From Parcels to Planet: Land Administration as the Foundation for Climate Finance and Enterprise Transformation

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SUMMARY

Climate action increasingly depends on how decisions about land are made, coordinated, and sustained over time. Land is where climate change is produced through human activity and land use change, where its impacts are experienced, and where opportunities for mitigation, adaptation, and resilience are realized. While climate ambition has grown, translating that ambition into durable outcomes remains difficult due to fragmented institutions, weak accountability, and uneven geospatial capability.

This paper positions land administration as a foundational institutional anchor for climate action, particularly in relation to accountability, legitimacy, and continuity. Secure land rights, authoritative records, and clear responsibilities provide the grounding needed to connect policy intent, financial incentives, and land-based outcomes. However, land administration alone is not sufficient. Effective climate response emerges through a broader geospatial ecosystem in which multiple institutions interact, often with overlapping mandates and interests on the same land.

The paper argues that geospatial enterprise plays a critical enabling role within this ecosystem. By organizing geospatial capability inside institutions through clear governance, shared reference, and coordinated processes, geospatial enterprise supports oversight across scales and under increasing automation without requiring centralized control. What distinguishes geospatial enterprise from other forms of enterprise capability is its explicit grounding in geospatial reference. Shared visual representations of where decisions apply and where impacts occur create a common language that strengthens integrity, trust, and authoritativeness in decision making.

Recognizing that institutional readiness varies widely, the paper frames progress as a trajectory rather than a threshold. By focusing on direction, governance, and integration from the outset, institutions, supported by professional stewardship, can gradually build geospatial ecosystems capable of supporting sustainable, resilient, and equitable outcomes beyond 2030.

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1. FROM INSTITUTIONS TO ECOSYSTEMS IN CLIMATE GOVERNANCE

Climate change is inseparable from how land is used, governed, and managed. Human activity on land is a major source of greenhouse gas emissions, while the impacts of climate change are experienced unevenly across specific places. At the same time, responses to climate change are implemented largely through decisions about land. Choices about land use, tenure, investment, and management therefore shape both the causes of climate change and the pathways available for mitigation, adaptation, and resilience.

Land governance sits at the centre of current efforts to address climate change and sustainable development. Decisions about land influence how societies manage natural resources, respond to climate risks, and support livelihoods over time. As the international community moves beyond the 2030 horizon of the Sustainable Development Goals, attention is shifting from setting targets toward building the institutional arrangements needed to translate climate ambition into sustained action on the ground.

Climate action unfolds through land-based decisions that operate across multiple, overlapping geospatial constructs. Parcels define ownership and tenure. Landscapes describe ecological and physical systems. Jurisdictions establish legal authority. Administrative regions organise planning, investment, and service delivery. Each construct reflects a different way of understanding land and assigning responsibility for how it is used and managed. Increasingly, climate related decisions must cut across these constructs rather than operate within any single one.

At the same time, climate action involves a wide range of institutions whose mandates intersect on the same land. Land administration agencies play a central role by providing legal certainty, continuity, and trusted geospatial reference. However, they operate alongside environmental agencies, planning authorities, statistical offices, infrastructure operators, financial institutions, scientific organisations, and private sector actors, often with different objectives, timeframes, and responsibilities. Sustainable and resilient outcomes depend on how effectively these actors are able to align decisions and coordinate action over time.

Such coordination depends on more than access to data or compatible technology. It is shaped by how roles are defined, how decisions are made, and how accountability is maintained across institutions and over time. When these arrangements are weak or fragmented, policies and investments struggle to influence behaviour or deliver durable outcomes. Where they are more clearly articulated and sustained, land administration can provide a stable institutional

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foundation while other actors contribute their expertise and responsibilities in complementary ways.

Seen in this way, climate governance is not only a matter of strengthening individual institutions. It is a question of enabling a functioning geospatial ecosystem. This ecosystem connects land governance, climate objectives, financial mechanisms, and digital capability in ways that support practical action on the ground. Understanding how these elements relate provides an essential starting point for building sustainability, resilience, and equitable growth beyond 2030.

2. LAND AND CLIMATE AS THE FOUNDATION OF SUSTAINABILITY AND RESILIENCE

Land is where climate change becomes visible in practice and where responses must ultimately take effect. It is the space where people live, produce food, build infrastructure, and depend on natural resources, and where climate related risks and opportunities are unevenly distributed. As a result, sustainability and resilience are shaped less by abstract climate objectives than by how land is accessed, allocated, used, and managed over time.

Human activity on land has been a major driver of climate change through the cumulative effects of land use and land cover change. Deforestation, agricultural practices, settlement expansion, infrastructure development, and resource extraction alter carbon cycles, disrupt water systems, and degrade ecosystems, reducing the Earth's capacity to buffer climatic variability and absorb environmental shocks. These changes typically emerge through many localised decisions made under different mandates and incentives, while their combined effects accumulate across regions and over time. At the same time, changes in land use and land management provide some of the most direct pathways for reducing emissions, enhancing carbon storage, and limiting exposure to climate related risks.

These dynamics unfold on defined areas of land that support housing, livelihoods, economic activity, and social stability. Climate impacts such as flooding, drought, erosion, heat stress, and sea level rise are experienced differently depending on location, patterns of land use, and development trajectories. Vulnerability is therefore not only a function of climate hazards, but also of how land use decisions concentrate or disperse exposure over time and lock in longer-term development trajectories. Sustainability and resilience emerge from how these land use patterns shape livelihoods, economic opportunity, and institutional capacity across sectors, rather than from isolated interventions.

Land related decisions are mediated through tenure arrangements, land use planning, environmental regulation, infrastructure investment, and everyday management practices. They involve multiple institutions operating under different mandates, timeframes, and governance arrangements. Where these arrangements lack alignment, climate initiatives struggle to influence behaviour or deliver lasting outcomes. More coherent arrangements allow land use decisions to reinforce climate objectives across policy, investment, and implementation rather than working at cross purposes.

Tenure security plays a particularly important role within this landscape. When rights and responsibilities are clearly recognised, individuals, communities, and organisations are more likely to invest in sustainable land management, adopt climate resilient practices, and steward natural resources over the long term. Where tenure is unclear or contested, climate initiatives face higher risks of conflict, exclusion, and short-lived results. While tenure security alone cannot resolve climate challenges, it provides essential conditions under which other land-based interventions can take root.

Understanding land as both a driver of climate pressure and a foundation for climate response helps explain why sustainability and resilience depend so strongly on institutions that operate on the ground. It also highlights the limits of project-based approaches that seek to influence land use through financial or technical mechanisms alone. Without institutional arrangements that provide continuity, accountability, and shared reference, such mechanisms struggle to shape land use decisions in durable ways as climate action scales.

3. FROM CLIMATE AMBITION TO ACTION THROUGH FINANCE AND INCENTIVES

Climate action increasingly relies on financial mechanisms to influence land use and land cover change over time. Public funding, development finance, green bonds, carbon markets, and results-based payments are used to encourage land use practices that reduce emissions, enhance carbon sequestration, lower climate risks, or protect vulnerable communities. These mechanisms seek to translate climate objectives into incentives that shape decisions made by multiple actors on the ground, often across long time horizons.

The effectiveness of climate finance depends on trust, accountability, and traceability. Governments, investors, and communities need to understand where funds are directed, what actions they support, and what changes they actually produce over time. This is particularly challenging for land-based interventions, where outcomes depend on many local decisions and unfold gradually through changes in land use and management. Where such changes cannot be credibly observed or verified, confidence in climate finance weakens and incentives lose their ability to influence behaviour on the ground.

Land related climate finance therefore places new demands on institutions that operate on the ground. It requires the ability to identify where interventions take place, who is involved, what rights and responsibilities apply, and how land use evolves over time. Monitoring, reporting, and verification become central not only for compliance, but because financial incentives depend on the ability to observe and confirm changes in land use and management in a credible and consistent way. Where these capabilities are weak, climate finance can reinforce existing inequalities or fail to deliver lasting benefits.

In this context, climate finance also functions as a coordination mechanism. It brings together land administration agencies, environmental authorities, planning institutions, financial actors, and local stakeholders around shared objectives and performance expectations. The capacity

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to align these actors around shared reference, clear roles, and consistent governance arrangements becomes critical for translating financial incentives into sustained changes in land use.

Understanding climate finance in this way highlights why investment alone is insufficient. Financial incentives can guide behaviour only when they are embedded within institutional arrangements that provide clarity of responsibility, continuity over time, and accountability for outcomes on the ground. In land-based climate action, this requires a shared, place-based reference that allows decisions, responsibilities, and outcomes to be linked consistently over time. This leads directly to land administration as an institutional anchor for climate finance and accountability.

4. LAND ADMINISTRATION AS AN INSTITUTIONAL ANCHOR FOR CLIMATE, FINANCE, AND ACCOUNTABILITY

Climate action at scale depends on the ability to assign responsibility, track change, and sustain commitments over time. As climate objectives are increasingly pursued through financial mechanisms, these requirements become more explicit and more demanding. Funds must be linked to defined areas of land, responsibilities must be clear, and changes in land use and management must be observable and verifiable. Without institutional arrangements that provide stable reference over time, climate initiatives struggle to influence behaviour in predictable, fair, and lasting ways.

Land administration provides this stability by establishing recognized records of land rights, boundaries, and land related interests. These records create legal certainty and continuity that are essential for accountability across funding cycles, policy shifts, and institutional change. They also provide an authoritative, place-based reference through which climate actions can be linked to specific locations, actors, and responsibilities. In this sense, land administration functions as an institutional anchor not by directing climate finance or policy, but by enabling accountability to operate consistently on the ground.

This anchoring role becomes particularly important as climate finance introduces performance expectations, reporting requirements, and long-term obligations. Public funding, development finance, and market-based mechanisms all require confidence that actions are taking place where intended and that responsibilities and benefits are appropriately assigned. In land-based interventions, such confidence cannot be established without reliable reference to land, rights, and use over time. Land administration enables this reference, allowing financial and policy commitments to remain connected to observable land use outcomes.

At the same time, land administration does not operate in isolation. Climate related interventions engage environmental authorities, planning agencies, financial institutions, development partners, and local organizations, each operating under different mandates and timeframes. Land administration supports interaction among these actors by providing common points of reference that allow decisions, responsibilities, and expectations to align without requiring centralized control or uniform institutional structures.

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The anchoring function of land administration is also central to equity, inclusion, and trust. Clear recognition of land rights and responsibilities helps reduce conflict, support legitimate participation, and protect vulnerable groups as climate interventions affect access to land and natural resources. Where land administration is weak or fragmented, accountability breaks down and climate finance risks reinforcing inequality or producing short lived outcomes.

Understanding land administration as an institutional anchor clarifies both its importance and its limits. It does not replace environmental regulation, financial oversight, or community engagement. Rather, it enables these functions to connect to land in a consistent and durable way. This perspective prepares the ground for examining how coordination across institutions must be sustained over time, and why broader arrangements are required as climate action increases in scale and complexity.

5. THE GEOSPATIAL ECOSYSTEM AND THE CHALLENGE OF COORDINATED ACTION

The presence of a shared, place-based anchor does not, on its own, ensure coordinated action. Climate related decisions affecting the same land continue to be made by different institutions, under separate mandates, timeframes, and accountability structures. While these decisions interact spatially through their effects on land use and management, they are rarely examined or governed together. As climate action scales, the consequences of this fragmentation become more pronounced.

This interaction without coordination creates a structural challenge. Institutions may act responsibly within their own mandates and still produce outcomes that conflict or undermine one another when viewed on the ground. Decisions taken independently in areas such as land use planning, infrastructure investment, environmental regulation, or financial allocation can reinforce incompatible land use patterns. Accountability in such contexts is not absent but dispersed across institutions whose actions intersect spatially without being aligned in practice.

Addressing this challenge requires more than informal collaboration or bilateral data exchange. It depends on the ability to relate decisions, responsibilities, and outcomes across institutions through shared reference and sustained governance arrangements. Land administration contributes authoritative place-based reference, but this alone does not establish how information, decisions, and accountability are connected across institutional boundaries over time.

Seen from this perspective, climate governance on land operates through a geospatial ecosystem. This ecosystem consists of multiple institutions whose decisions intersect on the same land and whose interactions are mediated through shared geospatial reference, governance arrangements, and information flows. It is not a single system or platform, but a pattern of interaction shaped by mandates, incentives, and institutional capacity.

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Understanding governance in ecosystem terms explains why strengthening individual institutions, while necessary, is insufficient to achieve coherent and durable outcomes.

Effective participation in a geospatial ecosystem depends on how geospatial capability is organized within institutions themselves. In this paper, the term geospatial enterprise refers to the internal organization of geospatial roles, processes, governance arrangements, and systems within an institution. It does not describe inter institutional infrastructure or the ecosystem as a whole. Rather, it reflects the capacity of an institution to use geospatial information consistently, transparently, and accountably in its own decision making. This distinction provides the basis for examining how internal institutional capability enables constructive engagement within the wider geospatial ecosystem.

6. GEOSPATIAL ENTERPRISE AS AN ENABLING FOUNDATION WITHIN INSTITUTIONS

The ability of institutions to participate effectively in a wider geospatial ecosystem depends on how geospatial capability is organized internally. Even where shared geospatial reference and external coordination mechanisms exist, fragmented roles, unclear responsibilities, and inconsistent practices within institutions limit their ability to engage constructively with others. Internal organization therefore becomes a precondition for effective coordination across institutional boundaries.

A geospatial enterprise provides a structured approach to this internal organization. It brings together geospatial roles, processes, governance arrangements, and systems across divisions and functions within an institution. Governance in this context does not imply centralized decision making or technical control. Rather, it provides oversight and alignment across multiple tiers, ensuring that geospatial capability is applied consistently, transparently, and accountably wherever decisions are taken. The objective is reliability in how spatial information supports institutional action over time.

In land and climate contexts, a functioning geospatial enterprise allows institutions to link decisions to specific locations on the land and to understand how those decisions interact with environmental conditions, regulatory frameworks, and financial commitments. By grounding analysis and reporting in shared geospatial reference, institutions can examine how responsibilities overlap, how actions accumulate, and how outcomes evolve across defined areas. This capacity supports monitoring, reporting, and verification requirements without requiring uniform workflows or centralized authority.

The visual and location-based nature of geospatial information plays an important role in this process. Shared maps and spatial representations make it possible for participants from different disciplines and organizational levels to see where decisions apply and where multiple interests intersect. When supported by clear governance arrangements and authoritative data, these representations strengthen transparency in decision making and enable examination, learning, and adjustment over time. What matters is not visualization for its own sake, but the ability to relate decisions and outcomes to the same geospatial reference.

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Understanding geospatial enterprise in this way clarifies its role within the broader geospatial ecosystem. Strong internal organization enables institutions to engage effectively with others by providing consistent reference, clear accountability, and dependable processes. Weak or fragmented enterprises limit the value of shared infrastructure and undermine coordination, even where external arrangements are in place. This perspective prepares the ground for examining how governance must evolve as climate action increases in scale and complexity and as digital capabilities place new demands on institutional decision making.

7. GOVERNANCE IN CONDITIONS OF SCALE, COMPLEXITY, AND DIGITAL CHANGE

Governance in land and climate contexts must operate under conditions of increasing scale, growing interaction, and accelerating digital capability. These conditions do not replace governance requirements. They intensify them. As climate action expands across jurisdictions, sectors, and time horizons, responsibilities remain distributed, while the effects of decisions accumulate on the same land. Governance under these conditions is therefore less about direct control and more about maintaining clarity, alignment, and accountability across actors and tiers.

Scale introduces amplification rather than simple growth. As land-based interventions extend across larger areas and involve more institutions, small misalignments in roles, incentives, or information can produce systemic effects. Decisions that appear reasonable within individual mandates may interact in unintended ways when viewed across shared geospatial reference. At scale, accountability becomes harder to sustain not because responsibility disappears, but because it becomes dispersed across interacting decisions that are rarely examined together.

Complexity further shapes these conditions. Land use outcomes emerge from the interaction of many decisions taken independently over time, often under changing environmental, economic, and political conditions. Cause and effect are not always linear or immediately visible, and outcomes cannot be traced reliably to single interventions or institutions. Governance in this context must support examination, learning, and adjustment rather than relying solely on fixed plans or static compliance mechanisms.

Digital capability alters these dynamics by increasing the speed, reach, and apparent precision of decision making. Automated analysis, predictive modelling, and decision support tools can improve insight into trends and risks, but they do not resolve questions of responsibility, legitimacy, or accountability. On the contrary, as digital tools enable decisions to be taken more rapidly and at greater scale, the need for clear governance arrangements becomes more acute. Without such arrangements, digital capability can amplify fragmentation rather than coherence.

Geospatial capability plays a critical role under these conditions by making location explicit. By grounding decisions, responsibilities, and outcomes in shared geospatial reference, it becomes possible to see where actions apply, where impacts accumulate, and where multiple

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mandates intersect on the same land. When organized through geospatial enterprise and supported by appropriate governance, this capability allows institutions to examine interactions, assess trade-offs, and adjust actions as conditions change.

Governance under scale, complexity, and digital change is therefore an ongoing institutional capability rather than a one-time design choice. It must operate across uneven levels of capacity, evolving mandates, and incomplete information. Recognizing these conditions prepares the ground for examining institutional fragility and uneven readiness, and for understanding progress toward climate ready land governance as a trajectory rather than a fixed state.

8. INSTITUTIONAL FRAGILITY, UNEVEN READINESS, AND THE IMPORTANCE OF TRAJECTORY

The governance conditions described in the preceding sections are not evenly present across institutions or countries. Land administration systems, geospatial capability, and governance arrangements vary widely in completeness, quality, and stability. In many contexts, institutional arrangements remain fragmented, under resourced, or dependent on short term projects. These conditions do not negate the direction outlined in this paper. They define the environment within which progress must be made.

Recognizing institutional fragility shifts the focus from completeness to trajectory. Institutions rarely move from absence to maturity in a single step. Instead, they evolve through incremental strengthening of land administration, geospatial practices, governance arrangements, and coordination mechanisms. Early decisions about roles, reference, and information sharing matter because they shape how future capability can be integrated or constrained. Fragmentation can become embedded as easily as alignment if direction is not considered from the outset.

In contexts of uneven readiness, the risk is often not doing too little but doing the wrong things too early. Investments in technology or data without corresponding attention to governance, accountability, and institutional alignment can reinforce silos and undermine trust. Similarly, strengthening land administration or geospatial capability in isolation, without considering how they will connect to planning, finance, environmental management, and local decision making, can limit their ability to support wider climate objectives.

Trajectory oriented thinking emphasizes sequencing over optimization. Even partial systems can support climate action when they are designed with clarity of purpose and future integration in mind. Establishing common geospatial reference, basic governance arrangements, and clear responsibilities creates a foundation on which additional capability can be built over time. These elements enable institutions to learn, adjust, and coordinate as conditions evolve, even when coverage and data quality are limited.

For professionals working in land and geospatial domains, this perspective highlights stewardship rather than implementation as the central task. The challenge is not only to

deliver projects or systems, but to guide institutional arrangements along pathways that remain adaptable and coherent as scale, complexity, and digital capability increase. This emphasis on trajectory prepares the ground for examining the implications for professional roles, responsibilities, and practice.

9. IMPLICATIONS FOR FIG PROFESSIONALS AND INSTITUTIONS

The arguments developed in this paper have direct implications for the roles, responsibilities, and professional practice of those working in land administration, surveying, and geospatial fields. As climate action increasingly depends on land-based decisions, place-based accountability, and coordination across institutions, these roles are exercised not in isolation, but through geospatial enterprise arrangements within a wider geospatial ecosystem. The contribution of FIG professionals therefore extends beyond technical delivery toward institutional stewardship.

First, FIG professionals are increasingly positioned as custodians of authoritative reference rather than providers of isolated products or services. Parcels, boundaries, control networks, base maps, and land records underpin accountability, legitimacy, and continuity across climate finance, planning, and implementation. Within geospatial enterprise arrangements, maintaining integrity in these foundations is not only a technical responsibility but a governance function that shapes how decisions are trusted, examined, and acted upon by others across the ecosystem.

Second, professional value is evolving as digital and automated capabilities become more influential within geospatial enterprises. Many routine analytical, monitoring, and processing tasks are increasingly automated or supported by artificial intelligence (AI). This shift does not reduce professional responsibility. It changes where professional judgment is applied. FIG professionals continue to contribute essential expertise in the field and in the management of authoritative data, while also taking on a growing role in overseeing how automated processes operate within institutional decision making and across institutional boundaries.

Third, this shift places new emphasis on governance, oversight, and ethical responsibility. Automated and AI enabled processes increasingly shape land use decisions, financial flows, and regulatory actions at scale. FIG professionals are uniquely positioned to act as custodians of these processes because they understand land not only as a technical object, but as a legal, institutional, environmental, and social construct. Through their roles in geospatial enterprise and ecosystem governance, they help ensure that automated outputs remain interpretable, that responsibilities are clear, and that decisions remain aligned with rights, mandates, and accountability arrangements.

Fourth, uneven institutional readiness reinforces the importance of a trajectory-oriented approach to professional engagement. In many contexts, the task is not to implement complete enterprise or ecosystem solutions, but to guide incremental progress while avoiding early choices that lock in fragmentation or undermine future integration. This requires long

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term thinking, collaboration across disciplines, and attention to how technical, organizational, and governance decisions interact over time.

Taken together, these implications point to an expanded professional mandate. FIG professionals are not only contributors to technical systems, but key actors in sustaining geospatial enterprises and ecosystems through which land, climate, and development objectives are pursued. As automation, scale, and institutional interdependence increase, professional stewardship of geospatial capability becomes more important rather than less, providing a foundation for trust, accountability, and durable outcomes.

10. CONCLUSION AND SYNTHESIS

Climate action increasingly depends on how societies make decisions about land. Land is where climate pressures are generated through human activity, where impacts are experienced unevenly across communities and ecosystems, and where responses must ultimately be implemented. Understanding climate governance as a land-based challenge therefore shifts attention away from isolated policies or projects toward the institutional arrangements through which land use decisions are made, coordinated, and sustained over time.

Durable climate outcomes depend on connecting ambition to accountability through location-based reference. Climate finance introduces incentives and performance expectations intended to influence land use change, but these mechanisms can only function where decisions, responsibilities, and outcomes can be consistently linked to defined areas of land. Land administration provides this anchoring reference by establishing recognized records of rights, boundaries, and land related interests that endure across funding cycles, policy change, and institutional turnover.

At the same time, anchoring alone is insufficient. Climate related decisions affecting the same land are taken by multiple institutions operating under different mandates, incentives, and timeframes. Their interactions shape land use outcomes even when individual actions are responsible within their own domains. Governing these interactions requires moving beyond isolated institutional strengthening toward a geospatial ecosystem perspective, in which coordination is understood as a relational challenge mediated through shared geospatial reference and governance arrangements rather than centralized control.

Effective participation in such an ecosystem depends on how geospatial capability is organized within institutions themselves. Geospatial enterprise provides the internal foundation through which institutions apply geospatial information consistently, transparently, and accountably in their own decision making. As scale, complexity, and digital capability increase, governance becomes less about fixed designs and more about maintaining alignment, oversight, and learning under changing conditions. Progress under these conditions is best understood as a trajectory shaped by early choices, sequencing, and institutional direction rather than by the achievement of complete or mature systems.

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Taken together, these elements form a coherent institutional logic. Land use change is the causal pathway through which climate outcomes emerge. Location-based reference enables accountability. Land administration anchors that reference. Geospatial enterprise organizes internal capability. Geospatial ecosystems govern interaction across institutions. Professional stewardship sustains these arrangements as automation, scale, and complexity increase. None of these elements is sufficient on its own. Each depends on the others to translate climate ambition into durable, trusted, and equitable outcomes.

Viewed in this way, strengthening climate governance is not primarily a technical challenge, nor a question of institutional reform in isolation. It is an exercise in cultivating the conditions under which land based decisions can be examined, aligned, and sustained over time. This perspective points toward a future in which land administration, geospatial capability, and professional stewardship play a central role in shaping climate ready institutions beyond 2030.

11.   REFERENCES AND FURTHER READING

Cejudo, Guillermo M., and Cynthia Michel. 2017. "Addressing Fragmented Government Action: Coordination, Coherence, and Integration." Policy Sciences 50 (4): 745–767.

Climate Policy Initiative (CPI). 2023. Global Landscape of Climate Finance 2023. London: Climate Policy Initiative.

Dale, Peter, and John McLaughlin. 1999. Land Administration. Oxford: Oxford University Press.

Deininger, Klaus, Harris Selod, and Anthony Burns. 2012. The Land Governance Assessment Framework: Identifying and Monitoring Good Practice in the Land Sector. Washington, DC: World Bank.
https://documents1.worldbank.org/curated/en/862461468327558327/pdf/657430PUB0EPI106 5724B09780821387580.pdf

European Commission. 2019. Ethics Guidelines for Trustworthy AI. Brussels: European Commission.
https://www.europarl.europa.eu/cmsdata/196377/AI%20HLEG_Ethics%20Guidelines%20for %20Trustworthy%20AI.pdf

Food and Agriculture Organization of the United Nations (FAO). 2012. Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Rome: FAO. https://openknowledge.fao.org/items/609a716c-464c-4454-9222-78f5e7cd23f7

International Federation of Surveyors (FIG). 1998. Statement of Ethical Principles and Model Code of Professional Conduct. FIG Publication No. 17. London: FIG Bureau.

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FIG (International Federation of Surveyors). 2014. Fit-for-Purpose Land Administration. FIG Publication No. 60. Copenhagen: FIG.

International Federation of Surveyors (FIG). 2019. FIG Council Work Plan 2019–2022: Volunteering for the Future. Copenhagen: FIG.

Green Climate Fund (GCF). 2023. Investment Framework and Results Management Framework. Incheon: Green Climate Fund. https://www.greenclimate.fund/sites/default/files/document/investment-framework-results-management-framework.pdf.

Griscom, Bronson W., et al. 2017. "Natural Climate Solutions." Proceedings of the National Academy of Sciences 114 (44): 11645–11650.

Harvey, Francis. 2008. A Primer of GIS: Fundamental Geographic and Cartographic Concepts. New York: Guilford Press.

Heeks, Richard. 2002. "Information Systems and Developing Countries: Failure, Success, and Local Improvisations." MIS Quarterly 26 (1): 101–116.

Huntington, Heather, and Ajay Shenoy. 2021. "Does Insecure Land Tenure Deter Investment? Evidence from a Randomized Controlled Trial." Journal of Development Economics 150 (C): Article 102632.

ICROA (International Carbon Reduction and Offset Alliance). 2020. The ICROA Code of Best Practice. London: ICROA. https://icroa.org/approval/icroa-code-of-best-practice/

Intergovernmental Panel on Climate Change (IPCC). 2019. Climate Change and Land: An IPCC Special Report. Geneva: IPCC. https://www.ipcc.ch/srccl/download/

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). 2023. Second Global Assessment of Biodiversity and Ecosystem Services. Bonn: IPBES Secretariat. https://www.ipbes.net/second-global-assessment

Janssen, Marijn, et al. 2020. "Data Governance: Organizing Data for Trustworthy Artificial Intelligence." Government Information Quarterly 37 (3).

MacEachren, Alan M. 1995. How Maps Work: Representation, Visualization, and Design. New York: Guilford Press.

Organisation for Economic Co-operation and Development (OECD). 2017. Policy Coherence for Sustainable Development 2017: Eradicating Poverty and Promoting Prosperity. Paris: OECD Publishing. https://www.oecd.org/en/publications/policy-coherence-for-sustainable-development-2017_9789264272576-en.html

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Organisation for Economic Co-operation and Development (OECD). 2019. The Path to Becoming a Data-Driven Public Sector. Paris: OECD Publishing. https://www.oecd.org/en/publications/the-path-to-becoming-a-data-driven-public-sector_059814a7-en.html

Organisation for Economic Co-operation and Development (OECD). 2021. "AI in Public Service Design and Delivery." In Governing with Artificial Intelligence, Paris: OECD Publishing. https://www.oecd.org/en/publications/governing-with-artificial-intelligence_795de142-en/full-report/ai-in-public-service-design-and-delivery_09704c1a.html

Peters, B. Guy. 2018. The Politics of Bureaucracy. 8th ed. London: Routledge.

Rajabifard, Abbas, and Ian P. Williamson. 2001. "Spatial Data Infrastructures: Concept, SDI Hierarchy and Future Directions." In Proceedings of the Geomatics '80 Conference, Tehran, Iran. https://rest.mars-prod.its.unimelb.edu.au/server/api/core/bitstreams/7bc69153-7db3-5d7d-ab19-50c42a298201/content

Star, Susan Leigh, and James R. Griesemer. 1989. "Institutional Ecology, Translations, and Boundary Objects." Social Studies of Science 19 (3): 387–420.

United Nations. 2023. Global Sustainable Development Report 2023: Times of Crisis, Times of Change—Science for Accelerating Transformations to Sustainable Development. New York: United Nations. https://sdgs.un.org/gsdr/gsdr2023

United Nations Department of Economic and Social Affairs (UN DESA). 2024. United Nations E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development. New York: United Nations. https://desapublications.un.org/sites/default/files/publications/2024-09/%28Web%20version%29%20E-Government%20Survey%202024%201392024.pdf

Williamson, Ian, Stig Enemark, Jude Wallace, and Abbas Rajabifard. 2010. Land Administration for Sustainable Development. Redlands, CA: Esri Press.

World Bank. 2021. Climate Change Action Plan 2021–2025: Supporting Green, Resilient, and Inclusive Development. Washington, DC: World Bank. https://documents1.worldbank.org/curated/en/705731624380363785/pdf/World-Bank-Group-Climate-Change-Action-Plan-2021-2025-Supporting-Green-Resilient-and-Inclusive-Development.pdf

World Bank Independent Evaluation Group (IEG). 2011. Information and Communication Technologies for Development: World Bank Group Experience. Washington, DC: World Bank. https://documents1.worldbank.org/curated/en/105121468149370524/pdf/732360BR0SecM200disclosed0100150120.pdf

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BIOGRAPHICAL NOTES

Carsten BJORNSSON is a Senior Business Development Manager at Esri, where he has worked since 2001. He has more than 30 years of experience in GIS and land administration, supporting national and regional geospatial programs across the United States, the Middle East, Africa, and Asia. His current work focuses on helping governments and organizations strengthen land administration and geospatial enterprises to support climate governance, sustainability, and resilience. His expertise includes enterprise GIS, geospatial standards, and digital transformation. He holds a master's degree in cadastral surveying and land information systems from Aalborg University.

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