A New Path Forward:
Society, Energy, and a New Perspective

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1. Introduction

We live in a time of accelerating crises, which some call a poly-crisis, or a meta-crisis, as it encompasses climate change, resource depletion, social fragmentation, and more. These challenges are not merely parallel; they are interconnected in complex, dynamic ways.

Our traditional mental models, rooted in Enlightenment and Industrial logic, are no longer sufficient. Just as Galileo's observations disrupted a worldview centuries ago, today's evidence demands we reconsider our beliefs about growth, energy, and progress.

This paper argues that a successful transition away from fossil fuels requires more than technology—it requires a transformation of our societal values, structures, and narratives. I suggest that the Three Horizons Framework, developed by Bill Sharpe is a useful tool for exploring a dignified, humane pathway through this transition.

2. Models and an Appropriate World View

Models are useful in many contexts, as they help us represent, understand, and analyse complex systems and phenomena. However, when a model is purely conceptual, as often seen in economics, people frequently forget that it is just a tool and the real world may not behave in the same way. Depending on the model used, the real world could act very differently. This disconnect can be particularly troubling, as it impacts financial markets and government policy.

Our current economic model values wood, cut and processed more highly than the tree from which it was cut, despite the multiple functions that a tree serves in maintaining life. Such distortions in value highlight the limitations of our current economic worldview, particularly in how it undervalues ecological integrity.

People did not anticipate the outcome of President Nixon's decision to abandon the gold standard in 1971, an event known as the 'Nixon Shock'. While gold no longer underpins currency, this shift underscores the broader point: our measures of value are socially constructed. Today, opportunity cost plays a central role in economic decision-making. Unfortunately, its abstract nature can obscure physical and ecological limits. This historical event serves as a stark reminder of the potential consequences of economic decisions and the importance of remembering that our economic models are merely representations, not reality.

Economic models utilise currencies such as the Dollar, Euro, or Pound as a language to describe the world. Increases in wealth, which can be viewed as a claim on future assets or energy (a more fundamental resource), are often reflected in rising asset values. However, since currency values no longer correlate with gold, increased government spending funded by debt leads to higher asset prices when measured in dollars, which in turn impacts not just the economy but individuals and families. This effect often goes unnoticed because there is a temporal disconnect; it takes time for these increases to be assimilated by the market.

This is not to suggest that traditional economic or scientific models lack value. Rather, their usefulness depends on acknowledging their scope and limits, and on complementing them with models that account for social, ecological, and energetic realities.

This effect appears particularly pronounced in housing markets, such as those in Sydney and London, for numerous reasons. People need housing, and it is common for individuals to aspire to own their homes. However, they compete directly with professional investors who can limit their personal exposure to loss, whereas average families cannot. Professional investors or corporations are likely to find it easier to raise funds. Decisions regarding homeownership are typically made over the long term.

In 1970, the average house price in Sydney was about $18,700, while the average annual wage was around $4,100, resulting in a price-to-income ratio of 4.5. By 2020, Sydney's median house price had soared to 12.2 times the average pre-tax income, reflecting a more than fivefold increase in real (inflation-adjusted) terms.

Although interest rates are at historic lows (making mortgage servicing less burdensome than during the high-rate era of the early 1990s), the sheer scale of price growth means that, for many, home ownership is now out of reach. While supply and demand, as well as policies such as negative gearing and capital gains exemptions, undeniably influence housing prices, they interact with broader systemic forces, such as global finance and speculative investment, that amplify inequality.

Despite the good intentions of neo-liberal economic policies championed by Ronald Reagan and Margaret Thatcher—aimed at benefiting workers through trickle-down effects—the reality has instead resulted in a transfer of wealth from workers to capital owners through a "wealth pump." Consequently, social costs have increased, further entrenching economic disparities and leading to a fundamental breakdown of the social contract. For many, the promise of home ownership and a comfortable retirement has become an elusive dream; for others, it has turned into a nightmare.

This affordability crisis is not unique to any one country, it is global. We can find ample data that shows long-term trends of declining affordability of housing. Here is a snapshot of the European data:

Metric	Value	Link to Source
House price rise in EU (2015–2024)	~53%	LinkedIn
Price-to-Income rise (2014–2022, EU avg)	>10%	Intereconomics
Portugal's price-to-income rise	+58%	Visual Capitalist
Czechia	24.00%	Visual Capitalist
Spain's price-to-income rise	+17%	Visual Capitalist
Euro Area: median overburden (2024)	12.5% households	Trading Economics
EU average overburden (2023)	4.1% households	Trading Economics

These figures reveal a clear transfer of wealth from income earners to property owners. The rising price-to-income ratios and growing housing cost burden underscore how our economic model has prioritized asset value growth over equitable access to shelter. This is precisely what we mean by the 'housing wealth pump'—and it's why systemic change is urgently needed.

In 2012, Kate Raworth wrote a paper titled 'A Safe and Just Space for Humanity', which challenged the adequacy of the metrics used to evaluate economic development. This work evolved into the concept of Doughnut Economics, offering a new framework for understanding growth and prosperity. The adoption of such new economic models is not just a choice but a necessity for a sustainable future.

Presented above are a sample of the arguments that I could provide to illustrate why our mental models, or worldviews, are flawed. However, due to brevity and the fact that most are familiar with the issues, I will proceed with an argument on why and how we need to change.

The transition away from fossil fuels has emerged as a critical topic of discussion, particularly in the context of addressing climate change and its far-reaching consequences. There is widespread agreement among scientists, the public, and policymakers that immediate action is crucial to mitigate the impacts of rising global temperatures, extreme weather events, and sea-level rise, despite some dissenters (Paris Agreement, 2015). However, the conversation surrounding this transition is complex and multifaceted, encompassing a variety of interrelated issues that warrant attention.

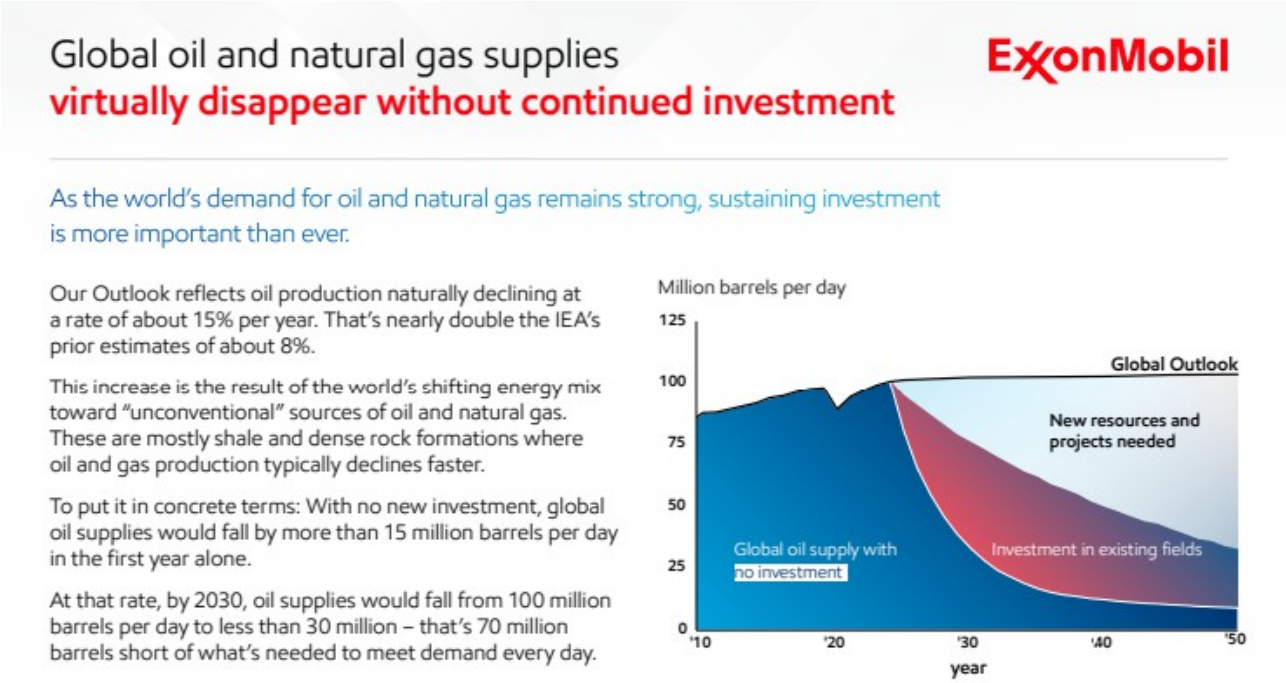
In addition to the well-known effects of climate change, other significant challenges need to be addressed. Examples include the deterioration of air and water quality, which pose risks not only to human health but also to ecosystems and wildlife. Pollution from fossil fuel combustion contributes to respiratory illnesses and other health issues, while contaminated water sources threaten both drinking supplies and aquatic life. Intensive agricultural practices, often fueled by fossil energy, degrade soil health, leading to reduced productivity and food nutrition. This decline not only affects crop yields but also impacts food security as the global population continues to grow.

Although models are simplifications, when grounded in real-world constraints, as explored in GTK’s analysis and community-led initiatives, they become tools for practical transformation. The Three Horizons Framework, while conceptual, serves as a bridge between today's realities and tomorrow's possibilities when used to guide tangible decisions at community and policy levels.

3. Confronting Constraints: GTK's Warning on Fossil Fuel Phase-Out

Concerned about the realism of existing transition plans, The Geological Survey of Finland (GTK) conducted a unique and comprehensive "**Assessment of the Extra Capacity Required of Alternative Energy Electrical Power Systems to Completely Replace Fossil Fuels**". The conclusion was that we do not have enough time or resources to transition from fossil fuels as planned. Although not explicitly stated, reports suggest that **major decisions may be taken out of our hands.**

Recent news reports, however, suggest that a forced transition may be imminent, as many consider we have passed Peak Oil and have reached Peak Shale Oil. ExxonMobil's 2024 Global Outlook warns that unemployment could rise to 30% within a decade if fossil fuel investment declines. But continued investment is risky when energy returns are diminishing and resources are depleting.



Source: ExxonMobil Global Outlook, Executive Summary, published August 2024.

Shale Oil, a source that has delayed Peak Oil is now reported on various respected platforms, for example: Adam Rozencwajg and Chris Martenson, Podcast: Peak Oil Arrives in the US Shale Patch. Are You Ready?, and Wall Street Journal, 17 May 2025 "U.S. Drillers Say Peak Shale Has Arrived".

This is of concern for two reasons. Economists warn that we are about to enter a recession. If we have reached Peak Oil, it will be a recession like no other, because, previously, energy solutions were found to bring new sources of oil online. In the 1970s, there were new locations, such as Alaska and the Gulf of Mexico. In 2005, new sources were available due to new technology and legislation permitting shale fracking and the use of oil sands. This is relevant due to the high correlation between energy and activity and, subsequently, GDP. Some may question if causation is present, but it is difficult for an economy to function without energy.

Despite the increasing use of renewable energy, our dependence on fossil fuels remains unchanged. This suggests that renewable sources are only keeping up with the growing demand for energy while we continue to consume more fossil fuels. There is no energy transition; it has stalled.

In recent years, several European countries, including Germany and France, have experienced a decline in the market share of electric vehicles (EVs). This decrease is mainly due to the phasing out of purchase subsidies that previously encouraged EV sales. While the specific reasons behind this trend are important, what truly matters is that it highlights a troubling indifference to the urgency of the situation. If we have indeed reached Peak Oil, it will be increasingly difficult for economies to restructure.

4. Why the Energy Transition Has Stalled?

The energy transition has stalled for several reasons, similar to challenges faced in the U.S. healthcare system, where systemic change is difficult despite widespread agreement on the need for improvement. Two key factors contribute to this resistance: those in power benefit from the status quo and often remain insulated from its failures, and there is a prevalent fear of the unknown that hinders the imagination of viable alternatives. Meaningful change lacks momentum without a clear, compelling vision for the future, which many societies currently lack. This dynamic is particularly evident in the transition away from fossil fuels.

Professor Joseph Tainter's work on societal collapse offers insight into this issue. He draws on Robert Carneiro's distinction between quantitative and qualitative change, emphasising that profound transformations require changes that fundamentally alter the system itself. Transitioning from fossil fuels is one such change. Tainter argues that complex societies tend to add layers of complexity to solve problems, but this approach yields diminishing returns over time. The current strategy for decarbonisation — swapping combustion engines for electric vehicles or coal with solar energy — maintains existing economic and social structures rather than transforming them entirely. Fossil fuels are deeply embedded in modern life, influencing not just energy consumption but also economic growth, consumer lifestyles, and centralised infrastructure.

5. Tainter's Questions

To examine our circumstances more clearly, Tainter encourages reflection on sustainability and transformation through four critical questions: **What should we sustain? For whom? For what duration? And at what cost?** Although these questions appear simple, they have far-reaching implications. Tainter notes that complex societies often fail when the cost of maintaining that complexity exceeds its benefits. For instance, the collapse of the Roman Empire and the decline of the Mayan civilization are often attributed to this phenomenon. Currently, we invest more resources in upholding an unsustainable energy system than in envisioning a different future.

Braess's Paradox illustrates how adding more roads can worsen traffic flow, a principle that can also apply to electrical grids, as seen in the recent cascading collapse in Spain and Portugal.

6. Hospicing Modernity

Vanessa Machado de Oliveira offers a deeper perspective by framing her ideas in a culturally and emotionally nuanced way. Her concept of "hospicing modernity" encourages us to recognise that certain aspects of our current civilisation—particularly its energy systems and foundational myths of progress, control, and human dominance—may be reaching their limits. However, she does not advocate for resignation or fatalism. Instead, she calls for an honest and compassionate acknowledgment that reforming a world built on fossil fuels and extractive practices may not be achievable in the ways we desire.

This process of "hospicing" is not about surrendering; instead, it involves grieving and releasing the illusions that trap us in destructive patterns. It requires us to accept that we can not fix some systems. We must let them go, allowing something new to emerge in their place.

In complex systems, technological interventions can create multiplier effects, sometimes reinforcing existing problems rather than resolving them. This is why the direction, intent, and governance of innovation matter profoundly, especially in a time of polycrisis.

7. Policy and Movement Implications

For policymakers, this means expanding the energy strategy beyond just supply and infrastructure. The appropriate response may be counterintuitive; rather than adding departments and roles, we should aim to simplify. The needed approach involves challenging the growth paradigm, promoting localied and resilient systems, and supporting narratives of sufficiency, equity, and regeneration. Policies should not only serve as regulatory tools but also as a facilitators of cultural transition. Nurturing and supporting local communities to develop their response because the balance of issues will be unique to that community.

For social movements, it means becoming spaces not of resistance but of mourning, storytelling, and reimagining. These movements can help people understand what is ending and nurture the fragile beginnings of new possibilities.

Together, the insights of Tainter and Machado de Oliveira remind us that our failure to transition from fossil fuels is not just a technical or political problem; it is a civilisational one. And that the work ahead is not only to build a sustainable future but to face, with honesty and humility, the end of an unsustainable one.

Of course, meaningful change does not occur in a vacuum. Vested interests, ranging from political donors to media conglomerates, shape public narratives and policies. In an era of misinformation, rebuilding trust and promoting civic literacy are essential. Education, therefore, must go beyond curriculum content to include media discernment and critical thinking about power, equity, and agency.

8. A New Plan – Using the Three Horizons Framework

To move forward, I suggest we accept that the future we were planning may not arrive. Instead of clinging to outdated assumptions, we let them go and see what is possible. As we face this destabilisation, we can transform it into a threshold for something new to emerge. Vanessa Machado de Oliveira emphasises the need to "hospice" what is dying, meaning we should refrain from investing in its future. Not hastening its demise but supporting the emergence of something new, currently undefined, without imposing our projections or idealisations. Using The Three Horizons Framework, I offer the following thoughts.

Firstly, if we consider actions across time and space, may assist in developing a richer choice of paths to pursue. By this I mean considering the near, regional and national and international communities, as well as now (or immediate) tomorrow (soon) and future.

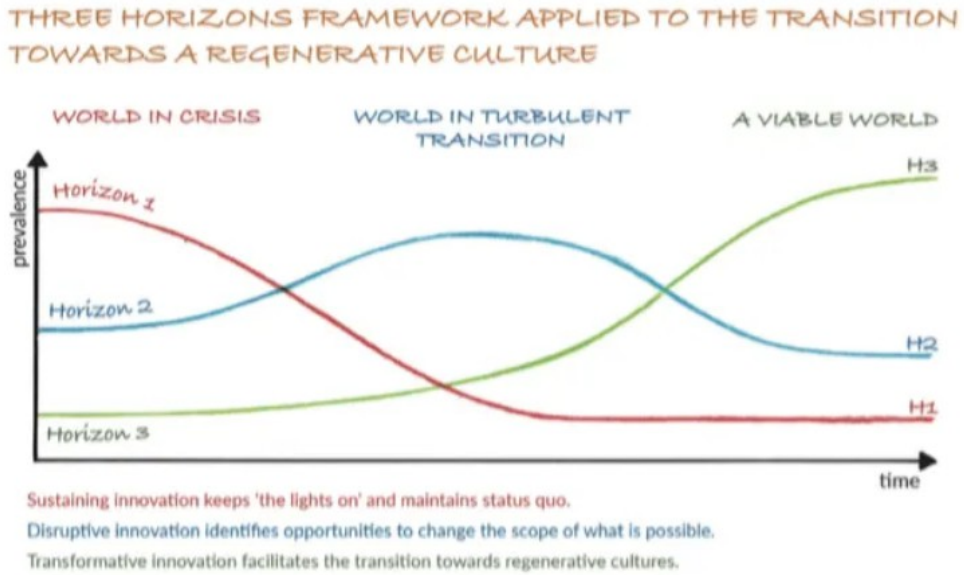


Figure 2: Adapted from bit.ly/DRC229 with permission from IFF

By Daniel Christian Wahl, designforsustsinsbility.com

8.1 Horizon 1: Educate and Community

a. Education

Shift the public understanding of the energy transition from "techno-optimism", where there is a belief that a solution will be found through technology, to resource realism. While technology will provide solutions, we need to use it to transform society rather than sustain it. (I remind you of Professor Tainter's four questions.)

Raise public awareness about the limitations of renewable energy sources and the crucial insights from GTK's research on transitioning away from fossil fuels. This can help shift the public perception of the energy transition from a purely technological problem to one that requires societal transformation.

Our economic thinking needs to mature from the absurd assumptions of classical and neoliberal economics to the more human future offered in Doughnut Economics.

If these concepts are new to teaching staff, open-ended essays allow students to research the differences and help teachers with alternative ideas.

b. Strengthen Local Communities

We have reached a critical point in multiple systems: climate change, resource depletion, species loss, social inequality and polarisation, economic and financial instability, what many call a polycrisis. We do not know the future, but we see the possibility of disruption is increasing. Developing local resilience can not be overstated. We know the future will challenge the formal systems and organisation of government. We know from Professor Tainter's research that solutions to problems that sustain our current systems are increasing in cost and becoming less effective. Local communities want to develop and maintain their independence. Creating local opportunities for people to build relationships with neighbours, in anticipation of disruption, for society's benefit.

c. Artificial Intelligence: A Challenge and a Chance for Transformation

We are witnessing artificial intelligence fundamentally transforming society. Its applications are already widespread in law, software development, and medicine, often reducing the reliance on highly trained professionals. Given that the primary role of schools is to prepare children to become productive and responsible members of society, this rapidly changing landscape creates a significant challenge. Schools will adapt by broadening their curricula to equip students with a broader range of skills and knowledge.

Planning for an uncertain future means acknowledging that current students need a more diverse education that prepares them not just for today's jobs but for tomorrow's evolving demands. Expanding the scope of education is no small task; it is complex and challenging, yet it presents an opportunity for schools to play a more significant role in shaping the future. As Professor Tainter's research suggests, maintaining the complexity of society requires significant resources, which may become unsustainable in the future.

Consequently, society may need to simplify, which involves taking on tasks at home that we currently outsource, such as growing, preserving, preparing food, or repairing appliances. Schools, therefore, have a vital role in imparting practical knowledge and skills that were once commonplace during simpler times. By doing so, they can help prepare individuals for a future where self-reliance and resourcefulness are more essential than ever, ensuring society remains resilient even as technological and economic landscapes evolve.

d. The Psychology of Change and Community Decision-Making

It is understandable that people may not believe a societal transition is necessary. Familiar patterns, even if flawed, provide a sense of control. People often cling to what they know, even when faced with overwhelming evidence of change. This cognitive inertia is not just psychological; it is cultural.

However, denial does not change reality. The longer we wait, the fewer our options.

So, how do we move forward together?

- **Ask the difficult questions:** What would it take for you to change your mind? What would you need to see to acknowledge that transition is necessary?
- **Establish 'markers' or 'indicators'.** These could include:
  – Fuel price volatility beyond a threshold.
  – Local crop failure or food price inflation.
  – Rising unemployment linked to energy costs.
  – Sustained supply chain delays.
- **Tie these indicators to agreed action plans:**
  – Marker A → Launch community-wide energy-saving measures.
  – Marker B → Begin local food security initiatives.
  – Marker C → Create emergency community support networks, neighbourhood mutual aid groups.

These agreements do not require full belief now—they are hedges against future possibilities. The goal is not to persuade everyone in advance but to prepare decision points that activate when conditions are met. This enables rapid response.

8.2 Horizon 2: Redesign and Rebuild

a. Revitalising and Re-developing Rural Communities

Many countries have historically experienced a significant migration from rural areas to larger urban centres. While this trend initially provided benefits, such as economic opportunities, access to services, and technological advancements, it has reached a point where the societal costs outweigh the advantages. In terms of Professor Tainter's theory, society's complexity has surpassed the point of diminishing returns, meaning that further expansion or concentration may no longer be sustainable or beneficial. This explains why we have had so many COP meetings that have failed to deliver a reduction in carbon emissions

Thanks to modern communication and digital technologies, the necessity of maintaining densely populated urban hubs is diminishing. Remote work capabilities enable many jobs previously tied to physical locations to be performed from virtually anywhere, reducing the need for large urban populations. Reversing the migration trend and re-developing and revitalising rural communities could bring multiple benefits. It would enhance local resilience and security, as residents could produce a significant portion of their food and goods, lowering their ecological footprint.

William Rees's ecological footprint concept underscores the importance of reducing our environmental impact by promoting local resource use and self-sufficiency. By developing rural communities where people can grow food, generate energy, and manage waste locally, we can decrease dependence on distant resource extraction and reduce the strain on planetary ecosystems. A managed effort to reverse this trend could see vibrant villages with diverse professional and skill sets emerge. These communities could host essential services—including healthcare, education, construction, agriculture, and digital development—ensuring continuity in the face of natural, economic, or geopolitical disruptions. Rehabilitating existing villages, especially those that have experienced closures of schools or other community facilities, would make effective use of established infrastructure and resources. This approach would foster sustainable, resilient communities that contribute to national security and environmental sustainability, offering their residents a higher quality of life.

b. Rebuild National Infrastructure

National infrastructure may need to be reconsidered to better suit a future with lower energy availability and a focus on sustainable growth. Many strategies aim to replace fossil fuel-based systems with renewable energy sources. However, this transition presents some important considerations. One key aspect is the Energy Return On Energy Invested (EROEI), which measures how much energy we gain relative to the energy we put into extracting and producing it. For over a century, our energy systems have benefited from a high energy return on energy invested (EROEI), making energy extraction relatively efficient. However, EROEI values have recently declined, and many renewable options available today tend to have lower EROEI.

This trend suggests that, over time, reliance on fossil fuels will become more challenging as reserves diminish. Developing alternative systems, such as new renewable technologies, energy storage solutions, or other innovations, will likely require significant infrastructure investments. GTK's research indicates that the current availability of minerals necessary for large-scale infrastructure development might be limited relative to the demands of maintaining current energy consumption levels. Because our economies and markets are so interconnected globally, these resource considerations have broad implications.

Recognising these possibilities can help inform future planning, even if the timing and scale of changes remain uncertain. Building resilient infrastructure and exploring alternative systems is a process that takes time, sometimes decades, and being aware of these challenges may support more informed and gradual adaptation over time. Taking proactive steps to consider these aspects can help reduce risks and improve preparedness for future scenarios.

8.3 Horizon 3: Transform

The Geological Survey of Finland, led by Dr. Simon Michaux, is working to support societies in transition by assessing the necessary steps to phase out fossil fuels completely. At this time, it has completed studies and reports for two regions: Finland and Hawai'i. The reports do not outline a specific transition plan but instead identify what is needed to enable business, government and community leaders to manage the transition effectively. This approach aims to minimize the inevitable losses and chaos we are likely to experience.

The scenarios acknowledge the profound material and time constraints that will increasingly shape our world, urging a managed contraction of energy and resource use. Achieving this future requires a fundamental reorientation of national priorities, shifting from relentless growth to one of resilience and sufficiency. In many regions, community-led initiatives are already taking root—though often piecemeal and under-resourced. Recognising and learning from these efforts is essential, as they offer early models of resilience that can be adapted and scaled.

Two key elements will assist in a successful transition. The first is the education of the population, which links it to the first horizon. Planting seeds today will result in the development of the plan tomorrow. Future generations will be better prepared to implement the necessary adjustments when the time comes.

The second is the metrics we use to frame and measure progress. As Kate Raworth observed when developing a new economics that became known as Doughnut Economics, continuing to pursue GDP growth, a dated concept born almost a hundred years ago on a finite planet, is a mistake.

8.4 Anticipating Outcomes: Preparing for Divergent Futures

Many people may find the ideas in this thesis difficult to accept because they fall outside their personal experiences. However, understanding the stakes is essential. Let us explore a few plausible scenarios and the contrasting outcomes depending on whether society prepares or fails to prepare.

Scenario 1: Without Continued Fossil Fuel Investment

Oil production declines naturally by 15% per year. ExxonMobil projects that without new investment, global oil output could drop from 100 million barrels/day to below 30 million by 2030. This is a steep, unmanaged energy descent.

With societal transition:

- Rapid localisation of food and energy systems.
- Increase in low-energy living, community self-reliance, and skills training.
- Managed economic contraction through relocalised exchange systems mutual aid, and reduced dependence on centralised supply chains.
- Social cohesion maintained through civic engagement and cultural adaptation. (Culture is the way we do things. So a significant reduction in the number of private motor vehicles is a cultural adaptation.)

Without transition:

- Economic shock and collapse in global supply chains.
- Mass unemployment(30%), civil unrest, and mass displacement.
- Collapse of healthcare, food, and public services.
- Governments are unable to respond due to cascading failures.

Scenario 2: Continued Fossil Fuel Investment

Oil production is maintained at current levels. This postpones decline but at immense ecological cost. Atmospheric CO_2 concentrations rise, and climate instability accelerates.

With societal transition:

- Investment redirected toward mitigation and adaptation infrastructure.
- Carbon budgeting and degrowth policies introduced to reduce ecological overshoot.
- Conscious energy descent through education and civic reforms.
- Civil society remains robust and forward-looking.

Without transition:

- Catastrophic climate feedback loops (permafrost and ice melt, ocean acidification).
- Resource conflicts, climate mitigation, growing authoritarianism.
- Socioeconomic inequality worsens as elites adapt and vulnerable suffer.

Scenario 3: Involuntary Disruption from Resource or Climate Shock

A triggering event such as a financial crisis, geopolitical conflict, or climate catastrophe.

With societal transition:

- Communities fall back on resilience strategies already being built.
- Distributed infrastructure cushions the blow.
- Adaptive governance and solidarity movements guide the response.

Without transition:

- Breakdown of Institutions
- Mass panic, hoarding, misinformation, and violence.
- Higher mortality and prolonged recovery.

8.5 The Three Horizons Framework Is Familiar

You may be more familiar with the Three Horizons Framework than you think. Most people intuitively apply it to their own lives, shifting focus between the immediate needs of today (Horizon 1), plans like annual holidays (Horizon 2), and long-term goals such as retirement (Horizon 3). We naturally move between these horizons, balancing the concerns of different aspects of our lives, family, friends, and work. Suppose we spend too much time focusing on the distant future (Horizons 2 and 3). In that case, we risk neglecting our immediate needs. We may not make it far enough to enjoy that holiday or retirement. For those facing financial hardship, even meeting basic daily needs can be a struggle. An annual holiday may seem like an unimaginable luxury.

9. Conclusion

The path ahead is not a matter of swapping fossil fuels for renewables—it is a civilisational crossroads. As Vanessa Machado de Oliveira reminds us, we must hospice the systems that can no longer be sustained, while midwifing new ways of living.

This is not a retreat from progress but an evolution. It demands courage, creativity, and a renewed understanding of what it means to thrive—moving from extraction to regeneration, from perpetual growth to sufficiency, and from denial to grounded realism.

By educating for realism, rebuilding for resilience, and reframing success through the lens of Doughnut Economics and the Three Horizons, we can guide a transition rooted not in fear, but in possibility. Let us lead not by clinging to old certainties, but by courageously imagining—and preparing for—what comes next.