DRAFT BREAK-EVEN ANALYSIS SUMMARY FOR REVIEW

Why Decarbonisation Is the Only Subsidy-Free Path to Regional Connectivity and Food Security

The CARICOM Ferry Trial (Galleons Passage) vs the Alpha Zulu RoPAC – Routes AZ1–AZ6

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1. Preamble – A Thirty-Six-Year Connectivity Problem

At Grand Anse in 1989, CARICOM Heads of Government pledged a single market and a seamlessly connected Caribbean. Thirty-six years on, that promise remains unkept in the one dimension an archipelago cannot do without: reliable intra-regional maritime transport. It remains cheaper and more dependable to move a pallet of fresh produce through Miami than between neighbouring islands, and the Community's own 25 by 2025 food-security initiative (extended to 2030 by Heads meeting in Bridgetown) expressly names transport and logistics costs among the causes of the shortfall. Yet even the Miami channel cannot move food at the rate people eat: fresh produce requires frequent, short, direct sailings paced to harvest and consumption, not a two-to-three-week trans-shipment pipeline that forces inventory, cold storage and spoilage into trade that should run just-in-time. The connectivity gap is not a commercial inconvenience; it is the binding constraint on regional food security and the CSME itself.

The Heads of Government have acted on this. At and around the 46th Regular Meeting of the Conference of Heads of Government (Georgetown, February 2024), the Governments of Trinidad and Tobago, Guyana and Barbados agreed to launch a pilot regional passenger and cargo ferry service, with Trinidad and Tobago lending its vessel, the Galleons Passage, to trial the Guyana–Trinidad–Barbados corridor for an initial period of approximately one year. The leaders themselves recognised the pilot's limits: one borrowed vessel does not make a ferry service, and a more suitable vessel would need to be specified for the long term. That is precisely the question this analysis addresses: what do the trial vessel's economics look like on the candidate corridors, and what should the purpose-built successor be?

That first iteration never materialised. By November 2024, the then Chairman of CARICOM, Grenada's Prime Minister Dickon Mitchell, told the Sunday Stabroek that the service was being held up by the economics of the vessel itself: "The challenge, obviously, is getting the right vessel" – a roll-on/roll-off ship able to carry both cargo and passengers, at the right price, and, tellingly, one that is fuel efficient (Stabroek News, "High cost of vessel delaying regional ferry service", 24 November 2024). The pilot announced with such optimism at the start of 2024 thus stalled on precisely the variables this analysis models: the capital cost of the vessel and its fuel economics.

A second iteration has now been announced. At their meeting in Saint Lucia in July 2026, CARICOM Heads of Government agreed to launch an interim 'proof of concept' trial within months – most likely on the Guyana–Trinidad corridor, potentially extending into the south-eastern Caribbean – again deploying the Galleons Passage while longer-term vessels are sought. Commenting the following day in Barbados Today ("Ferry plan must prioritise cargo to be viable, economist says", 9 July 2026), economist and aviation consultant Jeremy Stephen argued that the trial can achieve financial sustainability only if it is designed first and foremost around the commercial movement of goods, with passengers treated as secondary – "If it's just driven on cargo, I think it's way more manageable" – and that the arithmetic works only under a multi-call trans-shipment ('ring') model rather than point-to-point drop-offs. He warned, drawing the parallel with LIAT, that ageing, maintenance-hungry tonnage and unreformed port and customs practices would otherwise pull the venture back onto the public purse. This analysis adopts exactly that discipline: it

is a cargo-only model (passenger revenue excluded on both vessels), it tests multi-leg trans-shipment loops (AZ1–AZ5) against the point-to-point shuttle (AZ6), and it asks which vessel class can prove the concept on cargo alone, without subsidy. The second iteration must be measured on the same basis on which the first stalled – the capital cost and, above all, the fuel economics of the vessel – and that is the test applied throughout this summary.

The trial's design should be read for what it is. The Galleons Passage is lent for approximately one year expressly to give private-sector operators time to identify and secure a suitable permanent vessel – which implies a procurement budget in the region of US$9m, the estimated capital class of both the trial vessel's residual value and the purpose-built alternative costed here. But the deeper purpose of the trial is not the vessel at all: it is to test the market – to prove that dependable weekly demand exists – and to level the cumbersome bureaucracy between member states: the customs, licensing, phytosanitary and port-clearance frameworks that today add more friction than the sea itself, which Prime Minister Mottley has pressed to harmonise and which Stephen warns will otherwise eat any operating headway. On that reading, the trial succeeds not when the Galleons Passage breaks even – Section 5 shows it cannot on its own corridor – but when it leaves behind proven demand and cleared bureaucratic channels for the right vessel to exploit. This analysis identifies what that right vessel must be.

The thesis of this analysis is simple and, on the numbers, unavoidable: the only way to provide that connectivity – and the food security that depends on it – cost-effectively and without perpetual national subsidies is to let decarbonisation drive it. Fuel and the heavy fixed cash base of a conventional ship are its dominant, irreducible costs; at freight rates regional producers can actually bear, fuel alone consumes more than a quarter of the revenue of a completely full ship on the pilot's own Guyana–Trinidad corridor, before fixed costs several times larger are even touched. Remove fossil fuel from the vessel entirely – wind as the fuel, free and supplied at the point of use – and the weekly cost floor collapses by an order of magnitude, turning an unfundable public burden into a commercially self-sustaining service. Decarbonisation additionally unlocks the concessional climate and blue-economy finance that no diesel ferry can access. It should therefore be booked not as a cost of the service but as the mechanism that makes the service possible – and, as utilisation builds, the mechanism that lets freight rates fall.

2. Purpose

This summary presents a weekly cash break-even comparison between the trialled conventional ferry (the Galleons Passage, a 74 m diesel catamaran) and the Alpha Zulu RoPAC, a purpose-designed sub-500 GT zero-fossil-fuel sail-cargo trimaran, across six candidate inter-island routes (AZ1–AZ6). The assumptions applied are stated in full below; the results follow arithmetically from them.

The two vessels at a glance *(spec cards; CO_2 per pallet-nautical-mile at the stated service bases – derivations in Section 4):*



GALLEONS PASSAGE 73.9M

- 73.9m x 22.0m x 2.75m
- 400 PAX
- 60 Cars or equivalent est. 400 Pallets
- 4x 2200 kW • 15.0 knots service
- ≈0.5 kg CO_2 / Pallet-NM (15 kn, 55% load)

Service speed reflects reported operating limitations and prevailing sea states on southern Caribbean routes (Trinidad–Grenada, Barbados–Guyana).

RoPAC
STRATEGIC MARITIME DECARBONISATION INFRASTRUCTURE



ALPHA ZULU RoPAC 42.7M

- 42.7m x 23.68m x 2.0m
- 2 x 200 kW Electric Fossil Free
- 120 Standard Pallets (est.)
- 12 Passengers
- 0 kg Fossil CO_2 per Pallet-NM

3. Routes Modelled

AZ1 Guyana – Barbados – Dominica – Barbados – Guyana (1,010 nm, 4 calls).
AZ2 Trinidad – Grenada – SVG – Saint Lucia – Barbados – Trinidad (525 nm, 5 calls).
AZ3 Barbados – Dominica – Antigua – Dominica – Barbados (560 nm, 4 calls).
AZ4 Barbados – Saint Lucia – SVG – Grenada – SVG – Saint Lucia – Barbados (470 nm, 6 calls).
AZ5 Guyana – Trinidad – Grenada – SVG – Guyana (900 nm, 4 calls).
AZ6 Guyana – Trinidad – Guyana (700 nm, 2 calls) — the direct breadbasket shuttle.

Distances are approximate port-to-port estimates.

4. Assumptions

Case A – Common Freight Unit Comparison. For the vessel-efficiency comparison, both vessels retain the same per-pallet-per-leg rates: ambient $150; chilled $200; frozen $250. A cargo mix of 50% ambient / 30% chilled / 20% frozen yields a blended rate of $185 per pallet-leg. The mix is an assumption pending actual booking profiles and is a key sensitivity. Applying the same revenue unit to both vessels deliberately isolates vessel economics.

Market benchmark: the blended $185 per pallet-leg is supported – and if anything under-quoted – by prevailing market pricing: the Eric Hassell Shipping quotation for interisland sea freight, Barbados to Grenada (ref: Freight Quote for Marine Engine, 3 October 2024), equates to an illustrative freight rate of approximately BBD $415 (≈ US$208) per standard pallet (48″ × 40″ × 48″ high), freight only, exclusive of documentation, security, handling, LAC, export charges and VAT (Annex E).

Alpha Zulu RoPAC: capacity 120 standard pallet-equivalent units (48″ × 40″ × 48″ h, two-stack basis) per leg; weekly overheads $12,000 all-in for 24/7 operation (crew, provisions, power, insurance, administration and port tariffs – verified by line-item build-up at all-Caribbean crewing rates, with headroom, in Annexes B and C); zero fuel cost (wind-primary with regenerative electric propulsion: the electric motors provide auxiliary drive when the wind alone is insufficient and, under sail, auto-rotate as generators recharging the batteries); hull time charter $21,635 per week (12.5% p.a. on a US$9.0m asset) in the charter scenario, nil in the owner-operator scenario; average passage speed 12 knots. Maintenance basis: Statistics Norway's 2025 electric-ferry weights assign 8.24% to repair and maintenance; for reference this is rounded down to 8%. Because Alpha Zulu is a newbuild, zero-fossil-fuel vessel without large diesel propulsion machinery, the model does not mechanically apply the Norwegian ferry percentage. Instead it adopts a transparent lump-sum maintenance, repair and drydock reserve of US$50,000 per 50-week operating year, or US$1,000 per operating week, in both Alternative A and B.

Data verification note. On 21 September 2026, Champion Maritime Limited requested from the CARICOM Secretariat the proposed written operating plan for Galleons Passage, specifically its intended weekly frequency, cargo capacity, projected fuel consumption and any anticipated operating subsidy. Pending receipt of those operating data, this analysis uses independently sourced information and transparent, deliberately conservative planning estimates. The assumptions are stated so that the model can be updated directly when authoritative CARICOM or operator figures are received.

Galleons Passage: capacity 400 pallet-equivalent units per leg in Alternative A (20 TEU × 20 standard 48″ × 40″ × 48″ pallet-equivalent units, subject to the stowage caveat below), and 20 TEU per leg in Alternative B; service speed 15 knots; propulsion/fuel basis unchanged from the machinery-derived model below. Capital is treated separately from cash operating cost: the principal case uses the same 12.5% p.a. hull time-charter basis as Alpha Zulu on the US$9m residual estimate, equal to US$21,635/week. Fixed cash OPEX is rebuilt transparently from Annex A rather than adopting the previous unsupported US$145,000/week figure. Identified non-maintenance fixed OPEX is US$38,549/week. Repair, maintenance, spares and drydock/special-survey reserve are benchmarked to Statistics Norway's 2025 ferry cost structure. In the fuel-excluded ferry series, repair and maintenance is 14.37% of total non-fuel cost; because that denominator also contains depreciation and financing, the cash-OPEX model excludes those capital categories and re-normalises repair and maintenance against the operating categories (crew, repair/maintenance, administration and other), producing a 19.07% cash-OPEX share. Applied to the identified non-maintenance OPEX, this gives approximately US$9,084/week (US$454,200/50-week year) for repair, maintenance, spares and drydock reserve, and total fixed cash OPEX of approximately US$47,633/week before fuel, port costs and charter. The former US$145,000/week figure is retained only as a historical sponsor high-cost sensitivity and is not used in either principal Alternative A or Alternative B break-even calculation.

Port-tariff waiver (modelled): a three-year waiver of port tariffs is an aspiration the sponsor intends to pursue during the demonstration period; it is not a current concession and no waiver has been sought or granted. For comparability the waiver is modelled as in effect for both vessels: the Galleons Passage percall fees are zeroed, and the Alpha Zulu per-call tariff (estimated at $650 per call on the Barbados Port Inc CARICOM-rotation basis, Schedule of Charges effective 1 June 2025; approximately $1,400–1,600 per call on the standard basis) is deducted from its all-in overheads. Sensitivity without the waiver: the trial vessel's weekly cost rises by $15,000 per call and the Alpha Zulu's by approximately $650 per call – illustratively, on AZ1 at adopted costs the trial vessel moves from 85.1% to approximately 105% utilisation while the

chartered Alpha Zulu moves from 35.0% to approximately 38% – so the presence or absence of the waiver changes no verdict in Section 5.

Operating pattern: one loop per week per vessel; 7 hours per port call; 50-week operating year; passenger revenue excluded on both vessels for conservatism, and because the trial must be proved on cargo alone (see the Preamble and the Barbados Today commentary of 9 July 2026). Conventional-vessel cost inputs are stated as adopted assumptions and are listed for verification rather than re-derived here.

5. Results – Weekly Break-Even (waiver modelled)

Alternative A — Common-Unit Analytical Comparison. Alternative A is principally an analytical vessel-economics comparison. It applies the same blended US$185 pallet-leg revenue unit to both Galleons Passage and Alpha Zulu RoPAC, notwithstanding their different cargo-handling and commercial models. Its purpose is to hold the freight revenue unit constant and thereby isolate the underlying vessel economics. It should not be interpreted as representing the likely commercial tariff structure of Galleons Passage.
Carbon context. Alternative A deliberately excludes any monetary value for avoided CO2 from the break-even calculation. Galleons Passage nevertheless incurs operational CO2 emissions through its modelled marine-diesel consumption, while Alpha Zulu's ZeroFF operating premise produces no onboard fossil-fuel CO2. The comparison therefore does not require a carbon price or avoided-emissions credit for Alpha Zulu to achieve the break-even results shown.

Alternative B — Commercially Representative Comparison. Alternative B is intended to more closely represent the probable commercial operation of the two different vessel types. Galleons Passage is modelled as a container/flat-rack ferry selling TEU capacity, while Alpha Zulu RoPAC is modelled as a break-bulk/LCL packet service selling pallet and measured cargo capacity. This comparison is considered more commercially representative, but remains provisional pending receipt of authoritative Galleons Passage operating and tariff information from the CARICOM Secretariat.

Carbon context. Alternative B likewise assigns no revenue, subsidy or carbon-credit value to Alpha Zulu's avoided operational fossil-fuel emissions. The commercially representative comparison therefore evaluates each vessel on freight revenue and cash operating economics alone. Any future value attributable to avoided CO2, carbon pricing, green-shipping incentives or shipper emissions requirements would be additional to - not embedded in - the break-even results presented here.

Status of assumptions. On 21 September 2026, Champion Maritime Limited requested from the CARICOM Secretariat the proposed Galleons Passage operating plan, including intended weekly frequency, cargo capacity, projected fuel consumption and any anticipated operating subsidy. Pending receipt of that information, both alternatives use transparent planning assumptions based on independently sourced information. Alternative B should therefore be regarded as the more commercially representative working case, not as a representation of CARICOM's final operating plan or tariff structure.

Overall carbon treatment. Accordingly, the break-even comparison should be read first as a freight-economics analysis; the material difference in operational fossil-fuel emissions is a separate environmental and potential future economic attribute, not a revenue assumption required to produce the results.

Zulu time charter reflects 12.5% p.a. on the US$9.0m hull; its $12,000 all-in overhead is verified in Annexes B–C.

AZ1 — Guyana – Barbados – Dominica – Barbados – Guyana (1,010 nm, 4 calls; weekly capacity 1,600 pallet-legs trial vessel / 480 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation
Galleons Passage – historical $145k OPEX sensitivity	$251,612	1,361	85.1%
Galleons Passage – transparent principal case	$125,880	681	42.5%
Alpha Zulu – time charter	$31,035	168	35.0%
Alpha Zulu – owner-operator	$9,400	51	10.6%

Principal-case result: Galleons Passage weekly cash cost is approximately $125,880 on the transparent cost basis, requiring 681 common pallet-equivalent legs (42.5% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

AZ2 — Trinidad – Grenada – SVG – Saint Lucia – Barbados – Trinidad (525 nm, 5 calls; weekly capacity 2,000 pallet-legs trial vessel / 600 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation
Galleons Passage – historical $145k OPEX sensitivity	$225,940	1,222	61.1%
Galleons Passage – transparent principal case	$100,208	542	27.1%
Alpha Zulu – time charter	$30,385	165	27.5%
Alpha Zulu – owner-operator	$8,750	48	8.0%

Principal-case result: Galleons Passage weekly cash cost is approximately $100,208 on the transparent cost basis, requiring 542 common pallet-equivalent legs (27.1% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

AZ3 — Barbados – Dominica – Antigua – Dominica – Barbados (560 nm, 4 calls; weekly capacity 1,600 pallet-legs trial vessel / 480 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation

Galleons Passage – historical $145k OPEX sensitivity	$227,312	1,229	76.8%
Galleons Passage – transparent principal case	$101,580	550	34.3%
Alpha Zulu – time charter	$31,035	168	35.0%
Alpha Zulu – owner-operator	$9,400	51	10.6%

Principal-case result: Galleons Passage weekly cash cost is approximately $101,580 on the transparent cost basis, requiring 550 common pallet-equivalent legs (34.3% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

AZ4 — Barbados – Saint Lucia – SVG – Grenada – SVG – Saint Lucia – Barbados (470 nm, 6 calls; weekly capacity 2,400 pallet-legs trial vessel / 720 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation
Galleons Passage – historical $145k OPEX sensitivity	$223,488	1,209	50.4%
Galleons Passage – transparent principal case	$97,756	529	22.0%
Alpha Zulu – time charter	$29,735	161	22.4%
Alpha Zulu – owner-operator	$8,100	44	6.1%

Principal-case result: Galleons Passage weekly cash cost is approximately $97,756 on the transparent cost basis, requiring 529 common pallet-equivalent legs (22.0% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

AZ5 — Guyana – Trinidad – Grenada – SVG – Guyana (900 nm, 4 calls; weekly capacity 1,600 pallet-legs trial vessel / 480 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation
Galleons Passage – historical $145k OPEX sensitivity	$245,672	1,328	83.0%

Galleons Passage – transparent principal case	$119,940	649	40.5%
Alpha Zulu – time charter	$31,035	168	35.0%
Alpha Zulu – owner-operator	$9,400	51	10.6%

Principal-case result: Galleons Passage weekly cash cost is approximately $119,940 on the transparent cost basis, requiring 649 common pallet-equivalent legs (40.5% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

AZ6 — Guyana – Trinidad – Guyana (700 nm, 2 calls; weekly capacity 800 pallet-legs trial vessel / 240 Alpha Zulu)

Cost basis	Weekly cost	Break-even pallet-legs	Break-even utilisation
Galleons Passage – historical $145k OPEX sensitivity	$233,836	1,264	158.0%
Galleons Passage – transparent principal case	$108,104	585	73.0%
Alpha Zulu – time charter	$32,335	175	72.9%
Alpha Zulu – owner-operator	$10,700	58	24.2%

Principal-case result: Galleons Passage weekly cash cost is approximately $108,104 on the transparent cost basis, requiring 585 common pallet-equivalent legs (73.0% of Alternative A weekly capacity). The historical $145,000/week OPEX case is shown only as a high-cost sensitivity. Alpha Zulu results remain as previously modelled, subject to the revised US$50,000/year maintenance/drydock reserve stated in Annex C.

6. Alternative B — Commercially Representative Comparison

Purpose. Case A above intentionally applies a common pallet revenue unit to both vessels. Case B instead models each vessel according to the freight product for which it is configured: Galleons Passage as a container/flat-rack ferry selling TEU movements, and Alpha Zulu as a break-bulk/LCL packet vessel selling measured cargo space by cubic metre and pallet-equivalent position.

Galleons Passage container-rate sensitivity. The model retains the assumed 20 TEU intake per leg, but replaces the synthetic 400 separately saleable pallet positions with container revenue. A central freight-only planning rate of US$1,500 per TEU is tested against US$1,250 and US$2,000 sensitivities. The US$1,500 central case is an interpolation, not an asserted CARICOM ferry tariff. It is supported by a published Port of Spain–Bridgetown 20-foot general-cargo rate of US$1,458.06 (Caribbean Shipping Agencies, reproduced by InvesTT) and sits within the broad range of current online Caribbean 20-foot indications. A

2026 Seaboard Marine notice also confirms continuing Caribbean-to-Caribbean rate adjustments, including a US$125 increase for 20-foot dry containers and US$150 for 20-foot reefers.

Alpha Zulu measured-cargo basis. The Eric Hassell Shipping quotation already evidenced in Annex E is the stronger local benchmark for palletised/break-bulk traffic: BBD$379.50 freight for 1.38 CBM = BBD$275/CBM = US$137.50/CBM freight-only. A 48″ × 40″ × 48″ pallet occupies approximately 1.51 CBM and therefore prices at about US$208 at that observed rate. Alpha Zulu's proposed US$150 ambient charge for the same unit is approximately US$99/CBM, about 28% below the observed Hassell freight benchmark. Customer-facing height bands can therefore be expressed as convenient rounded manifestations of an underlying approximately US$100/CBM ambient tariff.

Standard 48″ × 40″ footprint	Approx. volume	AZ ambient indicator	Hassell-equivalent @ US$137.50/CBM
24″ high	0.76 CBM	$75	$104
48″ high	1.51 CBM	$150	$208
72″ high	2.27 CBM	$225	$312
96″ high	3.02 CBM	$300	$415

The height bands preserve the economics of the existing 48-inch pallet-equivalent capacity definition: a 96-inch-high unit occupies approximately twice the cubic capacity of a 48-inch-high unit and is therefore charged at approximately twice the ambient rate. Chilled and frozen cargo remain premium services and should be tested separately against actual energy, handling and market requirements.

Galleons Passage maximum weekly freight revenue. At the US$1,500/TEU central case this is 20 TEU × US$1,500 × revenue legs. Break-even utilisation is weekly vessel cost divided by that maximum weekly container revenue. Values above 100% are arithmetically impossible from container freight alone.

Route	Revenue legs	Max weekly revenue @ $1,500/TEU	Adopted-cost BE	Capital-neutral BE
AZ1	4	$120,000	104.9%	same principal case
AZ2	5	$150,000	66.8%	same principal case
AZ3	4	$120,000	84.7%	same principal case
AZ4	6	$180,000	54.3%	same principal case
AZ5	4	$120,000	100.0%	same principal case
AZ6	2	$60,000	180.2%	same principal case

Central-case result. At US$1,500/TEU, using the transparent principal Galleons Passage cost basis, only AZ2, AZ3, AZ4, AZ5 fall below 100% theoretical TEU utilisation; all other routes require more container revenue than a completely full 20-TEU deck can generate. This remains a sensitivity result, not a forecast of the eventual CARICOM ferry tariff or utilisation.

TEU rate /AZ1 cost basis	AZ2	AZ3	AZ4	AZ5	AZ6
$1,250 transparent principal case –125.9%	80.2%	101.6%	65.2%	119.9%	216.2%
$1,500 transparent principal case –104.9%	66.8%	84.7%	54.3%	100.0%	180.2%
$2,000 transparent principal case –78.7%	50.1%	63.5%	40.7%	75.0%	135.1%

Commercial interpretation. Container carriage can be highly economical for a shipper able to fill a container. RoPAC addresses the complementary regional logistics gap: a farmer, processor, manufacturer, supermarket, distributor or SME can buy one pallet, five pallets or twenty pallets of measured capacity without first aggregating enough cargo to justify an entire TEU. The CARICOM ferry can therefore establish and regularise the corridor while RoPAC makes the same corridor accessible at pallet scale. At sufficient trunk volumes, the systems are complementary rather than mutually exclusive.

Carbon burn by route — Galleons Passage at the 15-knot service basis (Alpha Zulu RoPAC: zero fossil CO_2 on every route)

MGO at 3.206 t CO_2 per tonne of fuel; main engines plus generator while sailing, generator only through the 7-hour port calls; layovers on shore power excluded; 50 loops per year.

Route	Fuel/loop (t)	CO_2/loop (t)	CO_2/year (t)
AZ1 (1,010 nm, 4 calls)	41.9	134.5	6,723
AZ2 (525 nm, 5 calls)	22.9	73.5	3,675
AZ3 (560 nm, 4 calls)	23.9	76.8	3,838
AZ4 (470 nm, 6 calls)	21.1	67.7	3,384
AZ5 (900 nm, 4 calls)	37.5	120.4	6,018
AZ6 (700 nm, 2 calls)	28.8	92.2	4,612
Alpha Zulu RoPAC, all routes	**0**	**0**	**0 (zero fossil CO_2, tank-to-wake)**

Between roughly 3,400 and 6,700 tonnes of CO_2 per year, per route, is therefore the standing carbon cost of operating the trial vessel on any of the candidate corridors – and the standing carbon saving of the Alpha Zulu performing the same scheduled work.

7. Key Findings

(a) With the corrected intake of 400 pallets per leg and the corrected engine-based fuel model, the trial vessel remains structurally impossible on its own trial corridor – the direct Guyana–Trinidad shuttle (AZ6) breaks even only at 158% of a completely full ship, even with port fees fully waived – and demands sustained loadings of 85% (AZ1) and 83% (AZ5), levels no scheduled service sustains week after week on seasonal agricultural productivity. On AZ2–AZ4 break-even falls to 50–77% utilisation, but that still means selling 1,209–1,229 pallet-legs every week – roughly ten times the keystone weekly demand this analysis treats as its critical assumption (Section 7), and far beyond any cargo volume yet evidenced on these corridors. Even on the corrected, lower fuel model, fuel ($28,500–$56,600 per loop) consumes between roughly a sixteenth and more than a quarter of the maximum revenue a completely full deck can generate, and the vessel's fixed cash base – charter plus non-fuel operating costs of $195,000 per week – exceeds the Alpha Zulu's entire weekly cost by more than six times before a litre of fuel is burned. These results are robust to the cost base: even on the fully capital-neutral case – the Alpha Zulu's own 12.5% charter basis applied to the trial vessel's US$9m residual, plus the lean Annex A operating build-up (a $105,200 fixed cash base) – AZ6 remains at the arithmetic limit at 97% of a completely full ship in both directions – impossible in practice against the ≈440 saleable pallet-legs the corridor's own demand pattern implies – and the other routes still require 723–875 sold pallet-legs per week. This is not a criticism of the pilot – a borrowed vessel was the fastest way to test the market and begin levelling the inter-state bureaucracy – but it confirms the Heads' own recognition that the Galleons Passage cannot be the permanent service, and that continuing it beyond the trial year would require open-ended public subsidy.

(b) The Alpha Zulu RoPAC breaks even at 161–175 pallet-legs per week on a time-charter basis – between 22% and 35% utilisation on the multi-leg loops, rising to 73% on the two-leg AZ6 shuttle – and at 44–58 pallet-legs (6–24% utilisation) as an owner-operator. The break-even advantage over the trial vessel is roughly 7–8 times on every route (4–5 times even on the capital-neutral base). On AZ6 the source assumptions are directional: the Guyana→Trinidad leg is modelled at 100% full, but the return leg at only ~10% repositioning, implying roughly 132 saleable pallet-legs per week – comfortably above the owneroperator break-even (58) but below the time-charter break-even (175). The direct shuttle is therefore viable owned, marginal chartered, unless southbound backhaul (e.g. Trinidad-manufactured goods and animal feed to Guyana) develops; the trial vessel remains impossible on the same corridor by nearly a factor of two either way. This asymmetry is itself an argument for the multi-leg loop architecture of AZ1–AZ5, which monetises intermediate calls instead of running one leg empty.

(c) The structural driver is the cost floor, not the revenue line: both vessels face identical freight rates, but the Alpha Zulu's weekly cash cost is $29,700–$32,300 (charter) or $8,000–$9,500 (owner-operator) against $223,000–$252,000 at adopted costs ($134,000–$162,000 on the capital-neutral base) for the conventional vessel. The purpose-built successor the Heads called for is, on these numbers, a small, zero-fuel, regionally owned vessel class – not a larger diesel ferry.

(d) The comparison therefore demonstrates the central proposition: connectivity and food security cannot be bought at these freight rates with a fossil-fuel vessel except through open-ended subsidy – impossible outright on the pilot's own corridor, and dependent everywhere else on sustained high loadings far beyond evidenced demand – while the decarbonised vessel is profitable on every route at modest

utilisation. Decarbonisation is not the cost of the service; it is the lever that makes the service commercially selfsustaining and finance-able. The same arithmetic carries a carbon ledger: at the 15-knot service basis the trial vessel emits roughly 3,400–6,700 tonnes of CO_2 per route per year (Section 5, carbon table), every tonne of which is avoided by the vessel class that also breaks even.

(e) The comparison also understates the Alpha Zulu's upside, because the vessel class is scalable in a way a single large ferry is not. Reliable, scheduled connectivity is itself a demand generator: once producers and buyers can count on a weekly sailing, new industries, production and distribution build around it – reversing today's cycle, in which unreliable transport suppresses the very cargo that would justify the service. As volumes grow, additional Alpha Zulu vessels are added to the mesh route by route, at $9.0m per hull and a weekly cash cost of $8,000–$30,000, deepening frequency and adding redundancy and resilience without the step-change capital and subsidy exposure of a second large ferry; and as travel demand matures on the shorter transits, individual vessels can be converted to all-passenger configuration. In the meantime, the sub-500 GT class's 12-passenger limit is a product rather than a constraint: twelve berths on a zero-fossilfuel sailing vessel trading between the islands can be marketed as a premium eco-tourism offering, generating ancillary revenue that this model conservatively excludes (Section 4). And where long-haul trunk volumes are better served by containerisation into the Bridgetown hub — Guyana rice being the standing example — the mesh does not compete with the container line; it completes it, distributing from the hub what deep-sea tonnage cannot economically deliver island by island (Section 7).

(f) For CARICOM Heads of Government, the decisive number is the price of inter-island logistics itself – regionally estimated at roughly three times comparable world benchmarks, with logistics absorbing 20– 30% of the landed cost of goods against approximately 8% in the mainland United States. The structure of this analysis shows why the zero-fossil vessel class is the instrument that can bring that number down: with

wind as the fuel, the cost of service is almost entirely a low, fixed floor, so every pallet sold above the modest break-even utilisations reported in Section 5 widens the margin available to reduce freight rates as uptake builds – a rate-reduction pathway no fuel-burning vessel can offer, and one this analysis conservatively excludes by holding rates constant throughout.

That is why the permanent policy choice is not simply between a diesel ferry and a sailing vessel. A statesubsidised diesel ferry may restore a route temporarily, but if it becomes the permanent model it risks supplanting the region's remaining legacy operators and absorbing their seafarers, agents, cargo relationships and trading knowledge into a service dependent on imported fuel and recurring public support. Alpha Zulu RoPAC is intended to replace that lost human and commercial capacity in Caribbean hands. It is a Caribbean-owned, commercially operated and Caribbean-crewed shipping platform, sized for islandscale consignments of agricultural produce, refrigerated food, manufactured goods, essential supplies and passengers, with modern sail as its primary motive power and electric propulsion as operational support. Its purpose is not to preserve an obsolete shipping model, but to rebuild the people, skills, vessels and confidence needed for dependable inter-island trade: to train seafarers, give producers access to neighbouring markets and make the Caribbean Sea — the region's natural highway — usable again. This is the difference between a permanent public ferry burden and strategic maritime infrastructure capable of scaling with demand, strengthening food security and regional integration without making government the permanent owner, operator or financier.

8. The Keystone Assumption – Demand ex-Guyana and the Barbados Hub

The network modelled here has two distinct architectures. Routes AZ1–AZ4 are Barbados-centric: Barbados serves as the hub for regional connectivity, with cargo aggregated, trans-shipped and distributed across the eastern Caribbean through Bridgetown — AZ1 routes its Guyana trade through the hub twice per loop, and AZ2–AZ4 knit Saint Lucia, SVG, Grenada, Dominica and Antigua to it. Their economics rest on many origins feeding many calls, not on any single port. Routes AZ5 and AZ6 are the Guyana–Trinidad breadbasket corridors, and it is these — together with the trial itself, which the Heads have pointed at the Guyana–Trinidad corridor — that turn on one assumption arithmetic cannot supply: that approximately 120 export-ready pallets (≈ 50 tonnes) per week actually present at Georgetown for carriage. Without that volume the trial, though not the wider Barbados-hub network, would be meaningless; and so the assumption prevails — this analysis takes the trial's own premise as given and asks which vessel can carry it economically.

Indeed, the continuing containerisation of Guyana agricultural commodity — i.e. rice — to Barbados as hub may for the foreseeable future remain the most cost-effective arrangement for the long-haul trunk leg, with the Alpha Zulu RoPAC providing the overarching economic solution: the scheduled, reliable and costeffective regional connectivity mesh that distributes from the hub across the islands — each mode doing what it does cheapest, the container trunk feeding the zero-fuel mesh.

Regional production capacity is not the constraint: against a CARICOM food import bill of roughly US$6 billion a year, 2,500 tonnes annually is a rounding error, and Guyana's output of rice, root crops and other staples is measured in the hundreds of thousands of tonnes. The genuine risk is aggregation — whether cold chain, consolidation, booking and phytosanitary clearance can assemble that volume on a dependable weekly schedule. The diligence evidence to seek is accordingly commercial, not agronomic: offtake letters of intent from producer cooperatives, exporters and destination buyers, ideally covering the first 26 weeks of service, together with confirmation of consolidation and cold-chain arrangements at Georgetown — and, for the Barbados-hub loops, equivalent consolidation and cold-chain capacity at Bridgetown, which the hub role both requires and rewards. Those documents would convert the model's largest assumption into a verified input.

9. Caveats and Items for Professional Review

(i) Cost inputs for both vessels are stated assumptions and have not been independently audited; the Alpha Zulu $12,000 per week all-in overhead in particular warrants line-item verification (crewing scale, insurance quotations, maintenance reserve), and the Galleons Passage machinery basis (four MTU main engines totalling approximately 8,800 kW plus generator) is as advised and should be verified against class records and engine nameplates. (ii) Port tariffs are evidenced only for Bridgetown (published schedule); the other jurisdictions' tariff books should be obtained, the CARICOM-rotation concession confirmed, and — should the aspirational three-year waiver described in Section 4 be pursued and granted — its legal basis and term confirmed port by port. (iii) Distances, the 12-knot average speed, the 7-hour port call, the cargo mix and single-loop weekly scheduling are planning assumptions and should each be subject to sensitivity testing, as should the Galleons Passage fuel-model inputs (the propeller-law exponent and the 85% MCR reference at the rated 22 knots, the 230 g/kWh part-load specific consumption, the 250 kWe hotel load, the shore-power treatment of layover time, and the 15-knot service speed itself, which rests on reported machinery condition and route sea states). (iv) The analysis is cash break-even only: it excludes depreciation, financing costs, taxation, VAT treatment, foreign exchange (Barbados-dollar figures converted at 2:1), drydocking accruals beyond a 50-week year, and any passenger or ancillary revenue. (v) Utilisation

above 100% denotes structural impossibility, not a rounding artefact. The Galleons Passage intake of 20 standard pallets per TEU (10 floor positions, double-stacked) should be confirmed against actual stowage plans, container and clearance heights and reefer-point availability; any intake below 400 pallets per leg raises its break-even utilisation proportionately. (vi) Statements attributed to CARICOM Heads of Government reflect publicly reported conference outcomes and announcements (February 2024 onward) and should be cited to primary communiqués in any external use; press commentary is cited to Barbados Today, "Ferry plan must prioritise cargo to be viable, economist says", 9 July 2026. (vii) The US$9–10m residual value attributed to the Galleons Passage is an industry estimate only — the vessel is not actively marketed for sale — and should be corroborated before reliance. (viii) Annexes A–D set out the supporting cost build-ups (trial-vessel overheads; prevailing Trinidad and Tobago STCW wages; Alpha Zulu all-Caribbean crewing; insurance and classification); the accompanying workbooks contain the live schedules with editable inputs. (ix) Case B container rates are sensitivity assumptions rather than a published CARICOM ferry tariff. Before external reliance, obtain the operator's actual freight schedule and specify whether quoted TEU rates include terminal handling, documentation, security, reefer power, flat-rack premiums or other origin/destination charges. Alpha Zulu CBM pricing should likewise be tested on a weight-or-measure basis where dense cargo reaches weight limits before cubic capacity.

Prepared in-house by Champion Maritime Limited at the request of Mr. Ian Dash, Alpha Zulu RoPAC project. All figures follow arithmetically from the stated assumptions and will change if any assumption changes.

Maintenance benchmark used in Alternatives A and B. Statistics Norway's weights effective Q1 2025 are derived from a cost survey using 2023 accounting data. For MGO ferries, repair and maintenance is 11.63% of the full cost structure; in the fuel-excluded series it is 14.37%. Because that fuel-excluded denominator still includes depreciation and financing, this analysis removes those capital categories and re-normalises repair and maintenance to the remaining cash operating categories, producing 19.07%. This yields approximately US$9,084/week on the identified Galleons Passage non-maintenance OPEX base. For electric ferries, Statistics Norway reports 8.24% repair and maintenance in the full cost structure; Alpha Zulu does not mechanically apply that ferry percentage and instead uses the explicit US$50,000/year (US$1,000/operating week) lump-sum maintenance, repair and drydock reserve requested for this newbuild wind-primary/electric vessel.

Status of Galleons Passage operating data. The principal cost case below is a planning model, not a representation of CARICOM or operator accounts. Champion Maritime requested authoritative operating-plan data from the CARICOM Secretariat on 21 September 2026. Until those figures are received, the model intentionally exposes each assumption and avoids relying on the former unsupported US$145,000/week OPEX figure.

Annex A — Galleons Passage Weekly Overheads: Line-Item Build-Up

Apples-to-apples with the Alpha Zulu schedule (Annex C): identical crew, NIS, victualling, insurance and drydock conventions, plus the vessel-specific machinery cost centres. Estimates for verification; 50-week operating year; TTD 6.80 = US$1.

Line item	US$/operating week
Crew payroll and employer NIS (16 aboard / 20 employed, T&T rates – Annex B)	11,261

Victualling (16 aboard)	988
Crew PA/medical cover	1,000
Drydock / special-survey reserve	Included in R&M benchmark below
Hull & Machinery insurance (in class)	3,000
P&I insurance (400-passenger certificate)	2,500
Classification society fees	800
Repair, maintenance, spares & drydock reserve (SSB 2025 cash-OPEX-normalised benchmark)	9,084
Lube oil, stores and consumables	7,000
Shore management, agency and administration	12,000
TOTAL estimated fixed operating costs (excl. fuel and port fees)	47,633
Historical sponsor OPEX sensitivity (not principal case)	145,000
Difference: historical sensitivity less transparent build-up	97,367
Historical high-cost sensitivity + $50,000 charter	195,000
Transparent build-up + historical $50,000 charter sensitivity	97,633
PRINCIPAL fixed cash base: transparent OPEX + $21,635 capital-neutral charter	69,268

The principal Galleons Passage fixed cash OPEX is now the transparent Annex A build-up of approximately US$47,633/week before fuel, port costs and charter. Repair, maintenance, spares and drydock reserve are approximately US$9,084/week (US$454,200/year), derived from Statistics Norway's 2025 ferry cost structure after excluding depreciation and financing from the cash-OPEX denominator. The original US$145,000/week OPEX is retained only as a historical sponsor high-cost sensitivity and is not relied upon for either Alternative A or Alternative B. Actual Galleons Passage accounts, yard invoices and class-survey budgets should replace the benchmark if obtained.

Annex B — Prevailing Trinidad and Tobago STCW Seafarer Wages

Monthly gross wages (TTD, mid-points of surveyed ranges) applied to both vessels' crewing. Informed by ERI SalaryExpert T&T survey data (2025–26) and regional market rates; ITF minimum basic wage for an

AB is US$690/month (2026). Employer NIS at ≈8.8% of insurable earnings capped at the TTD 13,600/month ceiling — verify against the current NIBTT schedule.

Rank and STCW certificate	Monthly TTD	Trial vessel	Alpha Zulu
Master, Reg II/2 (<3,000 GT)	33,000	1	—
Captain, Reg II/3 (<500 GT, near-coastal)	28,000	—	1
Chief Officer, Reg II/2	24,000	1	—
OOW / First Mate, Reg II/1 or II/3	17,000	2	1
Chief Engineer, Reg III/2	31,000	1	—
Second Engineer, Reg III/1	20,000	2	—
Bosun, Reg II/5	12,000	1	—
Able Seaman, Reg II/5	9,000	4	4
Ordinary Seaman, Reg II/4	7,250	2	—
Cook, MLC 2006 ship's cook certificate	7,750	2	1
Complement aboard / employed (rotation 1.25 / 1.5)	—	16 / 20	7 / 10.5
Resulting payroll + NIS, US$/operating week	**—**	**11,261**	**5,029**

Annex C — Alpha Zulu Crew and Overheads: All-Caribbean Crewing

The Alpha Zulu undertaking is all-Caribbean crewed from the most cost-effective compliant pool; Trinidad and Tobago (Annex B rates) is the operative basis. Barbados-rate and indicative OECS scenarios are held in the accompanying workbook. All scenarios exceed the ITF minimum.

Line item	US$/operating week
Crew payroll and employer NIS (7 aboard / 10.5 employed)	5,029
Victualling (US$12/person/day)	588
Crew PA/medical cover	500
Maintenance / repair / drydock reserve (lump-sum annual allowance)	1,000
Hull & Machinery insurance (in class)	1,200

P&I insurance (12-passenger certificate)	750
Classification society fees	400
TOTAL, owner-operator (all lines)	9,467
Charter-scenario operator cost (H&M and class with owner)	7,867
Adopted all-in overhead (Section 4)	12,000
Headroom for power and administration (owner / charter)	2,533 / 4,133

The Alpha Zulu model retains the US$12,000 all-in weekly overhead ceiling but now makes maintenance explicit as a US$50,000 annual lump sum, equivalent to US$1,000 per 50-week operating year and inclusive of routine maintenance, repair and drydock reserve. For external benchmarking, Statistics Norway's 2025 electric-ferry cost weights assign 8.24% to repair and maintenance; this paper rounds that benchmark down to 8% but does not mechanically apply it to Alpha Zulu because the vessel is a newbuild wind-primary/electric craft without large diesel propulsion machinery. Actual class, yard and equipment-maintenance quotations will govern.

Annex D — Insurance and Classification Basis (Both Vessels, In Class)

Item (annual US$, estimates pending quotations)	Galleons Passage	Alpha Zulu
Hull & Machinery (in-class basis)	150,000	60,000
P&I (400-pax certificate / 12-pax certificate)	125,000	37,500
Classification society periodical fees	40,000	20,000
Total per annum	**315,000**	**117,500**
Per operating week (÷50)	6,300	2,350

Both vessels are assumed classed with a recognised society and in survey (the Galleons Passage was built to Lloyd's Register SSC rules; a recognised society with sub-500 GT SSC coverage is assumed for the Alpha Zulu — NDA discussions with candidate classification societies are ongoing). Maintained class is the precondition of insurability on these terms. Insured values: ≈US$9–10m residual (industry estimate) for the Galleons Passage; US$9.0m newbuild for the Alpha Zulu — broadly capital-neutral. All premiums are market-range estimates; broker quotations per caveat (i) will govern.

Annex E — Derivation of the Market Benchmark Freight Rate per CBM

Source. Quotation issued by Eric Hassell Shipping (EHS), Bridgetown, Barbados (C. Prescod, EHS, to I. Dash, Champion Maritime Limited), 3 October 2024, for interisland carriage Barbados to Grenada of a crated marine engine, forklift-handled: 40″ high × 30″ wide × 70″ long, 1,140 kg. EHS billed the

consignment at 1.38 cbm (40 × 30 × 70 = 84,000 cubic inches × 1.6387 × 10^{-5} m^3 per cubic inch = 1.377 cbm, invoiced as 1.38).

Quoted charges (BBD).

Charge	BBD
Freight	$379.50
Security	$12.00
Handling	$0.72
LAC	$100.00
Export Charges	$35.00
VAT	$19.73
Total	**$546.95**

Step 1 — Isolate ocean freight. Only the freight line represents carriage; all other lines (security, handling, LAC, export charges, VAT) are documentation, port and fiscal charges and are excluded from the rate derivation.

Step 2 — Rate per cbm. BBD $379.50 ÷ 1.38 cbm = BBD $275.00 per cbm exactly (freight only).

Step 3 — Application to the standard pallet. A standard pallet of 48″ × 40″ × 48″ high = 92,160 cubic inches = 1.51 cbm. Freight: 1.51 cbm × BBD $275.00 = BBD $415.33, rounded to BBD $415. At the Barbados dollar's fixed peg of BBD $2.00 = US$1.00, this equals approximately US$208 per pallet, freight only, exclusive of documentation, security, handling, LAC, export charges and VAT.

Use in this analysis. US$208 per pallet on a 160 nm interisland lane is the prevailing market benchmark against which the modelled blended rate of US$185 per pallet-leg (Section 4, per standard 48″ × 40″ × 48″ h pallet (1.50 cbm), offered with cold-chain verifiability) is set. The model therefore charges below the evidenced market rate; the revenue assumptions are conservative. The same benchmark supports the Preamble's comparison with the trunk route: a dry FEU Miami–Bridgetown at prevailing indicative pricing of approximately US$4,035 floors about 20 standard pallets, i.e. roughly US$200 per pallet over ≈ 1,600 nm — essentially the same money as 160 nm interisland, an order-of-magnitude difference in cost per nautical mile.

10. Annex E1 — Container-Rate Sensitivity References

The Case B US$1,500/TEU central rate is a modelling interpolation, not a claimed tariff for the proposed CARICOM ferry. Reference points include: (1) InvesTT, The Cost of Doing Business in Trinidad and Tobago, ocean-freight table sourced to Caribbean Shipping Agencies Limited: Port of Spain–Bridgetown general cargo, US$1,458.06 per 20-foot container; (2) current online indicative quotations from FWFreight showing substantial corridor variation, including Guyana–Trinidad above US$1,800 per 20-foot container and Barbados–Grenada below US$1,000; and (3) Seaboard Marine, General Rate Increase Between

Caribbean Service Locations effective 22 March 2026: +US$125 per 20-foot dry container, +US$150 per 20-foot reefer, and +US$5.30 W/M for LCL. These references support testing US$1,250 / US$1,500 / US$2,000 rather than asserting one universal rate.

Web references: InvesTT — www.investt.co.tt/publications/The-Cost-of-Doing-Business-in-Trinidad-and-Tobago.pdf; FWFreight — fwfreight.com/freight-shipping/from-guyana-to-trinidad-and-tobago/ and fwfreight.com/freight-shipping/from-barbados-to-grenada/; Seaboard Marine — seaboardmarine.com/customer-advisories/general-rate-increase-between-caribbean-service-locations-effective-march-22-2026/

Annex F — Caribbean Regional Shipping: Studies, Reports and Decarbonisation Policy, 1997–2026

This annex lists the published studies, reports and programmes on intra-regional Caribbean shipping and connectivity carried out since 1997 — 33 in all, by the IDB, the World Bank, the Caribbean Development Bank, the European Union, UNCTAD, ECLAC, CARICOM, the University of the West Indies and the IMF — together with the current IMO and EU decarbonisation policy documents and recent developments, with links to each. It is provided as background to the Preamble: the connectivity gap this analysis addresses has been studied repeatedly for nearly three decades. Listing a document does not imply that its authors or sponsors hold any view on the Alpha Zulu RoPAC programme or on this analysis.

Inter-American Development Bank

F1. CPCS with Trevor Hamilton & Associates. *Short Sea Shipping Network and Finance Model for the Caribbean.* IDB Technical Note IDB-TN-1419, 2018. Network study and scenario analysis for Eastern Caribbean short sea shipping, including less-than-container-load cargo and south-to-north service.
https://publications.iadb.org/en/short-sea-shipping-network-and-finance-model-caribbean

F2. Krista Lucenti. *Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation.* IDB, December 2014. DOI 10.18235/0009250. Ten priority actions, including less-than-container-load services and reefer capacity.
https://publications.iadb.org/en/caribbean-regional-action-plan-freight-logistics-maritime-transport-and-trade-facilita tion

F3. IDB technical cooperation RG-T2649. *Increasing Maritime Trade and Transport Efficiency and Connectivity in the Caribbean.* Approved 14 October 2015; US$600,000. Funded the 2018 short sea shipping study.
https://www.iadb.org/en/project/RG-T2649

F4. IDB technical cooperation RG-T4175. *Promote Marine Renewable Energy, and Shipping and Port Services Decarbonization in the Caribbean.* Approved 25 May 2023; US$150,000.
https://www.iadb.org/en/project/RG-T4175

F5. IDB technical cooperation RG-T4866. *Integrated Freight Logistics Networks in the Caribbean Region.* In preparation; US$300,000. Emphasis on time- and temperature-sensitive supply chains.
https://www.iadb.org/en/project/RG-T4866

World Bank

F6. Cecilia Briceño-Garmendia, Heinrich C. Bofinger, Diana Cubas and María Florencia Millán-Placci. *Connectivity for Caribbean Countries: An Initial Assessment.* Policy Research Working Paper 7169, January 2015.
https://openknowledge.worldbank.org/entities/publication/705381bf-ff7e-50ff-a2be-10f846bd52ab

F7. Maritime & Transport Business Solutions (MTBS) for the World Bank. *Feasibility Study Ferry Service Eastern Caribbean.* April–June 2017. Passenger and cargo forecast, ferry network, vessel and port investment, PPP structures. Consultant's project summary.
https://mtbs.nl/projects/feasibility-study-ferry-service-eastern-caribbean

F8. Julie Barbet Gros, Brian Geyer, Raha Shahidsaless and Trang Thu Tran. *Driving Tourism in the Eastern Caribbean: The Case for a Regional Ferry.* World Bank.
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F9. CARICOM. *The World Bank is driving the process to link the entire Caribbean by ferries.* News release, 17 June 2015.
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Caribbean Development Bank

F10. CDB and FAO Investment Centre. *Regional Study for the Establishment of a Maritime Service to Improve Agrifood Trade and Food Security between Guyana, Trinidad and Tobago, Grenada and Barbados – Phase 1 Report.* December 2023.
https://agricarib.org/wp-content/uploads/2024/04/MARITIME-SERVICE-TO-IMPROVE-AGRIFOOD-TRADE-A ND-FOOD-SECURITY-BETWEEN-GUYANA-TRINIDAD-AND-TOBAGO-GRENADA-AND-BARBADOS-1.p df

F11. International Trade Centre with the CDB. *Logistics Chain Study for Saint Lucia.* July 2023.
https://www.caribank.org/sites/default/files/publication-resources/Logistics%20Chain%20Study%20For%20St%20Lucia.pdf

F12. CDB. *Strengthening Intra-Regional Logistics and Public-Private Alliances Key to Caribbean Trade Expansion.* 18 July 2024. Reports the CDB logistics studies for Grenada and Saint Lucia.
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European Union

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Multi-modal ferry linking Guyana and Suriname with Trinidad and Tobago, Barbados, the OECS and the French overseas territories. https://eulacfoundation.org/en/caribbean-maritime-intra-regional-transport
https://international-partnerships.ec.europa.eu/policies/global-gateway/caribbean-maritime-intra-regional-transport_ en

F14. Paul Baker, Pablo Quiles, Noel Watson and Tamira La Cruz. *Maritime, Ports and Logistics Report: Support to the CARIFORUM–EU Economic Partnership Agreement.* January 2024.
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F15. UNCTAD. *Closing the Distance: Partnerships for Sustainable and Resilient Transport Systems in Small Island Developing States.* UNCTAD/DTL/TLB/2014/2; listed by the UN as 2015.
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F16. UNCTAD. *Climate Change Impacts and Adaptation for Coastal Transport Infrastructure in the Caribbean* (SIDSport-ClimateAdapt). UN Development Account project, completed end-2017.
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https://www.cepal.org/en/publications/36276-maritime-transport-caribbean

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