

GUYANA'S LOW CARBON DEVELOPMENT STRATEGY 2030

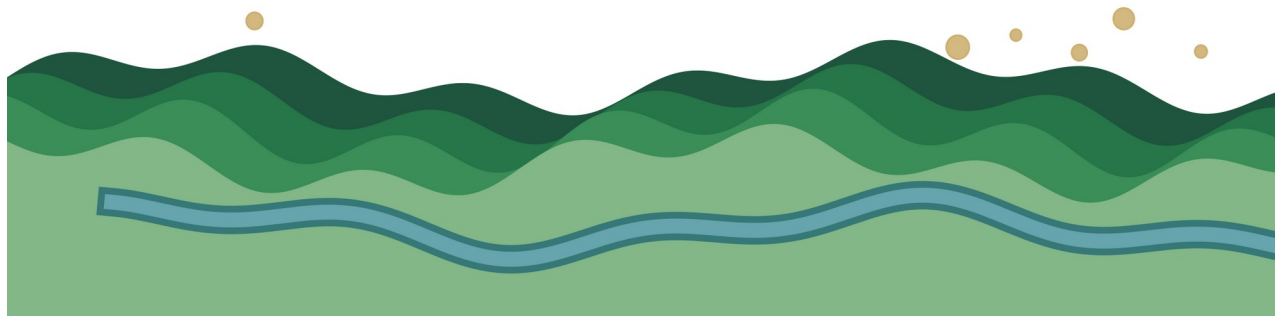
Forest finance, national development and climate accountability

An independent global evidence review | Comprehensive research edition 2.0 | 24 September 2026

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Original conceptual illustration of Guyana forests and waterways. Not a geographic map.

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Executive overview

Comprehensive edition, September 2026. This expanded report incorporates the June 2026 ART TREES 3.0 revision, the September ART verification status, additional examination of the July 2026 NDC, and distinct chapters on accounting, carbon-market exposure, petroleum and public finance, Indigenous safeguards, biodiversity, electricity, mining, adaptation and independently verifiable implementation. It does not claim external peer-review certification. [3,11,24,35,36]

Guyana's Low Carbon Development Strategy (LCDS) is an attempt to reorganise the relationship between tropical forests, national development and international finance. The original strategy emerged in 2009, alongside a results-based partnership with Norway. LCDS 2030, finalised in 2022, broadened the national framework to include jurisdictional forest-carbon markets, lower-emission electricity, Indigenous and hinterland development, coastal adaptation, and emerging priorities in biodiversity, water management and sustainable urban growth. The country's July 2026 nationally determined contribution (NDC) further connects this framework to its commitments under the Paris Agreement. [1,2,3,18]

The central issue for a global audience is not whether protecting forests has value. The relevant questions concern how that value is measured, who pays, who receives the proceeds, how the country demonstrates genuine climate outcomes, and how the model performs when mining, oil production, energy demand and severe climate events place competing demands on land and public resources. Evidence supports examination of Guyana's financial and institutional innovations alongside unresolved questions about the durability of carbon-credit methodologies, land rights, sectoral emissions, implementation quality and independently demonstrated social outcomes. [2,4,11,12,22]

This report distinguishes four separate forms of evidence throughout. **Verified observations** come from dated forest monitoring, registered issuances and official financial receipts. **Government commitments** describe intended targets and budget allocations. **Stakeholder positions** record documented interpretations, including disagreement about consultation and Indigenous consent. **Illustrative scenarios** model future conditions without predicting outcomes. This separation prevents a policy ambition, a contracted sales value, an issued carbon credit and an independently observed development result from appearing interchangeable.

At the end of 2023, Guyana's forestry monitoring system reported approximately 18 million hectares of forest and a national deforestation rate of **0.053%**, up from **0.036%** in 2022. The 2023 mapped deforestation area was **9,353 hectares**; mining and mining infrastructure accounted for **5,853 hectares**, approximately **62%** of mapped clearing. The monitored annual emissions from deforestation and forest degradation were **13.94 million tonnes of CO₂**. These values describe 2023, not 2026. A later equivalent national monitoring report was not verified in the source set used for this edition. [4,5]

Guyana's official LCDS payments timeline lists **US\$353.5 million** received from its commercial carbon-credit programme between December 2022 and March 2026. The 2022 Hess agreement established a minimum ten-year purchase value of **US\$750 million**, subject to delivery and the contract's terms. Receipt, contracted minimum value and potential future market revenue are separate financial measures. Government policy reserves at least **15% of carbon-credit revenue** for direct village-led investment. In July 2026, the Government announced another **G\$2.5 billion** for Amerindian communities, reporting cumulative programme disbursements of **G\$16.9 billion**. Those cumulative transfers should be reconciled against payment periods, exchange rates, additional allocations and audited village-bank records before drawing a precise programme-wide percentage. [6,8,9,26]

The Architecture for REDD+ Transactions (ART) issued **9,085,923 TREES credits** for Guyana's 2023 vintage in February 2026, with CORSIA eligibility indicated on the registry. ART accepted Guyana's 2024 monitoring report in February 2026 for independent verification; ART's September 2026 newsletter still described Guyana as being in validation or verification. Accepted monitoring information does not constitute newly issued or sold 2024 credits. [10,24,25]

A central distinction concerns market integrity. ART has received programme-level approval from the Integrity Council for the Voluntary Carbon Market (ICVCM). Yet ICVCM's **11 May 2026** decision found that the current ART TREES version 2.0 high-forest, low-deforestation (HFLD) methodology requires significant remedial changes before the relevant credits qualify for the Core Carbon Principles (CCP) label. The decision explicitly stated that none of the then-issued credits under this HFLD methodology qualified for CCP labels. This is distinct from ICAO CORSIA eligibility. An accurate international account needs to present all three statuses separately: ART issuance, CORSIA eligibility and CCP methodology approval. [10,11,23]

The July 2026 NDC sets out a planned electricity mix for **2030** of **1% heavy fuel oil, 64% natural gas and 35% renewable energy**. The NDC's 2035 plan envisages **1% heavy fuel oil, 58% gas and 41% renewables**. Natural gas represents a lower-emission fossil fuel when displacing heavy fuel oil or diesel under suitable operating conditions; the NDC does not classify it as renewable. Electricity-system targets should not be read as targets for all domestic industrial emissions, offshore production emissions or the eventual combustion of Guyana's exported petroleum. [3,21,22]

The report's principal contribution is an accountability framework relevant beyond Guyana. It links forest outcomes to public finance and community-level results while examining alternative market conditions, Indigenous consent arrangements, mining pressures, infrastructure delays, flood risk and emissions accounting. A reproducible data register, source-status hierarchy, scenario assumptions, evidence gaps and a proposed public dashboard are included to support continued external examination.

At a glance: six distinctions for international readers

Measure	Documented position as of this edition	Interpretation
Forest change	2023 mapped deforestation: 9,353 ha; rate: 0.053% [4]	Dated land-cover outcome, not a permanent performance guarantee.
Carbon finance	US\$353.5m received by March 2026 [6]	Realised payments, not the US\$750m contracted minimum.
Community participation	At least 15% revenue allocation is policy; G\$16.9bn cumulative disbursement reported July 2026 [3,8]	Financial transfer alone does not establish consent or verified project outcomes.
Credit status	2023 vintage: 9,085,923 issued February 2026 [10]	Issued credits are not necessarily sold, retired or CCP-labelled.
Method integrity	ICVCM ordered remedial action for ART TREES v2.0 HFLD in May 2026 [11]	Programme approval and methodology approval differ.
Electricity transition	NDC 2030: 64% natural gas, 35% renewables, 1% heavy fuel oil [3]	Grid mix excludes exported oil-use emissions.

1. Purpose, audience and method

This paper addresses international climate negotiators, development-finance institutions, investors, researchers, Indigenous organisations, civil-society groups, forest countries and the Guyanese public. Its objective is to explain Guyana's LCDS in a form suitable for global examination, including the record of implementation, the central policy trade-offs and the evidence needed to assess future performance. The paper neither assumes that a policy commitment establishes an achieved outcome nor treats the existence of a disputed claim as proof of misconduct.

The evidence window ends on **24 September 2026**. Primary sources include the 2022 LCDS, October 2024 implementation update, July 2026 NDC, national MRVS technical reports, public payment timelines, ART and ICAO documents, the May 2026 ICVCM decision, Guyana's national budget statements and UNFCCC filings. The analysis also includes World Bank and UNDP materials and the documented positions of the Amerindian

Peoples Association (APA). The source register records titles, dates and stable public links. No confidential AGM Inc. information has been used. [1-34]

Numbers have been assigned to their original year, reporting boundary, unit and evidentiary status. For example, the 2023 MRVS records mapped deforestation, estimated emissions and independent accuracy-assessment findings. The 2026 NDC records forward-looking national objectives, including conditional outcomes dependent on finance. A 2026 government press statement records an announced expenditure or disbursement but does not replace a village-level audit. The sources differ in scope and methodology; the paper identifies those differences rather than combining incompatible totals. [3,4,8]

Policy and regulatory positions appear only as dated, attributed descriptions. Proposals in the later sections are analytical options and monitoring designs rather than a political endorsement or an investment recommendation. Scenario calculations are transparent illustrations based on stated assumptions, not revenue forecasts or assertions that future credit issuance is assured.

1.1 Methodological safeguards

The analysis applies seven controls. First, original policy documents take precedence over retrospective promotional summaries when they disagree about the original commitment. Second, newer official instruments are used for current targets, while earlier plans retain their proper historical context. Third, independent scientific or standards assessments are reported next to official claims concerning environmental integrity. Fourth, opposing stakeholder accounts are attributed and documented without an unsupported finding of fact. Fifth, monetary totals identify receipts, commitments, allocations and expenditure as different stages. Sixth, land-cover figures are kept separate from carbon-stock, net-removal and crediting-baseline estimates. Seventh, source links remain available for independent reconstruction. [1-4,11-14,20]

The 2023 MRVS is the most recent full-year national deforestation assessment in the primary documents verified for this research. A 2024 TREES monitoring report was submitted and accepted in 2026, but acceptance initiates validation and verification rather than establishing final issuance. This paper does not relabel a monitoring submission as an issued credit or imply that the 2023 deforestation rate describes 2024 to September 2026. [4,24,25]

2. What LCDS 2030 is and how the framework developed

Guyana's first LCDS emerged in 2009 during a period when international climate finance focused heavily on reducing ongoing forest loss. A country with extensive intact forest and historically low deforestation posed a different design problem: conventional avoidance payments might undervalue existing conservation when historical deforestation provided the baseline. The Guyana-Norway partnership established a results-based bilateral route, using monitored forest outcomes and governance conditions to mobilise finance for a low-carbon development programme. Norway committed up to US\$250 million under the original partnership. GRIF reports total Norwegian contributions of approximately **US\$221.8 million**, including **US\$198.5 million** directed to the fund. Other official material reports amounts near US\$227 million, reflecting differences in period, investment income and accounting perimeter; these figures should not be described as identical. [9,18]

The initial portfolio supported monitoring systems, hinterland access to information and services, Amerindian land titling, village economic development, solar installations, institutional capacity and flood-management infrastructure. Its investment mechanism placed financial resources through the Guyana REDD+ Investment Fund rather than treating the payments as a purely unassigned transfer to the national treasury. UNDP's Phase 1 evaluation of the Amerindian Development Fund examined project performance and asset sustainability; it is a historical assessment of the earlier programme, not an evaluation of all LCDS 2030 community projects. [18,19,31]

In October 2021, the Government launched consultation on an expanded strategy. The LCDS 2030 was finalised in July 2022 after an approximately seven-month consultation process and was approved by the Multi-Stakeholder Steering Committee. The National Tshaos' Council endorsed the final strategy in July 2022, and the National Assembly passed a resolution in August. The consultation record includes national stakeholder sessions, regional meetings, written submissions and responses. Formal national endorsement and the quality of consent within every affected village are separate questions, a distinction addressed in Chapter 7. [1,3,13,34]

The updated strategy reorganises development around four interdependent elements. It seeks payments for forest climate services and, over time, broader ecosystem services. It aims to transform electricity and promote new low-carbon productive activity. It assigns priority to resilience against climate impacts, especially on Guyana's exposed coast. It also sets out arrangements for participation and distribution, including dedicated village-led programmes. Later development plans extend to biodiversity, urban form and water management. [1,2]

2.1 Institutional map

The Office of the President coordinates the LCDS framework and the Multi-Stakeholder Steering Committee supports oversight. The Guyana Forestry Commission maintains the forest MRVS. ART administers TREES validation, verification and credit issuance through its external standard and registry, while different external entities handle ICAO approval and ICVCM methodology assessment. Budget documents and implementing agencies account for domestic project allocations. Indigenous villages formulate Village Sustainability Plans and hold designated accounts under the stated benefit-sharing model. GRIF retains a role for earlier Norway-financed projects. These institutional functions differ and should not be collapsed into a single claim of independent oversight. [1,2,4,6,11,18]

The framework's conceptual significance lies in the linking of forest stewardship to investment in sectors with different time horizons. Carbon issuance and sales operate under verification and market cycles. Electricity and water infrastructure require engineering, procurement and maintenance over decades. Community-led enterprises and land-tenure administration require local institutions and long-term support. The credibility of the national strategy depends on reporting outcomes at all three levels rather than presenting a carbon-market milestone as proof that every downstream investment has succeeded.

2.2 Milestone ledger

Date	Event	Evidentiary status
2009	Guyana-Norway forest partnership and original LCDS [9,18]	Agreement and historical programme.
2021-2022	Consultation, final LCDS 2030, national resolutions [1,3,34]	Strategy and formal approvals.
Dec 2022	ART issued about 33.47m credits for 2016-2020; Hess contract announced [9,28]	Historical issuance and contracted purchases.
Feb 2024	ART issued about 7.14m credits for 2021 [28]	Registered issuance, separate from 2023 vintage.
Oct 2024	Government published multi-sector LCDS implementation update [2]	Reported progress and future plans.
Feb 2026	ART issued 9,085,923 credits for 2023 [10]	Verified issuer statement.
Feb 2026	ART accepted Guyana's 2024 monitoring report [25]	Verification process initiated, not issuance.
Mar 2026	Official cumulative LCDS payment timeline reached US\$353.5m [6]	Government-reported receipts.

Date	Event	Evidentiary status
May 2026	ICVCM required significant HFLD methodology revisions [11]	External methodology assessment.
Jul 2026	Guyana filed NDC 3.0 for 2025-2035 [3]	Current international commitment.
Sep 2026	ART reported Guyana within ongoing verification work [24]	Credit-process status at publication.

3. The forest asset: measuring conservation and pressure

Guyana sits on the northern shoulder of South America within the Guiana Shield, a region containing extensive tropical forest, major freshwater systems and long-established Indigenous communities. The 2026 NDC estimates approximately **18.5 million hectares** of rainforest, representing about **85%** of national land area, and describes forest carbon storage exceeding **21 billion tonnes of CO₂ equivalent**. These are national-document estimates; measurement approaches, reference years and land-cover definitions differ across publications. The report therefore uses a range of approximately 18 to 18.5 million hectares instead of suggesting spurious precision across datasets. [2,3,28]

The climate value of standing forest includes stored carbon, continued carbon uptake, protected soils, hydrological functions and avoided emissions from land conversion. Yet carbon accounting requires precise distinctions. The **stock** is carbon already stored; an annual **removal** is net atmospheric uptake over a specified year or period; **gross emissions** from deforestation and degradation represent losses associated with documented activities. A jurisdictional **credit** is a standard-specific, conservatively adjusted accounting unit relative to an approved reference level, with safeguards and deductions. Neither forest area nor total stored carbon translates directly into credits available for sale. [3,4,9]

Guyana's 2026 NDC describes annual forest uptake of approximately **68 million tonnes of CO₂**, while older official communication uses higher sequestration estimates. Its Third National Communication contains LULUCF removal projections expressed on another inventory basis. Such figures should not be used interchangeably without reconciling net versus gross, sector boundary, forest definition, treatment of managed lands and inventory methodology. The safest global presentation is to report the figure with its exact source and boundary, not to assert a single timeless annual absorption number. [2,3,22]

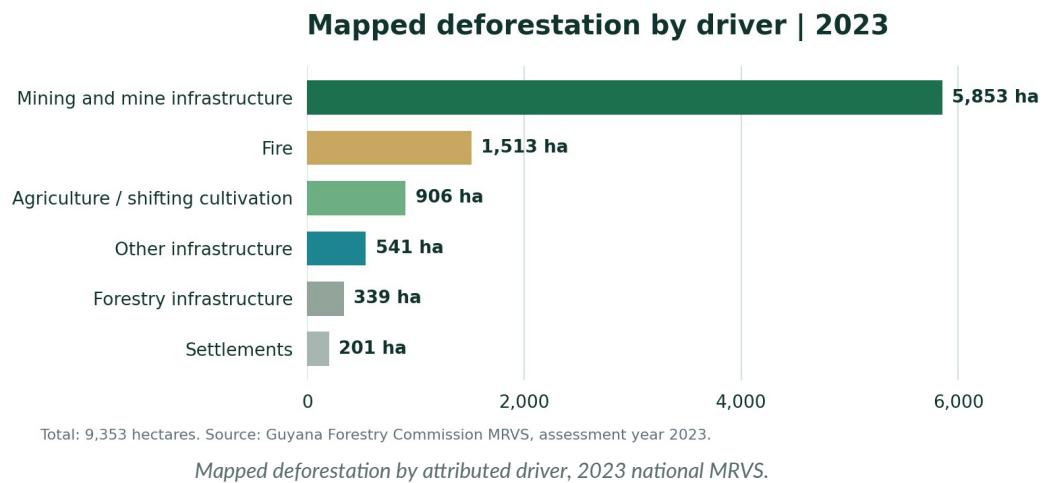
3.1 What the national MRVS reported

The Guyana Forestry Commission's MRVS applies satellite observation, change mapping and independent accuracy assessment, with reporting on major deforestation and degradation drivers. The Year 2023 report records **9,353 hectares** of mapped deforestation and a **0.053%** annual deforestation rate. That compares with **6,470 hectares** and **0.036%** in 2022. The annual mapped area therefore increased by **2,883 hectares**, or approximately **44.6%**, from the 2022 base. These figures indicate a year-on-year increase within a still-low absolute national rate. They do not establish the result for subsequent years. [4,5]

For 2023, the mapped driver categories were mining and mining infrastructure, **5,853 hectares**; fire, **1,513 hectares**; infrastructure, **541 hectares**; agriculture, **475 hectares**; shifting cultivation, **431 hectares**; forestry infrastructure, **339 hectares**; and settlements, **201 hectares**. Rounding the category areas produces the total mapped clearing of 9,353 hectares. Mining and its associated infrastructure represented about **62.6%** of the mapped total using unrounded arithmetic, reported as 62% in the official table. Fire accounted for roughly 16%. A separate sample-based accuracy assessment estimated approximately 8,250 hectares, with a 97.5% confidence interval spanning 5,842 to 10,658 hectares. The mapped result and sample-based estimate serve different statistical purposes. [4]

The same report estimated approximately **9.887 million tonnes of CO₂** from deforestation and **4.049 million tonnes** from degradation, approximately **13.936 million tonnes combined**. This is forest-sector gross

emissions associated with the monitoring scope. It is not a countrywide greenhouse-gas inventory, nor is it a direct measure of Guyana's net atmospheric balance. Changes in emissions from offshore oil operations and domestic transport require their own inventories. [4,21]



3.2 Interpreting a low baseline under development pressure

High-forest, low-deforestation countries face a distinctive financing challenge. A low historical rate means there is less historical deforestation available to 'avoid' under a simple historical baseline, even though rising commodity prices, infrastructure development, illegal mining and settlement could create future forest pressure. The environmental-integrity challenge is determining whether a proposed forward-looking crediting level represents a justified future threat rather than an inflated scenario used to generate units. A standard must also address leakage across jurisdictions, reversals, uncertainty, double issuance and the permanence of conserved forest over time. [9,11,28]

Guyana's documented 2023 increase shows why monitoring matters even when national forest coverage remains extensive. Mining corridors, new roads and fire create spatially concentrated risks. A national rate of 0.053% should not obscure disproportionate ecological impacts in watersheds, biodiversity areas or customary-use territories. Future reporting should present district-level forest loss, mine-disturbance footprints, river sediment trends, restoration outcomes and meaningful community observations beside the national aggregate. These are recommended indicators, not claims that all are currently published.

The independent UNFCCC technical analysis of Guyana's REDD+ annex for the 2013-2022 period described the data as overall consistent with the relevant REDD+ reporting guidelines and mostly transparent and consistent with the assessed reference level, while also identifying areas for technical improvement. That external technical-review conclusion should be cited within its 2013-2022 reporting scope; it does not certify every subsequent ART credit or every social outcome under LCDS 2030. [20]

4. Carbon markets: from monitoring to market integrity

Guyana's Phase II financing route relies on jurisdictional credits issued under ART's TREES standard, building upon the earlier results-based Guyana-Norway agreement. Jurisdictional accounting covers a national or sufficiently large subnational territory, aiming to capture deforestation displacement within the covered region and align credit accounting with the government responsible for forest regulation. Standard-level verification, public registries and host-country accounting then determine how credits are issued and transferred. The presence of a jurisdictional framework does not eliminate methodological judgment or dispute; the 2026 independent ICVCM assessment illustrates the importance of ongoing scrutiny. [9,10,11,18]

The chronological inventory matters. ART issued approximately **33.47 million 2016-2020 credits** in December 2022 and approximately **7.14 million 2021 credits** in February 2024. ART's February 2026 issuance of **9,085,923 2023-vintage credits** added a further distinct cohort. Registry status, buyer contract allocations, host-country authorisations, corresponding adjustments, transfers and final retirement or cancellation must be tracked at the **serial-number level** to establish exactly how any individual unit has been used. There is no basis for treating the sum of historic issuance as cash received or credits already retired. [9,10,28]

4.1 The Hess transaction and what its price terms mean

The December 2022 agreement committed Hess Corporation to buy **37.5 million credits** in a transaction described by Guyana as carrying a **minimum value of US\$750 million**. The stated price floor was **US\$15 per credit** for the 2016-2020 vintages, **US\$20** for 2021-2025 and **US\$25** for 2026-2030. The arrangement consisted of **12.5 million historic credits** and an expected **2.5 million credits per year** over 2021-2030. Issuance and contractual delivery conditions remain material. Price floors on a contracted volume should not be presented as the market price for all present or future Guyanese credits. [9]

The official payment timeline records **US\$75 million** in December 2022; **US\$37.5 million** in January 2023; **US\$37.5 million** in July 2023; **US\$37.5 million** in January 2024; **US\$50 million** in July 2024; **US\$58.1 million** in March 2025; and **US\$57.9 million** in March 2026. Together these seven published amounts total **US\$353.5 million**. The June 2026 statement rounding the received value to about US\$353 million is consistent with this timeline within normal rounding. Any new publication should check the live payment page for subsequent transactions rather than assume the total remains unchanged after this edition. [6,7]

4.2 Five credit-integrity questions

Baseline and additionality. A credible unit needs an evidence-based relationship between the reference level and the likely emissions trajectory absent the programme. High historic forest cover does not, by itself, resolve the counterfactual. Scenario modelling should present projected threat, uncertainty intervals and independent review of baseline assumptions. **Permanence and reversals.** A preserved forest remains exposed to mining, fire, drought, illegal activity and policy changes. Buffer and replacement provisions must be understood by buyers. **Leakage.** Restricting extraction in one location could shift pressures into another; national mapping reduces, but does not remove, the need for spatial monitoring and enforcement. **Double claims.** International use of a mitigation outcome introduces questions of authorisation, corresponding adjustments and national accounting. **Social safeguards.** A credible registry and carbon methodology do not replace evidence of lawful land tenure, informed participation, accessible grievance mechanisms and fair benefit distribution. [3,11,12,23,28]

4.3 ART, CORSIA and ICVCM are not the same approval

ART's validation and verification process supports the issuance of TREES credits. The International Civil Aviation Organization's CORSIA scheme determines which credits and programmes qualify for specified airline compliance periods, subject to applicable authorisations and double-claiming controls. The ICVCM independently assesses carbon-crediting programmes and methodologies against the Core Carbon Principles to decide eligibility for a separate CCP quality label. An issued TREES credit can therefore have one regulatory or programme status without possessing every other label. [10,11,23]

ART stated in March 2026 that the **2023 vintage** had been issued and labelled CORSIA-eligible. Separately, ICVCM found in **May 2026** that ART TREES v2.0's **HFLD crediting methodology** needed significant remedial action before CCP approval, including evidence that historic emissions materially underestimate likely future emissions and independent assessment of the proposed threat. Its decision indicated that the roughly **58.4 million HFLD credits issued under the assessed methodology at that date** were **not eligible for CCP labels**.

ART's programme-level approval remains a different status. The decision should not be restated as revocation of the already documented CORSIA eligibility or as proof that Guyana's forests lack climate value. [10,11,23]

A credible global presentation places these findings side by side rather than citing programme approval while omitting the methodology decision. It also avoids claiming that a 2024 report under review had produced 2024 marketable credits. ART confirmed in September 2026 that Guyana remained among jurisdictions in validation and verification. [11,24,25]

4.4 International accounting and the NDC

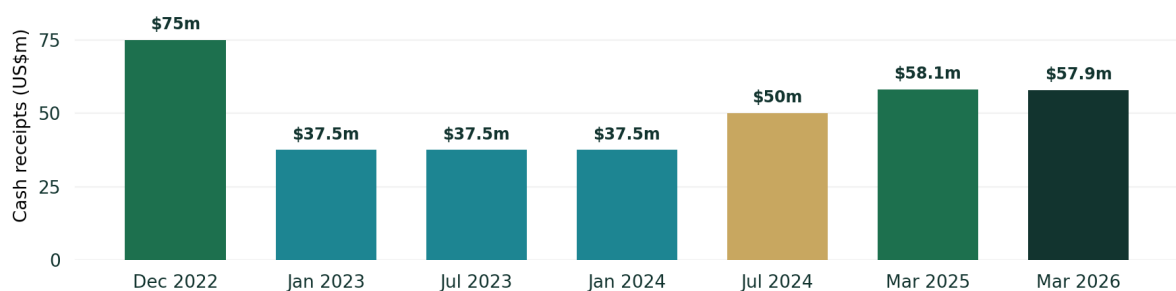
The July 2026 NDC describes the ability, subject to adequate financial incentives, to provide **up to 32,695,707 tonnes CO₂e annually** of forest-sector mitigation under its internationally referenced approach. Its target table separates **23,042,163 tonnes** associated with market-based finance and **9,653,544 tonnes** associated with other finance-dependent action. These are conditional national targets based on specified reference-level and policy assumptions, **not** proof that those numbers of new ART credits have been issued, sold or authorised in 2026. The NDC commits to restricting market-facing credits to amounts permitted under TREES, while exploring non-market finance for the balance. [3]

Where credits transfer internationally and the purchasing party makes a claim, the host country's authorisation and corresponding-adjustment treatment should be publicly traceable for the exact mitigation outcomes concerned. Evidence exists of Guyana's early reporting of such an adjustment in the context of its 2021 credits, but future transfers must remain independently identifiable. The essential question for a buyer is not whether a registry entry exists. It is whether the precise serial numbers, vintage, host authorisation, applicable scheme eligibility, cancellation or retirement and accounting treatment all support the intended claim. [23,28]

5. From forest finance to development finance

A carbon transaction becomes relevant to national development only when revenues are received, allocated, invested and converted into services or durable productive assets. Guyana's implementation framework allocates a minimum 15% of carbon-credit revenue directly to eligible Indigenous communities and reserves the remainder for national and multi-community LCDS priorities. The second category covers programmes such as adaptation infrastructure, renewable energy, land titling and other investments. Both channels need financial reporting with enough detail to identify funding source, date, beneficiary, project stage and observed result. A published commitment to an allocation percentage is the beginning of an accountability chain rather than its end. [1,2,3,9]

Reported carbon-credit payments | cumulative US\$353.5m



Source: Government of Guyana, official LCDS programme payment timeline (accessed 24 Sept 2026).

Government-reported carbon-credit payments through March 2026.

5.1 The financial reconciliation problem

Several frequently cited numbers answer different questions. The **US\$750 million Hess figure** is a contracted minimum associated with a decade of specified purchases. The **US\$353.5 million** on the official payment timeline represents published receipts through March 2026. A national budget allocation authorises planned spending in a fiscal year. A disbursement to a village bank records a transfer from the programme to a designated recipient. Actual village expenditure requires project-level vouchers, procurement records and completion evidence. An installed solar array or functioning drainage structure is a physical output; improved household service, flood losses avoided or income generated is an outcome. No individual figure should be substituted for the next. [6,8,9,17,26]

The Government's October 2024 update reported more than **G\$9 billion** allocated to over 240 villages and cited over **1,300 village projects initiated**. The January 2025 budget stated that the programme transferred **15% of proceeds in 2023** and **26.5% in 2024**, taking total village transfers above **G\$9.5 billion** by that time. On **14 June 2026**, the Government described nearly **3,000 Indigenous community projects implemented**. On **22 July 2026**, it announced another **G\$2.5 billion**, putting reported cumulative village disbursements at **G\$16.9 billion**. These figures arise from different reporting dates and distinguish 'initiated' from 'implemented' only where the original source does so. A single independently audited cohort list is required to test completion, financial reconciliation and sustained use. [2,8,26,29]

The public should be able to reconstruct a simple cash waterfall each year: opening programme balance; credit-sale receipts by transaction and vintage; relevant foreign-exchange rate; transfers to the 15% community stream; transfers and authorisations for the 85% national stream; interest or investment income where applicable; committed but unspent balances; procurement and operating costs; and closing reconciled balances. Community allocation percentages should identify the denominator, reporting period and whether a payment represents the statutory/policy minimum, an additional transfer or another public programme. This presentation also reduces the risk of double counting a community project financed by several sources.

5.2 National investments and economic transmission

Climate adaptation is a major intended use of LCDS proceeds. Budget and programme documents identify large drainage and irrigation investments, canals, pumps, sluices and flood-resilience assets. The World Bank's June 2024 coastal project approval was designed to benefit around **320,000 people**, or about **40%** of the population used in the appraisal. That is a **target population**, not a verified 2026 beneficiary count or a measured reduction in flood damage. The same rule applies to agricultural acreage to be protected and to energy cost savings announced ahead of commissioning. [2,15,17,26]

Solar and electricity programmes create another transmission pathway. The Government's 2026 budget reported the installation of solar farms, mini-hydropower assets, **46 solar mini-grids** and the distribution of **37,230 solar home systems** since 2020. These are Government-reported physical outputs; operational availability, maintenance performance, cost per connected user and measured electricity generated require a separate project-level series. The Guyana Energy Agency's March 2026 grid-connected household initiative adds a framework for rooftop generation, with published indicative system costs and expected savings that depend on local consumption, tariffs, equipment output and installation quality. [16,17]

Village-led investments include agricultural equipment, tourism facilities, transport assets, schools, community buildings and connectivity. Benefits differ by project type: a tractor serving several farms requires access rules, trained operators and an equipment-maintenance budget; an ICT hub requires reliable energy, bandwidth, device replacement and local training; a transport asset needs insurance, safety management and an economically viable operating schedule. A community-development portfolio should therefore report service use, maintenance and distribution across residents, not only project counts and purchase values.

5.3 A public financial reporting standard

For each reported investment, the minimum disclosure dataset would contain project identifier, region and village where relevant, approved budget, funding stream, amount transferred, expenditures to date, procurement method, vendor or delivery mechanism, completion date, maintenance owner, output measure, outcome measure and most recent independent review. Personal data and culturally sensitive information require suitable protection. Public data should nevertheless allow an auditor to compare original priorities with funded projects and to determine whether capital expenditure resulted in a functioning service. This is a recommended design for future reporting, not a representation of a current government database.

The proposed programme-level indicators are **receipts recognised, community transfers reconciled, projects physically complete, assets functioning after 12 and 36 months, beneficiaries reached, and climate or livelihood outcomes measured**. The first two indicators demonstrate financial flows. The middle two demonstrate execution and sustainability. The final two demonstrate social and environmental results. Presenting these layers together would help international partners understand the LCDS as a development-finance model rather than solely a forest-credit transaction.

6. Electricity transition and the emissions boundary

Guyana faces growing power demand associated with households, mining, transport, services and industrial expansion. Historically, the main public grid depended heavily on diesel and heavy fuel oil. LCDS 2030 identifies natural gas as a transitional source to displace higher-emission liquid fuels while solar, hydropower, wind, grid reinforcement and energy efficiency expand. The programme's economic rationale includes reliability and affordability as well as lower electricity emissions. Actual net reductions depend on commissioned capacity, dispatch, fuel displacement, grid losses, methane leakage and power-system utilisation. [1,2,3,17]

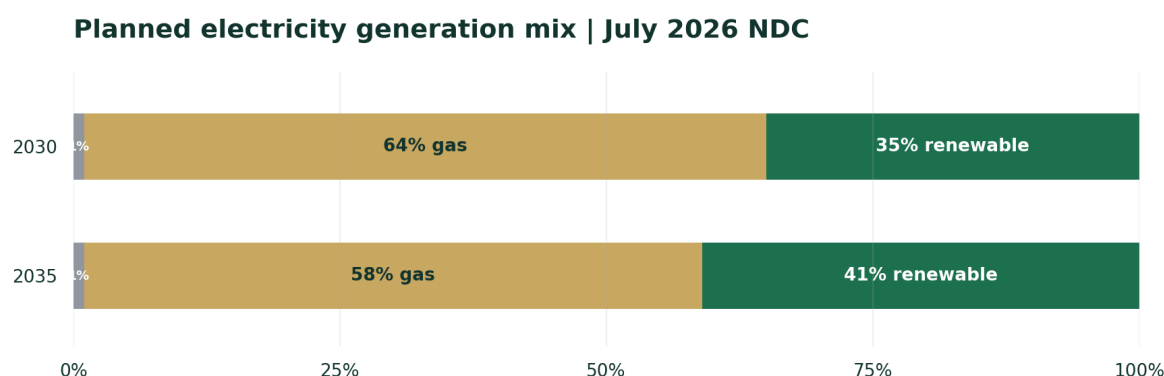
The numerical planning baseline has changed. The 2022 LCDS outlined a much larger 2030 power-demand trajectory for the Demerara-Berbice integrated system, while the July 2026 NDC presents a **2030 peak load of 475 MW** and a **2035 peak load of 568 MW** in its updated national table. The documents differ in date and possibly system coverage and growth assumptions. A serious appraisal would reconcile demand definitions, gross versus net electricity production, grid boundaries, industrial self-generation and realised demand growth before comparing the figures as if they measured the same quantity. The newer NDC should be treated as the current international target, not as proof that earlier engineering or procurement schedules were fulfilled. [1,3]

6.1 What the July 2026 NDC commits to

The updated NDC sets out an indicative generation mix for 2030 of **1% heavy fuel oil, 64% natural gas and 35% renewable power**. For 2035, the corresponding figures are **1%, 58% and 41%**. The source's phrase '99% clean and renewable' groups lower-emission natural gas with renewable sources for policy purposes; it does not imply a 99% renewable grid. Keeping the components separate is essential for international comparisons. The conditional actions include up to **100 MW of solar farms**, a potential **165 MW Amaila Falls hydropower project**, grid upgrades and displacement of diesel and heavy fuel oil with gas where adequate finance is available. [3]

The Government's May 2026 Gas-to-Energy update described a **300 MW** project at Wales, with a stated target for first power by the end of 2026. As of the date of that update, this remained a construction and commissioning target. Treating the planned first-power date or projected tariff reductions as achieved outcomes would introduce a timing error. A separate electricity-service dashboard should record first synchronisation, commercial-operation date, plant availability, delivered MWh, fuel consumption, actual displaced HFO and diesel volumes, methane emissions, grid outage indices and observed tariffs. [30]

Solar development has several different operating models: utility-scale PV supplying the public grid; storage-backed regional mini-grids; rooftop systems with grid export; and independent industrial systems. They have different hourly profiles, connection costs, resilience characteristics and maintenance demands. The Guyana Energy Agency's 2026 rooftop solar programme cites an indicative **5 kWp** installation generating approximately **7,884 kWh annually** with indicative household savings. Those modelled values depend on tariff assumptions and local irradiation and should not be extrapolated automatically to every household or region. [16]



Targets, not observed generation. Source: Guyana NDC 3.0 (submitted July 2026), p. 9.

NDC planning shares for electricity generation, not achieved results.

6.2 Why system design determines realised emissions

A comparison of gas and heavy fuel oil should use delivered electricity, not merely fuel type. Relevant terms include gas-turbine heat rate, combined-cycle operation, plant capacity factor, transmission losses, upstream methane releases, diesel backup requirements, the share of solar electricity curtailed, and the operating reserve required for grid reliability. If an increase in energy demand absorbs most new gas generation without retiring old liquid-fuel units, absolute emissions might rise even while emissions per kWh improve. Conversely, successfully retiring high-emission units while expanding solar and storage would reduce electricity-sector carbon intensity more quickly. These are physical scenarios rather than predictions about a particular project.

Grid expansion also shapes the development outcome. Hinterland communities need energy for refrigeration, cold chains, healthcare, communications and schools, not only installed peak generating capacity. Maintenance funding, local technical training and replacement cycles for batteries and inverters determine whether a commissioned system delivers reliable energy over its lifetime. Performance metrics should therefore include availability, battery health, customer hours of supply, delivered cost, local operator training and end-of-life management.

6.3 Oil production and the definition of a carbon sink

Guyana's offshore oil sector creates an emissions-accounting issue that should be discussed openly. The **domestic electricity system, offshore production and processing, national territorial greenhouse-gas inventory, net land-sector removals, and global emissions arising from exported fuel combustion** occupy different accounting boundaries. Avoided emissions from forest loss should not be treated as automatically cancelling emissions associated with exported petroleum. A carbon credit used by a buyer also has a different accounting role from the underlying forest sink reflected in a national inventory. [3,21,22]

Guyana's 2024 Third National Communication projected energy-sector emissions rising from approximately **6.17 million tonnes CO₂e in 2022** to **17.09 million tonnes in 2030** under its specified scenario, with oil and gas accounting for much of the increase. The July 2026 NDC separately seeks to limit growth in electricity-related emissions while power demand grows. These statements address different reporting scopes and

planning dates; a credible national dashboard needs to show both without creating a false net-zero claim. Exported-fuel combustion should be disclosed as a separate consequential global-emissions lens, even where national inventory rules allocate combustion to importing countries. [3,22]

The necessary evaluation is empirical. It compares the actual operational emissions intensity of Guyana's oil production, methane and flaring data, power-system generation, forest-sector emissions and removals, and lifecycle emissions associated with exports under clearly stated conventions. Forest finance, oil revenue and energy transition can coexist as national policy instruments, while their combined effect on global emissions and domestic resilience requires separate quantitative assessment. This report makes no inference about future oil prices or production volumes beyond published, dated plans.

7. Indigenous peoples, land tenure and consent

Indigenous peoples are central to forest stewardship in Guyana, and Village Sustainability Plans are a core LCDS 2030 implementation mechanism. Under the Government's stated framework, participating communities select projects through village-led processes and manage transfers through dedicated bank accounts. The original consultation documentation records involvement by national stakeholder groups, regional meetings and the National Tshaos' Council. In July 2022 the NTC endorsed LCDS 2030, including its community benefit-sharing approach. Those records support the existence of a formal national consultation process. They do not, on their own, demonstrate the same information quality, representation or consent in every village affected by land-use decisions or carbon transactions. [1,3,13,34]

The APA has repeatedly questioned the quality and timing of participation. Its September 2024 statement said some communities had not received adequate information on the initial carbon sale or its long-term consequences, and raised concerns that village planning occurred after the initial transaction rather than through earlier negotiation of the benefit-sharing model. In a United Nations statement in April 2025, APA President Mario Hastings also argued that land and resource rights, including free, prior and informed consent (FPIC), were insufficiently protected in relevant Guyanese practices. These are attributed positions, not an independently adjudicated finding by this paper. [12,14]

The Government rejected claims of inadequate consultation in a January 2023 response, pointing to a lengthy published consultation report, the national stakeholder process and the National Tshaos' Council's approval. Its later programme updates stress voluntary village participation, local decision-making and the financial resources reaching communities. The evidence therefore contains both a documented formal national process and a continuing dispute about the adequacy of individual and collective consent in implementation. A global account should record both positions and examine what additional evidence would resolve specific disagreements. [2,13,34]

7.1 Four distinct rights and participation tests

Representation. Who was consulted, with which mandate, and were communities represented by individuals authorised to act for them on the specific issue? A national council's endorsement has an important institutional role but should be distinguished from a village's deliberation on land use, the duration of a carbon arrangement or the allocation of its own proceeds. **Information.** Were contracts, maps, expected benefits, restrictions, risks, grievance routes and future obligations available in clear language and locally accessible forms before decisions were made? **Choice.** Were local procedures consistent with applicable law and the substantive standards of free, prior and informed consent where applicable? **Remedy.** Are there accessible mechanisms for correcting errors, contesting disputed facts, addressing complaints and changing a plan when circumstances evolve? [12,13,14]

The precise legal treatment of FPIC depends on the applicable domestic instruments, Indigenous land tenure, international obligations and the nature of the decision. This publication does not make a legal determination

about any particular village or establish whether a specific past agreement complied with all relevant obligations. Instead, it specifies the records necessary for a meaningful independent assessment: meeting notices; language and translation records; minutes and attendance with privacy safeguards; contract summaries; maps of titled and customary-use lands; village resolutions; benefit-sharing calculations; grievance records; and evidence of independent advice where requested.

7.2 A community-outcomes framework

Direct financial transfers matter because they place choices and resources closer to communities. Their developmental value also depends on participation within the village. Monitoring should disaggregate, where communities agree, who voted on a project, who receives services, who controls revenue-producing assets, how operating costs are financed and which groups encounter barriers. Gender and youth participation require more than counting event attendance. For example, a community enterprise should publish an annual ledger, an asset-maintenance plan and anonymised indicators of paid work, income distribution and access to equipment. Data collection must respect community decisions on confidentiality and traditional knowledge.

The July 2026 NDC adds quantifiable targets for the share of Indigenous villages benefiting from climate finance: **80% by 2030** and **100% by 2035**, against the stated historical indicator baseline. It also targets women's participation in climate and community programmes of **50% by 2030** and **60% by 2035**, and annual youth involvement in low-carbon sectors of at least **500** and **1,000**, respectively. These are stated targets, not verified present-day participation rates. Achievement requires consistent definitions and periodic independent measurement. [3]

An international integrity review should avoid treating Indigenous communities as a single constituency. Communities face different land-tenure arrangements, economic opportunities, governance practices and resource pressures. They also hold differing views on carbon-market participation. A robust implementation model would document each participating community's priorities and consent process, provide an effective route for dissent and grievance, and ensure that the sale of national credits does not become an implied restriction on lawful community livelihoods without a clear legal and consultative basis.

8. Mining, forestry and biodiversity: competing land uses

Guyana's mineral resources are important to its economy, while mining is a major identified driver of forest change. The 2023 MRVS attributed approximately **62% of mapped deforestation** to mining and mining infrastructure. Monitoring separately identified additional disturbance from roads, other infrastructure and fire. This creates a practical test for low-carbon development: rising mineral output or exploration should be assessed alongside forest disturbance, water quality, reclamation and regulatory compliance, using geospatial reporting where appropriate. A low national deforestation percentage alone does not establish good ecological conditions in an affected watershed. [4]

8.1 The mining-control sequence

A measurable mining-management system begins before excavation. It requires accurate geological information to reduce unnecessary clearing, baseline ecological and water surveys, enforceable permits, designated waste and tailings controls, safe fuel and chemical management, progressive rehabilitation and a funded closure plan. Inspections should link disturbance polygons with operating licences and reclamation bonds where applicable. Remote sensing identifies potential change but cannot, on its own, establish lawful authority, water chemistry, mercury exposure, tailings stability or the quality of restored ecosystems. These require separate field, laboratory and compliance evidence.

The October 2024 LCDS update described a mineral-mapping initiative intended to focus exploration and support more efficient resource development. The July 2026 NDC repeats the objective of better mineral

mapping, reclamation of mined-out land and watershed protection. These are policy measures whose success should be tested using avoided unnecessary clearing, hectares progressively rehabilitated, survival rates of restored vegetation, sediment loads and the quality of independent site inspections. A simple count of maps produced would indicate programme activity but not actual environmental improvement. [2,3]

Where mining occurs on or near Indigenous lands, consent, access and resource-right questions add a further layer of governance. The analytical requirement is to identify the site, applicable tenure, permit conditions and land-use rights before drawing conclusions about a particular dispute. Generalised claims that all mining activity benefits or harms all affected communities would be unsound. Publicly accessible, location-specific monitoring, including community-submitted observations with appropriate verification, would improve both accountability and early problem detection.

8.2 Sustainable forestry and traceability

Sustainable commercial forestry is part of the LCDS rather than an activity the strategy categorically excludes. Guyana's recent national documents emphasise forest monitoring, timber legality, reduced-impact logging, certification and implementation work associated with the EU-FLEGT Voluntary Partnership Agreement. The July 2026 NDC outlines increased field-monitoring staffing and trade-related capacity building as conditional or unconditional actions. The question is whether harvest controls protect long-term forest structure and biodiversity while maintaining lawful economic activity. [2,3]

The indicators need to separate legal compliance from ecological condition: audited chain-of-custody coverage, harvested volumes, forest roads, canopy disturbance, illegal logging detections, enforcement resolution and independent post-harvest assessments. Timber certification, where obtained, should be reported with scope, certificate validity and covered concessions. Planned international certification should not be described as certification already achieved nationwide.

8.3 Biodiversity, freshwater and emerging ecosystem services

LCDS 2030 identifies biodiversity conservation, improved water management and the possible development of ecosystem-service finance beyond forest carbon. The 2024 progress update described planning for expanded protected areas, an international biodiversity centre and additional urban and ecological initiatives. Those programme ambitions raise important design questions about protected-area financing, species and habitat baselines, the treatment of customary land uses, the cost of long-term management and the risk of double-claiming financial value across ecosystem services. [1,2]

Biodiversity value is multidimensional and cannot be represented adequately by tonnes of CO₂ or forest hectares alone. Baseline indicators should include habitat condition, ecological connectivity, priority species, freshwater systems, pollinator populations where relevant and community-defined cultural and livelihood services. Any future biodiversity-credit or water-service mechanism would need a distinct metric, credible additionality, independent monitoring, clear tenure and informed benefit-sharing arrangements. Anticipated sales and concept-stage initiatives should remain labelled **potential**, not booked as revenue or environmental gain.

9. Coastal resilience, food security and changing climate risk

Most of Guyana's population, principal settlements and significant agricultural activity occupy a low-lying Atlantic coastal plain. This concentration creates exposure to intense rainfall, high tides, sea-level rise, saline intrusion and flood-disruption of roads, farms and public services. The national strategy therefore integrates drainage, irrigation, sea defence and ecosystem-based approaches. The World Bank's 2024 coastal-resilience approval illustrates the scale: its project design sought to reduce flood risk for about **320,000 people**, subject to completed implementation and the project's appraisal assumptions. [2,3,15]

The 2026 NDC identifies flooding, drought, fires, extreme rainfall and agricultural water risk as central adaptation concerns. Its domestic plans include drainage investments intended to improve irrigation for **100,000 acres** of land. This is a stated programme target. The appropriate performance measure is not only canal excavation or pump installation, but drainage capacity under extreme rainfall, reduced flood duration, restored agricultural productivity and the number of vulnerable people benefiting under consistent assessment methods. [3]

9.1 Engineering and ecosystem resilience

A coastal asset's climate performance depends on the design standard, reliability of the complete drainage network, downstream maintenance and the intensity of future rainfall and storm surge. A rehabilitated koker might fail to deliver its planned benefit if canals are blocked, upstream storage is insufficient or surrounding land-use patterns change. Adaptation programmes therefore require asset inventories, maintenance records, mapped flood pathways, updated rainfall scenarios and coordination across agriculture, housing, public works and local government. Nature-based measures such as mangrove protection may complement engineered structures where site conditions and community priorities permit, but should not be substituted without hydraulic and ecological design evidence.

Adaptation benefits are often expressed as avoided future losses. These are modelled counterfactuals, not directly observed profits. An independent report should disclose climate scenario, asset lifetime, discount rate, counterfactual development pattern, maintenance assumptions and sensitivity analysis. Historical flood losses and public-health impacts provide additional validation, subject to data quality. This enables comparison among large canals, drainage rehabilitation, mangrove measures, local emergency systems and targeted protection for agricultural production without assuming that the largest capital project yields the largest benefit.

9.2 Food security and agricultural productivity

The low-carbon framework links resilience to food production, rural livelihoods and the national electricity system. Better irrigation and drainage support farms; lower-cost reliable power supports storage, milling and cold chains; sustainable land management limits unnecessary forest conversion. These benefits reinforce each other only when projects operate as an integrated system. A functioning flood-control asset without timely farm access, or an electric cold room without a reliable supply chain, will not yield the projected economic benefit.

The public record should track cultivated area, crop losses after extreme weather, dry-season water availability, time to restore access after floods, household food costs in affected communities and farm income under clearly specified comparison periods. The objective is to distinguish climate-resilience outcomes from gains caused principally by commodity prices, normal seasonal variation or public spending outside the LCDS.

10. Low-carbon growth, jobs and the distribution of opportunity

The LCDS is a national development framework, not a forest-credit programme alone. Its wider development agenda includes skills, infrastructure, affordable electricity, digital services, agriculture, sustainable tourism, water and biodiversity services, and more resilient settlements. The October 2024 update identified investment programmes spanning these sectors. A sound appraisal therefore tests whether projects deliver broad development outcomes rather than counting planned expenditure as realised benefits. [1,2]

10.1 Employment, skills and procurement

Construction generates temporary jobs and procurement demand. Long-term economic effects depend on the proportion of jobs retained during operations, Guyanese supplier participation, technology transfer, recurrent maintenance and the operating cost of infrastructure. A solar mini-grid has direct value when households receive reliable electricity and indirect value when enterprises gain dependable refrigeration, milling or connectivity. Those effects require reliable measurements of service, costs and business survival. They cannot be inferred from installed megawatts alone.

Training statistics should disclose enrolment, completion, accredited credentials, employment six and twelve months after graduation, gender, age, region and disability inclusion where voluntarily reported. Supplier data should distinguish a domestic intermediary from domestic value added. A supplier census should identify contract size, payment terms and participation by hinterland enterprises while protecting confidential company information. Cross-border comparisons need purchasing-power context and consistent job definitions.

10.2 Regional equity and service access

Different regions start with unequal access to electricity, transport, internet, education, water and health care. LCDS reporting ought to identify whether new investment narrows these gaps. Indicators should show the percentage of households receiving dependable electricity, hours of service, unplanned outages, affordability relative to income, access to safe water and days of road isolation after floods. The national mean may improve while remote communities still face significant service gaps. Disaggregation is therefore central to assessing distributional outcomes.

National economic growth and increases in public capital spending are separate from household outcomes. Attribution requires comparison groups, baseline survey years, consistent price adjustments and explicit treatment of concurrent social programmes. Independent evaluations should assess the maintenance burden of new assets. A road, seawall, solar installation or clinic without funded staffing and maintenance may show high capital expenditure and weak service outcomes.

10.3 Urban systems and waste

Rapid development increases demand for housing, transport, construction materials, waste management, water and electricity. Guyana's strategy discusses sustainable urban development and better management of biodiversity, water and natural assets. Climate-compatible cities require adequate drainage, heat-sensitive planning, flood-safe building locations, efficient vehicles and buildings, waste collection, methane controls where relevant and wastewater systems. Public planning should examine lifetime cost and exposure to future rainfall and sea-level scenarios, not only the initial construction price. [1,2,3]

The relevant data are building energy use, transport fuel per passenger-kilometre, public transport accessibility, landfill methane where measured, waste collection coverage, effluent compliance and urban tree cover. The country should avoid claiming net greenhouse-gas reductions from activity counts alone. The accounting system needs the baseline, measured energy or emissions effect and the period over which the effect is expected to persist.

11. Future stress tests: twelve scenarios for 2027-2035

The scenarios below are deliberately non-predictive. They test the internal logic of the LCDS under plausible combinations of market, ecological, infrastructure and governance conditions. No row assigns a likelihood or predicts a government decision. Each scenario identifies a measurable trigger and an operational response to examine. Several scenarios can occur together, especially drought, fire, mining pressure and a lower carbon-market price.

11.1 A scenario register

Scenario	Observable trigger	Main exposure	Monitoring or response question
S1: carbon-market continuity	Future eligible credits issue and meet buyer requirements	Continued revenue, still exposed to vintage and price	Are issued, transferred, retired and paid volumes reconciled publicly?
S2: CCP methodology delay	ART HFLD remedial actions remain incomplete or are not accepted	Smaller set of buyers seeking CCP labels	Do contracts distinguish CCP-dependent buyers from other eligible demand?
S3: eligibility requirements tighten	Buyers or aviation schemes change approved unit rules	Reassessment, transaction cost, limited access	What vintage, registry status and authorisation apply to each contracted unit?
S4: weaker uncontracted prices	New-market prices fall below an illustrative planning threshold	Less discretionary finance from future sales	Which expenditures remain affordable without speculative sales revenue?
S5: higher monitoring or buffer costs	New measurement, reversal or liability rules raise cost	Lower net proceeds per credit	Are transaction costs, reserves and long-term liabilities disclosed?
S6: mining clearing expands	Annual mine-linked deforestation rises from the 2023 reference	Forest loss, water harm and restoration obligation	Are disturbed areas, licence checks and restoration outcomes independently linked?
S7: severe drought or fire	A multi-season dry period increases fire or forest degradation	Carbon-stock loss, health and livelihood disruption	Are early warning, fire response and reversal rules operational?
S8: compound coastal flooding	High rainfall coincides with storm surge or drainage failure	Homes, farms, schools and transport exposed	Do completed assets meet design standards and keep operating during the event?
S9: gas project delay or underperformance	Commissioning or sustained plant output falls below schedule	Continued liquid-fuel generation and higher costs	Are grid mix, power plant availability and consumer prices reported monthly?
S10: faster renewable integration	Hydro, solar, batteries and grid works exceed baseline deployment	Changed fuel consumption and power-system balancing	Does measured displacement include curtailment, storage losses and grid constraints?
S11: unresolved consent dispute	Affected communities contest process or land rights	Trust, legal risk and programme participation	Is there an accessible, independent, time-bound grievance and remedy process?
S12: oil price or production shock	Hydrocarbon revenue changes sharply in either direction	Budget pressure or rapid spending growth	Are LCDS funds ring-fenced, audited and protected from unrelated fiscal assumptions?

These rows are analytical planning cases, not a claim that any listed event has occurred. The relevant baseline is always dated. For S6, for example, the latest verified full-year mapped mining-deforestation benchmark used in this edition is the 2023 MRVS figure of 5,853 hectares; no current mining rate is inferred. For S9, the NDC grid-mix target is a future system objective, not a statement about the present composition of electricity generation. [3,4]

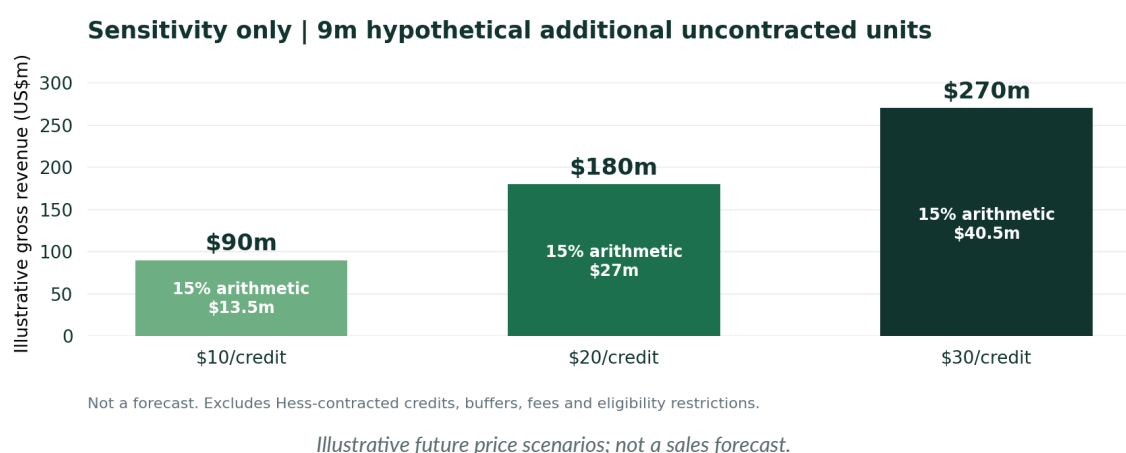
11.2 Carbon-price sensitivity, not a sales forecast

An intentionally hypothetical example assumes **9 million future, eligible, uncontracted credits** become available for sale in one year. At realised gross prices of **US\$10, US\$20 and US\$30**, the gross proceeds would equal **US\$90 million, US\$180 million and US\$270 million** respectively. A 15% earmark, applied mechanically to gross receipts solely for illustration, would represent **US\$13.5 million, US\$27 million and US\$40.5 million**. Actual programme allocations depend on the statutory or policy revenue definition, contract structure, transaction costs and audited accounting. None of these figures represents an announced future issuance, an available volume, a current bid, or a forecast of Guyana's receipts.

Hypothetical price per credit	Gross if 9m additional uncontracted credits sell	Illustrative 15% gross arithmetic	Gross remaining before other costs
US\$10	US\$90m	US\$13.5m	US\$76.5m
US\$20	US\$180m	US\$27.0m	US\$153.0m
US\$30	US\$270m	US\$40.5m	US\$229.5m

This calculation is independent of the Hess contract and excludes its committed volumes. It must never be added to the US\$750 million minimum contracted purchase value without verifying the inventory available after Hess allocations, which vintages meet buyer requirements, issuance and reversal-buffer deductions, any fee structure and authorisation requirements. Credit eligibility is not identical across voluntary markets, ICAO CORSIA and the CCP label. [6,10,11]

A prudent public capital-budget sensitivity analysis would also model **zero additional uncontracted sales** for a defined period. Under that condition, ongoing obligations for schools, health centres, mini-grid operations or drainage maintenance must have alternative budget cover. Public institutions should classify committed income by contractual entitlement and risk rather than treating a published credit quantity as immediately spendable cash.



11.3 Forest-pressure sensitivity

The mapped 2023 national deforestation reference used in this edition is 9,353 hectares, of which 5,853 hectares were classified as related to mining and associated infrastructure. Holding all other 2023 mapped loss unchanged, a purely illustrative 25% increase in mining-linked clearing would add about **1,463 hectares**, producing a **10,816-hectare** national arithmetic total. A 50% increase would add roughly **2,927 hectares**, producing **12,280 hectares**. These are scenario calculations, not observations or extrapolated trends. Different locations, forest-carbon density, degradation and forest-regrowth trajectories invalidate any one-for-one conversion of hectares into carbon credits. [4]

Hypothetical increase over 2023 mining-linked area	Additional mapped loss if other categories remain constant	Resulting national mapped-loss arithmetic
0%	0 ha	9,353 ha
25%	Approximately 1,463 ha	Approximately 10,816 ha
50%	Approximately 2,927 ha	Approximately 12,280 ha

Risk management needs polygon-level data tied to permits and hydrology, public enforcement statistics, clear restoration responsibilities and community reporting. A reduction in mapped annual clearing alone is insufficient evidence of watershed restoration or avoidance of heavy-metal exposure. Those outcomes require distinct environmental measurements.

11.4 Electricity and petroleum boundaries under stress

The July 2026 NDC's 2030 grid-mix pathway of 64% gas, 35% renewables and 1% heavy fuel oil depends on power-plant performance, fuel supply, network resilience and the speed of integrating renewable capacity. An extended gas-plant delay could increase reliance on existing diesel or heavy-fuel-oil units. Conversely, additional renewable generation does not automatically displace liquid fuels unless the network can absorb power, batteries and dispatch protocols operate as designed and customer demand is served reliably. [3,21]

The NDC's 2035 grid mix envisages more renewable energy but retains 58% natural gas. Environmental reporting should therefore use measured operational electricity emissions and a separate national greenhouse-gas inventory. Offshore exploration and production, processing, transport and the eventual use of exported oil form additional, distinct emissions boundaries. The Third National Communication's sectoral projections deserve separate scrutiny; an improvement in electricity emissions per kilowatt-hour should not be misrepresented as a reduction in total oil-related greenhouse-gas emissions. [3,22]

11.5 Compound disruption and contingency planning

A market downturn combined with severe drought and infrastructure disruption presents a more demanding test than any event alone. Reversal obligations could increase at the same time new credit sales weaken and emergency drainage and fire-response costs rise. A robust budgeting exercise would map which services depend on each incoming revenue stream, where legally committed spending has priority and which functions require protection irrespective of carbon-market conditions. The country-specific design should be published with explicit assumptions rather than hidden in a single optimistic national growth scenario.

12. An independently verifiable monitoring and reporting architecture

Guyana already operates important components of a national monitoring system. An integrated transparency design would connect forest change, credit issuance, cash receipt, village allocation, procurement, physical delivery, environmental results and climate risk without claiming that one dataset validates all the others. The following dashboard is an analytical proposal. It is not a description of a fully operational official dashboard as of September 2026. [3,4,6,10]

12.1 Proposed public dashboard and verification tests

Domain	Indicator and suggested update	Principal source	Verification question
Forest	Mapped loss by cause and region, annual	GFC national MRVS	Are maps, accuracy assessment and uncertainty disclosed?
Forest	Degradation, biomass emissions and removals, annual	MRVS and national inventory	Are accounting periods, boundaries and equations published?
Fire	Hotspots, burnt area and fire-attributed forest loss, seasonal	Remote sensing and field checks	Does classification separate fire damage from permanent conversion?
Mining	Newly disturbed area and restoration by permit, quarterly	Regulator and satellite data	Are permits, enforcement and reclamation linked to spatial polygons?
Markets	Credits issued by vintage, methodology and label, event-driven	ART registry and scheme decisions	Which units are issued, held, transferred, retired or cancelled?
Markets	Contracted volume and status, quarterly	Government contract summaries	Are existing obligations deducted from marketable inventory?

Domain	Indicator and suggested update	Principal source	Verification question
Finance	Cash received in USD and GYD with conversion rate, each payment	Treasury and LCDS portal	Is the bank receipt reconciled with Treasury entries?
Finance	Committed, transferred and spent amounts, quarterly	National budget and project accounts	Are double-counting and unspent balances visible?
Villages	Allocation by opt-in community, quarterly	Village plans and audited accounts	Is informed community authorisation recorded appropriately?
Villages	Project completion, functionality and users, six-monthly	Local verification and surveys	Does spending correspond to a working service?
Inclusion	Gender, age and accessibility of benefits, annually	Disaggregated voluntary surveys	Is privacy preserved and are missing observations shown?
Rights	Land title applications, disputes and resolution time, six-monthly	Land and justice bodies	Are independently reported unresolved cases visible?
Rights	Grievances received, resolved and appealed, quarterly	Independent grievance mechanism	Can communities challenge an outcome without retaliation?
Power	Grid fuel mix, energy output, outages and tariff, monthly	Utility and energy regulator	Are performance figures metered and emissions factors disclosed?
Renewables	Solar/hydro generation, availability and battery losses, monthly	Utility and project operators	Is generation measured rather than inferred from installed capacity?
Oil and gas	Scope-defined upstream emissions and methane controls, annually	National inventory and operators	Are methane detection methods and relevant boundaries stated?
Adaptation	Drainage asset availability and flood duration, seasonal	Public works and local authorities	Do observed events test the original project design claims?
Agriculture	Crop losses and irrigation service reliability, seasonal	Agriculture and meteorological agencies	Are weather and price effects considered in outcome attribution?
Biodiversity	Habitat condition and key species trends, periodic	Ecological field programmes	Is sampling adequate, inclusive and publicly documented?
Independent audit	Material qualifications and corrective-action completion, annually	External financial and technical reviewers	Are audit recommendations acted upon and dated?

A useful digital architecture preserves the original files, codebooks, geospatial boundaries, version history, licensing conditions and machine-readable data. Indicators should include geographic units only where confidentiality, safety and Indigenous data sovereignty requirements permit. Project photographs, self-reported completions and financial vouchers are separate evidence forms. Where exact coordinates would endanger ecosystems or culturally sensitive sites, independent reviewers should receive controlled access with an agreed public reporting alternative.

12.2 Assurance and governance of evidence

Independent environmental verification, financial audit and community rights assessment serve different purposes. Forest remote sensing does not establish free, prior and informed consent. An external financial audit may verify recorded expenditure without demonstrating project benefit. A household survey may document satisfaction without proving additional carbon removals. The ideal assurance report therefore names the evidence and limitation behind each assurance opinion, along with conflicts of interest and the commissioning body's scope of control.

For carbon units, a public registry reconciliation should connect monitoring vintage, verified net eligible quantity, buffer contributions, serial numbers, status, buyer, cancellation or retirement purpose and international authorisation where relevant. The public finance reconciliation should separately connect contract milestone, invoice, received cash, foreign exchange conversion, appropriation, transfer, project cost

and unspent balance. Reporting these as two linked ledgers prevents the recurrent confusion among issuance, sale, payment and final community expenditure.

12.3 Five-year evaluation design

An independent LCDS evaluation undertaken every five years would combine administrative review, targeted household surveys, geospatial analysis, environmental sampling and project case studies. Evaluation questions should be agreed before project outcomes are known, and baseline data should be archived. Counterfactual or comparison-group methods may be appropriate for household services where ethically and statistically feasible. For national forest conservation, credible attribution requires careful treatment of alternative land-use pressure, market trends, mining activity and policy changes outside the LCDS.

Community participation should include the right to submit an independent account of benefits and harms. A process should document how disputes concerning consent, land boundaries, procurement and project selection are addressed. Audit findings should be published with response dates, management ownership and follow-up evidence. Publication does not require disclosing personal financial data or culturally restricted information.

13. International relevance and conditions for transferability

Guyana offers a substantive case study for countries with extensive tropical forest cover and historically low deforestation, commonly referred to as HFLD countries. Their financing problem differs from jurisdictions attempting to reverse decades of high deforestation. Standard avoided-deforestation baselines may yield limited payments where historical forest loss was already low, even when substantial intact forest continues to supply a global climate and biodiversity service. Guyana's policy response has combined jurisdictional monitoring, a national revenue framework and public commitments to community benefit-sharing. Each component provides material for comparative research; no single result establishes that the complete model transfers unchanged to another country. [1,4,10]

13.1 Preconditions for application elsewhere

A jurisdiction contemplating similar mechanisms would need dependable forest tenure information, a credible and repeatable monitoring system, budget institutions equipped to handle ring-fenced proceeds, independent verification capacity, community decision mechanisms, a credible grievance process and a buyer willing to enter an adequately specified contract. Sovereign debt conditions, forest drivers, energy systems, constitutional land rights and administrative capacity vary across countries. Forest finance therefore cannot be treated as a substitute for governance reform or as an automatic source of fiscal stability.

The May 2026 ICVCM decision illustrates the importance of international methodology debates to HFLD models. ICVCM requested more convincing evidence that historical baseline emissions understate likely future emissions before the methodology secures its CCP label. At the same time, ART-issued and CORSIA-eligible status operate under distinct requirements. Forest countries and buyers need to distinguish environmental accounting, market acceptance and the availability of particular integrity labels instead of merging them into one generic certificate of quality. [10,11,23]

13.2 Finance architecture and market dependence

Large bilateral performance partnerships, commercial forward purchase agreements, multilateral grants, concessional lending and domestic budget finance carry different conditions. A jurisdictional sales agreement may improve medium-term funding visibility but introduce concentration risk when one buyer accounts for a substantial part of the contracted volume. Grants avoid credit-delivery obligations but depend on donor appropriation. Domestic revenue allows national ownership but faces competing fiscal demands. A national

strategy benefits from publishing the contractual, currency, market and fiscal exposures of each source rather than presenting them as interchangeable climate money.

Public scrutiny of Guyana's receipt ledger provides an opportunity to define a transferable standard of transparency. Every payment should be traceable to a vintage or other contractual milestone; every community transfer should be traceable to the approved allocation rule; and every material development outcome should be distinguishable from the expense incurred. The published records already provide parts of this chain, while external verification of complete project outcomes and consultation remains a separate task. [6,8,12,13]

13.3 What international communications should and should not claim

An international factsheet about Guyana's LCDS should state that Guyana reports extensive tropical forest cover, operates jurisdictional MRVS, has issued and commercially marketed ART TREES forest-carbon credits and has recorded substantial cash receipts under a published payment timeline. It should identify the actual years of the forest estimates and sales. It should also state that the country's 2026 NDC envisages gas as the majority of its planned 2030 electricity mix and that debates about credit baselines and Indigenous participation remain active. [3,4,6,10,11,12]

The same factsheet should avoid describing carbon credits as proof of permanent avoided emissions, credit issuance as cash in the bank, a registered unit as automatically CCP-labelled, fiscal transfers as proof of free consent, or electricity decarbonisation as evidence that exported fossil fuels have no climate impact. Trust in external communications depends on respecting these distinctions even where a simpler promotional message appears attractive.

14. Evidence status, research priorities and public accountability

The public record establishes that Guyana has implemented substantial elements of the LCDS framework, including national forest monitoring, issued ART carbon credits, a major commercial forward sale, recorded carbon-finance receipts, village-led investment allocations and ongoing investments in energy and adaptation. The July 2026 NDC states quantified targets for forest, electricity and community participation. These are distinct types of evidence, each attached to its own date, units and institution. [2,3,4,6,10]

Several issues remain unresolved in the evidence set assessed for this publication. They include the final verification outcome for the submitted 2024 ART monitoring period, the status of any future HFLD methodology revision under ICVCM's CCP requirements, independent programme-wide measurement of village-project performance, outstanding Indigenous consent and tenure disagreements, recent fully verified annual forest outcomes beyond the 2023 MRVS used here, and metered delivery against newer energy targets. Recording these open questions is part of the white paper's design and does not imply a finding against any institution or stakeholder. [4,11,12,24,25]

International researchers, investment institutions, development partners and civil society can assess the programme more thoroughly when data are accessible, baselines are reproducible and independent findings receive documented responses. A future edition of this report should update the national MRVS annual series, registry reconciliation, payment ledger, project-level expenditure and outcomes, electricity generation figures and unresolved rights issues as primary records become available. Changes should be logged rather than silently overwriting prior public claims.

The global significance of Guyana's experience rests in the interaction of five measurable systems: an extensive tropical forest, a results-based carbon market, public budget institutions, community-level development and a changing energy economy. Whether the system delivers durable, inclusive, independently demonstrated outcomes is an empirical question. The source register, sensitivity exercises and proposed monitoring architecture provide a basis for answering it over time.

15. Forest accounting, data quality and the limits of comparability

15.1 The accounting boundary is the first substantive decision

Forest-area monitoring, greenhouse-gas inventories, REDD+ reference levels and carbon-credit issuance describe related but different quantities. The national forest monitoring system estimates land-cover change, attributes mapped loss to drivers and applies carbon-stock and emission-factor methods. An economy-wide greenhouse-gas inventory extends beyond forest loss to energy, industry, agriculture, waste and other land-use categories. A REDD+ reference level provides a benchmark for assessing forest-sector mitigation performance. A carbon-credit registry records verified units issued under a particular standard. A government may report progress in all four systems without the same number appearing in every record. Reconciling them requires a bridge between defined reporting periods, spatial coverage, gases, eligible activities, adjustments, uncertainties and changes in methods. [3,4,20,21,22,32]

The July 2026 NDC places forestry, energy and adaptation within a 2025-2035 framework, while the 2023 MRVS reports measured outcomes for an earlier calendar year. A public figure from a 2023 forest assessment is therefore a historical observation, not the country's September 2026 deforestation rate. Likewise, the NDC's conditional forest-sector mitigation figures are commitments under a specified framework, not the stock of issued 2026 credits. A comparability table should state the publication date, measurement period and exact population covered before presenting side-by-side trends. [3,4]

The Global Green Growth Institute's February 2025-March 2027 programme identifies a further boundary problem. Guyana's established MRVS concentrates on forest-related land-use change and does not fully account for all land-use, land-use-change and forestry categories. The programme describes activities to broaden coverage, distinguish mangroves from other forest types, improve vegetation and accessibility maps, establish land-use emission factors and strengthen interagency data protocols. These are project objectives, not evidence that every component had been completed in September 2026. They matter because cross-sector claims about being a net carbon sink depend on a wider accounting boundary than forest-monitoring results alone. [21,22,36]

15.2 Independent measurement and uncertainty management

Three independent lines of evidence can support a forest performance assessment. First, the national MRVS supplies official classifications, activity data and emission factors; its supporting methods and independent accuracy checks determine what the headline estimates mean. Second, independent satellite products offer a consistency test across time and place. Third, ground-based measurements, enforcement records and community observations establish whether an unusual mapped signal corresponds to tree cover disturbance, mining, selective logging, fire, natural mortality or a land-use conversion. Each source has strengths and systematic limitations. [4,5,36,42]

An external satellite product should not be substituted uncritically for national deforestation figures. Global Forest Watch describes tree-cover loss as detected disturbance to vegetation exceeding a specified height, including temporary loss in managed or plantation areas. National MRVS statistics instead apply Guyana's forest definition, mapping thresholds and driver categories. Numbers may differ even where both observations are accurate. The appropriate comparison matches the forest mask, calendar interval, minimum mapping unit, disturbance definition, cloud-screening treatment and handling of regrowth. A discrepancy register should report unresolved differences rather than selectively publishing the lower figure. [4,42]

A reproducible MRVS audit would request raster metadata and version identifiers, forest/non-forest baseline maps, the independent reference sample design, validation confusion matrices, error-adjusted area estimates, the full emission-factor library and uncertainty-propagation model. For a sampled polygon, a reviewer should be able to trace the original imagery, analyst decision, reason for reclassification, driver attribution, carbon-pool assumptions and quality-review sign-off. If an update modifies historic estimates, earlier published values

should remain archived alongside the reason for revision. This is an analytical assurance design; access to source imagery, cadastral layers and village-level data would require permission and appropriate protections. [4,20,36]

15.3 A practical carbon balance-sheet bridge

A useful reconciliation begins with gross land-use emissions by activity and removals by eligible sinks, not an isolated headline about standing carbon stock. The next stage explains how the activity boundary differs from the national inventory and how each verified credit cohort was derived from the programme's credited performance. The final stage records transfers, retirements, cancellations, buffer allocations and the corresponding-adjustment treatment associated with authorised internationally transferred mitigation outcomes. Units, vintages and accounting years should appear in separate columns. [3,10,20,23,28]

Evidence layer	Primary measurement	Typical verification question	Claim that cannot be inferred directly
Forest monitoring	Hectares of mapped change, driver and calculated forest emissions	Are maps, definitions and uncertainty reproducible?	The number of eligible market credits
National inventory	Net national emissions/removals within declared inventory boundary	Are all relevant sectors and sinks covered consistently?	Whether one private buyer owns a mitigation claim
NDC accounting	Progress against dated nationally determined contributions	Are conditional and unconditional objectives distinguished?	Whether a target has already been delivered
ART registry	Issued units by reporting vintage and methodology	Are verification and serial numbers documented?	Cash receipts or every form of quality-label eligibility
Government accounts	Contracted revenue, cash received, appropriated and spent	Do audited public accounts reconcile the project chain?	Verified environmental or community outcomes

A transparent public record would give each cohort a persistent identifier and publish a versioned method note whenever numbers change. Independent replication should include tests for impossible date sequences, duplicate serial numbers, mismatched reporting boundaries, retroactive methodological changes and unexplained changes in forest stock. The output is a defensible chain of evidence, not a single interchangeable carbon figure. [3,4,10,11,36]

16. Carbon finance architecture: contracts, price risk and market access

16.1 A five-ledger approach to forest-finance claims

A public statement that Guyana has secured forest finance may refer to a contractual sale, an issued credit, an invoice, cash received or a budgeted investment. These events occur at different times and entail different risks. The announced Hess arrangement established a minimum long-term purchase commitment of US\$750 million for 37.5 million credits, with defined vintage-based price floors. The government's published seven-payment timeline through March 2026 totals US\$353.5 million. Neither amount alone identifies the unencumbered cash available at a future date, the number of units retired, the balance payable under each delivery condition or the independent project outcomes delivered by spending. [6,7,9]

A five-ledger model separates: contracted nominal consideration and obligations; issued and transferred credits with exact serial numbers; invoiced and received cash; appropriations and actual expenditure; and verified economic, environmental and social outcomes. Reconciliation items include timing differences, currency exchange, project commitments not yet disbursed, reserved credits, programme costs and future performance conditions. A consolidated table should never add US-dollar receipts to Guyana-dollar commitments without stating exchange-rate dates and conversion methodology. [6,8,9,17,26]

16.2 Quality standards, market eligibility and July-September 2026 developments

Three judgments must remain distinct. ART's registry determines whether units were issued following the applicable TREES methodology and verification process. ICAO's CORSIA rules determine whether identified units are eligible for a specified aviation compliance phase, subject to detailed programme, vintage, authorisation and cancellation requirements. ICVCM separately judges whether the crediting programme and specific methodology meet its Core Carbon Principles label criteria. The status of one does not automatically transfer to another. [10,11,23]

The May 2026 ICVCM decision required substantial remedial action for ART TREES v2.0's HFLD crediting approach, including more compelling evidence of future deforestation threats. It stated that the 58.4 million HFLD credits already issued under that methodology were not eligible for the CCP label under the assessed rules. In June 2026, ART published TREES 3.0, described changes to eligibility pathways and reporting, and in August updated its validation and verification standard. Those updates should not be represented as automatic retroactive CCP approval. An updated ICVCM determination would be needed to establish the status of a revised methodology. In September 2026, ART listed Guyana among eight jurisdictions undergoing validation or verification; inclusion is not equivalent to a completed new issuance. [11,24,35]

For an institutional buyer, due diligence should record the contractual counterparty, beneficiary account, legal title to mitigation outcomes, credit cohort, serial-number list, applicable eligibility window, reversal allocation, claims guidance, treatment of nested projects and public disclosure of corresponding adjustments where needed. For the host country, the equivalent ledger tests the interaction of national commitments, international authorisations and future room for adjustment. A strong written agreement cannot substitute for sound environmental accounting, and a robust methodology cannot substitute for a well-documented claims contract. [3,9,11,23,35]

16.3 The decision under price and methodology uncertainty

Future market value is uncertain because several risks interact. Issuance volume depends on measured performance and verification. Deliverable volume depends on buffer deductions, contractual allocations and registry rules. Realised price depends on vintage, buyer quality screens, regulatory eligibility, corresponding-adjustment requirements and negotiated terms. Timing depends on issuance and payment milestones. A disruption to a methodology can affect new market opportunities without changing the value of conservation itself. [9,11,24,35]

A planning model should therefore hold volume, price and payment dates as separate variables. Illustratively, 1 million transferable credits at US\$10, US\$20 and US\$30 produce gross nominal proceeds of US\$10 million, US\$20 million and US\$30 million, respectively, before issuance costs, contractual restrictions, transaction expenses and any required benefit-sharing. Those figures are sensitivity examples, not observed market prices or future sales forecasts. An additional downside case should set the eligible saleable volume to zero for one reporting period to test continuity of village and national investments. [9,11]

For public budget resilience, the key question is whether predictable essential services depend on a highly variable and externally regulated revenue stream. A prudence test separates one-off capital commitments from recurring operating costs, stress-tests delayed receipt and asks who carries the cost of a temporary market closure. International finance discussions should preserve the difference between payments for performance, concessional borrowing, ordinary public revenue and private investment. Each imposes different reporting and fiscal obligations. [17,26,39]

17. The petroleum, macroeconomic and low-carbon development interface

17.1 The simultaneous realities of forest conservation and oil production

The Guyanese economy combines globally significant standing forests with rapid offshore petroleum development. The two domains have different accounting boundaries, ownership structures and climate consequences. The country's forest MRVS measures specified land-sector outcomes, while territorial greenhouse-gas inventories measure national emissions within their defined scope. Combustion of exported crude occurs largely outside Guyana's territorial inventory, but such emissions remain relevant to global climate outcomes and to how importing entities report life-cycle emissions. A claim that forests have a large carbon stock is not equivalent to proof that petroleum extraction and use have negligible global emissions. [3,21,22,33,39]

The IMF's 2025 Article IV assessment identified rapidly expanding oil output and strong non-oil activity as major sources of national growth. It also emphasised the importance of fiscal sustainability, economic diversification and converting resource revenues into durable welfare. The IMF's country portal lists a July 2026 mission concluding statement, but that preliminary mission document should not be described as an Executive Board report unless one is published. These distinctions matter because national development outcomes require both credible environmental evidence and credible public investment evaluation. [39,40]

Low-carbon development is not a claim that every economic activity carries a zero-emission profile. It is a policy architecture intended to link resource use, conservation revenue, improved energy technology and resilience within national planning. Its overall climate significance must be assessed using separate territorial, value-chain and consumption-linked emissions boundaries rather than an unqualified single label. A balanced global description documents the scale of forest protection alongside extraction-related risks, future energy-system choices and observed fiscal outcomes. [1,3,21,22]

17.2 The fiscal transmission mechanism

Resource revenues affect public capital formation, domestic employment, foreign exchange availability, imported equipment, household income and the cost of local services. Forest-carbon receipts contribute to a distinct financing stream within this larger economy. The relevant policy evaluation separates revenue raised from the efficiency of expenditure and the persistence of resulting services. A project with a signed contract but no operational maintenance plan has a different development value from a functioning facility with independently verified service levels. [7,8,17,26,39]

Macroeconomic sensitivity testing should model combinations of petroleum-price shocks, forest-credit payment delays, construction-cost inflation and climate-related reconstruction costs. The test should not add the entire gross Hess minimum to annual fiscal capacity or use petroleum revenues to conceal underperformance in forest-finance reporting. For each scenario, report public cash flow, reserved funds, liabilities already incurred and service commitments. A second set of indicators should record non-oil private investment, productivity, local enterprise participation, skills transfer and access to resilient electricity. [9,17,26,39]

A practical analytical distinction is the difference between the Natural Resource Fund, which is associated with petroleum revenues under its governing framework, and separate LCDS forest-finance flows. Consolidated fiscal projections are useful, but treating distinct sources of funds as interchangeable erases their contractual, accounting and governance differences. Auditors need separate source-and-use schedules before combining their contribution to national development. [17,26,39]

17.3 Indicators for diversification without rhetorical shortcuts

GDP growth measures the expansion of economic output but does not by itself establish improvements in distribution, household resilience or environmental quality. A diversified-development dashboard should examine value added in agriculture, manufacturing and non-oil services; sector-specific real wages; firm survival; export concentration; female and youth labour participation; workforce certification; and regional access to public services. Petroleum, forest conservation and other natural-resource sectors should all appear in the account, with no double-counted employment or export figures. [17,33,39]

For each LCDS-funded intervention, the result chain has four levels: expenditure, output, outcome and independent evidence. Expenditure includes procurement and delivery costs. Output records commissioned assets or completed training. Outcome captures service availability, reduced losses, verified earnings or measurable ecosystem improvement. Independent evidence requires sampling, public methods and an audit trail. Illustrative examples include actual clinic cold-chain uptime after installation of solar storage, verified dry-season irrigation service per participating farm and independently measured diesel displacement by electricity assets. [2,8,15,16,39]

The counterfactual deserves equal attention. If a new road, hydro facility or agricultural scheme would have been completed under a different budget without forest-finance revenue, the programme should describe its financing contribution accurately rather than attribute the entire project outcome exclusively to the carbon transaction. An evaluation can still show accelerated delivery or a better resilience standard, provided its causal assumptions are explicit. [17,19,39]

18. Indigenous participation, rights and development assurance

18.1 Distinguishing a financing allocation from evidence of consent

Indigenous communities occupy a central position in the social and environmental assessment of LCDS 2030. The government's announced allocation directs at least 15% of relevant carbon-credit revenues to Indigenous and hinterland communities through locally developed plans. In July 2026, the Department of Public Information reported a further G\$2.5 billion for 2026 and a cumulative G\$16.9 billion in community disbursements. The reported financial amounts answer a funding question. They do not, by themselves, establish that land tenure is fully resolved, that all affected communities consent to every use of their customary territory or that each funded project has reached its intended outcomes. [8,12,13,29]

The Government of Guyana has published an account of stakeholder consultation and land-tenure arrangements. The Amerindian Peoples Association has published objections to aspects of carbon-credit consultation and participation. Both are part of the evidentiary record. Resolving a specific case requires affected-village documents, maps, meeting notices in accessible languages, procedures for representative decision-making, contemporaneous minutes, evidence of decisions and a fair mechanism for contesting outcomes. Advocacy and official reporting should not be confused with an independent finding covering every locality. [12,13,14,34]

The United Nations Declaration on the Rights of Indigenous Peoples addresses participation, lands and resources, and free, prior and informed consent in specified contexts. IFC Performance Standard 7 provides a distinct project-finance safeguard framework, including circumstances in which such consent is required. Their legal status and applicability are not identical to Guyana's domestic legislation or to ART's safeguards. An assessment must state which legal or contractual requirement applies to a particular project before treating a general international principle as an automatic domestic legal determination. [12,13,37,41]

18.2 A village-level outcome register

A community investment is more than the headline value of the transfer. A village-level register should retain an approved development plan, opening balance, amounts received, the public purchasing procedure, contracted suppliers, costs paid, asset ownership, commissioning evidence and responsibility for maintenance. Its outcome fields should reflect the village's stated priorities rather than a central catalogue imposed for reporting convenience. Relevant measures might include potable-water reliability, health-service access, travel times, education participation, reliable electricity, food production and changes in income by household group. The register should also disclose complaints and their resolution while protecting personal information and culturally sensitive locations. [8,19,29,34]

For stronger inference, studies should compare outcomes with a baseline and with relevant comparison communities or staggered implementation cohorts where the design is ethically appropriate. Attribution remains difficult because public works, remittances, petroleum-funded programmes and private investment may operate in the same area. Researchers should report the contribution of LCDS funding to an observed change, the absence of a counterfactual where one does not exist and uncertainty surrounding smaller village samples. Expenditure completion is not a substitute for beneficiary experience. [8,19,29]

Community assurance dimension	Evidence available for examination	Limit to the conclusion
Representation	Dated notices, attendance, translated materials and village decisions	Attendance alone does not prove agreement
Land rights	Survey maps, legal title status, documented customary use and dispute records	A single title map may omit overlapping customary claims
Local control	Village plans, banking authority, procurement records and minutes	An allocation does not establish independent spending discretion
Delivery	Commissioning certificates, field inspection and asset inventory	Delivered assets are not necessarily functioning services
Outcomes	Household survey, service uptime, income and accessibility measures	Causality requires consideration of other interventions
Grievance	Safe complaint access, independent review and remedial actions	Absence of reported complaints may reflect poor access

18.3 Distributional analysis and protection of vulnerable groups

The national allocation rule concerns an aggregate revenue share, but equity questions occur at several levels. Between regions, financial allocation interacts with population, remoteness, transport costs and differences in service backlogs. Between villages, priorities differ by local ecology, land-use pressures and infrastructure needs. Within villages, households may have different exposure to costs and benefits, including women, young people, persons with disabilities and residents whose livelihoods depend on seasonal forest access. An allocation formula should therefore be assessed alongside observed service outcomes and documented decision rights, without presuming that equal dollar amounts yield equal benefit. [8,14,19,29]

Monitoring needs both quantitative and qualitative methods. Financial statements and site visits test spending. Independent facilitated interviews document whether residents understand the programme, have access to relevant information and feel represented in decisions. Sensitive complaints should follow consent-based research procedures with protection from retaliation. Public reports can disclose anonymised results and response rates without exposing individual complainants or commercially sensitive records. [12,14,19,37]

International reviewers should resist two opposite shortcuts. Describing community allocation as conclusive proof of full rights-based compliance discounts documented objections. Treating every programme investment as illegitimate solely because some stakeholders contest consultation likewise fails to evaluate each affected community and project on the evidence. A sound report separates the government position,

stakeholder concerns, applicable requirements and the results of case-specific independent inquiry. [12,13,14,37,41]

19. Biodiversity, freshwater and the boundary between ecosystem services

19.1 Environmental value beyond a tonne of carbon

Forest-carbon accounting expresses a specified climate outcome in tonnes of carbon-dioxide equivalent. A forest ecosystem also supports freshwater regulation, species habitat, soil stability, local livelihoods and cultural values. These benefits interact but are not identical and cannot be added together as if each represented the same unit. A carbon transaction does not automatically convey legal rights over biological resources, water access, biodiversity outcomes or Indigenous cultural assets. The country's LCDS framework explores broader ecosystem services, while the 2025-2027 MRVS strengthening programme describes technical work that could support improved ecosystem mapping. The exploration of a future market should not be represented as revenue already earned. [1,2,36]

A biodiversity monitoring framework must identify ecosystems before assigning value. Appropriate national distinctions include intact forest, modified forest, riparian areas, mangroves, savannahs and freshwater systems. Indicators may include habitat extent, disturbance, connectivity, pressure from roads or mining, selected species trends and water-quality measurements. Some indicators require ground observations, community knowledge and repeated seasonal sampling. Satellite imagery is valuable for land-cover change but does not by itself measure pollinator abundance, fish population viability or cultural ecosystem services. [1,4,36,38]

The Taskforce on Nature-related Financial Disclosures organises nature-related assessment around governance, strategy, risk and impact management, and metrics and targets. Its LEAP approach starts with locating activities in relevant ecosystems, evaluating dependencies and impacts, assessing risks and preparing management responses. For mining, forestry and infrastructure, this provides a disciplined way to analyse effects on watercourses, biodiversity and livelihoods without treating a voluntary disclosure framework as national law. [38]

19.2 The problem of stacked claims

Some projects seek revenue for carbon, biodiversity and watershed services from the same protected area. Multiple payment streams are not inherently duplicates if each represents a genuinely distinct outcome, the applicable rules allow stacking, rights are clear and every outcome is independently measured. The integrity problem arises when the same improvement is sold twice under inconsistent accounting claims, when a credit buyer assumes exclusive rights never contracted, or when an intervention harms one ecosystem service while advertising another. [1,11,38]

A proposed ecosystem-services register should specify the spatial polygon, baseline period, intervention, additional change, eligible beneficiary, ownership basis, measurement method, safeguards, overlapping credit projects and continuing obligations. Public disclosure of sensitive biodiversity and culturally significant locations requires access controls and aggregation. A watershed intervention should distinguish upstream vegetation conservation from downstream water quality and maintain evidence of the causal link, including dry-season and high-flow results. A mangrove programme should account for shoreline dynamics, salinity, coastal erosion and storm damage as well as carbon pools. [1,15,36,38]

19.3 Land-use trade-offs requiring project-level evidence

Roads, mines, agriculture, hydro infrastructure and coastal engineering have different ecological footprints, social purposes and alternative designs. A national-level environmental claim cannot resolve project-specific impacts. The analysis should compare alternatives within the same service objective, including site selection, timing, engineering requirements, cumulative impacts, rehabilitation and long-term operating costs. For a proposed transport corridor, this includes direct clearing, new access to previously remote forest, wildlife connectivity and induced settlement. For an energy project, the boundary includes construction footprint, reservoir or fuel emissions as applicable, dispatch, transmission losses and displaced generation. [1,3,15,22]

Nature-related evaluation is especially important when one infrastructure asset offers an adaptation benefit while introducing a local ecological cost. A drainage project may reduce flooding but alter wetland hydrology; a seawall may protect an urban frontage but change nearby sediment movement. A trade-off record should show which ecological parameters were evaluated, what monitoring occurs during operation and who bears residual losses. These questions belong in feasibility and environmental assessment rather than appearing only after construction. [15,22,38]

20. Electricity transition: engineering evidence and system reliability

20.1 From planned megawatts to delivered electricity

The July 2026 NDC sets a 2030 peak-load planning figure of 475 MW and a 2035 figure of 568 MW. Its indicative 2030 electricity mix is 64% natural gas, 35% renewable sources and 1% heavy fuel oil; for 2035 the mix becomes 58% gas, 41% renewables and 1% heavy fuel oil. The NDC describes gas plus renewable generation as lower-emission and clean energy for national planning, while natural gas remains a fossil fuel. No international comparison should relabel the full 99% mix as renewable electricity. NDC targets are forward-looking and contingent on programme delivery, financing and technical implementation. [3]

Installed generating capacity measures available nameplate plant, not annual delivered energy. A useful public dashboard separates commissioned MW, dependable MW under peak conditions, net electrical generation in MWh, fuel input, thermal efficiency, renewable curtailment, distribution losses and hours of unserved demand. A solar farm can meet its engineering acceptance test but deliver less energy than expected if transmission is constrained or storage cannot perform its intended service. A gas plant may be mechanically complete before a reliable gas supply and electricity connection are available. Reporting milestones separately avoids converting procurement or construction announcements into electricity-sector outcomes. [3,16,17,30]

The NDC identifies regional and rural access measures, including solar hybrid grids and mini-grids, and conditional development of up to 100 MW of solar farms and approximately 165 MW of potential Amaila Falls hydropower. These projects have different lead times, hydrological and grid risks, land requirements and maintenance obligations. They should be compared by dependable generation, delivered cost over operating life, environmental and social impacts, and resilience under flood or drought conditions rather than capacity alone. [3]

20.2 Measuring real emissions displacement

For grid modernisation, emissions avoided depend on what generation is displaced hour by hour. A simple annual comparison multiplies renewable output by an average grid emissions factor, but this may misstate displacement during hours in which gas, diesel and hydropower contribute differently. Better practice uses audited fuel and generation data, the marginal dispatch profile where available, plant efficiency, transmission loss and changes in peak demand. Projects with battery storage should separately account for charging energy, round-trip efficiency, battery replacement and operating strategy. [3,16,21,22]

Gas-to-energy outcomes depend on a full fuel-chain boundary. Combustion emissions per unit of generation typically differ between natural gas and heavy fuel oil, yet upstream methane loss, gas-processing energy, plant efficiency and the displacement of existing generators affect life-cycle performance. Petroleum-associated infrastructure does not disappear from the climate account merely because a power plant burns gas rather than oil. The NDC's transitional-fuel treatment is a planning statement; realised performance requires measured fuel use and transparent assumptions about methane and alternative dispatch. [3,22,30]

Power-system indicator	Project-level record	Independent outcome test
Project status	Commissioning, first synchronisation and commercial operation	Evidence of sustained dispatch, not launch ceremony
Energy	Net MWh and hourly load served	Revenue-grade meter data matched to dispatch
Reliability	Forced outages, reserve margin and feeder interruption	Trends versus pre-project baseline
Affordability	Household tariffs, service charges and connection costs	Real household affordability by income group
Climate	Fuel input, grid mix, methane boundary and renewable curtailment	Reproducible calculation of changes in CO ₂ e
Equity	Connections by region, village and facility type	Service quality and uptime beyond connection counts

20.3 Hinterland systems and the social value of reliability

A grid connection offers limited benefit when voltage quality, continuity or maintenance remain inadequate. Hinterland systems also face high logistics costs and variable access to spare parts. Programme effectiveness is measurable through daily service hours, uptime during school or clinic operation, days of fuel dependency, productive electricity use and the availability of qualified local technicians. A lifecycle budget should include replacement batteries, inverter failures, transport, remote monitoring subscriptions and disposal or recycling requirements. [3,16]

Regional projects present an opportunity to compare delivery models. A standalone solar-battery system, interconnected regional mini-grid and extension of the national network may have different economics under projected demand growth. Assessment should state the number of customers, critical loads, frequency of major weather events, affordability assumptions and service standards. A technology preference without an appropriate local reliability model is not an evidence-based infrastructure conclusion. [3,15,16]

21. Extractive-sector land management, mining rehabilitation and traceability

21.1 Understanding why the dominant loss driver matters

Guyana's 2023 MRVS reported 9,353 hectares of mapped deforestation, including 5,853 hectares attributed to mining and associated infrastructure. This represents roughly 62.6% of the recorded 2023 mapped loss; the percentage reflects that reporting year's classification and does not establish the same driver share in later years. The materiality of the mining contribution suggests particular scrutiny of the entire project lifecycle, from permitting and access roads through progressive rehabilitation and closure. At the same time, annual land-cover trends should be read with the absolute area, local concentration and uncertainty alongside the national percentage. [4]

Not all disturbance has identical permanence or ecological consequences. A temporary work area with successful, monitored restoration differs from an expanding open pit or uncontrolled access corridor.

Independent review should assess fragmentation, stream sedimentation, tailings and chemical risks, road access and induced activity. A hectare-counting system misses some significant water and biodiversity impacts. Conversely, regulatory compliance reporting should distinguish authorised operations from suspected illegal activity and avoid assigning responsibility based solely on satellite interpretation. [1,4,22]

21.2 A lifecycle evidence chain

A mining-control register can connect approved tenure boundaries, environmental authorisations, forest-clearing permissions, progressive rehabilitation commitments and monitoring records without exposing sensitive operational data. Each disturbance polygon should receive a unique identifier and an activity timeline. A reviewer could then test whether clearing preceded authorisation, whether erosion controls were installed and maintained, whether rehabilitation was completed to its agreed standard and whether closure provisions cover long-term water-quality risks. Where multiple operators use a shared road or river access, cumulative effects need an accountable allocation of monitoring responsibilities. [1,4]

A rigorous rehabilitation outcome standard cannot equate tree planting with restored forest. Planted seedlings differ from established canopy, native species recovery, soil structure, hydrological connectivity and a functioning forest ecosystem. Early-year survival, medium-term vegetation structure and longer-term biodiversity outcomes require different observation periods. A credible register retains the original disturbance record even after an area receives a restored status; otherwise land-clearing and subsequent planting may be presented as a net-zero physical footprint without demonstrating ecological equivalence. [4,36,38]

For mineral supply chains, traceability extends from mine authorisation and production records to transport, processing and customer declarations. Physical chain-of-custody tests require product batches and documentation, while area-based compliance tests require spatially referenced operating permits. These systems serve different functions. Alignment could improve the evidentiary value of responsible-mineral claims, but no traceability label by itself proves ecological restoration or community consent. [1,4,12]

21.3 Institutional questions for cumulative-impact control

The practical challenge is coordination across mineral regulation, forestry, environmental protection, infrastructure and communities. Permit maps, land-use plans and monitoring reports may use different identifiers and update cycles. A joined audit design establishes a common coordinate reference, controlled data-sharing agreements and a public record of essential approvals. Sensitive concessions and Indigenous cultural locations require access restrictions, while the broad category of permitted disturbance, compliance actions and rehabilitation performance should remain open to meaningful scrutiny. [1,4,36]

External reviewers should distinguish a regulatory framework's existence from enforcement results. For each reporting year, a meaningful enforcement dashboard records inspections undertaken, violations identified, notices issued, corrective actions verified, outstanding restoration liabilities and repeat non-compliance. Because inspection effort affects detected violations, an increase in recorded infractions may indicate better detection rather than worsening underlying behaviour. Data should include denominator measures such as inspected concession area and staff coverage. [1,4]

The NDC's 2035 horizon presents a useful way to compare development and environmental outcomes under competing mining and forestry scenarios. A land-use model should include road-induced access, future commodity prices, artisanal activity, enforcement capacity, drought and restoration success. These are sensitivity variables, not forecasts about which economic sector will expand. The purpose is to reveal conditions under which forest outcomes cease to satisfy a specified performance threshold and what additional evidence would be needed. [3,4,36]

22. Climate adaptation: coastal, agricultural and hinterland risk

22.1 Coastal protection as a service standard

Guyana's coastal settlements and agricultural areas face combined hazards from intense rainfall, sea level, river discharge, drainage constraints and storm-surge events. A project appraisal that assigns one generic national flood probability obscures major location differences. The World Bank's 2024 coastal-resilience project documents public investment needs and projected beneficiaries; these prospective beneficiaries should not be described as residents already protected by completed infrastructure. The updated NDC identifies drainage, irrigation, coastal protection, mangrove restoration and early warning as major resilience actions. [3,15]

Coastal resilience is ultimately measured through reduction in expected losses and interruption of essential services. Indicators include drainage pump availability, canal conveyance under extreme rainfall, sea-defence condition, critical-road accessibility, hospital and school downtime, household displacement and insured or uninsured asset loss. Engineering completion certificates establish construction outputs, while flood-event performance and maintenance records provide evidence of risk reduction. Evaluators should record rainfall and tide severity so a dry year does not create a misleading appearance of project success. [3,15]

Nature-based and engineered interventions need an integrated assessment. Mangroves may attenuate wave energy and stabilise some shorelines where site conditions permit, while concrete defences and pumps serve different functions. Their relative contribution depends on bathymetry, sediment supply, coastal development and maintenance. A mixed design should define monitoring responsibility and preserve ecological data before and after construction. [3,15,38]

22.2 Climate-resilient agriculture and food security

The July 2026 NDC describes investment in irrigation resilience for approximately 100,000 acres of agricultural land. This is a stated programme objective, not a claim that every acre had received effective climate protection by September 2026. Land-area measures need to be paired with measured water availability, crop yields under comparable weather conditions, storage access, salinity, post-harvest loss and farm-income outcomes. [3]

Adaptation investments face correlated risk. An exceptionally wet season may damage both drainage infrastructure and farms. A drought can simultaneously affect river transport, irrigation water and hydropower output. Project feasibility should therefore test combined events rather than isolate each hazard. The relevant budget includes routine maintenance, periodic refurbishment, spare parts and emergency response, not only initial construction. Independent evaluations should document whether disaster losses would have been higher without the intervention, while acknowledging uncertainty around rare extreme events. [3,15,22]

22.3 Hinterland exposure and locally appropriate indicators

In hinterland regions, flood depth is only one dimension of climate vulnerability. River navigability, seasonal transport access, food storage, remote electricity and health-system supply chains are equally material. National adaptation reports should recognise communities' knowledge of river behaviour and land conditions while safeguarding sensitive local information. Project success may depend more on reduced service interruption than on a nationally aggregated expenditure metric. [3,8,15]

A resilience appraisal can compare an asset's performance against multiple plausible weather conditions: a moderately wet year, a 1-in-20-year design storm, a compound rainfall-and-high-tide event and an extended dry season. The probabilities are examples of engineering test conditions, not claims about observed Guyanese return periods. Maintenance deficiencies and a simultaneous electricity outage should appear in at

least one case. When the resulting service fails, the analysis should identify the responsible operator, expected restoration time and funding mechanism. [3,15]

23. Implementation architecture, public dashboard and evidence gates

23.1 Results-based reporting across ministries and projects

A national strategy spans agencies with different mandates and reporting cycles. Its public dashboard should therefore include named data owners, standardised definitions, reference dates, validation rules and archived historical versions. The proposed structure here is an independent analytical model and does not imply that the government has adopted every field. The smallest useful reporting unit differs by domain: a forest-disturbance polygon, a carbon-credit serial number, a financed infrastructure asset, a village development-plan project or a household-service observation. A linking architecture should connect these units through stable identifiers without conflating them. [1,2,3,4,36]

Cross-cutting measures should record gender, age, region and urban/hinterland access where privacy and statistical reliability permit. Each metric requires a numerator, denominator, sampling period and statement of uncertainty. For example, the proportion of energy users with uninterrupted service over a defined period is more informative than a count of solar installations, provided service is measured consistently. A social indicator should record the population surveyed and non-response to avoid presenting a small convenience sample as national experience. [3,8,16,19]

23.2 A ten-year results matrix

Domain	Baseline or dated evidence	2027-2030 progress evidence	2031-2035 outcome evidence	Verification need
Forests	2023 MRVS change and driver record	Comparable annual assessments and site enforcement outcomes	Long-run trends and uncertainty-adjusted loss	Independent geospatial and field review
Carbon finance	Contract and receipts through March 2026	Issuance, serial-level use and annual cash-to-project ledger	Audited project impacts and continuing obligations	Registry and public-account reconciliation
Indigenous communities	Published allocation rule and 2026 transfers	Village-level spending and grievance audit	Longitudinal service, rights and livelihood measures	Community-selected independent review
Electricity	July 2026 NDC targets	Commissioned assets, delivered MWh, outages and realised fuel displacement	Generation-mix, cost and emission trends against the NDC	Meter, fuel and asset records
Mining	2023 driver attribution	Permit, clearing, compliance and progressive-restoration records	Sustained rehabilitation and water-quality trends	Spatial, laboratory and regulatory audit
Resilience	World Bank and NDC baseline/project targets	Infrastructure condition and hazard-adjusted service outcomes	Reduced expected losses and faster service restoration	Engineering and impact evaluation
Nature	Ecosystem inventory and risk-screening baseline	Comparable habitat and freshwater surveys	Trends in connectivity and selected species/health metrics	Field-validated ecological assessment

The matrix intentionally does not convert every programme into a single national performance score. Indicators measure outcomes on different spatial, temporal and ethical bases. A composite value can conceal failure in a particular area, especially where an aggregate benefit masks a rights concern or a damaged watershed. A report should provide disaggregated performance alongside any national summary. [3,4,8,12,15,38]

23.3 Evidence gates for expenditure, claims and annual publication

Before a public-finance claim is released, an expenditure assurance gate tests procurement authorisation, payment record, asset delivery and maintenance funding. Before an environmental performance claim is released, a scientific gate tests source data, comparability, independent verification and uncertainty. Before a carbon-market eligibility claim is released, a legal and registry gate checks standards status, serial numbers, vintage, authorised use and accounting requirements. Before a beneficiary outcome claim is released, a social gate checks a documented baseline, participant selection, informed research procedures and the causal limits of available data. [3,4,9,11,12,23,37]

Publication control requires a clear escalation route for conflicting official and independent evidence. When a new method changes a previously published number, the archive should preserve the earlier figure and publish a change note. When a legal or standard-setting decision changes market eligibility, a dated update should amend the affected claims without rewriting historical issuance. When a community complaint remains under review, its status should remain visible with appropriate confidentiality rather than appearing as a resolved finding. [11,12,24,35]

The GitHub-ready research packet accompanying this edition includes a machine-readable source register, claims ledger, scenario register and automated document checks. The local build verifies the integrity of source identifiers, expected scenario records and publication files. Those checks detect omissions and inconsistencies in the report's structure; they do not establish the truth of unverified external claims or perform independent field verification. No autonomous worker was deployed to a remote repository because the connected GitHub account did not expose a writable installation during this edition's preparation. [4,11]

24. International transferability, limitations and competing interpretations

24.1 Conditions for learning from Guyana

Many forest-rich countries face pressure to finance services without accelerating permanent forest loss. Guyana's experience shows one route for combining a national forest-monitoring system, a bilateral results-based partnership, jurisdictional carbon-market participation and allocation of proceeds to local and national programmes. Whether such an arrangement transfers to another country depends on forest governance, tenure arrangements, reference levels, administrative capacity, market eligibility, verified demand and public financial systems. A transaction executed in one jurisdiction cannot serve as a reliable price or revenue forecast for another. [1,2,9,18,35]

Comparative research should classify countries by forest cover and historic deforestation trajectory, exposure to commodity expansion, land-tenure arrangements and budget dependence on carbon revenue. A high-forest, low-deforestation case faces a different baseline-additionality problem from a jurisdiction already experiencing widespread loss. The May 2026 ICVCM decision makes those differences central rather than peripheral to the international discussion. The June 2026 TREES 3.0 publication supplies a newer standards framework, but an analyst must follow subsequent independent assessments and registry decisions rather than assume an automatic resolution of previous concerns. [11,35]

24.2 Four defensible perspectives in the international debate

The host-country development perspective emphasises the costs and opportunity costs of maintaining forest cover while paying for education, health, energy and infrastructure. The integrity perspective asks whether a credited mitigation outcome exceeds a credible counterfactual, survives reversal risk and avoids double claiming. The Indigenous and local-community perspective asks who exercises land and resource rights, who decides project priorities and which remedies exist for disagreements. The global-transition perspective

examines the climate effect of forest protection alongside emissions from expanded petroleum production and the consumption of exported products. These viewpoints investigate distinct material questions and cannot be settled by substituting one metric for all others. [1,3,9,11,12,13,14,22,37]

The evidence is uneven. Contracted credit value and payment records are more directly observable than a hypothetical future deforestation trajectory. Satellite-detected change provides important physical evidence but does not capture all biodiversity or rights outcomes. Government announcements identify public commitments and administrative records, whereas independent studies may expose implementation gaps without having nationally representative samples. A comprehensive evaluation reports each limitation instead of assigning uniform certainty to all claims. [4,6,8,11,12,19,42]

24.3 A responsible international communication protocol

A worldwide publication on LCDS 2030 is most useful when the original strategy, dated implementation evidence, contested accounts and future scenarios remain visibly separate. A brief should state whether a figure is a historical observation, official target, contractual commitment, cash receipt, external standard decision or analytical sensitivity. Comparisons must define time period and measurement boundary. Short summaries should disclose the major 2026 carbon-methodology debate and explain why CORSIA, ART issuance and the CCP label address distinct questions. [2,3,4,6,9,10,11,23,24,35]

An institutional edition can be distributed as a searchable PDF alongside a structured source register and a plain-language executive summary. The full research edition should preserve original figures, state where data are unavailable and invite qualified technical and stakeholder review. An independent document does not gain official endorsement merely by citing government material or using national imagery. The publication should clearly identify its author, date, research method and independence, while any prospective government or commercial endorsement requires separate permission. [1,3,4]

24.4 Private-sector reporting and standards interoperability

Financial institutions and companies engaging with LCDS-related initiatives face additional reporting questions beyond the national NDC. IFRS S2 requires a reporting entity within its applicable scope to explain material climate-related governance, strategy, risk management, metrics and targets. TNFD addresses nature-related dependencies, impacts, risks and opportunities. The two frameworks differ in purpose and applicability. Neither a national carbon-sale announcement nor a public PDF automatically meets a company's own disclosure obligations. An institution should trace its claims to the specific financed activity, the material risks it faces, and the evidence supporting those assertions. [38,43]

For extractive, energy or infrastructure operators, a reporting package should distinguish owned operational emissions, purchased-energy emissions, relevant value-chain emissions, land-use impacts, community safeguards and resilience of assets exposed to flooding. The host country's NDC establishes national commitments; it does not automatically validate a company's product-level or corporate net-zero claims. A clear ownership map shows which institution measures each outcome, whether the result is independently assured and whether more than one entity seeks an exclusive claim over the same environmental improvement. [3,21,22,38,43]

Appendix A. Quantitative assumptions, units and reproducibility

All currency figures in carbon-market calculations are US dollars unless a row explicitly says Guyana dollars (GYD or G\$). One issued carbon credit is generally represented as one tonne of CO₂-equivalent under the issuing programme's accounting rules; issuance does not mean a unit has been sold or retired. Forest emissions, forest removals, mapped clearing and creditable net mitigation are different quantities, often

calculated over different boundaries and reporting periods. A year's mapped forest loss should not be multiplied by an assumed universal carbon factor to infer Guyana's credit issuance.

Calculation	Inputs	Formula and result	Restriction
Carbon-price case	Hypothetical 9m uncontracted eligible units, \$10/\$20/\$30 each	Gross = units x price, \$90m/\$180m/\$270m	No guarantee of issuance, sale, price or eligibility.
Community sensitivity	Hypothetical 15% of the illustrative gross cases	\$13.5m/\$27m/\$40.5m	Excludes contract definitions and audit reconciliation.
Forest-pressure case	2023 mapped total 9,353ha, mining-related 5,853ha	Total = 9,353 + 5,853 x percentage mining uplift	Not a new observation or credits estimate.
Government receipt sum	Seven publicly listed payments, USD millions	75+37.5+37.5+37.5+50+58.1+57.9 = 353.5	Timeline ends March 2026, not total contract value.
2023 mining share	5,853 / 9,353	Approximately 62.6%	2023 mapping classification only.
2023 loss-rate difference	2023 0.053% less 2022 0.036%	0.017 percentage points	Two observations, not a trend forecast.
2030 NDC electricity shares	HFO 1%, gas 64%, renewables 35%	Shares total 100%	Electricity generation pathway, not all energy.
2035 NDC electricity shares	HFO 1%, gas 58%, renewables 41%	Shares total 100%	Future plan, not accomplished output.

Sources for these historical inputs are the government's current published LCDS payment timeline, the 2023 GFC MRVS and Guyana's July 2026 NDC. [3,4,6]

Appendix B. Source conflicts and interpretation notes

Issue	What different documents say	Treatment in this report
Annual forest uptake	Historical official materials and the 2026 NDC employ different figures and boundaries for national forest carbon storage or removals.	Present the NDC's figure only with its stated boundary and date; do not mix with older figures or assume equality with marketable credits. [1,3]
Forest loss reporting	National mapped totals and independent sample-based accuracy estimates are not mathematically identical series.	State the 2023 mapped area and disclose the distinction between mapping and the independent accuracy estimate. [4]
Energy assumptions	The 2022 LCDS and 2024 update contain schedules and projections subsequently superseded or adjusted in the 2026 NDC.	Label original project timelines as historical and use the 2026 NDC when discussing its newer 2030 and 2035 commitments. [1,2,3]
Revenue	Contracted Hess minimum is at least US\$750m over ten years; paid receipts on the official timeline total US\$353.5m through March 2026.	Keep contract minimum, dated receipts, credit issuance and budget spending separate. [6,7,26]
Programme and methodology	ART issues credits; ICVCM's ART programme-level assessment differs from its May 2026 non-approval of the TREES HFLD methodology for CCP labels.	Identify scope and date of each decision and state CORSIA status separately. [10,11,23]
Consultation	Government documents describe seven months of consultation and community resolutions; APA describes concerns regarding meaningful participation, consent and tenure.	Attribute each account and identify consent records, grievance outcomes and land claims as independently assessable matters. [12,13]
Oil and electricity	Grid targets mainly concern electricity; national and life-cycle emissions have different reporting boundaries.	Report operational grid improvements separately from oil and gas production and exported-fuel combustion. [3,22]

Issue	What different documents say	Treatment in this report
Adaptation beneficiaries	The World Bank coastal project's 320,000 people are targeted beneficiaries in a project design.	Do not describe them as people already protected without an outcome evaluation. [15]

Appendix C. Questions an external reviewer should ask

C.1 Forest measurement and permanence

- 1. Are Guyana's forests being measured consistently?** An adequate answer contains a stable forest definition, comparable classified imagery, accuracy assessment, carbon-density assumptions, explicit treatment of degradation and a public revision history. Mapped clearing and emissions should remain separate series. [4,5]
- 2. Does historically low deforestation mean there is no additional climate benefit?** Historical loss alone cannot answer the question. The relevant assessment concerns credible future pressure, reference-level methodology, safeguards, leakage and permanence. ICVCM's May 2026 remedial requirements specifically require stronger evidence concerning likely future emissions in relevant HFLD crediting calculations. [11]
- 3. How are reversals caused by fire and other events managed?** Review the ART programme's actual buffer rules, the jurisdiction's updated risk assessments, satellite and field-based detection, and the financial and contractual allocation of losses. Avoid assuming all issued units are permanent. [10,23]
- 4. Do mining roads and degradation appear in carbon accounting?** Inspect the annual national MRVS by cause and emissions category, compare concession boundaries and review whether degradation data are complete. Water pollution, habitat loss and community impact require separate indicators. [4]
- 5. How should a reader interpret the 2023 deforestation increase?** Use the 2022 and 2023 rates, mapped hectares, identified activity drivers and methodology notes. Two annual observations are insufficient to predict the next decade. [4,5]

C.2 Carbon finance and integrity

- 6. Is the Hess contract the same as annual income?** No. The contract's minimum ten-year purchase value, annual contracted obligations, registry issuance, buyer acceptance, cash receipts and appropriated spending represent distinct steps. [6,7]
- 7. Are Guyana's issued credits CCP-approved?** The precise statement depends on vintage and methodology. ICVCM's May 2026 decision found that then-issued units under the assessed ART TREES v2.0 HFLD crediting level did not qualify for CCP labels; ART programme assessment and CORSIA eligibility are separate decisions. [10,11,23]
- 8. Do CORSIA labels settle all questions about environmental additionality?** No. ICAO eligibility establishes compliance with that programme's accepted-unit rules for relevant periods, not automatic approval under a different voluntary integrity label or the resolution of every contested baseline assumption. [10,11]
- 9. Can gross carbon proceeds be pledged indefinitely to recurrent services?** A budget analysis must distinguish contractually committed cash from conditional future supply, account for market, delivery, currency and counterparty risks, and show fallback funding sources. [6,7]
- 10. What prevents double counting across markets?** Review registry serials and unit status, cancellation or retirement, international authorisation where relevant and the national Paris Agreement accounting treatment. A credible answer is transaction-specific, not a general promise. [3,10]

C.3 People, institutions and biodiversity

11. Does transferring 15% of revenue prove Indigenous consent? No. Financial transfer, the terms of participation, rights to land and resources, the consultation process and independently measured outcomes are distinct evidence. Government and APA accounts should be read directly and affected communities heard. [8,12,13]

12. What should be publicly disclosed from village projects? Allocation, opted-in status, locally approved priorities, procurement, spending, completed assets, operational service, audit outcomes and grievances, with safeguards for personal and sensitive Indigenous information.

13. How should competing tenure claims be assessed? Use the specific statutory and customary rights, applicable court and land records, agreed consultation procedures and independent testimony from affected parties. A national consultation count cannot substitute for examining an individual disputed claim. [12,13]

14. How does a reviewer test biodiversity claims? Review habitat baselines, species and freshwater data, field sampling, access rules, ecosystem connectivity and the long-term financing plan. Avoid equating an area on a map with independently demonstrated ecosystem health.

15. Does higher public spending mean poverty has fallen? Not without a household baseline, regionally disaggregated income and service measures, an attribution method and sensitivity to inflation and concurrent programmes.

C.4 Energy, adaptation and global claims

16. Is the 2030 electricity target mostly renewable? No. The July 2026 NDC states a planned electricity generation mix of 64% gas, 35% renewables and 1% heavy fuel oil. Describe natural gas as a fossil fuel and report the year and electricity boundary. [3]

17. Does forest conservation cancel emissions from oil production or use? A valid answer distinguishes territorial greenhouse-gas inventory accounting, carbon-market claims, operational production emissions and the downstream combustion of exports. Offsets should not be treated as a substitute for transparent direct emissions reporting. [3,22]

18. How would a gas-project delay change the 2030 picture? Build metered fuel and generation cases with realistic commissioning and outage assumptions, then publish the resulting electricity-emissions factors. Do not infer the future result from installed capacity. [3,21]

19. Are flood-defence beneficiary estimates observed outcomes? Project-appraisal figures are expectations. Verify completed works, maintained hydraulic capacity, observed flood duration, actual household protection and exposed assets under current climate risk. [15]

20. What would justify greater international confidence in the LCDS? Publicly reproducible forest datasets, registry and finance reconciliations, independent project evaluations, documented responses to consultation disputes, metered energy results and corrections to earlier projections are relevant evidence. The sufficiency of the record is for each institution to assess against its own stated criteria.

Appendix D. Publication and evidence-control protocol

The source hierarchy for this report is: original policy text and international filings for commitments; dated MRVS and registry records for reported environmental quantities; official payment disclosures for reported receipts; independent standards decisions for their own assessment scope; official statements for a government's stated position; and named stakeholder publications for their authors' concerns or interpretations. External opinions are not repackaged as verified project findings. Contested rights questions remain open where the reviewed materials lack an adjudicated, project-specific record.

Before any institutional republication, an editor should perform source-by-source hyperlink checks, confirm whether a newer full-year MRVS has appeared, search the ART registry for subsequent 2024 issuances or corrections, verify current ICVCM remedy status, review the latest budget execution and reconcile exact project-level spending against the official general-ledger balance. An independent Guyanese forestry specialist, an Indigenous rights and land-tenure specialist, an energy-system modeller and a public-finance auditor should be invited to review relevant chapters. Such external peer review was not performed for research edition 1.0.

An open reproducibility packet should contain the source register with retrieval dates, scenario CSV inputs, chart-generation script, the exact report text and a dated change log. Every revision should identify altered data, source URL and reason. This procedure supports correction and permits a global audience to audit the record without relying on unsupported promotional statements.

Appendix E. Glossary

ART: Architecture for REDD+ Transactions, the programme operating the TREES standard for jurisdictional forest crediting.

CCP: Core Carbon Principles, the integrity criteria and labels administered by ICVCM.

CORSIA: Carbon Offsetting and Reduction Scheme for International Aviation, a separate ICAO framework with its own eligibility requirements.

FPIC: Free, prior and informed consent, relevant to international Indigenous rights standards and the requirements applicable to a particular activity.

GHG: Greenhouse gases, generally reported as tonnes of carbon dioxide equivalent (tCO₂e) when aggregated.

HFLD: High forest, low deforestation. In crediting programmes, a category with special baseline and eligibility questions.

ICVCM: Integrity Council for the Voluntary Carbon Market, which independently assesses crediting programmes and categories against its CCP framework.

LCDS 2030: Guyana's Low Carbon Development Strategy 2030, finalised in 2022.

MRVS: Monitoring, reporting and verification system for forests and related carbon estimates.

NDC: Nationally determined contribution under the Paris Agreement; Guyana submitted its NDC 3.0 in July 2026.

REDD+: Reducing emissions from deforestation and forest degradation, including conservation, sustainable management of forests and enhancement of forest carbon stocks.

TREES: The REDD+ Environmental Excellence Standard, administered by ART.

Village Sustainability Plan: A locally prepared investment plan under the participation and benefit-sharing arrangements of Guyana's LCDS.

Appendix F. Reviewer-grade evidence tests by major claim

The tests in this appendix specify evidence an independent reviewer would request before upgrading a public statement from "reported" to "independently corroborated." They are not statements that the underlying primary records are already in this report's possession.

F.1 Forest and emissions tests

Claim: forest cover remains broadly stable. Obtain the national forest mask for at least two consecutive reporting years, imagery metadata, classification accuracy results, thresholds, sampling weights and revision notices. Reproduce the area estimate using the same forest definition and compare it with independently sampled reference imagery. Inspect locations with high uncertainty and produce both national and driver-level area estimates. If there is a material unexplained discrepancy, present the alternatives and classify the claim as unresolved pending access to the relevant data. [4,5,36,42]

Claim: mining is the dominant current forest-loss driver. Confirm the most recent available national reporting year, distinguish mining activity from associated roads and other infrastructure, examine the satellite attribution method and sample probable error. The 2023 MRVS identifies mining-related loss as the principal mapped driver for that historical year; a contemporary claim requires a subsequent year of verified data. [4]

Claim: national emissions are offset by forests. Request an inventory that covers the national reporting boundary, all material gases and applicable land-use sectors; trace carbon stock and flow methods, territorial energy emissions and adjustments. Distinguish the annual physical stock change from a contractual carbon unit and from global end-use emissions associated with exported petroleum. If the inventory cannot support the complete balance, qualify the claim to the narrower reported forest-sector finding. [3,21,22,36]

F.2 Finance and market tests

Claim: a named amount of forest finance has been earned. Separate signed commitments, conditional future milestones, invoices, actual bank receipts and foreign-exchange conversion. Reconcile the official payment timeline to audited accounts and explain any difference in rounded public statements. Each figure needs its exact as-of date. [6,7,9,17]

Claim: a named credit volume is internationally eligible. Inspect the current scheme-eligibility document, ART registration and verification data, serial-number range, vintage, host-country authorisation and applicable corresponding-adjustment records. Verify the intended buyer claim against the specific compliance period. Treat voluntary CCP labels and regulatory CORSIA eligibility as different attributes. Check for changes in the underlying methodology after the May and June 2026 announcements. [3,10,11,23,24,35]

Claim: forest-finance expenditure improved village livelihoods. Request the approved village plan, account statement, procurement records, asset handover and operating budget. Compare pre-intervention and post-intervention service or income measures, disclose beneficiary sampling and check for other simultaneous funding. Audit procedures should protect personal data and obtain consent for interviews. [8,12,13,19,29,37]

Appendix G. Scenario mechanics and transparent sample calculations

G.1 Accounting identities

The analysis uses simple transparent relationships rather than a probability-weighted forecast. Gross illustrative proceeds equal saleable units multiplied by realised unit price. Net proceeds equal gross proceeds minus documented transaction charges, required withholding and other contractually specified deductions. Cash available for new commitments equals opening unrestricted balance plus cash received minus expenditure, existing commitments and designated reserves. No modelled future credit volume is treated as registered issuance. [9,11]

To illustrate price sensitivity, assume a hypothetical 1 million saleable units with zero delivery restrictions and no transaction fees. At a US\$10 price the gross value is US\$10 million; at US\$20 it is US\$20 million; at US\$30 it is US\$30 million. Suppose 15% were allocated under the programme's stated community allocation rule on

an equivalent hypothetical base: the three resulting illustrative allocations would be US\$1.5 million, US\$3 million and US\$4.5 million. This simple multiplication does not define the actual statutory, contractual or accounting base for Guyana's real allocations. A delayed-issuance case yields zero cash received in the model year even when the hypothetical future credit value is unchanged. [8,9]

A physical-forest scenario is similarly conditional. Starting from the 2023 mapped deforestation area of 9,353 hectares, a hypothetical 25% increase produces approximately 11,691 hectares in a following year; a 25% decline produces approximately 7,015 hectares. These scenarios do not estimate or predict 2024-2026 outcomes. They demonstrate how assumptions affect the scale of monitoring and enforcement required under defined performance thresholds. National forest-area percentage and affected carbon stock will not move proportionally in every case because location and biomass vary. [4]

G.2 A non-predictive cross-impact matrix

Hypothetical trigger	First-order financial effect	Second-order operational effect	Evidence to examine
Credit price falls 40%	Lower proceeds per eligible unit	Capital pipeline or reserve draw changes	Executed price, contract floor, unrestricted cash
Verification delayed 18 months	Near-term cash receipt postponed	Operating budgets and procurement rescheduled	Registry milestones and public expenditure ledger
More stringent HFLD baseline	Potentially different eligible credit volume	Additional modelling and validation expense	Revised methodology and independent assessment
Forest loss rises near mines	Risk to conservation and future claims	More inspections and rehabilitation obligations	Dated polygons, permits, field validation
Severe coastal flooding	Emergency spending and service disruption	Repair backlog and agricultural loss	Engineering performance and event severity
Drought plus high peak load	Hydropower and cooling constraints	More thermal dispatch or unserved demand	Hourly dispatch, hydrology and fuel records
Public investment cost escalation	More cash required for equal outputs	Smaller pipeline or delayed delivery	Procurement changes and price indices
Indigenous grievance unresolved	Project-level social and legal exposure	Delayed implementation pending local process	Community documentation and grievance status

For a compound case, combine delayed verification, higher construction costs and one severe weather event. The model must first apply cash-flow timing and existing contractual commitments. It then tests whether existing reserves cover critical operations and whether project schedules remain financially feasible. Adding theoretical future carbon contract value to cash on hand invalidates this test. The scenario matrix is designed to reveal the data needed for decisions, not to assign probabilities to events that have not been estimated. [6,9,11,15,39]

Appendix H. Field research and stakeholder interview protocol

A comprehensive follow-up study would select respondents to cover coastal and hinterland regions, Indigenous and non-Indigenous communities, ministries, technical regulators, programme implementers, independent specialists, carbon buyers and civil-society groups. Sampling should document why locations and respondents were selected; a small purposive sample must not be reported as a nationally representative opinion survey. Interviewers must obtain consent, identify conflicts of interest and provide participants with an appropriate method of correcting factual errors in attributed testimony. [12,13,14,19,34,37]

Community interviews should ask about access to project information, the process used to select priorities, ability to object or change decisions, practical procurement authority, maintenance arrangements and perceived changes in services and livelihoods. For sensitive matters, record the existence and process status of a concern rather than disclosing names or customary sites without consent. Affected communities should

be able to review the accurate representation of their testimony before publication of attributable statements. [12,14,37,41]

Technical interviews with the forestry commission should test classification changes, driver mapping, independent sample design and uncertainty propagation. Carbon-market interviews should test issuance timing, registry reconciliations, integrity-methodology decisions and double-counting controls. Public-finance interviews should separate the contract balance, the cash balance, capital appropriations, actual expenditure and project operating liabilities. Energy interviews should obtain fuel-consumption and delivered-generation records, while coastal resilience interviews should assess hazard-adjusted asset performance. Each interview question should link to a reproducible record rather than invite only general endorsements or objections. [3,4,6,9,11,15,24,36]

Evidence review should offer a right of response for materially criticised institutions or programmes. Disagreement should appear with its documentary basis and an explanation of whether the underlying evidence was independently accessible. The process must avoid implying that an interviewee's participation constitutes institutional approval of the white paper. [12,13,34]

Appendix I. Open-source research workflow and publishing controls

The accompanying research packet is compatible with common GitHub workflows but has no dependency on a paid external research agent. Its source data are stored as JSON, scenario cases as CSV, and the manuscript as Markdown. `repo_checks.py` detects missing numbered references and mismatched scenario records. Additional open-source components identified through the connected GitHub search include Citation.js for bibliography formatting, the OpenAI Agents SDK as an optional framework for future worker orchestration, and the Open Foris SEPAL codebase for geospatial processing infrastructure. Mentioning software here does not imply those packages have independently validated Guyana's MRVS figures. [4,36,42]

The recommended automated pipeline runs five local checks: reference completeness, date consistency, claim-status tagging, numerical reconciliation and PDF structure. Source references must map to a stable URL and a cited publication date. Critical numerical claims receive an explicit evidence category, measurement period and stated limitations. A machine test should flag an unreferenced number in a high-materiality chapter for human examination but avoid treating every year, page number or source identifier as a substantive climate statistic. Human reviewers should read the original technical tables and reconcile ambiguous language before publication. [3,4,6,11]

Geospatial replication should proceed only after obtaining appropriate dataset licences and access rights. Raster operations need an agreed forest mask, projection, spatial resolution and reporting interval. Reproducible scripts should preserve raw inputs and checksums, report changes in classification thresholds and generate a map of disagreement with the national product. A field-validation plan should be statistically defensible and protect sensitive locations. It is inappropriate to claim that a downloaded general-purpose forest map independently verifies a national ART credit cohort without aligning the accounting method and documentation. [4,20,36,42]

Publication control also includes accessibility. The PDF should contain searchable text, logical heading structure, legible figure labels, table headings and functioning source links. New editions need a revision history identifying material changes, particularly carbon market eligibility, the latest available MRVS assessment, financial receipts and NDC reporting. An automated green test is evidence of structural correctness only. Independent technical, Indigenous-rights, legal and financial review is a separate process and should be commissioned before describing the publication as externally peer reviewed. [3,4,8,11,12,35]

Source register

Sources reflect the dates and institutional positions stated. Primary government and standard-setter records are distinguished from independent reports and contested stakeholder accounts. Access dates do not imply later changes were checked after this edition.

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Editorial note, scope and verification for global circulation

Purpose and independence. This edition serves international institutions, investors, researchers, civil-society organisations and readers assessing Guyana's Low Carbon Development Strategy. The report is neither an official policy statement nor an assurance opinion. Government announcements, stakeholder accounts and standard-setter decisions remain attributed to their respective institutions. An announced programme is not presented as proof of a completed outcome.

Scope and reporting dates. The research cut-off is 24 September 2026. Historical forest observations, credit vintages, revenue receipts, budget appropriations and future targets are kept distinct. Figures drawn from different years, accounting frameworks or geographic boundaries should not be combined without reconciling their definitions. The 12 scenarios are illustrative stress tests, not probability-weighted forecasts.

Additional verification. Before relying on this report for institutional assurance, reviewers should confirm primary document versions and reproduce significant calculations. Independent exercises include forest-data resampling, carbon-credit serial-number checks, public-expenditure reconciliation, consultation-record examination and community interviews through appropriate consent processes. Automated citation and layout checks do not substitute for those exercises.

Corrections and future editions. A proposed correction should identify the passage, supporting primary record and nature of the change. Future editions should document amendments and re-check ART verification, ICVCM decisions, reported revenues, electricity commissioning, land-tenure outcomes and publicly reported implementation measures. Earlier editions should remain accessible for comparison.

Suggested citation. Ramsaroop, R. (2026). *Guyana's Low Carbon Development Strategy 2030: Forest finance, national development and climate accountability*. Independent global evidence review, comprehensive research edition 2.0. Georgetown, Guyana, 24 September 2026. The accompanying research kit provides numbered sources, claims and scenarios for further independent examination.