

Beyond Denial

Managing the Uncertainties of Global Change



Jorgen Randers. *"The lack of a dedicated and forceful human response to climate change in the first half of the 21st century will put the world on a dangerous track towards self reinforcing global warming in the second half."*



Paul Gilding. *"Can we afford to save civilization or would we rather keep the energy costs down while we hurtle off the cliff into collapse?"*

Report of a conversation among experts November 2012
Editor: Bob Douglas

“The short-term focus of capitalism and democracy will ensure that the wise decisions needed for well-being will not be made in time”.

“Please make my forecast wrong. Together we could create a much better world.”

Jorgen Randers "2052".

Short title for media purposes: "Beyond Denial"
Citation "Beyond Denial: Managing the Uncertainties of Global Change"
Ed RM Douglas Australia21 2012
Australia 21 Limited

ABN 25 096 242 410
ACN 096 242 410
PO Box 3244, Western, ACT 26 11
Phone 02 6288 0823.
Email: office@Australia 21.org.au
Web: www.australia21.org.au
ISBN 978-0-9873991-2-0
Published November 2012

Beyond Denial: Managing the Uncertainties of Global Change

Report of a conversation among experts, Canberra November 5th 2012

Editor: Bob Douglas

Contents

Foreword	4
Preface	5
Executive summary	6
Background to the Roundtable.....	8
“The Limits to Growth” and “2052” – a brief summary of the conclusions of Jorgen Randers’ recent book	8
“The great disruption”: a brief overview of Paul Gilding's recent book.....	10
Comments by expert participants in the Roundtable.....	11
Suggestions for action offered by Jorgen Randers	15
Comment by Paul Gilding.....	16
Points made by participants in the concluding session	16
Closing comment Jorgen Randers.....	20
Closing comment Paul Gilding,	20
Conclusions	20
Recommendations for action.	21
References.....	21

Foreword

Australia 21 is a not-for-profit company, which was established in 2001 to develop new frameworks for understanding complex multidisciplinary problems that are important to Australia's future.

During the past 12 years we have explored a range of issues relating to climate change, sustainability and Australia's ecosystems and have paid particular attention to the issue of resilience and national preparedness for coming shocks.

In this context, we took advantage of the visit to Canberra of Prof. Jorgen Randers and Paul Gilding, and with assistance The Robert Purves Foundation, brought together at short notice, a group of senior, mainly Canberra-based Australian experts, to discuss with our visitors, limits to growth as they could impact on Australia in coming decades.

The brief roundtable conversation has generated some conclusions, which we think are of public importance. We hope it will stimulate activities that will place the management of uncertainties about global change squarely on the national agenda.

Paul Barratt AO
Chair Australia21

Preface

In 1972, the Club of Rome issued a report entitled "The Limits to Growth," which warned of the possibility of collapse of human civilization if humans continue to expand both in their numbers and the demands they make on natural systems and resources. This warning has been repeated by scientists across the world and has been given new force by the accumulating evidence relating to anthropogenic climate change.

The warnings were shrugged off by many commentators, who argued that the innovative capacity of humans to overcome resource scarcity knew no bounds. Debate continues in the economics profession, about how these issues should be dealt with in development of public and economic policy.

Jorgen Randers, a Norwegian who was a co-author of "Limits to Growth" has continued to work on these issues for the past 40 years and his new book "2052" is based on further computer modelling and on his personal experience in seeking to have limits to growth built into public policy, not only in his own country, but internationally.

Several of the fourteen invited participants in the roundtable discussion are engaged in Australian research and policy development on these matters. They are not identified here as the discussions were held under the Chatham House rule to facilitate full and frank exchange of comments about the sensitive issues that were raised by the visitors.

The group expressed their concern that these matters are not receiving sufficient public consideration and that our leaders appear content to ignore them as long as they do not impact on the next election result. There was also firm support in the group for undertaking the actions suggested by Prof. Randers on risk analysis and to bring a constructive alternative narrative about managing future risks to public attention.

Em Prof Bob Douglas AO
Director Australia21 and Roundtable Chair

Executive summary

How soon and how seriously will the combination of climate change and continuing growth of population and the economy disrupt Australian wellbeing? Australia21 used a recent visit to Canberra by futurists, Professor Jorgen Randers and Paul Gilding to bring together 14 Australian experts to discuss this issue with them.

Randers, one of the authors of the 1972 Club of Rome “Limits to Growth” report, in his recent book, “2052” has concluded that humanity has a 40 year window to avoid the most serious negative consequences of its decades long growth and consumption binge. But he does not think that humans will rise soon enough above their current denial of the seriousness of what is happening and that the world will experience a progressive grinding down of human wellbeing and increasing starvation. He anticipates that human efforts to constrain greenhouse emissions will be inadequate and that there is a significant likelihood of runaway global heating in the latter part of the twenty first century. His predictions are based on what has happened in the past forty years and his experience that democratic capitalism places enormous impediments in the way of a change from “business as usual.”

Paul Gilding, the author of “The Great Disruption,” on the other hand argues that rather than a steady decline, the human world will, in the next one or two decades, experience shocks of such magnitude arising from our disordered economic system, climate change and peak oil, that they will call forth an emergency crisis response that will enable us to harness human ingenuity to craft a genuinely sustainable future for those humans who survive the shocks.

Both authors are convinced that humans could profoundly ameliorate the greenhouse threat at a very modest economic cost but Randers and many others have grave doubts that global human governance is capable of meeting the challenge.

In the audio-taped conversation, which followed brief presentations by the two authors, there was agreement in the group of experts, that on its present trajectory, the human species is heading for deep and perhaps early trouble. They also agreed that Australian political and governance systems are currently operating in the full expectation that modest incremental changes to the “business as usual” model still offers the prospect of endless enhancement of human wellbeing for a population that will continue to grow and prosper.

Nowhere in the official records of Australian government expectations is there serious recognition of the threats that the destruction of planetary systems is bringing to bear on this Australian dream. The group agreed with their guests that substantial early shocks are possible or even probable, arising from a combination of the destruction of arable land and rising food prices, the peaking of oil production, extreme weather events and bushfires and the international consequences of human conflict over depleting resources. The perpetuation and accentuation of domestic and global inequity were seen as an added risk to affluent countries like our own.

Most participants agreed that Australia could rapidly wean itself off its fossil fuel dependency at modest economic and social cost and that substantial benefits could flow from early commitment to this path. But this scenario is not being seriously considered by those who control the levers of national policy. There was discussion about the capacity of modern

macroeconomic thinking to adapt to these kinds of challenges and a recognition that economic methodologists are slowly adjusting to these new realities.

Concern was expressed at current low reserves of petroleum and the long supply line, which will place Australia in a particularly vulnerable position as easy oil access declines. Climate change will also exacerbate the declining quality of Australian arable land and inhibit our food production capacity.

The group agreed with Randers that Australia should embark on a systematic effort to identify the five most serious threats to the wellbeing of the Australian population in the coming decade and put in place well rehearsed plans for their mitigation. To enable this to happen social scientists, educators and psychologists must be enlisted to assist the Australian population to overcome our natural protective denial of these unwanted futures and contemplate the transition to a positive new eco-centric future.

The group also agreed that a new national narrative is required that can help to enhance community understanding of the nature of these risks and build momentum for transformative change in Australian expectations and preparedness. This narrative should assist in building resilience to the most likely shocks in the near term. It should be pitched around opportunity, competitive advantage, exciting new industries, interesting new jobs, regional growth, better homes and transport, healthier diets, happier lives – all things that people actually want.

Background to the Roundtable.

In early November 2012, Australia21 invited a group of 14 senior Australian experts in climate policy, public health, economics, security, food policy, energy, sustainability and strategic planning, to meet for a two-hour discussion about prospects for global change in the context of continuing population and economic growth. The meeting followed a public seminar by Professor Jorgen Randers of Norway, a member of the Club of Rome and Mr Paul Gilding an Australian consultant in sustainability and a fellow member with Randers of the global faculty of The University of Cambridge's Program for Sustainability Leadership.

Randers and Gilding have each recently published important books about the future and both argue that an early comprehensive approach to greenhouse emissions is essential if human catastrophe is to be avoided. Together, Randers and Gilding have written for the Journal of Global Responsibility, a paper entitled "The One Degree War Plan", which paints a picture of how the world could respond, if it chose to eliminate CO2 emission from the global economy in 20 years and thus avoid catastrophic climate outcomes.

The two authors differ in their expectations about the next four decades. Gilding agrees with Randers about the underpinning drivers of change, but believes that rather than the steady decline over the next four decades predicted by Randers, the world will, in the next decade, end its current denial and embark on an emergency or crisis response to the inter-linked issues of human induced climate change and fossil fuel dependency.

The discussion was held under the Chatham House rule. A transcript of the discussion was prepared but did not identify who said what in the conversation so as to facilitate a free and frank exchange of reactions to these sobering future possibilities by Australians in senior positions of responsibility across a range of research and public policy fields.

"The Limits to Growth" and "2052" – a brief summary of the conclusions of Jorgen Randers' recent book

Jorgen Randers was a co-author of the original "Limits to Growth" study by the Club of Rome in 1972, which addressed the grand question of how humanity would adapt to the physical limitations of planet Earth. The 1972 report had presented the following projections about the time period that we have now entered:

- During the first half of the 21st century the ongoing growth in the human ecological footprint would stop.
- Humanity's resource use and environmental impact would be brought down to levels that can be sustained in the long run.
- These milestones would come to pass in one of many ways – for example through catastrophic "overshoot and collapse" or through well-managed, "peak and decline".

In his recent book, "2052" Randers offers his status report after 40 years and his forecast for the next forty years. In a nutshell this is what he anticipates will happen:

- Over the next 40 years, efforts to limit the ecological footprint will continue.
- Future growth in global population and GDP will be constrained not only by this effort but also by reduced fertility as a result of urbanisation, productivity decline as a result of social unrest and continuing poverty among the poorest 2 billion world citizens.
- There will be impressive advances in resource efficiency and climate friendly solutions.
- And a shift in focus toward human well-being rather than per capita income growth.
- But the human response will be too slow. The most critical factor will be greenhouse gas emissions from human activities, which will remain so high that our grandchildren most likely will have to live with self-reinforcing and hence runaway, global warming in the second half of the 21st century.
- The global population will stagnate earlier than expected because fertility will fall dramatically in the increasingly urbanized population. Population will peak at 8.1 billion people just after 2040 and then decline.
- The global GDP will grow more slowly than expected because of the low population growth and declining growth rates in gross labor productivity. Global GDP will reach 2.2 times current levels around 2050.
- Productivity growth will be slower than in the past because economies are maturing, because of increased social strife and because of negative interference from extreme weather.
- The growth rate in global consumption will slow because a greater share of GDP will have to be allocated to investment – in order to solve the problems created by resource depletion, pollution, climate change, biodiversity loss and inequity. Global consumption of goods and services will peak in 2045.
- As a consequence of increased social investment in the decades ahead (albeit often involuntary and in reaction to crisis), resource and climate problems will not become catastrophic before 2052. But there will be much unnecessary suffering from unabated climate damage around the middle of the century.
- The lack of a dedicated and forceful human response in the first half of the 21st century will put the world on a dangerous track toward self-reinforcing global warming in the second half of the century.
- Slow growth in per capita consumption in much of the world (and stagnation in the rich world) will lead to increased social tension and conflict, which will further reduce early productivity growth.
- The short-term focus of capitalism and democracy will ensure that the wise decisions needed for long-term well-being will not be made in time.
- The global population will be increasingly urban and unwilling to protect nature for its own sake. Biodiversity will suffer.
- The impact will differ among the five regions analyzed in the book – the United States ; the other OECD nations including Japan and Canada and most other industrialized

nations; China; BRISE (Brazil, Russia, India, South Africa and 10 other big emerging economies); and the rest of the world which includes the 2.1 billion people at the bottom of the income ladder.

- The most surprising loser will be the current global economic elite, particularly the United States (which will experience stagnant per capita consumption for the next generation). China will be the winner. BRISE will make progress and the rest of the world will remain poor. All – and particularly the poor – will live in an increasingly disorderly and climate damaged world.
- The world in 2052 will certainly not be uniform or flat – the sentiment and conditions in the five regions will differ dramatically.

“The great disruption”: a brief overview of Paul Gilding's recent book

Paul Gilding was the CEO of Greenpeace International before working as a sustainability consultant to the CEO's of a number of the largest and most successful businesses in the world.

He argues that economic growth has no future in a world that is already overstretched beyond its capacity to replenish resources. He believes we are approaching a period of massive instability, precipitated by climate change, but resulting from the combination of human population and economic growth. We are now facing limits imposed by physics, chemistry and biology, because the Earth is now full. Despite human brilliance at technological innovation, our current naïve faith in economic growth as a solution to our difficulties will inevitably fail us and we will hit the wall, probably quite soon.

The problem is not only climate change but also the massive destruction of the ecosystems on which our lives and livelihoods depend. Gilding has no doubt that we can get through the serious crises and disruption that now lie in wait for humanity. Indeed he finds the challenge positively exhilarating. He argues that the great disruption will bring out the very best of human innovation, compassion and community spirit, although we cannot now avoid chaos and misery for millions and perhaps billions during the transition period.

He says that a successful outcome requires that we will reinvent the human economy. When the world finally accepts the seriousness and inevitability of our predicament, we will respond by unleashing massive ingenuity and capacity to adapt. “Our species is slow but not stupid,” he says. We will be forced to change from shopping and overwork to sharing and enjoying our leisure time, our communities and our relationships. Because we must, we will share the world's resources with those who are in poverty. And we will all enjoy life more. Continuation of the current consumerist culture now does little for human wellbeing in developed countries like Australia and has huge crippling costs.

Gilding uses the rapid transformation that occurred as the Allied Powers responded to Hitler's invasion of Poland and the Japanese attack on Pearl Harbour, as evidence of the capacity of human societies to transform and lift themselves to new heights of capacity, communal understanding and support at stunningly short notice. In that situation, as with the one that now faces us, human societies were very slow to act, but once committed, the results were extraordinary.

The climate crisis is only one of a series of interconnected challenges, which now face humanity as we contemplate a possible population of 9 billion people by 2050. Food insecurity, water availability, heating of the planet and the destruction of ecosystems are all associated with our pathological addiction to economic growth. Furthermore, he says, it is economic growth that has contributed to growing inequity in the distribution of resources even though it has also lifted millions out of poverty.

Gilding has great respect for the market and also for the role which economic growth has played in the past. But economic growth is over and the market will only serve society if it is regulated to do so. The problem is, we have now passed the planet's limits to growth. We must rethink the human strategy. Inevitably, he says, the dam of denial that it is holding up global action on anthropogenic global warming will collapse and we will act rapidly and with great ingenuity and effect. The sooner the tipping point arrives that will unite the world around the seriousness and mitigation of the gathering storm, the better.

But while we wait for that to happen, millions of people and groups around the world are preparing the building blocks for a new stable state economy that will replace our growth addiction. For a while, the growth addicts will continue to use the growth model to tackle climate change and fight what the author describes as “the 1° war”. This is the requirement that we reduce the world’s carbon emissions budget to one that is compatible with no more than a 1° rise in planetary temperature above preindustrial levels. Currently, we are heading for at least 2° and possibly much more, which would be catastrophic.

This is an optimistic book. Gilding shares with the reader his personal journey to these conclusions and the anxieties and uncertainties he has experienced along the way. He also anticipates and deals with many counterarguments to his optimism. He says that the challenge is not only for big business and government, but especially for ordinary people everywhere. Together we must take charge of the restructuring of society and the economy in ways that serve both humanity and our precious environment.

Comments by expert participants in the Roundtable.

The Roundtable provided an opportunity for participants to register the following responses to the issues raised by the two visitors.

- From my perspective as a climate scientist, resource constraints are not as tight as constraints in getting rid of the effluents of human activities; carbon dioxide being at the top of the list. We are tending to understate the severity and implications of climate change in many places. For those who communicate these issues there is a real tightrope to walk between on the one hand understating those estimates in order to provide some hope and on the other hand overstating them in an effort to scare people. My perception is that scaring people is not working. Nevertheless we are on the whole understating the estimates of climate change and its implications. Socially there is a huge issue relating to rising inequity. Inertia remains a huge problem because we need to be taking action 20 years before the problems become catastrophic.
- Food security is a major threat to world security in the near future. There have been three food crises in the past four years. 60% of all the wars fought in the past 25 years have food, land or water at their root. A great deal of migration is a consequence of people getting out from potentially troubled areas or fleeing from already troubled areas. Massive migration will be a consequence of larger and larger food shocks that we will see in the not

too distant future. People will experience climate change first and foremost in the price they will pay for food and in the availability of certain kinds of food.

- Satellite photography reveals that we lost 1% of the world's farming area in each of the last 24 years to 2010. It is estimated that we are losing between 75 and 100 billion tons of soil per year. There are likely to be quite serious shocks resulting from these and other losses in the near future. Food has not been the problem that was earlier predicted for it in the past three decades but it will be a major determinant of crises in coming decades.
- Deforestation is continuing as a major threat in countries in our region. Patronage, corruption, the poor rule of law and efforts to embed democracy in the process of environmental protection is a major difficulty for several countries in our region.
- Denial of the reality of climate change is on the ascendancy in Australia. It is a more serious problem here than in Europe at present. There is a tendency to believe that science, technology and innovation can meet all of the challenges we are facing and that the economic system and market forces will prevent catastrophic change.
- Eighty percent of the food that is eaten in the world today is grown in the country where it is eaten. There is need to strengthen farming capabilities of people in developing countries.
- We need to be asking where technology will lead us in the future. With movements such as the occupy Wall Street movement it seems likely that technology will facilitate social movements and will generate new business models where government, business and the community can work together to develop solutions.
- There is a serious possibility of an intensified "fortress world". We need to be aware of the distinct possibility of nuclear war, beginning in South Asia or the Middle East.
- The economic costs of a decisive response to climate change are not huge. Part of the problem is that it requires a collective solution. It seems that many climate denialists are motivated by fear of collective action. We could imagine a world where it becomes increasingly clear that we must act on climate change and that we will then commit to a collective solution.
- The reason Michael Bloomberg, mayor of New York gave for his firm endorsement of Barack Obama in the recent presidential elections was that he thinks that the evidence is accumulating that serious climate events like Sandy are being driven by greenhouse effects. The thing that he thought distinguished Obama from Romney was his likely response to climate change.
- Our own minority democratic government has put in place a collective solution to climate change. While it is not sufficient, it is certainly something and in the process of making that decision the government did itself political damage. Capitalist democracies do sometimes come to difficult collective decisions.
- While climate change is going to be an ongoing and long-term challenge to the economy and society, it is the constraints in easy oil that will be the key issue. Recent Australian work, which updated data comparisons with the original "Limits to Growth," show continuing alignment with the "business as usual" scenario that results in turnover or collapse within years or at most decades. Resources are being drawn away from various

sectors of the economy in order to access more difficult to obtain resources. We are getting into a catch 22 situation and things could just fall away. This is despite the application of new technologies. We need action at both the technological and the social interface. There seems a very real chance that we have left orderly change too late. It is the rate of change that lies at the heart of the problem and there is an argument for preparing the lifeboats.

- We are in the position where biophysical limits have been exceeded for some time. On the climate change front we have badly underestimated its impact in a risk management sense. We are now seeing non-linear impacts, with several safety borders having already been crossed in various parts of the world. Unless we actively do something about it now those changes are going to get locked in and be amplified in the years ahead.
- The temperature projections that Jorgen Randers has proposed are optimistic. At the moment, a 5 to 6° scenario on average globally in 2050 seems more likely. That means that the Arctic will be warming by 9 or 12° which means that the concerns about release of methane stores in the permafrost will become very real.
- The 2° target that has been set for the world is far too high. We must bring it way below that and must do it very quickly. That means not just stopping emissions. It means drawing down carbon from the atmosphere.
- Cheap oil has peaked. The hype that is wrapped around cheap oil and gas at the moment is unrealistic. The United States is not going to be independent in energy. The critical problem is that the energy return on investment is dropping extremely fast. We are scraping the bottom of the proverbial barrel with tar sands, shale gas and so on. The environmental implications are dramatic. Global emissions will rise disproportionately in the next few years.
- We must question the concept of economic growth as we know it. It is not possible to sustain this in a global context - certainly not in the developed world and probably not even in the developing world in the way the system is operating at present.
- Nowhere in the analysis that is coming through official reports that are being put out at the present time on the future of Australia, are these concerns about the impact of peak oil and climate change being properly considered. There is no real understanding where events could lead us. We are already in an emergency situation and we must (and inevitably will) get to the point of taking emergency action. We need to be on a war footing approach. All of this is going to happen much more quickly than most people expect.
- Because economists are not much interested in measures like the ecological footprint and the energy return on investment, I have been using conventional economic methodology to develop a single measure of global sustainability. By working backwards from an environmental target and saying "let's assume that some kind of target for carbon dioxide is based on serious enough climate damage to make it worth achieving economically, and asking what will be the damage needed to make it worth achieving?" I have concluded that if the target is 2°C, then achieving it is no problem. But ignoring it makes the world look very much as Randers has suggested, with human well-being peaking around midcentury.
- I work with a group that is concerned about the lack of resilience in Australian society. Given the path down which we are heading and the inevitability of failures, we are asking how to create more resilient capacity in Australia. Our analysis suggests that we have only

three weeks of fuel supply in this country. And yet our government agencies are willing for us to go to zero fuel refining capacity. Our entire society and economy depend on fuel. We have sold our souls to a global supply chain and a disturbing lack of resiliency, because it is convenient. If we have a Middle East crisis or a global financial crisis we cannot assume that the fuels that we currently rely on will be available.

- We already have available to us in Australia, alternative energy sources that could rapidly free us from a dependency on fossil fuels. The question really is whether we have the willpower to implement the changes that will make it possible to move away from coal.
- International progress is being made on future fusion power. This could in the long run of 50 years provide limitless non-polluting energy that will solve many problems. We need to build the economic and political framework that will help us transition towards this point using the renewable technologies already available. We can change everything within a timeframe of decades to a situation where we would emit very little CO₂. The skill sets that we need are in the change management area. We need people working on the social and human sciences side to assist this energy change process.
- As neither an economist nor a climate scientist, I am being asked to do two things. I'm being told to accept climate scientists' assertions and to ignore economists. It seems to me as an outsider, that economists are currently fringe dwellers in this domain. And yet the nature of this problem is fundamentally one of allocating resources. We are being told that it would only require a small investment to move to a complete non-carbon emitting economy. It seems that we should be engaging more actively with the economists.
- I come from a systems ecology background and am working on climate adaptation issues. I believe there is a lot more happening to the climate system than we recognise and that we must prepare ourselves for substantial shocks. But I also completely agree that you don't get action anymore from simply threatening people with the seriousness of the problems. I think we have to be ready with the solutions that can be applied locally before we get a global crisis. I also suspect that a significant part of the denial of climate change is related to peoples' concerns about empowering big government. It is not just about leaders or massive collective action. It is about how we articulate the solutions, which will allow people to retain a sense of control over what they are doing.
- We need to confront the issue of inequality. According to the recent book "The Spirit Level" it will be bad for well-off people if we continue to maintain current levels of inequality. There are poor outcomes for the whole society if current levels of inequality are maintained in the face of the climate threat. This message needs to be heard by the elite.
- There is a need for a new kind of social narrative that places the coming shocks in a new perspective. We will not escape climate change by simply being rich. The solutions to climate change are not particularly expensive and they will open up new possibilities for rich and poor alike. We need to start developing an expectation about an economy in which there is no growth in the availability of resources.
- Why don't we share? A loose network called "Transform Australia" which has been exploring the requirements for a viable future Australia has proposed some elements of a new eco-centric social narrative that will downplay the competitiveness and anthropocentrism of modern culture and build rewards for caring, sharing and nurture into the future economy.

Suggestions for action offered by Jorgen Randers

1. I suggest that the first thing you should do in Australia is agree on what are the risks and "un-sustainabilities" that are now threatening this country. List these threats and try to place them in the likely time order in which they could confront your future. Identify the nearest ones to now and select the five most important on the basis of what worries you most about them.
2. Think through with open minds what would happen if that un-sustainability actually happens. Think through precisely what would happen. (One of the reasons I do not think much will happen over the next 50 years is that I think people will starve and die before they get the revolution going. So there will be a lot of suffering but it may not destabilise the system. People get used to anything.)
3. Identify what could be done to improve the outcome of those unsustainabilities when they arrive. Hopefully, there would be two or three things that would contribute to a better outcome in each of the five most likely areas of concern. The report of your findings would then be the platform for the next step.
4. If you want to change the world you must segment the market. You must choose the grouping of actions in such a way that you can find those few allies that you have for those things that you want to do. It may be that choosing the elite is a really good idea or you may decide to go for the general public or the scientists. But above all do the segmentation of the market and identify the stakeholders group. Never try and implement something when you cannot find a single support group.

My experience suggests that you should not expect too much help from macro economists. These guys are working in an axiomatic system, which has five or six assumptions at the bottom. What they do is to undertake interventions that are mathematically solvable and depend on building a consistent construct on those basic assumptions. Inside that system, externalities exist and they deal with them by putting a price on the activity that generates the externality. The economic solution is to price the unwanted activity. Most of them believe that for risks that are more than 20 years ahead a discount rate of 1% is adequate for future costs that are presently invisible. As a result their cost-benefit analysis of the net present value of damage in the future is lower than the cost of doing something now. So they suggest we should not do anything about it now but let the economy continue growing until we get so rich that we can solve the problem. As long as these guys are unwilling to move to a 3% or more discount rate they will not be helpful. (Two participants disagreed with what they believed to be a caricature of macroeconomics and expressed the view that a number of Australian macroeconomists are working very comfortably with higher interest rates and in close collaboration with climate scientists.)

Comment by Paul Gilding

“I come to this issue as an Australian with a strong environmental background. I have spent fifteen years working with big business on these issues in the belief that markets and economics is the way we will solve these problems. We are right now in system overload/breakdown from a number of risks. The melting of the Arctic sea-ice, itself very significant, is much more important than itself. It symbolizes a system that we do not fully understand and whose reactions are accelerating beyond our understanding. It is all happening faster than we thought. Things may evolve in a smooth fashion along the lines that Jorgen argues, but also they may not. I would argue there is a reasonable likelihood – and I think anybody would agree a reasonable possibility- of early catastrophic impact. We need to ask how best to think about this issue. We need to think about managing a system for potential food breakdown. Not food shortages in Australia but food system breakdown. We need to prepare for the disruption to oil supplies, which could happen for a range of reasons. The point is we are incredibly exposed as an economy and not seriously discussing them. That, to me is the Fukushima problem for Australia.

There are some things happening right now that are both exciting and scary. One is the arrival of solar. This is disrupting in a very profound way the business model of the utility sector. They depend upon pre-pricing for most of their profits, but are having profits taken away by rooftop solar. That is exciting for the solar industry and terrifying for the utility industry. It is very disruptive to see a number of coal-fired utilities going broke. How will we keep the lights on? Does that mean we should have less renewables because we are fearful for the coal industry? There is a whole raft of economic and business implications that we are not yet thinking through as a nation.

There are some good things happening in cities, with movements to develop greater community independence, energy efficient buildings and a range of local food production endeavors. There is also some really good stuff happening around the world in this space. My conclusion is that there is a lot of really important stuff that we are not looking at and that we need to look at it quite strategically and talk about it in the context that Jorgen has suggested. This is not just an issue for scientists and policy makers. This is a practical on-the-ground set of questions about what we are going to do when the carbon bubble bursts. How will we manage these issues and where is the downside for us as a country?”

Points made by participants in the concluding session

- There is an opportunity in the next 12 months with the coming election. We should take advantage of the sensitivity of both parties to media discussion about uncomfortable questions. Without a coherent and agreed set of messages this issue will not get traction. We need to recruit public interest in this question, which is likely to be followed by government interest.
- I agree with the need to use the opportunity of the coming election and with the need to refine our focus on the five most important and proximate risks to Australia's future. We need to be clear in the message and for whom it is intended.
- If this issue is to be taken seriously it needs to be based on peer-reviewed published evidence and not simply someone's idea that things are worse than the climate modelling suggests.

- I agree with the need to focus on tipping points that could make things a lot worse for Australia in the short term. While we are all inclined to slip into thinking about generic global issues, if we want to resonate in Australia, we need especially to concentrate on things that if we don't solve, the rest of the world won't solve for us. We are a long way from the rest of the world and there are certain risks that come from our own specific circumstances. The exercise that has been proposed will create opportunities. We have specific agricultural and urban issues that deserve special attention.
- Until we develop different measures of well-being to place in front of Australians on a regular basis we will go on, by default, valuing consumption.
- There appears to be broad consensus on two points. The first is that we are in deep shit and could probably get out of it if we want to. The second is that societies are spinning their wheels deciding how to get out of it. If we could turn the green economy into an international competitive activity, almost a sport, we would have a lot more chance of society coming together around the issue. Fashion is what drives consumption today and it is what can drive our energy choices. We need to make this an engaging activity – something that has a positive feel to it. I do not believe it is beyond our wit to do so and that we can make combating and ameliorating climate change not only competitive but also fun.
- Following on from that, we need a new narrative. The narrative has to address what the real unsustainabilities in Australia are and where we are at in addressing them. The information that points to our predicament is readily available, but it is not finding its way into official documents about our future nor into the broader community. We must, as a society, seriously look at the problems and the opportunities.
- Coal is going to go as is coal seam gas. We must change fundamentally the way the entire economy works. There is a range of issues that nobody is talking about. In the short term, oil may be the biggest one. Our self-sufficiency is rapidly declining and there is no sign of it being reversed. We are dangling on the end of a long supply chain. All of these things have to be brought into the new dialogue.
- We must also bring into the narrative the opportunity side of things. Australia has huge renewable energy potential. The cost of these things will drop very fast. We also have significant arable potential in terms of food development. But it is not going to happen unless we face up to the implications of continuing on our present path. We need serious public discussion around all of this and it will not occur through the political system. Nor will it happen in business until business has reached the point of understanding that their interests lie in supporting a new approach. I'm hopeful that we are getting very close to that situation.
- There are three key players government, the business community and the general community. We have to identify the roles of these three key players in what needs now to happen. Another point of influence is the financial institutions. They are making decisions on where the money flows into business. We need to explore the role of insurance companies superannuation groups and global banks.
- We need to increase our ambition for domestic transformation. At present we have a national policy for Australia's emission future, which is to reduce emissions by 5% by 2020. Even by Treasury modeling there is recognition that a 5% reduction by 2020

actually means a 20% increase in domestic emissions, with the targets being achieved by buying offsets overseas. We need rather to focus discussion on domestic transformation in the energy sector.

- I want to issue some words of caution. We must not sell out all of the market mechanisms in pursuit of command economy solutions. Secondly, let's not assume that there are a lot of well-known risks that are somehow being covered up. On the issue of the oil supply chain problem I would point to the fact that oil is a market product and there are probably some companies interested in not running out of petroleum. That is provided they are allowed to charge a suitable premium when the product might be running scarce.
- I have spent months plowing through the climate change literature, trying to find scientific evidence that would support the 2°C limit. I could not find anything that was that categorical. That is, I think because these things are unknown. It is very hard to know precisely, because we are talking about weird things that might happen to the global climate system that is now being subject to stresses that have never happened before. It's worse when you're trying to include the element of human climate damage. We never had 7 billion people before. So there is profound uncertainty, which is not taken into account by the way we do conventional climate calculations. What I am saying is that it is not likely that you can readily obtain a consensus about "this is the big risk that everybody is not talking about". There will always be some uncertainty, which will make communicating it difficult. We cannot easily say "this bad thing will happen to us in 30 years time and people are not talking about it". We must deal with the uncertainties
- I have been wondering what the product of this discussion will be and where it will go. We have in this group many of the usual suspects and we are not necessarily getting the message out to those groups, which need to hear it. Getting the message out to all those people who need to hear it in order to solve the problems in an orderly manner is unlikely to succeed. So I think we need to accept the advice to segment the market and involve those people in the community and business, who want to do something about it.
- I would draw a distinction between risks, which are genuinely scary and are a really big deal from those, which are relatively easily soluble by market forces. The idea that climate change might lead to irreversible damage to the biophysical environment that makes human civilization only possible for very small numbers is in my view a big deal. But then I am hearing that the world might have got to peak oil. That the price of oil might be high and we might all need to survive with less oil. So what? I cannot see that that is a huge problem. I can't see that it is a big deal for Australia if the coal industry disappears over the next 40 years. 90% of the Australian economy is not mining. If people are saying to me that the globe is going to have to wean itself off dirty forms of energy, my reaction is "bring it on" I'm not worried about the market economy's capacity to deal with that. But I am worried if our economic activity is doing things that are going to destroy the biophysical environment.
- One problem with that argument is that these things are all interlinked. If we are driven only by catastrophic potential risk, oil has ramifications all the way through the energy system. So if you want to address the catastrophic risk you have got to take action very quickly on things like oil and gas industries.
- We clearly have to deal with both catastrophic risk and risks that are less catastrophic. It seems clear that the Australian coal industry is going to lose but generators are not going

to lose. They will simply move to renewables. We need to facilitate that change as quickly as possible and convey those ideas in a more coherent fashion than has taken place so far.

- These issues also need to be discussed and conveyed to the secretaries and deputy secretaries of critical government departments. There are many avenues we can pursue. The information has got to be up there in the public arena and it has got to engage directly with the people who are making the decisions.
- We need to emphasize that contrary to some statements made today the climate models have not got it fundamentally wrong. They have got it fundamentally right. But we have to acknowledge that the models embrace an enormous band of uncertainty. We have to live with that. The ensemble of projections that have now been running for decades fit the data pretty well.
- Outside this room a bunch of woolly thinking is going on about the solutions to climate change. The point was illustrated by the statement that Australia could meet its targets for 2020 while at the same time increasing emissions by buying in carbon credits from elsewhere. These are derived from land-use change. That is a solution that will not work for very long because there isn't a great deal of land, which can tolerate changed use. Furthermore the carbon cycle simply cannot manage that amount of uptake.
- It has been suggested that we could fix all this if we had infinite energy. At one level I agree with that comment but at another I do not think it will help us to respond to what is the real challenge. I think what we are about is redefining growth and taking it away from increasing material consumption towards increasing well-being. We have reached a point where material consumption is toxic.
- We also need to take note of the fact that the conversation we have been having today is a conversation between a group of white males most of whom are on the wrong side of 50. This would have been a different conversation if the demographic had been different. We need to change the demographic in these conversations.
- I think we need to generate benign uproar as opposed to malignant uproar. We need to think of Australian insecurity in a global context. In the near future prior to 2050 I think the problems will be particularly about oil. Energy does not solve phosphorus and it does not solve inequality. There are precedents for the virtuous competition between countries and cities. The healthy city movement fostered a sanitary revolution in the 1800s.
- We need to pay more attention to the psychosocial dynamics of our situation, not just the biophysical constraints and limits. In particular we need to do more to link the debate about future global threats to the growing, current costs of material progress and high-consumption lifestyles to people's health and wellbeing; it's not about a trade-off. Our immediate, personal experiences count for more, psychologically, than abstract statistics and future uncertainties.
- People discount global threats for several reasons: a human bias towards optimism (she'll be right, we've overcome problems like this before), perceived uncertainty (there is a history of failed predictions of collapse, and experts disagree), and system justification (a tendency to believe in and justify the way things are, and not want to change the familiar status quo). Surveys reveal deep social pessimism and public unease in developed nations, including Australia, but environmental and resource issues are not the main

reasons; the concerns are more immediate and personal, more social and economic. We need to show these are all part of the same predicament.

Closing comment Jorgen Randers

I think that well developed plans exist for solving most of the problems that you might have on your list. You don't need to do too much about new plans for solving problems. What you have to do is decide what problems you are going to try to solve.

The art is of course then to get those solutions implemented. So I reiterate, first try to agree on what exactly are the problems that you would like Australia to solve. Once you've done that you can then go to find the plan that will help you do that. Then find someone who supports your solution. That is the difficult part and I don't believe you will succeed. I think it is much easier to predict what **will** actually happen in the medium-term future than it is to predict what **should** happen in the medium-term future.

There is so much short-term-ism at the individual, corporate and national levels. For many people the picture is not as bad as we might think. Clearly it is bad for some groupings. It would be ideal if groups like this could choose one or two actionable items where you could yet have a plan and get it implemented. Like the three weeks of fuel. I think it is an interesting idea as a test.

Think through what will happen if you do nothing and try to find out whether there is anything that could be done with meaning. Find a plan that has already been made, find some allies and do something about it. Limit your solutions to something which is a real problem and that something can be done about. I am keen to make sure that other countries are not as idiotic as my own.

Closing comment Paul Gilding,

I think we need to engage the people who are not engaged. So I spend most of my time now engaging with large corporate bodies that do not yet support action in this area. I am also attempting to engage the military and defense agencies around the world. I think that getting them onside in whatever way possible, will start to change the shape of the conversation.

We don't need any more greenies; we don't need any more plans; we don't need any more green solar businesses. They are happening by themselves for good reasons. We do need to bring the rest of society into the debate because they are not there now. That to me is a major focus and I think many of us need to get into that effort. I think that bringing the community on board will change the conversation.

Conclusions

This brief dialogue has resulted in significant level of consensus among a group of 14 senior public health, environment, climate change, economic and public policy researchers on the following matters.

1. Risks from climate change are turning out to be more serious and more urgent than earlier predictions suggested.
2. The greenhouse threat could be addressed at relatively modest economic cost if we move urgently to transfer energy systems away from fossil fuels.
3. The world has already crossed a number of sustainability boundaries, which makes it probable that Australia will face serious system shocks in the near-term.
4. Our leaders and the community at large are still in denial (or studiously unaware) of the realities of global change”.
5. We need an analysis and broader understanding of Australia's vulnerabilities to the kinds of shocks that global change is bringing.
6. This will usher in opportunities for new industries, interesting new jobs, genuinely sustainable regional growth, better homes and transport, healthier diets, and happier lives - all things that people actually want.

Recommendations for action.

1. This report should be circulated widely among policymakers, community leaders and researchers.
2. Australia 21 should work together with other agencies to undertake the risk identification and analysis proposed by Prof. Randers and commence the development of a new sustainable eco-centric narrative for Australian society.
3. The products of this exercise should then be used to empower and energise the Australian electorate.

References

1. 2052: A global forecast for the next forty years. A report to the Club of Rome commemorating the 40th anniversary of The Limits to Growth. Jorgen Randers. Chelsea Green Publishing. White River Junction, Vermont. Published 2012.
2. The Great Disruption: How the climate crisis will change everything (for the better.)Paul Gilding. Bloomsbury Press New York, London, Berlin, Sydney. Published 2011.

“Our leaders and the community at large are still in denial (or studiously unaware) of the realities of global change”.

“We need an analysis and broader understanding of Australia's vulnerabilities to the kinds of shocks that global change is bringing”.

“This will usher in opportunities for new industries, interesting new jobs, genuinely sustainable regional growth, better homes and transport, healthier diets, and happier lives - all things that people actually want”.