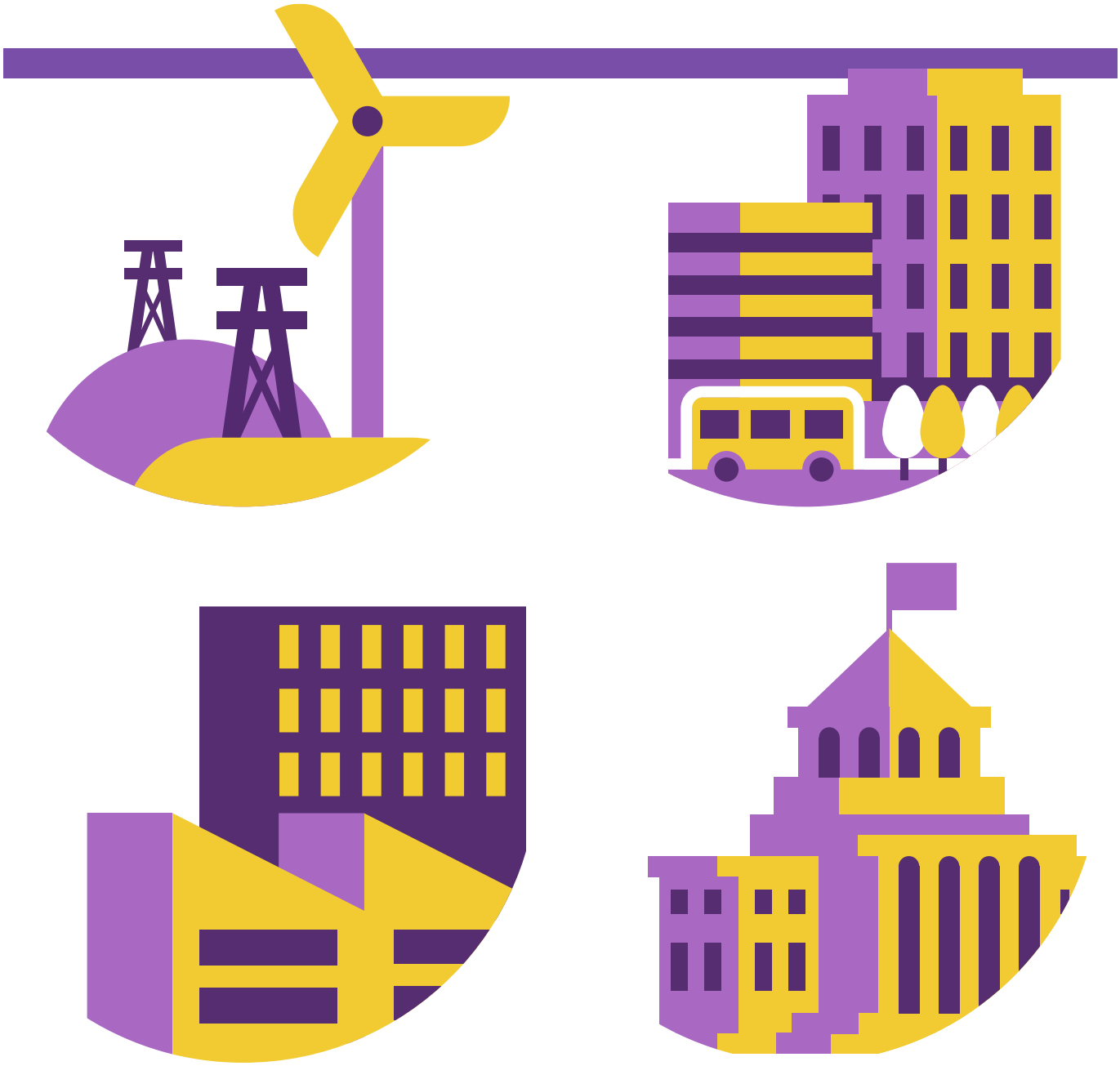
IGC

Research strategy



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Contents

Introduction

Growth is the driver of long run prosperity. It is the product of countless interactions between people and firms. People have ideas for new goods and services and create and grow firms that bring these ideas to the market. When many people develop firms and persuade consumers to part with their hard-earned income for these products, well-paying jobs are created, workers gain new skills, cities expand, and exports grow.

Productivity and innovation are the secret ingredients of this transformation. While we observe their effects most clearly in macroeconomic outcomes, it is the underlying microeconomic processes – such as technology adoption, organisational changes, and policies that correct market and government failures – that sustain productivity growth and innovation.

Today's low- and middle-income countries no longer face just an economic growth challenge; they now also face a *sustainable* growth challenge. Our deteriorating natural world – from the air we breathe, the water we drink, to the weather we experience – cannot be ignored. Environmental externalities harm the ingredients of growth. As highlighted in the recently published IGC white paper, "**Innovation, growth, and the environment**", three facts make achieving sustainable growth in developing countries a global imperative: their need for economic growth to raise living standards is greatest; their burdens from climate change are heaviest; and emissions will grow most quickly in these countries.

Eliminating extreme poverty by 2030 requires inclusive growth. The root cause of mass poverty is that most people, despite working long hours, remain acutely unproductive. An effective long-term growth strategy must therefore generate sufficient good jobs to shift large numbers of people into higher productivity activities. By moving people out of precarious subsistence activities into productive employment, such transformations build economic resilience. Effective states are crucial for steering this process and providing wider social protection against such shocks. Ultimately, economic resilience is at the heart of climate resilience.

Protecting those in poverty from the negative effects of climate change also requires us to make production and consumption cleaner. Left unabated, the externalities from growth – climate change and environmental degradation – may block the path to prosperity. Striking a balance between human activity and the natural environment is no longer a choice but an imperative.

Fortunately, growth versus environment trade-offs are becoming less severe. A central and cross-cutting theme of the white paper is the importance of innovations – not just technological but also organisational, social and political – in achieving this balance. Understanding the barriers to adoption, and the policy interventions that can overcome them, is more important than ever. So, too, is understanding how governments and others can catalyse innovation locally.

We have recently refreshed our four thematic **evidence papers**, which now take full account of these challenges, identify critical gaps in knowledge, and set out a policy-driven research agenda on sustainable growth. In the face of these new challenges, effective policy decisions require robust evidence and innovative ideas in a range of new areas. Leveraging 15 years of experience and a strong network of researchers and country teams, the IGC aims to promote innovative methods and data-driven approaches to deliver these.

This research strategy lays out our primary focus areas, aligned with the policy priorities of our country teams and the knowledge gaps identified in the evidence papers. The annex provides a comprehensive compilation of research questions across the different themes.

We organise our research under the four key microeconomic transformations that drive sustainable growth: in the capabilities of firms and the functioning of markets; in the capacity of the state; in the organisation of cities; and in the provision of energy and environmental protection to achieve sustainable growth.

Firms: We seek to understand what determines the productive potential of firms in an economy, from large formal firms to agricultural enterprises and small-scale family farms. Our focus is on interventions and policies that reduce barriers which prevent firms from developing their capabilities and accessing local and global markets. Recognising the classic market failure borne from externalities, governments need to promote green innovation through firm-upgrading policies using a blend of subsidies, tax instruments, and regulations. Furthermore, supporting employment creation takes on added importance in the context of climate change, as formal jobs offer better protection against climate adversities.

State: An effective state – one which can raise revenues, implement policies, and ensure welfare, stability, and security against violence – remains central to our research. This development must also address the challenges presented by environmental externalities, including through the extension of social protection frameworks to help protect individuals from climate shocks and promote adaptive decisions.

Cities: Recognising that the future of developing countries is urban, we emphasise the central role of cities in promoting productivity and growth, as well as their potential downsides, such as congestion, pollution, and crime, that limit growth. Climate change is likely to accelerate urbanisation, requiring governments to protect individuals from these downsides while creating space for innovations in how firms and markets are organised. Place-based strategies can facilitate productivity gains while supporting areas expecting significant emigration.

Energy and environment: Affordable and reliable energy is essential for growth. Our research will explore how the voracious appetite for energy can be met while limiting the associated externalities, both global and local. Harnessing the innovations in renewable energy will be essential in this challenge. Likewise, conserving natural assets will help in mitigating externalities and building resilience. Issues of innovation and political economy will cut across all these areas of research.

These four transformations do not operate in isolation. For instance, the lack of energy access limits firm capabilities, and the state can implement labour policies that enhance firm productivity. Similarly, the externalities from energy consumption in the form of climate change permeate all sectors making state intervention necessary. While we present each theme separately below, we are also interested in how these transformations interact.

IGC research priorities

The IGC's four themes:

Firms, trade, and productivity – Increasing productivity through structural changes in firms' capabilities, the functioning of markets and how firms interact with world markets, while promoting green innovation and enhancing resilience against climate shocks.

State effectiveness – Escaping fragility and improving the capabilities and effectiveness of states to deliver higher rates of inclusive growth, while addressing the challenges of environmental externalities.

Cities – Making cities more productive and inclusive while addressing the downsides of density and ensuring resilience to climate change.

Energy and environment – Improving access to reliable, cost-efficient energy, supporting the transition to clean energy, reducing global and local environmental externalities, and more effectively managing natural capital.

Firms, trade, and productivity

Main themes of research under firms, trade, and productivity

Firm capabilities

- Entrepreneurship, management practices, training programmes
- Technology adoption, green innovation, and quality upgrading
- Labour market policies
- Access to finance, venture capital, material inputs, electricity, and other inputs
- Climate change and productivity
- Fiscal policy and government regulation

Markets

- Misallocation of factors of production and structural transformation
- Value chains, firm-to firm relationships, intermediaries, access to markets
- Market power and competition policy
- External economies and industrial policy

International trade

- Impact of trade in presence of distortions
- Export promotion, trade policy and other related policies
- Trade integration and trade infrastructure
- FDI policy (attraction, SEZs, spillovers)
- Trade and inequality

Agriculture and rural development

- Agri-SMEs and access to finance
- Agricultural climate adaptation, green innovation
- Rural infrastructure development
- Economic potential of natural assets

The research programme on firms, trade, and productivity aims to identify mechanisms that can enable firms to more efficiently deliver goods and services that consumers at home and around the world are willing to pay for, in a way that is environmentally sustainable. We find it useful to think about the necessary transition as arising from four types of transformations: in the capabilities of firms, in the green innovation of production, in the functioning of markets, and in the interaction of firms with world markets. Lastly, we give explicit emphasis to the role of agricultural firms and farms in influencing rural development.

Firm capabilities

Our first area of research seeks to identify barriers that prevent firms from developing their capabilities and to assess the effectiveness of policies that target these constraints.

There is a large body of evidence showing that a typical firm in low- and middle- income poor countries is poorly managed (Bloom et al., 2012). However, there is much less evidence on what works to improve management practices. For example, there is now a large body of evidence that shows that provision of management training to entrepreneurs has little effect (McKenzie and Woodruff, 2014; Grimm and Paffhausen, 2015).

There is also some evidence that focused consulting services have a larger effect and are cost- efficient (Bloom et al., 2013; Bruhn et al., 2018). However, the question this raises is why firms do not pay for these services themselves. Recent studies suggest firms might not be aware of the positive returns from these services or face challenges in identifying high-quality providers due to market information asymmetries (Maffioli et al., 2020). Another approach to improving firm capabilities focuses on coaching, mentoring, and peer interactions programmes. Cai and Szeidl (2017) and Fafchamps and Quinn (2018) generate networking opportunities among business owners and show promising effects on firm performance. One-on-one mentorship programs have also shown positive impacts on business performance, though these effects can diminish over time (Brooks et al., 2018). More evidence on the effectiveness and scalability of such programmes would be useful. We also seek to understand the diffusion of good management from the entry of foreign-owned firms, or those in international supply chains, as well around the market for managerial talent more broadly.

Another possible explanation for the observed low productivity of firms in developing countries relates to the use of the technologies or inputs. Technology adoption will be central to the green transition in developing countries. We have some patchy evidence on adoption from agriculture. But work on the soccer ball industry in Pakistan suggests that barriers to technology adoption are more widespread (Atkin et al., 2017). Barriers such as organisational constraints and incentive structures can significantly impact technology uptake (Verhoogen 2023). We want to build on this evidence in more sectors. If we find evidence of low adoption, we need to understand why firms do not adopt inexpensive production processes that would bring them closer to the production frontier.

We also want to understand what policy interventions can promote the use of better technologies. For example, producers may not have enough information about technologies, or the returns to such technologies (Allcott and Greenstone, 2012). Another possibility could be that credit constraints prevent them from acquiring technology, despite the high returns. Lastly, risk aversion and incomplete insurance markets can also lead to inefficient adoption. For example, lack of insurance against climate risks can deter technology adoption (Islam et al., 2018). We have very little information on which explanations are the right ones, and what policy interventions are effective at addressing the relevant constraints. We will prioritise research that seeks to find answers to these issues.

The evolution of large, technologically advanced firms offers a promising pathway to sustainable growth. Due to their scale and access to resources, such firms are better positioned to innovate and mitigate environmental externalities, such as enhancing production efficiency and implementing pollution reduction strategies (Cainelli et al., 2012; Perkins and Neumayer, 2008). We want to understand what interventions can promote such innovations. These firms, especially those with multinational linkages, also exhibit greater resilience to environmental shocks, thereby safeguarding jobs both physically, through safer indoor environments, and economically, through enhanced market integration and credit access (Otto et al., 2021; Balboni et al., 2023; Castro-Vincenzi, 2022; Blakeslee et al., 2020; Colmer, 2021). Evidence also suggests that green technologies, like LED lighting, can boost productivity on high-heat days, providing both environmental and economic benefits Adhvaryu et al., 2018). We seek to understand more on the link between climate change externalities and the productivity of workers and firms.

Firms may also not reach their full capabilities because they do not have access to necessary inputs such as labour, capital, material inputs or electricity. Labour market search frictions may make it difficult for small firms to find the workers necessary to grow. It could also be the case that the supply of skilled workers is very thin, or that there is a skills mismatch. We will work to understand ways to build the supply of workers with relevant skills, for example through vocational training, apprenticeships, and the provision of information on the returns to such programmes. There is also some suggestive evidence that firms in developing countries do not support the acquisition of skills by their workers (Lagakos et al., 2018). Initiatives like job fairs and skill certification programmes can reduce these frictions (Abebe et al., 2024a; Bassi and Nansamba, 2022). More evidence on their impact on productivity is needed. Labour mobility also remains an area of interest. High transport costs and poor urban living conditions hinder rural-urban migration, affecting labour allocation and productivity growth (Bryan and Morten, 2019).

Governments might use vocational training to foster green skills, essential for areas like renewable energy. Vocational training can address skill mismatches in green sectors, which is important as climate change shifts local labour supply and demand, impacting productivity. Training programs can develop skills needed for renewable energy and climate resilience (Bandiera et al., 2021).While it's unclear if a skill shortage hinders green sector growth, addressing this could benefit the environment. Moreover, vocational training should consider roles in adaptation and resilience, as climate change may cause mismatches in local labour supply and demand, hindering individuals' adaptation opportunities.

Access to credit is also important for firms to grow. A large body of evidence suggests that the marginal return to capital is large for small businesses (De Mel et al., 2008; McKenzie and Woodruff, 2008). However, microfinance does not seem to have transformative effects on target populations (Meager, 2019). Further research would be useful on innovative contracts to address the challenges presented by identifying, vetting, and monitoring firms, and on models for angel investors, venture capital, incubators, and accelerators in developing countries. Evidence on the marginal product of capital for large firms is also needed. Removing credit constraints for large firms could have important spillover effects upstream and downstream. Micro-

equity contracts and digital financial tools offer potential solutions, though challenges in implementation remain (De Mel et al., 2019). Broadly, the financing of both small and large firms, in rural and urban settings, remains an area of keen interest for us.

Many firms in developing countries also suffer from the lack of access to a reliable source of electricity. The average time without electricity per month is 66 hours in sub-Saharan Africa and 46 hours in South Asia. These outages are often cited by entrepreneurs as the most important constraint to their growth. Linking this theme with Energy and Environment, we seek to build evidence on the impact of the lack of access to reliable electricity on firm performance. Here it will be interesting to see how energy systems that rely more on renewables affect firm productivity and growth.

Finally, fiscal policy and government regulation also influence firm productivity. Pigouvian taxes, particularly those targeting pollution, are important. Carbon tax schemes, increasingly common globally, have shown effectiveness in the EU and Canada (Metcalf, 2021; Timilsina, 2022). Cap-and-trade systems provide flexibility but pose challenges in terms of establishment and achieving desired carbon prices (Metcalf, 2021). Government regulation through production standards or quotas are also influential. Examples include fuel efficiency standards in automobiles and pollution quotas in India and China (Duflo et al., 2013; Zheng and Kahn, 2017). Combining R&D subsidies with environmental taxes, as proposed by Acemoglu et al. (2012), could balance innovation with environmental goals.

The functioning of markets

Our second area of research seeks to transform the way markets function in developing countries. There is a large body of evidence that resources are not only scarce but also misallocated in developing countries (Hsieh and Klenow, 2009). The misallocation can be between firms, industries, or regions in a country. We have, however, much less evidence on what exactly are the policies and institutions that generate factor misallocation. The list of potential candidates is very large and likely to vary across countries and time. There is also suggestive evidence that distortions or frictions on the demand side might reduce market access or misallocate demand across firms and in turn, can slow down the integration of firms into value chains. These potentially include high trade costs, search costs, or contractual frictions. Recent evidence highlights that trade liberalization can reduce such distortions but also reveals varying impacts on market power and firm entry (Edmonds et al., 2015). We encourage further research in this area.

Some markets in developing countries are captured by powerful firms. For example, there is evidence that the trading and transportation sectors are often captured by a small number of large companies. The retail sector, in particular, appears to be less competitive in developing countries than in high-income countries (Atkin et al., 2018). The cement industry is another example. This, in turn, can have a large impact on the upstream and downstream sectors. We aim to better document the patterns of market power in developing countries, and to examine possible interventions to improve the functioning of these critical sectors. The needs here include measuring mark-ups, understanding in which contexts lower competition is welfare- improving, documenting better how competition and market

structure at different levels impact the entire value chains, and identifying effective policy measure to enhance competition.

The existence of externalities such as external economies of scale, agglomeration economies and technological or human capital spillovers create a rationale for state intervention, usually referred to as industrial policy. While many governments in developing countries already implement industrial policy in some way, there is very limited evidence on the size of the externalities that justify these interventions and where – in which firms and which sectors – they are the strongest. Conditional on the existence of certain externalities, there is also a need for more evidence on how governments should respond to them, especially when states have limited capabilities and coordination to implement complex policies effectively, and how they might design policies in the face of uncertainty over which firms and sectors to target. There is also growing interest in the role of industrial policy as a means to not only promote economic development but also address environmental goals, particularly in sectors with high emissions (Bartelme et al., 2019).

International trade

Our third area of research relates to how domestic firms interact with international markets. We see four important dimensions of this interaction, all of which have important implications for promoting sustainable growth and environmental protection.

The first is how opening to trade affects the functioning of markets and firms. For example, does it worsen or alleviate resource misallocation and market power? Does the allocation of factors resulting from trade openness promote production externalities? How are different types of firms impacted by trade policy? The ramifications of climate change on trade patterns, especially in agriculture, is an area of interest. With agriculture constituting a significant portion of global exports, the effects of climate change, such as diminished yields in developing countries, pose a challenge. However, global trade networks and more open trade policies could mitigate these spatial shifts. This raises questions regarding the efficiency and adaptability of the current trade infrastructure in developing countries, from physical infrastructure to tariff barriers. Trade policies therefore need to be designed considering environmental considerations. For example, aligning tariff structures with carbon content can incentivise cleaner production (Shapiro, 2021).

The second is whether access to world markets facilitates transfer of knowledge and adoption of best practices and technologies. Atkin et al. (2017) show that firms' performance improves when they start selling to foreign buyers, and a growing body of evidence suggests that foreign direct investment entry generates productivity spillovers for domestic firms (Alfaro-Urena et al., 2021).

Such spillovers also potentially promote sustainable production methods and enforce environmental standards. Moreover, larger firms, given their superior technological capabilities, are more inclined to adopt environmentally friendly processes. As high-income countries alter their trade policies, low- and middle-income countries must anticipate and adapt. Initiatives like the EU's carbon border adjustment mechanism (CBAM) underline the shifting landscape. Recent evidence highlights that policies like CBAM could shift

production practices globally towards greener standards (Avenyo and Tregenna, 2022). However, they also impose costs that may reduce exports. Non-tariff barriers may be particularly damaging, especially where – as with the new EU Deforestation Regulation (EUDR) – compliance costs are high. Research is needed on the impact of such policies low- and middle income countries, and how the adverse effects can be mitigated.

The third aims at measuring the economic returns of public goods such as transport infrastructure, supplier development programmes and export promotion services that facilitate integration into global value chains. Infrastructure investments not only improve trade but also support sustainable development. Upgrading port facilities and expanding road networks can enhance trade efficiency while reducing environmental impact (Cosar and Demir, 2016). While the benefits of these interventions are clear, there is limited evidence as to whether they are effective and cost-efficient.

Lastly, an important question is the extent to which opening to trade redistributes income within the domestic economy, either mitigating or worsening existing inequality. Inequality can take various forms. A large literature has shown that the skill-wage premium increases with trade openness, increasing income inequality (Goldberg and Pavcnik, 2007). Evidence on the impact of trade liberalisation on consumer prices in developing countries is lacking. There is also less evidence on which firms in the value chains – in which sectors and which locations – are most affected by trade shocks and regional trade integration policies. If access to world markets increases inequality, a central question is how redistribution can be done efficiently. Similarly, who bears the cost of adjustment to trade shocks is a question that deserves more attention. Incorporating social and environmental safeguards into trade policies could balance the benefits of trade with the need to address inequality and environmental impacts (Münch and Scheifele, 2023). More research is needed on how these policies can be designed to ensure equitable and sustainable outcomes.

Agriculture and rural development

Agriculture remains a key pillar of rural economies, with a predominant share of the workforce engaged in this sector across developing countries like India, Mozambique, and Zambia (Roser, 2023). However, persistent rural poverty, especially amongst labourers who do not own any assets, magnifies the inefficiencies and vulnerabilities of this sector (Balboni et al., 2022; Banerjee et al., 2015; Bandiera et al., 2022). The effects of climate change on agriculture requires innovative adaptive measures, ranging from improved farming practices to efficient land use and clean energy. Addressing risks, such as those from uncertain climatic events, is an important area for policy; innovative insurance models have shown promise in promoting investment and mitigating the adverse effects of unpredictable events on farming (Karlan et al., 2014; Lane, 2023; Donovan, 2020).

Agricultural firms face many of the same challenges that other firms face in raising their firm capabilities. By design, given their rural locations, these constraints may be even amplified. For example, small agricultural enterprises may lack access to capital or markets, inhibiting their ability to invest into machinery or upgrading production technology. Recognising that many firms in this sector are small, we emphasise the need for further research in the nexus of agriculture, SMEs, and financing.

A key challenge of rural development is transportation infrastructure. As of 2016, a staggering one billion individuals lived more than 2 km from paved roads, limiting their ability to trade and seek employment opportunities (Roberts et al., 2006; Donaldson, 2018; Atkin and Donaldson, 2015). The ripple effect of limited transport amplifies trade costs and restricts mobility, crucial for accessing urban employment markets (Asher and Novosad, 2020). Complementing transportation, electrification is another important element in rural empowerment. It is not merely about lighting and phone charging; electrification, especially when combined with better roads, has the potential to significantly raise employment levels and overall welfare in rural areas (Allcott, 2018; Dinkelman, 2011; Lipscomb et al., 2013; Moneke, 2023).

Rural areas also possess considerable natural assets, and their conservation can yield significant economic benefits. Implementing nature-based solutions can mitigate environmental impacts, such as CO2 emissions, and introduce sustainable revenue opportunities for these communities (Mercer, 2022; Jayachandran, 2022). The potential of the tourism industry, influenced by well- conserved natural assets, can support economic development and underscore the importance of conservation (Faber and Gaubert, 2019). A central challenge remains in achieving growth while maintaining the integrity and sustainability of these assets.

State effectiveness

Main themes of research under state effectiveness

Fragility and economic development

- Escaping extreme fragility
- Inclusive institutions: political selection and state accountability
- New challenges of fragility: populism, climate migration, and economic integration of refugees

Poverty, labour markets, and inclusive growth policies

- Social protection
- Occupational transformation, inclusive labour market policies
- Climate adaptation

State revenue and effective state policies

- Revenue mobilization
- Bureaucracies, policy implementation
- Spending effectiveness
- State effectiveness and climate change

International policy and coordination

- Climate finance
- Loss and damage funds
- Climate agreements

An effective state operating in a functioning and stable political environment is a necessary condition to achieve higher rates of inclusive growth (Besley and Persson, 2009). The state not only designs economic policies but also provides key public services that are essential for growth, structural change, and poverty reduction. However, in many countries, the state does not deliver on these responsibilities (Collier, 2007).

In light of climate change and environmental degradation, the responsibilities of states are evolving rapidly. In both poorer, agriculture-dependent countries and countries undergoing rapid economic transformations, the state has a central role to play in supporting transitions to cleaner energy and production, and increased resilience to environmental risks.

We see future research that can help fulfil this objective falling into four key areas. The first area focuses on how state fragility affects economic development and how states can escape fragility by building a functioning state, strengthening institutions, and making them more inclusive. Amidst this, states must also confront the challenges of climate change and how to navigate political gridlocks to enact robust policies to support sustainable growth.

The second area focuses on what the state should do to promote inclusive growth and reduce poverty. Here, innovative thinking is needed to recast the set of policies used by the state to promote the welfare of its citizens. A new dimension is the role of the state in addressing the impacts of climate change and environmental degradation. These are significant new barriers to economic growth and require innovations in state policy. Climate-induced shocks will necessitate states to be agile and adaptive, especially in the context of developing countries, which tend to be more vulnerable due to geographical, economic, and infrastructural characteristics. Innovations, especially in regulations, taxes, and infrastructure, will be required. In the third area, we look at how state policies can be made more effective. Here, improving state effectiveness revolves around mobilising domestic resources, building effective bureaucracies to implement economic policies, and making state expenditures more impactful. The evolving climate context introduces additional complexities to this framework. Effectiveness in this realm will also involve overcoming political barriers to integrate mitigation and adaptation strategies, refining governance structures, and promoting international cooperation geared towards sustainable growth.

The fourth area focuses on international policy and coordination. Climate change is a global problem that requires new thinking in areas such as climate finance, loss and damage funds, and climate agreements. A whole body of new research is required to think through how to design these policies and mechanisms in a way that low- and middle- income countries can benefit from them.

As noted above, our white paper emphasises the importance of innovations – technological, organisational, social, and political – to meeting the challenges of climate change. A key question cutting across these four areas is how the state can incentivise and support such innovations.

Fragility and economic development

The starting point for our first area of research is that state fragility is a trap from which it is difficult to escape. The uncertainty, low state capacity and absence of public goods that come with fragility all constrain the private sector. Firms are then reluctant to invest or create jobs, economic development stalls and the growth needed to support increases in state capacity does not take place. We welcome research on how the core economic functions of the state can be established and sustained in extremely fragile political and economic environments. Research is also needed on the set of economic factors and policy priorities that allow peace to be sustained and put countries on a path out of extreme fragility.

State fragility extends beyond just political and economic dimensions, and now encompasses environmental vulnerabilities. Growing evidence suggests that state fragility is intensified by climate change and environmental damages (Peters et al., 2022). Climate-induced events, such as spells of bad weather, can result in poor agricultural yields, leading to economic shocks that amplify conflict and violence in fragile states (Miguel et al., 2004). Such disruptions can significantly hinder development, and in some cases, reverse its progress. Climate disruptions are also driving migration pressures (Clement et al., 2021). Unplanned and large-scale human displacements due to climate changes further induce fragility, straining economies and widening social divides. Moreover, a state's legitimacy, historically rooted in its adherence to a social contract emphasising public safety and economic fulfilment, is now intertwined with its responses to environmental challenges. Aligning economic policy with the urgent demand for environmental protection, especially in countries most affected by climate effects, not only ensures growth but also enhances government legitimacy. Ambitious climate adaptation and mitigation policies have the potential to both counteract environmental challenges and strengthen the bond between governments and their citizens.

In light of these complex challenges, our inquiry into how institutions in developing countries can be strengthened and made more inclusive is even more urgent. Institutions that are robust and inclusive can mitigate the economic and political uncertainties that hinder investment and job creation, promoting economic growth (Acemoglu and Robinson, 2012). Research is urgently needed, especially in areas like political selection, where leaders across government levels play key roles in determining economic policies (Burgess et al., 2015; De Luca et al., 2018). We seek to better understand the ties between political selection, representation, and inclusion in the political process to economic outcomes. Acemoglu and Robinson (2012) underscore state accountability as fundamental for economic growth. The introduction of digital governance tools is also transforming accountability mechanisms, providing new research avenues Given the sensitivities associated with political selection and state accountability in numerous countries affiliated with the IGC, we aim to capitalise on our longstanding ties with policymakers to pioneer innovative projects in these domains.

Poverty, labour markets, and inclusive growth policies

Our second main area of research concerns what the state can do to reduce poverty and generate higher rates of inclusive growth. This objective is important in its own right but also because it helps to re-establish a social contract between the state and the population, especially where poverty rates are high. Interventions designed to enable poor populations to make more productive use of their abilities are not only more likely to result sustained reductions in poverty (Balboni et al., 2022), but also help tackle the lack of social mobility that is often at the root of political dissatisfaction and conflict.

Recent changes in the distribution of poverty around the world heighten the need to re-think growth policies and poverty reduction programmes. Most of the poorest populations in the world live either in fragile states or are being left behind in rapidly growing economies (Page and Pande, 2018). With the emerging evidence on the increasing importance of environmental externalities like climate hazards, the expansion of social protection in low-income countries is becoming even more urgent (Lane, 2023; Narayan et al., 2023; Surminski, 2014). To begin with, despite its expansion – covering approximately 2.5 billion people globally (Banerjee et al., 2022) – the reach of social protection remains limited, particularly in low-income countries where only 15% have access to such interventions (Parekh and Bandiera, 2020). With climate hazards disproportionately affecting low-income countries, expanding these programs is a priority.

Innovative approaches are also needed. Traditional interventions have often prioritised immediate consumption support, but combining conditional cash transfers with innovative elements like vocational training or business loans can empower communities against the volatile effects of climate change (Macours et al., 2012). An enhanced focus on designing adaptive and flexible interventions that not only address immediate needs but also equip individuals and communities to better navigate the climate-altered future is essential. For example, leveraging mobile technology to deliver social protection and financial services in remote areas is a promising new avenue for research (Aker and Cariolle., 2023). Understanding the political economy of social protection will also provide insights into designing more effective and equitable programs (Burgess et al., 2023).

In line with this, we will also support research that identifies labour market policies to promote productivity-enhancing occupational transformation for poor populations. Policies that promote growth and occupational change are also crucial for aiding poor populations in adapting to these environmental changes, making them central to the design of social protection systems. Exploring the role of digital platforms in improving access to training and employment opportunities (Smith et al., 2023), and examining the potential of green jobs in driving sustainable economic growth (Jones et al., 2022), are areas we are interested in exploring further.

State revenue and effective state policies

The set of economic policies that are essential for inclusive growth are generally designed and delivered by bureaucracies. Making these policies more effective also requires building more efficient, capable, and impactful state organisations. A number of studies have documented the power of incentives in driving bureaucrats' performance (Khan et al., 2016; Bertrand et al.,

2019). There is less research on how government officials at different levels interact: whether poor management at the top impacts civil servants, and more generally how the state can build stronger bureaucratic systems. This need is particularly important for thinking about policy implementation.

A wide range of policies, from industrial policy to competition, require the setup of complex agencies where governance plays an important role, for example with respect to identifying the key market failures that need to be addressed, or positive externalities that should be promoted. For example, establishing effective regulatory institutions and mobilising political will are both key hurdles in the fight to mitigate climate change. Creating robust frameworks for evaluating bureaucratic performance and promoting collaboration across government levels can also play an important role in enhancing policy implementation (BenYishay et al., 2022).

Recent climate events, such as the floods in Pakistan in 2022, underscore the need for agile state responses such as early warning systems. Such strategies demand coordination across government departments, the private sector, and international partners. Institutional innovations, like climate change commissions, can bolster these efforts. For instance, establishing potent regulatory institutions and galvanising political will are quintessential challenges in our battle against climate change. It is important to understand the divergence between established regulations and actual outcomes in the context of environmental degradation.

In the current scenario, some influential enterprises benefit from overlooking environmental rules, often at a societal cost (Balboni et al., 2023). Strategies for better hiring, incentivisation, and bureaucrat performance, especially in confronting climate challenges, need further exploration. Digital tools for monitoring compliance and enforcing environmental regulations can be highly effective (Anderson et al., 2019). As climate disturbances that can span multiple jurisdictions become frequent, there is a need for federal synchronisation and localised disaster responses, including in areas such as refining water management or updating insurance markets for natural disasters. Exploring decentralized governance structures that enhance local resilience while maintaining national coordination (Holland et al., 2022) is an area of interest.

A major constraint on global climate action is the financial capacity and resilience of developing economies, particularly in regions like sub-Saharan Africa and South Asia where the tax-to-GDP ratios are typically below 20%. Against an estimated need for investments of US$ 190 billion per year until 2030 for mitigation and US$ 50 billion per year by 2050 for adaptation, sub-Saharan Africa received only US$ 15.7 billion in concessional climate finance in 2020, a small fraction of the collective goal of US$ 100 billion per year agreed globally in the 2015 Paris Agreement. Innovative financial instruments and partnerships with international donors can help bridge this funding gap (Tseng et al., 2021). We are interested in research on the development

of mechanisms that enable fiscal authorities to access climate finance, including rigorous assessment of investment impacts.

While efforts to increase the volume of climate finance are critical, developing countries need also to prioritise domestic revenue mobilisation. We are keen on research that proposes novel ways to increase tax revenues while supporting sustainable growth. Pigouvian taxes, particularly carbon taxes, offer a promising avenue for reducing carbon emissions and generating revenue. Research on the implementation and effectiveness of such taxes, including their economic and distributional impacts, is of interest (BenYishay et al., 2022). Integrating environmental considerations into tax policies more broadly, such as taxes on plastic use or waste generation, is also an area we are keen to explore.

Improving tax administration is another priority area, focusing on enhancing efficiency, transparency, and compliance. Digital tax administration tools have shown promise in reducing opportunities for corruption and evasion, as seen in Ghana (Anderson et al., 2023). We are keen to study the impact of these tools on tax compliance and revenue collection in various contexts. Community-based tax collection systems that engage local populations can also improve compliance and provide insights into more effective revenue mobilisation strategies (Tseng et al., 2021).

We seek to understand the role of property taxes and natural resource management in sustainable development. Property taxes can provide stable revenue while encouraging efficient land use (BenYishay et al., 2022). Research on their effectiveness in promoting conservation and sustainable land practices is needed. Efficiently harnessing and managing revenues from natural resources, such as oil, gas, and minerals, is also important. Sovereign wealth funds, like those in Chile and Norway, offer useful insights but need adaptation for the developing country context (Jayachandran, 2022). Further research on how to integrate natural capital into economic policy frameworks is also needed. (Holland et al., 2022).

Finally, in providing public goods and services, the state disburses large amounts of resources and there is significant dispersion across countries as to how effective this spending is.

Leakages in spending are prevalent in developing countries (Niehaus and Sukhtankar, 2013; Olken, 2006). In this area, we would like more research on how to reduce passive waste, in particular by improving government procurement rules and management systems, as well as expanded research on reducing active waste and overt corruption. We would also like to see more research on policy tools to enable governments more effectively to target expenditure programmes, such as social assistance, to ensure spending efficiency.

International policy and coordination

The global scope of climate change mitigation and adaptation brings policy challenges, and research is needed on how to incentivise and sustain international collective action to coordinate international mitigation efforts and support loss and damage funds. There is also an urgent need to understand if trade policies can reduce environmental degradation and whether unilateral green policies will result in carbon leakage.

Cities

Main themes of research under cities

Firms and employment:

- Agglomeration
- Urban labour markets
- Rural to urban migration

Infrastructure and public services

- Housing and informal settlements
- Transport
- Water, sanitation, waste management

Land use and planning

- Land ownership
- Urban planning
- Transport infrastructure
- Adaptation infrastructure

Municipal finances and urban governance

- Tax policy and compliance
- Governance and public finance management

The future of the developing world is urban. According to the United Nations, Africa's urban population will triple by 2050. South Asia, and India in particular, will also witness a significant growth in its urban populations in the forthcoming decades. This profound spatial transition, which is critical to structural transformation in these economies, creates both challenges and opportunities.

The density of urban areas facilitates interactions between people and firms that catalyse innovation and productivity growth. At the same time, however, this density intensifies challenges like traffic congestion, contagious disease and environmental externalities.

Climate factors are likely to accelerate urban migration. Designing urban policies that capture the benefits of urbanisation while addressing its challenges, particularly the environmental ones, is increasingly important.

The IGC research programme on Cities will concentrate on four key areas: firms and employment in cities, infrastructure and public services, land use and planning, and municipal finance and governance. A cross-cutting issue is the interaction with climate change, and how cities can be made adaptive and resilient while at the same time providing the benefits of agglomeration.

Firms and employment

Our first area of research relates to firms and agglomeration economies in cities. The central question is whether cities enhance the productivity of people and firms, or if the positive relationship between density and income is largely a byproduct of the influx of more skilled individuals into urban areas. The growing urban development literature, including works by Chauvin et al. (2017) and others, underscores the inherent benefits of cities. In particular, the disparities in productivity and wages between urban and rural regions arise not only from skilled workers' preferences for city life, but also from true productivity premiums and agglomeration benefits intrinsic to urban environments (Gollin et al., 2014; Young, 2013). Recent studies such as De la Roca et al. (2023) provide further evidence, suggesting that the density-productivity relationship may hold significant implications for urban policy across emerging markets. However, the exact mechanisms behind this productivity advantage remain unclear: is it optimal firm-worker matchups, or an accelerated pace of human capital development within cities?

Understanding how to make cities platforms of opportunity for all is an important area of policy. Factors like regulatory restrictions, limited skilled labour, and prevailing informality may reduce the productivity-enhancing potential of cities. Slums and informal housing settlements represent a particular challenge (Marx et al., 2013).

The rapid pace of urbanisation also brings new challenges, especially where it intersects with environmental change. Projections show that by 2050, a considerable number of people will inhabit vulnerable coastal cities with risks of flooding and heat extremes (Cities, 2018). This trend is especially pronounced in low- and middle-income countries that have limited infrastructure budgets to protect citizens. Byers et al. (2018) suggest that urban areas could offer greater resilience against climate-induced impacts. Work is needed on policies that can both mitigate urban climate risks and harness the economic potential of cities for sustainable growth.

These issues cannot be examined in isolation from those relating to rural development (see the section on rural development under the Firms theme above). Not only is climate change aggravating the already serious challenge of rural poverty, but urban and rural development need to be viewed as collaborative efforts, not competing priorities. A key reason for this is migration.

In 2020, an estimated 281 million people were international migrants, which underscores the substantial magnitude of global migration both across and within borders (Migration, 2021). This vast migration, fuelled by individuals seeking better economic prospects and protection against environmental externalities, takes place against a backdrop of persistent wage and productivity disparities across regions and nations. These discrepancies are exacerbated by various barriers such as insufficient information about job opportunities, the inherent risks and costs of migration, and challenges in adjusting to new environments (Bryan et al., 2014; Diop, 2023).

Different regions are projected to experience varied climate-induced impacts, with urban areas potentially offering more resilience against environmental shocks (Byers et al., 2018). By 2050, climate change is anticipated to internally displace about 260 million people, with sub-Saharan Africa accounting for a significant portion of this migration (Clement et al.,

2021). While such migrations may reduce the economic and social costs of climate change by facilitating the relocation of the most affected individuals to less vulnerable regions, they also create difficult policy challenges.

Infrastructure and public services

Our second research focus pertains to addressing urban disamenities. While urbanisation can facilitate economic connections between workers and employers, it simultaneously increases vulnerabilities to disease, congestion and crime. As centres of economic activity, cities are substantial contributors to pollution and emissions, and they face growing challenges from climate change. Recent studies highlight the migration of well-educated young professionals from highly polluted urban areas, suggesting a detrimental impact on the urban skill pool and productivity (Chen et al., 2022). Climate migration risks exacerbating the shortage of decent housing, especially in informal settlements.

Congestion, particularly in cities within low- and middle-income countries, not only hampers urban productivity but also contributes to environmental challenges, including greenhouse gas emissions. Potential solutions encompass pricing modifications and the implementation of efficient transportation modalities, such as Bus Rapid Transit (BRT) systems, which have demonstrated economic advantages (Tsivanidis, 2022). Further exploration into the economic and environmental benefits of such systems is needed, as they represent a significant opportunity for reducing local pollution and contributing to climate change mitigation (Khanna et al., 2021).

Housing, another significant challenge, can often include slums in low- and middle-income countries. These informal settlements, often marked by poor housing standards and inadequate services, might inadvertently trap residents in poverty cycles (Marx et al., 2013). Strategies such as early public investment and property rights reform could potentially enhance housing quality (Gonzalez-Navarro and Undarraga, 2023), but the intricacies of social networks and potential rental markets within these areas require further research.

Utilities, primarily encompassing water, sanitation, and waste management, have significant health and economic implications (Hamory et al., 2020). The role of incentives in shaping behaviour, and the impact of subsidies for water connections, road usage patterns, and the link to strong municipal financing of these utilities, are areas of interest.

Land use and planning

Urban planning is not just about managing the built environment—it fundamentally shapes how cities function and grow. As urban areas expand, the intersection of architecture, human activity, and economic dynamics becomes increasingly complex. Despite advancements in urban economics, particularly through formal spatial modelling, significant gaps remain in applying these tools to real-world policymaking effectively. These models, which integrate geography, demographics, and economic factors, offer a way to forecast the broad impacts of urban planning decisions. There is a need to refine these models to better reflect the complexities of urban environments and evaluate the potential outcomes of various land-use policies and zoning regulations.

The evolution of structural urban models has introduced a more nuanced understanding of cities, moving beyond traditional simplifications to incorporate detailed, spatially disaggregated data. This approach allows for an analysis of how economic policies ripple through urban landscapes, affecting everything from housing prices to job locations (Ahlfeldt et al., 2015). However, these models often fall short in developing country contexts, where urban dynamics include significant informality and constrained public resources. For example, the implementation of Bus Rapid Transit systems in cities like Bogotá has highlighted substantial welfare gains through better alignment of residential and employment locations (Tsivanidis, 2022). Further exploration is needed on how infrastructural changes can reshape economic and social landscapes, with a focus on their distributional impacts and interactions with urban form and land use.

Addressing the informal nature of land rights and housing in developing cities remains a challenge. Models that address both formal and informal housing markets are important for understanding how policy interventions influence market dynamics (Gechter and Tsivanidis, 2018). The high costs associated with transitioning slums to formal housing markets call for innovative, inclusive policies that integrate informal settlements into the urban fabric effectively. The future of urban economic research should aim to develop frameworks that can anticipate the impacts of land tenure reforms and housing policies, ensuring that these efforts promote inclusivity and boost city-wide productivity.

Municipal finances and urban governance

Many urban centres are constrained by limited municipal revenues, which impede their ability to fund increasing public spending requirements. Simultaneously, urban policy decision-making is frequently impeded by the absence of a clear, authorising framework, leading to institutional overlaps and ambiguities in mandates that often sideline pressing cross-district urban concerns. The broader challenges of public sector organisation, especially in low- and middle income countries, exacerbate these issues, making the coordination of urban policies even more complex (Engel, Fischer, and Galetovic, 2014). Studies such as those by Ferraz and Finan (2011) demonstrate the positive impact of auditing on reducing corruption, suggesting that enhancing institutional integrity could significantly improve the efficiency of public expenditures. We are interested in further exploration of these issues.

Investigating novel ways to increase municipal finances, such as through urban land value capture, are equally important. Specifically, exploring mechanisms like annual land and property taxes could provide cities with an equitable and efficient revenue stream. This revenue, sourced from enhanced urban land and property values, could then be strategically redirected to finance public initiatives that boost urban productivity. Further research is needed to understand how straightforward land value taxes, shown to be effective in some contexts with weak administrative capabilities (Singh, 2018), could bolster municipal finances.

Energy and environment

Main themes of research under energy and environment

Access to energy

- Impact of energy access on firms and households
- Energy market design
- Political economy of energy supply

Global externalities from energy consumption

- Climate change mitigation and energy policy
- Adaptation to climate change and public goods
- Innovation and diffusion of green technologies

Local externalities from energy consumption

- Consequences of pollution on health and human capital
- Willingness-to-pay for air and environment quality
- Governance and regulations

Conservation of natural capital

- Economic valuation of environmental assets
- Effective policies for sustainable conservation

The path to economic prosperity requires the consumption of large amounts of energy. Americans consume on average 12,700 kWh per year, Indians 1,300 kWh, and Ethiopians a meagre 79 kWh – just enough to power a 30-watt bulb for seven hours a day. Low-income countries will not grow out of poverty if they only provide enough energy to supply a single light bulb for each citizen. More than a billion people, mostly in South Asia and sub- Saharan Africa, still live without reliable and affordable energy.

How can energy policy promote economic development? Since the first industrial revolution, key drivers of economic growth such as mechanisation, transportation, and electrification, have been powered by fossil fuels. This model has generated negative externalities from the beginning, and their accumulation over time has dire consequences today. Reliance on fossil fuels increases the risks of disruptive climate change while also generating local pollution that causes people to lead shorter and sicker lives (Greenstone et al., 2015; Jacobson, 2015; WHO, 2016, Burgess et al., 2017). Most of the future growth in energy consumption will occur in developing countries (Wolfram et al., 2012) potentially causing damage to health and

affecting growth and economic development around the world (IPCC, 2014). For this reason, the energy use and the environment must be considered jointly, not in isolation from one another. Increasing access to energy is essential to generating the economic growth needed to eliminate extreme poverty by 2030. The growth needed to reduce poverty will generate harmful environmental externalities if the right policies are not in place, and what constitutes "right" will vary around the world depending on factors like income and the existing climate.

This tension between improving energy access for growth and mitigating the externalities from growth is at the centre of the IGC research programme on Energy and Environment. We will support research in four main areas.

The first is energy access: how will the last billion get access to energy, and what benefits will it bring for their livelihoods? The second is climate change mitigation and adaptation: what are the most effective policies for developing countries to mitigate emissions in the energy sector and adapt to global climate change? The third is minimising local environmental damage: in countries with weak enforcement capacity, how can environmental regulations reduce the local harms from energy consumption? The fourth is the conservation of natural capital: how can international and local public goods such as land and water ecosystems be valued and preserved?

Cutting across these four areas of research are the core themes of technology, innovation and political economy. New technologies and innovation can help provide access to inexpensive and reliable energy as well as limit the negative environmental side effects of energy consumption. But it is crucial to understand what policies are most effective in promoting local innovation and in facilitating the transfer of existing technologies to developing countries. Whole new energy and transportation systems will have to be developed. In addition, as the state plays a central role in energy markets in most developing countries, understanding the political economy of electricity generation and distribution is critical. How energy is priced and who gets access to energy depend on political factors. Strategies for improving environmental quality must take into account political incentives.

Access to energy

Our first main area of research concerns the relationship between energy access and economic growth. The starting point for this agenda is understanding the demand side: how households and firms value and use energy (Lipscomb et al., 2013; Aberese, 2017; Lee et al., 2019). While a growing literature has documented the impact of energy access on firm performance and household welfare, research is needed on the long-term impact of energy provision on households and firms, as well as the general equilibrium effects of expanding access. Do energy investments crowd-in private investment and growth? As countries transition from traditional to modern energy sources, understanding the pace and impact of this shift is important. This transition not only affects economic productivity but also carries significant environmental implications (IEA, 2023).

Energy access might be constrained by demand but also by supply-side policies that undercut the profitability of serving poor customers (Burgess et al., 2019). We need to deepen our understanding of the optimal design of energy markets in developing countries. Creating markets that internalize

the cost of environmental externalities is an important factor in building equitable energy systems (IEA, 2022). Research in this area will encompass the distribution side of the energy system and the generation and transmission of energy, all of which are often heavily controlled by the state.

The politics of energy distort both the demand and supply of energy and may limit access. If research is to have an impact on energy policy, it must consider the constraints that derive from equity, redistribution and political concerns as well as governance failures. For example, a whole range of subsidies, from generation to distribution, have crept into energy supply. Beyond electricity pricing, the design of financial and institutional structures that promote investment plays a central role. A parallel question is how redistribution can be achieved through instruments other than the mispricing of energy. Having prices reflect the social costs of different forms of energy would reduce the externalities from energy consumption, but more research is needed on how this can be done in less regressive and more politically feasible ways.

Global externalities from energy consumption

How to address global externalities from energy consumption represents the second main area of research. Working out ways of reducing greenhouse gas emissions whilst expanding energy access represents a major challenge. Recent advances, such as the plummeting costs of renewable energy, particularly solar, suggest a shifting landscape in energy economics that could support significant mitigation efforts (Banares-Sanchez et al., 2023). We need to think about what policy instruments can be used to promote low carbon energy sources, how the prices of different sorts of energy can be set to reflect their social costs of consumption, and how various policy instruments, such as cap-and-trade systems and carbon taxes, can be used to incentivise carbon emission reductions. Addressing the intermittency problem faced by renewables through for example, regional market integration, improving demand-side management and energy efficiency and working out how to expand investments all require significant research effort (Astier and Hatem, 2023). Understanding what drives innovation and diffusion of green technologies (for example, solar) is particularly important as the adoption of cleaner energy transportation systems is central to mitigation.

On adaptation, we need to design policies that help populations become less dependent on forms of employment and production, such as agriculture, that will be adversely affected by climate change. This is becoming increasingly urgent as models project that climate change will severely disrupt agricultural outputs and manufacturing productivity in low-income regions (Lobell and Tebaldi, 2014; Burke, Hsiang, and Miguel, 2015). We will also support research on the set of public and financial services that are needed to support climate change adaptation and help people in developing countries cope with the impact of climate change. Part of this will link to the work on social protection and climate change under our State Effectiveness theme. Importantly, mitigation and adaptation are intertwined: we need to find ways of reducing emissions that are complementary to efforts to adapt, for example, with an energy mix that is resilient in moments of climate change- induced distress (IPCC, 2022; 2018). More research is needed on how these complementarities can be adequately incentivised.

Local externalities from energy consumption

How to minimise local environmental damage is our third main area of research. Developing countries today have perhaps the most acute air pollution problem in world history and the associated costs can be staggering (Chen et al., 2013). Local pollution and climate change are not issues that operate in isolation. Harnessing rising concerns over local pollution represents an indirect but potentially powerful means of tackling climate change, not least by linking the short-term benefits of pollution reduction to the long-term benefits of climate action. Research on measuring the impact of pollution on outcomes such as health, human capital, and the productivity of firms and individuals is critical here (Ebenstein et al., 2017). New findings indicate that exposure to pollutants like particulate matter and nitrogen dioxide significantly exacerbates health risks, emphasizing the urgency of this research (Adhvaryu et al., 2023; Heo et al., 2023). This research raises awareness and can affect willingness to pay for environmental quality, thus improving the chances that policies to reduce local pollution become politically salient and hence implementable. Greater awareness can also change the social norms and values surrounding environmental quality and thereby facilitate a shift to an equilibrium where there is widespread political support for tackling local pollution – and climate change. We need research on how this can be achieved.

Key to this area of research is the design of environmental regulations. Here the gap between de jure and de facto environmental regulation is particularly wide in developing countries. Particularly important are regulations to constrain emissions, pollution and environmental degradation. The challenges are compounded by the high social costs of pollution abatement and the weak enforcement of existing regulations (Duflo et al., 2013; Greenstone and Hanna, 2014).

Limiting these externalities becomes more important as countries grow. Here there is a considerable need for work identifying effective and politically feasible policies. One important question for research is how institutions and policies can be strengthened to ensure effective enforcement. Recent studies suggest that innovations in monitoring technologies, such as the deployment of continuous emissions monitoring systems, could play an important role in bridging the enforcement gap (Astier et al., 2023). Another is how policymakers can be made more accountable for these costs by designing appropriate governance structures and policies.

Conservation of natural capital

Natural capital and environmental sustainability are foundational to economic development. We are currently experiencing the repercussions of depleting natural capital, including extinctions, deforestation driven by various needs such as agriculture and fuel, and a decline in coral reefs and peatlands. Our improving understanding of natural capital preservation owes much to technological advancements. Remote sensing products now enable detailed monitoring of land- use changes. The observation satellite data by Hansen et al. (2013), for example, provides a granular understanding of global forest loss and gain. Employing such data, research has started to explore the negative impacts of practices like using fire for land clearing in Indonesia. However, there is a pressing need to incorporate natural capital

into economic policy more effectively. This can be segmented into two research priorities.

The first is to quantify the benefits and costs of natural capital conservation and understand their distribution (Frank and Sudarshan, 2023) . The second is to formulate and evaluate policies to manage natural capital, taking into account the varying stakeholder interests in different regions. Direct conservation, such as establishing protected areas for various ecosystems, is the most straightforward approach to counter environmental degradation. In addition to preserving these resources, we need to understand their intrinsic value. Ecosystems offer a myriad of services – trees sequester carbon, bees enable pollination, and water drives agriculture and hydropower. Valuation methods that are sensitive to the specific ecosystems and integrated into economic processes are key to understanding the full economic benefits of natural capital (Greenstone and Jack, 2015).

Recognising the value of natural capital alone does not ensure its sustainable use. Market and institutional frameworks must facilitate and incentivise preservation. For instance, while forests might represent a global asset for combating climate change, local interests might lean towards their exploitation for immediate economic benefits. This discrepancy creates a policy challenge, emphasising the need for strategies that harmonise local development aspirations with broader environmental concerns. Popular policies like payment-for-ecosystem-services (PES) have shown potential but with mixed outcomes. Other interventions like strengthening property rights have also demonstrated varied results. As efforts to conserve biodiversity continue, there is a clear call for further research into innovative, cost-effective incentive mechanisms to bolster natural capital protection. The challenge is to devise effective policies that balance local development and global conservation objectives in a way that is feasible and acceptable to all stakeholders involved (Jayachandran, 2023).

Annexure – research questions

I. Firms

a. Firm capabilities

i. Entrepreneurship, Management Practices, Training Programmes

- What types of entrepreneurs benefit most from training programmes, and should governments identify and support high-potential entrepreneurs?
- How can training programmes, including vocational and managerial training, help workers adapt to climate change and mitigate productivity losses from high heat?
- In what contexts are mentorship, peer interaction, and consulting services effective, and what mechanisms enable their success?
- What are the overall effects of entrepreneurship programmes on the economy, and how can their delivery be improved with technology or 'edutainment'?
- How do gender roles and social norms impact the selection and success of high-ability entrepreneurs in support programmes?
- What role do incubators play in promoting disruptive entry?

ii. Technology Adoption, Green Innovation, and Quality Upgrading

- What are the barriers to technology adoption, especially for externality mitigating technologies, and which policy interventions are most effective in reducing them?
- How do firms learn about and adopt new technologies, and what regulations foster technological advancement?
- How can government subsidies, particularly in emerging sectors like solar energy, effectively stimulate green innovation and sustainable economic growth?
- How can a blend of R&D subsidies and environmental taxes best promote sustainable innovation, especially in developing countries?

iii. Labour Market Policies

- What is the magnitude of search frictions for skilled workers, and how can these be reduced through effective skill development and vocational training programmes?
- Does discrimination contribute to diminished wage growth and hinder the promotion of capable individuals in developing countries?
- How can policy help overcome search frictions and high worker turnover, and promote efficient labour allocation?

iv. Access to Finance, Venture Capital, Material Inputs, Electricity, and Other Inputs

- How can innovative finance improve access to capital for firms and enhance growth and sustainability?
- What are the impacts of infrastructure challenges on firm development, and how can renewable energy mitigate these effects?
- How do climate-related productivity shocks affect agricultural firms' input choices?
- How does access to finance influence agricultural SMEs' performance and environmental impact?
- What barriers and enablers affect access to formal credit for agricultural SMEs, and how do financial innovations impact this?
- How does finance access impact rural livelihoods, food security, and climate resilience for agricultural SMEs?

v. Climate Change and Productivity

- How do climate change impacts like heat stress and extreme weather affect worker productivity and firm output, and what strategies can firms adopt to mitigate these effects?
- How does environmental pollution, including air quality, impact worker productivity and overall economic performance, and what interventions are effective in mitigating these impacts?
- What is the relative importance of low access to inputs like finance, materials, and electricity in reducing firm productivity?

b. Markets

i. Misallocation of Factors of Production and Structural Transformation

- What factors lead to the misallocation of resources, and how do policies and regulations influence this?
- How do labour frictions and barriers impact optimal labour allocation and structural transformation?
- How will climate shocks affect labour allocation in agriculture and other sectors?
- Why is there less disruptive business entry in low- and middle-income countries?

ii. Role of Firm-Level Demand and Market Access

- What market failures reduce firm market access, and how can they be addressed?
- How do search frictions and global value chains (GVCs) influence market access and demand for firms?
- How can reducing contractual frictions and improving reputation mechanisms drive innovation and productivity in response to demand shocks?

iii. Intermediation and Competition along Value Chains

- What role do intermediaries and agribusinesses play in reducing market failures and frictions in agricultural value chains?
- How do market power and competition dynamics affect value chains, and what interventions can increase competition?

iv. External Economies, Spillovers, and Industrial Policy

- Where are externalities strongest, and what policies address them effectively?
- How can industrial policy support clean sector development in low-capacity environments?

c. International trade

i. Existing Distortions Affected by Trade Openness

- How does trade openness influence production externalities, environmental impacts, and market distortions?
- What are the impacts of trade policy on informality and innovation?
- How do changes in trade policy affect embedded firms and overall economic dynamics?
- What is the optimal balance between industrial and trade policy to address production externalities?

ii. FDI Policy and Spillovers

- How does exporting promote learning and quality upgrading, and in which sectors are these effects strongest?
- Through which channels do FDI spillovers arise, and how do they impact local firms' productivity, wages, and competition?
- How does FDI reallocation vary under different climate policies?
- What policies effectively link domestic and foreign firms to promote productivity and environmental benefits?

iii. Trade Integration and Infrastructure

- How can we perform cost-benefit analyses of physical trading infrastructure, and where are the highest marginal returns?
- What policies improve customs collection and reduce border corruption?
- Which trade facilitation services significantly increase trade flows, and how can intra-national trade infrastructure be expanded?

iv. Export Promotion

- What externalities or market failures justify export promotion programmes, and how large are these externalities?
- How effective are programmes in improving local firms' reputations and matching exporters with buyers?

- Which interventions are effective and cost-efficient in addressing market failures?
- How will trade policy affect where polluting firms are located?

v. Trade and Inequality

- How does trade policy and liberalisation impact consumer welfare and firm dynamics in low- and middle-income countries?
- How can the gains from trade be more equally distributed, and what are the spatial impacts of regional trade integration?
- How do 'clean' and 'dirty' industries respond to state institutions and trade governance?
- What factors slow the adjustment to trade shocks, and what policies can speed up this adjustment?
- How can adjustments to climate shocks be mitigated compared to traditional trade shocks?
- What is the role of lobbying and political economy in shaping trade policy in low- and middle-income countries?

d. Rural development and climate change

- How can improved farming practices and efficient land use mitigate the impact of climate change on agriculture?
- What innovative insurance models are effective in promoting agricultural investment and mitigating the adverse effects of unpredictable climatic events?
- How does the lack of transportation infrastructure affect rural poverty and employment opportunities?
- What are the combined effects of electrification and improved road infrastructure on employment levels and welfare in rural areas?
- How can nature-based solutions and conservation of natural assets generate sustainable revenue and economic benefits for rural communities?
- What role can the tourism industry play in promoting economic development and conservation in rural areas with well-preserved natural assets?
- How can rural development balance economic growth with the sustainability and conservation of natural assets?

II. State Effectiveness

a. Fragility and economic development

i. Escaping extreme fragility

- What interventions can effectively promote development objectives in environments experiencing conflict or organized violence?
- How can economic governance strategies be designed to enhance the durability of peace agreements and reduce the likelihood of future conflicts?

- What mechanisms and policies are most effective in attracting private sector investment in fragile states to stimulate and sustain economic growth?
- What are the most effective approaches to strengthening political and economic institutions in fragile states to foster long-term stability and development?
- How does state legitimacy influence economic performance in fragile states, and what strategies can be implemented to enhance it?

ii. Building stronger and more inclusive institutions

- What factors facilitate the selection of representative and competent leaders in fragile states, and how do political identities (ethnicity, caste, party affiliation) influence public investments and policies?
- What role do traditional institutions, such as chiefs, play in designing local economic policy and providing public services?
- How can political representation of marginalized groups be enhanced to improve human capital and economic outcomes?
- What mechanisms and strategies can hold political leaders accountable and promote inclusive growth in fragile states?
- How do politicians react to accountability interventions, and what strategies effectively enhance state accountability?
- What are the most effective methods for disseminating information to improve voter behaviour and political accountability in fragile states?
- How can new technologies be harnessed to enhance political accountability without exacerbating social and political challenges?
- How do political incentives and electoral pressures influence the implementation and sustainability of climate policies, and what strategies increase public support for these policies?
- How does the structure of political systems affect the efficacy of environmental policies and climate change mitigation efforts?

ii. New challenges of fragility: populism, climate migration, and economic integration of refugees

- How do anti-poverty programmes and the provision of public goods affect ethnic and cultural cleavages?
- What economic factors are responsible for the rise of populism in developing countries?
- What is the economic impact of refugees in low-income countries? What policies facilitate their economic integration?
- How do political polarization and identity politics influence economic stability and policy-making in fragile states?
- What are the long-term economic effects of climate-induced migration on urban and rural economies in developing countries?

- How can state policies effectively mitigate the negative impacts of climate change on migration and economic development in fragile regions?

b. Poverty, labour markets, and inclusive growth policies

i. Social protection

- How can we design social insurance and social assistance transfer programs to have a transformative impact on the lives of the poor?
- How can the insight from behavioural economics be used to design more effective social protection programs?
- How should employment insurance be designed in developing countries?
- What are the main constraints of implementing state-run social protection programs at scale?
- What are the general equilibrium effects of social protection programs?
- How can the state effectively coordinate and maximize the efforts of NGOs and other social partners in poverty reduction initiatives?
- How can the state facilitate occupational transformation to increase productivity among the poor in developing countries?
- How can social protection programs be designed to incorporate climate adaptation strategies and enhance resilience?
- How can agricultural insurance be expanded to help farmers adopt climate-resilient practices and technologies?
- How can big-push programs, such as vocational training, effectively transform occupational abilities and reduce poverty?
- What innovative policies can be developed to raise more funds for state-run social protection programs in resource-constrained settings?
- What are the best practices for integrating climate considerations into economic policies to avoid unintended environmental damage?

ii. Labour market policies and occupational transformation

- How can we design "big-push" transfer programs that transform the labour market and production activities of the poor? How can these programs be scaled up by governments?
- What are the main barriers that prevent productive people from getting productive jobs? What public services and policies can remove these frictions?
- How can discrimination in labour markets be decreased?
- What are the most effective professional training programs for the youth? What is the appropriate role of 'hard' and 'soft' skills in such programs? How can these programs be made more attractive?
- How can credit constraints be effectively alleviated to enable the poor to acquire productive assets and improve their income flow?

- What policies and interventions can reduce migration costs and improve welfare for the poor seeking employment in urban areas?
- How can vocational training programs be financially sustained, and what models are most effective in ensuring their long-term success?
- What are the best practices for integrating green skills into vocational training programs to support the transition to environmentally friendly economic sectors?

iii. State interventions in climate adaptation

- How can the marginal value of public funds (MVPF) be effectively measured in the context of climate change adaptation interventions in low-income countries?
- What are the most effective state interventions for correcting market failures related to agriculture and environmental degradation exacerbated by climate change?
- How can property rights be leveraged to enhance land conservation and climate change adaptation efforts while ensuring equitable distribution of benefits and costs?
- What are the best practices for integrating natural capital conservation into economic policy frameworks in developing countries?
- How can state-led information dissemination strategies be designed to effectively promote the adoption of climate-resilient technologies and practices?
- What role can Payment for Ecosystem Services (PES) play in reconciling economic and environmental objectives in poverty alleviation efforts?
- How can governments balance infrastructure development with the need for climate adaptation, particularly in areas vulnerable to sea level rise and other climate impacts?
- What are the economic benefits and costs of various state-provided information campaigns and subsidies aimed at enhancing climate resilience and sustainable growth?

c. State revenue and effective state policies

i. Revenue mobilization

- How do social norms, corruption, and behavioural messages impact tax compliance?
- How can the 'last-mile' problem in VAT be solved, and consumers be incentivised to request receipts?
- How can data science and machine learning reduce non-compliant tax behaviour, including at borders and in cross-border profit-shifting?
- How can developing countries reduce tax evasion and manage profit-shifting under new regulations like the global minimum tax?
- Which tax administration reforms yield the highest return on tax collection, particularly in countries with large informal sectors?

- What are the optimal tax instruments and the impact of tax rate increases across different income levels?
- How can tax incentives be designed to avoid distortions and ensure equity?
- What are the effects of lobbying on tax policy, and how can political constraints to tax reform be overcome?
- What are the equity and efficiency impacts of climate-motivated tax policies like carbon taxes, and how can their distributional impacts be mitigated?
- How can digital technology improve tax collection, taxpayer compliance, and prevent climate-related tax burdens on poorer households?
- How can natural capital conservation be integrated into economic policy, and how can property rights enhance land conservation and climate adaptation?
- What institutional frameworks maximize natural resource revenue while mitigating the resource curse?
- How can states monitor and regulate informal small-scale mining to ensure sustainable practices?
- What policies can improve tax collection efficiency and transparency from multinational companies in natural resource extraction?
- How can digitization and creative measurement improve tax compliance in the informal sector?
- How do developing countries' transfer pricing units function with fewer resources, and how effective are they compared to "best-in-class" countries?
- How can developing countries create and enforce international tax rules effectively, considering their resource constraints?
- What are the impacts of digitization on taxpayer compliance and enforcement, and what are the opportunity costs?
- What are the best methods for taxing the digital economy?
- How can small-scale experiments and nudges improve tax compliance?

ii. Public sector effectiveness

- How can screening mechanisms for selecting high-performing civil servants be improved?
- What skills and attributes should be prioritized in selecting bureaucrats to enhance public sector performance?
- What incentive structures motivate bureaucrats to achieve higher performance and accountability?
- How can senior bureaucrats be better selected, incentivised, and monitored to improve organizational outcomes?
- What management practices enhance performance within the public sector?

- How can the state design and build complex agencies that effectively deliver policy objectives on structural change and economic development?
- What are the primary challenges to policy implementation in developing countries, and how can they be addressed to improve outcomes?
- How do policy implementation challenges affect the design and effectiveness of public policies in low-income countries?
- How does intrinsic motivation among bureaucrats influence their performance, and what strategies can enhance this motivation?
- What role do career incentives and promotions play in public sector performance, and how can these be optimized?

iii. Spending effectiveness

- What are the most effective methods for accurately targeting social protection programs in developing countries?
- How do community-based targeting approaches compare to algorithmic methods in efficiency and effectiveness?
- How can self-selection mechanisms be optimized to ensure social protection benefits reach the intended recipients?
- What impact does providing detailed eligibility information have on the efficiency and fairness of social protection programs?
- How can new technologies, such as biometric ID systems, enhance the targeting and delivery of social protection programs?
- What factors influence the efficiency of public procurement systems, and how can these systems be improved to reduce corruption and waste?
- What are the key considerations for designing effective public-private partnerships (PPPs) in infrastructure and service delivery?
- How can payment systems be designed to reduce corruption and ensure public funds reach their intended recipients?
- What are the main political economy challenges affecting public spending efficiency, and how can they be addressed?
- How can technology and innovative payment systems enhance the transparency and effectiveness of public spending in low-income countries?

iv. State effectiveness and climate change

- How can states incentivise bureaucrats to enforce environmental regulations, especially in high-corruption environments?
- What strategies are effective for monitoring and enforcing pollution controls at various government levels?
- How can states balance local economic interests with environmental conservation to reduce deforestation and preserve biodiversity?
- What are best practices for involving communities and marginalized groups in natural resource management and conservation?

- How can states improve their capacity to secure and manage international climate finance, such as from the UN Green Climate Fund?
- What regulatory frameworks can reduce uncertainty and enhance private sector investment in climate adaptation and mitigation?
- How can innovative financial instruments and public-private partnerships bridge the climate finance gap in different national contexts?
- What mechanisms can governments develop to transparently track and assess the impact of climate investments for continued donor support?

d. International policy and coordination

- How can international climate finance mechanisms best incentivise and sustain global climate action?
- What impact do trade policies have on environmental degradation, and how can they be improved to support climate goals?
- How do unilateral green policies affect carbon leakage, and what strategies can mitigate this issue?

III. Cities

a. Firms and employment

- What are the size and nature of the returns to concentration across formal and informal economic activities?
- Do cities facilitate firm-worker matching and the exchange of goods and services, and act as accelerators for rapid skill acquisition and learning?
- How do neighbourhoods and slums influence access to economic opportunities and social mobility for residents, particularly among vulnerable classes?
- What forces diminish the potential benefits of agglomeration in urban areas?
- Which constraints on firms, such as skill shortages, limited market access, regulatory burdens, or energy access issues, hinder labour demand and contribute to high unemployment rates among the young and vulnerable populations?
- What factors limit the ability of workers in developing countries to acquire skills and learn from employers and co-workers, compared to their counterparts in developed countries?
- How can the comparative advantages of different cities be identified, and how can local governments design and implement policies to leverage these advantages effectively?
- How does climate interact with and impact the advantages of urban agglomeration?
- How will climate change-related migration affect urban labour markets in developing countries?
- How will changing temperatures influence the productivity of firms in developing world cities?

- What empirical methods, such as RCTs, historical policy quasi-experiments, and structural modelling, can best identify policies to enhance urban productivity?

b. Urban land use and planning

- How do limited land rights and complex tenure systems impact urban form and infrastructure investment?
- Can governments facilitate efficient land markets to better allocate urban space?
- How does land titling function in practice, and what barriers exist to using formal titling systems? How does this interaction affect existing informal land tenure systems?
- How do urban planning and regulatory frameworks influence economic outcomes?
- What is the impact of land use regulation on housing costs and economic activity?
- Are cities experiencing inefficient sprawl, and what policies could improve land use efficiency?
- What are the long-term effects of unplanned spatial expansion and persistent informality on labour market outcomes and overall economic performance?

c. Infrastructure and public services

- How can water and waste services be provided to effectively maintain public health and a clean environment?
- How do the social costs of urban density and the social benefits of these public services vary across population groups?
- What is the willingness to pay for water and waste services?
- Can governments facilitate affordable housing for lower-income residents?
- What is the impact of public housing projects, slum upgrading programs, and land readjustment on resident welfare, land prices, productive activity, and fiscal costs?
- How does the location of public housing and the spatial integration of lower and higher-income residents affect welfare, land prices, productive activity, and fiscal costs?
- How can urban mobility be improved?
- What are the costs of congestion, including hours lost to traffic and distortions in land and labour markets?
- What is the role of informal transit networks, and can they complement or substitute mass rapid transit systems?
- What impact do new technologies like ride sharing have on the future of mobility?
- How can cities increase public transit adoption, and what is the impact on emissions?
- To what extent are firms constrained by issues like traffic congestion and unpaved roads?

d. Municipal finance and governance

- How can institutions and capacity at the local level be strengthened?
- How can the efficiency of local government be better measured, and what institutions improve this efficiency?
- To what extent does local regulation influence firms' growth and size?
- What is the role of local governments in economic development policy, and how can national and local policies for enhancing productivity be better coordinated?
- How can low and middle-income countries finance service provision and the functioning of local government?
- How can existing tax design, enforcement, and compliance be enhanced at the local level?
- What impact can new instruments, such as land value capture programs, have on areas with low state capacity and high informality?

IV. Energy and environment

a. Energy Access

i. Energy demand

- Can low-emissions innovation drive energy access?
- What is the demand for energy access and energy use for a range of users, energy sources, and end uses of energy?
- How does the advent of lower-cost renewable energy change household demand for energy services?
- How does the adoption of solar and battery systems by households and communities impact energy access and grid planning?
- What are the impacts of grid energy expansion on energy emissions?
- What are the direct gains of energy access for households, firms, and public facilities?
- Do energy demand estimates line up with direct estimates of the gains from energy access? Why or why not?
- What are the external returns to energy access? What are the sources of external returns?
- What explains the differences in micro- and macro-estimates of the returns to electrification?

ii. Energy supply

- What are the barriers to integrating renewable energy generators into existing wholesale markets?
- How can market design and regulation create better incentives for renewable energy sources in low- and middle-income countries?

- What interventions have been effective in reducing the barriers for private investment in renewable energy generation in low- and middle-income countries?
- Can electricity production markets help deliver welfare gains through the adoption of the latest and cleanest modes of production?
- What effect will increasing renewable energy penetration have on reliability, generation costs, and consumer benefits from energy access?
- How does the hybrid construction of energy markets in low- and middle-income countries, with both state and private actors, affect their efficiency in the short and long run?
- To what extent can the privatisation of different segments of the energy market, such as the distribution of electricity or natural gas, affect market efficiency? How does this depend on the political and regulatory environment?
- How can market rules and public investments in infrastructure integrate energy markets to increase efficiency?
- How does WTP for access depend on scale, reliability, and quality of supply?
- How do reforms in areas like financial contracting, procurement rules, or market formalisation and centralisation affect the efficiency of energy markets?
- What are the benefits of market integration across countries in the electricity sector?
- How do regulatory design and institutions affect energy supply and the incentives of energy supply companies?
- How can market design and regulation create better incentives for renewable energy sources in low- and middle-income countries?

iii. Political economy of the energy sector

- How do supply-side politics affect investment, contracting, and the efficiency of energy markets?
- How do demand-side politics affect tariffs, reliability, and the benefits of energy access?
- How does the provision of energy affect social norms about the state?
- How can financial and institutional structures create a favourable investment environment for private suppliers?
- What kinds of institutions are most robust to political interference? How can rent-seeking and elite capture be minimised?
- How does state control over utilities impact the introduction of renewable energy sources onto the grid?
- Given political constraints, how can we develop independent and robust regulatory processes for the allocation of power and determination of tariffs?

- What reforms are necessary to move towards an equilibrium where electricity is paid for? What are the welfare consequences of such reforms?
- How can energy subsidies begin to reflect the pollution externalities associated with fossil fuel-based energy supplies?
- What distortions result from subsidies in the energy sector?
- Can unconditional transfers effectively replace energy subsidies? How can unconditional transfers be targeted to compensate the losers in energy subsidy reform?
- What are the effects of allocating energy contracts, investment, and supply on political rather than economic grounds?

b. Global externalities from energy consumption

i. Mitigation with supply-side energy policies

- How can low- and middle-income countries best manage the intermittency issues associated with low carbon energy sources?
- What policies are effective in encouraging the adoption of storage technologies that aid grid management?
- Can pricing designs, such as real-time pricing, help manage intermittency challenges?
- How large is the role of credit constraints and capital market imperfections in slowing the adoption of renewables? How can these constraints be overcome?
- How can the performance of renewable auctions be enhanced through auction theory and past experiences?
- What are the most effective financial instruments for increasing low-carbon energy supply?
- What type of market designs and pricing policies are optimal to achieve low-carbon energy targets in low- and middle-income countries?

ii. Mitigation with demand-side energy policies

- What are the private and social returns on energy efficiency investments and policies?
- How do energy efficiency strategies compare to supply-side interventions in terms of cost-effectiveness for greenhouse gas reductions, particularly in low- and middle-income countries?
- What barriers, such as informational or financial, hinder energy efficiency investments by individuals and firms?
- Is there a larger energy efficiency gap in low- and middle-income countries, and what roles do distortions like low electricity prices, credit constraints, and limited warranties play? What policy tools can address these barriers?
- How effectively do energy users respond to consumption nudges in low- and middle-income countries?

iii. Climate adaptation

- How can trade, growth, and structural change help households and firms adapt to climate change in low- and middle-income countries?
- How effective are natural capital investments in stimulating local economic growth?
- What public goods are necessary to aid climate change adaptation for households and firms?
- How should insurance, financial markets, and transfer schemes be designed to help vulnerable households, particularly in agriculture, adapt to climate change?
- What is the role of information provision about climate impacts in inducing optimal adaptation policies and behaviour? How can governments effectively deliver this information?
- How can behavioural nudges incentivise optimal adaptation decisions?
- How can increased energy service access benefit climate change adaptation?
- How does higher energy efficiency relate to climate adaptation, and what policies can promote adaptive, less carbon-intensive technologies?

iv. Natural capital

- How can the monetary benefits derived from natural capital under climate change stresses and shocks be better quantified?
- What are the economic impacts of biodiversity loss on agricultural production, natural disaster resilience, drug discovery, and infectious disease transmission?
- How can natural capital valuation methods be improved for low- and middle-income countries to accurately reflect the value of environmental assets?
- What are the main market failures and political tensions that hinder sustainable conservation outcomes, and how can they be addressed?
- How effective are payment-for-ecosystem-services (PES) programs, and what factors determine their success or failure?
- What are the impacts of strengthening property rights, such as land titling, on conservation efforts and biodiversity protection?
- How do economic activities like urbanization, electrification, and fossil fuel production affect biodiversity, and what policies can balance development and conservation?
- What are the cost-effective conservation finance schemes that can align local development and global conservation objectives?

c. Local externalities from energy consumption

i. Consequences of pollution for health and productivity

- What are the effects of long-term exposure to air and water pollution from energy use?
- How do pollution impacts vary by gender, socioeconomic status, and caste?
- How do congestion externalities influence energy demand, and vice versa?
- How does public perception of air pollution drive changes in air pollution regulation?
- What low-cost interventions effectively mitigate industrial point-source emissions?
- How effective are payment for ecosystem services (PES) programs in reducing seasonal crop burning in agriculture?

ii. Willingness to pay for environmental quality

- Can we measure WTP for environmental quality through household defensive responses to local pollution?
- What interventions are households or employers willing to adopt to mitigate the impacts of pollution?
- Does spatial sorting occur in response to local pollution?
- How do social norms and market failures (for example, imperfect information, capital constraints) affect WTP for environmental quality through defensive expenditures?
- What causes WTP for environmental quality to change? Do public information campaigns alter WTP?

iii. Enforcing regulation

- How can environmental regulations be effective when monitoring and enforcement are weak?
- Why do governments adopt or fail to adopt environmental regulations, and how do benefits and costs influence this?
- What are the implications of new technologies that reduce the costs of detecting violators for regulation in low- and middle-income countries?
- What role does rent-seeking and bribery play in determining local environmental quality, and how can such behaviours be reduced?
- How effective are information disclosure, emissions markets, and other advanced regulatory instruments in low- and middle-income countries?

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