TECHNICAL PAPER

# China's Technical Foundations for Nature Markets

## Tracing ecological evidence from ground to claim

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morphosis.
THE LANDBANKING GROUP

## ABOUT THE REPORT

The China Nature Markets initiative is an 18-month project bringing together the Institute of Finance and Sustainability (IFS), Morphosis, and The Landbanking Group (TLG) in association with the Asian Infrastructure Investment Bank (AIIB). The initiative tests whether nature markets can be designed, piloted, and scaled in China in ways that integrate ecological assets into financial systems. Focusing on the biodiversity-rich region of Ya'an (Sichuan), the project moves from concept to practice, developing high-integrity models using both stand-alone biodiversity credits aligned with the International Advisory Panel on Biodiversity Credits (IAPB) and integrated nature credits that capture broader ecosystem services including water regulation and soil health. Underpinned by AI-driven monitoring and a shared evidence infrastructure for ecological assessment, verification, and registry, the initiative aims to produce a credible, scalable, and internationally relevant blueprint for nature markets, positioning China at the forefront of mobilising investment into resilience for the natural world.

This technical paper is the companion to China's Institutional Foundations for Nature Markets, tracing the ecological evidence base that any future nature market would need, from ground to claim. Drawing on fieldwork across pilot landscapes, it examines why some of China's most intensively monitored ecosystems still cannot yet support a market transaction. China already holds a much stronger evidence base, in monitoring, ecosystem accounting, and rights registration, than the market infrastructure built to use it. This paper poses a precise question to that evidence base: what would it take to connect what is already measured to a claim that a market, or a lender, could actually rely on? We welcome views from practitioners, policymakers, and standard-setters as the work proceeds.

This technical paper can be read in conjunction with the accompanying policy paper: *China's Institutional Foundations for Nature Markets.*

## ABOUT THE PARTNERS

**The Institute of Finance and Sustainability (IFS)** is a Beijing-based non-profit research institution specialised in the issues of ESG investment, natural capital, green technology innovation, and the low-carbon transition. Its mission is to advance green finance and sustainable development in China and beyond, through high-quality research on green finance policies, markets and products. It aims to become a globally recognised think tank and make substantial contribution to international efforts to conserve nature and combat climate change. https://www.ifs.net.cn/

**Morphosis** is an adaptation solutions investment business for a severely climate-impacted world 'beyond 1.5°C'. Its purpose is to deliver affordable transformative adaptation solutions to low and middle-income households by catalysing the adaptation economy through investment, policy engagement, research and advisory work. Morphosis orchestrates a network of private investors, market, policy and other stakeholders, and invests in a growing portfolio of adaptation solution businesses. https://morphosis.solutions/

**The Landbanking Group (TLG)** is a Nature Fintech that provides the Nature Data and Decision Infrastructure to translate physical data on water, soil, biodiversity and carbon into economic and financial values. This translation enables the integration of nature into economic and business decisions. Despite the significance of natural systems for economic and business success, the risks and opportunities originating from the condition of nature have been largely ignored. Based on AI-enhanced tooling that derives forecasts and scenarios from the biophysical data, nature becomes part of regular business decisions. The condition of nature and its change cannot only be traced but also evaluated, contracted and traded as a digital twin.
https://www.thelandbankinggroup.com/

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All errors and omissions in this report are the responsibility of the authors and partner institutions.

# Interest Statement.

The Landbanking Group develops commercial products and services in natural capital measurement and nature-related financial infrastructure and therefore holds an interest in the subject of this paper. What follows sets out requirements drawn from payment arrangements observable in the two landscapes examined here and from the sources cited.

It prescribes no particular platform or commercial system and endorses no product, and it names no method, model or platform as the solution to any requirement it identifies, including the authors' own. The views expressed are those of the authors and do not necessarily represent those of the consortium partners or of the institutions acknowledged above.

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Generative AI tools were used during preparation of this paper to support drafting, restructuring, language refinement, comparison against source material and visual development. All substantive content, factual claims, references and visual outputs were reviewed by the authors, who retain responsibility for the final paper.

# Key Messages

## China Nature Credit Markets.



**1. China's eco-compensation policy framework effectiveness can be enhanced by integrating nature credit markets, thereby:**

a. Connecting markets and policy together with a common nature-related infrastructure of data, accounting and rules.

b. Investing with private money alongside public funding to pay for restoration and conservation.

c. Incentivising markets so that businesses and financial products actually reward outcomes that are good for nature.



**2. These nature credit markets will strengthen public budgets and rules by:**

a. Identifying a clear, agreed claim on what's being bought or sold.

b. Providing solid, location-specific evidence behind that claim.

c. Establishing rules to monitor, verify, register, and hold people accountable.



**3. China can then lead the next generation of policy-aligned nature credit markets, nationally and internationally by:**

a. Testing selected pilots to see what market infrastructure works, and connecting the people running them so they can learn from each other, including on a provincial level.

b. Learning and sharing by bringing in international experience and sharing what China is learning with international partners.

c. Competing globally so that Chinese businesses succeed as global markets increasingly price in nature.

# Key Messages
## Technical Paper.

### WHAT WE FOUND



1. **China can build nature credit markets by connecting the systems and experience it already has.**

   a. Existing foundations include natural resource rights and registration, ecological monitoring and accounting, environmental trading and conservation payments.

   b. Clear rules and records that institutions can check against one another can help these foundations support credit purchases, registration and finance.

### WHAT THIS MEANS



2. **Shared evidence and records can show what has been measured, what is already committed and what must be assessed before further use.**

   a. Transparent ecological data help providers and buyers understand and assess measured results.

   b. Link records of conservation grants, service purchases, credits and finance so participants can check prior commitments and outcomes available for further purchases or funding.

   c. Common recording rules should preserve different ecological attributes and appropriate assessment methods, without combining all outcomes into a single measure.

### WHAT TO DO NEXT



3. **Market rules should connect reliable evidence with clear rights, permitted uses and responsibilities.**

   a. Develop credits from eligible outcomes of existing projects, or start with companies' dependence on nature and develop credits for the outcomes they need.

   b. Use green finance and carbon market experience, and verifiable data, to test payments and delivery. Compare costs and funds raised with existing payment methods.

   c. Follow later transactions and monitor ecological outcomes to assess whether funding and conservation gains continue.

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# Executive Summary.

Rangers in Yingjing County have serviced the same camera stations and walked the same survey routes since 2018. Far to the east, in Huzhou, a credit officer prices a loan against twenty-one indicators measured on the borrower's property.

Together, the two landscapes show a common problem: ecological evidence already supports public payments and financial decisions, but those uses do not by themselves create a nature credit or other market claim capable of recurring use.

Alongside these payment arrangements, China already has many of the supporting components: ecological monitoring backed by statutory responsibilities for data quality, ecosystem accounting, unified natural-resource rights registration, carbon registry and trading infrastructure, cooperative structures that distribute revenue to land managers, and operating tools that combine public environmental information for corporate and supply-chain decisions. The unresolved task is to connect these systems through clear rules for demand, authority and entitlement, evidence governance, authoritative recording and use.

**Six constraints emerge from the two landscapes:**



1. **Demand.** Business needs, voluntary goals, legal duties and financing conditions can create reasons to pay for ecological outcomes, but they have not yet produced sufficiently durable demand for nature-credit purchases at market scale. Compliance demand depends on rules that permit credits to satisfy defined obligations; value-chain demand depends on a direct business relationship with the relevant ecosystem service; and voluntary purchases remain discretionary. Loan repricing is a separate use of ecological evidence unless it results in a credit purchase.



2. **Financeability of public payments.** The arrangements examined demonstrate recurring public payments, but the sources reviewed do not establish whether future payments constitute legally enforceable and assignable payment rights capable of supporting financing.



3. **Authority and entitlement.** Chinese law recognises ownership, use and management interests in land and natural resources, together with defined rights in areas such as carbon, water use and pollution discharge. The sources examined do not establish a single legal or contractual basis that answers all of the further questions relevant to broader ecological-condition claims: who may assert the outcome and receive payment, whether a resulting claim or instrument may be transferred or pledged, and what rights or remedies apply if obligations are not met. These questions require confirmation for the intended use, particularly on state-owned land.



4. **Authoritative recording.** A governed evidence record is needed to connect a place, its relevant interests, ecological evidence and claims. Where a nature credit or other transferable market instrument is issued, an authoritative registry is then needed for its identity, account position, transfer and retirement. No institution was identified in the systems examined as having responsibility for a common cross-purpose evidence record of this kind or for registry functions covering broader ecological-condition instruments.



5. **Interoperability.** Ecological evidence is distributed across systems developed for different purposes. Use across institutions requires provenance to be preserved and relationships between methods and classifications to be explicit; it does not require adoption of a single metric.



6. **Institutional capability.** Capability is uneven. Some Chinese institutions already use ecological evidence in lending, monitoring and commercial decisions, while many prospective users still lack the processes and analytical capability needed to incorporate ecological condition into operational and financial decisions.

These constraints perform different functions and should not be treated as a single technical problem. Measurement can support a claim but cannot create demand or the legal or contractual authority required for a particular use. Existing rights in land and natural resources are relevant inputs but do not by themselves determine whether a nature credit may be issued, transferred, pledged or used to satisfy an obligation. An evidence record can preserve the information needed to assess those questions but cannot determine their legal effect. A registry can administer an issued instrument but cannot create the authority on which issuance depends, and a trading venue cannot create recurring demand simply by making transactions possible.

The distinction between ecological stocks and flows is also central. An ecosystem is a stock described by its extent, condition and productive capacity; ecosystem services and other outputs arise over time. Claims may relate to continuing stock condition, a delivered flow or a measured change in condition, with different evidence, exclusivity and accounting consequences. Payment for a service can generate revenue without creating an asset in the ecological stock that produced it. Financial recognition depends on whether the relevant right or resource meets the applicable accounting recognition and measurement requirements.

The technical contribution of this paper is to specify the evidence architecture from ground to claim. For a defined area, an evidence record preserves its spatial identity, relevant rights and interests, ecological values and their provenance, applicable consents and access conditions and claims already made against the area. It exists independently of any issued instrument and can support public payments, lending, reporting and market transactions. Where a nature credit or other transferable market instrument is issued, a registry provides the authoritative record of its identity, account position, transfer and retirement while maintaining the link to supporting evidence. A trading venue is a separate layer through which eligible instruments may be exchanged.

This architecture also clarifies what interoperability requires. Evidence produced under Chinese methods and classifications can remain within domestic systems while being interpretable by authorised users elsewhere. Existing Chinese applications already demonstrate how public environmental and spatial information can support corporate, financial and supply-chain screening. Interoperability does not require ecological outcomes in different places to be treated as interchangeable. Transparency does not require transferability.

Nor should demand for evidence be confused with demand for an ecological outcome: disclosure, target-setting and market-access requirements can increase the need for location-specific ecological information without creating a buyer for a nature credit-market instrument.

These existing capabilities provide a basis for two complementary forms of pilot. One can begin with eligible results from existing conservation activity and test whether nature credits can help fund continued protection and management. The other can trace a company's dependence on an ecosystem service and develop credits for the ecological outcomes needed to maintain or improve that service. Both can use the same ground-to-claim evidence architecture, but they differ in the payer, claim, governing rules and evidence needed for permitted use. Initial transactions can test buyer commitment, authority, verification, registry linkage, delivery and transaction cost; subsequent transactions and monitoring are required to test whether funding and ecological performance persist.

The appropriate role of markets also has limits. Compliance arrangements can create recurring demand through legal obligation. Value-chain and contractual arrangements may do so where a business has a direct economic relationship with a landscape or ecological service. Voluntary contributions can add finance but provide a less predictable basis for scale. Where ecological benefits are diffuse, no identifiable payer exists or market exchange is inappropriate, public finance remains necessary. Well-governed market mechanisms can broaden the financing base for China's ecological objectives and its commitments under the Convention on Biological Diversity where a payer, appropriate authority and measurable outcome can be established. They complement rather than replace public investment and regulation.

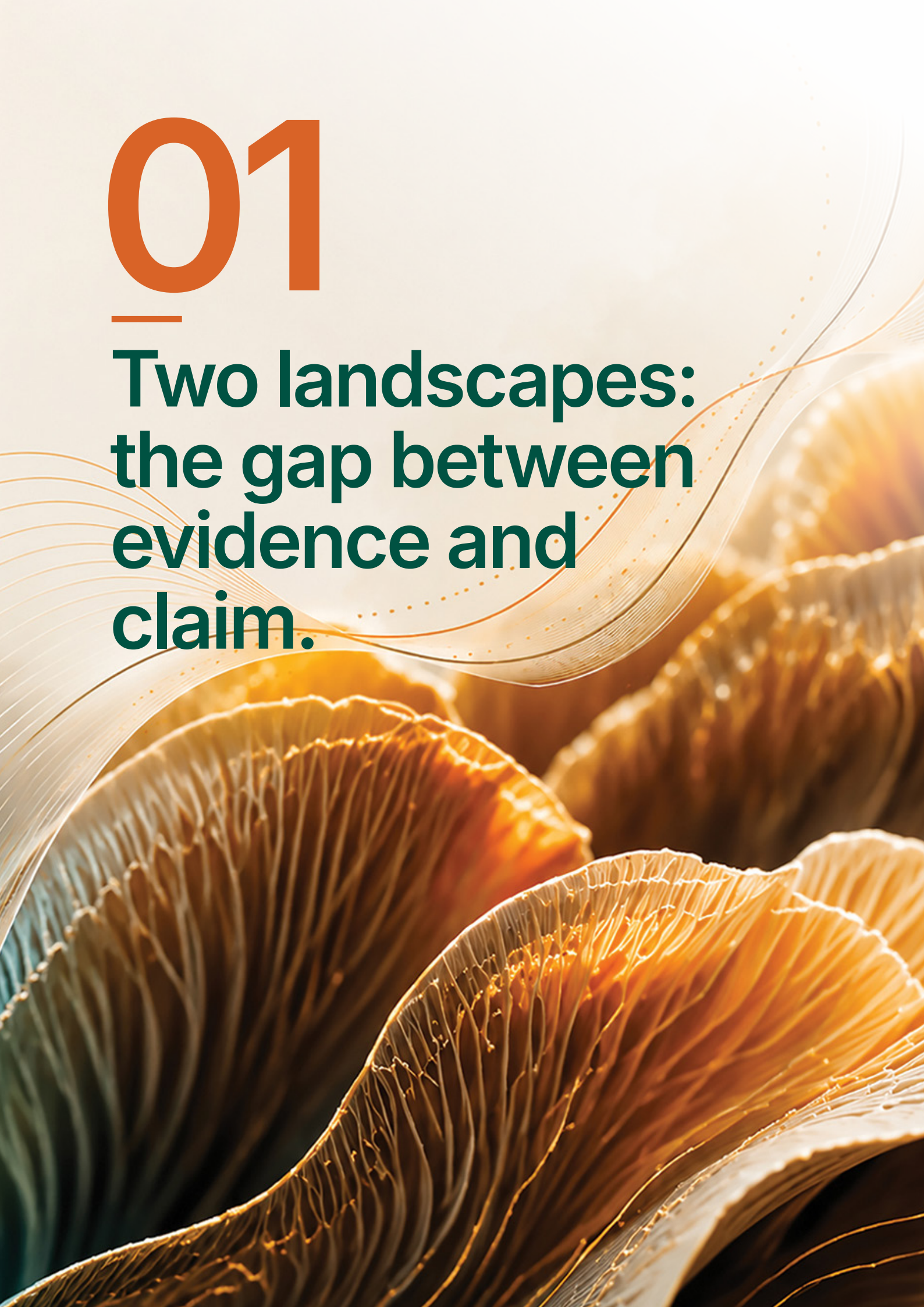
> **"Payment for a service can generate revenue without creating an asset in the ecological stock that produced it."**





# 01

# Two landscapes: the gap between evidence and claim.





Rangers in Yingjing County have followed the same survey routes and serviced the same camera stations since 2018. Their work takes place within an intensively monitored protected landscape, with 1,098 infrared cameras, 805 patrol transects and more than 960 staff across the Ya'an section of Giant Panda National Park[6,15].

Far to the east, in Huzhou, ecological evidence enters a different decision: a credit officer prices a loan against twenty-one indicators measured on the borrower's land under a municipal standard that requires each value to be traceable to a mapped location and confirmable in the field[2,46].

Together, the two landscapes show the gap between ecological evidence and a financeable or purchasable claim. Ya'an has extensive monitoring and public protection funding, but the authority or interest required for each possible use of a broader ecological claim has not been tested. Huzhou shows that ecological evidence can already influence financial decisions without itself becoming a nature credit or other transferable instrument.

The paper therefore asks what is required to connect evidence about a place to a claim or credit on which a buyer, lender or regulator can rely.

The paper proceeds from diagnosis to technical requirements. Section 2 identifies the constraints to recurring market activity and section 3 distinguishes the payment pathways and claims they support. Sections 4 to 6 then specify the rights, evidence and recording functions required between ground and claim. Sections 7 and 8 examine the implications for accounting, financing and use across institutions and jurisdictions, before section 9 identifies what can be tested before a recurring market exists.

## 1.1 Ya'an and Giant Panda National Park

Ya'an contains 5,935.82 square kilometres of Giant Panda National Park across five counties[6]. Figures from Sichuan's fourth giant panda survey, cited by the director of Ya'an's culture and tourism bureau in a 2025 interview, put the wild population across those five counties at 340[45]. The national park master plan provides the spatial and management framework for habitat protection, restoration and connectivity[6].

Protection is financed through public budgets. Park funding supports protection obligations, county governments compensate households for restrictions on land use, and central transfers to key ecological function zones increase partly with Ecological Conservation Redline coverage[3,11].

The the Ecological Protection Compensation Regulations provide the legal framework for these payments[3,11].

Monitoring is extensive. Yingjing is one of only two national sites for the integrated sky, air and ground monitoring platform, although the master plan still identifies gaps in grassroots capacity, patrol equipment and baseline data[6,15]. This evidence does not by itself determine who may assert, receive payment for, transfer or pledge a claim associated with ecological condition. State-owned land accounts for three quarters of the park, so the legal or administrative authority required for each proposed use would need to be confirmed.

> **"This evidence does not by itself determine who may assert, receive payment for, transfer or pledge a claim."**

## 1.2 Huzhou and Anji

Huzhou is a prefecture-level city in Zhejiang that administers Anji and Deqing and was designated one of China's first green-finance reform pilot zones. To support credit decisions, the municipality developed a parcel-level technical standard for ecological-product value assessment. A local bank branch subsequently used twenty-one indicators as authorisation criteria for a VEP climate loan and applied a differentiated interest rate; published reporting places the rate differential at 45 to 50 basis points[2,46]. In Anji, a local platform connects data across multiple public systems, including natural-resource and ecological-redline monitoring systems, and manages a portfolio of ecological-resource projects[53].

This demonstrates institutional coordination and commercialisation capability; it should not be interpreted as evidence that ecological sites have been converted into nature credits.

Several arrangements in the area already connect identifiable payers with ecological or resource-management outcomes. Deqing and downstream Yuhang have operated a cross-regional water-quality compensation mechanism since 2018, with an annual RMB15 million compensation fund and payment direction determined by measured water quality[50]. Published reporting also identifies related horizontal ecological-compensation and co-stewardship agreements across Anji, Changxing, Deqing and neighbouring jurisdictions, using annual payments and shared responsibilities for water-quality protection and restoration[51,52]. Dali Village transferred 5,425 mu of bamboo forest, approximately 362 hectares, into unified management through its cooperative.

Carbon is traded through the county platform, while households retain a base rent and 80 per cent of the carbon revenue. The structure has since been replicated by 119 village cooperatives across more than 840,000 mu; published reporting also records court-directed carbon purchases by liable parties[47].

These arrangements operate through different legal and contractual bases. Existing law recognises ownership, use and management interests in natural resources and provides specific rules for environmental factors including carbon, water use and pollution discharge[3,12]. For broader ecological condition, the relevant question is use-specific: existing rights and agreements must be examined to determine who may receive payment, issue or transfer an instrument, pledge it, or enforce obligations associated with it. The sources examined do not establish a single general entitlement that answers all of those questions.

The distinction between stocks and flows is central to what follows. An ecosystem is a stock described by its extent, condition and productive capacity; it generates services and other flows over time. Existing rights may govern land and natural resources, while separate instruments may govern particular outputs, uses or payment rights. Those existing interests do not by themselves determine who may assert, transfer or pledge a broader claim relating to ecological condition or improvement; that depends on the legal or contractual basis for the intended use.

MONITORING SCALE

**1,098 cameras**

support long-term ecological monitoring across Ya'an's Giant Panda National Park landscape.

ECOLOGICAL FINANCE

**21 indicators**

used in Huzhou to assess ecological value and inform loan decisions.

COMMUNITY SCALE

**840,000+ mu (~56,000 ha)**

brought under replicated cooperative management across 119 village cooperatives.

The distinction also has financial consequences: a service flow can generate revenue without creating an asset in the ecological stock that produced it. In Huzhou, ecological condition can affect credit terms[2,46], but no arrangement examined represents the condition itself as a separate transferable or pledgeable right. Section 7 develops the accounting implications.

Carbon illustrates the difference. Its standardised accounting units and registry infrastructure allow issued units to be recorded and traded. For broader ecological condition, the systems examined do not establish an equivalent common unit or comparable registry route.

At Xiazhu Lake, published reporting records the sale of 10,000 tonnes of wetland carbon at RMB58.83 per tonne and, separately, an intended RMB2 billion credit line to the local carbon-sink storage and trading centre[48,49]. These are not alternative valuations of the same asset: the first concerns revenue from carbon units generated over time; the second concerns financing supported by a broader set of assets and cash flows.

Section 6 examines the additional record, authority and registry functions required where broader ecological claims or nature credits are issued.

## 1.3 Existing payment and evidence arrangements

Across the two landscapes, ecological evidence already informs several payment and financing arrangements. Table 1 sets out four examples, their payers, what is being paid for and the record each party consults.

At Xiazhu Lake, wetland carbon, value-linked lending and judicial purchases all relate to the same landscape, but no common governed cross-claim record was identified in the systems examined[16].

**Table 1.** Four payment and financing arrangements, four primary records

| ARRANGEMENT | PAYER | WHAT IS PAID FOR | RECORD CONSULTED |
|---|---|---|---|
| CLIMATE LOAN, HUZHOU BANK BRANCH | Commercial bank | Differentiated loan rate linked to twenty-one assessment indicators | Parcel-level assessment under DB3305/T 271-2023: twenty-one indicators |
| DEQING AND YUHANG COMPENSATION, SINCE 2018 | County governments | Water quality at the boundary | One measurement against the agreed standard; fifteen million yuan a year, direction follows the result |
| DALI VILLAGE BAMBOO CARBON | Buyers via the county cooperative | Carbon revenue and base rent to households | Chain of transfer contracts and a filed methodology |
| JUDICIAL ECOLOGICAL COMPENSATION | Liable parties | Carbon offsets in place of restoration, 25,000 tonnes to date | Carbon unit and transaction record |

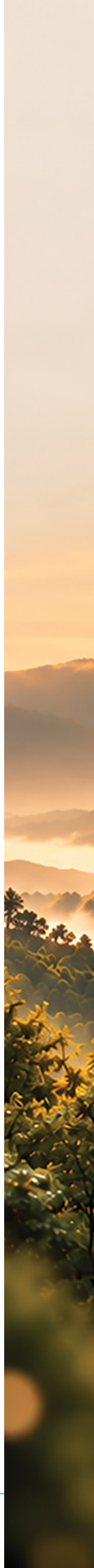
**Sources:** [2, 46, 47, 50].

The consortium's two indicator frameworks show a related problem. One proposes five accounting modules; the other organises 105 indicators around pressure, state and value[15,16]. Both are coherent for their intended purposes, but their results are not directly comparable without preserving provenance and documenting how their methods and classifications relate. Neither framework needs to be rewritten. Section 6.1 explains how a common evidence structure can preserve both while making those relationships explicit. Table 2 summarises the shared conditions across the two landscapes.

**Table 2.** The two landscapes against the shared conditions

| | YA'AN | HUZHOU AND ANJI |
|---|---|---|
| DEMAND AND PAYER | Public budgets: park obligations, compensation, function zone transfers | Prudential, commercial and compliance: bank lending, carbon purchases and court-directed purchases by liable parties |
| CLAIMS COMPATIBLE WITH LAND DESIGNATION | Stewardship and risk reduction; in-kind restoration where occupation is approved | Performance delivery and risk reduction; equivalence where land category permits |
| WHO HAS PERMISSION TO USE THE LAND | Three quarters state-owned; corridors cross state and collective tenure | Layered village, household, cooperative and platform interests under rights unbundling |
| EVIDENCE BASE | Deep monitoring on annual and biennial cycles; accounting framework in development | Parcel valuation with field verification; indicators on a credit cycle |
| WHAT IS NEEDED | Authority or interest required for each proposed use on state-owned land; distinction between public compensation and market claims | Authority and rules for asserting an outcome and, where an instrument is issued, for issuance, registration, transfer and, where applicable, pledge |

> **"Carbon illustrates the difference. Its standardised accounting units and registry infrastructure allow issued units to be recorded and traded."**

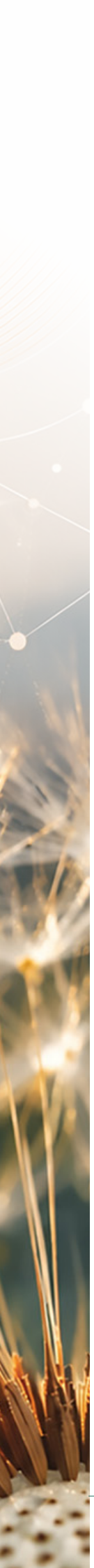




# 02

# Six constraints to nature credit-market formation.





The two landscapes reveal six distinct constraints between ecological evidence and recurring nature credit-market activity. Four concern the conditions required for a credible transaction; the remaining two concern whether evidence can be used consistently across institutions and decisions. None can be resolved by collecting more data alone.

## 01

### Demand.

No general legal obligation currently creates recurring demand for biodiversity or ecosystem condition as such. China's carbon market and market-allocation mechanisms for water-use and pollution-discharge rights depend on regulatory rules that create or structure demand[3,12]. Courts and voluntary buyers can create episodic payments, while banks can reprice financial exposure without purchasing an ecological outcome. A compliance market therefore requires a continuing legal obligation. Other pathways can produce recurring demand where a business has a direct contractual or economic relationship with a landscape or ecological service. Repricing a loan is not the same as paying for an ecological outcome. Section 3 sets out what each pathway asks of the evidence.

## 02

### Financeability of public payments.

Horizontal ecological-compensation and co-stewardship arrangements are not confined to Deqing–Yuhang[50]. Published reporting identifies several recurring arrangements across the wider region, including annual payments between counties, districts and villages for water-quality protection, restoration and shared watershed management[51,52]. This strengthens the evidence that public ecological payment arrangements can recur across jurisdictions. It does not, however, establish the legal character of the future payment stream. The sources reviewed do not confirm whether future payments are legally enforceable in advance, or whether any resulting payment right can be assigned or pledged to a financier. Financeability must therefore be assessed from the specific agreement and applicable legal framework rather than inferred from payment recurrence alone. Section 6.4 sets out the authority questions this raises.

## 03

### Authority and entitlement.

The legal issue is not an absence of rights. Chinese law already recognises ownership, use and management interests in land and natural resources, together with specific rights in areas such as carbon, water use and pollution discharge. The unresolved question for broader ecological-condition claims is use-specific: which interest or authorisation supports receipt of payment, issuance of a nature credit, transfer or pledge of an instrument, and enforcement where delivery or payment obligations are not met? These functions need not attach to the same party or arise from the same underlying interest. Article 693 provides a basis for recording natural-resource interests but does not by itself answer those transaction-specific questions[3]. Sections 4.1 and 6.4 take this up.

## 04

### Authoritative recording.

Existing Chinese systems perform different parts of the record-and-transaction chain. Natural-resource registration records underlying interests; carbon infrastructure records issued units and their lifecycle; and local platforms and trading venues support transaction and settlement functions. What the systems examined do not provide is a governed cross-purpose evidence record linking a defined area, relevant interests, ecological evidence and prior claims, together with registry functions where broader transferable ecological instruments are issued. These are separate institutional functions: the evidence record exists before issuance, the registry becomes authoritative for an issued instrument, and the trading venue supports exchange. Sections 6.1 to 6.3 set out what each layer holds.

## 05

### Interoperability.

The records examined in the two landscapes, including the consortium's two indicator frameworks, were designed for different purposes. Ecological condition has no natural common unit equivalent to the standardised accounting unit used in carbon markets. The technical requirement is therefore not a single metric, but retention of provenance, method and classification together with explicit rules describing relationships between systems. Without those rules, each user must interpret the evidence independently before relying on information produced elsewhere. Sections 5.4 and 8.2 set out what this requires.

## 06

### Institutional capability.

Capability is uneven rather than absent. Huzhou and Anji show that ecological evidence can already enter credit and commercial decision processes, while the Giant Panda National Park master plan identifies gaps in grassroots monitoring capacity, equipment and baseline data[6,46,53]. Wider use will require banks, agencies and other users to incorporate ecological evidence into existing operational processes, risk models and decision rules. Section 7 sets out what a credit decision actually consumes.

Responsibility for these constraints is distributed. Policy and regulation shape demand; law and competent authorities determine the authority required for particular uses; an appointed institution must govern the evidence record and any registry; standards bodies can establish interoperability requirements; and users must develop the capability to act on the evidence. The architecture proposed here directly addresses fragmentation of evidence and can reduce information costs in financing and authority decisions. It cannot create demand, determine the legal or contractual basis required for an intended use, create a financeable future payment right or appoint the institution responsible for authoritative recording. Distributional consequences and liability for reliance are related governance questions addressed in sections 4 and 5 rather than additional constraints.

There is nevertheless a reason to specify the evidence architecture before a recurring market exists. A common record can support arrangements already in use, including public compensation and financial risk assessment, while reducing repeated work when the same place is assessed for different purposes. The proposal is not to impose one measurement method. It is to specify what information must accompany ecological evidence and how it is recorded so that different users can interpret it consistently. Figure 1 places these shared functions within the sequence from the ground to a payable claim. Section 3 examines how payment arises and what each type of claim requires from the evidence.

## From ground to claim

Seven stages from ecological assessment to enforcement and reporting




### Shared evidence functions

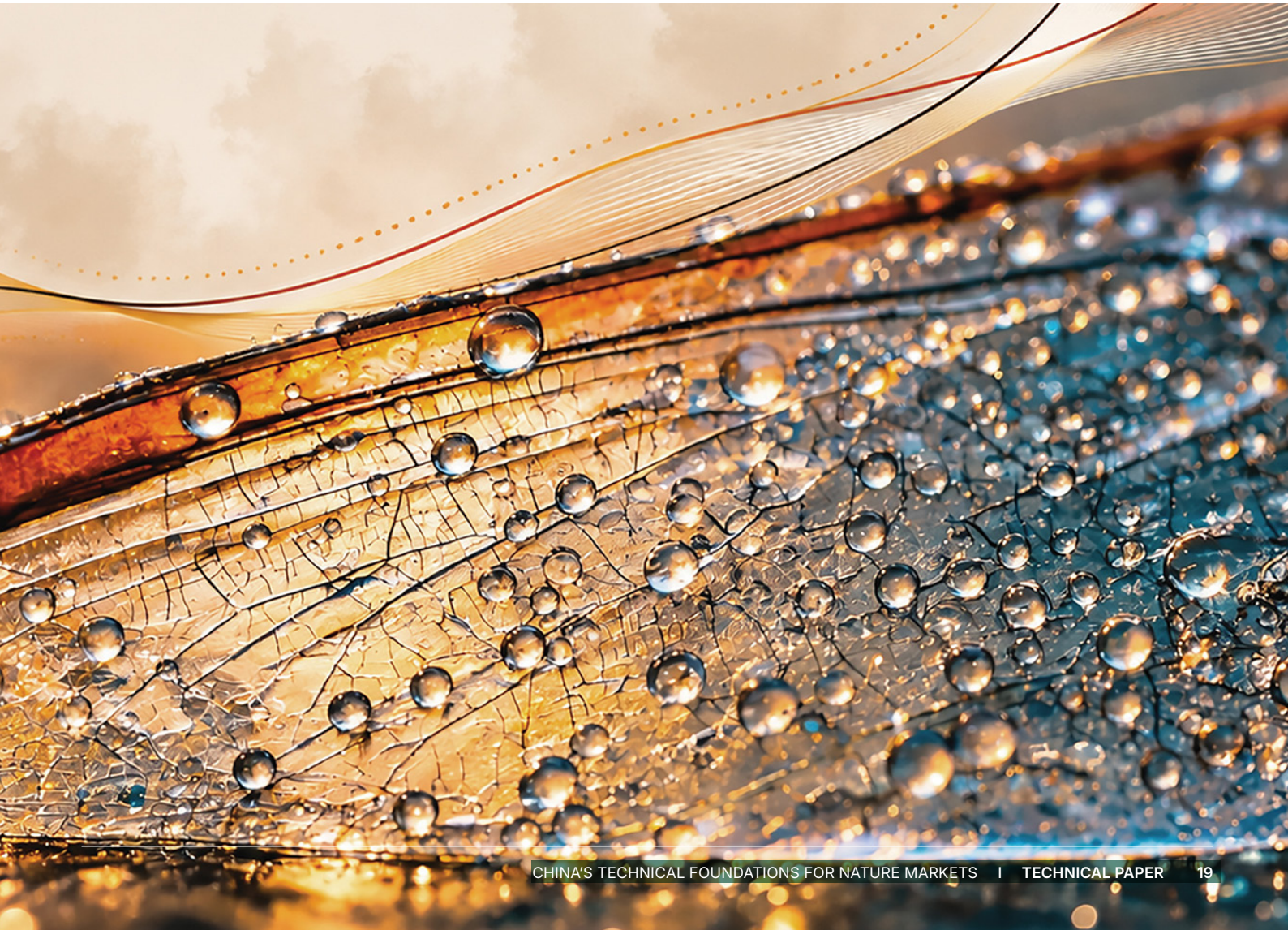
Carried once, read by every later stage

| | |
|---|---|
| Spatial reference | section 4 |
| Evidence, verification and data handling | section 5 |
| The record, claims and registration | section 6 |

### Where this paper sits

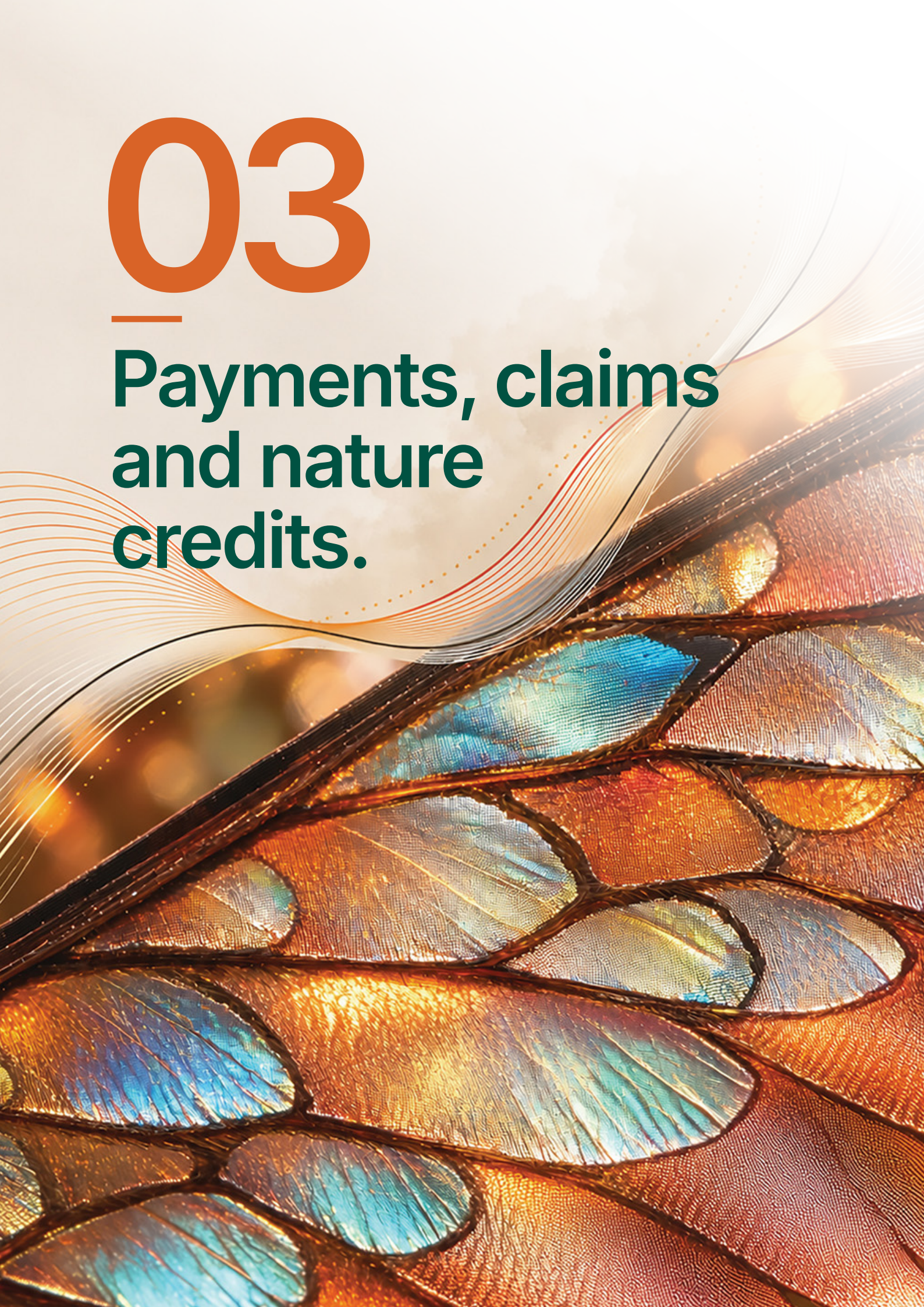
Stages 4 to 7 are carried by financiers, exchanges and issuers, and depend entirely on what stages 1 to 3 produce. This paper examines the three shared functions beneath those first stages: the conditions under which an assessment, a record and a monitored value can carry a payment or a claim.

**Figure 1.** From ground to claim. Stages 4 to 7 are performed by financiers, exchanges and issuers and depend on outputs from the first three stages. Sections 4 to 6 examine the shared functions required beneath those later stages. The return path represents the link from an issued instrument to the evidence and review supporting it.



# 03

# Payments, claims and nature credits.



## 3.1 Payment pathways and claim types

Payment for ecological outcomes can arise through four pathways identified in the companion policy paper: public results-based payment, compliance compensation, value-chain payment and voluntary contribution[1]. These pathways describe why payment occurs. The claim types used in this paper describe what is being asserted about the ecological outcome. The two classifications are related but do not correspond one-to-one.

Where used, nature credits add an instrument layer to these pathways rather than replacing them. A public, compliance, value-chain or voluntary arrangement may use an issued credit where the governing rules permit it, while some arrangements can operate without issuing a unit. The ecological claim should therefore be defined separately from the instrument used to represent it.

Public results-based payment occurs where a public body links payment to a defined ecological result. The Deqing–Yuhang water-quality arrangement is the clearest example examined here. Park and county budgets also finance ecological protection, but unless payment is conditional on a measured result they remain public funding rather than results-based payment.

Compliance compensation arises from a legal obligation. Chinese law already provides restoration duties, damage-compensation procedures and specified payments. Those obligations may be discharged only through the forms permitted by the applicable law, permit, agreement or judgment. Wider use of nature credits would therefore require explicit rules defining which obligations an eligible credit may satisfy, how ecological matching is assessed, when the underlying duty is discharged and who remains responsible for maintaining the result.

Value-chain payment arises where a business pays for an ecological outcome connected to its sourcing or operations. Aquaculture, tea, bamboo and tourism businesses can have such relationships with particular landscapes. This is different from value-chain reporting, which may require ecological evidence without purchasing an outcome. Voluntary contribution depends on discretionary corporate, philanthropic or individual commitments. Court-directed purchases belong to the compliance pathway because payment arises from legal liability[47].

Finance is a supporting channel rather than a separate payment pathway. A lender can use ecological evidence in two different ways. It can reprice an existing exposure because ecological condition changes financial risk, without purchasing an ecological outcome. Alternatively, it can make a financial benefit, such as a margin adjustment or disbursement, conditional on delivery of an agreed ecological result. The Huzhou climate loan contains elements of both: its indicators inform credit assessment, while the differentiated interest rate creates a performance-linked incentive[2,46].

### Across these pathways, four claim types are relevant:

- **Equivalence** asserts that an ecological gain satisfies or compensates for a specified loss elsewhere. If the outcome fails, the underlying obligation remains unmet. The evidence must therefore establish the relevant baseline, any ecological additionality required by the applicable rules, the requisite duration or permanence and rules for exclusive use or retirement.
- **Performance delivery** asserts that a defined service or outcome was delivered under agreed terms. The evidence must show what was delivered, over what period and against which contractual criteria.
- **Risk reduction** asserts that ecological condition changes a quantified financial or operational exposure. The evidence must establish the relevant condition or threshold, the period for which the assessment remains valid and the trigger for reassessment or withdrawal.
- **Stewardship** asserts that ecological condition has been maintained to an agreed level. The evidence must show continuing condition or performance over the relevant period; failure may result in funding being withheld or not renewed.

A single landscape makes the distinctions clearer. Consider a high-condition forest under pressure from development or mining. A stewardship claim may concern maintenance of the forest's condition as an ecological stock; a risk-reduction claim may rely on that condition where it moderates erosion, flooding or another operational exposure; a performance-delivery claim may relate to services generated over time; and, where the rules permit, an equivalence claim may use a defined restoration or avoided-loss outcome to address a specified loss elsewhere. The same landscape can therefore support different claims without making the underlying stock, the services it generates or the instruments representing them interchangeable.

Whether those claims go beyond what would otherwise have occurred is a separate question. Ecologically, the test is whether the forest is in better condition than it would have been without the intervention, for example because protection prevented loss from likely development or mining. Financially, the issue is whether the transaction introduced funding that would not otherwise have been available. At the level of impact, the question is whether the specific buyer, investor or intervention materially changed the outcome. Maintenance can therefore be genuine performance even where it does not satisfy all three tests. Any credit methodology should state explicitly which test is relevant to the claim it supports.

**Figure 2 sets the payment pathways and financial channel against the four claim types.**

## What each pathway asks of the evidence

| | Equivalence<br>baseline, additionality, permanence, retirement | Performance<br>delivery against terms within a defined window | Risk reduction<br>threshold attested, validity and withdrawal | Stewardship<br>condition held, funds applied |
|---|---|---|---|---|
| **Public results-based payment**<br>a public buyer purchases a delivered result | □ | ● | | ● |
| **Compliance compensation**<br>statutory or permit-based residual duty | ● | ○ | | |
| **Value chain**<br>dependence a buyer can trace, in sourcing or operations | | ● | | ○ |
| **Voluntary contribution**<br>corporate goal, philanthropy, public commitment | ○ | | | ● |
| **Finance, in two roles**<br>repricing an exposure buys no outcome; a rate conditional on a measured result does | | ○ | ● | |

Common evidence core, required by every claim: which place, produced by which method at which version, when, traceable to what.

● The claim this pathway characteristically asserts
○ A claim it can assert where law, land category or contract permits
□ A public body delivers the work while the duty, and therefore the claim, stays with the holder

**Figure 2.** Four payment pathways and four claim types over one common evidence core. Nature credits can represent eligible outcomes within these pathways; finance appears twice because repricing an exposure and contracting on a measured result are different financial uses of ecological evidence.

## 3.2 Assessment scope and purpose

All four claim types require a common evidence core: the place assessed, the method used, the date of assessment and the source of the evidence. The spatial scope then depends on the decision being supported. A loan may assess the borrower's parcels, a compensation arrangement a watershed, and a restoration project its site together with an affected area.

Huzhou's standard allows the assessment area to comprise the approved project boundary, the project plus an affected watershed or buffer, or disconnected areas linked by an ecological or economic process, while valuation proceeds parcel by parcel within that scope[2]. The assessment boundary therefore follows the purpose of the decision, while the measurement units and methods used within it must remain explicit. Comparability does not require different assessment boundaries to coincide; it requires users to know how each value was produced and whether values from different methods or spatial scales can legitimately be compared.

## 3.3 Land designation and permitted claims

Ecological evidence can show what exists, what has changed and, where the method permits, what would otherwise have occurred. It does not determine whether one ecological outcome may be used to satisfy a loss or obligation elsewhere. That is a legal and market-design question.

Equivalence makes this distinction explicit. It asserts that an outcome in one place can satisfy a specified loss in another, but that substitution is valid only where the governing rules permit it and define the conditions under which the two may be treated as equivalent. Australia's reformed Environment Protection and Biodiversity Conservation Act framework provides a clear example. Under the 2026 National Environmental Standards, once the new approval tests commence, proponents must first apply the mitigation hierarchy. Where residual significant impacts are permitted to proceed, compensation must satisfy the statutory net-gain test; offset activities must provide a like-for-like result, deliver a measurable improvement relative to the relevant baseline and provide a benefit that would not otherwise have occurred[54]. The evidence demonstrates whether those conditions are met. The regulatory framework determines whether substitution is allowed and what counts as an acceptable substitute.

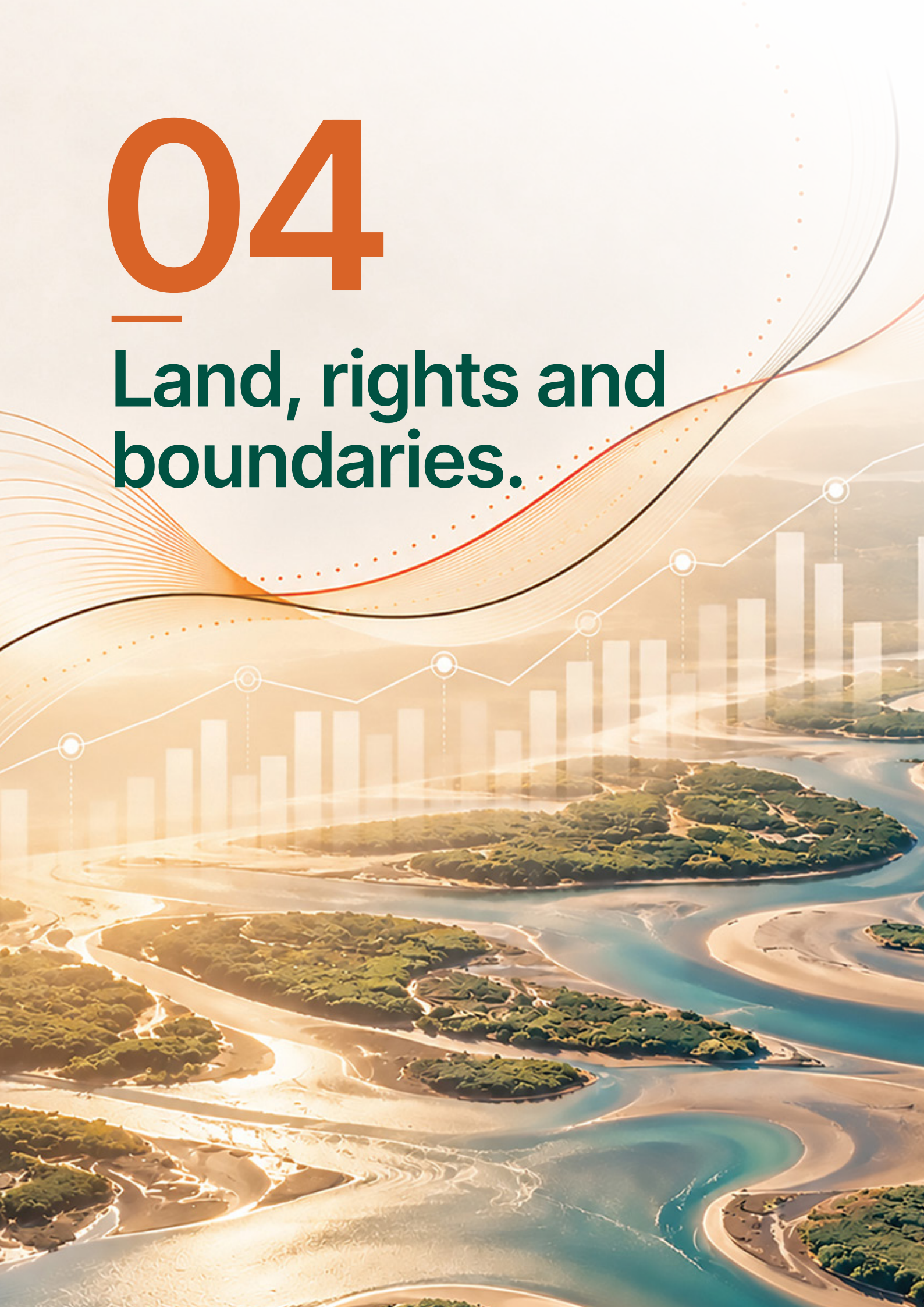
China approaches the same question through a different institutional structure. Within the Ecological Conservation Redline, regulation defines which activities may occur, including specified forms of research, traditional livelihood, forestry, tourism, infrastructure and restoration[4,5]. These controls determine what may be done on the land, but they do not themselves create a transferable instrument through which an ecological obligation can be discharged.

Wetland protection illustrates the distinction. Approved occupation can give rise to statutory restoration or compensation requirements under the applicable rules[13]. The existence of that obligation does not by itself create a general right to satisfy it by purchasing a nature credit. If credits were to be used for that purpose, the governing framework would need to specify which outcomes qualify, how ecological matching is determined, how the obligation is discharged and who remains responsible if the required result is not delivered.

Tenure raises a separate question. Three quarters of Giant Panda National Park is state-owned, with one quarter under collective ownership[6]. Within traditional-use areas, collective land and forest interests may be managed through leases, exchanges or conservation agreements subject to applicable consent and compensation requirements[7]. Those arrangements identify relevant interests in the land and resources, but they do not answer every question associated with a market claim. The authority required to receive payment, issue or transfer an instrument, pledge it or use it to satisfy an obligation depends on the proposed transaction. Section 4 examines those use-specific requirements.

# 04

# Land, rights and boundaries.





## 4.1 Existing rights and authority for use

Land designation affects which claims may be permitted. A separate question is what authority or interest a party needs for the intended use. Existing ownership, contract, use and management rights are relevant, but they do not answer every question involved in receiving payment, issuing an instrument, transferring or pledging it, or enforcing obligations on non-delivery or default.

Rural tenure arrangements can involve several parties because ownership, contract and management rights may be separated. In Dali Village, households retain contract rights while unified management of the bamboo forest is transferred to the village cooperative. Wider cooperative and platform arrangements support procurement and trading of the carbon[47]. An evidence record should therefore identify the underlying ownership, use and management interests; the party authorised to assert the outcome or receive payment; the legal or contractual basis for that authority; relevant consents; and any conditions on transfer, pledge or enforcement. Recording those matters does not determine their legal effect.

Giant Panda National Park raises the same issue across state and collective land. Provincial authorities administer state-owned natural resources, while collective interests may enter unified management through arrangements requiring the consent of relevant rights holders[6]. Article 693 identifies unified natural-resource rights registration as the system for recording natural-resource interests[3]. The evidence record can reference those interests and preserve the relevant chain of consent, including who granted it, the area and period covered and applicable conditions. Whether those interests are sufficient for a particular nature-credit use remains a separate legal or administrative determination.

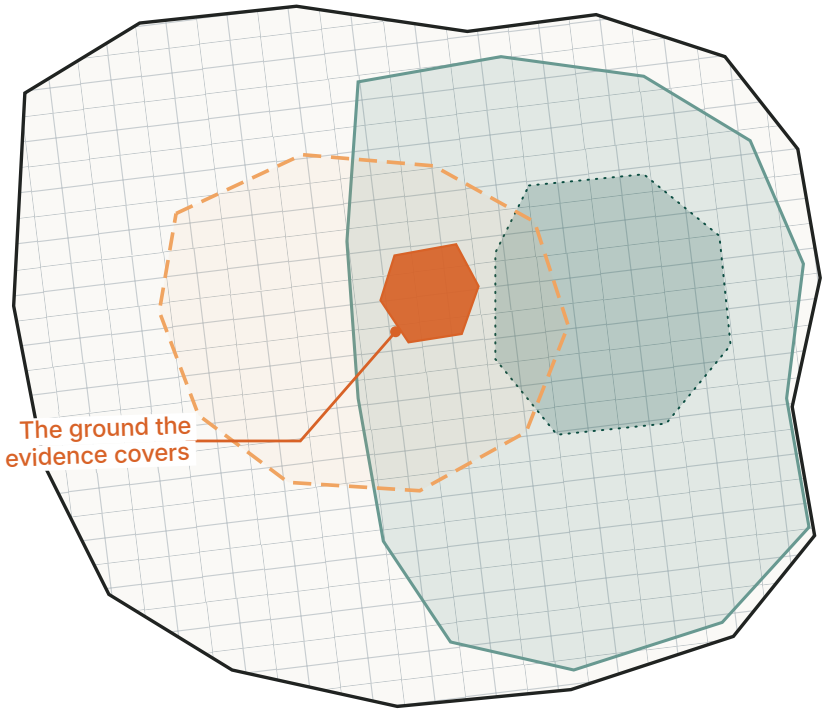
> **“Recording rights and interests does not determine their legal effect.”**

## 4.2 Multiple boundary systems

The record must also identify the spatial area to which rights, evidence and claims apply. The same ground may be described by several boundary systems, each established for a different purpose. In Yingjing County, Ecological Conservation Redline boundaries determine where specific protection controls apply; the national land survey provides the land-use survey base; national park zoning distinguishes core protection and general control areas; and administrative boundaries define units used for purposes including ecosystem accounting and fiscal compensation[4,6,8,11,15]. Transaction-specific boundaries, such as the watershed used for the Deqing–Yuhang payment, may add another spatial frame.

These boundaries can overlap without being interchangeable. Forty-seven per cent of Yingjing County lies within the national park, while the county also functions as an administrative and accounting unit and forms part of ecological corridors that cross county boundaries[6,15]. Different users may therefore refer to different spatial definitions when assessing the same location.

The evidence record should preserve these references rather than replace them with a new common map. Each boundary reference should identify its custodian, edition or version, effective period and purpose. This allows a lender, public authority or park manager to apply the spatial framework relevant to its own decision while referring to the same underlying area and evidence. The field records examined did not consistently contain all four elements. Figure 3 illustrates the overlap, and Table 3 identifies the function of each boundary system.




Yingjing County, Ya'an. Extents are schematic and not to scale.

### One evidence record

against the extent the evidence actually describes.

### Read through four boundary systems

- Administrative Area
- National Park Zoning
- Core Protection Area
- Ecological Conservation Redline
- Third National Land Survey

Each frame is authoritative for its own mandate and for nothing else. Table 3 sets out what each governs.

**Figure 3.** One location described by four boundary systems. The evidence record preserves the relevant spatial references so that each institution can apply the boundary system required for its decision.

**Table 3.** Four boundary systems and what each one governs

| BOUNDARY SYSTEM | AUTHORITATIVE FOR | APPLICATION IN YINGJING COUNTY |
|---|---|---|
| ECOLOGICAL CONSERVATION REDLINE | where specified protection and land-use controls apply | the part of the county inside the line, where permitted activity is a defined list[4,5] |
| THIRD NATIONAL LAND SURVEY | land-use classification and the national survey base | land-use and spatial survey coverage across the county[6] |
| NATIONAL PARK ZONING | core protection and general control areas | 836.51 square kilometres, forty-seven per cent of the county, split 330.33 core and 506.18 general control[15] |
| ADMINISTRATIVE AREA | the scope of ecosystem product accounting and fiscal compensation | the county as a single accounting and compensation unit[8,11] |

## 4.3 Boundary change over time

Spatial references also need to remain traceable when boundaries change. Parcels may split or merge, surveys may be revised and administrative boundaries may change while ecological obligations, compensation arrangements or loan conditions remain in force. A long-term obligation can only be tested against its original spatial scope if earlier boundary versions are preserved and linked to their successors. An obligation recorded against a parcel in 2026, for example, should remain traceable if that parcel is divided in 2031.

## 4.4 What remains to be agreed

The issue identified here is not the absence of a national spatial base. Ecological Conservation Redline boundaries, national land survey data, natural-resource rights registration, forest records and national park zoning already provide extensive spatial coverage, while local platforms such as Anji's integrate many of these data layers[4,53].

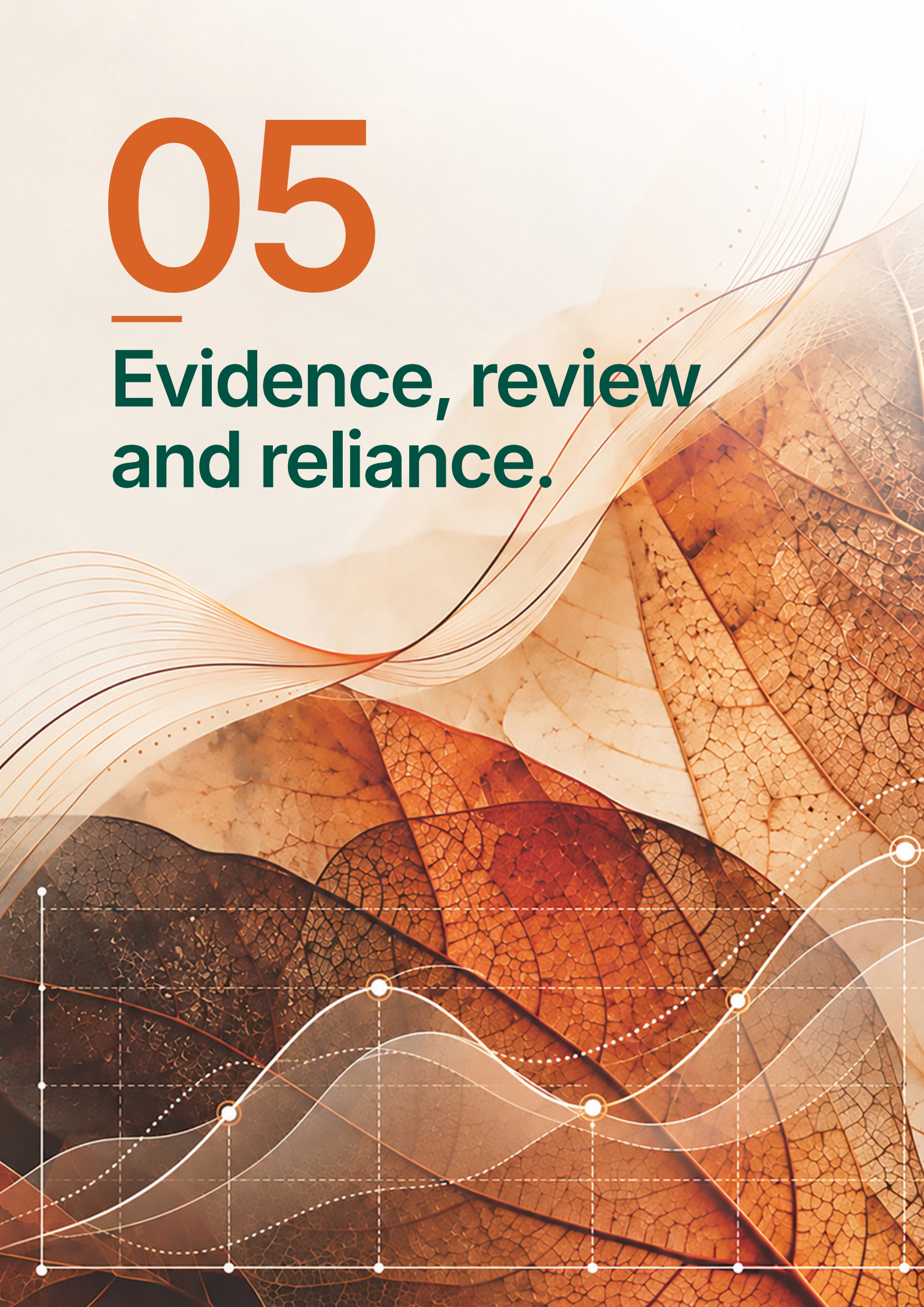
What remains is agreement on how different institutions use those sources together. Three matters need to be specified:

- which spatial source is authoritative for each type of decision;
- how differences or overlaps between boundary systems are handled where more than one applies to the same decision; and
- how the custodian, version, effective period and permitted use of each spatial reference are recorded.

These requirements concern governance of existing spatial information. They do not require a new national survey or a replacement map.

# 05

# Evidence, review and reliance.



## 5.1 Accountability for monitoring evidence

Evidence can support decisions beyond the institution that produced it only if responsibility for its production is clear. China's Ecological Environment Code assigns responsibility for the authenticity, accuracy and completeness of monitoring data to monitoring institutions and monitored entities, prohibits falsification, extends monitoring to ecosystems and biodiversity, and requires information-sharing mechanisms across levels of government[3].

The monitoring regulations add quality-management requirements and legal liability[23]. These provisions establish accountability for the source data.

They do not establish how a value was produced, whether it can be compared with other evidence, or what review has been applied. Those requirements are considered below.

## 5.2 Provenance and interpretation

Provenance records how a value was produced. Direct measurement, modelling and transfer from another location can all produce valid evidence, but they do not provide the same basis for interpretation. Gross ecosystem product totals use modelled relationships at county scale; Huzhou's parcel values draw on high-resolution imagery checked in the field; and Ya'an's habitat suitability is modelled while its camera counts are direct observations[2,8,15]. Each value should therefore retain its method, version, source and spatial resolution.

Transferred values require the same transparency. A value or benefit function developed for one place may be applied elsewhere only where the basis for transfer is stated and justified. The original source and the assumptions supporting the transfer should remain attached to the resulting value.

Comparison over time introduces a different question. Direction of change can be established from observations produced on a consistent basis; whether that change is favourable depends on the purpose of the assessment. The record should preserve the observation separately from that judgement so different users can interpret the same evidence without altering the underlying value.

## 5.3 Technology-neutral evidence requirements

China's Fifteenth Five-Year Plan framework continues to emphasise ecological monitoring capacity[25,26,28].

As monitoring methods and technologies evolve, the importance of recording provenance, method, version and uncertainty increases rather than diminishes.

The evidence requirements should therefore specify what must accompany a result instead of prescribing the technology used to produce it. A modelled result, for example, should identify the method and version that generated it. This allows methods and technologies to change while preserving traceability and the information needed to assess comparability.

> **"Direct measurement, modelling and transfer from another location can all produce valid evidence, but they do not provide the same basis for interpretation."**

## 5.4 Aggregation and comparability

Evidence can be reused at another spatial scale only where the method permits it. Some measures can be combined across areas, while composite or calibrated indices may depend on the spatial extent for which they were developed. Huzhou addresses this distinction by calculating parcel values directly instead of allocating each parcel a share of the county total[2]. Whether a value can be aggregated or transferred to another scale therefore depends on its method, provenance and uncertainty[33].

Comparison between classification systems presents a related problem. Provincial gross ecosystem product and ecological product value standards can reflect local conditions that a national standard cannot represent at the same level of detail[8,9,10]. Comparability does not require those classifications to be replaced by a single system. The original classification should be retained, with any mapping to another system recorded alongside it. The mapping should identify who established it, the versions connected, the type of correspondence and the confidence assigned to the match. Replacing the original classification with the mapped classification would remove information needed for later interpretation.

## 5.5 Matching review to the claim

Evidence also requires a form of review appropriate to its use. Internal quality control, assurance, verification, validation and agreed-upon procedures serve different purposes and should not be treated as levels on a single scale. The appropriate approach depends on the claim, the decision that relies on it and the consequence if the information is materially wrong.

Who performs the work is a separate distinction. First-party review is undertaken by the organisation that produced the evidence; second-party review by a party with an interest in its use or outcome; and independent third-party review by a practitioner or body separate from its preparation. These categories describe the reviewer's relationship to the evidence, not the depth of the work or the type of conclusion provided.

Assurance is a defined engagement in which an independent practitioner obtains evidence and expresses a conclusion against specified criteria. China's Sustainability Information Assurance Services Standard No. 6101 distinguishes reasonable and limited assurance, with different levels of engagement risk, evidence and forms of conclusion[35]. The appropriate level depends on the significance and intended use of the information.

Verification and validation answer different questions. ISO/IEC 17029 distinguishes verification of claims about events or results that have already occurred from validation of claims concerning intended future use or projected outcomes[36,38]. In a nature-market context, verifying that an ecological outcome occurred is therefore different from validating a baseline, counterfactual or methodology used to predict what would otherwise have happened. Agreed-upon procedures provide a further option where specified procedures are performed and the resulting factual findings are reported without an assurance conclusion[37].

The intensity of review should follow the consequence of the claim. Routine monitoring may rely on documented quality controls, automated checks and targeted sampling. Independent scrutiny becomes more important when a method is approved, a baseline or counterfactual is established, an instrument is issued, a material claim changes, or a reversal or corrective action occurs. Claims used to discharge a legal obligation or support issuance will generally justify stronger review than information used only for internal management[23].

Chinese practice already separates some of these roles. Statutory liability applies to organisations producing monitoring data[3,23]; the Sichuan exchange distinguishes its data, platform, trading and settlement functions from independent verification of ecological outcomes[14]; and in

Anji the forestry bureau monitors and regulates while the platform company trades[16]. Separating evidence production, review, issuance, registration and trading reduces the potential for conflicts of interest. Technical integrity is separate from substantive review. Tamper evidence, for example through a cryptographic hash, can show that a record has not changed since creation, but not whether the original information was accurate, the method appropriate or the resulting claim valid.

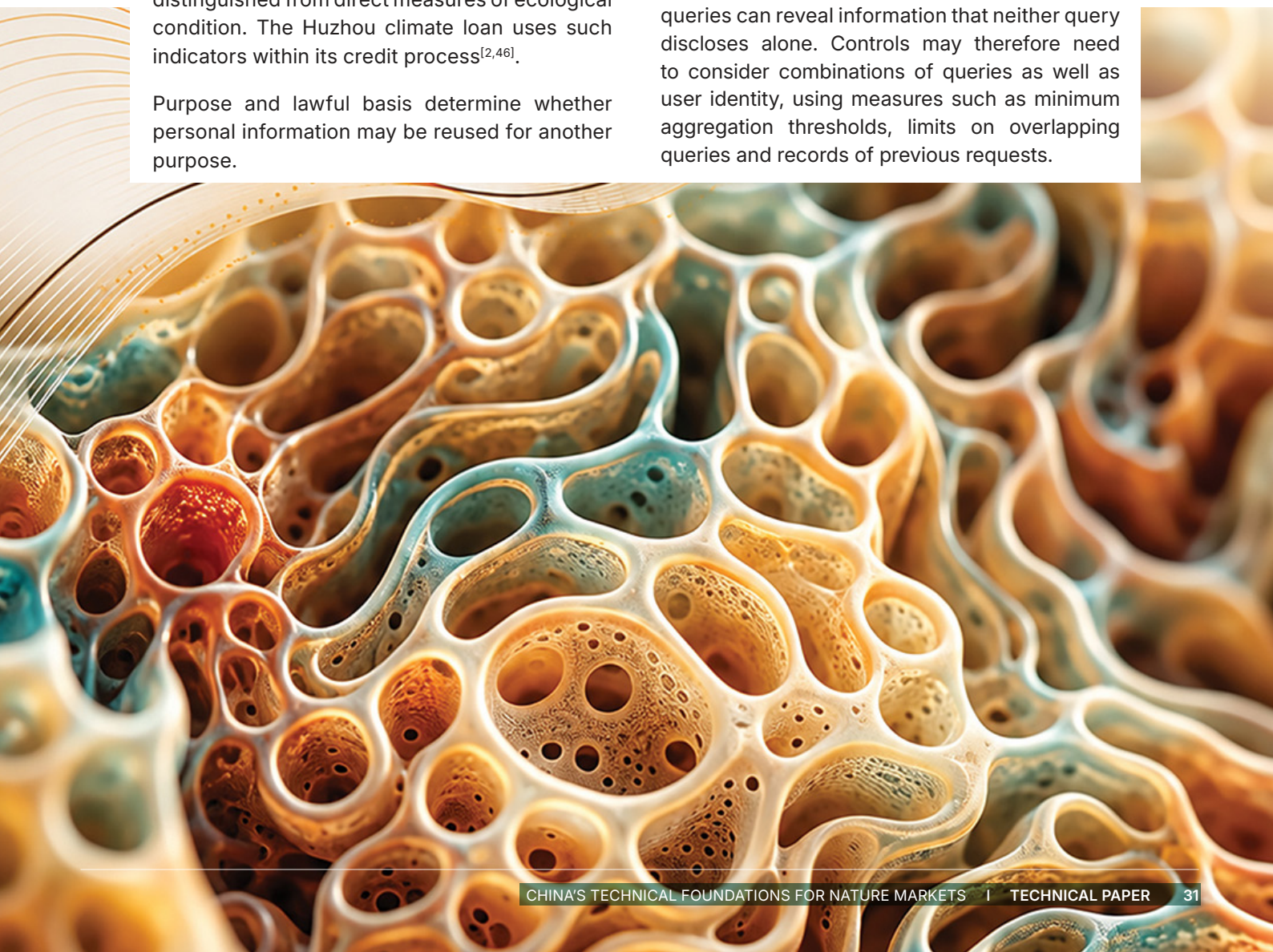
## 5.6 Timeliness, consent and access

An assurance or verification conclusion does not make evidence suitable for every decision. Reliance also depends on relevance, provenance, uncertainty, timeliness and whether the proposed use is consistent with the conditions under which the evidence was collected.

Timeliness matters because ecological and financial decisions operate on different cycles. Ecological condition may be assessed annually or biennially while lending decisions occur more frequently. Operational indicators can support faster decisions where they are clearly distinguished from direct measures of ecological condition. The Huzhou climate loan uses such indicators within its credit process[2,46].

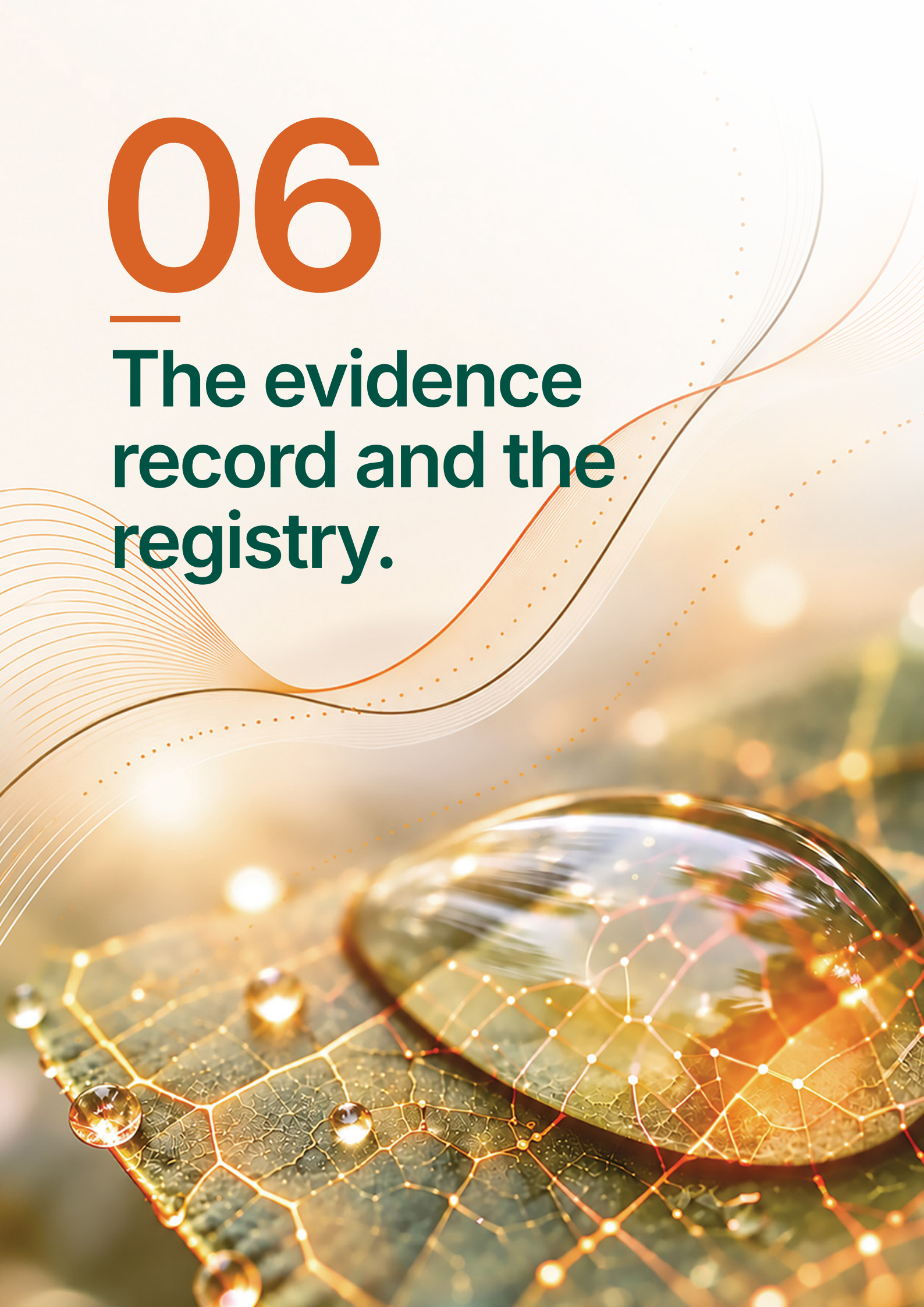
Purpose and lawful basis determine whether personal information may be reused for another purpose. Permission or consent obtained for one arrangement does not automatically extend to materially different processing. A relying party therefore needs to know the purpose for which personal information was collected, the lawful basis for its use and whether the proposed use falls within those terms[44].

Access controls must also address what users can infer by combining permitted results. Some ecological, geospatial and operational data may be subject to access, security or cross-border restrictions under applicable Chinese data-governance rules[27]. Separate authorised queries can reveal information that neither query discloses alone. Controls may therefore need to consider combinations of queries as well as user identity, using measures such as minimum aggregation thresholds, limits on overlapping queries and records of previous requests.



# 06

# The evidence record and the registry.



## 6.1 The evidence record

**An evidence record is the common information layer for a defined area of ground. It exists independently of any financial or market instrument and brings together the spatial identity of the area, relevant rights and interests, ecological values and their provenance, applicable consents and access conditions and claims subsequently made against it.**

The same underlying record can therefore support different decisions, including public payments, lending, reporting and market transactions, without requiring each use to create its own account of the ground. For each ecological value, the record preserves the unit, spatial extent, method and version, producer, date, uncertainty and status. Corrections or later assessments are added without removing earlier versions so that a user can establish what evidence was available when a decision was made. Where different methods produce different values for the same attribute, both remain with their provenance attached. The common structure makes the differences visible rather than requiring the methods to produce the same result.

China already has operating systems that demonstrate part of this function. The Institute of Public and Environmental Affairs (IPE) biodiversity and eco-function zoning tools assemble publicly available spatial information, including Ecological Conservation Redline, "Three Lines and One List", nature reserves, ecological function zoning and national parks, to support biodiversity and supply-chain risk screening by enterprises and financial institutions. The approach has also been recognised within the Taskforce on Nature-related Financial Disclosures (TNFD) catalogue of assessment tools[39,41]. It is not the evidence record proposed here because it does not establish a project-level chain connecting rights, consent, ecological evidence and claims. The significance here is that Chinese environmental and spatial data are already being combined for decisions beyond the agencies that originally produced them.

Rights and interests also form part of the record. Parties whose interests may be affected should be able to identify the information recorded about those interests and, where appropriate, dispute it. The record does not determine legal authority or entitlement, select between competing methods, decide whether an outcome is favourable or set a price. It preserves the evidence and its context so that the institution responsible for a particular decision can apply its own criteria.

## 6.2 Claims and exclusivity

The record must also identify claims already associated with the area. Instrument form and claim type should remain separate. A nature credit is a unit representing an ecological outcome under defined rules[18,27]; the claim identifies what is actually being asserted about that outcome. The same broad instrument category may therefore represent different claim types, while some claims can be made and paid for without issuing a credit.

For each claim, the record should identify the claim type, ecological attributes affected, spatial area, applicable period and whether the claim is recorded with an external authority or only between the parties.

Claims do not automatically extend to every ecological attribute of a place. A carbon claim over the Dali Village bamboo, for example, does not by itself claim its water or habitat attributes. The record should also preserve the spatial version and time period against which a claim was made. If a parcel is later divided, or an issuance period ends while a retention obligation continues, the original claim and continuing obligation should remain traceable.

**Preventing overlap requires three different controls.**

1. **Unit uniqueness.** Any issued unit requires a unique identity and should not be duplicated or reused after retirement. This is principally a registry function.
2. **Outcome exclusivity.** Where an ecological outcome is used to satisfy a defined equivalence claim, the same outcome should not support another incompatible equivalence claim unless the applicable rules permit it. Whether it may also contribute to a public target is a separate regulatory and accounting question. Article 6 of the Paris Agreement provides an analogous approach to incompatible claims over the same mitigation outcome[19].
3. **Contracted-flow exclusivity.** A service or outcome contracted to one counterparty for a defined purpose and period cannot also be promised to another on the same terms for that period. This is double selling of the contracted flow, which a registry designed only to prevent duplicate unit issuance may not detect.

These controls relate to, but are not the same as, the stock-and-flow distinction. Equivalence can commit an ecological outcome to a specified use, while performance delivery can commit a service flow for a defined period. Risk-reduction and stewardship claims generally rely on continuing ecological condition without making the underlying condition unavailable to every other user. Different claims can therefore coexist over the same ground where they concern compatible attributes, rights and purposes.

**Table 4.** Claim types and exclusivity requirements

| CLAIM | ASSERTS | ON FAILURE | OUTCOME OR FLOW COMMITTED | EVIDENCE EMPHASIS |
|---|---|---|---|---|
| EQUIVALENCE | A specified loss is compensated by an outcome here | Underlying obligation or claim remains unmet | Yes - outcome committed to the specified equivalence use | Baseline; ecological additionality where required; required duration or permanence; substitution rules; retirement where a unit is issued. |
| PERFORMANCE DELIVERY | A defined service or outcome was delivered | Contractual remedy | Yes - contracted flow or outcome for the defined period | Delivery against agreed terms within the defined period |
| RISK REDUCTION | Ecological condition reduces a quantified exposure | Repricing or withdrawal | No | Condition or threshold, validity period and trigger for reassessment |
| STEWARDSHIP | Ecological condition is maintained to an agreed level | Funding withheld or not renewed | No | Condition maintained over the relevant period |

Where claims or obligations overlap, the record makes the relationship visible but does not determine priority. A retention requirement attached to a carbon arrangement may, for example, conflict with a later harvest cycle[16]. Whether the two are compatible, and which prevails if they are not, remains a matter for the applicable contracts, regulation or legal authority.

Evidence depth also constrains the claims that can be supported. A reference-only record identifies an area and its classification; condition evidence adds ecological state at a point in time; behavioural evidence records management activity; and counterfactual evidence estimates what would otherwise have occurred. Greater evidence depth does not automatically authorise a particular claim, but some claims require more than others. Figure 4 illustrates those relationships. Areas for which evidence exists but no claim has been made should not be interpreted as an inventory of assets available for sale.

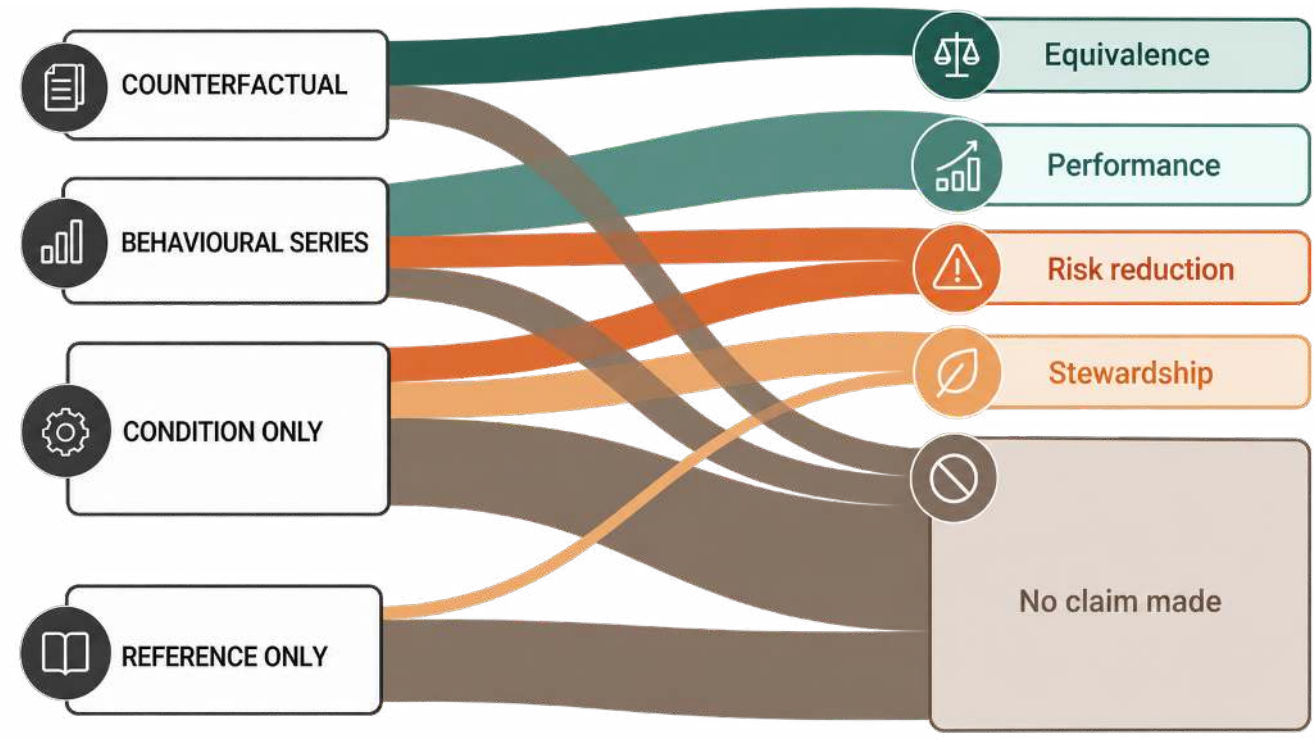



**Figure 4.** Recorded area by evidence depth and by the claim made against it. The residual is ground for which evidence has been recorded but no claim has been made. Proportions are illustrative.

## 6.3 From evidence to nature credit: registry and trading functions

Credit issuance is an additional layer above the evidence record, not a substitute for it. The evidence record substantiates the ecological outcome and relevant interests; the applicable legal or contractual rules determine who may issue and use the credit; and the registry records the credit once a valid basis for issuance exists.

Where a nature credit or other transferable market instrument is issued, an authoritative registry is required. It provides the traceable record of the instrument's unique identity, account position, status, transfer and retirement while maintaining the link to the evidence supporting issuance. A trading venue performs a separate function by enabling eligible instruments to be offered, matched, traded and settled. Bilateral service contracts, public results-based payments and financing decisions can use the evidence record without requiring credit issuance or a registry.

China's carbon infrastructure already demonstrates this separation. Sichuan's exchange performs trading, account, funds, settlement and witnessing functions, while its own description places the definitive record of holdings in a separate registry linked to the trading account[14].

Where a unit is used to discharge an obligation, both the registry and the applicable regulatory rules are required.

Existing trading infrastructure may therefore reduce the need to construct a new trading venue for future instruments. The larger gap is within the supporting layers: a governed evidence record, an authoritative registry where issuance occurs, and a durable link between the instrument and the evidence and review supporting it. In the systems examined, that evidentiary link is often maintained through document references rather than structured information associated with the instrument. This can make later due diligence more difficult where methods, evidence or review status have changed.

Changes to either the evidence record or registry also require governance. Corrections should remain traceable, and a party with an interest in a claim should not be able to alter the authoritative history of that claim unilaterally. Table 5 separates the evidence-record, registry and trading functions and identifies which elements already exist.

EVIDENCE RECORD

**1 common record**

connects ecological evidence, rights, consents and claims to a defined area of ground.

CLAIM PROTECTION

**3 controls**

protect against overlap: unit uniqueness, outcome exclusivity and contracted-flow exclusivity.

MARKET STRUCTURE

**3 distinct layers**

separate the evidence record, authoritative registry and trading functions.

**Table 5.** Current functions and gaps by layer
Registry and trading rows drawn from the exchange's own written description of its architecture[14].

| LAYER | FUNCTION | CURRENT POSITION IN CHINA |
|---|---|---|
| EVIDENCE RECORD | Spatial identity with custodian, version and effective period | Extensive national spatial sources exist; no common governed cross-purpose evidence record identified |
| EVIDENCE RECORD | Ecological value with method, version, provenance, uncertainty and status | Information exists across monitoring, accounting and project systems; no common governed structure identified |
| EVIDENCE RECORD | Claims by attribute, area, period and status | Recorded within individual schemes or contracts where applicable; no common cross-claim record identified |
| REGISTRY | Issuance and unique identity | Established for carbon; no equivalent registry identified for broader ecological-condition instruments |
| REGISTRY | Account position, transfer and lifecycle to retirement | Established for carbon; no equivalent broader ecological-condition registry identified |
| REGISTRY | Link from issued instrument to supporting evidence and review | Partial in systems examined; often maintained through document references |
| TRADING | Trading accounts, funds and settlement | Existing exchange and banking infrastructure; applicability depends on the instrument and governing rules |
| TRADING | Trading, transfer instructions and witnessing | Existing exchange capability; use for additional instruments would require the applicable rules and approvals |

## 6.4 Authority before issuance

Neither the evidence record nor the registry determines whether a party is authorised to issue, receive or transfer a nature credit. Before issuance, the relevant legal or contractual basis must be established for the intended use. That inquiry is use-specific: authority to manage land or receive a payment does not necessarily answer whether an instrument may be transferred, pledged or used to discharge an obligation. Existing ownership, use and management interests and relevant consents are therefore inputs to the determination rather than substitutes for it.

This distinction is particularly important on state-owned core-protection land. The evidence record can identify the relevant ownership, management authority, consents and intended use and can show which questions remain unresolved. It does not decide whether a party may issue, transfer or pledge a credit; that conclusion belongs to the competent legal or administrative authority.

Funding source can create a related issue. Publicly financed restoration may overlap with later ecological claims or issued units. These uses are not necessarily incompatible, but their compatibility depends on the applicable rules. The record should therefore distinguish the funding source, any right or unit created and the ecological outcome to which each relates. The carbon, lending and judicial arrangements associated with Xiazhu Lake illustrate why these relationships need to be visible together[48,49].

# 07

# Accounting, reporting and financial recognition.



Ecological evidence can support ecosystem accounting, financial reporting and financial decisions, but these uses are not equivalent. Ecosystem accounting organises ecosystem extent, condition and service flows against spatial units, and China's gross ecosystem product programme follows a related logic[8,17].

Project-level evidence can contribute to broader accounts where the method permits aggregation, but a project boundary and an administrative boundary remain different accounting units. Spatial scope must therefore remain explicit when results are combined. An ecosystem account can describe condition, services or value without identifying a payer, creating a claim or allocating a right.

The stock-and-flow distinction is important here because ecosystem accounting treats the ecosystem asset and the services it generates separately[17]. The ecosystem is a stock described by its extent and condition, while many ecosystem services are flows realised over time. Payment for a delivered service can therefore generate revenue without creating a separately recognisable asset in the ecological stock that produced it.

Financial reporting asks a different question: whether an entity controls a qualifying resource or right that meets the applicable recognition and measurement requirements. Existing ownership, use or management rights over land and natural resources may support recognition in their own right, but they do not automatically create a separate asset based on ecological condition or improvement. A separate legal or contractual right associated with ecological condition may support financial recognition if it meets the applicable recognition and measurement requirements; accounting treatment follows from the right and does not create it. This distinction is particularly relevant to China's natural-resource balance-sheet work and state-owned protected areas. Recognition of the underlying land or natural resource is not the same as recognition of a separate asset associated with its ecological condition. Related arrangements may nevertheless give rise to revenue, costs, liabilities, receivables or other recognised items[29].

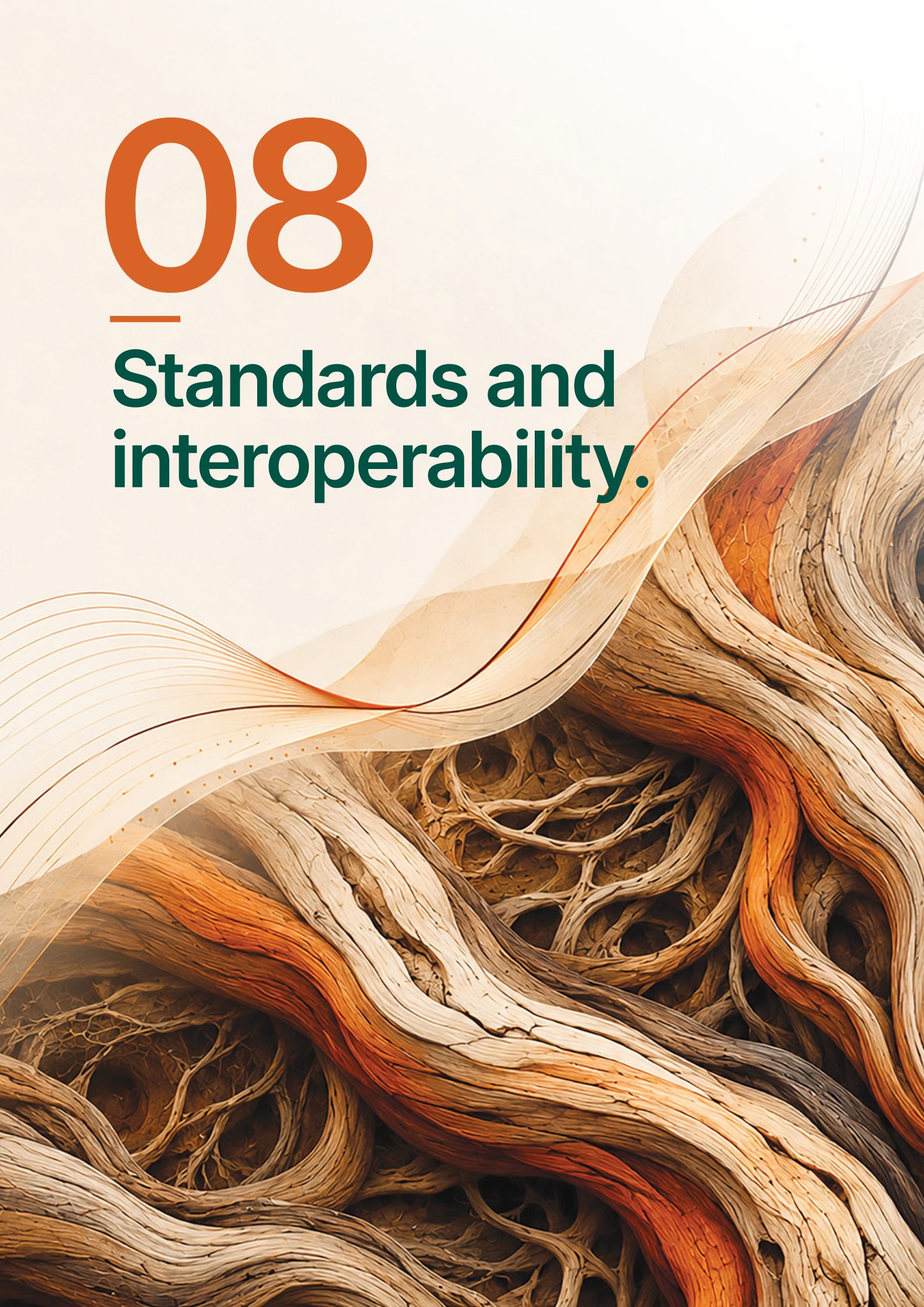
Disclosure creates another use for the same evidence. Reporting requirements can require an organisation to identify nature-related dependencies, impacts or risks without creating a buyer for an ecological outcome. The International Sustainability Standards Board (ISSB) is also developing a proposed International Financial Reporting Standards (IFRS) Sustainability Practice Statement on nature-related disclosures, with an exposure draft planned for October 2026[31].

Reporting can still influence investment and capital allocation, while a lender may go further by incorporating ecological condition directly into a credit decision. In Huzhou, ecological evidence affects financial risk assessment and pricing even though the bank does not purchase the ecological outcome itself[2,46]. Improved ecological evidence can therefore support financing decisions before ecological condition is represented by a separately financeable right or asset. Demand for that evidence should still be distinguished from demand for an ecological claim or instrument.

**“Improved ecological evidence can therefore support financing decisions before ecological condition is represented by a separately financeable right or asset.”**

# 08

# Standards and interoperability.



## 8.1 Cross-border use of ecological evidence

**Most payment arrangements examined in this paper are governed and recorded within China. Cross-border use arises when ecological evidence produced under Chinese systems is needed by a foreign lender, importer, investor or company with operations or suppliers in China.**

An operating Chinese example already exists. IPE's published eco-function zoning work, reflected in its Bio-Risk Scan, combines publicly available spatial information including the "Three Lines and One List", biodiversity conservation areas, national nature reserves, ecological function zoning and national parks to support biodiversity and supply-chain risk screening by enterprises and financial institutions[39,41]. IPE's CITI framework similarly uses public environmental information to assess how Chinese and multinational brands manage environmental risks across their supply chains in China[40]. These systems do not create ecological claims or market instruments. They show that Chinese environmental data can already support location-specific decisions beyond the agencies that produced it.

The same requirement is becoming more important internationally. TNFD guidance asks organisations to assess nature-related dependencies, impacts, risks and opportunities across value chains, while the Science Based Targets Network (SBTN) requires companies using its framework to map operating and sourcing locations and assess pressures and the state of nature at those locations[42,43]. The EU Deforestation Regulation imposes a different, legal requirement: covered commodities must be linked to geolocated production plots and supported by due-diligence evidence[32]. These frameworks have different purposes, but each increases demand for evidence linked to a specific place. IPE's Bio-Risk Scan is already included in the TNFD tools catalogue for locating interfaces with nature and evaluating priority dependencies and impacts.

This is demand for evidence, not necessarily demand for an ecological outcome. Where location-specific assessment identifies a material dependency, impact, risk, target or compliance requirement, a nature-credit purchase or another market mechanism may provide one route for financing action where a clear payer, relevant authority and measurable outcome can be established. It does not replace the underlying reporting, target-setting or regulatory requirement.

## 8.2 Requirements for interoperability

Cross-border use does not require Chinese evidence to be converted into a foreign classification or moved into a single international system. It requires enough common structure for another authorised user to understand what was measured, where it applies, how it was produced, which classification was used and what review has been applied.

Interoperability therefore requires agreement on four matters: the information a record must contain; a common way to represent it; a process for testing whether participating systems conform to the agreed structure; and a process for maintaining mappings and versions as methods and classifications change. Methods, thresholds and technologies can remain with the institutions responsible for them. The original Chinese classification should remain attached to the evidence, with any mapping recorded alongside it rather than replacing it.

Fungibility is separate. Ecological outcomes are not inherently interchangeable across jurisdictions because their significance depends on place, ecosystem type, time and community context. A market may establish rules under which units are treated as equivalent for a defined purpose, but that is a market-design decision. Interoperability only requires records produced under different systems to be interpretable and assessable across them.

## 8.3 Cross-border reliance

An external user needs to know the responsible institution, method and version, date, spatial extent, uncertainty and review status. China already provides an accountability base through statutory responsibility for monitoring data and, in the systems examined, some separation between evidence production, verification, registration and trading[3,14,23].

Cross-border reliance does not require unrestricted access to source data. The record can disclose enough information to assess provenance and review while source data remain within Chinese systems and subject to applicable data-governance rules[24,27]. This preserves domestic custody without requiring an external user to rely solely on the organisation that produced the result.

A record can show how a value was produced and what has been checked; it cannot determine whether the observed condition or change is ecologically desirable. That judgement depends on local ecological context and the purpose of the decision.

## 8.4 China's existing capability and lessons from other markets

China already has many of the systems needed to support interoperability: national monitoring, natural-resource rights registration, ecosystem accounting, carbon-market infrastructure and corporate screening tools such as those developed by IPE[2,3,23,39–41]. International alignment therefore does not require these systems to be replaced. Domestic records and classifications can remain authoritative while their meaning is made interpretable to authorised users elsewhere.

Experience in other jurisdictions supports three further conclusions. England and Colombia show why an authoritative registry is needed once recognised biodiversity or habitat units are issued: the registry records what has been created, allocated or used[21,22]. Australia shows that market infrastructure can exist before sufficient demand develops; its Nature Repair Market established registration and project requirements before a compliance buyer existed[20].

United States wetland and stream mitigation banking shows the converse: a continuing regulatory obligation, recognised units and established infrastructure can support recurring transactions and attract institutional capital[34].

The lesson is not that China should reproduce any of these systems. Measurement, authoritative recording, interoperability and demand perform different functions. China already has substantial capability in monitoring, rights registration, accounting, corporate screening and trading, while nature credits and other broader ecological instruments still require confirmation of the authority needed for the intended use, an authoritative registry where issuance occurs and a durable basis for payment. The technical task is to connect existing Chinese systems without displacing the classifications, institutions and data-governance arrangements from which their authority derives.

> **“Transparency does not require transferability.”**





09

# From existing capability to nature credit-market formation.





China already has many of the technical and institutional components that nature credit markets could use: ecological monitoring with statutory data responsibilities, natural-resource rights registration, ecosystem accounting, carbon registry and trading infrastructure and cooperative structures capable of distributing revenue to land managers[3,14,23,47].

The central challenge is therefore not to create a new system from the beginning, but to connect existing capabilities to credible ecological claims and, where appropriate, nature credits.

The six constraints identified in this paper resolve into a sequence of decisions. A transaction first requires a durable basis for payment. It then requires a legally or contractually credible basis for the specific actions involved, including who may assert the outcome and receive payment and, where relevant, issue, transfer or pledge an instrument. The evidence supporting the claim must be governed so that its location, provenance, relevant interests, review status and previous claims can be established. Where a nature credit or other transferable market instrument is issued, a registry must then provide the authoritative record of its identity and lifecycle. Interoperability and institutional capability determine whether this sequence can operate across systems and at scale.

These functions should remain distinct. Better measurement cannot create demand or determine legal authority. Existing ownership, use and management interests do not automatically establish authority for every proposed transaction. The evidence record can preserve the information needed to determine and assess a claim but cannot make that legal determination itself. A registry can administer an issued instrument but cannot create the authority on which issuance depends. Keeping these functions separate is a condition of credible market design rather than an obstacle to it.

The companion policy paper proposes two pilot entry points: eligible outcomes from existing conservation activity and company dependence on ecosystem services[1]. From a technical perspective, both can test the same ground-to-claim sequence, but they need not use the same claim, evidence threshold or permitted use.

A pilot should therefore test buyer commitment, authority, measurement and review, issuance and registry linkage where a credit is created, delivery over time and the full cost of administration. Comparison with existing payment arrangements should distinguish the funds raised from the cost of establishing and maintaining the credit mechanism.

The boundary of the market remains equally important. Compliance arrangements can create recurring demand through legal obligation. Value-chain and contractual arrangements may do so where a business has a direct economic relationship with a landscape or ecological service. Voluntary contributions can add finance but provide a less predictable basis for scale. Where benefits are diffuse, no identifiable payer exists or market exchange is inappropriate, public finance remains necessary. Well-governed market mechanisms can therefore broaden the financing base for China's ecological objectives and its commitments under the Convention on Biological Diversity where a payer, appropriate authority and measurable outcome can be established[30]. They complement rather than replace public investment and regulation.

These questions define the next phase of work: testing different demand pathways, measuring transaction costs and operational feasibility, testing governance arrangements for evidence records and registries, assessing how ecological evidence changes financing decisions, and identifying the legal and institutional conditions required for scale. The companion policy paper sets out the corresponding market-development and pilot implications; the technical requirements specified here provide a basis for testing those options in practice.

# Glossary of Key Terms.

This glossary covers terms specific to the evidence and registration layer, including Chinese institutional terms that readers outside China may not know. Terms defined in the companion policy paper are not repeated. Chinese renderings are given for the domestic categories so that the English can be checked against the source and used in the bilingual edition.

| TERM | MEANING IN THIS REPORT |
|---|---|
| MU (亩) | Chinese unit of land area equal to one fifteenth of a hectare or about 667 square metres. Used where source documents report areas in this unit. |
| YUAN (RMB) | China's currency. Amounts are reported as stated in the source documents and are not converted. |
| PREFECTURE-LEVEL CITY | Administrative tier between province and county. Huzhou is the example used and administers Anji and Deqing among its counties. |
| TWO MOUNTAINS PRINCIPLE (两山理念) | Principle first articulated in Anji in 2005 and later adopted as national policy, recognising clear waters and green mountains as assets of value. |
| FIFTEENTH FIVE-YEAR PLAN (十五五规划) | China's national planning period for 2026 to 2030, including sectoral plans issued under it, such as the Ecological Protection Fifteenth Five-Year Plan and the Ecological Environment Monitoring Fifteenth Five-Year Plan. |
| ECOLOGICAL ENVIRONMENT CODE (生态环境法典) | Consolidated environmental statute adopted in March 2026 and in force from August 2026, covering the monitoring, compensation and ecological product provisions cited here. |
| CIVIL CODE (民法典) | China's general private-law statute governing property, contractual and related civil rights. |
| ECOLOGICAL CONSERVATION REDLINE (生态保护红线) | Nationally designated areas under strict protection, mapped to parcel level and subject to defined limits on permitted activity. |
| THIRD NATIONAL LAND SURVEY (第三次全国国土调查) | National survey providing the national land-use classification and spatial survey base. Rights and ownership interests are recorded through the relevant rights-registration systems. |
| THREE LINES AND ONE LIST (三线一单) | China's ecological-environment zoning and access-control framework. The "three lines" are the Ecological Conservation Redline, the environmental quality bottom line and the resource utilisation upper limit; the "one list" is the ecological-environment access list, which specifies location-specific conditions and restrictions on development, pollution and resource use. |
| UNIFIED NATURAL RESOURCE RIGHTS REGISTRATION (自然资源统一确权登记) | National system recording rights over land, forest, water and other natural resources, including separate interests in the same place. |
| RIGHTS UNBUNDLING (三权分置) | Separation of collective ownership, household contract rights and transferable management rights over rural land. |

| TERM | MEANING IN THIS REPORT |
|---|---|
| OCCUPATION AND COMPENSATION BALANCE (占补平衡) | Requirement that cultivated land taken for construction be replaced with farmland of equivalent quantity and quality under applicable land-management rules. |
| KEY ECOLOGICAL FUNCTION ZONE (重点生态功能区) | Designation associated with central fiscal transfers, which increase with protected coverage. |
| NATIONAL PARK ZONING | Zoning into core protection and general control areas, with traditional use zones delineated inside the general control area for residents who cannot be relocated. |
| GROSS ECOSYSTEM PRODUCT (生态系统生产总值, GEP) | Monetary measure of ecosystem goods and services within a defined area, calculated under an applicable GEP accounting standard. |
| ECOLOGICAL PRODUCT VALUE | Assessed value of ecological goods and services associated with a defined place. |
| VALUE CHAIN (价值链) | A pathway through which a buyer pays for an ecological outcome in a landscape on which its sourcing or operations depend. |
| CLAIM | An assertion about an ecological outcome on which a third party is asked to rely or pay. Four types are distinguished here: equivalence, performance delivery, risk reduction and stewardship. |
| EVIDENCE RECORD | The common record for a defined area of ground. It identifies the spatial area, relevant rights and interests, ecological values and their provenance, applicable consents and access conditions, and the claims made against that ground. It exists before any financial or market instrument is issued and can support multiple uses, including public payments, lending, reporting and market transactions. |
| REGISTRY | The authoritative system for an issued instrument. It records the instrument's unique identity, account position, status, transfers and retirement, and maintains the link to the evidence supporting issuance. A registry records and administers an instrument once a valid basis for issuance exists; it does not create the legal, administrative or contractual authority on which issuance depends. |
| EXCHANGE / TRADING VENUE | The market infrastructure through which eligible instruments are offered, matched, traded and settled. It may provide trading accounts, matching, funds transfer, settlement and related transaction services, but the authoritative record of an instrument's identity, account position and lifecycle is maintained in the registry. |
| PROVENANCE | The recorded account of how a value was produced: which method and version produced it, when, from which source and whether it was measured, modelled or transferred. |
| DIRECTION AND FAVOURABILITY | Direction is the arithmetic change in a value over time. Favourability is a judgement about whether that change is desirable for a stated purpose. |

| TERM | MEANING IN THIS REPORT |
|---|---|
| ASSURANCE, VERIFICATION AND VALIDATION | Assurance is an engagement in which an independent practitioner obtains evidence and expresses a conclusion against specified criteria. Verification evaluates claims about events or results that have occurred; validation evaluates claims concerning intended future use or projected outcomes. |
| INTEROPERABILITY AND FUNGIBILITY | Interoperability means enabling one system to interpret and use a record maintained by another while preserving its original context and classification. Fungibility means treating units or outcomes as interchangeable for a defined purpose. Interoperability does not imply fungibility. |
| TAMPER EVIDENCE | Proof that a record has not been altered since it was written. It does not establish whether the record was accurate when created. |
| AUTHORITY | The legal, administrative or contractual basis permitting a party to take a specified action, such as receive payment, issue or transfer an instrument, pledge a right or use an instrument to discharge an obligation. Different actions may require different sources of authority. |
| ENTITLEMENT | A legally or contractually recognised right to receive a benefit or payment, or to exercise a defined claim. An entitlement relevant to a particular transaction does not necessarily arise from ownership, use or management rights in the underlying land or resource. |
| ADDITIONALITY | Three separate tests of what would have happened without the relevant intervention. Ecological additionality asks whether ecological condition, function or service is better than it would otherwise have been. Financial additionality asks whether the funding or finance would otherwise have been available or committed. Impact additionality asks whether a specific actor or intervention changed the outcome relative to what would otherwise have occurred. |

# References.


**[1]** Zeng, J., Bai, Y., Wilson, C. N. and Zadek, S. (2026). China's Institutional Foundations for Nature Markets. Policy Paper. IFS, Morphosis and The Landbanking Group. October 2026. https://www.morphosis.solutions/projects/catalyzing-chinas-nature-markets

**[2]** DB3305/T 271-2023, Technical specification for value assessment of ecological products in specific geographical units, Huzhou Administration for Market Regulation, issued 18 October 2023. https://std.samr.gov.cn/db/search/stdDBDetailed?id=08965E1DD493EC4DE06397BE0A0A58A2

**[3]** Ecological Environment Code of the People's Republic of China (生态环境法典), adopted 12 March 2026, in force 15 August 2026. https://www.mee.gov.cn/ywgz/fgbz/fl/202603/t20260313_1146496.shtml

**[4]** Opinions on Delineating and Strictly Observing Ecological Conservation Redlines 《关于划定并严守生态保护红线的若干意见》, General Office of the CPC Central Committee and General Office of the State Council, 2017. https://www.forestry.gov.cn/c/www/gwywj/57045.jhtml

**[5]** Notice on Strengthening the Management of Ecological Conservation Redlines (Trial) 《自然资源部 生态环境部 国家林业和草原局关于加强生态保护红线管理的通知（试行）》, Ministry of Natural Resources, Ministry of Ecology and Environment and National Forestry and Grassland Administration, 2022. https://www.mee.gov.cn/xxgk2018/xxgk/xxgk10/202208/t20220822_992127.html

**[6]** Giant Panda National Park Master Plan (2023 to 2030), National Forestry and Grassland Administration and the people's governments of Sichuan, Shaanxi and Gansu. https://www.forestry.gov.cn/u/cms/www/202404/121800447jxg.pdf

**[7]** Giant Panda National Park Spatial Management and Utilization Special Implementation Plan (2025 to 2030). https://www.forestry.gov.cn/c/www/gkjsxm/637103.jhtml

**[8]** GB/T 46869-2025, Gross ecosystem product accounting, national standard, 2025. https://openstd.samr.gov.cn/bzgk/std/newGbInfo?hcno=C1F1C28ADBFD8337DE86C70BD1480613

**[9]** DB33/T 2274-2020, Technical specification for gross ecosystem product accounting, terrestrial ecosystems, Zhejiang Province, 2020. https://std.samr.gov.cn/db/search/stdDBDetailed?id=B3A75FD368F525BFE05397BE0A0AE0AC

**[10]** DB34/T 5312-2025, Ecological product value assessment standard, Anhui Province, 2025. https://std.samr.gov.cn/db/search/stdDBDetailed?id=4721CC2324A7AC59E06397BE0A0AA21B

**[11]** Regulations on Ecological Protection Compensation, State Council, in force 1 June 2024. https://www.mee.gov.cn/zcwj/gwywj/202404/t20240410_1070369.shtml

**[12]** Opinion on Improving the Market Allocation System for Resource and Environmental Factors, CPC Central Committee and State Council, dated 14 May 2025. https://www.mee.gov.cn/zcwj/zyygwj/202505/t20250530_1120371.shtml

**[13]** Wetland Protection Law of the People's Republic of China (湿地保护法). https://www.mee.gov.cn/ywgz/fgbz/fl/202112/t20211227_965347.shtml

**[14]** Sichuan United Environment Exchange, written responses to the consortium, April 2026.

**[15]** Ya'an biodiversity credit methodology team and Shanshui Conservation Center, Response to Transaction Infrastructure Framework Questions, consortium working document, 2026.

**[16]** China Nature Markets Initiative, Huzhou and Anji field research, June 2026. Mission record. Published Chinese sources are cited alongside or in place of this record where available.

**[17]** United Nations et al., System of Environmental-Economic Accounting: Ecosystem Accounting, 2021. https://seea.un.org/en/content/system-environmental-economic-accounting-ecosystem-accounting-white-cover-version

**[18]** International Advisory Panel on Biodiversity Credits, framework and definition of a biodiversity credit, 2024. https://www.iapbiocredits.org/framework

**[19]** UNFCCC, Decision 2/CMA.3, Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement, 2021, including corresponding-adjustment requirements. https://unfccc.int/process-and-meetings/the-paris-agreement/article-6/article-6-decisions-and-documentation

**[20]** Nature Repair Act 2023 (Commonwealth of Australia) and Clean Energy Regulator, Nature Repair Market register, project and certificate status as of early September 2026. https://www.legislation.gov.au/C2023A00121/latest https://cer.gov.au/markets/reports-and-data/biodiversity-market-register

**[21]** Environment Act 2021 (England), statutory biodiversity gain and the biodiversity gain sites register. https://www.legislation.gov.uk/ukpga/2021/30/contents https://www.gov.uk/guidance/search-the-biodiversity-gain-sites-register

**[22]** Ministry of Environment and Sustainable Development (Colombia), habitat bank registration framework. https://www.minambiente.gov.co/direccion-de-bosques-biodiversidad-y-servicios-ecosistemicos/bancos-de-habitat-2/

**[23]** Regulations on Ecological and Environmental Monitoring, State Council, in force 1 January 2026. https://www.gov.cn/zhengce/zhengceku/202511/content_7047289.htm

**[24]** Regulations on Government Data Sharing, State Council, in force August 2025. https://www.gov.cn/zhengce/content/202506/content_7026294.htm

**[25]** Ecological Protection Fifteenth Five-Year Plan (环生态〔2026〕47号), six ministries led by the Ministry of Ecology and Environment, issued August 2026. https://www.mee.gov.cn/xxgk2018/xxgk/xxgk03/202608/t20260810_1163837.html

**[26]** Ecological Environment Monitoring Fifteenth Five-Year Plan, Ministry of Ecology and Environment and National Development and Reform Commission, July 2026. https://www.mee.gov.cn/xxgk2018/xxgk/xxgk03/202607/t20260713_1161428.html

**[27]** Data Security Law of the People's Republic of China; Provisions on Promoting and Regulating Cross-Border Data Flows, 2024. https://www.cac.gov.cn/2021-06/11/c_1624994566919140.htm https://www.cac.gov.cn/2024-03/22/c_1712776611775634.htm

**[28]** Outline of the Fifteenth Five-Year Plan for National Economic and Social Development and Long-Range Objectives, adopted by the National People's Congress, March 2026. https://www.ndrc.gov.cn/fggz/fzzlgh/gjfzgh/202603/U020260317369114704096.pdf

**[29]** International Public Sector Accounting Standards Board, IPSAS 51, Tangible Natural Resources Held for Conservation, 22 January 2026. https://www.ipsasb.org/publications/ipsas-51-tangible-natural-resources-held-conservation

**[30]** Kunming-Montreal Global Biodiversity Framework, CBD decision 15/4, Target 19, 2022. https://www.cbd.int/gbf/targets/19

**[31]** International Sustainability Standards Board, Nature-related Disclosures, ISSB Update July 2026, IFRS Foundation, 21 July 2026; due-process approval for an exposure draft of a proposed IFRS Practice Statement on nature-related disclosures, with a 120-day comment period. https://www.ifrs.org/news-and-events/updates/issb/2026/issb-update-july-2026/

**[32]** Regulation (EU) 2023/1115 on deforestation-free products, as amended by Regulation (EU) 2025/2650; application from 30 December 2026 for large and medium operators. https://eur-lex.europa.eu/eli/reg/2023/1115/oj https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32025R2650

**[33]** Van Landeghem K, Pascoe S, Wakiyama T and Scheufele G, From Guidance to Practice: Early Insights from SEEA EA Valuation, paper prepared for the 32nd Meeting of the London Group on Environmental-Economic Accounting, Guatemala City, September 2026. https://seea.un.org/en/events/london-group-environmental-economic-accounting-32nd-meeting

**[34]** Bennett, G., Lucena, L., Burns, C. and Watkins, K. (2026). Gaining Ground: State of Private Investment in Nature 2026. Ecosystem Marketplace and The Nature Conservancy, 22 June 2026. https://www.nature.org/en-us/what-we-do/our-insights/perspectives/gaining-ground-state-of-private-investment-in-nature-2026/

**[35]** Ministry of Finance of the People's Republic of China, Sustainability Information Assurance Services Standard No. 6101 — Basic Standard (Trial) (可持续信息鉴证业务准则第6101号——基本准则（试行）), Cai Kuai [2026] No. 1, issued 9 January 2026, published 27 January 2026. https://kjs.mof.gov.cn/zhengcefabu/202601/t20260127_3982643.htm

**[36]** International Organization for Standardization and International Electrotechnical Commission, ISO/IEC 17029:2019, Conformity assessment — General principles and requirements for validation and verification bodies, 2019. https://www.iso.org/standard/29352.html

**[37]** International Auditing and Assurance Standards Board, ISRS 4400 (Revised), Agreed-Upon Procedures Engagements, issued April 2020. https://www.iaasb.org/publications/international-standard-related-services-isrs-4400-revised

**[38]** International Organization for Standardization, ISO 14064-3:2019, Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements, 2019; confirmed current in 2024. https://www.iso.org/standard/66455.html

**[39]** United Nations Economic and Social Commission for Asia and the Pacific, Asian Development Bank, United Nations Environment Programme and Institute for Global Environmental Strategies, Asia-Pacific Synergies Report: Advancing Synergistic Solutions to the Triple Planetary Crisis and the SDGs, 2026, including the case study "Eco-function zoning map for biodiversity and supply chain risk screening in China", pp. 30 and 32. https://repository.unescap.org/items/3a2c3686-2bf4-4695-8503-9338214f863b

**[40]** Institute of Public and Environmental Affairs, Green Supply Chain Corporate Information Transparency Index (CITI), current evaluation framework and published materials, 2014–2026; CITI Evaluation Guidelines 13.0, March 2026. https://wwwen.ipe.org.cn/GreenSupplyChain/download.aspx?isbuild=1&ishour=0

**[41]** Taskforce on Nature-related Financial Disclosures, Tools Catalogue: Institute of Public & Environmental Affairs Bio-Risk Scan, 2026. https://tnfd.global/assessment-guidance/tools-catalogue/?tools-id=11336

**[42]** Taskforce on Nature-related Financial Disclosures, Guidance on Value Chains, Version 1.0, March 2026. https://tnfd.global/publication/guidance-on-value-chains/

**[43]** Science Based Targets Network, Value Chain Assessment — Step 1b, current corporate target-setting guidance, 2025–2026. https://sciencebasedtargetsnetwork.org/companies/take-action/assess/value-chain-assessment/

**[44]** Personal Information Protection Law of the People's Republic of China (中华人民共和国个人信息保护法), adopted 20 August 2021, in force 1 November 2021, Articles 6 and 13–15. https://en.spp.gov.cn/2021-12/29/c_948419.htm

**[45]** Cover News (封面新闻), "Feng Juntao, Director of the Ya'an Municipal Bureau of Culture, Radio, Television, Sports and Tourism: Building cultural-tourism products and improving service quality so visitors can enjoy 'panda-style slow living'", West China Metropolis Daily, 27 August 2025. https://www.sohu.com/a/928695904_120952561

**[46]** Sina Finance, "Holding the Green Finance Pen", reproducing China Banking and Insurance News, 27 October 2025; corroborated by China National Radio, 31 October 2025. https://finance.sina.com.cn/jjxw/2025-10-27/doc-infvhvux2348879.shtml https://zj.cnr.cn/zhuanti/jhxpz/xxzfq/20251031/t20251031_527414344.shtml

**[47]** National Forestry and Grassland Administration, "Zhejiang Anji: Bamboo Forest Air Turned into Real Gold and Silver", from China Green Times, 18 June 2025. https://www.forestry.gov.cn/c/www/gglcswcy/630048.jhtml

**[48]** China Economics, "Zhejiang Deqing: Good Air Sold for a Good Price", from Economic Daily, 21 May 2022. https://www.ce.cn/xwzx/gnsz/2008/202205/21/t20220521_37603032.shtml

**[49]** Xinhua Finance, "Wetland Carbon Credits Realize Ecological Value", 19 May 2023. https://www.cnfin.com/qy-lb/detail/20230519/3866609_1.html

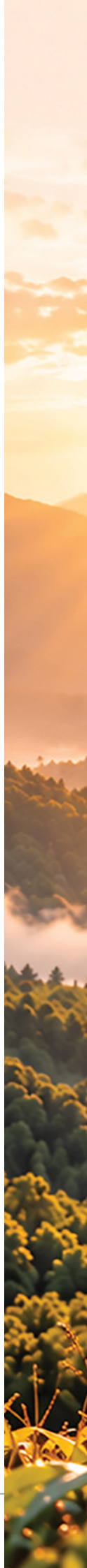
**[50]** Tide News, "Yuhang and Deqing Join Hands: Ecological Compensation Mechanism Brings Clean Water to a Stream", 12 June 2023; corroborated by Zhejiang Online, "The Wager/Win-win", 24 September 2022. https://www.yuhang.gov.cn/art/2023/6/12/art_1532133_59046217.html https://zjnews.zjol.com.cn/zjnews/202209/t20220924_24842456.shtml

**[51]** People.cn Zhejiang, "Huzhou Anji Explores Cross-regional Ecological Compensation Model", 15 August 2025. https://zj.people.com.cn/n2/2025/0815/c186327-41323391.html

**[52]** Hangzhou CPPCC, "From Xin'an River to East Tiaoxi River", published via Hangzhou Daily, 11 January 2023. https://www.hzzx.gov.cn/cshz/content/2023-01/11/content_8445600.htm

**[53]** China City News, "Zhejiang Anji Decodes 'Two Mountains Bank'", 12 July 2021. https://paper.people.com.cn/zgcsb/html/2021-07/12/content_3057559.htm

**[54]** Australian Government, National Environmental Standard (Matters of National Environmental Significance) 2026 and National Environmental Standard (Environmental Offsets) 2026, made under the Environment Protection and Biodiversity Conservation Act 1999, registered August 2026; Department of Climate Change, Energy, the Environment and Water, EPBC Act reform guidance on environmental protection, restoration and offsets. https://www.legislation.gov.au/F2026L01094/asmade https://www.legislation.gov.au/F2026L01093/asmade https://www.dcceew.gov.au/environment/epbc/epbc-act-reform/standards





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