

# The emerging global crisis of land use

How rising competition for land threatens international and environmental stability, and how the risks can be mitigated

Richard King, Tim G. Benton, Antony Froggatt,  
Helen Harwatt, Daniel Quiggin and Laura Wellesley

---

# Report summary

**Humanity faces a deepening ‘land crunch’ in the coming decades, as on current trends the demand for land for farming, climate change mitigation and other essential uses will increasingly exceed the availability of appropriate land. Intensifying competition for land will make international cooperation on solutions more important, but also more elusive.**

---

Pressures around land use are emerging as one of the defining environmental challenges of modern times. Competition for productive and ecologically valuable land, and for the resources and services it provides, is set to intensify over the coming decades. Ever more land will be used to produce food and renewable energy; at the same time, more land will be required to sequester carbon to mitigate climate change, while fulfilling other essential needs such as supporting biodiversity. As land use in any given domain – for example, climate action – will potentially tie up land critically needed in others, humanity faces the prospect of an acute ‘land crunch’ in which land, despite its apparent abundance, will increasingly be defined by its scarcity. In one scenario, for example, by the middle of this century the world could face an agricultural land deficit – the gap between the amount of farmland needed and that available – of 573 million hectares, almost twice India’s land area.

This report explores the drivers of the land crunch, models how the pressures associated with it could play out between now and 2050, and presents ideas for promoting more sustainable land use and cooperative land stewardship. While the crunch is, in some respects, already a contemporary phenomenon – reflecting relentless growth in resource consumption, stagnating land productivity and accelerating biodiversity loss – the pressures will continue to mount in the future. So what can and should humanity do now to prevent existing pressures on land from becoming unmanageable within decades?

The emerging policy dilemmas are unprecedented. Although land has been a strategic asset and the object of territorial ambitions and conflict throughout history, choices over land use are now more entwined with globally consequential environmental outcomes than ever before. In particular, the climate crisis is changing the picture. Global heating and extreme weather events are degrading lands globally.

**International cooperation is essential for tackling the land crunch, but prospects for effective action are complicated by the political impulses and resource security agendas of individual countries.**

Meanwhile, the land footprints of some of the energy and carbon-capture solutions currently being proposed for achieving net zero can only, at the scale required, impinge on other land uses such as farming – itself often a grossly inefficient land user. At a time when the planet is already being pushed beyond what it can sustainably support, the reality is that land will very soon be expected to provide yet more resources and services from an essentially finite area.

International cooperation is essential, we argue, for tackling a challenge of this scale, but prospects for effective action are complicated by the political impulses and resource security agendas of individual countries. There is a real risk that governments and corporations will respond to prospective and actual increases in the pressures on land with aggressive efforts to control or appropriate land resources in their own self-interest. This trajectory would both make conflict more likely and further exacerbate the very supply constraints liable to motivate such behaviour.

## **Rising demands, finite supply**

In this report, we examine the main sources of demand for land, and consider how changes in key sectors might translate into different levels – and new patterns – of land use in the future. We survey contemporary land-use trends, from urbanization to deforestation, setting out the environmental problems many of these continue to create. Drawing on assumptions in the academic and policy literature, we also examine in detail the potential land requirements for energy sector decarbonization and food production, expected to be two of the most significant drivers of land-use change between now and 2050. We consider variables such as whether consumers continue with current dietary patterns or shift to more sustainable alternatives. We also quantify the prospective land use specifically associated with deploying bioenergy at scale, an increasingly topical question in the context of policymakers' bullish proposals for the use of bioenergy with carbon capture and storage (BECCS).

The results of our analysis are, in the main, profoundly sobering. First, even though BECCS, a much-hyped technology to capture carbon dioxide emissions while producing energy, is now widely considered as a mainstream option for climate change mitigation, it is high-risk. It is unproven at the scale needed, has questionable benefits in terms of reducing net emissions, and is extremely land-hungry. Biomass-based energy, of which BECCS is one type, requires upwards of 1,000 times as much land as fossil alternatives per unit of power generated, and approximately 40–50 times more than solar photovoltaics. By 2050, we estimate, the area of agricultural land needed for cultivation of bioenergy crops, if policymakers rely substantially on bioenergy and BECCS to limit global heating,<sup>1</sup> could be equivalent to over 20 per cent of current global cropland.

---

<sup>1</sup> Our analysis draws on a joint International Energy Agency and International Renewable Energy Agency scenario for energy demand in the low-carbon transition, positioned as being 'compatible with limiting the rise in global mean temperature to 2°C by 2100 with a probability of 66 per cent, as a way of contributing to the "well below 2°C" target of the Paris Agreement'.

Second, and at the same time, the changing consumption patterns and preferences of a global population that now stands at around 8 billion threaten to make food systems ever more unsustainable. While the overall rate of population growth is now slower than at any time since the 1950s, the number of people on the planet is not expected to peak until the 2080s. As affluence increases in some countries, lifestyles – including diets – become more resource-intensive.

To quantify the anticipated pressures, the report envisages six scenarios for land use by 2050. All six scenarios assume a common increase in the deployment of renewable energy, to keep global heating to below 2°C, but with varying food system trajectories from ‘business as usual’ to profoundly reformed. In one scenario, farmers adopt sustainable techniques for improving agricultural productivity, food waste is cut by 50 per cent, and healthy diets are adopted globally. In another, half of all meat, dairy and related animal-product consumption is replaced by consumption of plant-based ‘imitation’ meat.

Overall, we find significant reductions in the land footprint are achievable through the most reform-oriented options – even eliminating the global agricultural land deficit in some cases and freeing up more land for conservation. But we also confirm the very poor outlook for land-use sustainability under business-as-usual conditions. By 2050, without significant changes in agriculture and diets, the amount of land used for farming could grow by over a fifth.

With biodiversity protection and ecosystem restoration also needing to be included in the land-use mix – not least to increase resilience to a changing climate – it is clear that, in the absence of international cooperation on progressive policy action, the world simply will not have enough land to meet all of humanity’s currently desired and envisioned uses by mid-century. (It should be noted that land reclamation is a virtual non-starter for relieving supply constraints, as even at an extremely ambitious scale it would barely make a dent in the problem and would create resource use issues of its own.)

Difficult trade-offs and policy decisions await. To put it bluntly, without significant reforms governments will be forced into a series of untenable choices: between feeding people, meeting climate targets and preserving nature; between economic prosperity today and safeguarding populations’ well-being tomorrow; and between asserting national resource security agendas and managing foreign relations to avoid conflict. Existing inequalities and tensions will increase if competition between land uses, and users, is not addressed by policies that acknowledge national constraints without surrendering the ambition to reduce global resource use.

However, these are not irresolvable dilemmas or inevitable outcomes. Many of the measures needed to mitigate the land crunch are well understood – indeed, some of the most important proposed solutions are not even new – although implementing them is no less challenging. There is an intrinsically political dimension to asking governments to re-engineer their economies, or people to change their consumption habits, for the sake of a common goal that depends on solutions being coordinated across geographical and political divides. The best approach in any given country will also vary according to the specific land resources and economic resources at that country’s disposal.

## A new Land Wealth Index – quality as well as quantity

To better understand the factors that might determine national land-use choices in the future, we have created the Chatham House Land Wealth Index (LWI). Developed specifically for this report, the LWI offers a country-by-country picture of ‘land wealth’ worldwide, reflecting the extent and essential characteristics of the productive and environment-supporting lands of 163 countries. (Very small countries such as Singapore are omitted from the index, although where relevant some are specifically referred to in the analysis; a few other countries or territories, such as Greenland, are excluded on grounds of insufficient comparable data despite meeting the threshold for land area.)

The index is a composite of 16 quantitative indicators covering variables such as cropland quantity, land degradation (for example, trends in tree cover loss), governance, economic capacity, environmental risks such as water scarcity, and direct and indirect population pressures. These measures are not exhaustive, but they have the utility of capturing values not typically included in economic assessments: for example, the holistic conception of ‘wealth’ used in the LWI recognizes the ecological and societal value of land as well as its market potential.

The LWI is not intended as a definitive ‘league table’ of land wealth. Rather, in presenting the index, we aim to provide an intuitive sense of how globally important resources are distributed between nations, along with a data-driven indication of countries’ susceptibility or resilience to land-related pressures in the widest sense. As such, perhaps the key aspect of the LWI is the light it sheds on the *qualitative* dimensions of land wealth. What this means, in simple terms, is that although absolute land area is a significant determinant of a country’s land wealth, it is far from the only factor. Huge countries such as the US, Russia, Australia, China, Brazil and Canada all, unsurprisingly, feature in the top 10 places in the LWI. But a smaller country can also rank highly if it has high-quality land or manages its land well, among other variables. A good example is Germany, which ranks fifth in the index despite being the 64th largest country by area.

At the same time, the LWI confirms the essential truth that having a lot of land is not, on its own, a guarantee of land wealth – especially if that land is degraded, poorly governed or both. Algeria and the Democratic Republic of the Congo (DRC), in their own different ways, illustrate the point. These two countries rank 95th and 56th in the index respectively, despite being the 10th and 11th largest countries in the world. Both suffer from weak governance, with Algeria’s position in the index also reflecting the inherent challenges associated with a predominantly desert landscape. The DRC, in contrast, is one of the most carbon- and biodiversity-rich countries, possessing high-quality lands that are important beyond its borders for mitigating and providing resilience to global environmental change. However, the country’s very low institutional capacity, rapid projected population growth and high vulnerability to land exploitation bring down its overall ranking. India also ranks far lower, at 45th, than it would in a table reflecting size alone (i.e. seventh), with poor soil quality a factor across much of the country.

**Having a lot of land is not, on its own, a guarantee of land wealth – especially if that land is degraded, poorly governed or both.**

More than just providing a snapshot of relative status, the LWI is intended to give an idea of how countries might be motivated, or best placed, to act in the future on the basis of their land wealth, and what this could mean for international relations and land-use pressures. As such, the index loosely informs a set of five geopolitical typologies – ‘**land superpowers**’, ‘**potential land elites**’, ‘**threatened land-wealthy countries**’, ‘**land-poor geopolitical elites**’ and ‘**land-poor developing countries**’. These typologies are intended to reflect some of the more noteworthy intersections between land wealth and geopolitical and economic power, and to indicate the likely impacts of such power on a country’s future land wealth and vice-versa.

All other factors being equal, a large and prosperous country is more likely to have substantial geopolitical and economic power, and thus to qualify as either a land superpower or potential land elite. Many of the top 20 countries in the LWI are land superpowers. Conversely, a small but rich country might have the ability to acquire or access land-derived resources overseas to compensate for a lack of native resources. Qatar – near the very bottom of our index – scores lowest of all 163 countries featured in the LWI for amount and quality of land, yet on a per capita basis is one of the world’s richest countries. In our framework, it is categorized as a ‘land-poor geopolitical elite’. This leaves it far better placed to avoid or manage resource constraints than the ‘land-poor developing countries’ that occupy most of the lowest positions around it in the index. More generally, there is a troubling risk of a new scramble for resources, in which countries with significant geopolitical heft will wield their soft power and economic influence to exploit other countries’ lands.

To be clear, no rigid correlation exists between a country’s LWI ranking and its typology, and a simple sorting exercise is not our objective. This is partly because the index measures one half of the equation (land wealth), not the other (geopolitical and economic power). Some countries, for instance, have features associated with more than one typology. One such example is China, which we classify primarily as a land superpower; however, the country’s high risk of water scarcity means that in some respects it also falls into the ‘threatened land-wealthy’ category. Other countries featured in the index fall outside the five typologies discussed in the report; this is particularly the case for countries with middling land wealth or geopolitical/economic power profiles. In other words, the typologies are designed to highlight interesting patterns and commonalities rather than provide a comprehensive system of categorization covering every country.

## **Geopolitics: a tragedy of the commons in the making?**

Countries across different typologies have very uneven susceptibilities to the land-use pressures and resource scarcity we anticipate between now and 2050. Their responses, quite naturally, are likely to prioritize protecting national interests such as food security and critical resource supplies. As mentioned, however, this could conflict with efforts to optimize land use at a global level. Although it is tempting to treat the problem as a technocratic one – identifying or imagining

the optimum global mix of land uses for aggregate sustainability – the task of getting countries to reform their land use for the sake of a common interest is inherently political.

To explore this problem in more depth, the report sets out four hypothetical scenarios, or ‘futures’, describing the geopolitics of land use to 2050. Under business-as-usual dynamics – which we call **‘tipping over the edge together’** – land use continues along its current unsustainable path. Multilateralism remains important as an organizing principle in international relations, but it is insufficient to prevent severe land degradation and intensifying resource scarcity. No one wins in this scenario, although land superpowers fare better relative to other country typologies.

The second future sees an unwelcome shift towards unilateralism. We call this scenario **‘plunder thy foreigner’** – an intentional nod to the term ‘beggar thy neighbour’ familiar in economic theory. In this future, in response to rising competition for land and to feared or actual resource shortages, more powerful countries seek to appropriate or exploit the natural resources of less powerful ones. Commitments to upholding multilateral agreements are subordinated to the pursuit of short-term resource security, and a breakdown in international cooperation undermines efforts to tackle global problems. Some categories of country – for instance, land superpowers and land-poor geopolitical elites – may fare relatively better than others, but this is the worst of the four scenarios for planetary health and sustainable land use. The risk of conflict over land is especially high in this future.

In the third future, which we label **‘self-sufficiency for national security’**, unilateralism also dominates international relations, but the emphasis of land policies is different. In response to trade disruptions, food shortages and geopolitical tensions, governments focus on domestic resource self-sufficiency. Some countries grow more of their own produce. This has limited, localized benefits for sustainability in some cases, but it makes global land use less efficient in aggregate. The temptation of protectionism also undermines prospects for coordinated action on global land uses that are best for people and the planet. Land-poor developing countries reliant on foreign aid and imported food are especially vulnerable in this future.

A **‘land-wealthy world’** is the most optimistic and sustainable of our four futures. High levels of multilateral cooperation enable land use to become optimized for global benefit, creating a world in which the negative impacts of climate change, land degradation and biodiversity loss are reduced, and competing land uses are balanced more effectively. Sustainability becomes the defining principle of land resource management for most countries through to 2050. This is achieved through multilateral cooperation. Geopolitical relationships become more progressive and constructive than in other potential futures, and land use is less destructive.

These four scenarios are not exhaustive – any number of other futures can be imagined – nor are they mutually exclusive. One future may overlap with or lead to another. For example, there may be elements of business-as-usual multilateralism in a ‘plunder thy foreigner’ future. Nor will all countries conform to type in any given future: in a ‘land-wealthy world’, for example, some countries may still attempt isolationist or predatory approaches; others will still need international support

in addressing their vulnerabilities. The world could move from one set of dynamics to another as more impacts of the land crunch are felt and the effectiveness of responses is assessed. ‘Plunder thy foreigner’ would be a disturbing but natural progression from the failure of status quo multilateralism, whereas a ‘self-sufficiency for national security’ future, while unwelcome in itself, could conceivably morph into more cooperative dynamics as countries start to see the impacts and limitations of isolation.

## Recommendations: getting to a ‘land-wealthy world’

In the context of these challenges, what can and should decision-makers do now to avert the worst impacts of the land crunch, and to improve the chances of achieving the ‘land-wealthy world’ scenario described above? One thing, for sure, is that success will require a whole-of-society effort, so our recommendations are aimed at a wide variety of stakeholders – including governments, regulators, international organizations, scientists and businesses.

Our recommendations are divided into three categories of action: 1) reduce humanity’s land-use footprint and related pressures; 2) govern global land resources systemically and cooperatively; and 3) value land differently and finance its stewardship.

### 1. Reduce humanity’s land-use footprint and related pressures

This is the big one. More than any other action, humanity needs to bring its consumption of resources down to collectively sustainable levels. If this does not happen, other solutions for addressing land-use pressures simply cannot succeed. And if pressures on land intensify to the point of unmanageability, the risks of conflict will increase.

Key tasks:

#### Transform food systems

Agriculture is by far the largest human land use, and food systems are central to rising pressures on land, so efforts to transform food systems need to be redoubled. This will include shifting from animal- to more plant-based diets, and reducing supply-chain food losses and consumer waste. Ideas on this topic have been around for a long time, but have so far failed to gain sufficient political traction to overcome incentive structures perpetuating the status quo. However, the potential of food system reform to reduce, and improve the sustainability of, land use is such that these ideas cannot be ignored. What has been missing is political momentum. Just as biodiversity protection had its galvanizing political moment, akin to the Paris climate conference, at the COP15 summit of the Convention on Biological Diversity (CBD) in 2022, food systems now need their own ‘Paris moment’ if genuinely systemic and transformative approaches, with global buy-in, are to be unlocked. The extensive diplomatic groundwork around food systems undertaken in the

**Agriculture is by far the largest human land use, and food systems are central to rising pressures on land, so efforts to transform food systems need to be redoubled.**



run-up to the COP28 climate summit in late 2023 confirms that the urgency to act is widely understood internationally. However, this must be backed by concerted, ongoing and holistic action to match the rhetoric.

#### **Don't bank on BECCS**

Reliance on high-risk climate change mitigation technologies such as bioenergy with carbon capture and storage (BECCS) needs to be minimized. BECCS is prohibitively land-intensive, and unrealistic expectations for it are causing other necessary climate change mitigation actions to be deferred or overlooked. BECCS may have some future role as part of a diverse portfolio of climate solutions, but it should be used very sparingly. Instead, other technological and nature-based carbon dioxide removal solutions – from forest and grassland protection to ‘blue carbon’ sequestration options like mangrove and seagrass restoration – need to be explored more fully. Scientists and civil society must urgently deliver systematic, country-by-country analysis of the practical applications of such solutions, their limitations, their net carbon, biodiversity and livelihood impacts, and their suitability for different geographies and economies.

#### **Use marginal lands better**

‘Marginal lands’ of little current productive value, particularly extensive areas of degraded or barren lands such as deserts, must be harnessed for sustainable use or returned to their full ecological potential. This could include using them for nature restoration, carbon capture and storage, solar energy generation, or – in environments that can sustain them – land-sparing food production facilities such as vertical hydroponic/aquaponic farms or cultured-meat laboratories. To facilitate such changes, development donors could use foreign aid and other financial flows to build local resilience through appropriate land restoration and investment in sustainable economic activities in marginal areas.

#### **Build the circular economy**

Inclusive ‘circular’ economies, if widely adopted, will help to decouple economic prosperity from growth in material consumption and its reliance on land. This will be especially important as demand increases for biomaterials as substitutes for extractive resources like critical minerals and fossil fuels. Existing bio-based economic practices such as land-intensive agriculture and forestry will also need to be replaced with alternatives that have smaller land footprints and are associated with fewer environmental and societal harms. Private sector innovation has a key role to play in facilitating this transition, by innovating to extend product lifespans, reduce resource use per product, and maximize opportunities for recycling and reuse. But governments will also need to be involved, so that technical barriers to trade – for example in second-hand and remanufactured goods and recycled raw materials – can be lowered or removed. Regulatory and trade requirements will need to be unified between jurisdictions, while new trade agreements must embed principles of circularity and inclusivity.

## **2. Govern global land resources systemically and cooperatively**

International cooperation will be critical to reducing land-use pressures, as all countries will suffer if the geopolitics around land use degenerate towards zero-sum approaches. Yet the outlook for multilateralism is deteriorating. This suggests the prospects for forging new binding agreements or creating brand new global institutions to tackle environmental problems are remote. Instead, we argue, countries should persevere with multilateralism under the current architecture, doing what they can with existing institutions and mechanisms, while also exploring new ways of working together. Minilateral or ad hoc arrangements will be needed at times, although these must not supplant broad-based multilateral action.

Key tasks:

### **Coordinate between the ‘Rio conventions’**

Progress on land-use cooperation remains more likely via established treaties and UN conventions than through fundamental reform of the international architecture for environmental governance. An immediate priority should be greater alignment between the bodies and workplans of the three ‘Rio conventions’: the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), and the CBD. Mechanisms should be developed that incentivize and legislate for sustained increases in policy ambition, and that are coherent across all three conventions (so that, for instance, the design of climate change mitigation takes biodiversity implications into account). At the national level, greater effort is required in many countries to ensure that domestic policymaking advances progress towards meeting the objectives and targets enshrined in all three conventions. For each country, this approach should reflect an overarching, coherent strategy, coordinated across government offices and agencies, instead of the piecemeal and often discordant policymaking currently observed.

International forums such as the UN Food Systems Summit offer cooperation mechanisms that could be recruited to support the efforts above. One approach would be to integrate national strategies on food system transformation into countries’ nationally determined contributions (NDCs) on emissions reductions within the UNFCCC, as well as into their national biodiversity strategies and action plans under the CBD’s new Global Biodiversity Framework (GBF).

### **Measure, report and verify land use consistently**

Policymakers need better information to assess the risks of land degradation, weigh up the relative merits of different land-use policies, and drive change accordingly. A consistent measurement, reporting and verification (MRV) framework covering all land uses needs to be developed, perhaps drawing on lessons from the forestry-specific experiences of MRV in relation to the UNFCCC’s REDD+ framework. An expanded framework of this kind would need to cover all countries (not just developing countries, as under REDD+) and a wider range of ecological and social metrics (such as biodiversity, farmer incomes, etc.).

Another option could be to use the voluntary reporting metrics of the UN's Land Degradation Neutrality Target Setting Programme to increase accountability on sustainable land use. However, for greater effectiveness, the adoption of the programme's land degradation neutrality targets needs to be extended beyond the current 129 participating countries. Target-setting could also be bolstered by widespread adoption of the UN's new 'SEEA Ecosystem Accounting' framework, which recognizes natural capital in economic reporting.

In the private sector, fuller transparency on land use and related risks is needed, and disclosures may increasingly be demanded by governments that have adopted the GBF's new biodiversity targets, announced in late 2022. Existing corporate disclosure frameworks, coupled with regulation and policy galvanized by the GBF, could be used to make land- and nature-related disclosures a core part of every company and financial institution's annual reporting. For example, the Financial Stability Board's Taskforce on Climate-related Financial Disclosures (TCFD) and the new international Taskforce on Nature-related Financial Disclosures (TNFD) could prompt increased corporate disclosures, using the land-use headings in their reporting systems.

#### **Anticipate and communicate land-use risks**

Improved monitoring and modelling of the quality and condition of land are needed so that the risks to land sustainability associated with environmental change – as well as the risks associated with different policy options – can be more accurately and convincingly communicated and acted on. As a first step, the scientific community needs to provide analysis of contemporary and future land, climate and biodiversity interactions in more policy-actionable formats. This should include scenarios highlighting the potential sectoral and temporal trade-offs associated with different land-use, trade, development and climate strategies. (For instance, does an energy decarbonization policy have unintended consequences for food security; or does an agricultural policy to boost food security today undermine food security tomorrow by irreversibly degrading productive lands?)

Such work would enable policymakers to develop clearly articulated global pathways and guidelines for responsible investment, dietary change, and technological and nature-based climate change mitigation. These are needed in turn to inform national-level action plans on the collective transformation of land use. Work could be overseen, at least initially, by the United Nations Environment Programme.

'Horizon scanning' of potential sources of pressure arising from global land demand is also needed to provide decision-makers with better visibility of land-related risks and early warnings of future problems. One way to address this would be to set up an inter-agency global risk-scanning institution, specifically devoted to land use, modelled on the G20's Agricultural Market Information System (AMIS). AMIS essentially exists to prevent market failure. It aims to enhance food market transparency and boost policy coordination in times of market uncertainty. The new agency could identify and audit risks from land-use changes and land degradation, and scan for cascading risks from biodiversity loss and climate change.

### **Increase enforcement of land rights and protections**

Countries, landowners and land-using communities need legally enforceable preventive measures that they can use when their land resources are at risk of expropriation or degradation (for example, by private profit-making entities). They will also require mechanisms for legal redress when abuses occur. Environmental and rights-based litigation – already being used by affected communities and non-governmental organizations – could serve to plug regulatory gaps, and to hold companies responsible for acts and omissions in their value chains.

Concerted efforts will be needed to ensure that the protection of high-value lands is not at the expense of local, indigenous or vulnerable stakeholders. Decisions around land protection should involve the participation of communities most affected by land-use change, complemented by financial compensation mechanisms, investment in local livelihoods, and robust land rights legislation.

### **3. Value land differently and finance its stewardship**

To incentivize the protection of land, its value in providing long-term public goods needs to be systemically recognized and accounted for. Accelerated mobilization of financial resources, particularly in and for lower-income countries, will also be needed to incentivize and enable sound environmental stewardship. This ambitious endeavour is politically challenging in the current economic context, but supporting poorer countries with these efforts will have global benefits.

Key tasks:

#### **Formalize the value of protected and ecologically rich land**

The long-term value that protected and other ecologically rich lands provide – both for the countries in which they are situated and for planetary health – needs more formal, institutional recognition. Ad hoc, intrinsic valuations need to be replaced with regulations or payment schemes and other market-based instruments that explicitly assign financial values to social and environmental goods, including biodiversity.

Reductionist carbon accounting that fails to reflect the importance of broader ecosystem integrity and functionality needs to be avoided. Instead, widespread adoption of ‘natural capital accounting’ could help jurisdictions to ascribe economic value to land in a manner commensurate with the value of its biodiversity, ecosystem functions and utility as a carbon sink. (Natural capital accounting measures changes in the extent and condition of ecosystems at a variety of scales in a standardized format; its wider use could enable the flow and value of ecosystem services to be integrated more readily into economic accounting and reporting systems.)

#### **Develop regulatory and market measures to incentivize change**

New measures will be required to ensure that the environmental and social costs and benefits of land-based products and services are better reflected in economic valuations and trade. As a starting point, this will require nations and trading jurisdictions to institute economy-wide carbon pricing for emissions and sequestration. Mandating measures to verify emissions sequestration may also be required.

Applying pricing mechanisms to the valuation of *non-carbon* elements of land wealth, such as embodied biodiversity costs or land footprints, is more complicated.

**The long-term value that protected and other ecologically rich lands provide – both for the countries in which they are situated and for planetary health – needs more formal, institutional recognition.**

However, such issues, and their alignment with global trade rules, could usefully be explored through the Trade and Environmental Sustainability Structured Discussions (TESSD) at the World Trade Organization.

### **Redirect public funds towards sustainable land use**

Public money should be redirected to supporting practices that reduce, rather than increase, pressures on land. This will entail reallocation of publicly funded subsidies, removal of perverse incentives, and correction of market failures to enable better use of private and public goods. Agricultural subsidy reforms are an urgent priority. Reforms in this area may be accelerated if policymakers successfully meet the 2025 deadline, as set in the GBF, to identify how they will phase out subsidies deemed harmful for biodiversity. This could encourage the replacement of such subsidies with what the framework describes as ‘incentives for the conservation and sustainable use of biodiversity’.

### **Invest in nature-based solutions and create a ‘Rio convention fund’**

More public and private sector financing for nature-based solutions (NBS) is urgently needed to reduce land pressures. NBS consist of a wide variety of activities involving the conservation, management and restoration of ecosystems. Beyond their carbon sequestration and emissions mitigation roles, NBS offer myriad climate change adaptation and biodiversity benefits if sensitively and appropriately deployed in each landscape.

One means of financing NBS would be through ‘payments for ecosystem services’ (PES), which can involve payments by governments or private beneficiaries of the services in question. While PES activity is increasing, especially in domestic contexts, such initiatives need to go further, faster. There is an expanding role for governments to provide domestic finance and policy oversight in this area, though more international public finance and private capital are also required.

In the longer term, the creation of an additional ‘Rio convention fund’ using public or blended finance may offer the best chance of mobilizing money to address the land crunch. Funding could be made available to integrate action spanning all three Rio conventions, for example aligning (a) NDCs on greenhouse gas emissions (under the UNFCCC); (b) national biodiversity strategies and action plans (under the CBD); and (c) national plans for achieving land degradation neutrality targets (under the UNCCD).

## **An urgent imperative**

All of the above are vital actions, which need to be taken by a multitude of stakeholders if humanity is to avert the worst outcomes from the deepening land crunch. But perhaps most fundamentally, governments in particular have to make land an urgent priority. They need to start recognizing and acting on the land crunch as one of the existential issues of our time. Governments need to acknowledge the magnitude of the challenge, take responsibility for addressing it, and effect institutional changes that embed land crunch planning at the centre of domestic, foreign and economic policy.

# Independent thinking since 1920

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording or any information storage or retrieval system, without the prior written permission of the copyright holder. Please direct all enquiries to the publishers.

Chatham House does not express opinions of its own. The opinions expressed in this publication are the responsibility of the author(s).

Copyright © The Royal Institute of International Affairs, 2023  
designbysoapbox.com



**The Royal Institute of International Affairs**  
**Chatham House**

10 St James's Square, London SW1Y 4LE

T +44 (0)20 7957 5700

[contact@chathamhouse.org](mailto:contact@chathamhouse.org) | [chathamhouse.org](http://chathamhouse.org)

Charity Registration Number: 208223