



SHIELD

Strategic Human & Integrated
Environmental Lagoon Development

PROGRAM SHIELD
Aby Lagoon Region | Côte d'Ivoire

PROGRAM VISION

SHIELD is an integrated, long-term transformation program designed to restore the Aby Lagoon ecosystem while building a resilient public-health and climate-response capacity through a One Health approach.

SHIELD connects, within one coherent portfolio:

- Environmental restoration and ecological protection
- Infectious disease prevention and early warning
- Health and crisis-response infrastructure
- Education, research, and innovation capacity
- Inclusive local economic development

SHIELD is structured as a public-private partnership platform, enabling coordinated engagement of government entities, international partners, development finance institutions, and private investors.

WHY THE ABY LAGOON REGION

The Aby Lagoon area faces interlinked challenges:

- ecosystem degradation and loss of natural protective buffers
- exposure to water-related health risks
- gaps in sanitation and public infrastructure
- high potential for climate-positive interventions, including blue carbon opportunities (subject to MRV and certification)

SHIELD addresses environmental, health, and socioeconomic needs as one system, with measurable outcomes and scalable design.



PROGRAM STRUCTURE: 5 INTEGRATED PILLARS



I. SHIELD-ECO — Environmental Restoration

Core scope:

- Mangrove restoration and habitat recovery
- Water quality monitoring and environmental data collection
- Measures to reduce pollution and improve waste management
- Anti-erosion and ecosystem resilience actions
- Preparation of climate-finance pathways, including blue carbon / carbon credit frameworks (where feasible)
- Progressive lagoon water recovery through natural biological restoration and pollution reduction measures
- Collection of environmental data supporting future integrated water treatment and ecosystem recovery programmes
- Pilot local wastewater separation and micro-treatment solutions preventing direct discharge into the lagoon

Time horizon: 5–10 years



II. SHIELD-HEALTH — Epidemic Prevention & Preparedness

Core scope:

- Early Warning System (EWS) for priority infectious risks
- Integration of environmental and health surveillance (One Health data logic)
- Strengthened laboratory and diagnostic capacity
- Rapid response teams and incident coordination protocols
- Prevention focus on water-related disease risks as an entry point
- Development of modular emergency healthcare infrastructure concepts for epidemic response scenarios

Time horizon: 3–5 years



III. SHIELD-ACADEMIA — Education, Research & Innovation Capacity

Core scope:

- Center of Excellence aligned with One Health and climate priorities
- Capacity building, training programs, and knowledge transfer
- Development of environmental and health data competencies (including AI-enabled analytics where appropriate)
- Institutional platform supporting the program's long-term sustainability

Time horizon: 5–8 years

PROGRAM STRUCTURE: 5 INTEGRATED PILLARS



IV. SHIELD–INFRA — Public & Health Infrastructure

Core scope:

- University-linked hospital concept and associated services
- Emergency Operations / Crisis Coordination capability (EOC logic)
- Water and sanitation infrastructure improvement
- Enabling public infrastructure that supports resilience and service delivery

Time horizon:
7–10 years



V. SHIELD–COMMUNITY — Inclusive Local Development

Core scope:

- Green jobs and workforce activation
- Women and youth inclusion pathways
- Local entrepreneurship linked to environmental services
- Eco-tourism and community-based value creation
- Vocational training and entrepreneurship support programmes for local communities

Time horizon:
3–8 years

FINANCIAL ARCHITECTURE (EXECUTIVE VIEW)

SHIELD is designed for blended finance, combining grants, concessional instruments, development finance, and PPP structures—depending on each pillar’s profile.

Pillar	Indicative budget (USD)	Typical financing profile
SHIELD–ECO	25–40M	Climate/environment grants + blended finance
SHIELD–HEALTH	2–10M	Public health grants + systems strengthening
SHIELD–ACADEMIA	15–30M	Partnerships, research/education funding + capacity building
SHIELD–INFRA	60–120M	PPP + development finance / infrastructure instruments
SHIELD–COMMUNITY	5–15M	Development grants + in

Total indicative program potential (10-year horizon):
110–215M USD (Ranges reflect portfolio logic and staging; final figures to be validated per CAPEX/OPEX and design studies.)

IMPLEMENTATION ROADMAP & VALUE PROPOSITION

PHASE I

(0–3 years)
Launch & Early Impact

- Initiate health–security and surveillance components
- Establish environmental monitoring baseline
- Prepare infrastructure designs and investment packaging
- Community awareness, sanitation education and vocational activation programmes

PHASE II

(3–7 years)
Scale & Build

- Initiate health–security and surveillance components
- Establish environmental monitoring baseline
- Prepare infrastructure designs and investment packaging
- Operational implementation of initiatives prepared during Phase I
- Completion of short-cycle priority projects demonstrating early implementation success

PHASE III

(7–10 years)
Operate & Sustain

- Full operational maturity of key infrastructure
- Operationalization of feasible climate–finance mechanisms (e.g., blue carbon pathways, subject to MRV/certification)
- Sustained community programs and local economic integration

KEY DIFFERENTIATORS

- One Health design: environment + health + resilience in one system
- Data-enabled architecture: linking environmental indicators and health surveillance
- Finance-ready portfolio: structured for grants, blended finance, and PPP
- Institutional sustainability: capacity building through academia and skills transfer
- Replicable model: designed to scale to other coastal and lagoon regions

SHIELD AS A PARTNERSHIP PLATFORM

- a government-aligned, multi-partner development portfolio
- an implementable program with staged projects and investment logic
- a reference model for integrated coastal restoration and health security

SHIELD – WHAT CAN BE FUNDED & FROM WHICH SOURCES

SHIELD-ECO

Lagoon Restoration & Climate Resilience

- EU NDICI (Global Europe)
- EU Global Gateway (Team Europe)
- AFD (France) Climate Financing
- EIB Climate & Infrastructure Loans
- African Development Bank – Climate Window
- Green Climate Fund (via accredited entity)
- Global Environment Facility – Adaptation Fund
- Blended Finance Structures
- Carbon Credit Mechanisms (subject to validation)

SHIELD-HEALTH

Epidemic Prevention & Health Security

- U.S. CDC Global Health Security Grants
- U.S.–Côte d'Ivoire Bilateral Health Programs
- World Bank – Health Systems Financing
- African Development Bank – Health Window
- EU NDICI Health Envelope
- Technical Assistance Grants

SHIELD-INFRA

Hospital, EOC, Water & Sanitation

- World Bank (IDA / IBRD) Sovereign Loans
- African Development Bank Infrastructure Loans
- European Investment Bank
- AFD (France) Development Loans
- EU Global Gateway Blending
- PPP Project Finance* IFC (if revenue-based)

SHIELD-ACADEMIA

Research & Institutional Capacity

- EU Development Cooperation
- Team Europe Capacity Programs
- World Bank Education Window
- AfDB Capacity Building Programs
- Bilateral Academic Partnerships

SHIELD-COMMUNITY

Green Jobs & Local Economic Activation

- EU NDICI Local Development
- Adaptation Fund
- GEF Small Grants
- UNDP Development Programs
- Impact Investment Funds

WHO CAN APPLY – FUNDING ELIGIBILITY STRUCTURE

Sovereign / Public Financing

- World Bank (IDA / IBRD) → Ministry of Finance
- African Development Bank (Sovereign) → Government
 - EU NDICI → Relevant Ministry
 - AFD → Government Entity
 - EIB → Government or State Entity

If funding is sovereign → Government applies and signs.

Climate Funds

- Green Climate Fund → Accredited Entity (UNDP / MDB)
 - GEF → Implementing Agency
 - Adaptation Fund → Accredited Institution

Private companies cannot apply directly.

Private / Non-Sovereign Financing

- IFC → SPV / Private Operator
- AfDB (Non-Sovereign Window) → SPV
- Impact Funds → Investment Vehicle
- Commercial Banks → Project SPV

If project generates revenue → SPV can apply.

Government Participation & Administrative Coordination

- National ministries provide strategic oversight and sovereign alignment
- Local authorities support territorial implementation and administrative coordination

PUBLIC-PRIVATE PARTNERSHIP STRUCTURE FOR SHIELD

Recommended PPP Architecture

Government

- Grants concession
- Provides regulatory framework
- May offer availability payments
- Ensures sovereign backing if required

SPV (Project Company)

- Design
- Build
- Finance
- Operate

Development Finance

- Long-term debt
- Risk mitigation
- Blended structure support

Climate / Grant Layer

- Feasibility funding
- CAPEX risk reduction
- Bankability improvement

PPP-Suitable Components:

- Hospital Infrastructure
- Water & Sanitation Utilities
- Waste Management
- Service-Based Health Operations

Possible PPP Models:

- DBFO – Hospital
- Concession – Water Utility
- Availability Payment Model – Public Health Infrastructure
- Hybrid Blended PPP – Climate-Linked Infrastructure

INTEGRATED FINANCING STRATEGY FOR SHIELD

PHASE I

Grant-Focused

Health Systems
+
Environmental Baseline
+
Feasibility

PHASE II

Blended Finance

EU Grants
+
MDB Loans
+
Climate Finance

PHASE III

PPP & Long-Term
Sustainability

Infrastructure Delivery
+
Operational Models

CAPITAL STACK (PPP + BLENDED FINANCE)

Capital Layer	Instrument	Typical Providers (Examples)	Cash vs. Enhancement	Repayable	Primary Use	Investor / Credit Analyst Notes
1	Public In-Kind (land, buildings, permits, right-of-way, existing assets)	Government / municipalities / public agencies	Non-cash	No	Site readiness; reduces CAPEX; speeds procurement	Must be valued & documented (title, valuation method, encumbrances)
2	Preparation & TA Grants (feasibility, ESIA, designs, transaction advisory)	EU NDICI/Team Europe TA, bilateral TA, foundations	Cash grant	No	Makes projects "bankable"; PPP structuring costs	High leverage: small grant unlocks large debt
3	Program Grants (Public Goods) (health surveillance, environmental restoration, community)	EU NDICI, climate funds via accredited entities, US health grants	Cash grant	No	Non-revenue components; operating systems	Keep separate from SPV cashflows (avoid contaminating project finance DSCR)
4	Concessional / Sovereign Debt (long-tenor loans)	World Bank / AfDB / AFD / EIB / KfW (as applicable)	Cash debt	Yes	Core public infrastructure CAPEX; sometimes on-lent to SPV	Usually sovereign borrower ; needs MoF pipeline + debt sustainability framing
5	Non-Sovereign / Project Debt (SPV debt)	IFC / AfDB non-sovereign / DFIs / commercial banks	Cash debt	Yes	Revenue/availability-payment projects	Requires robust offtake (availability payments / tariffs / service contracts)
6	Guarantees / Risk Mitigation	Regional/MDB guarantee & insurance platforms; political risk insurance	Enhancement (not cash)	N/A	Lowers WACC; improves terms; unlocks lenders	Must specify: what risk covered (political, FX, breach of contract, PRG)
7	Private Equity (SPV)	Strategic operator + impact/infrastructure investors	Cash equity	Return-based	Aligns performance; covers contingencies; O&M capability	Typical equity 10–25% depending on risk and payment security
8	Results-Based Payments / Carbon Revenues	Donor RBF windows / verified carbon buyers (if applicable)	Cash upon performance	N/A	Incentives; upside; partial OPEX support	Treat as upside , not base case, unless contracted with high certainty

"WHO PAYS" AND "WHAT IS BANKABLE" — STRUCTURE BY ASSET TYPE

Asset / Sub-Project Type	Instrument	Typical Providers (Examples)	Cash vs. Enhancement
Hospital / EOC (core public health infrastructure)	PPP DBFO or Hybrid (public CAPEX + private O&M)	Availability payments (government) + KPI deductions	Grants 10–25% (prep + social) / Sovereign debt 40–60% / SPV debt 10–30% / Equity 10–20% / Guarantees embedded
Water & Sanitation (utility components)	Concession or Availability-based PPP	Tariffs + targeted subsidy or availability payments	Grants 10–20% / Sovereign or SPV debt 40–70% / Equity 10–20% / Guarantees embedded
Waste Management (service contract/ concession)	Performance-based concession	Service fees + municipal payments	Grants 5–15% / SPV debt 40–70% / Equity 10–25% / Guarantees embedded
Environmental Restoration (mangroves, lagoon, monitoring)	Public program + implementation partners	Public funding; potential RBF	Grants 50–80% / Sovereign debt 10–30% / Private 0–15% / Carbon as upside
Health Security Systems (surveillance, labs, RRT)	Public program + specialized implementers	Public budgets + donor support	Grants 60–90% / Sovereign debt 10–40% / Private minimal
Community / Green Jobs	Grant-led programs + local SMEs	Program financing	Grants 70–95% / Debt minimal / Impact equity selectively (0–10%)

CONSOLIDATED "OWN CONTRIBUTION" (CO-FINANCING) — PPP-COMPLIANT SOURCES

KEY CREDIT ENHANCERS

Area	What Analysts Need to See	Practical Evidence / Document
Payment security	PPP DBFO or Hybrid (public CAPEX + private O&M)	Availability payments (government) + KPI deductions
FX and convertibility	Concession or Availability-based PPP	Tariffs + targeted subsidy or availability payments
Offtake & KPIs	Performance-based concession	Service fees + municipal payments
ESG & permits	Public program + implementation partners	Public funding; potential RBF
Procurement pathway	Public program + specialized implementers	Public budgets + donor support

- **Public in-kind:** land + buildings + existing infrastructure (valued, documented)
- **Public counterpart cash:** budgeted counterpart funding (often 5–15% of CAPEX)
- **Sovereign debt as counterpart:** concessional loans paired with grants (blending)
- **SPV equity:** operator/investor equity (typically 10–25% of SPV capital)
- **Guarantees:** improve terms (not cash), but count as bankability lever

OPTIONAL LOCAL ECONOMIC DEVELOPMENT COMPONENT

STRATEGIC OBJECTIVE

To support the long-term sustainability of the SHIELD Programme through environmentally aligned local economic development and additional local investment participation.

POTENTIAL DIRECTIONS

- * Eco-tourism and biodiversity-based initiatives
- * Protected environmental and educational areas
- * Community-based entrepreneurship and vocational activity
- * Environmentally compatible investment zones developed in cooperation with local authorities

POTENTIAL DIRECTIONS

- * Additional local financing opportunities
- * Increased private sector participation
- * Local job creation and entrepreneurship support
- * Stronger long-term sustainability of the SHIELD ecosystem

LONG-TERM VISION

Potential future development of a:

"SHIELD Eco-Tourism & Sustainable Development Zone" supporting environmental protection, education and local economic growth.

