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Ministry of
Industries, Mines and Energy,
Republic of Namibia

A Scenario-Based Assessment of a Diversified Energy Portfolio for Namibia's Energy Security *Integrating Oil, Gas and Renewables to Achieve a Resilient Energy System*



**From Decision to Dividend:
Making Namibia's Oil Work
for Namibians**

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The Context: A Country at a Crossroads

- **Namibia's Orange Basin discoveries have raised expectations of hydrocarbon-led development**
 - **Simultaneously, Namibia holds serious solar, wind, and green hydrogen potential**
 - **These two opportunities are usually discussed separately — this study treats them as one system**
 - **Central question: Can oil, gas, and renewables be combined together to build real energy security?**
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Structural Problem

- **Namibia imports approximately 57% of its total energy supply**
- **Exposure to: price volatility, regional supply challenges within the Southern African Power Pool (SAPP), and constrained industrial planning**
- **Energy insecurity is not a future risk — it is a present, structural constraint on growth**
- **This is the vulnerability the study is built to test solutions against**



Research Question & Objectives

- **Core question: What is the optimal sequencing of oil, gas, and renewable investment to reduce import dependence and strengthen resilience?**
- **Evaluate how a diversified portfolio (upstream hydrocarbons + gas-to-power + scaled renewables) can:**
 - **Reduce import dependency below strategically significant thresholds**
 - **Improve long-term system resilience**
 - **Assess ESG implications and carbon transition risk per pathway**
- **Deliverable: a practical decision-support tool for operators, investors, and policymakers**





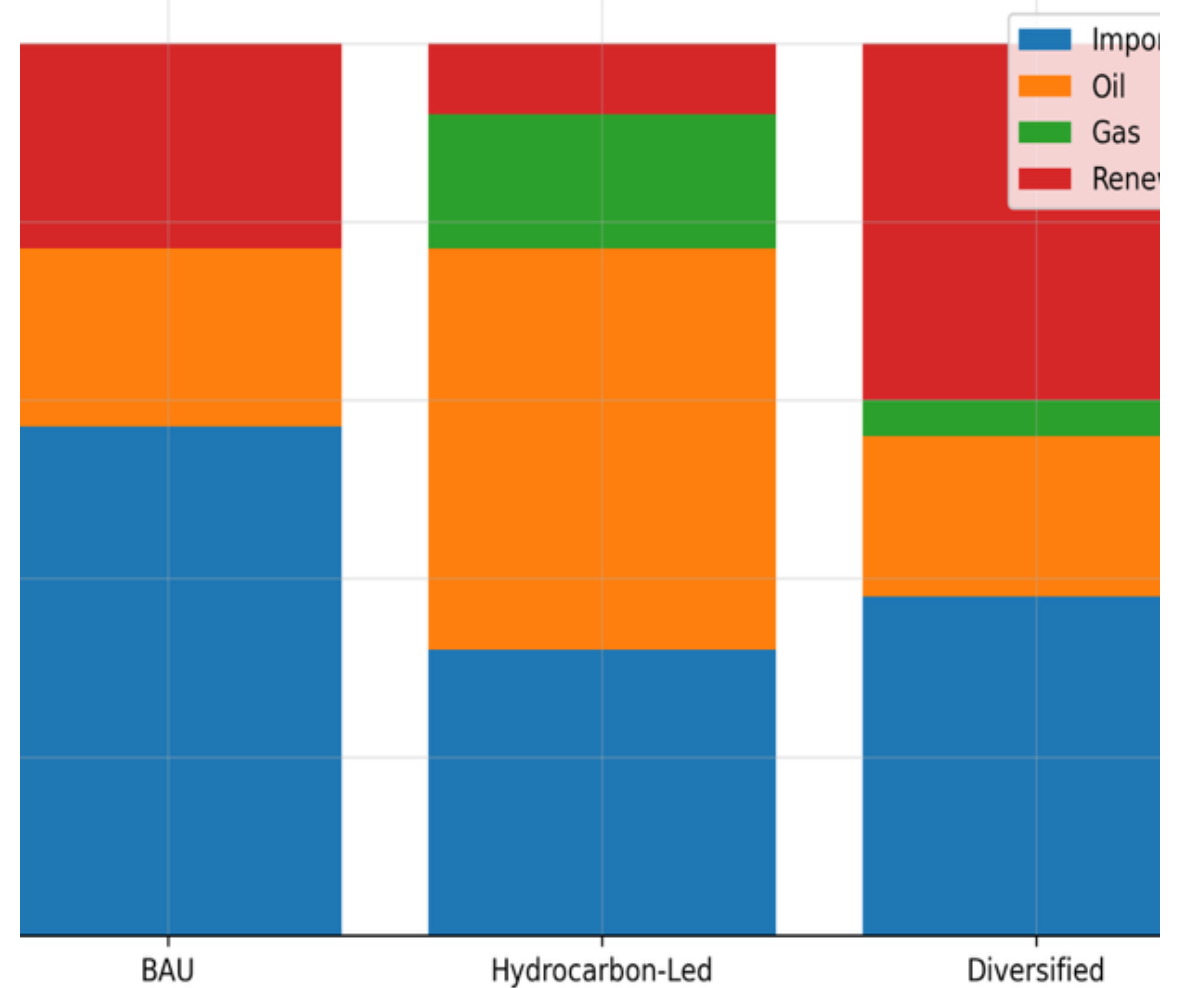
Methodology

- **Scenario-based analytical framework, tested to 2040**
 - **Data sources:**
 - **National energy balance data — UN Statistics Division**
 - **Infrastructure assumptions — operator disclosures, regional energy modelling**
 - **Policy diagnostics across: draft National Upstream Petroleum Local Content Policy, National Energy Policy, NDP6, National Integrated Resource Plan (NIRP), Namibia Green Hydrogen and Derivatives Strategy, NDC Second Update**
 - **Three development pathways tested against energy security, fiscal, and emissions metrics**
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Three Pathways

- **Business-as-Usual** — current policy trajectory, incremental renewables
- **Hydrocarbon-Led Development** — accelerated upstream + domestic gas-to-power
- **Energy Transition (Integrated)** — phased hydrocarbon monetisation + utility-scale renewables + green hydrogen + transmission reinforcement

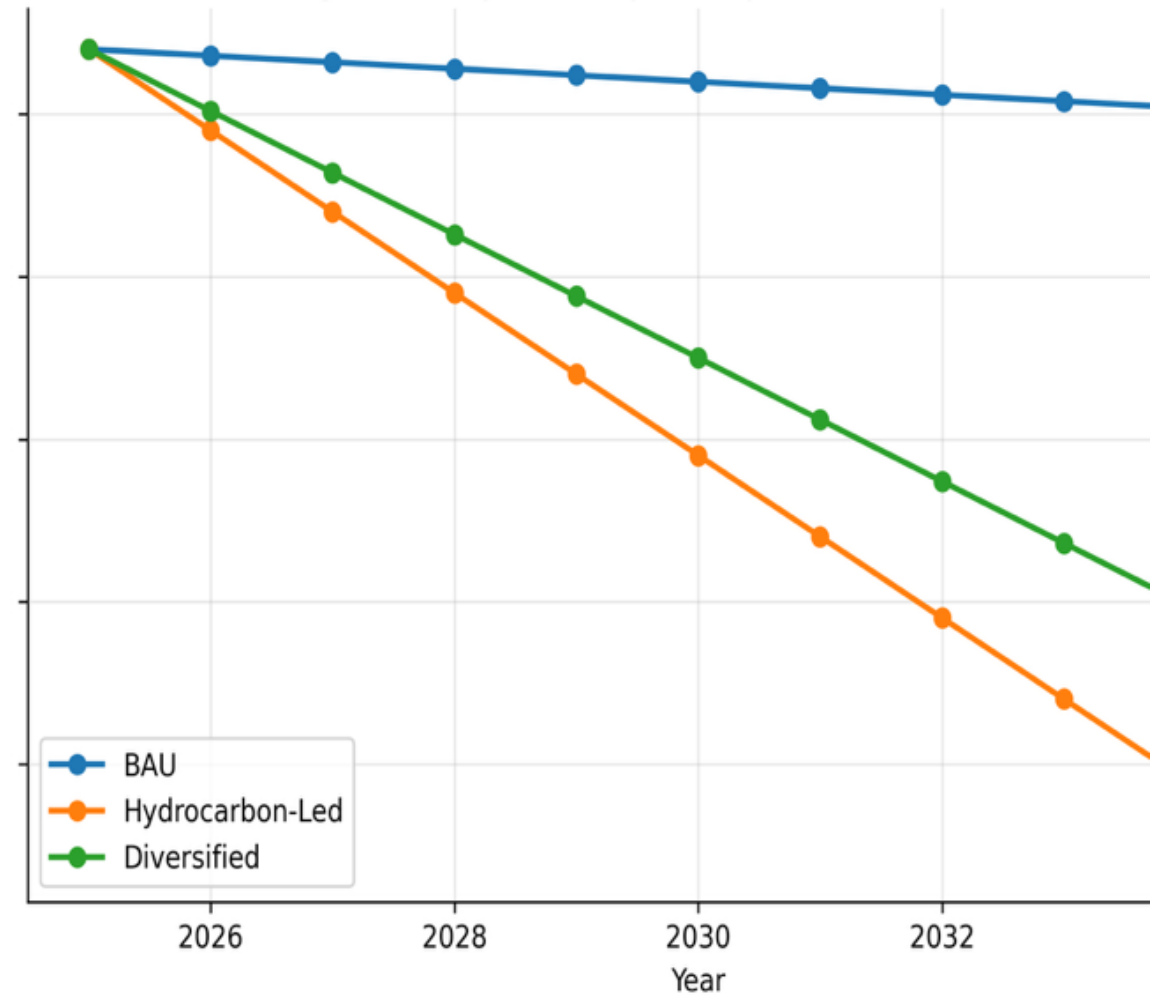
Figure 1. Energy Mix by Scenario



Scenario 1: Business-as-Usual

- Current policy, incremental renewables
- Import dependence stays above 50% through 2035
- Vulnerability barely improves

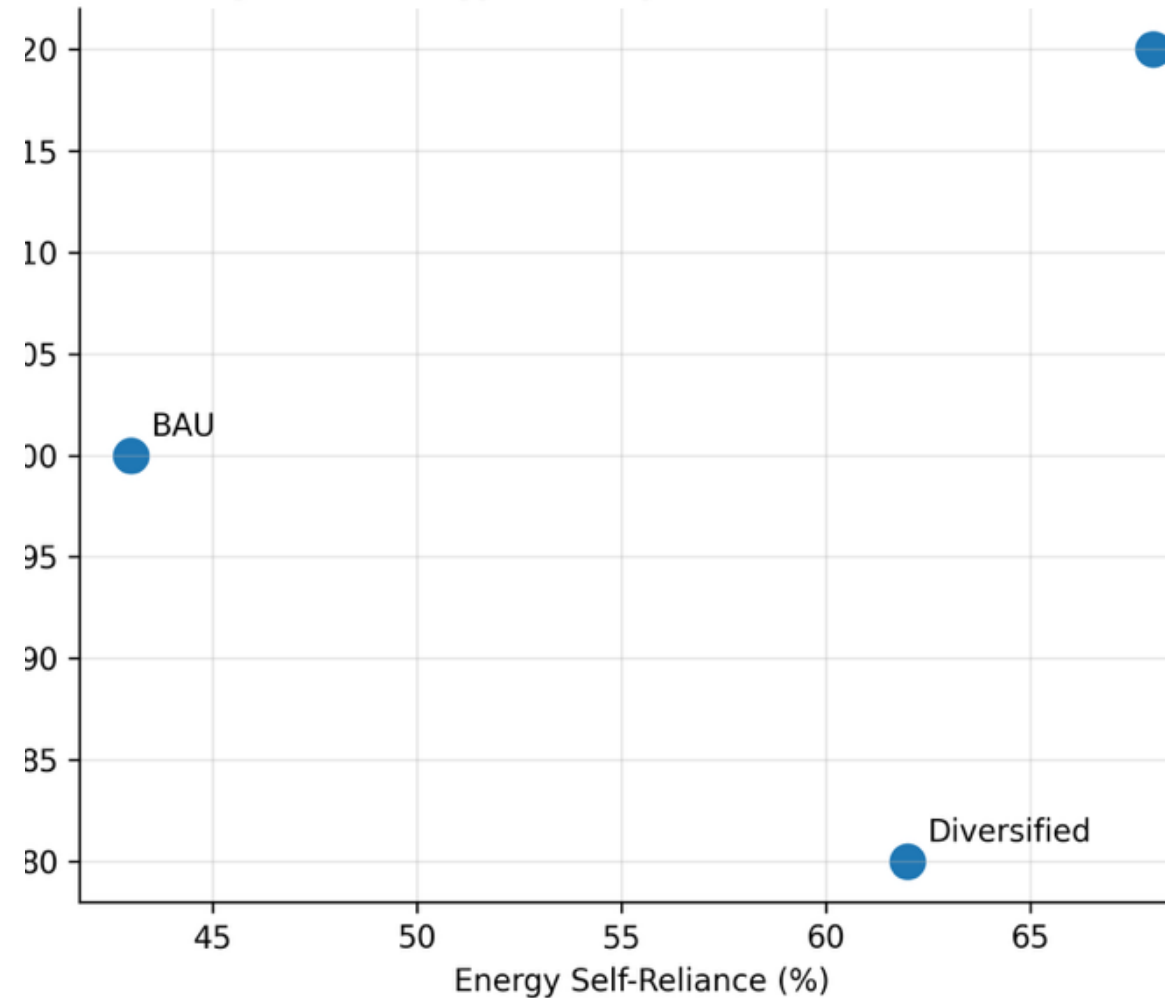
Figure 2. Projected Import Dependence (2025-2035)



Scenario 2: Hydrocarbon-Led

- Accelerated upstream + domestic gas-to-power
- Self-reliance improves to 65–70%
- Trade-off: higher carbon and price-cycle exposure

Figure 3. Energy Security vs Emissions Trade-off



Scenario 3: Integrated Transition

- **Hydrocarbons + solar, wind, green hydrogen + grid upgrades**
- **Import dependence falls below 40%**
- **Best balance of security, stability, and emissions**

**Scenario
Comparison**

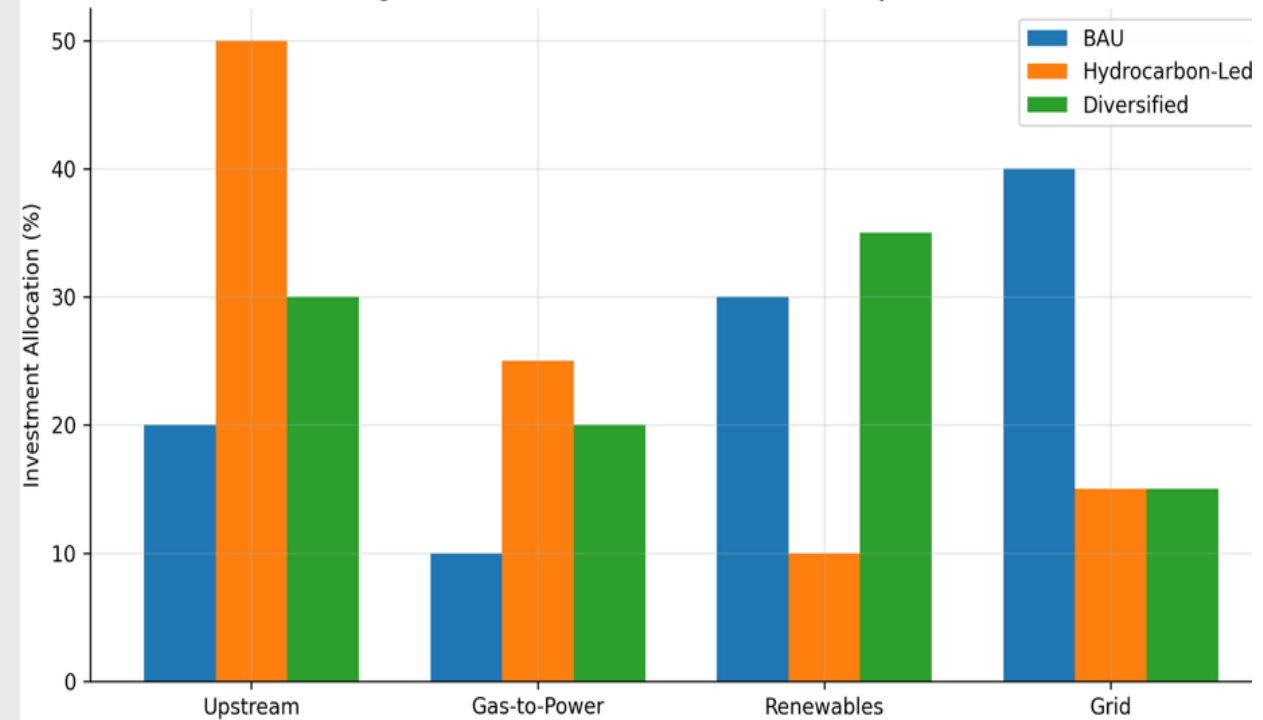
Metric	BAU	Hydrocarbon- Led	Integrated
Import dependence (2035)	>50%	~30–35%	<40%
Transition risk	Unchanged	High	Balanced

Sequencing Is the Bottleneck

Gas, transmission, and renewables must be built in coordination

Poor sequencing strands otherwise viable projects

Figure 4. Indicative Investment Allocation by Scenario

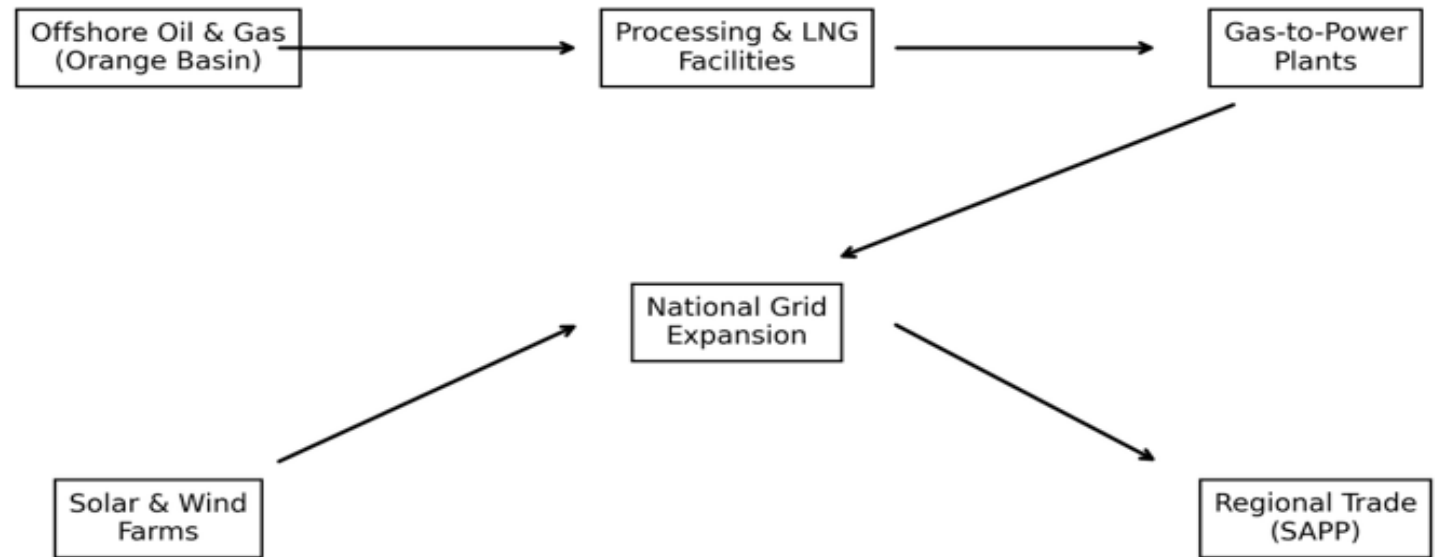


Revenue as Catalyst

- **Transparent petroleum revenue governance can fund the transition**
- **A due-diligence signal for ESG investors and DFIs**

Integrated System Architecture

Figure 5. Integrated Energy System Architecture



- Offshore production → gas-to-power → renewables → regional trade
- Positions Namibia as a candidate SAPP energy hub

Conclusion

- **Integration beats either path alone**
- **Next step: align sequencing across NIRP, hydrogen strategy, and upstream policy**

