

# NEXUS ORIGO

## *Strategic Pre-Feasibility Dossier*

Study Summary and Module-Level Plan for the structuring of an integrated, bidirectional, multi-product interoceanic energy platform across the Isthmus of Panama.

PROJECT	TAP NEXUS — Trans-American Pipeline / Energy Corridor Panama
PREPARED BY	ADC <sup>5</sup> INGO — Aurora Development Consortium
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### TERMINOLOGY NOTE

In this document, the designation **NEXORA** refers to the international project-writing and structuring consortium that carries out the drafting, structuring and coordination work of the NEXUS ORIGO SPFD. NEXORA operates across multiple jurisdictions and is a strategic partner of ADC<sup>5</sup> INGO.

ADC<sup>5</sup> INGO is not itself the author of the study and does not staff it with internal personnel for that purpose; its role is limited to strategic framing, diplomatic and business-environment support, and the high-level governance context within which the project is structured.

This delineation of roles is maintained in order to comply with international transparency, financeability and governance standards. All further references in this document shall be understood accordingly.

**SECTION 1**

# Structure of the Full Study Line

The study work leading toward the implementation of the TAP NEXUS project is divided into seven phases. The logic of the phases follows international megaproject development standards, namely AACE Class 5 to Class 1, as well as the progression from Strategic Outline Business Case to Outline Business Case and Full Business Case.

## 1.1 Phasing

### **F0 — Concept**

Development of the strategic framework, platform logic and partner architecture of TAP NEXUS. At the current stage, F0 is essentially completed; the existing materials (Strategic Overview, Strategic Rationale, TAP Development Platform, TAPNEXUS Pres) form the starting basis.

### **F1 — NEXUS ORIGO SPFD**

This is the subject of the present document. It is a Strategic Pre-Feasibility level dossier, to be launched after the Panamanian countersignature of the LOI. Its purpose is to provide, in parallel with Platform-building, the technical and economic substance on which partner negotiations with sovereign, industrial and financial stakeholders can be based. The expected level is close to AACE Class 4.

### **F2 — Bankable Feasibility Study (BFS)**

A detailed bankable-level study forming the basis for financiers, including DFIs, commercial banks, JBIC and sovereign debt providers. AACE Class 3 level.

### **F3 — FEED + ESIA**

Full development of the front-end engineering design and the environmental and social impact assessment. F3 forms the contractual basis for construction.

### **F4 — Detailed Design + Financial Close**

Detailed design and financial close. Signing of financing documents and execution of construction contracts.

### **F5 — Construction**

The physical implementation phase, typically extending over several years.

### **F6 — Commissioning and Operation**

Commissioning of the system, followed by long-term operation within the framework of the new PTP S.A. and the TAP NEXUS Consortium Entity.

## 1.2 Positioning of NEXUS ORIGO

The NEXUS ORIGO SPFD is the central product of Phase F1. The subsequent F2 phase (the Bankable Feasibility Study) will be a substantially larger and more expert-intensive study, typically in the USD 20–100 million range. The purpose of the NO SPFD is to ensure that all required professional and strategic inputs are available for that next phase, and that partner negotiations along the Platform-building track can rely on an appropriate level of substance.

**Parallel-track logic.** The NO SPFD runs in parallel with the TAP NEXUS Platform partner-engagement track. The two tracks meet at controlled synchronisation points (including AC / MEG and Panamanian partners) and mutually reinforce each other.

**SECTION 2**

# Overall View of the NEXUS ORIGO SPFD

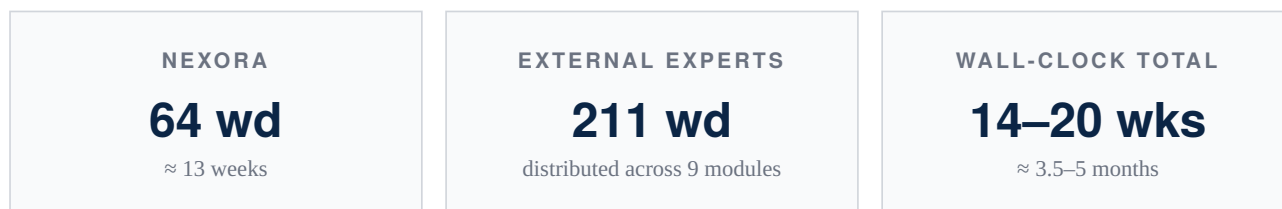
## 2.1 Submodules

The NO SPFD consists of nine submodules, which together cover the full content range required for the partner-level structuring of TAP NEXUS.

1. Strategic Anchor Module
2. Technical Concept Module
3. Market and Flow Module
4. Commercial and Economic Module
5. Financing Architecture Module
6. Governance and Sovereign Module
7. ESIA Pre-Scoping Module
8. Risk and Resilience Module
9. Roadmap and Phasing Module

## 2.2 Aggregated Duration

Based on a five-day working week.



The wall-clock critical path is ESIA Pre-Scoping (approximately 10 weeks). Integration and partner-iteration rounds add a further 4–6 weeks to reach the realistic total study duration.

## 2.3 Aggregated Budget — Recommended Scenario B

Scenario B is based on a 60% / 40% work-share split between NEXORA and external contributors in the material-production line, and falls within international benchmarks.

### I. MATERIAL-PRODUCTION COST — USD 3.0M

- NEXORA fee (60%): **USD 1.8M**
- External expert and study-drafting fees (40%): **USD 1.2M**

## II. PASS-THROUGH COSTS — USD 1.65M

- Fees (data subscriptions, licences, legal vendor framework): USD 400K
- Logistics (Panama fieldwork, travel, community consultation): USD 300K
- Output production and reserve (translation, graphics, document management, insurance, contingency): USD 950K

**Total amount:** approximately **USD 4.65M** ≈ EUR 4.2M ≈ HUF 1.8 billion.

## 2.4 Benchmark Compliance

- The industry pre-feasibility range for USD 25–45B CAPEX megaprojects is **USD 1.5–5M**.
- The AACE Class 4 (comprehensive) range is 0.01–0.02% × USD 35B, corresponding to **USD 3.5–7M**.
- The USD 4.65M budget sits in the middle of the Class 4 range and in the upper band of the broader benchmark range.
- For megaproject-level studies, the upper range is accepted where the pre-feasibility version covers the full scope.

## 2.5 Scenario Flexibility

The NO SPFD budget can be scaled across three scenarios, all of which remain within benchmark range.

Scenario	NEXORA / External	I. Writing	II. Pass-through	Total
<b>A</b> — parity, lower track	50% / 50%	USD 2.4M	USD 1.5M	USD 3.9M
<b>B</b> — recommended, middle track	60% / 40%	USD 3.0M	USD 1.65M	<b>USD 4.65M</b>
<b>C</b> — maximum NEXORA, upper track	65% / 35%	USD 3.43M	USD 1.7M	USD 5.13M

The present document is based on Scenario B, but Scenario A or C may also be applied depending on the partner constellation and negotiation dynamics.

## SECTION 3

# Detailed Breakdown by Module

The following figures are based on Scenario B. Module-level external expert costs are allocated within the USD 1.2M external framework, while the NEXORA allocation is made through the module-level assignment of the USD 1.8M structuring and coordination fee. The NEXORA value reflects not only actual work performed, but also the value of the structuring and orchestration role across the full project.

## 3.1 Strategic Anchor Module

### PURPOSE

To develop a consolidated, partner-level narrative for the TAP NEXUS strategic framework, the “infrastructure-limited” thesis, the geopolitical logic and the bilateral energy-corridor positioning. This module defines the tone and core argumentation axis of the full dossier.

### NEXORA CONTRIBUTION

Approximately 75%, including integration of existing materials, narrative development and peer-level argumentation.

### EXTERNAL EXPERT STACK

- Senior geopolitical and energy-strategy adviser, in a review role and for argumentation stress-testing.
- Diplomatic or ministerial-background adviser with Panama sensitivity, for cultural and political validation.

#### DURATION

NEXORA: **8 wd**

External: **7 wd**

Wall-clock: **3 weeks**

#### COST

NEXORA: **USD 250K**

External: **USD 45K**

Module direct: **USD 295K**

## 3.2 Technical Concept Module

### PURPOSE

To develop, at pre-feasibility level, the consolidated technical concept of the full TAP NEXUS technical system, including seven pipeline lines, dual-side terminals, a Pacific-side refinery, distributed underground storage, the FLUENTA ENERGY hybrid energy system and the AERION SHIELD security layer.

### NEXORA CONTRIBUTION

Approximately 17%, including technical narrative, integration, block-diagram summary and incorporation of engineering inputs.

### EXTERNAL EXPERT STACK

- Pipeline lead engineer (oil & gas midstream, large-diameter cross-isthmus experience)
- Refinery process engineer (downstream, 500–600 kbpd configuration)
- Marine terminal and port engineer (VLCC-capable deepwater systems)
- SCADA and industrial automation systems engineer
- Energy systems engineer (FLUENTA hybrid mix)
- Industrial security and drone-AI architect (AERION SHIELD)
- Geotechnical and route engineer
- Hydraulic engineer (pipeline flow and pumping stations)

#### DURATION

NEXORA: **5 wd**

External: **35 wd**

Wall-clock: **8 weeks**

#### COST

NEXORA: **USD 150K**

External: **USD 215K**

Module direct: **USD 365K**

### 3.3 Market and Flow Module

**PURPOSE**

To conduct a structural analysis of Atlantic–Pacific crude oil and product flows, validate the capacity constraints of the Panama Canal, develop the VLCC-level flow logic, and prepare the offtake and transportation framework at pre-feasibility level.

**NEXORA CONTRIBUTION**

Approximately 32%, including thesis framework, public-data integration, narrative and scenario logic.

**EXTERNAL EXPERT STACK**

- Crude oil and products market analyst (Wood Mackenzie, Rystad, IEA or S&P Platts calibre)
- Maritime freight economist
- Refining economics analyst (crack spreads and margin curves)

**DURATION**

NEXORA: **7 wd**  
 External: **25 wd**  
 Wall-clock: **6.5 weeks**

**COST**

NEXORA: **USD 180K**  
 External: **USD 135K**  
 Module direct: **USD 315K**

### 3.4 Commercial and Economic Module

**PURPOSE**

To substantiate, at pre-feasibility level, the TAP NEXUS CAPEX/OPEX bands currently indicated in the materials (USD 25–45B / USD 1.5–3.0B); to develop cash-flow profiles, payback trajectories and sensitivity analysis; and to structure the economic value flows connected to the new PTP S.A. and the Consortium Entity.

**NEXORA CONTRIBUTION**

Approximately 22%, including economic framework, narrative and sensitivity logic.

**EXTERNAL EXPERT STACK**

- Megaproject economist with CAPEX/OPEX experience and AACE class familiarity
- Financial modeller (DCF, sensitivity and Monte Carlo)
- Cost engineer (AACE Class 4–5 bottom-up estimates)

**DURATION**

NEXORA: **6 wd**  
 External: **30 wd**  
 Wall-clock: **7 weeks**

**COST**

NEXORA: **USD 180K**  
 External: **USD 155K**  
 Module direct: **USD 335K**

### 3.5 Financing Architecture Module

#### PURPOSE

To develop the TAP NEXUS financing architecture from a combination of blended finance, concessional DFI loans, commercial bank debt, sovereign-aligned debt and equity allocation. The module also prepares the potential role of JBIC, Mitsui / Mitsubishi financing positions and a payment-waterfall outline.

#### NEXORA CONTRIBUTION

Approximately 52%, based on the Principal's expertise in structuring the financing architecture.

#### EXTERNAL EXPERT STACK

- Project finance lawyer or banker with DFI background
- Sovereign debt structuring adviser
- International tax structuring expert

#### DURATION

NEXORA: **10 wd**

External: **20 wd**

Wall-clock: **6 weeks**

#### COST

NEXORA: **USD 250K**

External: **USD 170K**

Module direct: **USD 420K**

### 3.6 Governance and Sovereign Module

#### PURPOSE

To develop the ownership and governance structure of the new PTP S.A. (PNIH 60% and the 20% / 10% / 10% breakdown), the golden share and veto-right mechanism, the role of the State Supervisory Board, and the governance framework of the TAP NEXUS Consortium Entity. The module also covers concession rights, asset lock and international arbitration clauses.

#### NEXORA CONTRIBUTION

Approximately 47%, based on the Principal's expertise in structuring the governance framework and SPV/PPP architecture.

#### EXTERNAL EXPERT STACK

- International corporate and M&A lawyer with sovereign experience
- Local Panamanian corporate lawyer (concession law and local company law)
- Governance and supervisory board adviser
- International arbitration counsel (London / New York forums)

#### DURATION

NEXORA: **9 wd**

External: **25 wd**

Wall-clock: **7 weeks**

#### COST

NEXORA: **USD 220K**

External: **USD 150K**

Module direct: **USD 370K**

### 3.7 ESIA Pre-Scoping Module

#### PURPOSE

To prepare the scoping for the Phase F3 ESIA, including the methodological framework, application logic for IFC Performance Standards and Equator Principles, indigenous consultation framework covering the Ngäbe-Buglé comarca and other affected communities, biodiversity baseline framework, climate-adaptation perspective, and regulatory and permitting map.

#### NEXORA CONTRIBUTION

Approximately 12%, including methodological framework, regulatory narrative and integration.

#### EXTERNAL EXPERT STACK

- ESIA lead with IFC Performance Standards and Equator Principles background
- Environmental engineer (water, air and soil baseline)
- Social and community expert with Ngäbe-Buglé and comarca context
- Biodiversity specialist
- Climate adaptation and resilience expert

#### DURATION

NEXORA: **4 wd**

External: **45 wd** (critical path)

Wall-clock: **≈ 10 weeks**

#### COST

NEXORA: **USD 130K**

External: **USD 190K**

Module direct: **USD 320K**

### 3.8 Risk and Resilience Module

#### PURPOSE

To develop the full TAP NEXUS risk map, including political, regulatory, geopolitical, operational, financing, market and ESG risks; to prepare a BATNA map toward key partners (Panama, Aramco, Siemens, STRABAG, JBIC); to conduct scenario analysis; and to assess the risk profile of coexistence with the Panama Canal.

#### NEXORA CONTRIBUTION

Approximately 62%, based on the Principal's expertise in strategic risk and BATNA analysis.

#### EXTERNAL EXPERT STACK

- Enterprise risk management adviser
- Geopolitical risk analyst
- Insurance and reinsurance broker (optional, for risk-transfer perspective)

#### DURATION

NEXORA: **8 wd**  
 External: **12 wd**  
 Wall-clock: **4 weeks**

#### COST

NEXORA: **USD 230K**  
 External: **USD 70K**  
 Module direct: **USD 300K**

### 3.9 Roadmap and Phasing Module

#### PURPOSE

To prepare the detailed transition plan from the NO SPFD into Phase F2 (BFS); to define governance gates and decision points between phases; to outline the broad timing of F2–F4; and to structure the milestones of the TAP NEXUS Consortium Entity.

#### NEXORA CONTRIBUTION

Approximately 50%, based on the strategic phasing experience of the Principal and ADC<sup>5</sup>.

#### EXTERNAL EXPERT STACK

- Megaproject director (PMP / PgMP qualification, oil & gas or major infrastructure background)
- Project controls specialist (Primavera / EVM, optional)

#### DURATION

NEXORA: **7 wd**  
 External: **12 wd**  
 Wall-clock: **≈ 4 weeks**

#### COST

NEXORA: **USD 210K**  
 External: **USD 70K**  
 Module direct: **USD 280K**

**SECTION 4**

# Pass-Through Costs

Pass-through costs are independent reimbursable costs. They do not form part of either the NEXORA fee or the external expert fees.

## 4.1 Fees — USD 400K

- Data subscriptions and licences (Wood Mackenzie, Rystad, S&P Platts, IHS Markit): approximately USD 300K
- Software and platform usage fees (modelling, document management, project collaboration): approximately USD 50K
- Legal work for vendor scope agreements and NDA framework: approximately USD 50K

## 4.2 Logistics — USD 300K

Panama fieldwork, travel, accommodation, local transfers, community-consultation logistics, partner-meeting travel and local coordination.

## 4.3 Output Production and Reserve — USD 950K

- Translation from HU master into EN, ES (and optionally JP / AR / DE): approximately USD 100K
- Graphics, layout and partner-deliverable level design specialist: approximately USD 100K
- Document management, audit trail, archiving and insurance (E&O and PI): approximately USD 100K
- Optional press preparation and communications review: approximately USD 100K
- Final integration of the legal vendor framework and scope extensions: approximately USD 100K
- Contingency (10–12% of the total amount): approximately USD 450K

## SECTION 5

# Timing and Critical Path

## 5.1 Module-Level Wall-Clock

Module	Wall-clock
Strategic Anchor	3 weeks
Technical Concept	8 weeks
Market and Flow	6.5 weeks
Commercial and Economic	7 weeks
Financing Architecture	6 weeks
Governance and Sovereign	7 weeks
<b>ESIA Pre-Scoping</b>	<b>≈ 10 weeks (critical path)</b>
Risk and Resilience	4 weeks
Roadmap and Phasing	≈ 4 weeks

## 5.2 Full Wall-Clock

The modules can be run to a significant extent in parallel. The critical path is ESIA Pre-Scoping (approximately 10 weeks), followed by the Technical Concept Module (approximately 8 weeks).

Assuming parallel execution, including integration and partner iteration, the full NEXUS ORIGO SPFD timeline is as follows.

- Pure work (critical path): approximately 10 weeks
- Integration and partner review: additional 4–6 weeks
- Full wall-clock: approximately **14–20 weeks (3.5–5 months)**

## 5.3 Synchronisation with the Platform-Building Track

After the Panamanian countersignature of the LOI, the NEXUS ORIGO SPFD track and the TAP NEXUS Platform partner-engagement track launch simultaneously.

### EXPECTED SYNCHRONISATION POINTS

- **Week 6:** first joint review with AC / MEG and Panamanian partners.
- **Week 12:** mid-track consolidation and integration of partner feedback.
- **Weeks 18–20:** final dossier delivery and launch of the transition into BFS.

## SECTION 6

# Budget Summary — Scenario B

Item	Amount	Comment
<b>I. Material-production cost</b>	<b>USD 3.0M</b>	NEXORA + external writers / specialists
thereof NEXORA fee (60%)	USD 1.8M	internal study drafting, structuring, coordination
thereof external experts (40%)	USD 1.2M	module-level direct expert labour
<b>II. Pass-through</b>	<b>USD 1.65M</b>	reimbursable costs
Fees	USD 400K	data, licences, legal vendor
Logistics	USD 300K	fieldwork, travel, consultation
Output production and reserve	USD 950K	translation, graphics, document mgmt, insurance, contingency
<b>TOTAL</b>	<b>≈ USD 4.65M</b>	<b>≈ EUR 4.2M · ≈ HUF 1.8 billion</b>

All scenarios (A, B, C) remain within the AACE Class 4 international benchmark range (USD 3.5–7M for a USD 35B-CAPEX megaproject), with Scenario B positioned at the centre of the band.

**SECTION 7**

# Notes, Contingencies and Open Points

## 7.1 Scenario Selection

The present document is based on Scenario B. As partner negotiations progress, Scenario A (parity at USD 3.9M) or Scenario C (maximum NEXORA at USD 5.13M) may also be selected if stakeholder expectations justify it. All three scenarios fall within international benchmark range.

## 7.2 Scope Extension of Certain Modules

The Market and Flow and Commercial and Economic modules may be expanded if partners (particularly Aramco, Mitsui and JBIC) require a deeper market-data level. This can be managed through restructuring within the external fee framework, or covered from the contingency reserve.

## 7.3 ESIA as Critical Path

The ESIA Pre-Scoping module is the most time-intensive module of the full NO SPFD. Early launch (preferably in the first week after LOI countersignature) is key to shortening the overall wall-clock. Organising Ngäbe-Buglé community consultation is time-consuming and diplomatically sensitive, requiring separate logistical and communications preparation.

## 7.4 Use of the External Expert Stack

The USD 1.2M external framework is based on a minimum expert stack. Scope extension (for example, additional engineering sub-disciplines or full ESG due diligence) would move the requirement upward; in such cases, the project should shift to Scenario C or adopt a targeted increase of the external scope.

## 7.5 ADC<sup>5</sup> INGO Network Resources

A significant part of the external expert stack can be drawn from the ADC<sup>5</sup> INGO network covering 51 countries, which may reduce project-management overhead and accelerate expert engagement. The precise internal / external split can be finalised once the expert team is assembled.

## 7.6 Currency Sensitivity

The budget is USD-based. In the event of significant EUR/USD or HUF/USD movements, the equivalent HUF and EUR values may shift; the contingency reserve covers part of this exposure.

## 7.7 Confidentiality Level

The present document was prepared for internal use. The external partner-level version follows the same module structure, but does not include the NEXORA fee logic or the degree of scenario flexibility. It includes only the aggregated amount, the substantive scope and the mandatory timing.

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*The document was prepared under the strategic direction of ADC<sup>5</sup> INGO and the Principal. All references — including TAP NEXUS, FLUENTA ENERGY, AERION SHIELD, ADC<sup>5</sup> INGO, PNIH and new PTP S.A. — shall be understood according to the designations used within the ADC<sup>5</sup> framework.*