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# GREEN OUTSOURCING IN GLOBAL VALUE CHAINS: FROM TRANSACTION COST MINIMISATION TO ENVIRONMENTAL CAPABILITY RECOMBINATION

# «ЗЕЛЕНИЙ» АУТСОРСИНГ У ГЛОБАЛЬНИХ ЛАНЦЮГАХ СТВОРЕННЯ ВАРТОСТІ: ВІД МІНІМІЗАЦІЇ ТРАНСАКЦІЙНИХ ВИТРАТ ДО РЕКОМБІНАЦІЇ ЕКОЛОГІЧНИХ МОЖЛИВОСТЕЙ

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***Abstract***. *The governance of outsourcing decisions in multinational enterprises has been theorised extensively through transaction cost economics, property rights theory, and the resource-based view. However, these frameworks, developed largely without reference to environmental constraints, provide insufficient guidance for firms navigating the demands of supply chain decarbonisation, scope 3 emissions accountability, and green value chain transformation. This article identifies a fundamental theoretical gap and proposes a conceptual extension to address it.*

*The concept of ecological asset specificity, the degree of mutual dependency created through joint environmental investment and regulatory interdependence between supply chain partners, as a distinct governance variable absent from Williamson's original typology were introduced. It is argued that this omission has practical consequences: firms that have made significant co-investments in supplier environmental capability face governance risks, including environmental asset stranding and regulatory exposure, that existing contractual frameworks cannot adequately anticipate or mitigate.*

*Drawing on Gereffi, Humphrey, and Sturgeon's global value chain governance typology, it is demonstrated that modular governance architectures, though widely adopted for their flexibility advantages, create structural disincentives for the relational investment that genuine environmental capability development requires. Relational governance, by contrast, provides the organisational conditions under which innovation offsets of the kind described by Porter and van der Linde can be realised at the supply chain level.*

*The article culminates in a reconceptualisation of green outsourcing as a form of environmental capability recombination – a strategic practice through which MNEs assemble and develop environmental resources across organisational and national boundaries. This framing, grounded in Verbeke's internalisation theory, repositions outsourcing from a cost arbitrage instrument to a platform for sustainability-driven competitive advantage. Theoretical and managerial implications are discussed, and directions for future empirical research are identified.*

***Keywords:*** *green outsourcing; ecological asset specificity; global value chains; environmental capability recombination; transaction cost economics; outsourcing governance; supply chain decarbonisation; multinational enterprises; relational governance; sustainable supply chain management*

***Анотація***. *Теоретичне осмислення аутсорсингових рішень багатонаціональних підприємств традиційно спирається на економіку трансакційних витрат, теорію прав власності та ресурсно-орієнтований підхід. Однак ці концепції, сформовані переважно без урахування екологічних обмежень, не забезпечують достатньої теоретичної основи для компаній, що стикаються з викликами декарбонізації ланцюгів постачання, обліку викидів третього рівня та екологізації глобальних ланцюгів створення вартості. У статті ідентифіковано фундаментальну теоретичну прогалину та запропоновано концептуальне розширення для її усунення.*

*Введено поняття екологічної специфічності активів – ступеня взаємозалежності, що виникає внаслідок спільних екологічних інвестицій та регуляторної взаємозалежності між партнерами по ланцюгу постачання – як окремої змінної управління, відсутньої в оригінальній типології Вільямсона. Стверджується, що ця прогалина має практичні наслідки: компанії, що здійснили значні спільні інвестиції в екологічний потенціал постачальників, стикаються з управлінськими ризиками, включаючи знецінення екологічних активів та регуляторні ризики, які чинні контрактні механізми не спроможні належним чином передбачити або мінімізувати.*

*Спираючись на типологію управління глобальними ланцюгами вартості Гереффі, Гамфрі та Стерджона, доведено, що модульні архітектури управління, попри їхні переваги в частині гнучкості, формують структурні антистимули для реляційних інвестицій, необхідних для розвитку реальних екологічних можливостей. Реляційне управління, навпаки, забезпечує організаційні умови для реалізації інноваційного офсету, описаного Портером і ван дер Лінде, на рівні ланцюга постачання.*

*У статті запропоновано переосмислення зеленого аутсорсингу як форми рекомбінації екологічних можливостей – стратегічної практики, за допомогою якої БНП формують та розвивають екологічні ресурси через організаційні та національні кордони. Цей підхід, заснований на теорії інтерналізації Вербеке, репозиціонує аутсорсинг від інструменту арбітражу витрат до платформи для досягнення конкурентних переваг на основі сталого розвитку.*

***Ключові слова:*** *зелений аутсорсинг; екологічна специфічність активів; глобальні ланцюги створення вартості; рекомбінація екологічних можливостей; економіка трансакційних витрат; управління аутсорсингом; декарбонізація ланцюгів постачання; багатонаціональні підприємства; реляційне управління; управління сталими ланцюгами постачання*

**Introduction.** There is something quietly paradoxical about the way outsourcing is still theorised. Decades of scholarship (from Coase's foundational question about why firms exist at all,

through Williamson's meticulous anatomy of transactional hazards, to the sprawling literature on global value chains) has produced a remarkably coherent picture of how multinational enterprises (MNEs) decide what to make and what to buy. This traditional understanding of the firm as an alternative to the market mechanism remains a cornerstone of international business studies (*Buckley & Casson, 1976*). The logic is elegant: firms internalise activities when the costs of market exchange outweigh the costs of internal coordination, and they externalise when the reverse holds. What this picture largely omits, however, is the environment – not as backdrop, but as a genuinely transformative variable in the governance of cross-border production. This omission was perhaps forgivable in 1937, or even in 1985. It is considerably harder to justify today.

The intensification of climate-related regulation, the mainstreaming of ESG frameworks within institutional investment, and the growing consumer and civil society pressure on supply chain transparency have collectively altered the conditions under which outsourcing decisions are made. Modern corporations are now evaluated not just on financial performance, but as "corporate citizens" responsible for their impact across global networks (*Crane & Matten, 2016*). Firms no longer choose suppliers solely on the basis of cost, capability, or contractual risk. Increasingly, they must weigh the environmental profile of their partners, the carbon intensity of logistics corridors, the regulatory exposure associated with particular jurisdictions, and the reputational consequences of being upstream from a pollution scandal. This necessitates a shift towards integrating social and environmental responsibility into the core of international business strategy (*Kolk, 2016*). The make-or-buy decision, in other words, has acquired an ecological dimension that existing theory has not yet adequately absorbed.

This article argues that what is needed is not a wholesale replacement of the transactional cost framework or its descendants, but a deliberate extension – one that introduces the concept of ecological asset specificity as a distinct governance variable, and that reframes outsourcing not merely as a mechanism for cost arbitrage, but as a potential instrument for the recombination of environmental capabilities across global value chains. By focusing on the creation of "sustainable value", firms can align their environmental efforts with long-term competitive differentiation (*Hart & Milstein, 2003*). The concept of green outsourcing, as developed here, is intended to occupy precisely this theoretical space: between the classical logic of make-or-buy and the emerging imperatives of sustainable production.

**The article aims** to develop a conceptual extension of classical outsourcing theories by introducing the notion of ecological asset specificity and reconceptualising green outsourcing as a strategic instrument for environmental capability recombination within the global value chains of multinational enterprises.

**Literature review.** Any serious engagement with outsourcing theory must begin with Ronald Coase, not out of ritual deference, but because his 1937 question, why does the firm exist if the price mechanism can coordinate economic activity, remains the most productive starting point for thinking about organisational boundaries. This fundamental inquiry was later expanded into the theory of the multinational enterprise, positing that firms exist to exploit advantages across borders that markets cannot efficiently coordinate (*Hymer, 1976*). Coase's answer, that firms emerge when internal coordination is cheaper than market exchange, introduced the concept of transaction costs into economics and, by extension, into the study of international business (*Coase, 1937*). The decision to outsource, at its most basic level, is a decision about which side of that cost equation a particular activity falls on.

However, Coase's original framework was remarkably spare. Transaction costs were conceived primarily in terms of search, negotiation, and enforcement – the frictions involved in using the price mechanism. What the framework did not anticipate was the degree to which externalities (costs

imposed on parties outside the transaction) would eventually become internalised through regulation, litigation, and reputational pressure, and would thereby re-enter the calculus of the firm. In our current state of "World 3.0", global integration is incomplete, and firms must navigate the complex realities of semi-globalized markets (*Ghemawat, 2011*). Environmental costs are the most consequential example of this dynamic. When a firm outsources manufacturing to a supplier with weak environmental controls, the pollution generated is, in classical Coasian terms, an externality – it falls outside the transaction. In the contemporary regulatory environment, however, this externalisation is increasingly incomplete. Geographic and administrative distances between partners can no longer be used to obscure environmental impacts (*Ghemawat, 2001*). Supply chain due diligence legislation, carbon border adjustment mechanisms, and mandatory scope 3 emissions reporting are progressively forcing firms to account for the environmental conduct of their suppliers as if it were their own. The transaction, in effect, has expanded.

Oliver Williamson built the most influential predictive model on Coasian foundations, identifying the key variables that determine whether market exchange or internal hierarchy is the more efficient governance structure for a given transaction (*Williamson, 1985*). The choice of governance is often guided by the need to combine ownership-specific assets with location-specific advantages through internalisation (*Dunning, 1980*). The three principal dimensions of Williamson's framework (asset specificity, uncertainty, and transaction frequency) remain analytically powerful, and the logic they generate is well established: high asset specificity raises the risk of opportunism and thus favours internalisation; low specificity and high standardisation favour market governance; intermediate cases produce hybrid arrangements of various kinds. Furthermore, because many MNEs operate primarily on a regional rather than a global scale, these governance choices are often embedded in regional production networks (*Rugman, 2005*).

Asset specificity is the most consequential of these variables. Williamson distinguished several types: site specificity, physical asset specificity, human asset specificity, dedicated assets, each capturing a different way in which resources become locked into particular transactional relationships, creating dependency and the attendant risk of hold-up. What Williamson's taxonomy does not include, however, is what might be called ecological asset specificity: the degree to which a firm's environmental capabilities, certifications, or compliance infrastructure are adapted to particular partners, processes, or regulatory contexts. This lack of theoretical accounting is problematic in "emerging markets", where institutional voids require firms to build their own systems of governance and compliance (*Khanna & Palepu, 2010*).

Consider a firm that has invested in a supplier's capacity to meet specific emissions standards, funded the transition to renewable energy in that supplier's facilities, or co-developed proprietary waste reduction technologies within a supply chain relationship. These investments exhibit all the hallmarks of asset specificity. They are relationship-specific, difficult to redeploy, and create genuine mutual dependency. Yet they fall outside Williamson's original categories. This exclusion overlooks the fact that internationalization is a process of gradual knowledge development and increasing commitment to sustainable practices (*Johanson & Vahlne, 1977*). The practical consequence of this omission is significant. Firms that have developed deep environmental relationships with their supply chain partners face governance challenges that the transaction cost framework, as originally formulated, cannot adequately characterise. MNEs from emerging economies, for instance, may use international expansion as a "springboard" to acquire the green capabilities they lack at home (*Luo & Tung, 2007*).

The risk is not merely opportunism in the conventional sense, but something more structurally complex: the possibility that environmental investments made within an outsourcing relationship will be stranded if the relationship breaks down, or that a partner's environmental non-compliance will

create regulatory or reputational exposure that cannot be contractually anticipated or fully mitigated. To mitigate these risks, modern firms may require a "Chief External Officer" to manage the interface between the firm and its complex external environment (*Doh et al., 2014*). These are transactional hazards of a new kind, and they require theoretical accommodation. The new internalisation theory emphasizes that managing such cross-border relationships is a dynamic capability central to corporate success (*Verbeke & Kano, 2015*).

Grossman and Hart's (1986) property rights theory introduced a further dimension to the make-or-buy question: the allocation of residual control rights. Where Williamson focused on the costs of writing and enforcing contracts, Grossman and Hart began from the observation that all contracts are necessarily incomplete (no agreement can anticipate every contingency) and that the ownership of assets determines who holds decision-making authority in the gaps. Ownership, on this view, is not merely a legal formality but a governance mechanism that shapes incentives and, consequently, investment behaviour. For outsourcing theory, this insight translates into a fundamental trade-off. When a firm retains ownership of an activity, it retains control but also bears the full cost of coordination. When it outsources, it surrenders some degree of control in exchange for the supplier's incentive to invest and innovate. Grossman and Hart's framework implies that the optimal allocation of ownership rights depends on whose investments are more critical to the value of the relationship.

The environmental dimension introduces a new layer of complexity here. Environmental compliance and the development of green capabilities require specific investments – in technology, processes, and organisational routines. They are difficult to specify contractually and whose value is highly sensitive to regulatory change. A supplier that invests in low-carbon manufacturing capacity does so partly in anticipation of future regulatory requirements; the value of that investment depends on policy trajectories that neither party fully controls. In this context, the allocation of residual control rights over environmental assets becomes a non-trivial governance question. Who bears the risk of a carbon tax that renders a particular production process uneconomical? Who captures the value of green certifications that enhance the buyer's market position? These are precisely the kinds of questions that arise in the gaps of incomplete contracts, and Grossman and Hart's framework provides useful analytical tools for thinking about them, even if it does not, in its original form, engage with environmental specifics. Furthermore, as the global order shifts, these contractual gaps are increasingly filled by evolving ethical principles and institutional pressures that redefine the responsibilities of multinational corporations (*Kirste, 2024*).

Barney's (1991) resource-based view redirected attention from the transaction to the firm, arguing that sustainable competitive advantage derives from resources that are valuable, rare, inimitable, and non-substitutable (the VRIN criteria). Applied to outsourcing, RBV generates a familiar prescription: retain activities that involve VRIN resources, outsource those that do not. The firm's strategic logic, on this account, is one of focusing internal effort on the sources of differentiation and purchasing everything else from whoever can supply it most efficiently. This logic is not wrong, but it is incomplete in ways that the environmental transition has made increasingly visible. The RBV framework treats environmental capabilities primarily as a potential source of competitive advantage – a view that Porter and van der Linde (1995) developed with considerable sophistication, arguing that stringent environmental regulation can stimulate innovation offsets that enhance rather than erode competitiveness.

What the framework does less well, however, is account for the interdependence of environmental capabilities across organisational boundaries. Green competitive advantage, in practice, is rarely the product of a single firm's internal resources; it is typically embedded in supply chain relationships, in shared standards and verification systems, in the accumulated trust and joint investment of long-term partnerships. A firm cannot simply decide to outsource its way to

environmental sustainability any more than it can outsource its way to technological leadership – the capability is partly relational, and the make-or-buy decision must be made with that relational character in mind. This is the theoretical gap that the present article seeks to address. Transaction cost economics, property rights theory, and the resource-based view each illuminate important aspects of the outsourcing decision, but none of them provides an adequate framework for the environmental governance challenges that contemporary MNEs face. What is needed is an integrative approach – one that retains the analytical rigour of these traditions while extending them to incorporate ecological asset specificity, the governance of incomplete environmental contracts, and the relational foundations of green capability development. Such an approach is essential for addressing the dual challenges of climate change and sustainable development within the framework of global value chains (*Kolk & Pinkse, 2012*). The next sections develop this approach in the context of global value chain governance. Recent scholarship has already begun to use the global value chain framework to specifically tackle and analyse global environmental crises (De Marchi & Gereffi, 2023).

**Main results of the research.** The framework developed by Gereffi, Humphrey, and Sturgeon (2005) remains one of the most productive conceptual tools available for analysing how outsourcing relationships are structured across national boundaries. Their five-fold typology (market, modular, relational, captive, and hierarchy) was originally constructed around three determinants: the complexity of transactions, the ability to codify them, and the capabilities of the supplier base. As global trade evolves, these contours of capitalism continue to redefine how lead firms and suppliers interact (*Gereffi, 2018*). What is striking, in retrospect, is how directly these determinants map onto the governance challenges posed by environmental compliance and how little the original framework engaged with this correspondence.

We consider the complexity first. Environmental governance introduces a particular kind of transactional complexity that differs qualitatively from the technical complexity that Gereffi and colleagues had in mind. When a buyer firm seeks to impose emissions standards, deforestation commitments, or chemical use restrictions on a supplier, it is not simply specifying a product attribute, it is attempting to influence a production process that may be embedded in local regulatory contexts, energy systems, and labour practices that the buyer neither controls nor fully understands. The information asymmetries involved are substantial. The modular governance structure, in which suppliers produce to the buyer's specifications using their own general-purpose equipment and capabilities, is, in principle, well suited to the diffusion of environmental standards, because the codifiability of technical specifications is precisely what makes modular relationships function.

If a buyer can write a clear, verifiable environmental standard into its supplier code of conduct, and if third-party auditing can provide credible verification, then the modular logic should apply: the supplier either meets the standard or loses the contract. In practice, however, this model has proven considerably less effective than its theoretical promise suggests. The proliferation of sustainability audits across global supply chains has generated extensive evidence of their limitations – audits are episodic, they are often gamed, and they create incentives for superficial compliance rather than genuine capability development (*Kolk et al., 2017*). The codification problem, it turns out, is harder than it looks when the object being codified is not a dimensional tolerance, but a process outcome embedded in a complex organisational and regulatory environment. This is further complicated by the global trends in climate change litigation, which create new legal pressures for firms to provide substantive, rather than just procedural, evidence of environmental due diligence (*Setzer & Higham, 2021*).

Relational governance, by contrast, offers a different set of possibilities. In relational value chain relationships, coordination is achieved not through codified specifications alone, but through mutual dependence, reputation, and the accumulated trust of repeated interaction. This form of

governance is increasingly seen as a vital mechanism for multinational enterprises to contribute to the Sustainable Development Goals (SDGs) by fostering deeper, more inclusive partnerships (*Kolk, Kourula, & Pisani, 2017*). Dyer and Singh (1998) argued that relational rents, the returns generated by inter-firm collaboration that could not be achieved by either party acting independently, arise from relation-specific assets, knowledge-sharing routines, complementary capabilities, and effective governance mechanisms. These are precisely the conditions under which meaningful environmental capability development becomes possible. By aligning corporate sustainability with inclusive development, MNEs can ensure that environmental gains do not come at the expense of social equity in host countries (*Kourula, Pisani, & Kolk, 2017*). A buyer that invests in a supplier's environmental management system, co-funds the transition to renewable energy in that supplier's facilities or embeds its own engineers in the supplier's process improvement teams is doing something categorically different from a buyer that ticks compliance boxes through annual audits. It is building a shared environmental capability – one that is, in Barney's (1991) terms, genuinely difficult to imitate because it is embedded in the specific history and trust of the relationship. The captive governance structure, in which small or less capable suppliers are dependent on a single dominant buyer, raises a different set of environmental governance questions. On one hand, the power asymmetry in captive relationships gives buyers considerable leverage to impose environmental requirements on suppliers who have few alternatives. On the other hand, the same asymmetry that makes compliance demands enforceable also tends to suppress the supplier innovation that genuine environmental improvement requires.

A supplier that is structurally dependent on a single buyer has limited incentive to invest in environmental capabilities that exceed that buyer's requirements, because the returns to such investment cannot be captured across a diversified customer base. The result is a compliance-without-capability dynamic that is pervasive in labour-intensive global supply chains and that represents, arguably, the most significant structural obstacle to the greening of global value chains. Addressing these obstacles requires MNEs to take on greater responsibilities for governance and human rights across their entire value network (*Zagelmeyer, 2020). Sturgeon's (2002*) account of modularity in value chains provides an important complement to the Gereffi governance typology. To understand these dynamics, it is critical to distinguish between value chains, which focus on value creation, and production networks, which represent the physical and organisational linkages between firms (*Sturgeon, 2001*).

Sturgeon argued that the modularisation of production, the decomposition of complex activities into standardised, independently developable components, enables firms to externalise manufacturing without losing coordination at the system level. The strategic logic is compelling: modularity reduces the coordination costs of outsourcing, accelerates innovation by allowing parallel development across the supply network, and creates the flexibility to switch suppliers in response to cost or quality changes. From an environmental perspective, however, modularity is a double-edged instrument. The same flexibility that allows a firm to re-source production rapidly in response to a cost shock also allows it to exit environmental commitments with limited friction. This structural tension highlights that the environmental impact of MNEs is not just a byproduct of production, but a direct consequence of how their global networks are governed (*Steenbergen & Saurav, 2023*).

If a supplier relationship is genuinely modular, if the buyer can switch to an alternative supplier at low cost because interfaces are standardised and relationship-specific investments are minimal, then the buyer has limited incentive to invest in that supplier' environmental development, and the supplier has limited incentive to exceed compliance minima. Modularity, in other words, can systematically undermine the relational conditions under which serious environmental capability building becomes possible. This tension is not merely theoretical. It manifested acutely during the

COVID-19 pandemic, when the fragility of tightly optimised modular supply chains became visible (*Akinbolajo, O., 2024*). Firms that had prioritised flexibility and cost efficiency over depth of relationship found themselves unable to influence supplier behaviour when circumstances demanded rapid adaptation. The environmental parallel is instructive: firms that have treated their supply chains as modular assemblies of interchangeable components are discovering that the transition to lower-carbon production requires precisely the kind of deep, relationship-specific investment that modularity was designed to avoid. The architecture of the value chain, it turns out, is not neutral with respect to environmental outcomes.

The conceptual history of outsourcing in the international business literature is, at one level, a story of progressive sophistication – from the simple cost logic of early transaction cost economics to the relational rents of Dyer and Singh (1998), the modularity arguments of Sturgeon (2002), and Verbeke's (2013) reconceptualisation of internalisation as a dynamic capability. However, beneath this sophistication, the dominant metaphor has remained remarkably consistent: outsourcing as *arbitrage*. The firm identifies a differential – in labour costs, in expertise, in regulatory conditions, and exploits it by relocating an activity to wherever the differential is most favourable.

The green transition challenges this metaphor at a fundamental level. Environmental capability is not, in most cases, a fixed attribute of a location or a supplier that a firm can simply appropriate through a contractual relationship. It is, rather, a capability that must be actively developed – through investment, through knowledge transfer, through the kind of sustained organisational learning that requires genuine commitment from both parties. This commitment must also address the broader social dimensions of sustainability, ensuring that environmental initiatives do not overlook critical issues such as child labour or ethical working conditions in complex supply chains (*Engelbertink & Kolk, 2021*).

A firm cannot outsource to a green supplier if no such supplier exists. In many industries and many geographies, no such supplier yet exists at the scale or capability level required. The strategic logic of green outsourcing is therefore not primarily one of arbitrage but of *recombination* – the deliberate assembly and re-configuration of environmental capabilities across organisational and national boundaries to generate sustainability outcomes that no single firm could achieve independently. This recombination process is fundamentally shaped by the "competitive advantage of nations", as the institutional and resource-based quality of the host country determines the baseline for supplier environmental performance (*Porter, 1990*). This distinction carries significant theoretical weight. Verbeke (2013) introduced the concept of recombination capabilities in a different but related context, arguing that the capacity to combine firm-specific advantages with location-specific advantages from multiple national environments is a defining characteristic of the successful contemporary MNE. The argument developed here extends this logic: green outsourcing, properly conceived, is a form of environmental capability recombination – a strategic practice through which MNEs assemble, develop, and deploy environmental resources across their value chains in ways that create both competitive and sustainability value.

Porter and van der Linde's (1995) seminal argument about the relationship between environmental regulation and competitive advantage provides an important theoretical anchor for the concept of green outsourcing. Their central claim, that well-designed environmental regulation can trigger innovation offsets that more than compensate for compliance costs, challenged the prevailing assumption that environmental protection and economic competitiveness exist in fundamental tension. Firms that responded to regulatory pressure by genuinely rethinking their resource use, rather than simply installing end-of-pipe controls, discovered efficiency gains, product improvements, and new market opportunities that their less innovative competitors had not anticipated. What Porter and van der Linde described at the level of the firm has a direct analogue at the level of the supply chain.

When a dominant buyer firm (an MNE with the leverage and the incentive to drive environmental improvement through its supply network) imposes meaningful environmental requirements on its suppliers and provides the technical and financial support to meet them, it can trigger precisely the kind of innovation dynamic that Porter and van der Linde identified.

The key word here is *meaningful*: requirements that are genuinely demanding, that push suppliers beyond current practice, and that are accompanied by sufficient investment and time horizon to make adaptation feasible. The five characteristics of effective environmental standards that Porter and van der Linde identified: flexibility in means, stringency in ends, realistic transition periods, a focus on resource productivity rather than pollution control, and first-mover positioning, apply with equal force to the design of supply chain environmental programmes.

This has direct implications for the make-or-buy decision. A firm that treats environmental compliance as a procurement criterion, screening suppliers against a minimum standard and switching to alternatives when they fail, is likely to generate compliance behaviour rather than capability development. A firm that treats green outsourcing as a long-term capability investment, accepting the higher coordination costs of relational governance in exchange for the deeper environmental transformation that only relational governance can sustain, is engaged in something strategically different. The choice between these approaches is, at its core, a governance choice that maps directly onto the Gereffi typology: modular governance can enforce compliance; relational governance can build capability.

Kolk and Pinkse's (2008) taxonomy of corporate climate strategies provides a useful empirical grounding for the more abstract arguments developed above. Their six-fold classification – cautious planners, emerging planners, internal explorers, vertical explorers, horizontal explorers, and emission traders, captures the range of strategic postures that MNEs have actually adopted in response to climate pressure, and each posture implies a different relationship between internalisation and outsourcing as instruments of environmental strategy. The vertical explorers are most directly relevant here. These are firms that focus their environmental efforts on their supply chains (upstream toward raw material suppliers, downstream toward customers) because their own direct emissions are relatively low while the emissions embedded in their supply chains are substantial. For a vertical explorer, green outsourcing is not a peripheral concern but the central mechanism of environmental strategy. The governance challenges described in the previous section, how to move beyond compliance auditing toward genuine capability development, how to structure relational investments that yield innovation offsets, how to allocate residual control rights over environmental assets, are, for vertical explorers, first-order strategic questions.

What Kolk and Pinkse's taxonomy also reveals, however, is the degree to which most firms have not yet made this transition. The majority of their sample fell into categories that combine modest ambitions with limited supply chain engagement. The implication is not simply that firms are failing to live up to their environmental rhetoric, though that is often true, but that the strategic frameworks available to managers do not yet provide adequate guidance for the governance of green value chains. Transaction cost economics tells them to minimise transactional hazards; the resource-based view tells them to protect core competencies; the global value chain literature tells them about governance structures. None of these frameworks, taken individually, tells them how to design an outsourcing architecture that simultaneously delivers environmental capability development, competitive differentiation, and transactional efficiency. The concept of green outsourcing, as developed in this article, is an attempt to begin filling that gap.

Verbeke's (2013) concept of deep internalisation, the retention of high-value activities within the firm, combined with the selective externalisation of others through carefully designed outsourcing arrangements, offers perhaps the most useful integrative framework available for thinking about green

outsourcing at the level of the MNE. Verbeke's argument is that the boundary between internalisation and outsourcing should not be drawn on the basis of cost alone, or even on the basis of asset specificity in the Williamsonian sense, but based on a holistic assessment of how the configuration of internal and external activities shapes the firm's overall capacity to create and capture value. Applied to environmental strategy, this logic generates a clear implication: MNEs should internalise the environmental capabilities that are most central to their competitive differentiation and most difficult to develop through arm's-length relationships, and should outsource environmental functions where external partners can develop and maintain the required capabilities more effectively than internal teams, provided that the governance of those outsourcing relationships is designed to ensure genuine capability development rather than mere compliance. The distinction, to return to the central argument of this article, is between outsourcing as environmental arbitrage and outsourcing as environmental recombination. The former is a procurement decision; the latter is a strategic one, and it requires a correspondingly more sophisticated governance architecture.

The argument developed across the preceding sections can be stated with some precision: the classical make-or-buy framework, and its various theoretical elaborations, provides an insufficient basis for governing outsourcing decisions in an era defined by environmental constraint. This is not a trivial observation. Transaction cost economics, the property rights approach, and the resource-based view have each made genuine and lasting contributions to the understanding of organisational boundaries – contributions that retain their analytical value and that this article has no interest in discarding. The claim, rather, is one of incompleteness. These frameworks were constructed to explain how firms minimise governance costs and protect competitive assets in conditions of market imperfection. They were not constructed to explain how firms build, transfer, and recombine environmental capabilities across the complex, multi-tiered networks that constitute contemporary global value chains.

**Table 1.**

*Theoretical frameworks and their environmental governance implications*

| Framework | Primary governance logic | Environmental variables in original formulation | Extension required for green outsourcing |
|---|---|---|---|
| Transaction cost economics (*Coase, 1937; Williamson, 1985*) | Minimise costs of market exchange; internalise when internal coordination is cheaper. Asset specificity, uncertainty, and frequency determine governance structure. | Absent<br>Externalities treated as outside the transaction; no environmental cost category. | Ecological asset specificity<br>Joint environmental investments create mutual dependency and hold-up risk not captured by existing specificity typology. |
| Property rights theory (*Grossman & Hart, 1986*) | Allocate residual control rights to the party whose investment most affects joint value. Ownership determines incentives under incomplete contracts. | Absent<br>Environmental assets not conceptualised; no treatment of regulatory contingencies in residual control allocation. | Environmental residual control<br>Allocation of ownership over green certifications, carbon assets, and co-developed environmental IP under regulatory |

| | | | |
|---|---|---|---|
| | | | uncertainty. |
| Resource-based view (*Barney, 1991*) | Internalise VRIN resources that underpin competitive advantage; outsource non-core activities. | Partial<br>Environmental capability can qualify as VRIN but framework does not address its relational or cross-boundary character. | Interdependent green capability<br>Recognition that environmental competitive advantage is often embedded in supply chain relationships, not solely in firm-internal resources. |
| Relational view (*Dyer & Singh, 1998*) | Generate relational rents through relation-specific assets, knowledge sharing, complementary resources, and effective governance. | Partial<br>Trust and joint investment logic applicable to environmental co-development but not explicitly applied to sustainability outcomes. | Green relational rents<br>Relational governance as the necessary condition for environmental capability building beyond compliance; shared environmental investment as rent-generating mechanism. |
| GVC governance typology (*Gereffi, Humphrey & Sturgeon, 2005*) | Governance form determined by transaction complexity, codifiability, and supplier capability. Five types: market, modular, relational, captive, hierarchy. | Significant gap<br>The framework does not address environmental complexity or ecological codifiability as determinants of governance. | Environmental governance matrix<br>Modular governance enables compliance; relational governance enables capability development.<br>Environmental complexity and ecological asset specificity as additional governance determinants. |

The concept of ecological asset specificity, introduced in this article, is intended to perform a precise bridging function. By extending Williamson's (1985) typology to include a category of asset specificity defined not by technical or physical lock-in but by environmental co-investment and regulatory interdependence, it becomes possible to apply the governance logic of transaction cost economics to environmental relationships without abandoning the framework's analytical structure. The implication is not merely theoretical: it suggests that firms and their supply chain partners who have made joint investments in environmental capability: shared emissions monitoring systems, co-developed green production processes, jointly funded renewable energy transitions, face a genuine hold-up problem that existing contract design has not yet learned to address. The stranding of environmental investments when supply chain relationships dissolve is a real and growing source of value destruction, and it deserves the same theoretical attention as physical and human asset specificity.

The recombination framing, drawn from Verbeke's (2013) treatment of dynamic capabilities and extended here to the environmental domain, adds a further dimension. Recombination is not merely about protecting existing environmental assets from opportunistic appropriation; it is about actively assembling environmental capabilities from multiple organisational and geographical sources to generate sustainability outcomes that exceed what any single firm could achieve alone.

This is, in essence, what the most sophisticated green supply chain programmes attempt to do. And it is why the governance architecture of such programmes matters so profoundly. The difference between a compliance audit and a genuine capability-building partnership is not merely a difference of ambition; it is a difference of governance form, and governance form determines what kinds of environmental value can be created.

One of the more uncomfortable implications of the analysis concerns the widely celebrated principle of modular supply chain design. Modularity, the decomposition of production into standardised, independently developable components, has been presented in the international business literature primarily as a source of strategic flexibility and innovation velocity (Sturgeon, 2002). From an environmental governance perspective, however, modularity creates a structural disincentive for the kind of relational investment that deep environmental capability development requires. If the defining feature of a modular relationship is that partners are interchangeable, that switching costs are low and interfaces are standardised, then neither buyer, nor supplier has adequate incentive to make the long-term, relationship-specific environmental investments that genuine sustainability transformation demands.

This tension has practical implications that extend well beyond the theoretical register. The firms most deeply committed to supply chain decarbonisation, those engaged with science-based targets initiatives, scope 3 emissions reduction programmes, and supplier capability development at scale, are, almost without exception, firms that have moved away from modular toward relational governance in strategically critical supply chain segments. Apple's deep-tier supplier engagement on renewable energy, Unilever's long-term commodity supplier partnerships on agricultural sustainability, and IKEA's co-investment in supplier energy efficiency all reflect a similar underlying logic: that environmental transformation requires governance depth, and governance depth requires a degree of relational commitment that modularity systematically precludes.

The implication for theory is that the environmental transition may be forcing a partial reversal of the modularisation trend that characterised global value chain development in the 1990s and 2000s. Firms that built their supply chains on the flexibility logic of modularity now face the environmental governance logic of relationality. And the two are not easily reconciled. Navigating this tension is, arguably, one of the defining strategic challenges of the current period for MNEs engaged in global production.

The governance architecture of green outsourcing is not a neutral procurement matter, and treating it as such is one of the more consequential mistakes MNEs currently make at scale. Firms that route environmental ambition through compliance audits are not simply choosing an imperfect instrument. They are choosing a governance form that structurally forecloses the deeper supplier engagement that decarbonisation actually requires. The harder implication is this: relational governance costs more in time, coordination, and the loss of the switching flexibility that modular supply chains were built to preserve. MNEs that want genuine environmental capability development in their supply chains need to decide, segment by segment, whether they are willing to pay that cost and most existing strategic frameworks do not explicitly force that decision.

Second, the allocation of residual control rights over environmental assets, the question that Grossman and Hart's (1986) framework raises but does not resolve in the environmental context, deserves far more careful contractual attention than it currently receives. Joint environmental investments of the kind described above create genuine questions about ownership: who captures the value of a green certification earned through shared investment? Who bears the cost if a regulatory change strands an environmental asset? Who controls the intellectual property generated by joint process innovation? Standard supplier contracts do not adequately address these questions, and the gap between what firms invest in environmental supply chain relationships and what their contracts

protect is a significant, underappreciated governance risk.

Third, and perhaps most fundamentally, the concept of green outsourcing as environmental capability recombination suggests that MNEs should be thinking about their supply chains not merely as cost structures to be optimised or risk exposures to be managed, but as platforms for the assembly and development of environmental capabilities that can generate competitive advantage in a progressively decarbonising global economy. This is a different strategic logic from anything that classical outsourcing theory anticipated, and it requires a correspondingly different set of managerial frameworks and governance tools.

**Table 2.**

*Green outsourcing decision framework: governance form and environmental strategy by corporate climate type*

| **Corporate climate strategy type** | **Recommended governance form** | **Outsourcing configuration** | | **Primary environmental outcome** |
|---|---|---|---|---|
| | | **Key governance instruments** | **Make-or-buy logic** | |
| Cautious planners Monitoring only; no concrete action | Market | Minimum environmental clauses in supplier contracts; periodic compliance questionnaires | Buy on cost; environmental criteria as threshold, not selection driver | Risk reduction; avoidance of reputational exposure from non-compliant suppliers |
| Emerging planners Emissions targets set; no implementation | Modular | Supplier codes of conduct; third-party certification requirements; annual ESG audits | Buy standardised; environmental compliance as codified specification | Compliance attainment; audit-based verification of supplier environmental performance |
| Internal explorers Strong internal focus; energy efficiency | Hierarchy | Internalisation of energy-intensive processes; selective outsourcing of low-emission peripheral activities | Make where emissions are concentrated; buy where environmental impact is negligible | Scope 1 and 2 emissions reduction; direct energy efficiency gains in controlled operations |
| Vertical explorers Supply chain environmental focus | Relational | Co-investment in supplier environmental capability; joint emissions monitoring; long-term partnership contracts; shared | Buy from committed partners; governance depth traded for flexibility; ecological asset specificity high | Scope 3 emissions reduction; environmental capability recombination across the value chain; innovation offsets |

| | | | | |
|---|---|---|---|---|
| | | green R&D | | |
| Horizontal explorers Cross-market environmental opportunity | Modular Relational | Green product licensing; environmental joint ventures; outsourcing to green-specialist partners in adjacent markets | Buy green capability from adjacent-market specialists; build where proprietary environmental advantage is sought | New market entry through environmental differentiation; green revenue stream development |
| Emission traders Carbon market participation; offset focus | Captive Market | Emissions trading agreements; offset project outsourcing; carbon credit procurement from captive or spot-market suppliers | Buy emissions reductions externally; internalise trading strategy and carbon accounting | Net emissions position management; regulatory compliance through market mechanisms rather than operational transformation |

Source: (*Kolk & Pinkse, 2008*)

**Conclusions.** The governance of outsourcing decisions in multinational enterprises has long been theorised through frameworks whose explanatory power, while considerable, was not designed for the environmental conditions that now define the competitive and regulatory landscape. Transaction cost economics, the resource-based view, and global value chain governance each illuminate important dimensions of the make-or-buy calculus, yet none of them was constructed with supply chain decarbonisation, scope 3 accountability, or the co-investment dynamics of green capability development in mind. The result is a structural mismatch between the theoretical tools available to practitioners and scholars and the governance challenges they are asked to address.

This article has attempted to close part of that gap by introducing ecological asset specificity as a distinct governance variable and by situating green outsourcing within a recombination capability framework derived from internalization theory. The argument has not been that existing frameworks are wrong. It has been that they are, in the current moment, incomplete, and that their incompleteness has costs that show up not in theoretical discussions but in the governance decisions of firms that have committed to environmental transformation without adequate conceptual scaffolding.

The article's central contributions can be summarised in three propositions. First, ecological asset specificity constitutes a distinct and theoretically significant category within the Williamsonian framework, characterised by mutual dependency arising from joint environmental investment and the regulatory interdependence of supply chain partners operating in overlapping or linked compliance environments. Second, the governance form of outsourcing relationships is not neutral with respect to environmental outcomes: modular governance can enforce compliance, but it cannot sustain capability development, while relational governance, with its attendant costs of coordination and commitment, is the necessary condition for the kind of deep environmental transformation that genuine supply chain decarbonisation requires. Third, green outsourcing is most productively understood not as a variant of cost arbitrage but as a form of environmental capability recombination – a strategic practice through which MNEs assemble, develop, and deploy environmental resources

across organisational and national boundaries to generate sustainability outcomes that no single actor could achieve independently.

These propositions do not supersede the classical frameworks they extend. Coase's (1937) insight about the nature of the firm, Williamson's (1985) transactional logic, Barney's (1991) resource architecture, and Verbeke's (2013) recombination capability all remain analytically indispensable. This article argues that they are insufficient, taken individually or collectively, to address the environmental governance challenges the contemporary period has placed before multinational enterprises. Extending them – carefully, with attention to what each framework actually explains and where each leaves explanatory gaps – is the most productive available path toward a theory of outsourcing adequate to the demands of the green transition.

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