussion let alone a plan for how this transition will be achieved. The number of sunset industries that will not survive this transition will escalate quickly. Some like the airline industry will fail to meet the emission reduction targets and ultimately die together with industries that rely on it including service industries, tourism, and many others. Some will die because their business becomes uninsurable, or will be unable to take on the financial risks. The list is endless.

Our global financial system will come under increasing stress and ultimately fail, unable to cope with huge debt, and defaults in an age of declining fortunes. Where will the profitable industries be at a time of increasing financial stress?

In an age of increasing stress and decline, political impacts will be profound

- governments will struggle to finance essential goods and services
- societies will struggle to pay the cost of the transition, including new taxes or meet legislated changes which destroy their livelihoods – such as taxes on burping livestock (in the Netherlands and New Zealand)
- social and economic implications for jobs will be profound and the need to find new ones to replace the growing number of lost jobs will place enormous pressure on society and politicians that represent them
- Increasing stress on government and institutions that underpin civil society - will these survive? And if not what kind of outcome is likely?

Implications at a city level for the shorter term may include

- increasing shortages of everything – particularly food and water, even critical elements required for technology-based actions (rare earths and metals etc)
- major transformation in the way the city operates, but what jobs will have value and where will they be located?
- restrictions on government's capacity to build and maintain essential infrastructure and supply of essential goods and services: many services and business activities that use it will disappear and much of the existing infrastructure will cease to have value and become stranded assets (such as freeways), abandoned, reclaimed and repurposed
- increasing social, economic and political stress and death rates from famine, disease, heat stress, conflicts of different kinds etc even at a local level.

Under this scenario decline in economic and population terms becomes inevitable.

In summary an adaption strategy based on continuation of business as usual is untenable. It must be based on degrowth and social and economic decline. If humanity does not adapt accordingly the planet will force it to do so, but this will require a very different mindset and approach to city planning. Key actions in an adaption strategy must include

- Reduce the human footprint on this planet, by consuming less of everything
- Reduce and reverse habitat destruction
- Reduce and clean up pollution of all kinds
- Stop species loss

- poorly thought-out or ill-conceived programs/proposals which result in disastrous social and economic outcomes but may yield suboptimal environmental benefits, or even perverse outcomes.

- Plan for population and economic decline, accepting the reality that such a plan will not be a one off but one that requires constant adjustment.

Most politicians and business leaders can be expected to reject scenarios presented above, in the belief that reducing greenhouse emissions and other addressing other environmental imperatives can be achieved whilst maintaining much of business as usual and by use of technology. This argument is flawed and not supported by the history of failures and collapses of many civilisations that have occurred throughout the course of human history.

Dr Graham Turner summed up the situation in his presentation at the Sustainable Cities Sustainable Transport Forum in 2009 below. Quoting Jared Diamond from his book ***Collapse – How Societies choose to Fail or Survive***, he listed five key choices as follows:

1. failure to ***anticipate*** a problem -no previous experience, no science
2. failure to ***perceive*** a problem in progress- no measurements, too complex to observe
3. failure to attempt a solution (rational, ***bad behaviour***)- rational for vested interests to maintain their dominance
4. failure to change ***bad values -*** irrational behaviour, societal values entrenched
5. failure to change ***other irrational behaviour-psychological denial***

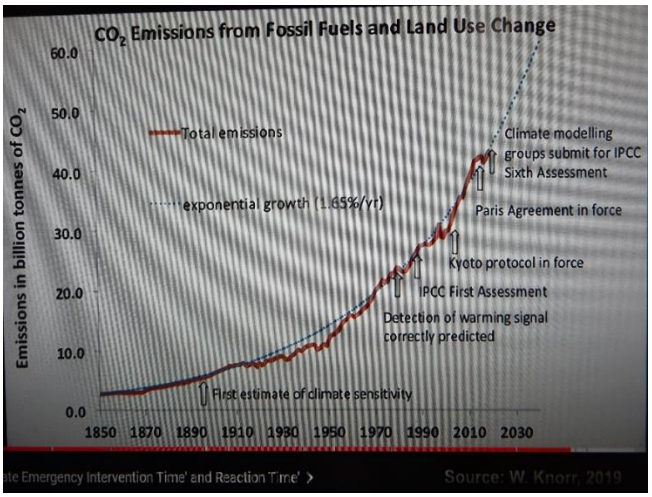
Turner added a sixth cause

6. failure of solution, technically not possible

and concluded with the following comments:

- There are success stories of avoiding collapse, but very few within isolated systems
- There is a very common recourse to using technology, rather than changing behaviour
- It appears that we (modern society) have progressed SLOWLY along the road map toward addressing our global problems
- But we now appear to be potentially in the last stage:
- solution unlikely.

Despite numerous warnings over many decades about the need to reduce the environmental impact of human activity on this planet and repeated warnings about the need to reduce greenhouse emissions (as well as pollution, environmental degradation, habitat and species loss) emissions continue to rise exponentially at the rate of 1.65%/year.



It is a reminder of how difficult it is to engineer and manage system change and overcome powerful forces that resist it. The human agenda continues to be driven by vested interests that ignore the advice of scientists, arguing that emission reductions can be achieved using technology in a way that will enable societies to continue with business as usual. There is no sign of this mindset changing. The profound changes required to limit global warming to 3 degrees (equivalent to 4 degrees for Australia which would render it unliveable) will not be achieved. However the pretence that societies can continue to live a sustainable existence is over and communities throughout the world will have no choice but to adapt to an environment of declining fortunes that may never end.

The evidence for this is already clear. Large numbers of refugees are fleeing homelands that can no longer support them and have no future; homelands that have been reduced to a state of anarchy by war and disorder. In the past it was possible to move and settle elsewhere but today that option is rapidly disappearing. This concern will soon apply to our city and regional towns and if these fail where can people go? The imperative is to address liveability issues and maintain essential goods and services including food as a matter of urgency to avoid the same fate.

It is argued that however grim the future looks, a plan must be prepared that provides our city with the best chance to survive. There is no guarantee the revised city plan will deliver this but it recognises the fundamentals that must be employed to do so. Designing and implementing it will require a radical change in thinking and the mindset, aspirations, values that underpin it and inspired leadership to implement it but it must be based on a realistic assessment of the future that must be planned for.