The political economy of sunset and sunrise corporate strategies: risks and opportunities for business and society

Policy Brief

University College London
Dr Brunilde Verrier, Professor Neil Strachan

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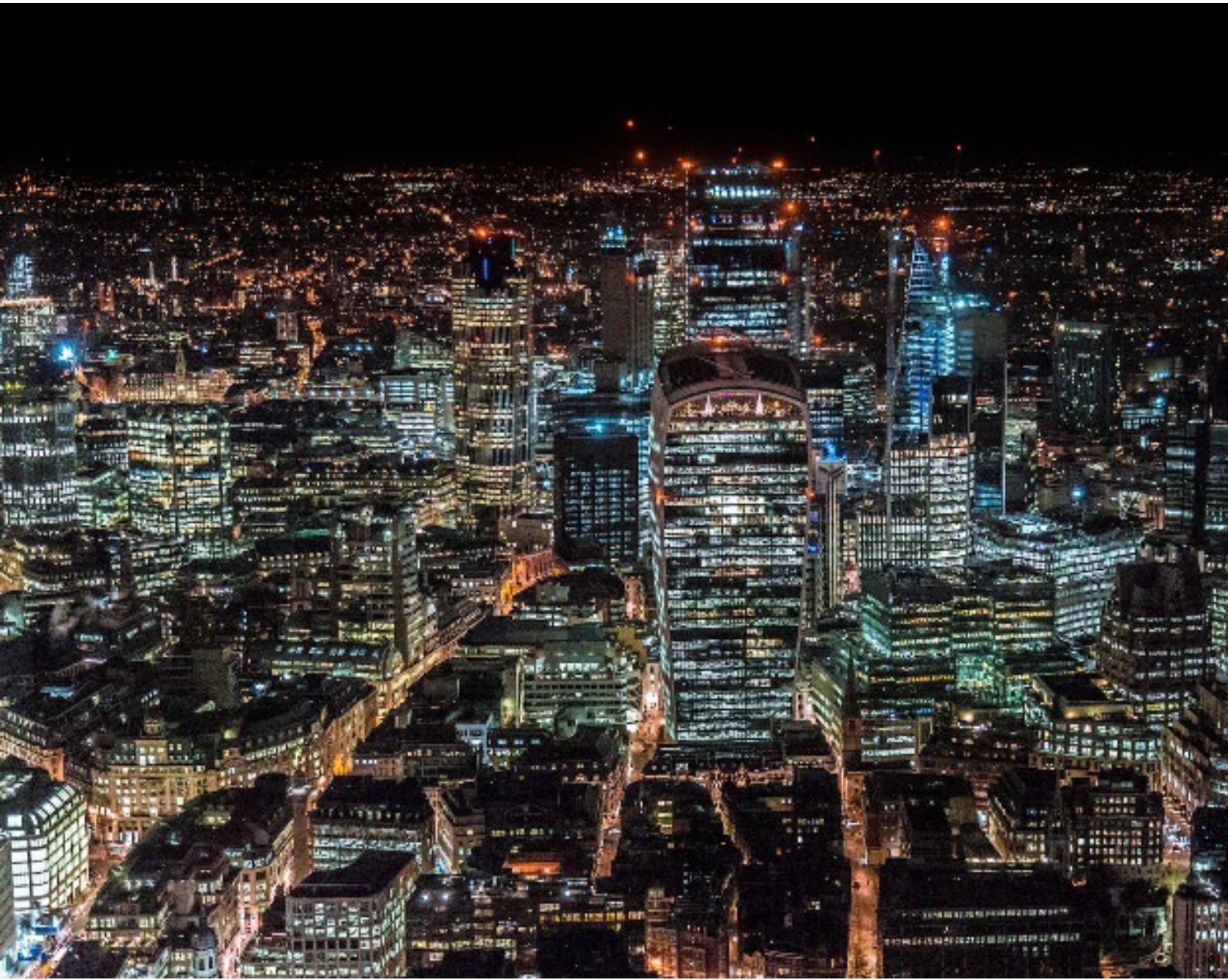

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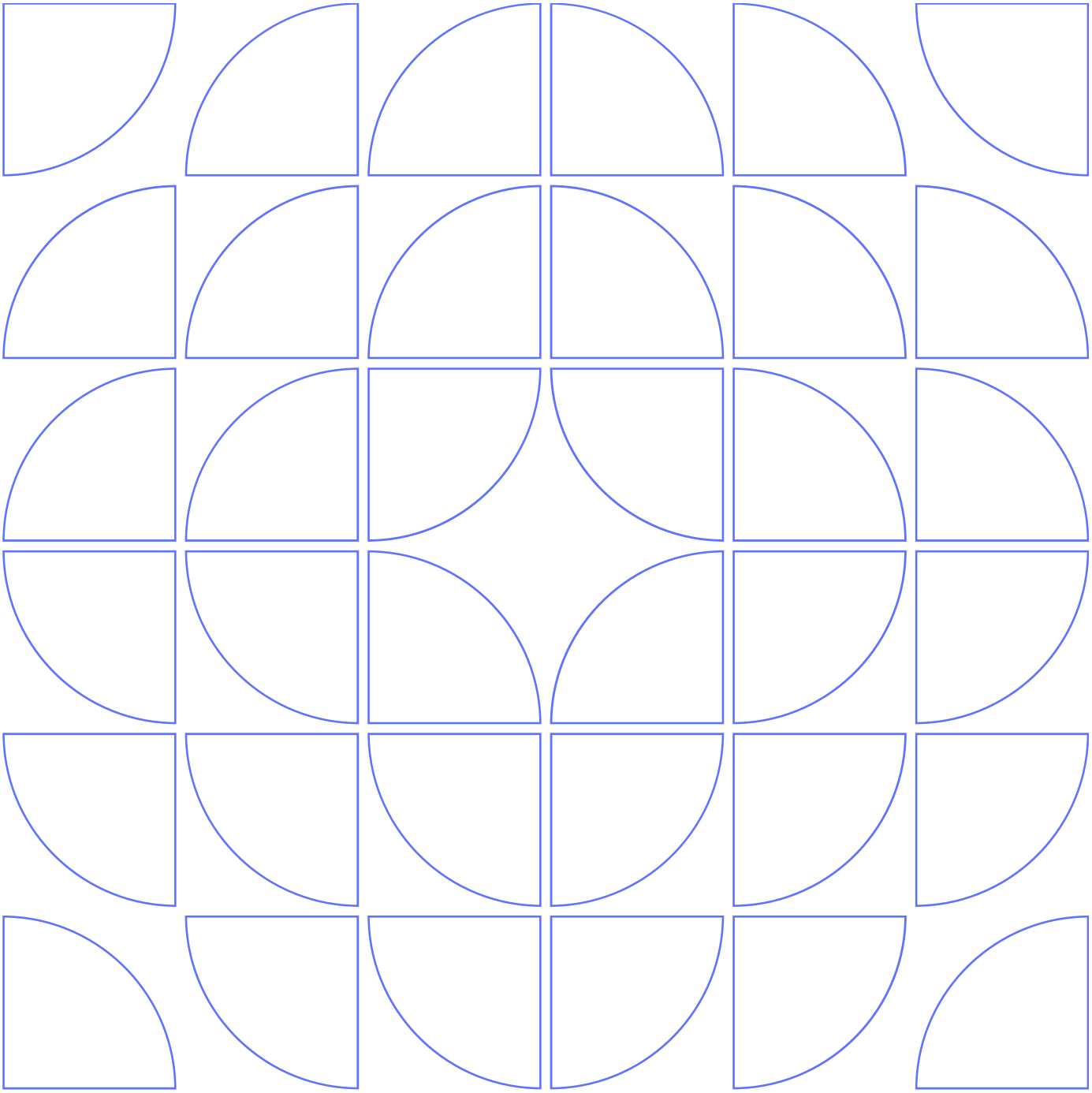

IDRIC Policy Brief: The political economy of sunset and sunrise corporate strategies: risks and opportunities for business and society

Summary and highlights

Energy intensive industries are at the heart of the socio-economic fabric of the UK, and many other countries. However, the low-carbon industrial transition requires both major technical achievements as well as societal transformations. In this landscape, incumbent industries face a difficult position:

- They need to manage the decline of carbon-intensive assets to ensure their own continued business performance
- They need to retain their industrial competitiveness for national energy resilience and security
- They are also expected to continue to provide stable employment and be a foundation for socio-economic stability in specific towns and cities

The strategic positioning of firms towards decarbonisation can entail important risks or benefits to business performance and society. This brief illustrates the political economy of industry strategies – i.e. their connection with markets, citizens, and the state, to highlight potential vicious and virtuous cycles of transformation in national energy pathways.

The main risks are centred on the stranding of physical, financial, and human assets of incumbent industries, which can affect business and society resilience. However, the same industries can leverage their expertise towards transformative opportunities to sustain new business models as well as support communities and regional socio-economic stability. Important co-benefits of such opportunities can be realised through innovations, skills and resources transfer, to enhance market certainty for investors while securing the firm's financial position and social license to operate.

Having more certainty in the future is essential for industry decision-makers. Clearly defined government policies and support with exiting strategies can help, but firms can also strengthen their performance over time by sending their own innovation and investment signals to markets and policy decision-makers. Additionally, engaging citizens and consumers early in transitions is an essential enabler to drive stability, industry resilience and low-carbon transitions. System dynamics simulation models can be derived from the causal loop diagrams presented in the brief.

1. Introduction

1.1. The challenge facing incumbent and new entrant firms

Industries are facing increasing public, investors and shareholder's scrutiny to operate in accordance with environmental, social and governance best practices (ESGs) [1]. Incumbent firms are often well-established entities managing large flows of financial, human and physical assets. They also often benefit from high-level networks and stable private and institutional investments [2]. Incumbents can start to lose investors' interest in case of changing market and socio-economic conditions. New entrants are characterised by high technical and societal innovations, but low networking coalitions, coordination, or political influence. Despite rapid growth, they are not stable enough on the market to attract steady funds [2].

In the context of the low-carbon transition, it is more appropriate to recognise and explore the diversity and temporality of industries *strategies* rather than opposing incumbents and new entrant organisations [3]. Strategies are transient and firms can evolve into "sunsetting" and "sunrising" roles, from leading and supporting transitions, implement change imposed by regulations, through to mobilizing opposition to policies and new entrants, notably via lobbying [4]. While incumbents have often been portrayed as technically and culturally locked-in, they also engage in active business diversification and have powerful potential to drive innovations and support the transition [3]. Incumbents have the "economic, social or technological capacity to affect system change" [4].

1.2. Strategies of incumbent firms

Incumbents corporations can resist, delay, or reposition their contribution to transitions by heading towards net-zero emissions without core transformations [5]. Favouring incremental change make them vulnerable to the rapid emergence of new markets, technologies and services [6]. They can misinterpret their new position on the market, leading to slow responses and "business model inertia" furthered by their large technical and strategic processes [7] [8]. The need to re-organise may only be recognised when risks and costs are very high, reinforcing patterns of organisational and cultural resistance to change.

However, business model experimentation and collaborations between competing firms can enhance business viability and innovation [9]. For example, many energy incumbents are investing to develop carbon capture and storage (CCS) infrastructures and hydrogen technologies associated to chemical optimisation towards circular, closed loops processes. The association of large industries to CCS and hydrogen which are yet to become viable on a large scale is of particular interest to future energy pathways, as some argue itis necessary to help society transition to a low carbon economy [10], but others argue it is a controversial solution liable to delay emissions mitigation goals.

Finally, if a firm immediately recognises its position on future markets, core cultural transformations can be driven by a clear top-down vision enriched with bottom-up expertise. Hence, incumbents can drive innovation and support transformative change [3] by engaging in active innovations and diversification. Linking such strategies to their well-established expertise and networks, incumbent actors are likely to manage more efficiently the decline of legacy assets and sustain their long-term viability [11], while harvesting public image benefits [3].

2. Industry Strategies and Socio-economic Stability

2.1. Business, financial, sectoral, and macro-economic risks

While defensive strategies can sometimes appear to sustain the business in the short and medium term, increasing costs and risks will reinforce organisational and cultural resistance and close important windows of opportunities for the business, which can eventually ripple through wider transitions "lock-ins" for national energy pathways [12]. Incumbent corporations' assets can be technological or financial (investments), but also physical infrastructures, and human resources (skills). Sustainability transition scholars stress the wider risks to communities and regional economies coming from the depreciated assets of sunsetting industries which are rapidly losing value on the market, becoming "stranded" [13]. The value of assets tied to a particular industrial process or geographical location will diminish even more rapidly, reinforcing cost to transitions and resistance due to the impact on local jobs [12]. If corporations delay their contribution to transitions, or actively mobilise action to slow or inhibit change, the risks coming from stranded assets are likely to increase [5].

2.2. Harvesting business and society co-benefits

Engaging early in low-carbon transformations allows for gradual, lower levels of disruptions as firms shift from perceiving initial capital costs as barriers to seeing them as investment opportunities to avoid increasing costs and become resilient organisations aligned with evolving customer demand, public scrutiny and shareholder values [14]. Incumbent industries can contribute to and benefit from transitions through; a) technological innovation, b) knowledge and resources transfer, and c) enhancing the credibility of novel technologies. Combined this offers market certainty and stability for investors while securing their position on new markets, improving their image and delaying the decline of legacy assets [14]. Early transitions can also help policy makers minimize climate damage and transition costs, sustain businesses financial health, and achieve rapid low-carbon transitions [15] [13]. Leaders supporting transition policies may also be perceived as more legitimate and benefit from a greater political mandate or social license to operate [16] .

3. Feedback Cycles in Industrial Strategies

When analysing industry strategies for future energy transition pathways, system dynamics allow investigation of complexity and non-linear behaviours [1] [2]. With the use of causal loop diagrams (CLDs) as in Figures 1 and 2, we can illustrate feedback loops creating “virtuous” and “vicious” cycles for business and society. Vicious effects are mostly created via the accumulation of stranded assets, while virtuous co-benefits are generated by high levels of adaptation and early transfer of resources and skills.

In Figure 1, the two central loops of this CLD can be described as “business lock-in” versus “green investment certainty”. The first loop illustrates how resistive strategies lead to reduced diversification and limited physical and human resources evolution, which gradually increases the amount of assets becoming stranded, generating higher costs to transition, and reinforcing cultural barriers to change. By opposition, more supportive strategies increase core adaptation, the credibility of green technologies and low-carbon market certainty. The latter can further enhance business performance by alleviating potential misperceptions of the business position on new markets.

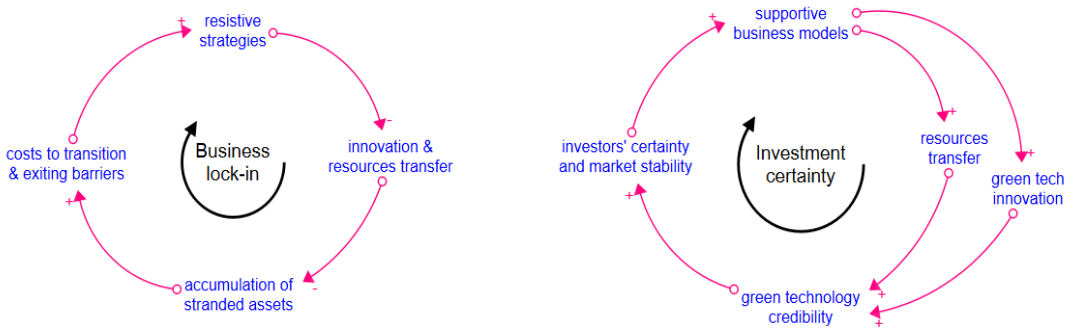

Figure 1: Main strategic "vicious" and "virtuous" reinforcing cycles

How to read the figures: A CLD illustrates positive (+) if *b* goes in the same direction as *a*, and negative (-) if *b* goes in the opposite direction as *a*. These polarities between components in a system create reinforcing or balancing feedback loops.

Figure 2 build on this and shows both sunset (resistive) and sunrise (supportive) strategies represented by different levels of the single variable “resistive strategy”. The variables “public commitment” and “policy commitment” together with “green market certainty” complete the picture with essential socio-technical mechanisms of transformation such as technology diffusion, divestment, and phase-out. Some of these mechanisms reinforce initial vicious and virtuous effects, while others balance them. For instance, if a growing green market share and investor’s scrutiny is perceived as a threat rather than an opportunity, this will counteract virtuous cycles of societal and market transformations (loop B1).

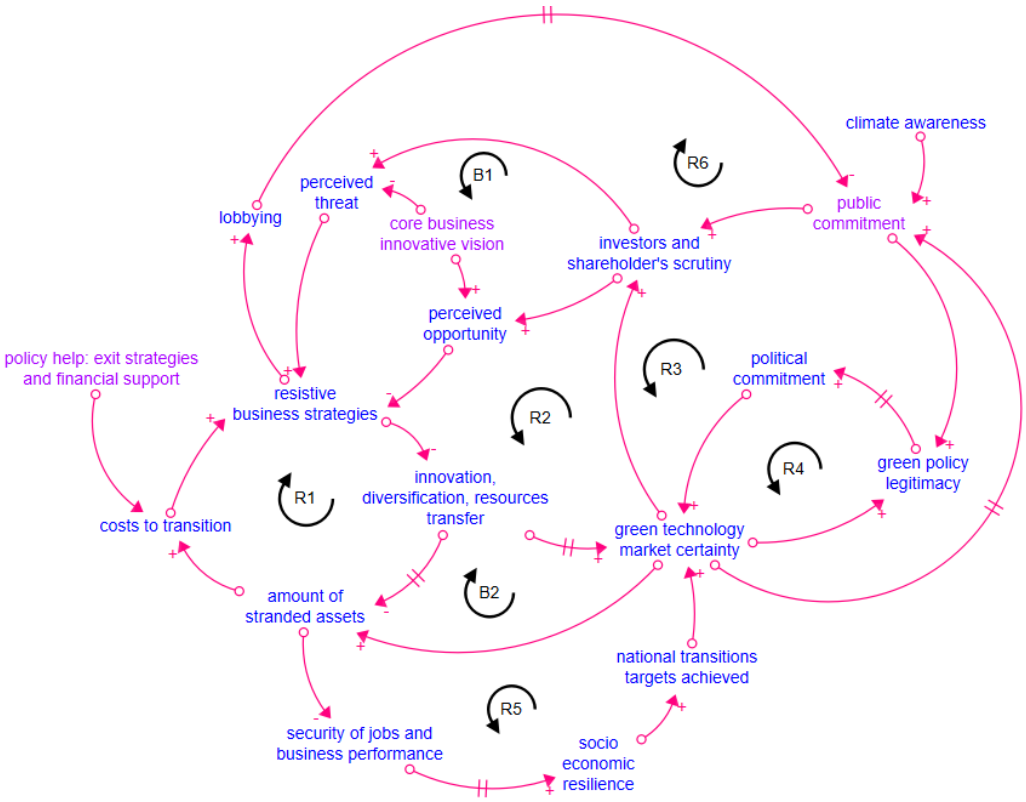

Figure 2: Socio-technical feedback cycles of industrial decarbonisation strategies (hash marks = accumulation delays; in purple=variables of leveraging interest)

A detailed summary of the feedbacks in Figure 2 is presented in Table 1.

Table 1: Detailed summary of feedback loops

Feedback loop name	Denomination and type	Summary of causalities
Business lock-in	Reinforcing effect 1 (R1)	Vicious reinforcing pattern between resistive strategies and increasing costs and exiting barriers, via an accumulation of stranded assets
Innovation and green investment certainty	R2	Virtuous link between innovation & skills transfers increasing market certainty and securing the firm's position on new markets
Perception of threat to business	Balancing effect 1 (B1)	The perception of shareholder's scrutiny as a threat increases resistance and counterbalances virtuous innovations cycles
Market disruption	B2	Fast market change can accelerate the creation of stranded assets
Divestment and public scrutiny	R3	Public movements increase investor's scrutiny to invest in sustainable assets
Phase out	R4	Policy commitment increases low carbon market development
Socio-technical transitions	R5	Business adaptation drives long-term security for jobs and business performance, enhancing the achievement of national targets
Lobbying	R6	Mobilizing opposition dampens commitment to transitions, reducing certainty and stability

4. Application to Industrial Policy and Decision Making

So far, policy and regulation efforts for industrial decarbonisation have mostly focused on carbon taxes, emissions reduction, market development incentives, large infrastructure developments as well as transparency requirements [17]. However, increasing public climate awareness and engaging citizens early is also an essential lever, as it may provide green market and policy legitimacy with an important driving effect on the development of the market and shareholder scrutiny (Figure 2, loop R7), helping easier governance and secure corporation's license to operate [16].

Clearly defined government policies and hence more certainty in the market evolution is essential for industry decision makers, as well as being supported with their existing strategies. However, firms can also greatly contribute to market certainty and their own viability over time by sending their own innovation and investment signals to investors and policy decision makers.

Delays in the system illustrate oncoming gradual accumulations (e.g., of stranded assets but also technological diffusion or public and political commitments), showing areas where "tipping points" must be considered and windows of opportunities seized for efficient mitigating action, for instance, before risks to jobs, businesses and wider socio-economic resilience are too great.

CCS and green hydrogen as part of the energy mix can help accelerate and support low-carbon transitions in hard to abate sectors (e.g., steel, chemicals) and for energy storage purpose (e.g., from extra energy produced from renewables), which would in this case support the virtuous cycle of green market investment certainty (Figure 2, loop R2). Yet, these technologies also have the potential to restrain the market diffusion of renewables and delay the phase-out of carbon intensive fuels. In this case, such technologies would reinforce defensive vicious cycles related to the mobilisation of opposition and reduced public commitment (Figure 2, loop R7).

Lobbying can provide political power to firms and lead policy makers to defend industry's interests as their own [5], but it is a risky strategy for long-term industrial competitiveness and resilience. Decentralisation is an opportunity to develop new businesses even for well-established actors [6]. In energy intensive and high-capital expenditure industries such as steel, chemical or cement, the diffusion of low-carbon technologies must overcome important financial barriers since investments carry uncertainty, longer paybacks and shutdowns to upgrade existing assets [18]. Carbon pricing mechanisms can help increase demand for low-carbon steel if they are introduced in the same time as planned investments, to avoid further competitiveness risks [19].

Helped by financial mechanisms – decommissioning needs and green technologies export networks are seen as other avenues for sustained economic growth from the transition from oil and gas [20]. This puts government responsibility at the core of increasing consumer acceptance and engagement and setting direction for innovation and financial investment that can manage economic instabilities arising from structural change.

5. Concluding Remarks

The decarbonisation of business and industries is essential to reach national decarbonisation targets in the UK and other industrialised countries who have pledged to contribute to limiting global warming to 1.5C above pre-industrial levels. Industries face pressure to decarbonise, including from public and investors scrutiny. Because industries are historically tied to the well-being of society through their services, infrastructures, and the provision of essential jobs and skills, the strategies they choose to answer these pressures and mitigate disruptions may have profound implications for whole regions and their communities. If governments can engage early in core business transformations through financial and advisory policy, this can help with long-term industrial exiting strategies. Building on this, engaging citizens and consumers in transitions, are important leveraging opportunities to drive industry resilience and societal low-carbon transitions. The operationalisation of complex socio-technical system studies can be enhanced with multi-stakeholder participatory approaches and scenarios modelling. The causal loop diagrams (CLDs) presented here are one example of an analytical framework to engage with industrial and policy stakeholders. In future, such a CLD can be used as a stepping stone towards quantified "stock and flows" simulation models of successful industrial decarbonisation strategies.

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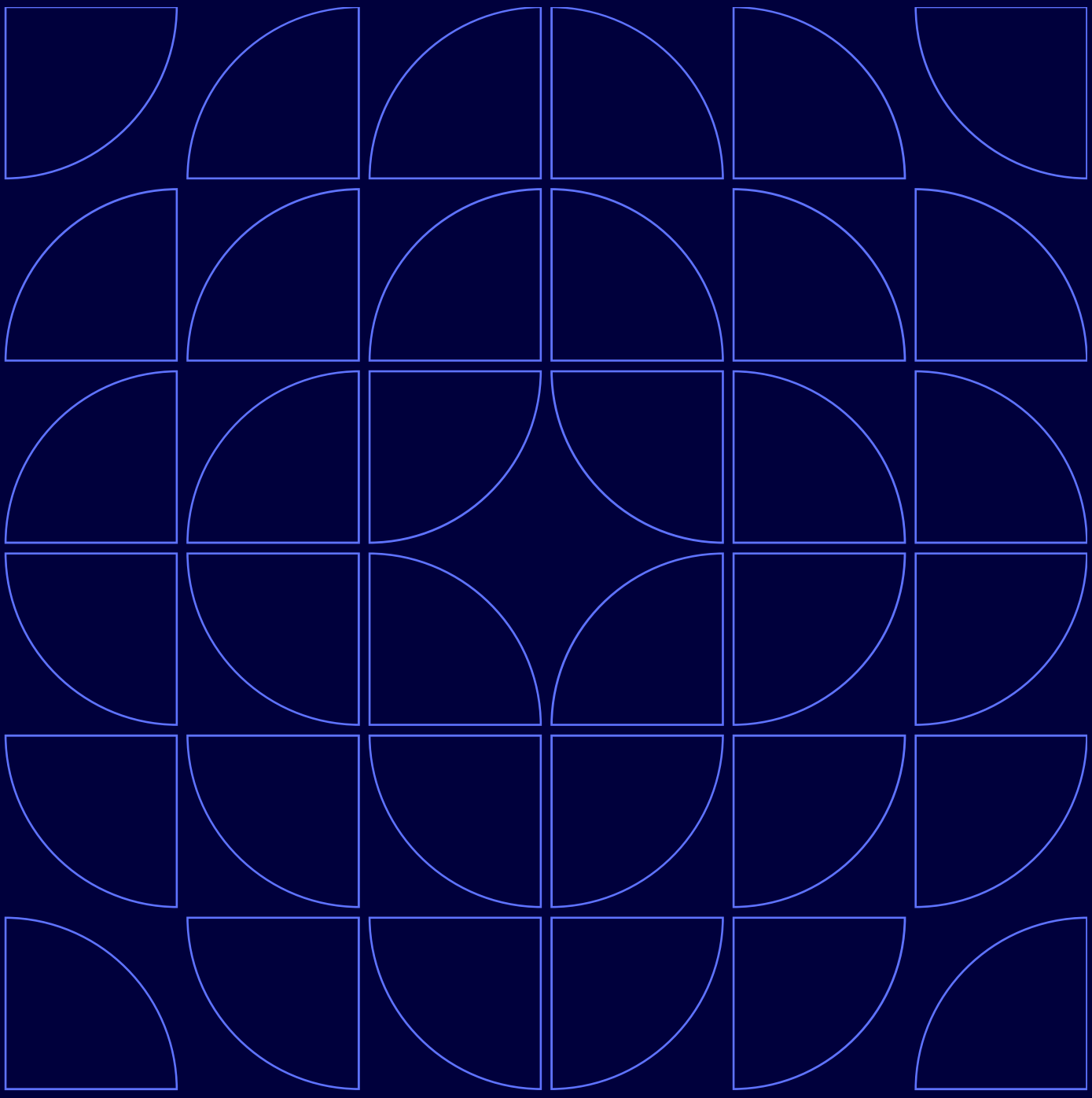
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