GREEN INDUSTRIAL POLICY
Grappling with Political Economy to Improve Performance

A working paper

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Meeting the moment: GIP and the pursuit of climate goals

As countries around the world ramp up efforts to address the climate crisis, the need for efficiency and effectiveness in designing and implementing responsive policies has never been greater. Successful climate action, particularly around the vast demands of fostering rapid and just energy transitions (JETs), requires major shifts in policy and economic activity. Such shifts must be undertaken in ways that are mindful of both social and developmental implications[1]...and must happen fast.

Governments are facing demands to phase out fossil fuels, ramp up renewables, respond to "green" market opportunities, and simultaneously advance public welfare priorities. In response, many are eschewing the relatively hands-off market-led liberal approaches favored in Western economic discourse over the last 30 years. Instead, governments of varying income levels are favoring a more hands-on approach through green industrial policy (GIP) in hopes of rapidly expanding climate-friendly economic activities. Indeed, GIP is increasingly seen as crucial to keeping climate targets within reach.

Green industrial policies in middle-income G20 countries doubled between 2015 and 2022 and increased forty-fold in high-income G20 countries over the same period.[2] Countries as diverse as the US, China, Kenya,Ethiopia, Brazil, Egypt, and India have been heavily investing in GIP in recent years. These moves are echoed in a range of regional initiatives in the European Union and beyond that seek to realize benefits of, e.g., shared infrastructure, regional value chains, regional trade agreements, and other forms of economic collaboration to foster green production or consumption. There also have been discussions taking place at the international level around supporting various forms of GIP, including calls, pre-2024 election, for a US-led Clean Energy Marshall Plan to hasten the expansion of such policies.[3]

[1] Lütkenhorst et al. refer to GIP's, "triple challenge of maintaining economic growth, avoiding environmental disasters and keeping inequality and poverty levels in check" in Lütkenhorst, W., Vidican, G., Altenburg, T., Pegels, A. (2014). "Green industrial policy: managing transformation under uncertainty." Discussion Paper, No. 28/2014 Deutsches Institut für Entwicklungspolitik (DIE). https://www.econstor.eu/bitstream/10419/199441/1/die-dp-2014-28.pdf.

[2] Juhász, R., Lane, N. (2024, May 10). "The Political Economy of Industrial Policy." https://ssrn.com/abstract=4823810.

[3] While the US assuming this role in the near future now seems unviable, it may be worth considering whether the EU might approximate some dimensions of such a plan.

As with most policies, there will be the intended outcomes of GIP and what actually happens. Frequently, these are not the same. Whether, and to what extent, the intended goals of GIP are realized will depend both on technical factors, certainly, but also crucially on their political viability. The importance of the latter is sometimes underappreciated both by those designing GIP and those supporting their implementation. Given the urgency and magnitude of the climate challenges GIP is meant to tackle, it is therefore critical to:

1) Understand how different aspects of specific political economy contexts can propel or hinder the performance of GIP

2) Systematically integrate these considerations into the prospecting, design, and implementation of these policies.

How industrial policy is meant to work and the complexities of "green" industrial policy

Industrial policy (IP) refers to "state action meant to intentionally shift the composition of economic activity." [4] It has historically been adopted by states to encourage major economic transformations to improve productivity and competitiveness by, e.g., mitigating risks to targeted sectors and addressing anticipated externalities.[5] IP can take various forms. These have ranged from protectionist measures like tariffs and other trade restrictions to subsidies and tax incentives; from loan guarantees and concessional finance to investment in research and development (R&D); from technology transfers to strategic procurement activities. With pro-market turns of the 1980s, economic globalization, and the emergence of the so-called Washington Consensus in the 1990s, overt industrial policy fell out of favor, particularly with wealthy Western nations.[6]

[4] Juhász, R., Lane, N. (2024, May 10). "The Political Economy of Industrial Policy." p. 1, https://ssrn.com/abstract=4823810.

[5] For more on the basic history of industrial policy, see, The Partnership for Action on Green Economy (2016). "Practitioner's Guide to Strategic Green Industrial Policy." https://archive.un-page.org/files/public/practitioners_guide_to_green_industrial_policy.pdf.

[6] The goal of post-World War II IP was typically to restructure economic activities to increase growth by enhancing the productivity or competitiveness of a specific sector. After a heyday in the 1960s and 1970s – with economies like Japan, Taiwan, and South Korea often cited as success stories – the state-led growth models associated with that period of IP declined in popularity (though never disappearing entirely even in the most pro-market states). As noted above, in the 1980s, the overt hands-on role of governments in guiding and directing economic activity was de-emphasized and gave way over the next few decades to government power being deployed to help advance neoliberal economic approaches. For a discussion of the ways in which industrial policy persisted and was reoriented after the 1970s, see Bulfone, F. (2023). "Industrial policy and comparative political economy: A literature review and research agenda." Competition & Change, Volume 27(1), pp. 22-43. https://doi.org/10.1177/10245294221076225.

In recent years, however, IP has been making a comeback, particularly as governments have attempted to respond to the climate crisis, confronted the COVID-19 pandemic, and faced growing geopolitical and economic competition. Even Western governments that had long sworn off overt government meddling in their economies appear to be drawing inspiration from, and responding to, the successful state-led approach underlying the massive expansion of the Chinese economy over the last three decades.[7]

GIP is, in theory, being deployed to accelerate the extensive and time-sensitive structural changes needed to achieve significant progress on JET and other climate goals. These policies are intended to address market failures and clear major obstacles to promote industries that produce green technologies and advance the production of goods and services in greener ways.[8] This can involve actions ranging from massive upfront investments in low-carbon pathways to steps for promoting uptake of these. The latter can also entail advancing greener production and consumption patterns through supportive behavior changes among key actors.

What's different about green industrial policy? In addition to marking a departure from recent decades of free market approaches to economic policy, the current period's ***green* IP differs from prior IP** iterations in several other ways:

- Multiplicity of goals – typically, the formal goals of GIP are related not solely to economic productivity and competitiveness, but tend to be multifaceted and involve combinations of economic, environmental, social and, in some cases, national security priorities.[9]
- Breadth of actors and issues – GIP tends to be cross-sectoral, implicating a wider range of actors, issues, agencies, and industries than the previous era's sector-specific IP.

[7] For more on how some aspects of current GIP seem to be a response to Chinese expansion, see, Lewis, J. (2024). "The Climate Risk of Green Industrial Policy." Current History, 123 (849), pp. 14–19. https://doi.org/10.1525/curh.2024.123.849.14

[8] Rodrik notes the aim of IP should be "uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them" in Rodrik, D. (2004). "Industrial Policy for the Twenty-First Century. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=617544 and Harrison et al. offer the two dimensions of green industrial policy used in this text, see, Harrison, A. Martin, L. Nataraj, S. (2017, October). "Green Industrial Policy in Emerging Markets." Annual Review of Resource Economics, Volume 9. https://www.annualreviews.org/content/journals/10.1146/annurev-resource-100516-053445.

[9] For more on the complexity of GIP goals, see for example, Ferrannini, A., Barbieri, E., Biggeri, M., Di Tommaso, M (2021). "Industrial policy for sustainable human development in the post-Covid-19 era." World Development, Volume 137. https://www.sciencedirect.com/science/article/pii/S0305750X20303429 or Ilyina, A., Pazarbasioglu C., Ruta, M. (2024, April 12). "Industrial Policy is Back But the Bar to Get it Right Is High: More data, analysis and dialogue are needed to avoid costly mistakes." IMF Blog. https://www.imf.org/en/Blogs/Articles/2024/04/12/industrial-policy-is-back-but-the-bar-to-get-it-right-is-high; for more on national security and GIP, see Mazzocco, I. (2024, February 27). "Green Industrial Policy: A Holistic Approach." CSIS Briefs. https://www.csis.org/analysis/green-industrial-policy-holistic-approach.

- Pressing timeframes – timelines for executing GIP are generally more compressed due to linkages with net zero targets and the urgency of the climate crisis;
- Powerful resistance – GIP must often overcome broad "entrenched behavioral patterns favoring unsustainable production and consumption" as well as powerful vested interests – particularly those tied to fossil fuels – that have strong incentives to resist or even actively impede change;
- Uncertainties – GIP needs to account for significant levels of uncertainty related to relevant future technologies, costs, and policy environments and how these will likely play out in particular settings;[10]and
- Geographic mismatches – climate issues are inherently transnational (and subnational), which means they can be harder to manage effectively through national level GIP.

Collectively, these characteristics bring greater complexity to attempts to steer economic activities toward various goals through GIP, frequently with important practical implications (discussed below).

[10] For discussions of the uncertainties associated with GIP, see Lütkenhorst, et al, ibid.. Fay, M. Hallegatte, S., Vogt-Schilb, A. (2013, October 1). "Green industrial policies: When and how (English)." Policy Research working paper no. WPS 6677, World Bank Group. http://documents.worldbank.org/curated/en/994641468156896733/Green-industrial-policies-when-and-how and more recently, this expert panel discussion on Industrial Policy for the Green Transition (2024, June 5). https://www.hks.harvard.edu/centers/wiener/programs/economy/our-work/reimagining-economy-blog/industrial-policy-green.

How GIP can go wrong

While GIP may indeed be necessary to support the magnitude, scope, and timeframes that climate action demands, the practical efficacy and success of such policies are in no way guaranteed. The post-World War II track record of IP strongly suggests that such policies do not always generate expected results – a challenge that may be even greater in light of the deep complexities of GIP and the pressures for these policies to succeed.

The intended effects of GIP can be derailed in several ways (reasons discussed below). Sometimes, potentially valuable GIP **commitments are simply not made**. In other instances, it can be difficult for policy-makers to pick "winners," resulting in GIPs **targeting the wrong industries and activities.** Appropriately designed and targeted policies can be undermined at the implementation stage: by **flawed or partial implementation, distorted implementation** in service of corruption, outright **non-implementation, or commitments to implementation that are locked in too strongly** without appropriate exit strategies when policies are proving ineffective. Even when implemented as intended, there is the risk of various **unintended consequences** resulting from GIP, creating **negative externalities** for some stakeholders even if improving national economic or environmental scorecards or advancing global climate goals (see Box 1). Worse still are instances when GIP fails to achieve any such improvements and instead creates opportunities for ills, like corruption, to thrive.

Box 1: Examples of unintended consequences and negative externalities

Some concerns have been raised about potential risks or negative outcomes associated with GIP. For instance, some communities might face the loss of subsistence farming or indigenous lands to new renewables, palm oil production, or mining projects related to the energy transition. Fossil fuel dependent domestic industries might face rising costs and competitive pressures from successful mandates around renewable energy use. The poor may be disproportionately hurt by increased prices of goods resulting from tariffs used to protect green industries, possibly leading to retaliation. Populations of low-emitting countries might bear the burden of increased taxes to support green subsidies, even when these do not directly or significantly benefit those populations in the short-term, but rather benefit global climate priorities and the interests of wealthier countries in advancing their energy transitions. Another possible externality is GIP in wealthier countries exacerbating global disparities between them and poorer countries as the former have better access to capital and markets to realize the "greening" of their economies.

Thus, even when GIP appears to be "working," such gains might also incur unforeseen costs that should be acknowledged and potentially addressed to maximize the benefits of GIP. Keeping in mind such ways that IP can go astray, it is important to consider some of the key causes and their implications for those supporting GIP.

Addressing political economy to improve GIP performance

The effects of the climate crisis are already being felt across the world. It is, therefore, essential to try to avoid the derailment scenarios above and make the most of finite time and resources devoted to GIP. An important starting point is to ask why has IP sometimes gone off course; and how can proponents and supporters try to do better with GIP?

The role of financial and technical capacities among government actors, the importance of the right selection and mix of policies, and the impact of initial economic and institutional starting points of a given country have long been recognized for their importance in shaping the fate of IP. Yet, because by nature any type of IP takes place at the intersection of economics and politics, some of the most important determinants of whether and how GIPs will be undertaken – and what the ultimate impacts will be – are likely to be found in the political economy (PE) contexts in which they unfold. As Juhász and Lane note, "economics alone cannot explain the vast differences in experiences with industrial policy. The industrial policies that go into effect are those that correspond with our political world, yet modern political economic analysis of this area is sparse." That political economy realities shape the performance of IP is not a new theoretical insight. However, this insight has often been inadequately integrated into practical efforts to design and implement IP, an omission that can diminish the efficacy of these policies.

At a basic level, PE concerns boil down to power, interest, and incentive dynamics and how they unfold to shape outcomes in a given institutional context. The powerful actors who can influence outcomes of GIP are not always formal political actors or those acting explicitly through formal political processes but can also include powerful actors beyond government who exercise their influence informally. Ultimately, when those who can formally or informally influence the outcomes in question through existing institutions want GIP to succeed – when their interest or incentives align with this goal – prospects for meaningful progress are improved.[11]

However, power and interest dynamics, as well as the institutions through which they are allocated and expressed, are frequently misaligned with the pursuit of various GIP goals and can impede progress. Such misalignments between PE contexts and the effective pursuit of GIP can pose significant challenges to the development and execution of sound policies. These are challenges that cannot be overcome through improved technical capacity or increased resource allocations alone. Rather, they require those advancing GIP to understand the key PE dynamics at play around a particular policy or set of policies in a given context and to develop deliberate strategies and approaches in response. The following are some illustrative examples of what this might look like in practice.

[11] For an example of how conducive political conditions can contribute to successful industrial policy, see Juhász and Lane's discussion of South Korea in the 1960s in Juhász, R., Lane, N. (2024, June). "A New Economics of Industrial Policy." IMF. https://www.imf.org/en/Publications/fandd/issues/2024/06/A-New-Economics-of-Industrial-Policy-Reka-Juhasz-and-Nathan-Lane#:~:text=Yet%20taking%20politics%20seriously%20helps,facing%20the%20steepest%20political%20resistance. For an early analysis raising the importance of powerful actors' preferences in shaping the fate of IP, see Robinson, J. (2011). "Industrial Policy and Development: A Political Economy Perspective," in Yfu Lin, J., Pleskovic, B., eds, (2011). Annual World Bank Conference on Development Economics 2010: Lessons from East Asia and the Global Financial Crisis, World Bank. https://scholar.harvard.edu/files/jrobinson/files/jr_wb_industry_policy20-20Robinson.pdf.

Confronting GIP authority and interest misalignments

A constellation of government policy-makers and bureaucrats are typically charged with formally leading GIP design and implementation. This means that the fate of GIP will be determined in part by the capacities of these actors and their advisors, yes, but perhaps more importantly, by the institutions, incentives, and interests that shape their decisions and actions. In an ideal world, policy-makers leading GIP would be driven by some combination of broader economic, environmental, or social interests. However, in practice, the priorities and motivations of those formally tasked with shepherding GIP regularly depart from this ideal.

- First off, even for public welfare-oriented policy-makers, successful combinations of economic, social, and environmental priorities may prove difficult to reconcile, at times forcing them to choose or emphasize one goal – e.g., energy security, national economic competitiveness, or investment promotion – over others. For instance, policy-makers in countries that have fewer economic opportunities might find it difficult to choose to strand fossil fuel assets and forgo near-term national economic benefits in pursuit of what they might perceive to be longer-term climate goals benefitting diffuse global populations.

Beyond the challenges of configuring various national welfare priorities, policy-makers can also be driven by personal or political interests, increasing the prospects that GIP will languish or be distorted by rent-seeking, corruption, clientelism, or capture.[12] In such cases, bad outcomes are not limited by technical knowledge or capacity but by interest misalignments and lack of will among those charged with developing and implementing policy.[13] When policy-makers' chief interest is staying in power, bolstering political support among key constituents or enriching themselves or their cronies, they may resist GIPs that could threaten this support or access to these benefits.[14] Or, they may bend GIP and related opportunities inefficiently to benefit their allies. Similar dynamics can unfold when policy-makers are captured by powerful corporate interests ("corporate capture"), a significant risk given that IP requires close collaboration between public and private sectors. In such cases, private sector actors may use their influence to lobby for policies and implementation (including exclusions and exemptions) that maximize benefits to themselves and their enterprises. In doing so, they divert these policies and their benefits away from serving broader economic, environmental, or social missions (see the example below of fossil fuel companies undermining various GIP, including fossil fuel subsidy reform).[15]

[12] Prospects of state capture of GIP are discussed in Lütkenhorst, W. et al., ibid., pp. 34-37.

[13] For instance, consider how the political influence of fossil fuel lobbies in the US and EU has long been seen as contributing to climate change denialism by far right politicians and to delayed progress on green policies regardless of the overwhelming scientific evidence. For a discussion of these issues in the US context, see, McGreal C. (2021, July 19). "How a powerful US lobby group helps big oil to block climate action." The Guardian. https://www.theguardian.com/environment/2021/jul/19/big-oil-climate-crisis-lobby-group-api or Committee on Oversight and Government Reforms, Democrats (2024, April 30). "New Joint Bicameral Staff Report Reveals Big Oil's Campaign of Climate Denial, Disinformation, and Doublespeak." https://oversightdemocrats.house.gov/news/press-releases/new-joint-bicameral-staff-report-reveals-big-oils-campaign-climate-denial and globally, InfluenceMap (2016, April). "How much big oil spends on obstructive climate lobbying." https://senate.ucsd.edu/media/206150/lobby_spend_report__april.pdf, Center for American Progress (2023, December 5). "These Fossil Fuel Industry Tactics Are Fueling Democratic Backsliding." https://www.americanprogress.org/article/these-fossil-fuel-industry-tactics-are-fueling-democratic-backsliding/#:~:text=The%20fossil%20fuel%20industry%20has%20also%20played%20a%20major%20role,who%20backed%20voter%20suppression%20bill.

[14] Elected policy-makers may also be motivated to distort GIP by the desire to mobilize wider support in the short term. Discussing IP more broadly, Altenburg argues that, "Politicians may want to demonstrate that they are taking action in order to satisfy their constituencies, regardless of outcomes. Rather than taking evidence-based decisions, it is in their interest to systematically overrate benefits and underrate costs. Lobbyists may reinforce such biased assessments to ensure continued flows of subsidies," in Altenburg, T. (2011). "Industrial policy in developing countries: overview and lessons from seven country cases." Discussion Paper, No. 4, Deutsches Institut für Entwicklungspolitik (DIE), p. 17. https://www.econstor.eu/bitstream/10419/199359/1/die-dp-2011-04.pdf.

[15] For more on the tradeoffs of IP driven by company priorities and economic growth, see, Mazzucato, M. (2024, September). "Policy With a Purpose." International Monetary Fund. https://www.imf.org/en/Publications/fandd/issues/2024/09/policy-with-a-purpose-mazzucato.

As with policy-makers, there is an implicit assumption that bureaucrats charged with implementing GIP will perform their duties driven by broader welfare goals and will be compelled to do so to the best of their abilities. Again, this is often not the case. Motivations of bureaucrats can be complex, especially in settings where their agencies or departments are under-resourced and overburdened, their leaders unaccountable, their salaries low, their career prospects limited, or their voices excluded from key decisions. In such contexts, bureaucrats may be driven by a range of interests beyond the nominal "mission" of their jobs – e.g., professional advancement, inter-agency politics, intra-agency politics, ease of doing their job[16] – which may skew whether and how they plan and implement GIP. For instance, if there are no professional rewards for doing the hard work of GIP well nor negative consequences for failing to do so[17] – i.e., no "sticks" to hold them accountable for performance failures nor "carrots" to incentivize success – bureaucrats may lack the motivation to put in the considerable effort required to effectively implement GIP. They may also find their interests being shaped by active pressure or inducements from more powerful actors within and beyond government to perform their jobs in certain ways (including in ways that water down or distort implementation to serve particularistic interests).

When policy-makers and bureaucrats are driven by interests other than achieving the ultimate ends given GIP are nominally meant to advance, the adoption and performance of such policies can be undermined. Examples of deliberately addressing such risks through mitigation strategies can include:

- **assessing whether specific GIP are worth undertaking in particular settings** in light of the conduciveness of the PE landscape;
- **designing GIP in ways that best align with existing policy-maker sympathies**, e.g., by focusing on areas where their interests most overlap with greening the economy in some way, or focusing attention on those officials who are already sympathetic to act as change champions;
- **identifying and bolstering the power of what Honig calls** mission-driven bureaucrats, i.e. bureaucrats whose primary interest is serving the public good;
- **incentivizing good performance on GIP among policy-makers and bureaucrats** to improve the likelihood of them implementing GIP as intended e.g., by rewarding progress on meaningful steps toward implementing commitments through financial, professional, reputational, political, or other inducements; and
- **creating disincentives for resisting or distorting GIP,** e.g., by instituting transparency and strict checks on corruption and rent-seeking, putting in place and enforcing conflict of interest policies to discourage tendencies to prioritize personal gains over public good, and insulating bureaucrats from external pressure or influence through the creation of independent bodies, whistle-blower mechanisms, etc.

[16] According to Altenburg, another driver of bureaucratic inefficiency around IP might be that "implementing agencies have an interest in setting up new programmes or expanding them in order to increase their budgets and power." Altenburg (n 13), p. 17.
[17] "In general terms, bureaucrats face at best minor penalties if they misallocate resources." Ibid.

Winners, losers, and the fate of GIP

Like most economic activities, GIP, whatever its specific focus, will have distributional effects. There will be "winners" and "losers" both from the status quo and from the changes associated with specific policy choices. Whether among governments, domestic or international private sector, traditional authorities, civil society, local communities, or some other group, the distribution of anticipated or real gains and losses can also shape the performance of GIP and therefore must be accounted for.

Prospects for progress should be more promising when powerful actors (often "winners" under the current system) anticipate being winners under the new system, i.e. when they have an interest in seeing GIP work well. These might be politicians who anticipate building political support through the creation of "green jobs" or leaders hoping to bolster international investments into their green industries. They might be global clean energy companies looking for new markets or powerful domestic private sector actors looking for new opportunities. From investors in "sunrise industries" to communities anticipating improved energy access from nearby renewables projects. Whatever the benefits they anticipate, potential winners from GIP can play an important role in supporting the uptake, design, and implementation of GIP through their respective spheres of influence.

On the other side of the coin, however, are the "losers" – those who anticipate or experience losses or disadvantages from specific GIP, e.g.: those involved in sunset industries facing job losses or lower profits; officials facing decreased fossil fuel rents available to allocate for political support; households or industries facing higher costs from fossil fuel subsidy phaseouts or carbon price policies that are not actively offset[18] or those affected by greater competition for land and water resources from new green projects. Here, those perceiving themselves as losers may have an interest in acting as "spoilers" and may exercise their influence – whether through the ballot box, direct exercise of authority, political support or pressure, informal threats or inducements, etc. – to weaken GIP.

GIP spoilers can come in various shapes and sizes. Fossil fuel companies and others who might be benefiting from oil rents, cheap energy, sector-related jobs, political advantages, and other gains from these industries may feel they have interests in actively obstructing progress on GIP. For instance, fearing their monopoly power and

[18] See, for example, Jenkins's discussion of how industries anticipating losses from carbon pricing policies can impede progress in Jenkins, J. (2014, June). "Political economy constraints on carbon pricing policies: What are the implications for economic efficiency, environmental efficacy, and climate policy design?". Energy Policy, Volume69. https://www.sciencedirect.com/science/article/abs/pii/S0301421514000901.]

profits could be undercut, powerful utilities in the US,[19] and beyond, have deployed their lobbying power and influence over politicians to resist policies designed to reorient the economy away from fossil fuels and toward renewable energy systems[20] Similarly, political pressure and resistance from consumers and producers across the globe, fearing loss of cheap energy and business respectively, have effectively hamstrung critical fossil fuel subsidy reforms intended to level the playing field for renewables.[21]

When spoilers seek to use their power to align policy-makers' interests with their own rather than with the public welfare and planetary good, they may be able to impede real progress on GIP. Again, these are less problems of technical or financial resources and more of political will, and more specifically, the interests and incentives of powerful actors and their ability to influence policy outcomes. Therefore, it is crucial to keep in mind the balance of existing and potential winners and losers, supporters and spoilers – and whether or how these actors might be tipped in favor of success – when designing and implementing GIP.

[19] An additional discussion on how the interests of utilities can run contrary to GIP goals can be found at Fogler, C., Ver Beek, N. (2023, October). "The Dirty Truth About Utility Climate Pledges." Sierra Club. https://coal.sierraclub.org/sites/nat-coal/files/dirty_truth_report_2023.pdf?utm_source=sierraclub&utm_medium=web&utm_id=dirty-truth&utm_content=popup.

[20] Such corporate capture dynamics play out across other relevant policy areas. For instance, on corporate capture and emissions trading and renewables policy, see, Helm, D. (2010). "Government failure, rent-seeking, and capture: the design of climate change policy." Oxford Review of Economic Policy, Oxford University Press and Oxford Review of Economic Policy Limited, Volume 26(2), pp. 182-196, Summer.https://www.jstor.org/stable/43664559.

[21] For valuable discussions of the political economy of fossil fuel subsidy phase out, see, McCulloch, N. (2023). "Ending Fossil Fuel Subsidies: The Politics of Saving the Planet." Practical Action Publishing. https://doi.org/10.3362/9781788532044; and for recent thoughts on how to try to get more progress on phase out, see, Skovgaard, J., van Asselt, H., Beaton, C. et al. (2024). "Revitalizing international fossil fuel subsidy phase out commitments through roadmaps, closing loopholes, and support."

Beyond failing to achieve their policy promise, when potential beneficiaries from GIP lack the power to overcome resistance in a particular institutional context, GIP can do more harm than good if it becomes another pathway for perpetuating or even exacerbating inequalities. Strategies to mitigate the prospect of losers undermining the efficacy of GIP and bolster support from winners may include:

- **anticipating and mapping winners and losers of specific policies** and integrating these considerations into policy design;
- **decreasing the number of losers** who might be motivated to act as spoilers, e.g., by seeking "win-win" GIP scenarios that allow those who anticipate losses to benefit from GIP/remain "winners" in some sense;[22]
- **decreasing the depth of losses/cushioning the blows facing key actors** where feasible and consistent with the goals of the GIP being undertaken, e.g., through clean energy subsidies, short-term compensation schemes, temporary exemptions for sunset industries, or safety net programs for social groups negatively affected by specific GIP;[23]
- **decreasing the ability of losers to act as spoilers,** e.g., by devising ways to cut off their access to policy-makers or using transparency measures to actively raise public awareness and scrutiny of their attempts to undermine reform;
- **increasing the numbers of actors who see themselves as winners,** e.g., by focusing specific GIP on outcomes that a range of actors would have reason to support[24] or designing policies that intentionally deliver quick and tangible wins to key constituencies to gain their support;[25]
- **increasing the mobilization of winners,** e.g., by using strategic communications and strategic narrative framing to inform and rally support from potential beneficiaries, explicitly aligning intended GIP outcomes with their interests and priorities; and
- **increasing the power of prospective winners**, e.g., by expanding their ranks through support for strategic coalitions[26] and creating opportunities, including participatory governance mechanisms, for these actors to influence key decisions or actions.

[22] This might mean, for instance, deliberately seeking to provide skills retraining and new jobs for specific populations professionally displaced by economic changes resulting from GIP or providing fossil fuel investors with preferential terms for undertaking GIP-supportive investments.

[23] Fay et al. explore various sunrise and sunset policies intended to smooth the acceptance and efficacy of GIP in Fay, M., Hallegatte, S., Vogt-Schilb, A. (2013). "Green industrial policies: When and how (English)." Policy Research working paper no. WPS 6677, World Bank Group. http://documents.worldbank.org/curated/en/994641468156896733/Green-industrial-policies-when-and-how.

[24] This might include anticipated job/livelihood gains for specific communities or unions, access to new markets for the domestic private sector, access to energy for those who previously were underserved, increased political support for elected officials, etc.

[25] Depending on the target audience, such wins might include jobs, investment capital, economic linkages, financial incentives, renewables rents, political support, procurement opportunities, improved energy access, technological diffusion, etc.

[26] For more on assembling strategic coalitions through the identification of shared desired outcomes, as well as an example from Germany's energy transition process, see Section 5 of Lütkenhorst, W., et al (n 1).

Managing the fluidity of political contexts

PE contexts are not static. The dynamism of power, interests, and political institutions over time can create both opportunities and challenges for GIP. For instance, power can change hands as the result of elections or other transitions, potentially between leaders with very different priorities, making long-term, credible commitments to GIP more difficult. Recent national elections in the US acutely illustrate this dynamic. Various dimensions of GIP initiated under the Biden administration – from the imposition of a methane fee for oil and gas companies to tax credits for renewables investment and production – now are subject to uncertainty and active rollbacks. In addition to power changing hands, there is also the possibility of the interests of key actors changing over time in response to factors such as evolving political contexts, institutional reorganizations, or shifting personal preferences. This results in the so-called "time inconsistency problem"[27].

While such changes may create new openings for pursuing GIP, they may also make the consistency of long-term commitments and actions needed for the effective implementation of GIP – including the attraction of requisite investments and execution of policies – more difficult to achieve. Managing such fluidity in the PE landscape and enabling more durable and credible commitments to GIP is not easy. However, it can be advanced through a variety of actions, including:

- **scanning the political landscape for "moments of opportunity" to advance GIP** and moving quickly when opportunities arise;
- **developing strategies to try to "lock in" commitments** to GIP by creating costs for deviation from plans over time or benefits for sticking with them across various stages, perhaps by actors external to the system and therefore not moved by the same PE shifts;
- **putting in place supranational entities to support and monitor compliance;** and
- **supporting on-going demand-side mobilization among key constituents**, benefitting from reforms to try to sustain pressure to see these reforms through. [28]

[27] For more on how time inconsistency problems related to renewables policies, specifically the ability to deviate from long-term commitments in pursuit of shorter- term interests, can deter investment and undermine progress, see, Chiappinelli, O., May, N. (2022). "Too good to be true? Time-inconsistent renewable energy policies." Energy Economics, Volume 112. https://doi.org/10.1016/j.eneco.2022.106102.

[28] For more on these and other ways to address time inconsistency problems, see ibid.

Addressing the complexity of GIP political economy landscapes

The often complex nature of GIP goals – the desire to have them at once serve a constellation of local through global social, economic, environmental, and political ends – and the wide range of actors implicated in executing these can also hinder the prospects of effective operationalization. In part, this is because the varied goals of GIP – and the multitude of interests underlying them – are not always easy to reconcile in practice. Given how difficult it has proven to "pick winners" when IP has been focused on specific sectors with narrow economic goals, it seems likely that identifying a pathway that serves various GIP goals across a range of issues and sectors will necessarily be more complex. Reconciling diverse priorities is not impossible[29] but it is both technically and politically challenging. Compared to other sector-specific past iterations of industrial policy, GIP potentially requires grappling with more tradeoffs across issues and interests of different actors in the process of policy formulation (see Box 2). When those experiencing negative outcomes become disillusioned with GIP, resistance or protest can follow, accompanied by political fragmentation and stalled progress.

Box 2: Illustrating potential GIP tradeoffs

While tradeoffs across GIP goals are not inevitable, understanding and, eventually, addressing them is vital for improving prospects of policy success. Consider, for example, how the same transition mineral project might be experienced differently across policy realms and populations. It might be an environmental win for those chiefly concerned with renewables expansion at the global or national levels but a potential environmental loss if the project has significant negative impacts on local ecosystems or biodiversity. It may be a potential economic boon at the national level where governments might hope, for example, to capitalize on battery supply chain opportunities, but a potential driver of lost profits or livelihoods for those competing

[29] Part 2 of Altenburg and Assmann (eds.) explores the potential complementarities and tradeoffs across environmental, social, and economic goals of GIP. Altenburg, T., Assmann, C. (eds.) (2017). "Green Industrial Policy. Concept, Policies, Country Experience." UN Environment; German Development Institute / Deutsches Institut für Entwicklungspolitk (DIE). https://www.un-page.org/static/91e62d2bc2fc4be983f5af57c522ecd3/green-industrial-policy-book-aw-web.pdf. Gu provides a very clear discussion of the potential tradeoffs and complementarities across economic, climate and security goals. Gu, B. (April 22, 2024). "A Three-Dimensional Analytical Framework for Green Industrial Policy – Balancing Climate, Growth, and Security Goals." Climate Policy Lab. https://www.climatepolicylab.org/climatesmart/2024/4/22/a-three-dimensional-analytical-framework-for-green-industrial-policybalancing-climate-growth-and-security-goals

with these projects for jobs, land, or water. Such projects can contribute to expanded energy and infrastructure access to underserved communities but also become a potential source of social and cultural disruption and dislocation, e.g., for indigenous and other land-connected communities. The realities of such tradeoffs and their potential to undermine the efficacy of GIP are playing out in real time as examples from the lithium sector from Serbia to the Andes, from Zimbabwe to the United States clearly demonstrate.[30]

Similar stories of conflicting interests and tradeoffs across goals emerge around other possible targets of GIP. Policies aimed at expanding low-cost renewable energy may come at the expense of developing domestic industries around low-carbon energy technologies. Fossil fuel subsidy reforms intended to hasten phase-out by driving up consumer and producer costs may help reach national and global climate action targets or improve air quality. However, they also potentially hurt poorer populations or domestic industries when not deliberately coupled with compensatory measures. Efforts to drive down renewable energy costs to expand clean energy use may serve national climate or security goals, but undermine the global trading system. China's rapidly expanding renewables sector is a major contributor to global climate goals while also becoming a source of geopolitical competition both around sourcing input minerals and the export of resulting products, such as solar panels.

The complexities of GIP can also lead to coordination problems across the assorted actors who need to come together for successful GIP implementation. As Shen et al. note, "the multiplicity of policy objectives can lead to notable coordination challenges [...] when a plurality of international, national, and local actors from both public and private spheres are involved in the policy process, often with distinctive preferences among multiple policy goals."[31] Even within just the public sector, there are often

[30] Similar stories of conflicting interests and tradeoffs across goals emerge around other possible targets of GIP. Fossil fuel subsidy reforms, intended to hasten phase out by driving up consumer and producer costs, may help reach national and global climate action targets or improve air quality. However, they also potentially hurt poorer populations or domestic industries when not deliberately coupled with compensatory measures. Efforts to drive down renewable energy costs to expand clean energy use that, again, may serve national climate or security goals but fail to result in meaningful local capacity building and growth,may be undertaken in ways that undermine the global trading system. Even at the global level, China's rapidly expanding renewables sector is a major contributor to global climate goals while also becoming a source of geopolitical competition around the minerals needed to drive this. For more on how the potentially competing interests implicated in GIP can affect the fate of these policies, see Alami, I., Copley, J., Moraitis, A. (2023, November 24). "Hard Truths about Green Industrial Policy," Project Syndicate. Texto del párrafo; Medinilla, A., Byiers, B. (2023, December 14). "The political economy of green industrialisation in Africa." ECDPM. Texto del párrafo; and specifically with regard to transition minerals, see The Economic Commission for Latin America and the Caribbean (ECLAC) (2023). "Lithium Extraction and Industrialization: Opportunities and Challenges for Latin America and the Caribbean."Texto del párrafo

[31] Shen, W., Ayele, S., Kuma Worako, T. (2023). "The political economy of green industrial policy in Africa: Unpacking the coordination challenges in Ethiopia." Energy Policy, Volume 179. https://www.sciencedirect.com/science/article/abs/pii/S0301421523002185. The authors discuss in detail the coordination challenges facing GIP in low-income contexts, especially in Africa, some of which are touched on in this section.

considerable bureaucratic fragmentation and silos to overcome within government – both across ministries and agencies but also across different levels of government (national, regional, local) – in order to develop and implement GIP.

Coordination challenges, and their underlying power and interest dynamics, will also likely affect GIP that reach across borders. For instance, realizing the benefits of regional initiatives – e.g., shared infrastructure, regional value chains, regional trade agreements, or other forms of economic collaboration to foster green production or consumption – will require coordination of actors and alignment of interests among key players in different governments. Therefore, regional projects should be designed in ways that actively enable coordination and serve collective goals, but which also consider national ambitions and the interests of key powerful actors across the countries involved.

There are different types of approaches that might be employed to address the various levels of complexities of GIP and the accompanying tradeoffs and coordination challenges they can entail, including:

- **acknowledging complexity and anticipating "messiness" in the drive for effective GIP**, e.g., by adopting systems change approaches that emphasize experimentation, close monitoring, learning, flexibility, and adaptation in pursuit of specific desired outcomes;
- **making GIP more manageable**, e.g., by narrowing and simplifying the scope of GIP efforts and explicitly prioritizing across possible goals;
- **using participatory mechanisms** to ensure that a variety of relevant perspectives are represented and to increase prospects of widespread buy-in to decisions about priorities and sequencing;
- **identifying common ground/avoiding deadlock**, e.g., by working to reconcile or mediate competing goals and interests among key (not all) stakeholders or by seeking win-win policies that serve a range of interests; and
- **taking coordination seriously,** e.g., by designating and capacitating specific agencies to steer and coordinate GIP processes, which can both help bring interests into alignment and also address logistical coordination challenges.[32]

[32]Ibid.

The road ahead: Getting to political feasibility

GIP will be a crucial element of the battle to combat the climate crisis. There is no time to lose nor much room for error when it comes to putting GIP in practice. Politically savvy approaches tailored to the specific contexts within which they unfold – ones that are actively mindful of the power and interest dynamics and institutions that shape outcomes – provide real opportunities to improve prospects of success. Therefore, alongside ensuring technical capacity, the political factors likely to shape the performance of GIP in a given context must be actively identified and integrated into design and implementation. As the examples above illustrate, there are many tangible and feasible ways to do this.

For GIP to work as intended to advance a JET and other goals, the PE context – e.g., the risks, challenges, and opportunities generated by the interests of key powerful decision-makers and bureaucrats, as well as potential winners and losers from various policy choices and the institutional settings in which these unfold – must be understood and deliberately addressed in design and implementation. To this end, actors working on GIP will need to draw more on experts in political analysis and local actors with deep knowledge of the specifics of a given context. Those funding and undertaking GIP should invest not only on integrating PE into project design, but also embed monitoring, evaluation and learning approaches so that governments (and the range of stakeholders) can come to better understand what is effective and what is not.

While the concerns raised in this piece apply to all policy areas, if thoughtful and thorough steps are not taken to deliberately account for PE considerations from the outset, it is likely that we will see green industrial policies across the world that fail to meet their promise in mitigating the climate crisis, a failure people and planet simply cannot afford.

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