

# Net Zero Carbon and Other “Planning Dilemmas” starting with Rare Earths

written by Steve Mackowski | December 12, 2022

In the last 5 years since I last wrote for InvestorIntel, as they say, there’s been a lot of water under the bridge. But 5 years ago, could you have predicted the actual water flow? Could you have had a target? Where is Macca’s head space at? Well as usual I’ll get there. So the last 5 years have been part of my “eco-retreat” project taking our property to almost pristine Australian forest, complete with all the native wildlife that goes with that. Achieved – yes! To plan – pretty much. Took longer but a few un-planned for health issues slowed me down, but overall happy. So a good plan? Well yes, but why was that? I’ll get back.

So the majority of Western nations are planning for some sort of climate change management by targeting “net zero carbon”. Is that a plan? Is that an inspiration? Is that a target? Well, a personal anecdote may help to answer that. Twenty odd years ago I was asked if I could develop a plan to mine and process the resources of an island. “What is the time horizon”, I asked. “That’s part of your plan”, was the response. OK! Background necessary to consider. The island is currently a National Park and has been granted First Nations custodianship. The resource is conventional and processing is not difficult. So what is the plan going to allow for? First point to learn here is do not start at the beginning and progress forwards, i.e. resource definition and all the normal stuff. That will consume a lot of time if you can’t get a plan that has any chance of working. Start at the end and work backwards. What must have happened to

allow such a controversial project to develop? Remember, this is First Nations and National Park. Was the request by the MD for a plan? A verification of his dreams? A realisation into practice through a lofty target? What is akin to “net zero” when there is no detail, no costs, no resources? In fact, it is worse than that since it has been stated that net zero will need “as yet unachieved technology” to get there.

Let's look at rare earths for a while. Circa one hundred years ago, some enterprising alchemist discovered the rare earths group (I am not going to write a history paper). He dabbled and found out that a mixed rare earth alloy could be used as a flint generator. Misch metal was born. Did he have a dream to produce magnets for electric cars? Not yet! A couple of decades later when catalytic converters were developed for motor vehicles, the use of lanthanum oxide powders was big news. Poor cerium prices went through the floor. Electric cars the dream yet? Not yet. Not until the development of computer chips and the need for cerium polishing powders, did the rare earths scene buzz again. Electric car dreams? Not yet. Then came magnets in the 90's and the boom really starts. Boom goes neodymium-praseodymium (Nd-Pr) for magnets, boom goes Yttrium (Yt) for lighting, then boom goes Samarium (Sm), Gadolinium (Gd) and (Dysprosium) Dy for better magnets. Then boom for electric cars? Not yet? Why not after 100 years of technical development hasn't the dream/plan/target of electric cars (and net zero?) occurred? It needed the western world to commit to the target of net zero with the goal of saving the planet. So, could have the dream of electric cars been planned for 100 years ago and if so what would it have looked like? A series of as yet unknown new technologies with an unknown timescale and an unknown cost? Sound familiar with net zero planning?

Back on rare earths today. We are finally seeing traction on some of the junior explorers of the early 2000's. Take Arafura

Rare Earths Limited (ASX: ARU) as an example. For many years the resource was known, the technology was defined, the way forward was clear, but what were the “planned” construction dates? Three – five years post Bankable Feasibility Study. That was over 10 years ago! What was wrong with the planning? Nothing! The caveats of financing and marketing achievement and timing were not met. Not met until this year when the motor companies finally saw their electric car future (a future they were perhaps forced to see) which led to financiers being amenable to the funds. I want you to see a process here, that is the planning process broken down into individual steps and timelines. Did the mining company meet its resource definition target? Yes. Did they reach their process definition target? Yes. Did they meet their BFS target? Yes. Did they meet their marketing and finance targets? Yes, but it took an extra 10 years. What do you see here? Some targets met as planned, other targets met but later than originally planned. What is jumping out? Hopefully, you can see that Arafura met the plans that were under its direct control – the resource, the process, the engineering, the costing. The marketing and finance however were not under their control. They could perhaps influence the market and the financier, but they could not control. Hence the delay. So what’s the lesson to be learned here? Yes you have to be good at the resource part, the chemistry and the engineering but you have to have the toughness, the hanging-in there, and the ability to stay alive until those uncontrollables that are part of your plan align and the main wheel starts to turn again. You can influence but you cannot control. What has this got to do with net zero planning? I will come to that in my next piece but I know you are waiting to find out about the plan to mine a resource on a First Nations National Park.

Imagine an island. A paradise. A National Park that has had its custodianship legislated to the First Nations people. It has a

resource, a very valuable resource that you have been tasked to define a plan for its development. So what did I do. I started at the end. Asked the question: "What are the conditions that would need to be satisfied to achieve the goal". (Keep the net zero in the back of your mind. All will be revealed.)

Condition 1. The First Nations custodians must be happy. Condition 2. The Governments and their bureaucracies must be happy. Condition 3. The multitude of ESG focused groups must be happy.

I'll stretch the word happy and settle for appeased. What would appease these groups? Well my first thoughts were around a serious military conflict justifying a Commonwealth takeover of all resources and territory, but I thought that was stretching the justification too far out of my tasked planning horizon. So a few examples. Doesn't matter how real you think they are, they are just possibilities. The important bit comes after.

1. An animal of world significance is on the island and is looking at extinction unless some serious and expensive actions are taken. Or.
2. A similar situation with the whole ecosystem. Or.
3. First Nations heritage is under severe threat.

All issues require significant funding, but there is no money available. Only the development of the resource and the satisfactory rehabilitation will provide the funds to continue. Never mind the reality part, that's out of my control. But what is in my control is why should the government select my company to be trusted to do the development. These are the things that you can control. These are the things that you can do now and in the future that will develop your toughness and increase your chances – while hanging-in there, and staying alive until those

uncontrollables that are part of your plan align and the wheel starts to turn again.

How much water did I plan for to go under my bridge, in my retreat rainfall, catchment and erosion plan? The 1 in 100 year rain event was my guide. But got 2 such events in 2 months. An event out of my control. I am still recovering/upgrading and yes, changing my plan. See you next time for more on the "Net Zero" planning process.