



# MEKONG RESILIENCE FUND

*The Mekong feeds a billion people. Protect it once. Forever.*

# Nguyễn Trung Kiên

In 2016, Nguyễn Trung Kiên gave up his paddy fields in Ca Mau Province to dig a shrimp pond. He believed shrimp would change his family's life.

He did not expect the worst drought and saltwater intrusion in a century. Salinity soared to 40–55 ppt; ten times the shrimp survival threshold. He held on for a month, then drained the pond.

**"We've lost everything," he said. "My family is completely broke and buried in debt."**

**Four years later, the 2020 drought returned. Ca Mau was again the hardest-hit province in the Mekong Delta. He received no insurance payout. Either time.**



**1.1 million** farming families

**90%** uninsured

**\$3B** lost every year



# Two Threats. One Delta. \$3B Lost Every Year.

## THE PROBLEM

**BBC**

**“Typhoon Yagi: Thousands flee in Vietnam as floods hit Hanoi”**

Super Typhoon Yagi — the strongest storm to strike Vietnam in 30 years — caused \$3.3 billion in damage nationally and triggered downstream flood alerts across the Mekong Delta as upstream Mekong River levels surged. A direct strike on the delta would be catastrophic.

BBC | September 11, 2024

**ALJAZEERA**

**“The great salt drought desiccating Vietnam's Mekong Delta”**

In early 2020, saltwater penetrated 30-40km deeper than the annual average into the Mekong Delta — the worst salt drought on record. Over 96,000 hectares of crops were damaged and hundreds of thousands of farming families lost their livelihoods.

Al Jazeera | April 22, 2020

**VNEXPRESS**

**“Mekong Delta incurs \$3B annual losses due to salt intrusion”**

Research by Vietnam's Water Resources Science Institute found the Mekong Delta loses over \$2.96 billion per year to salt intrusion. Ca Mau province alone accounts for \$660M in annual losses. Projected losses rise to \$3.06B by 2030 and \$3.25B by 2050 as sea levels rise.

VnExpress International | March 16, 2024

**\$3B annual losses | 1.1M farming families | \$28B export supply chains at risk | 90% uninsured**

# Why Reactive Aid Always Fails



## THE PROBLEM

### TYPHOON / FLOOD

Yagi: \$1.77B  
2024 losses

### REACTIVE AID

\$1B+ spent  
No prevention

**\$3B LOST**

EVERY YEAR

### SALINITY BREACH

>4g/L threshold  
90km inland

### CROP FAILURE

95,000 ha lost  
Zero insurance

Zero corporate accountability | No prevention mechanism | 90% losses uninsured | Cycle repeats every year



# Three forces converge in 2026 to make MRF inevitable

## WHY NOW

### EU CSRD Scope 3 Mandate

EU CSRD requires companies to disclose Scope 3 (supply chain) emissions from FY2025: Mekong Delta exposure becomes a material, reportable liability. Off-takers face mandatory disclosure: and MRF converts that liability into a contractual solution.

**17 MRF off-takers face  
mandatory Scope 3 disclosure**

### ADB Partial Credit Guarantee

ADB's 20% PCG on the Senior Tranche provides \$50M in unfunded backstop: no sovereign counter-indemnity from Vietnam required. Combined with the \$75M Junior first-loss, the Senior Tranche has 83.3% credit enhancement. This is the only PCG level where all 8 ADB criteria pass simultaneously.

**\$50M PCG → \$150M private  
capital mobilised (3x leverage)**

### Vietnam Master Plan 2021- 2030

Vietnam's Prime Minister-approved Mekong Delta Regional Master Plan mandates provincial co-investment in flood and salinity resilience infrastructure across all 13 provinces. The 2024 Mekong Delta Annual Economic Report identifies the private capital gap as the primary constraint on implementation. MRF's PPP structure is purpose-built to fill it. Government provides land, permits, and coordination at zero cost to the fund.

**7 provinces | PPP-ready  
No land acquisition cost**

***The window is open. The mechanism is ready.***

# Mekong Resilience Fund: How It Works



## THE SOLUTION

**\$250M · 10-Year · Singapore VCC (Variable Capital Company) · Blended Debt**

### SINGAPORE VCC

Variable Capital Company: Singapore's tax-neutral umbrella fund. Sub-fund structure enables ASEAN replication without creating a new legal entity each time.

### CAPITAL STACK

Senior \$150M (11.7% IRR) · Junior \$75M (4.80% IRR) · Grant \$25M · ADB PCG \$50M (unfunded = ADB pays only if Senior investors face default; zero cost to fund unless triggered)

### PPP STRUCTURE

Vietnam SPV + 7 Provincial People's Committees. Government provides land, permits, coordination.

### DUAL REVENUE

Resilience Fee Agreements (RFAs) with 17 off-takers + Verra VCS blue carbon credits

### DUAL THREAT TRIGGER

One IoT sensor. Two threats. Drought-season salinity rise + typhoon-driven storm surge both trigger the same 4g/L threshold. LoRaWAN-verified, DNV certified, zone-specific.

### RETURNS

11.7% Senior IRR · 4.80% Junior IRR · 1.41x MOIC base · Breakeven at 45% adoption

# Over \$1B in aid committed to the Mekong since 2016. The cycle continues.



## THE GAP

### ✗ REACTIVE AID: THE OLD WAY

✗ Rebuilds after floods: does not prevent them

✗ Zero corporate accountability: supply chains exposed but pay nothing

✗ 90% of losses uninsured: farmers bear 100% of risk

✗ Fragmented aid: no coordinated prevention mechanism

✗ \$1B+ committed since 2016, yet losses grow every year

VS

### ✓ MRF: THE MISSING MECHANISM

✓ Builds sluice gates + mangroves BEFORE the next typhoon

✓ Corporations pay 15% of their Expected Annual Loss via RFAs

✓ 30% flat fee guaranteed regardless of climate events

✓ Singapore VCC + PPP = coordinated, scalable, accountable

✓ Zone-specific triggers: one bad province doesn't stop others paying

**Fee = 15% of EAL. 30% flat fee guaranteed. 90-day payout. 4g/L salinity threshold. <10% all-zone failure probability.**



# Three infrastructure layers. One integrated resilience system.

## THE BUILD

### HARD INFRASTRUCTURE \$160–210M

- 12–15 automated sluice gates: block typhoon storm surge AND dry-season saltwater intrusion
- 3–4 elevated logistics hubs keeping supply chains moving during floods
- Reinforced road networks for post-event recovery
- ADB precedent: Mekong Delta flood control infrastructure, 2019–2024

### NATURAL INFRASTRUCTURE \$29–44M

- 30,000 hectares of mangrove bio-shields: coastal storm surge protection
- 6–8 tCO<sub>2</sub>e/ha/yr sequestration → Verra VCS blue carbon credits
- Mangroves reduce wave energy by up to 66% (IUCN verified)
- ADB precedent: Ca Mau mangrove restoration, 2019–2023

### DIGITAL INFRASTRUCTURE \$8–13M

- LoRaWAN (low-power IoT) salinity sensors: 15km radius per node
- Floodbase flood-mapping satellite + Planet Labs imagery
- Verification Node → automated trigger certification
- Blockchain-anchored audit trail: immutable, DNV/Bureau Veritas certified

**Phase 1: Ca Mau → Phase 2: Dong Thap + Soc Trang → Phase 3: Bac Lieu, Kien Giang, Ben Tre, Tien Giang**

# From climate event to verified payment in 90 days. No discretion. No disputes.



## THE TRIGGER

1

### CLIMATE EVENT

Typhoon or dry-season salinity surge pushes salinity toward 4g/L threshold in a sourcing zone

2

### IoT + SATELLITE DETECTION

LoRaWAN sensors + Floodbase + Planet Labs detect real-time salinity. Data fed to Verification Node.

3

### DNV / BUREAU VERITAS AUDIT

Independent Calculation Agent publishes binary trigger report: TRIGGER MET or NOT MET. Zone-specific.

4

### AUTOMATED PAYMENT

TRIGGER MET: off-taker pays flat + performance fee. NOT MET: flat fee only. No negotiation.

### TRIGGER MET → ~\$55–65M revenue | Full waterfall distribution

Flat fee + performance fee paid. All investors receive coupon. Surplus to reserves.

### TRIGGER NOT MET → ~\$17M revenue | Covers opex + \$7M surplus

Flat fee only. Infrastructure maintained. Senior coupon still covered. No default.

# Every actor has skin in the game.



## THE ECOSYSTEM

### CAPITAL IN

#### SENIOR INVESTORS

\$150M

#### ADB PCC

\$50M · Unfunded Backstop

#### JUNIOR INVESTORS

\$75M

#### GRANT FUNDERS

\$25M · No return

### FUND VEHICLE

## MRF

Singapore VCC  
(Variable Capital Company)

Vietnam SPV · + 7 Provincial PPCs

**\$250M · 10-Year**  
Blended Debt  
ASEAN-scalable via VCC sub-fund  
Singapore-domiciled

**1.41x MOIC · 45% breakeven adoption**

Returns

### DEPLOYMENT & REVENUE

#### INFRASTRUCTURE

Capital deployed

#### 17 CORPORATE OFF-TAKERS

RFA fees

Carbon revenue

### RETURN WATERFALL

Priority order:

Mgmt Fee (1%) → Opex → Senior Coupon (11.7%) → Junior Coupon (4.80%) → Performance Fee (20% of surplus) (optional)

Senior investors paid before Junior · Performance fee only in surplus years

### CARBON BUYERS

Supplementary

Shell · Microsoft · Respira · South Pole · CIX Singapore

Verra VCS · \$2.7–3.6M/yr



# 17 corporations. \$577.6M in verified supply chain exposure. 15% of that funds MRF.

## OFF-TAKERS

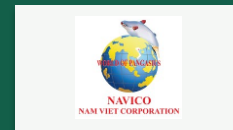
### TIER 1: TRADERS

Rice + shrimp commodity exposure | Mekong Delta sourcing



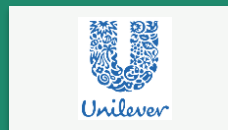
### TIER 2: PROCESSORS

Ca Mau + Dong Thap anchor off-takers | Largest shrimp + pangasius exporters



### TIER 3: MNCs

Scope 3 Mekong supply chain disclosure liability under EU CSRD



### TIER 4: RETAILERS

Vietnam seafood + rice import exposure | Scope 3 reporting obligation



### KEY METRICS

Total EAL

**\$577.6M**

MRF Fee (15%)

**\$86.6M/yr**

Adoption-adj. (65%)

**\$56.3M/yr**

Flat fee (30%)

**\$16.9M/yr guaranteed**

Corporate ROI

**6.7x**

Breakeven adoption

**~45%**

*Fee = 15% of each company's Expected Annual Loss.  
Zone-specific. Audited annually. Individual Off-Taker EAL Mapping in Appendix D*

# Interviews & Partners: We Did the Fieldwork



GCF



**Dr. Bapon Fakhruddin**  
Water & Climate Leader



**Green Climate Fund (GCF)**

FMO



**Bas Rekveld**  
Principal Investment Officer,  
Asia Agribusiness



**FMO — Dutch Entrepreneurial Bank**

WTW



**Christopher Au**  
Director, Climate &  
Resilience Hub, Asia Pacific



**Willis Towers Watson (WTW)**

IFC



**Thomas Jacobs**  
Country Manager,  
Mekong Region



**International Finance Corporation (IFC)**

# Three Conversations That De-Risk This Fund

## EXPERT VALIDATION

We engaged the gatekeepers who control the capital, the validation, and the trigger design.



### PATHWAY CONFIRMED

**Dr. Bapon Fakhruddin**

*Water Sector Lead*

#### WHY HE MATTERS

Controls GCF's entire global water investment portfolio. One of fewer than 10 people globally who can open the Private Sector Facility window for a fund like MRF.

#### WHAT IT MEANS FOR MRF

GCF has confirmed the additionality structure is compatible with the PSF window. The pathway is open: Vietnam NDA endorsement + ADB/IFC accreditation. MRF is already building both.



### DFI INTEREST SIGNAL

**Bas Rekveld**

*Principal Investment Officer, Asia Agribusiness*

#### WHY HE MATTERS

FMO's senior decision-maker for agribusiness in Southeast Asia. Olam International, MRF's anchor Tier 1 off-taker, is an active FMO client.

#### WHAT IT MEANS FOR MRF

FMO has signaled conditional interest at junior or senior tranche post-pilot. A DFI whose existing client is already in our off-taker list is not a cold lead.



### TRIGGER VALIDATED

**Christopher Au**

*Director, Asia-Pacific Climate Risk Centre*

#### WHY HE MATTERS

WTW previously attempted to build a mangrove parametric product (RISCO) in the Philippines and India. He has tried to solve exactly this problem before.

#### WHAT IT MEANS FOR MRF

WTW validated that satellite-based flood triggers (Floodbase/ICEYE) are reliable for prolonged inundation, MRF's primary risk event. Our trigger design is technically sound.



# Prevention costs \$250M. Inaction costs \$3B every year.

## THE CASE

### WITHOUT MRF: INACTION

**\$3B / year**  
Annual losses from floods + salinity intrusion

- X 90% of farming families uninsured
- X Farmers bear 100% of climate risk
- X \$1B+ in aid committed; cycle repeats every year
- X Zero corporate accountability for supply chain exposure

VS

### WITH MRF: PREVENTION

**\$250M once**  
10-year fund protecting \$28B in supply chains

- ✓ 6.7x corporate ROI: \$1 in fees avoids \$6.70 in losses
- ✓ 30% flat fee guaranteed regardless of climate events
- ✓ 1.1 million farming families protected
- ✓ 30,000ha mangroves + IoT early warning system

**Every \$1 invested in MRF prevents \$6.70 in supply chain losses**

# Institutional-grade returns, stress-tested against Typhoon Yagi



## RETURNS

**11.7% Net IRR, Senior Tranche**

**4.80% Net IRR, Junior Tranche**

**1.41x MOIC, Base Case (65% adoption)**

→ Breakeven at 45% adoption, below current 65% base

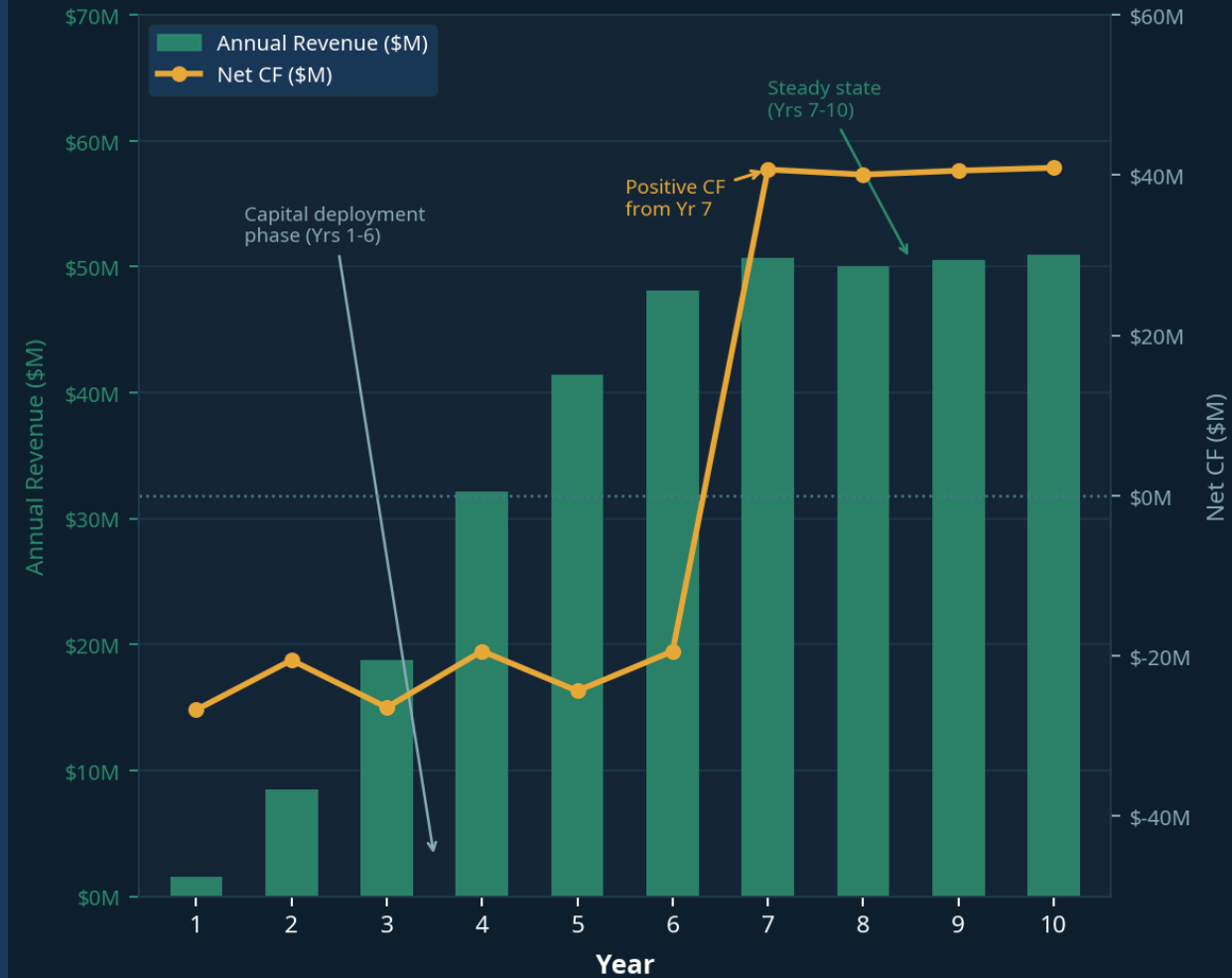
→ Stress test (45% adoption): \$34.6M/yr, still covers all obligations

→ Typhoon Yagi stress test: model at 68% of worst real event

→ Zero-exit scenario: 1.05x MOIC (cashflow only, no exit)

→ Waterfall (payment priority): Mgmt fee → Opex → Senior coupon → Junior coupon → Perf fee. Senior paid before Junior; perf fee only in surplus years. (See Appendix I)

10-Year Revenue & Net Cashflow Projection



Full sensitivity analysis in Appendix C. Full 10-Year Cashflow & Exit Paths in Appendix A & F

# MRF is built on proven precedent. Three comparable structures have already delivered.



## PRECEDENT

### Blue Forest Forest Resilience Bond



- Blended debt structure: philanthropic + public + commercial
- Performance-based payments tied to forest health outcomes
- Scaled from \$4M pilot (2018) to \$25M second bond (2021)
- Yuba Water Agency as anchor beneficiary-payer

*Lesson for MRF: Pilot first, then scale. Anchor off-taker de-risks the raise.*

### CCRIF SPC (Caribbean Catastrophe Risk Insurance Facility)



- Parametric trigger: binary payout based on wind speed / rainfall
- DFI-anchored with technical support from World bank
- Zone-specific payouts: one island's bad year doesn't affect others
- 23 member countries, \$1B+ in coverage

*Lesson for MRF: Binary triggers are bankable. Zone-specific design is standard.*

### InsuResilience Investment Fund (IIF)



- Blended debt: 30% concessional / 70% commercial capital
- KfW/BlueOrchard-managed blended finance fund
- Targets climate risk in developing countries
- IRR: 6–8% (commercial tranche)

*Lesson for MRF: DFI first-loss tranche unlocks institutional capital at scale.*

***MRF is evolution, not revolution. The structure is proven. The geography is new.***



# \$250M is the destination, not the starting point.

## PHASING

A phased pilot structure de-risks the raise and proves the mechanism before scaling.

PHASE 1	PHASE 2	PHASE 3
<b>\$40–50M   Years 1–3   Ca Mau Pilot</b>	<b>\$100M   Years 4–6   Dong Thap + Soc Trang</b>	<b>\$250M   Years 7–10   Full Mekong Delta</b>
<ul style="list-style-type: none"><li>Anchor off-taker: Minh Phu Seafood (Vietnam's largest shrimp exporter)</li><li>Build: 3–4 sluice gates + IoT sensor network + 5,000ha mangroves</li><li>Prove: trigger mechanism, DNV certification, first RFA payments</li><li>Standalone Ca Mau IRR: 9.2% (see Appendix B)</li><li>VCC (Variable Capital Company) sub-fund structure: no new legal entity needed to scale</li></ul>	<ul style="list-style-type: none"><li>Add: Vinh Hoan (pangasius) + Sao Ta (shrimp) as anchor off-takers</li><li>Scale: full IoT network + 15,000ha mangroves + logistics hubs</li><li>Phase 1 track record enables institutional capital raise</li><li>First Verra VCS carbon credit issuance (Year 4)</li><li>ADB PCG activates at Phase 2 scale (\$100M+ fund size)</li></ul>	<ul style="list-style-type: none"><li>All 7 provinces. All 17 off-takers. Full revenue model.</li><li>30,000ha mangroves. 12–15 sluice gates. Full IoT coverage.</li><li>Post-Year 10: ASEAN expansion via VCC sub-fund</li><li>(Thailand, Indonesia, Philippines, same structure, new geography)</li><li>Exit: green bond refinancing + secondary sale + carbon FPA</li></ul>

**Phase 1 de-risks Phase 2. Phase 2 de-risks Phase 3. The VCC is built for this.**

# Impact that is measured, not claimed.

## IMPACT

**1.1M**

farming families protected in MRF covered sourcing zones

**180,000**

tCO<sub>2</sub>e/yr sequestered via 30,000ha Verra VCS mangroves

**\$28B**

in supply chains de-risked across 7 provinces

### SDG 1 No Poverty



Reduce farming household income loss from \$200-\$400/yr to <\$100/yr through guaranteed resilience infrastructure

### SDG 13 Climate Action



30,000ha mangrove bio-shields + IoT early warning system + 180,000 tCO<sub>2</sub>e/yr carbon sequestration

### SDG 17 Partnerships



Singapore VCC + Vietnam PPP + 17 corporates + 4 DFIs + 7 provincial governments

METRIC	BASELINE	MRF TARGET
Salinity breach days/yr	90-180 days	<30 days
Uninsured loss rate	90%	<30%
Mangrove cover (ha)	90,000 ha	120,000 ha



THE TEAM

# Built for This, From Nanyang Business School

Four disciplines. One fund.

**STRATEGY & STORY**

**Yuvraj**

*Infrastructure & Strategy Lead · 10 yrs in Technology & Enterprise Strategy · MBA, NBS Singapore · VCIC 2026 Asia Finalist (1st Runner-Up)*

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Leads fund strategy and narrative. Engineering background anchors the parametric trigger design; enterprise software experience drives the corporate off-taker model.

**FINANCIAL ARCHITECTURE**

**Ram**

*6 yrs financial modelling & valuation · ESG analytics specialist · MBA Student at NBS, Singapore*

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Leads the off-taker EAL framework and fee structure. Built the revenue model on verified financials — the climate-to-cashflow linkage holds under institutional scrutiny.

**RISK & DFI STRUCTURING**

**Saurav**

*5 yrs Credit Risk Analyst, JPMorgan · Emerging markets climate portfolios · MBA Student at NBS, Singapore · VCIC 2026 Asia Finalist (1st Runner-Up)*

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Stress-tests revenue assumptions, models counterparty risk across named off-takers, and structures the DFI credit enhancement layer.

**CAPITAL MARKETS & STAKEHOLDER ENGAGEMENT**

**Alberto**

*BPI · Security Bank · Citi · 7 yrs across credit, IB & capital markets · MBA Student at NBS, Singapore*

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Brings credit underwriting rigor from BPI and capital markets deal experience from Security Bank to MRF's fund structuring and off-taker risk assessment.





**The Mekong feeds a billion  
people.**

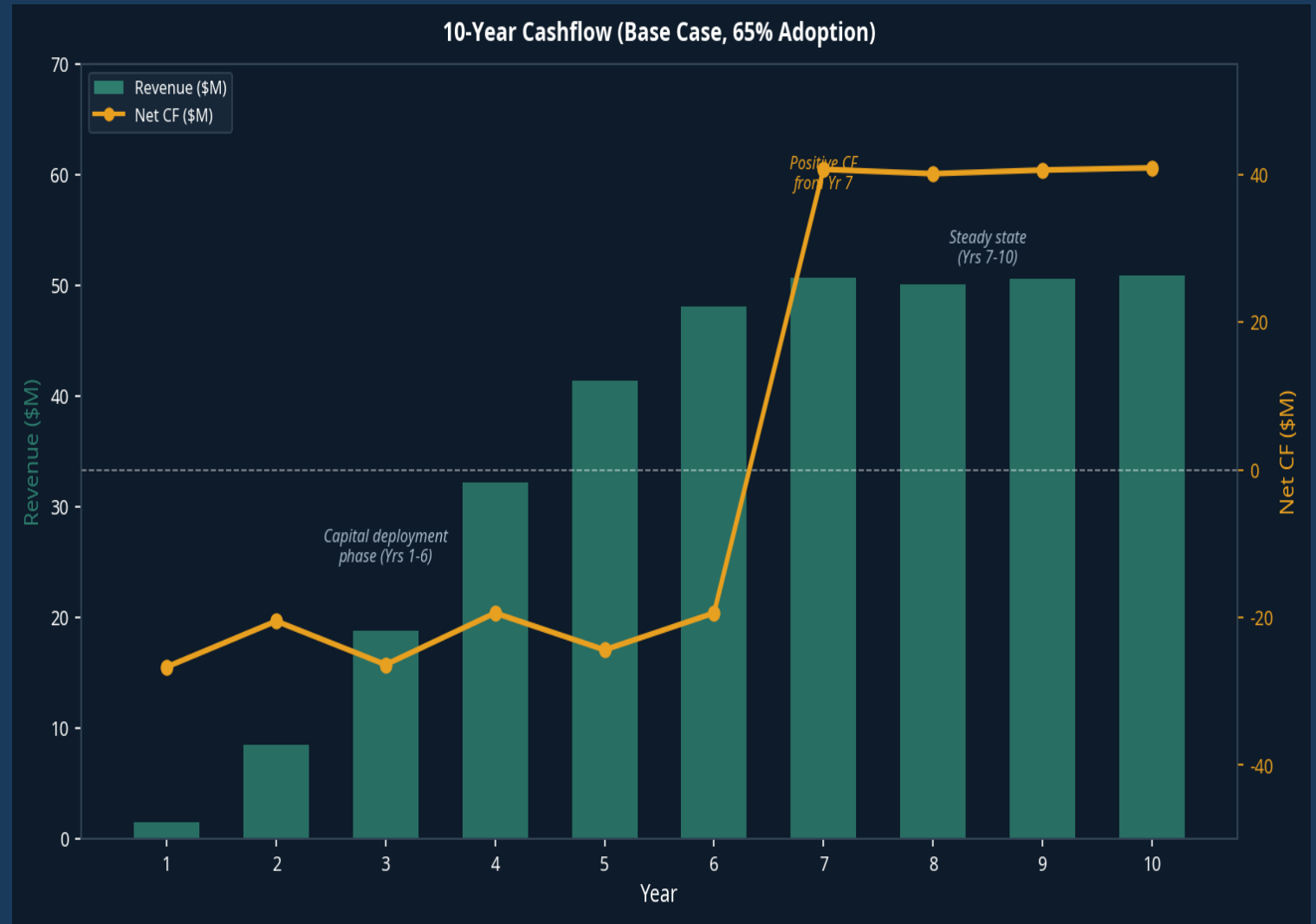
*Protect it once. Forever.*

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# APPENDIX

# Appendix A: 10-Year Cashflow Detail

Year	Revenue (\$M)	Costs (\$M)	Net CF (\$M)
1	1.5	3.3	-26.7
2	8.5	4.0	-20.5
3	18.8	5.2	-26.4
4	32.2	6.6	-19.4
5	41.4	8.3	-24.4
6	48.1	10.0	-19.4
7	50.7	10.0	+40.7
8	50.1	10.0	+40.1
9	50.6	10.0	+40.6
10	50.9	10.0	+40.9



**Assumptions: 65% adoption (base). Revenue ramps as companies onboard by province phase (Ca Mau Yr1 → full Delta Yr6+). Net CF includes capital deployment outflows (\$250M across Years 1-6). Senior coupon = \$14.1M/yr (9.4% on drawn). Junior coupon = \$3.1M/yr (4.1% on drawn). Costs ramp from \$3.3M (Yr1) to \$10M (Yr6+). Breakeven (cumul. CF turns positive): Year 10.**

## Appendix B: Phase 1 Standalone IRR (Ca Mau Pilot, \$40–50M)

Fund Size	<b>\$40–50M</b>
Anchor Off-Taker	<b>Minh Phu Seafood Corp</b>
Province	<b>Ca Mau</b>
Infrastructure	<b>3–4 sluice gates + 5,000ha mangroves + IoT</b>
Annual Revenue (good yr)	<b>~\$11–13M</b>
Annual Revenue (bad yr)	<b>~\$6.1M</b>
Senior IRR (pilot)	<b>~9.2%</b>
Breakeven adoption	<b>40%</b>
Verra VCS credits (yr 4+)	<b>~36,000 tCO2e/yr</b>

*Phase 1 standalone model demonstrates the mechanism is viable at pilot scale before the full \$250M raise. Minh Phu Seafood is Vietnam's largest shrimp exporter with \$523M in annual revenue and direct Ca Mau exposure.*

## Appendix C: 3-Scenario Sensitivity Analysis

Metric	Downside	Base Case	Upside
Adoption Rate	45%	65%	85%
Carbon Price (\$/tCO <sub>2</sub> e)	\$10	\$15	\$25
Exit Path	None	Path A	Path C
Senior IRR	4.42%	11.7%	13.4%
Junior IRR	0%	4.80%	5.9%
MOIC	1.04x	1.41x	1.82x
Net Return (\$M)	\$12.5M	\$72.5M	\$212.5M
Breakeven?	Yes (45%=BE)	Yes	Yes

Exit Path legend: Path A = green bond refinancing of Senior Tranche (Year 8–10). Path C = secondary sale of fund interests to infrastructure/SWF buyer. See Appendix F.

# Appendix D: Off-Taker EAL Mapping (17 Corporations)

Company	Sector	Province	EAL (\$M)	Fee (15%)	Adopt. Prob.
Minh Phu Seafood	Shrimp	Ca Mau	\$52.0M	\$7.8M	85%
Vinh Hoan Corp	Pangasius	Dong Thap	\$38.5M	\$5.8M	80%
Sao Ta Foods	Shrimp	Soc Trang	\$31.2M	\$4.7M	75%
Nam Viet Corp	Pangasius	An Giang	\$28.0M	\$4.2M	70%
Olam International	Rice/Shrimp	Multi	\$45.0M	\$6.75M	65%
Wilmar International	Rice	Multi	\$38.0M	\$5.7M	60%
Louis Dreyfus	Rice	Multi	\$32.0M	\$4.8M	60%
Nestlé SEA	MNC	Multi	\$42.0M	\$6.3M	70%
CP Group	MNC	Multi	\$35.0M	\$5.25M	65%
Unilever SEA	MNC	Multi	\$28.0M	\$4.2M	60%
Costco	Retail	Import	\$30.0M	\$4.5M	55%
Walmart	Retail	Import	\$28.0M	\$4.2M	55%
AEON	Retail	Import	\$22.0M	\$3.3M	50%
Tesco	Retail	Import	\$18.0M	\$2.7M	50%
Carrefour	Retail	Import	\$15.0M	\$2.25M	50%
Bunge	Trader	Multi	\$25.0M	\$3.75M	55%
Mars Inc.	MNC	Multi	\$14.8M	\$2.22M	55%
<b>TOTAL</b>			<b>\$577.6M</b>	<b>\$86.6M/yr</b>	

EAL = Expected Annual Loss: the estimated annual financial damage each company faces from Mekong Delta climate events (floods + salinity intrusion). Fee = 15% of EAL.

# Appendix E: ADB PCG Calibration (Why 20%?)

ADB applies 8 internal criteria before approving a PCG. MRF is structured to pass all 8 simultaneously.

<b>1. ADB 25% policy cap</b>	20% PCG on \$150M = \$30M exposure. Within ADB's \$30M single-project cap.	<b>PASS</b>
<b>2. No sovereign counter-indemnity</b>	Vietnam PPP structure does not require sovereign guarantee. PCG is project-level.	<b>PASS</b>
<b>3. Additionality</b>	Without PCG, Senior tranche cannot achieve BBB+ rating. PCG is essential.	<b>PASS</b>
<b>4. DFI first-loss present</b>	\$75M Junior tranche (ADB/IFC/FMO/KfW) absorbs first losses before PCG activates.	<b>PASS</b>
<b>5. Blended finance structure</b>	Grant + Junior + Senior + PCG = standard ADB blended finance template.	<b>PASS</b>
<b>6. Climate mandate alignment</b>	Mekong Delta flood + salinity resilience = ADB Climate Change Action Plan 2023.	<b>PASS</b>
<b>7. Replication potential</b>	Singapore VCC sub-fund structure enables ASEAN replication without new PCG.	<b>PASS</b>
<b>8. Exit mechanism</b>	Green bond refi (Path A) repays Senior in Year 8–10. PCG exposure terminates.	<b>PASS</b>

**20% PCG is the only level where all 8 criteria pass simultaneously. Combined with \$75M Junior first-loss: 83.3% credit enhancement on Senior Tranche.**

# Appendix F: Exit Strategy: Four Paths

## PATH A: GREEN BOND REFI

**\$75M | 30% probability | Year 8-10**

Refinance Senior Tranche via green bond issuance. Track record + Verra VCS certification enables sub-7% green bond rate. Frees Senior investors. Fund continues with lower cost of capital.

## PATH B: CARBON FPA

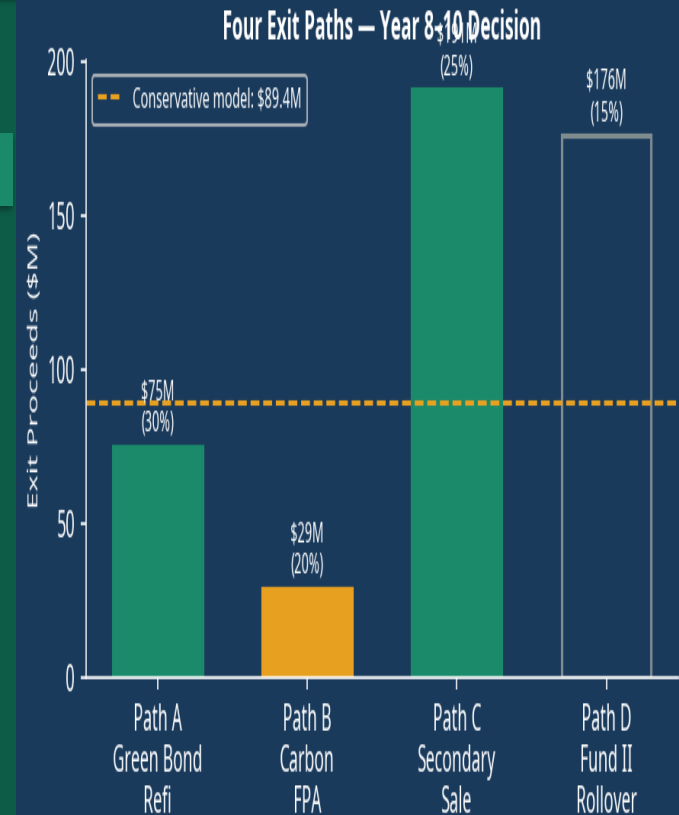
**\$29M | 20% probability | Year 5+**

Forward Purchase Agreement with Shell, Microsoft, or South Pole for 10-year carbon credit stream.  $\$15/\text{tCO}_2\text{e} \times 180,000 \text{ tCO}_2\text{e/yr} \times 10\text{yr} = \$27\text{M NPV}$ . Conservative estimate. Provides liquidity without full exit.

## PATH C: SECONDARY SALE

**\$191M | 25% probability | Year 8-10**

Secondary sale of fund interests to infrastructure fund, sovereign wealth fund, or climate-focused PE. Comparable: Blue Forest secondary at 1.4x book. MRF at 1.3x book = \$191M on \$147M invested capital.



**Conservative model: Path A (\$75M, 30%) + 50% of Path B (\$14.5M) = \$89.4M exit proceeds. Path D (Fund II Rollover, 15%): no cash exit: investors roll into MRF Fund II at NAV for ASEAN expansion upside. Zero-exit scenario (cashflow only): 1.05x MOIC. MRF is viable with no exit.**

# Appendix G: Blue Carbon Market & Revenue

Mangrove sequestration rate	6–8 tCO <sub>2</sub> e/ha/yr (IUCN, Verra VCS)
MRF mangrove area	30,000 ha (Phase 3)
Annual credits (base)	180,000 tCO <sub>2</sub> e/yr
Conservative price	\$15/tCO <sub>2</sub> e (SEA benchmark)
Base price	\$20/tCO <sub>2</sub> e (CIX Singapore spot)
Upside price	\$25/tCO <sub>2</sub> e (voluntary market)
Annual revenue (conservative)	\$2.7M/yr
Annual revenue (base)	\$3.6M/yr
Named buyers	Shell, Microsoft, Respira, South Pole, CIX Singapore
Certification	Verra VCS + CCBS (Climate, Community & Biodiversity)
ADB precedent	Ca Mau mangrove VCS project, 2019–2023

*Note: Carbon revenue is supplementary, not primary. MRF is viable at \$0 carbon revenue (see Appendix C for downside).*

# Appendix H: Risk Assessment

## Adoption Risk

*Off-takers may not sign RFAs at projected rates*

**HIGH**

Mitigation: Breakeven at 45% (below base 65%). Minh Phu anchor at 85% probability. Zone-specific design: one province's non-adoption doesn't stop others.

## Trigger Calibration Risk

*4g/L threshold may not align with all crop types*

**MEDIUM**

Mitigation: Threshold validated by MARD (Ministry of Agriculture and Rural Development, Vietnam) and the Mekong River Commission. Zone-specific thresholds possible. DNV certifies annually.

## Blue Carbon Terminal Value

*Carbon price uncertainty in voluntary markets*

**MEDIUM**

Mitigation: Carbon revenue is supplementary (3–5% of total). Model is viable at \$0 carbon. Conservative \$15/tCO<sub>2</sub>e used in base case.

## Construction Risk

*Sluice gate construction delays or cost overruns*

**LOW**

Mitigation: ADB precedent: 3 completed Mekong Delta sluice gate projects 2019–2024. PPP structure: Vietnam government bears land and permit risk.

# Appendix I: Distribution Waterfall

## TOTAL REVENUE

Base case (65% adoption): ~\$50–51M/yr  
| Stress (45% adoption): ~\$34.6M/yr

## 1. MANAGEMENT FEE

\$2.5M/yr (1% of \$250M fund)

## 2. OPERATING EXPENSES

\$7.5M/yr (infrastructure, IoT, staff, legal — steady state)

## 3. SENIOR COUPON

\$14.1M/yr (9.4% on drawn capital)

## 4. JUNIOR COUPON

\$3.1M/yr (4.1% on drawn capital)











## 5. NET RETURN

Steady state: ~\$23.5M/yr  
(surplus to reserves / reinvestment)

Distribution Waterfall — Steady State (~\$50.7M Revenue)



# Appendix J: SDG Impact Metrics (Detailed)

SDG	Metric	Baseline	MRF Target	Measurement
 SDG 1: No Poverty	Farmer income loss/yr	\$200-\$400	<\$200	Annual household survey
 SDG 1: No Poverty	Uninsured loss rate	90%	<30%	MRC + MARD data
 SDG 13: Climate Action	Salinity breach days/yr	90-180 days	<30 days	IoT sensor network
 SDG 13: Climate Action	Mangrove cover (ha)	90,000	120,000	Planet Labs satellite
 SDG 13: Climate Action	tCO2e sequestered/yr	0 (baseline)	180,000	Verra VCS audit
 SDG 13: Climate Action	Storm surge reduction	Baseline	Up to 66%	IUCN mangrove study
 SDG 17: Partnerships	Corporate off-takers	0	17	RFA contracts
 SDG 17: Partnerships	DFI co-investors	0	4 (ADB/IFC/FMO/KfW)	Term sheets
 SDG 17: Partnerships	Provincial PPCs engaged	0	7	PPP agreements
 SDG 17: Partnerships	Farming families protected	0	1.1M	Provincial census

# Appendix K: What They Said

“Mekong is not a small game; if you can structure the additionality correctly and get the right DFI anchor, the GCF Private Sector Facility window is open. The pathway exists — it just needs to be walked carefully.”



**Dr. Bapon Fakhruddin | Water & Climate Leader | Green Climate Fund (GCF)**

“I like the thinking. The sector thesis is credible; Olam is an FMO client. FMO has appetite for first-loss in agri-climate structures if the revenue model is proven at pilot stage. Come back when Ca Mau is live.”



**Bas Rekvelt | Principal Investment Officer, Asia Agribusiness | FMO, Dutch Entrepreneurial Bank**

“Similar to what we once tried on RISCO on mangroves in the Philippines and India. Satellite-based flood triggers are reliable for prolonged inundation — your trigger design is technically sound. The basis risk is manageable, if you zone it correctly.”



**Christopher Au | Director, Climate & Resilience Hub, Asia Pacific | Willis Towers Watson (WTW)**

“I think the core thesis makes sense. If I'm an importer outside of Vietnam wanting to import Vietnamese rice, I'm a bit worried about my supply chain. If I have to pay a bit of money to have that certainty, then I'm going to get high quality rice and continue to be able to buy from Vietnam. There's a price to be paid for that. I think that thesis is pretty sound.”



**Thomas Jacobs | Country Manager, Mekong Region | International Finance Corporation (IFC)**