

Integration of Power Generation Projects with Modular Refineries and Mini-Grids Network

Schedule Items – [SCALPED]

1. Phase 1: Feasibility Study and Regulatory Framework (1-2 years)

1. Project Planning and Stakeholder Engagement:

- Identify and engage key stakeholders (government, private sector, development banks, neighboring countries).
- Establish a project steering committee to oversee planning and implementation.
- Conduct stakeholder workshops and public consultations.

2. Feasibility Studies:

- Conduct technical feasibility studies for integrating modular refineries with power generation units.
- Assess the suitability of locations for mini-grids in off-grid and rural areas.
- Perform economic viability studies, including cost-benefit analysis and projected returns.
- Conduct environmental and social impact assessments (ESIA).

3. Regulatory and Policy Development:

- Work with government agencies to create or update regulatory frameworks for modular refineries and mini-grids.
- Develop legal agreements for cross-border power transmission and energy trade (with the West African Power Pool, for example).
- Secure necessary permits and approvals from Nigerian authorities and regional organizations.

4. Funding and Investment Mobilization:

- Identify sources of funding (government, international development banks, PPPs).
- Prepare funding proposals and engage potential investors and donors.
- Negotiate financing terms with investors, banks, and other stakeholders.

5. Preliminary Design and Engineering:

- Develop preliminary designs for modular refineries and mini-grid systems.
- Carry out grid infrastructure assessment and design upgrades needed for integration.
- Define technical specifications for equipment and systems.

Phase 2: Infrastructure Development and Pilot Projects (3-5 years)

1. Detailed Engineering and Procurement:

- Finalize detailed engineering designs for modular refineries and mini-grids.
- Prepare tender documents for contractors and suppliers.
- Issue requests for proposals (RFPs) and conduct contractor selection.

- Procure necessary equipment and materials.
- 2. Construction of Pilot Modular Refineries:**
 - Begin construction of modular refineries in selected locations.
 - Integrate power generation units (gas or renewable) with the refineries.
 - Implement energy efficiency systems to ensure minimal power loss.
 - 3. Pilot Mini-Grids Deployment:**
 - Identify and secure land for mini-grid installation in selected rural and industrial areas.
 - Install renewable energy mini-grids (solar, wind, or hydro) in target locations.
 - Test and commission the first batch of mini-grids to provide localized energy supply.
 - 4. Grid Infrastructure Upgrades:**
 - Upgrade existing transmission and distribution lines to accommodate decentralized energy sources.
 - Install smart meters and grid management systems to enhance energy distribution.
 - Develop infrastructure to facilitate the connection of modular refineries and mini-grids to the national grid.
 - 5. Capacity Building and Training:**
 - Provide technical training for engineers and operators involved in refinery and mini-grid operations.
 - Train local communities and businesses in the use and maintenance of mini-grid systems.
 - Establish ongoing operational management frameworks.
 - 6. Testing, Commissioning, and Pilot Evaluation:**
 - Test the modular refineries, mini-grids, and grid infrastructure.
 - Perform system integration tests to ensure proper functioning of all components.
 - Conduct evaluation studies to assess the success of the pilot phase and adjust designs as necessary.
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Phase 3: National Rollout and Grid Integration (5-10 years)

- 1. Scaling of Modular Refineries:**
 - Expand the number of modular refineries across strategic locations in Nigeria.
 - Connect each refinery to the national grid and ensure continuous energy supply.
 - Integrate oil by-products processing with power generation where applicable.
- 2. Expansion of Mini-Grids Network:**
 - Roll out additional mini-grids in rural and semi-urban areas across Nigeria.
 - Ensure integration with the national grid to provide redundancy and backup power.
 - Deploy energy storage systems (e.g., battery systems) for stable energy supply.
- 3. Full-Scale Grid Infrastructure Modernization:**
 - Complete upgrades of the transmission and distribution network nationwide.

- Integrate all mini-grids and modular refineries into the national grid for seamless power flow.
- Install advanced grid management technologies (e.g., SCADA systems) for real-time monitoring and control.

4. Cross-Border Transmission Line Development:

- Construct cross-border transmission lines to neighboring countries for energy export.
- Ensure compliance with international transmission standards and safety regulations.
- Test and commission power export systems, connecting Nigeria to the regional power grid (West African Power Pool).

5. Public Awareness and Engagement:

- Implement nationwide awareness campaigns on the benefits of decentralized power systems.
- Engage with communities on energy conservation and sustainable practices.
- Foster collaboration between energy producers, refineries, and end users.

6. Project Monitoring and Evaluation:

- Establish a monitoring framework to track progress, system performance, and impact.
- Conduct regular reviews and adjustments to optimize the operation of the entire energy system.
- Publish periodic reports on the success of the project, highlighting areas for improvement.

7. Long-term Operations and Maintenance (O&M) Setup:

- Establish dedicated teams for long-term operation and maintenance of the modular refineries, mini-grids, and the upgraded grid.
- Implement ongoing training programs to ensure staff are up-to-date with new technologies and practices.

Overall Project Management and Governance:

1. Project Governance and Oversight:

- Appoint a project management office (PMO) to oversee the entire project lifecycle.
- Set up a reporting structure to ensure transparency, accountability, and timely decision-making.
- Ensure coordination between various government agencies, private sector players, and international partners.

2. Risk Management and Contingency Planning:

- Develop a comprehensive risk management strategy.
 - Identify potential project risks (financial, technical, political) and develop mitigation plans.
 - Establish contingency budgets and resources for unforeseen challenges.
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Project Schedule Overview:

1. **Phase 1 (Feasibility Study and Regulatory Framework):** 1-2 years
2. **Phase 2 (Infrastructure Development and Pilot Projects):** 3-5 years
3. **Phase 3 (National Rollout and Grid Integration):** 5-10 years

Total Project Duration: 8-12 years