Leading Sustainability and Regeneration in Projects[1]

The Impact of Environmental Regulations on Economic Growth: Debunking Myths and Exploring Opportunities[2]

By Dr. Hugo Minney

Figure 1 The alchemy of the Porter Hypothesis

Abstract

We challenge the long-standing misconception that environmental regulations are a drag on economic growth. We argue that modern, well-designed environmental policies can catalyse innovation, and through this can create competitive advantage. By leveraging evidence from decades of OECD analysis and real-world case studies, we demonstrate the cost of failure to implement and enforce regulations at a national and international level. We also show the risks – and very real costs – for companies and government organisations by ignoring the medium and long-term impact of environmentally detrimental practices. We show that the "Pollution Halo

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Effect" creates long-term value, and we debunk the "grow now, clean later" fallacy. For project professionals, this reframing is a call to action: to move beyond a defensive, compliance-based mindset and become strategic leaders who turn regulatory constraints into opportunities for sustainable and regenerative growth.

Keywords: *Economic Growth, Sustainability, Regeneration, Environmental Regulations, Porter Hypothesis, Pollution Haven, Pollution Halo, Project Management, Innovation.*

The growth imperative and its perceived discontents

Project managers and industry leaders seem to work under the assumption that continuous growth, as measured by Gross Domestic Product (GDP), is the sole path to societal progress and prosperity (Minney 2025c). Project mandates embed this assumption, justified as they are by revenue generation or increased GDP. The previous articles (Minney 2025a, 2025b, 2025c) explored alternative frameworks to redefine success beyond mere financial returns, focusing on quality of life. For example, a transition to a service-based economy and to experience-based consumption can generate economic growth (measured in happiness or other quality-of-life markers (NZ Treasury 2021; Social Progress Imperative 2024)) without consuming finite resources or producing pollution.

In this article, we examine the belief that environmental regulations are a burden that hinders growth. We explain why this belief came about (it was true of the types of environmental regulations at the time) and put forward evidence that modern policies and regulations are catalysts that drive innovation, enhance efficiency, and create new economic opportunities and competitive advantage. We demonstrate that project managers who understand the dynamic relationship between regulation and economic activity, can move beyond a defensive, compliance-based mindset to a proactive, strategic one.

From command-and-control to market-based incentives: The evolving landscape of regulation

In the early days of environmental regulation, most were prescriptive and rigid, dictating specific technologies or setting strict limits on pollution with a "command-and-control" (CAC) approach (Porter and van der Linde 1995). This model, common in developed nations between 1950s and 1990s, left little room for companies to innovate. A company under this framework aimed to achieve the bare minimum compliance at the lowest possible cost, a purely defensive posture. For a project manager, regulations meant increased costs for the project and were to be endured rather than embraced. Organisations faced three choices: comply, pay the fine, or cease trading in that market. This last could take a number of forms, including moving operations elsewhere.

From the 1980s onwards as regulations matured, more flexible "market-based incentives" (MBI) gained prominence (Porter and van der Linde 1995). MBIs such as carbon pricing, cap-and-trade systems, and eco-taxes, do not dictate how companies should achieve a required result, such as reducing pollution. Instead, they assign a financial cost to environmental externalities,

incentivising firms to find the most cost-effective means given their circumstances and resources (Porter and van der Linde 1995).

OECD has concluded that MBI environmental policies have done what they are supposed to: they have had "relatively small effects on aggregate economic outcomes such as employment, investment, trade and productivity" (OECD 2021); at the same time they have been highly effective at reducing industrial emissions (OECD 2021). It is the *design* of the policy that makes the difference. Policies using market-based incentives are more effective at offsetting negative effects than traditional CAC policies (OECD 2021). The evidence from OECD and others suggests that environmental policy doesn't limit growth, other factors like trade policy and labour market conditions are far more influential. Meanwhile, the same environmental policy has a substantial impact on environmental effects (OECD 2021).

We (project managers) might think that national and global policies and the distinction between CAC and MBI is remote from our work. Yes, our primary role is to deliver the outcome of the project, but in an MBI environment we have flexibility to approach the problem in innovative ways which might actually decrease the cost of the project in the long run, delivering the outcome in a better way than the plan we inherited. Regulation becomes a floor for performance rather than a ceiling, which defines a new type of project leadership — understanding the policy landscape and leveraging it for long-term gain.

Strategic differences of CAC and MBI are clarified in Table 1:

Table 1 Comparing CAC and MBI regulations for impact on the economy and effectiveness at reducing pollution

Dimension	Command-and-control (CAC)	Market-based incentives (MBI)
Approach	Prescriptive and rigid	Outcome-based and flexible
Project manager mindset	Compliance at minimum cost	Strategic advantage, ROI
Project goal	Meet minimum standards	Outperform competitors, innovate beyond requirements
Primary risk	Non-compliance, fines, and penalties	Missed opportunity, competitive disadvantage
Innovation	Limited and reactive	Fostered and required to reduce costs or gain other advantage

Dimension	Command-and-control (CAC)	Market-based incentives (MBI)
Examples	Banning a substance, mandating specific equipment	Carbon pricing, cap-and-trade systems

The Porter hypothesis: innovation drives advantage

The shift from CAC to MBI is underpinned by a concept known as the Porter Hypothesis, which we introduced and explained in detail in the September article (Minney 2025c). Michael Porter challenged the traditional economic assumption that firms already operate at maximum efficiency and that any regulation will inevitably impose a cost and reduce profitability. Pollution is often a sign of economic inefficiency and wasted resources; therefore, reducing pollution is often "coincident with improving productivity with which resources are used" (Porter 1991; Porter and van der Linde 1995). The hypothesis in its 'strong' form claims that properly designed environmental regulations spur innovation that exceeds the costs of compliance (Porter and van der Linde 1995), and even the 'weak' form claims that the burden of regulation is mitigated or completely offset by innovation. See Figure 2.

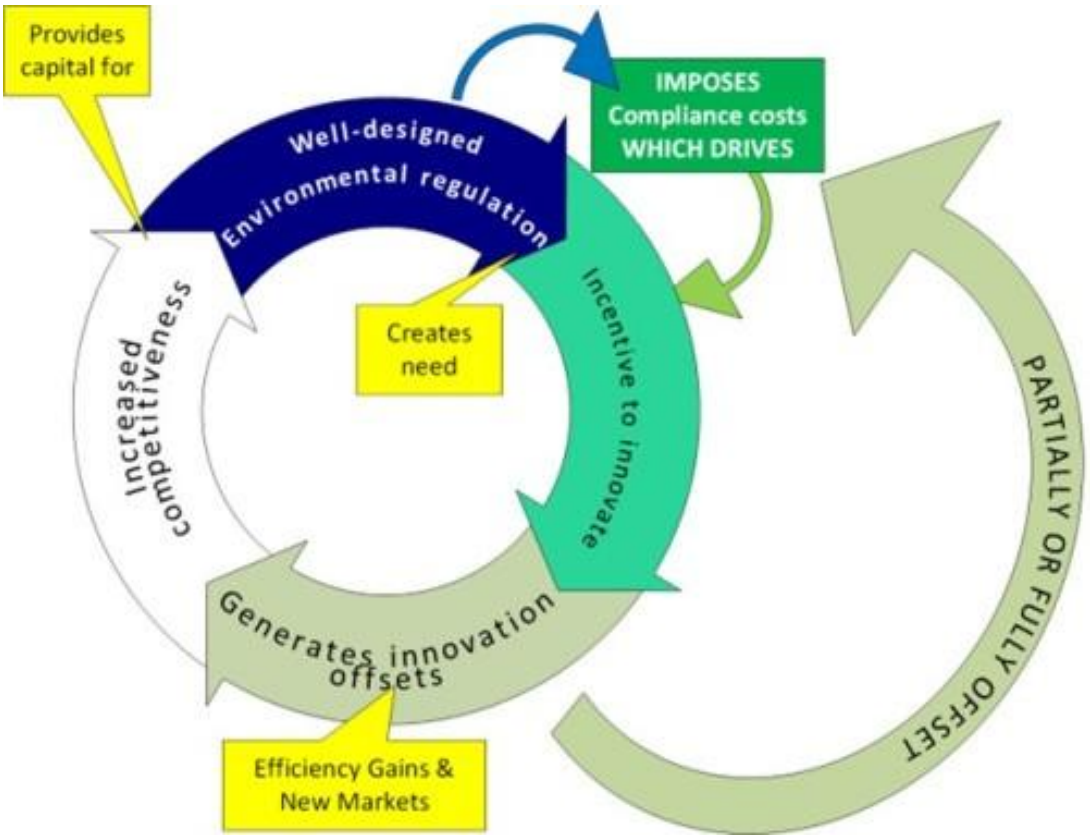

Figure 2 Porter hypothesis - drivers and feedback loops

There's evidence to support this: the European Union's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) programme aims to protect human health and the environment. On one hand there is a significant cost on businesses in the EU, estimated at approximately €2.5 billion per year (ECHA 2021; Ecomundo 2021). However, the long-term benefits are projected to be enormous, with an estimated €100 billion in value to human health and the environment over 25-30 years (ECHA 2021; Ecomundo 2021). As the Porter hypothesis predicts, the programme has also driven innovation: companies replacing or significantly reducing their use of hazardous substances and developing safer, more economically and technically viable substitutes (Ecomundo 2021), which might lower costs and avoid consumer boycotts and higher insurance.

The California Zero-Emission Vehicle (ZEV) programme demonstrates how a regulatory mandate can create an entirely new market (Wachs, King, and Agrawal 2019). By requiring a certain proportion of vehicle sales to be zero-emission, the programme has accelerated the development of electric vehicles and influenced ZEV policies globally (Wachs, King, and Agrawal 2019; CARB n.d.). Concerns about revenue lost from declining gasoline sales taxes are offset by revenue from user fees levied on ZEVs, demonstrating that government-led sustainability projects are financially sustainable on top of the reduced costs of healthcare, and lost productivity (Wachs, King, and Agrawal 2019). This shift to cleaner vehicles will prevent 160,000 asthma attacks and 5,000 deaths by 2050 if widely adopted across the U.S. (Goldstein, O'Brien, and Orvis 2023), which has considerable economic value although this has not been calculated in the sources used.

There's evidence that sustainability and regeneration Key Performance Indicators and success criteria will be part of future projects and operations. We can look at another branch of legislation: Health and Safety was largely ridiculed and ignored until there were a few high profile and extremely costly cases. H&S is now recognised and implemented in most workplaces as the cheaper option than failing to implement it. Perhaps it will take an expensive damages case against a fossil fuel major to turn the tables, but in the meantime the sustainability champions such as Scania are creating new markets with themselves as the incumbent, which could limit the longevity of some of today's major companies.

We as project managers have the opportunity to become "innovation brokers": to identify and champion new approaches and activities within the project we manage — the "innovation offsets" (efficiency gains and new market opportunities) that are the heart of the Porter hypothesis (Porter and van der Linde 1995).

The environmental Kuznets curve revisited: From pollution havens to pollution halos

Some key concepts we covered in September's article are important to the argument that follows:

- The relationship between economic development and environmental degradation can be described by the **Environmental Kuznets Curve (EKC)**; as a country's income rises, environmental detriment (e.g. pollution) initially rises too but reaches a peak where the population is rich enough to start demanding quality of life (Grossman and Krueger

1995). The original theory has been criticised for failing to account of what actually happens (see PHH and PHE below), so we illustrate different outcomes in the September article, figure repeated below (Figure 3).

- The **"pollution haven hypothesis" (PHH)** is what often happens with CAC-style regulations. It describes a scenario where dirty industries facing strict environmental regulations in one country relocate their dirty bits to countries with laxer rules or laxer enforcement to reduce their costs (Cole 2004). The empirical evidence for this is mixed, but it is particularly prevalent for traditionally "dirty" industries like manufacturing and mining, and poorer nations seek Foreign Direct Investment (FDI) by promoting their lax regulations (Benzerrouk, Abid, and Sekrafi 2021; Padhan and Bhat 2024).
- More optimistically, the **"pollution halo effect" (PHE)**, has emerged as a response to pressure from stakeholders. The PHE is best described as when multinational corporations introduce cleaner technologies, more efficient management systems, and superior environmental practices as global standards, and therefore into the host countries where they operate (Phung, Rasoulinezhad, and Luong Thi Thu 2023). This effect is dominant for FDI in "clean" industries like services and is particularly visible in richer countries (Phung, Rasoulinezhad, and Luong Thi Thu 2023; Padhan and Bhat 2024). Stakeholder pressures driving this include customer and consumer pressure (boycotts for companies that are seen to exploit poor countries; trying to attract the best talent when amongst professionals who care about the impact of our work on the world; and investors under pressure to invest responsibly.

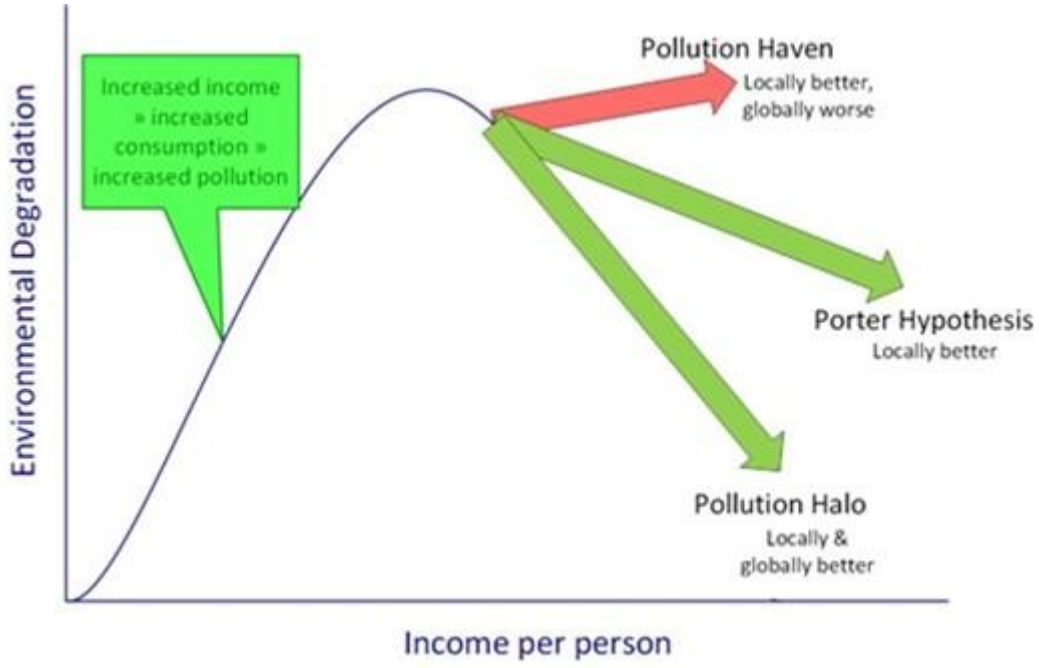

Figure 3 Environmental Kuznets Curve, revised with outcomes depending on conditions

So, if I'm working for a multinational company, I have the choice to either move the pollution elsewhere or stop polluting. A project to build a new factory in a developing country could either use old, polluting technology for short-term savings and potentially long-term liability, or we could leverage energy-efficient, closed-loop systems, thereby setting a new local standard. Some examples include lawsuits faced by the tobacco industry and the fossil fuel sector for both failing to improve practice and obfuscating information they already knew (Sato et al. 2023; ACSCAN 2024; CBSnews 2025a; Minney 2025b), and the new opportunities that could last decades for companies that decide to lead in sustainability, like Scania (Scania 2024).

The cost of inaction: Debunking the 'grow now, clean later' fallacy

The "grow now, clean later" approach — the belief that we can defer environmental costs and social problems for future generations to resolve (and that there will always be a technological solution) (Simon 1998; Kiel, Matheson, and Golembiewski 2010; Gonella et al. 2019) — is not only ethically flawed but also a demonstrable economic and social fallacy (Nordhaus and Shellenberger 2015; Ekins and Zenghelis 2021). This approach might appear attractive to those able to abandon a damaged location, but it imposes severe hardship on those left behind (but what if the location that is being exploited is a whole planet, the planet earth? And the escape plan is to go to Mars? That means those left behind are most of us). We know it's much cheaper to design processes that don't produce pollution in the first place, or to install "end of pipe" filters, than it is to clean up contamination from thousands of hectares of land and sea after it has been released, where the whole population is too sick to work and the land so contaminated that nobody wants to live there anyway.

The consequences of this fallacy are tragically illustrated by two major examples: the air pollution crisis in India and the oil contamination in the Niger Delta.

Air Pollution in India

In 2019, air pollution (specifically 2.5 particulate pollution) was linked to 1.67 million deaths and caused an economic loss of $36.8 billion, equivalent to 1.36% of India's GDP (Dandona et al. 2021). This burden is not distributed equally; it is disproportionately high in states with low per-capita GDP, highlighting the direct link between environmental degradation and social inequality (Dandona et al. 2021). Reports also show that improving air quality could add years to the average life expectancy of the population, with consequent economic benefit as well as the benefit to human capital (unfortunately ignored by GDP) (Economic_Times 2025).

The Niger Delta

According to a UNEP assessment, decades of oil spills and a lack of remediation have severely impacted the environment and public health (Amnesty International 2009; UNEP 2011). Pollution has destroyed farmlands, contaminated drinking water, and decimated fisheries, ruining local businesses and traditional livelihoods (Amnesty International 2009; Ordinioha and Brisibe 2013). Pollution has led to serious health issues, including breathing problems, skin lesions, and an increased risk of cancer (Ordinioha and Brisibe 2013). These ongoing environmental and social disasters have resulted in poverty, social unrest, and a loss of basic human rights for hundreds of

thousands of people, demonstrating the catastrophic costs of prioritising short-term economic activity over long-term planetary and human health (Wikipedia 2023).

For project managers, these two examples might be global, but they highlight that the cost of inaction is real and not an abstract externality. These costs are direct project risks or organisation risks that can manifest as reduced employee productivity due to illness, devaluation of physical assets in polluted areas, the loss of a social licence to operate, and even significant liabilities in the future (EBSCO 2022; Callahan and Mankin 2025; CBSnews 2025b; Khanna et al. 2025; Minney 2025c). An organisation trying to operate in a community where human and natural capital have been destroyed by prior unsustainable activity faces a sick workforce, low morale, and a hostile local populace. The "grow now, clean later" fallacy leads to wasted capital investment, as the foundations for long-term prosperity — healthy people and a healthy environment — are eroded.

What this means in numbers

Looking at this in cost terms, the annual cost to businesses from the EU's REACH programme is €2.5 billion (ECHA 2021; Ecomundo 2021), compared with EU's GDP for 2023 which was €17.27 Trillion ($18.591 trillion in USD (Trading Economics 2025a)). Approximately €146 per €1 million or 0.01456%. In contrast, the annual economic loss from air pollution in India is $36.8 billion (Dandona et al. 2021); using the same comparison (India's GDP is $3.568 trillion (Trading Economics 2025b)), this is 1.03% or $10,314 per $1 million (using USD).

Similar calculations can be done for the Niger Delta. The environmental degradation from gas flaring, dredging of larger rivers, oil spillage and reclamation of land due to oil and gas extraction across the Niger Delta region costs about US$758 million every year (Ayanlade and Proske 2015; Wikipedia 2023). 75% of the cost is borne by the local communities through polluted water, infertile farmland and lost biodiversity. If we use $187.76 billion as the GDP of Nigeria (Trading Economics 2024), then remembering that the Niger Delta is only one place in Nigeria where environmental detriment might be degrading economic output, the loss to the Nigerian economy from this one site is $4,040 per $1 million or 0.404%.

Table 2 The cost of taking action or inaction on environmental detriment. Taking action is a lot less expensive than failing to take action.

Taking action or failing to take action	Ratio of cost	Explanation
Investment in EU's REACH	$146 per $1million	EU: the ratio will remain the same whatever unit it is expressed in
Cost of inaction resulting in India's air pollution	$10,314 per $1million	Deaths, reduced productivity due to sickness, reduced life expectancy. Disproportionately impacts poorer regions
Cost of inaction resulting in Niger Delta's environmental detriment	$4,040 per $1million	Niger Delta is a small part of Nigeria, but the impact is significant across Nigeria's GDP. Destroyed

Taking action or failing to take action	Ratio of cost	Explanation
		farmlands and fisheries, contaminated drinking water, loss of local businesses.

The costs (investment) of responsible, proactive action are almost trivial compared with the catastrophic, long-term costs of inaction. Project managers must expand our risk registers to include these long-term risks and model the "avoided costs" as a tangible benefit in our business cases, providing compelling justification for sustainable projects that might otherwise be dismissed as "too expensive."

From theory to practice: The project manager's mandate

The theories and case studies presented in this article converge on a single, compelling conclusion: environmental regulations are not a burden to be endured but a strategic opportunity to be leveraged. For the project manager, this translates into a new mandate that extends far beyond the traditional confines of time, cost, and scope, with a focus on delivering long-term value to the organisation. A project's ultimate purpose is not to succeed as a project, but to contribute towards the long-term success of the organisation.

Project strategy

Project managers and sponsors must reframe our project charters and business cases. Rather than simply justifying each project by its outputs or short-term financial returns, we should articulate how it will create "innovation offsets" that generate long-term value (Porter and van der Linde 1995). For example, a project to implement new production technology should be justified not only by its potential to reduce operating costs but also by its ability to reduce resource waste, improve energy efficiency, and create a new, more sustainable business model.

Responsible procurement

Drawing on the Pollution Halo Effect, project managers must view our procurement decisions as a strategic lever for positive global impact. This means moving beyond a lowest-cost model to one that prioritises suppliers who embed cleaner technologies and practices throughout their supply chains (Phung, Rasoulinezhad, and Luong Thi Thu 2023; Padhan and Bhat 2024). By doing so, a project can become a force for global regeneration, building a more resilient and ethical supply chain and enhancing the organisation's long-term reputation. Failing to do so could have substantial reputational damage.

Comprehensive risk management

The evidence from the India and Niger Delta case studies mandates a fundamental shift in how project risks are assessed. Project managers must expand our risk registers to include the costs of inaction and limited action, even on a small scale. Damaging a nature reserve through pollution

run-off could mire a project in red tape for years, and closing roads without proper engagement could lead to protests and obstructions, and investors withdrawing so as to avoid being associated with the project. It doesn't have to be global in its significance!

Risk management means accounting for reputational risk, loss of social licence to operate, decreased employee productivity due to health issues, and the potential devaluation of long-term physical assets (Minney 2025b). A project that operates in a degraded environment is inherently more risky, and this reality must be accounted for in its business case.

Quantifying the risk

When building a case for a change, such as the original business case or the changes to a project to make it sustainable, there are a number of standard techniques we can apply to estimate avoided costs:

1. *Market-based methods*

These are techniques that use known or readily calculated quantities to convert an effect into a financial equivalent. Examples include:

- Damage cost approach (if this detriment were to occur, what would be the effect on production?)
- Cost of Illness (what are the direct medical costs plus lost productivity including premature mortality, and any liability the organisation or its insurers might be liable for?)
- Replacement cost or if replacement isn't possible, then the cost of prevention by other means (the "do nothing" option) (Minney 2024)

2. *Revealed Preference Methods*

Secondary costs that are impacted to some extent although the attribution will need to be tested or triangulated:

- Hedonic pricing (e.g. market prices such as property values or wages differentials)
- Travel Cost Method (used to estimate a value for a recreational site, i.e. the time and money people are willing to spend in lost earnings as well as direct costs in order to avail themselves of the site. A fairly simple multiplication of the number of visitors and the amount they actually spend on getting there)

3. *Stated Preference Methods*

Survey techniques based on what people would be Willing to Pay (WTP) or Willing to Accept (WTA). These ask the respondent (i.e. engaged stakeholder) directly or indirectly to rank preference for attractiveness (WTP) or avoidance of detriment (WTA):

- Contingent valuation method (frame a hypothetical, for example "reduced pollution would improve life expectancy by 3 years. What would you be willing to pay in taxes per year to achieve this?"; alternatively, "What compensation would you demand if this were not made available to you?"
- Choice Modelling/ Choice Experiments (an indirect way of determining the WTP or WTA; either compare 3 options of cost for effect (aka Direct Choice Modelling) or compared to other things that you might wish to pay for or be prepared to accept, which are of known value, where would you rank the effect being tested. There are a couple more variations, Conjoint Analysis, Paired Comparisons (can get extremely involved) and Best-Worst Scaling but that's it in a nutshell)

The project managers might not apply these techniques ourselves but needs to know how they work and are likely to want to use them in the course of engaging with stakeholders so as to ensure that projects aren't unduly delayed and costs don't escalate.

Multi-capital benefits management

This article reinforces the importance of the multi-capital framework introduced in August (Minney 2025b). The insights from the case studies provide a strong foundation for quantifying non-financial benefits. The benefits of a project can be expressed not just in financial returns but also in terms of "avoided costs", such as reduced healthcare burdens, improved property values, and enhanced talent attraction and retention (Dandona et al. 2021; Minney 2025b). Our task as project managers is to provide the data and a persuasive narrative that demonstrates the return on investment from sustainable action and from including sustainability and regeneration in our projects.

This section is summarised in the table below:

Table 3 How to put a price on environmental benefits

Concept	Project management domain	Actionable strategy
Porter hypothesis	Project chartering & planning	Incorporate "innovation offsets" into the business case, seeking out opportunities for efficiency gains that exceed compliance costs.
Pollution halo effect	Procurement & supply chain management	Prioritise suppliers who spread cleaner practices and technologies, building a resilient and ethical supply chain.
The costs of inaction	Risk management & benefits realisation	Add long-term reputational, social, and economic risks to the risk register; model the "avoided costs" as a tangible benefit.

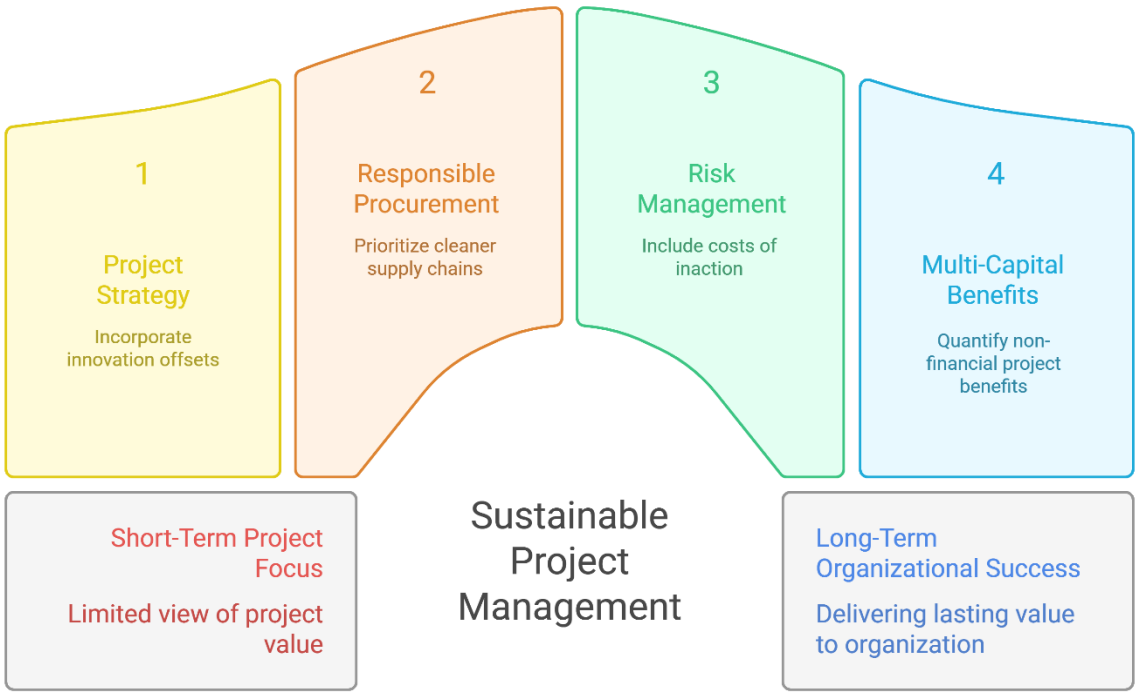

Figure 4 Environmental regulations as strategic opportunity

Conclusion: A symbiotic relationship

The perceived trade-off between environmental regulation and economic growth is a myth. A lack of regulation does not lead to sustained prosperity; instead, it leads to devastating long-term costs that are absorbed by the economy, society, and the environment. Ultimately these are borne by the organisation and economy (sometimes sooner rather than later). Conversely, well-designed regulations, particularly those that use market-based incentives, incentivise innovation and efficiency gains that lead to a stronger, more resilient economy and to stronger companies.

Project managers are on the front line of this transformation. Our decisions, from the decisions about which projects to prioritise through project activities and supply chain and risk, are what will turn economic theory into tangible, positive change. By embracing the principles outlined in this article, project managers can redefine our role and our projects. We can move beyond simple compliance and become strategic leaders who leverage regulation to create competitive advantage, build more resilient organisations, and contribute to a more regenerative future.

As we concluded in September (Minney 2025b), GDP is too small a mirror to see our future in. We are the builders of the bigger, better mirror. By embracing our role as leaders of sustainability and regeneration, we can prove that true prosperity is measured not by endless expansion, but by the health of our planet, the wellbeing of our communities, and the flourishing of all individuals.

AI usage in researching and writing this paper – statement by the author

This article, "The Impact of Environmental Regulations on Economic Growth: Debunking Myths and Exploring Opportunities", was prepared with the assistance of an Artificial Intelligence (AI) large language model (LLM). Under direction and control of the author, the AI LLM was used to facilitate the drafting, research, and refinement process of the article. For example, AI was guided to refine the language to ensure it aligned with British English conventions, maintained a professional yet accessible tone, and avoided common AI-generated phrasing. An AI tool was also used to assist in the generation of illustrations. The author maintained full control at all times and assumes full responsibility for the completed work.

About the Author

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Dr. Hugo Minney is a Fellow of APM (Association for Project Management), a Member of PMI and PMI UK, Lead of APM's Benefits and Value IN (Interest Network) and Sustainability IN, founder of APM's Nuclear Industries IN, and committee member of PMI UK's Sustainability Community of Action (none of which are paid). Minney is also chair of the British Standards Institute's working group on Benefits Management, which publishes and maintains BS 202002 (Applying benefits management on portfolios, programmes and projects) (also unpaid).

Minney is a business consultant. He has analysed the benefits of change, and weighed them up against the need for effective operations to keep the lights on, since 1990 when he started supplying high ticket computer systems and specialist software for workforce planning; he has built business cases of all types and is acutely aware of the pressures to make a single project a success at the expense of the organisation's objectives; as a board director in National Health Service he could take a portfolio overview and prioritise the individual benefits of projects to ensure the success of the whole organisation. Minney is now a project management consultant with a sideline chairing a charity restoring the sense of community for young people.

Minney specialises in putting a number on difficult benefits (such as sustainability and regeneration), motivating team members by reporting what they are achieving together and motivating teams to build the communities and companies we want to be part of – together. He believes in standards and is accredited as a Social Value practitioner and Chartered Project Professional.

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