'It is essential to see the profound peril in continued flagrant misperception of…. ….the human situation' Catton (Overshoot, 1980).

Key Points: The Commission should tell the Government that its Brief was incorrectly-scoped and will need near-term readdressing.

It should urge the Government to set up a Systems-based, discipline-integrating, real-sustainability-focused, long-viewing body.

The reason? Economists – and those who hang their projections on economics-promulgated ones - do not know (are not taught) enough, to determine the best way for New Zealand to negotiate the coming energy/resource descent. Phrases like 'reduce costs', 'economic stimulus', 'funding and financing', even 'export growth', are from that era; we need to move on.

Your interim report is a classic example; where it makes big-picture sense, it does do by chance.

Scoping the real problem:

We are coming up against the global Limits to Growth and are overshot as a species; those being two sides of the same coin. Infrastructure is resources, supplied and maintained using energy resources. 'Funding' is a mechanism for divvying-up energy and resources; technology is a mechanism for using them more efficiently; neither funding nor technology can guarantee resource availability. De-growth and triage (and increasing conflict/competition over remaining resources, particularly energy) will be the hallmarks of the next 1-3 decades; all infrastructure decisions have to be made with this inexorable trend in mind.

BAU is an oxymoron

What we do is extract, degrade and excrete, parts of a finite planet. Until recently, we've done this at exponentially-increasing rates. The Energy we used (to do the work and to stave off Entropy) was the fossilised remains of historical sunlight; it is finite and we need to leave it before it leaves us. Yes, we need to morph to

renewables, ASAP. Yes, we need to circularise material flows. Yes, we need to pursue efficiencies. But no, those will not support what we currently think of as BAU, not by some orders of magnitude**. It was really BaTA; Business as Temporarily Attainable**. We now have to plan for de-growth and triage.

Real Sustainability is needed

What is needed is a holistic, Systems-meshing suite of Legislation(s), the combined goal of which is Real Sustainability. Sustainability can be measured by:

1. Recycling/replacing finite resources 100%, or leaving them in the ground.
2. Not drawing-down Renewable Resources faster than their rate of renewal.
3. Not filling Sinks faster than their capacity to absorb/mitigate.

(Fossil Fuels are addressed en passant in '1', CO2 emissions in '3'. 3 also includes the absorption-capacities of species.

GDP

GDP should neither be cited, nor used as a measure. At best, it is a poor measure of Flows, but it measures neither Stocks nor Entropy; which is why we are in the poo on multiple fronts.

RMA – and legislative integration

It is clear that every year since the RMA became law, our environment has deteriorated in the counts that count. It is also clear that offshoring of resource draw-down and pollution is inadequately accounted. Thus sustainability legislation needs to be made **more restrictive, not less**. Currently much legislation is oxymoronic; 'economic growth' initiatives versus 'withdrawal from fossil energy' ones, being a classic example. All legislation needs to be integrated, and based on fact. **As proposed, the RMA re-jig is woefully short of delivering anything even close to Sustainability.**

Energy

At base-line, all life is an Energy equation, all societal constructs are Energy equations and **we are going to have to get by on very much less**. And Entropy never sleeps. This means we will be able to do less work, therefore we will be

triaging infrastructure in the near-term and increasingly thereafter. This may be an unacceptable political narrative but is a truth which *must* be addressed.

Limits to Growth – which need to be addressed

Nowhere in the Report are Limits mentioned, nor Overshoot. This is akin to the Titanic Times peddling a deck-chair demand-crisis while failing to mention the sinking. In short, not only is it is doomed to near-term irrelevancy; it is the product of ignorance and assumption. We should be doing better.

The irruption of humanity – from 1 billion at the start of the Industrial Revolution to 8 billion now – has not been because of social advancement, nor has it been because of technology, nor even because of fractional-reserve debt-issuance. The work has been done via the one-off use of fossilised energy (currently 10 calories of FF to 1 calorie of food, for instance) as both surplus energy and as feedstock. Surplus energy (over and above the energy required for life; food, temperature-control, movement) gave us person-time to do things like learning, and to lever the learning into the likes of medicine and technology. This fossil-sourced surplus was always temporary.

As wellbeing has an unwritten 'resource-consumption-per-head' corollary, population (curtailment thereof) is a necessary ecological part of reducing our Energy demand.

De-growth required

From a position of overshoot, there needs to be a period of de-growth to attain a non-growth equilibrium. This will be unpopular, but is better done in a controlled manner than via collapse. Maximum carrying-capacity = sustainably-available resources divided by desired per-head consumption. **Ex fossil energy, NZ is already overpopulated**. It is time we had that discussion, rather than projecting ever-more growth to justify ever-more debt-issuance and ever-more consumption of planetary parts.

The divergence between our narrative, and fact

Our narrative has been one of self-justification and self-aggrandisement. We have seen ourselves as superior to Nature, able to circumvent Physics, infinitely-

intelligent. We still confuse growth with draw-down, energy with technology, wealth with debt, assets with Entropy.

Our failure has been to believe that keystroke-generated debt would be perpetually exchangeable for real resources, delivered by real work done by real energy. In a Bounded System (Earth) this was only going to work until it didn't. And it is beginning to 'isn't'.

That incorrect narrative has spawned many incorrect assumptions. This is true of the energy, resource stock and time-line assumptions your Report appears to be making by default.

The True Narrative

Humanity (and collaterally all other planetary life-forms) is approaching the descent phase of the Limits-to-Growth trajectory. Advocating even more roads to service even more sprawl for even more people, is therefore invalid. So too, is the idea that compacted populations (cities) will solve environmental encroachment (all citizens require sunlit acreage, which must be imported further/more per density-increase).

We will be incapable, in the near future, of even maintaining the infrastructure we have (a trend which is becoming increasingly-obviously manifest in deferred-maintenance-caused breakages and in 3-water-type call-ins. The rot (inevitably) is setting in, and we built too wide, too shallow, to cope for long. Managed triage/retreat will be the best we can achieve; collapse should be avoided if possible.

What to do?

The Commission should think of future infrastructure and its maintenance, in terms of identifying/earmarking future-available resources and energy.
'Funding' will increasingly be an invalid measure (for obvious reasons; money has been disconnected from reality for some decades) and belief-loss is already beginning to drive resource-hoarding. For this reason, your: *6. Ensure security and resilience of critical infrastructure* makes a valid point, even if not in the way intended.

The first consideration must be displacement of and triage of, things made from/by fossil feedstock. Road surfaces, pipework, structures; all these are directly or near-directly created from FF, with no proven alternative. Thus, advocating MORE without a proven substitute for this finite resource, is intergenerational theft (**think of it as longitudinal colonialism**). Besides being madness.

Growth, therefore, is an invalid overarching goal. It should be replaced with **'Long term viability'.**

Beyond fossil energy, cities will be compromised as life-supporting constructs; they are, after all, just heat-engines (Girardet 2015). Many too-compact ones will become uninhabitable. **It is likely populations will head back to food-production sites, reversing the two-century-long fossil-energised influx.** This trend should be anticipated in your final Report.

As the availability of energy and resources has a 'per head' proviso, population has to be addressed; there are no guaranteed 'Rights' for an unlimited population within a Bounded System. This discussion should - via sustainable energy – include an ideal long-term acreage/head ratio (which will tell us that NZ is already orders-of-magnitude overpopulated). You ask the valid question in: *Q14. Does New Zealand need a Population Strategy that sets out a preferred population growth path, to reduce demand uncertainty and improve infrastructure planning?*

The answer is: Yes; a negative one.

Which means your comments like: *'Success in these areas can create a virtuous cycle, attracting more residents and businesses that contribute to the ongoing prosperity and liveability of cities and regions'* and *"capacity to accommodate future growth, and that take precedence over subjective amenity barriers'*

are incorrect/invalid (besides being examples of the dissonance we need to move beyond).

In light of energy reduction and resource competition/scarcity, applying efficiencies to the existing housing stock (there is no time left to replace it) is a low-hanging fruit. With some (decaying, uninsulated housing on south-facing slopes, for example) it will be more efficient to lose it. The same ruler should be passed over all service infrastructure.

Ease of maintenance-access will be an increasing factor, as energy availability reduces; for instance easily-removable covers will beat buried services. Increasingly, the hardest-to-maintain infrastructure will be abandoned or adapted (remote bitumen roading reverting via gravel to rutted mud, for instance).

It may be – with little notice – necessary to invent a method of ensuring that infrastructural work deemed socially-essential, is carried out. Currently this is done via 'payment' and societal rules (enforced by paid policing and penalties). This system was built empirically on the up-side of growth; how we hold society intact on the downside has yet to be addressed – and I have zero expectation that the Commission can/will initiate the discussion. Yet someone better had.

Future living styles – the car was a product of the fossil-energised blip – need to be taken into account. Currently dyslexia reigns; we are attempting to change cars to renewable energy and create parallel cycleways at great resource/energy input. In reality, we will barely be able to maintain those sealed surfaces, upon which we'll be down to walking/cycling/skateboarding/scootering and only-essentially transporting (unless a minority Elite commandeer that space).

Alongside food-production demanding increased labour, other hithertofore-deemed-essential activities will be seen as irrelevant; **this trend should be anticipated so as to avoid misallocation of infrastructure** (both new-build and maintenance); for instance much that is done in a CBD is existentially-irrelevant.

It should be borne in mind that every 'next' option will be 'worse'. Next landfills will be further away, house-sites will be further away or worse geographically (less solar gain, more wind chill), ports more distant, dams in less-ideal sites. Diminishing returns will be the order of the day, trending into negative returns (indeed, if we were accounting truthfully, we are in negative-return territory now, globally). These 'returns' have to be tabulated in other than dollar terms, obviously. Wellbeing is a step along that pathway, but an inadequate one as portrayed.

For obvious reasons, we have a lack of people trained in Limits to Growth and Systems thinking. We also have obvious inter-silo shortfalls within Academia in that regard, so there will be a war-footing need to educate in this space, albeit able to use existing literature.

Conclusion

We are running out of Overton-Window time to change the narrative before events wave-break over us, but I urge the Commission to do it's damndest to urge the needed mindset-change. Addressing infrastructure without understanding the Limits-to-Growth long game is madness; if parts of your effort are correct, it will be by default. Accordingly, addressing your current report in minutiae is pointless until the base-line predicament is correctly identified.

We need to set up a Systems-meshing, long-looking, sustainability-understanding body, to oversee the required change in societal narrative. There is only enough stored global energy for one 'heave' at setting ourselves up sustainably; let's not waste it.

[redacted]

(Sustainability researcher/writer)

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