Valuation, Natural Capital and Carbon Markets: Implications for Land Professionals, Tenure and Market Transparency

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SUMMARY

Nature-based climate solutions (NbS) and carbon markets are rapidly reshaping land value, land management and tenure rights across both the Global North and South. This paper synthesizes practice insights from recent RICS outputs and global initiatives, and grounds them in valuation standards (IVS/RICS), land governance principles (GLTN, FPIC), and empirical case examples. We examine how carbon credit projects change valuation approaches (real property vs financial instrument), where transaction price and tenure transparency break down (LSLA, voluntary vs compliance markets), and how geospatial/AI capabilities are enabling landscape-scale natural capital assessments. We conclude with concrete implications for policymakers, standard setters, market data infrastructure and professional education to strengthen defensible valuation, tenure security and market integrity in the emerging carbon economy.

1. Introduction

Carbon markets, driven by Article 6 of the Paris Agreement and proliferating voluntary mechanisms, are moving from niche to mainstream. As credits become embedded in land-based projects—soil carbon sequestration, peatland restoration, mangrove reforestation—surveyors and valuers must reconcile traditional market value paradigms with expanding concepts of natural, social and cultural capital. In parallel, land acquisition practices and large-scale land-based investments (LSLA) expose persistent transparency and tenure risks, particularly for communities with unregistered or customary rights. This paper translates a practitioner-oriented slide deck into an academic synthesis that foregrounds valuation practice, tenure safeguards and data governance, and provides a coherent framework for global conference audiences.

2. Market Value, Investment Value and Valuation Standards

International Valuation Standards (IVS) define Market Value as the estimated amount for which an asset should exchange on the valuation date between a willing buyer and seller in an arm's length transaction after proper marketing and acting knowledgeably, prudently and without compulsion. In land-based carbon projects, valuers increasingly confront two perspectives: (i) the interest in land as a real property asset (IVS 400) and (ii) carbon credits as a financial instrument (IVS 500). Project

permanence, certification, ownership and contractual obligations, risk and insurance—alongside traditional variables such as location and access—shape credible value formation.

3. Unregistered Land: Standards, Skills and Non-market Value

Where formal title is absent, communities derive legitimate individual and communal rights from land and water—fishing, livestock, crops, wild foods, timber—that may be partly market-facing and partly internal to livelihoods. Comparable and income approaches can value traded produce and cashflows, but non-traded subsistence benefits and cultural/ecological significance require recognition or alternative quantification. The GLTN Manual for the Valuation of Unregistered Land sets out a staged approach: identify rights, collect information, determine market existence, quantify market value with explicit treatment of risk/uncertainty, identify non-market value, and then quantify or recognise it. Transparent documentation and community engagement are preconditions for defensible outcomes.

4. Case Insight: Klamath River Dam Removal (US)

The Klamath River case illustrates retrospective recognition of environmental and cultural value. Dams built from 1912 severely disrupted salmon runs and tribal livelihoods; recent removals have supported the return of Chinook salmon and rebalanced ecological services. The case exposes limitations of narrow economic valuation and highlights the need to incorporate intergenerational, ecological and cultural dimensions when appraising land and water infrastructure.

5. Acquisition and Compensation: Principle of Equivalence

International practice recognises that compensating for market value alone rarely satisfies the Principle of Equivalence—the standard that affected persons should be no worse off post-taking. Special value to owner, disturbance costs, injurious affection/severance, and solatium (solace for intangible losses) complement replacement value. International financial institution (IFI) safeguards typically extend eligibility to those with recognised or recognisable claims, and require livelihood restoration alongside asset compensation.

6. Large-Scale Land Acquisitions (LSLA) and Transparency

Evidence on LSLA shows persistent opacity in deal disclosure across advanced economies: limited identification of operating companies, weak locational transparency, and scarce financial detail (prices/fees). Opacity facilitates corruption risks and displacement of vulnerable land users. Improving transparency of transactions and contractual terms is foundational for carbon projects that interact with land rights at scale.

7. Carbon Markets: Compliance vs Voluntary and Valuation Factors
Carbon markets bifurcate into compliance markets (CCM) linked to national/regional schemes and the voluntary carbon market (VCM). Key valuation inputs for soil carbon sequestration projects (SCSPs) include credit revenue potential, certification/compliance costs, permanence/duration, risk/insurance, and ownership/contractual constraints. Cross-sector collaboration (Land Registries, legal and insurance industries) is required to document carbon rights and restrictions within title, manage delivery risk, and support defensible valuation.

8. Case Evidence from Projects
Delta Blue Carbon (Pakistan) sold 50,000 mangrove-restoration credits to a single purchaser at a premium relative to comparable land projects, reflecting biodiversity and social co-benefits. Pricing mechanism design (auction vs bilateral sale), buyer concentration, and co-benefit valuation materially affect observable prices and should be disclosed in reports.

In Australia, a landmark financing structure saw a major bank prepay for Australian Carbon Credit Units (ACCUs) over five years to support acquisition and management of pastoral leases tied to carbon projects. Prepayment structures, delivery obligations and legal encumbrances on land use reinforce the necessity to treat carbon credits as both property-linked and financial claims in valuation practice.

9. Geospatial, AI and Landscape-scale Natural Capital Assessment
Landscape-scale approaches integrate GIS, remote sensing and ecological models to assess peatland restoration, woodland management, deer population control and watercourse resilience. Geospatial/AI capabilities improve baselining, monitoring, verification and reporting (MRV), reduce information asymmetry, and enable more reliable attribution of carbon and co-benefit outcomes across parcels and tenures.

10. Land Tenure, FPIC and Carbon Frameworks
Emerging national carbon frameworks emphasise identification and recognition of land and water rights, Free, Prior and Informed Consent (FPIC)—including the right to say no—fair compensation, fair participation and enforceability. Registries of project documents and conditions, accessible to the public, help align local knowledge with data-driven decisions and protect tenure security within carbon schemes.

11. Implications for Policy, Standards, Data Infrastructure and Education
Policymakers:

• Strengthen enforceable transparency regimes for land-linked carbon transactions (price disclosure, beneficial ownership, locational precision) and expand coverage of public systems to infrastructure and green assets.

• Align acquisition/compensation with equivalence and livelihood restoration principles, extending eligibility to recognisable claims and customary rights where applicable.

Standard setters (IVS/RICS/TEGOVA):

• Embed explicit guidance on data availability/quality, uncertainty disclosure and dual treatment of credits as property interests and financial instruments.

• Mandate documentation of MRV assumptions (permanence, leakage, baselines) and contractual encumbrances affecting land use and value.

Market data infrastructure:

• Prioritise accurate transaction price capture and reconciliation with actuals; implement common data and metadata standards to interoperate governmental and non-governmental sources.

• Integrate registries for carbon rights/restrictions into land administration (cadastre/LADM) with open, machine-readable access to support MRV and valuation.

Professional education and capacity building:

• Integrate transparency literacy, uncertainty analysis and behavioural bias training into core curricula and CPD for valuers and land administrators.

• Build cross-sector competencies (legal/insurance/geospatial) and community engagement methods (FPIC) for defensible carbon project valuation and tenure safeguarding.

12. Alignment with the Sustainable Development Goals (SDGs)

The themes in this paper directly support SDG 13 (Climate Action), SDG 15 (Life on Land), SDG 16 (Peace, Justice and Strong Institutions) and SDG 12 (Responsible Consumption and Production) through improved transparency, tenure security, natural capital stewardship and integrity of market mechanisms.

13. Conclusion

Carbon markets and NbS are transforming the valuation landscape. Defensible practice demands explicit treatment of uncertainty, transparent disclosure of price/process data, and recognition of non-market value alongside market value. Strengthening links among policy, standards, data infrastructure

and professional education will enable surveyors and valuers to lead in building a just, credible carbon economy that respects tenure and enhances natural capital.

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BIOGRAPHICAL NOTES

James is a Chartered Land Surveyor & Chartered Geographer. James studied at TUD Dublin and University of London. With over 30 years' experience in the global land and geospatial sectors, James worked on some of the largest surveying and infrastructure projects in Europe before spending several years working on mapping, surveying, and informal land rights issues for the United Nations in the Middle East. James is head of Land & Resources (L&NR) with The Royal Institution of Chartered Surveyors (RICS) with direct responsibility for the geospatial sector and the management of best practice standards and output across all L&NR sectors. James is chair of the International Land Standard (ILMS) Coalition, vice chair of FIG Comm 9 and Secretary General of the Commonwealth Association of Surveyors (CASLE) and is working on further research, insight, and standards on issues of geospatial practice, land administration systems (alongside World Bank and UN), informal settlements, customary land issues, land acquisition and compensation, and the processes of land and property rights formalisation.

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