Reaching Universal Access In Ghana by 2020
and 5TH Mini-Grid Action Learning Event
GoG/ WB-ESMAP/ DFID/ SREP.
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Movenpick Ambassador Hotel, Accra

Technical Solutions

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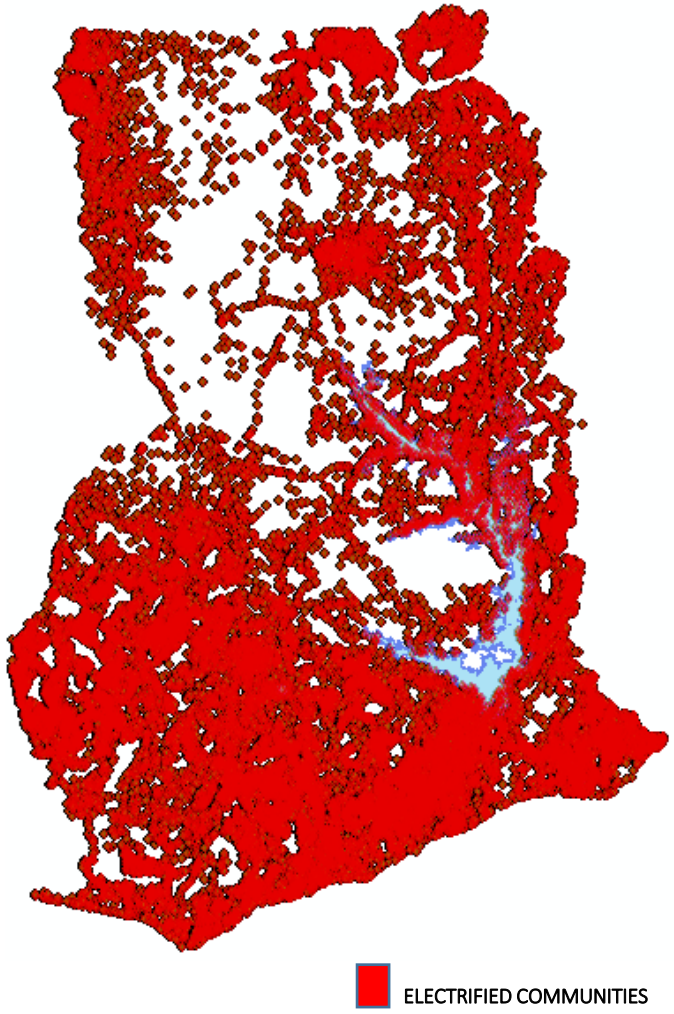
NATIONAL ELECTRIFICATION POLICY -1989

- National Electrification Scheme (NES) instituted in 1989 to achieve universal access of reliable electricity supply over a 30-year period (1990-2020)

- National Electricity Access was about 25% with only 5% Rural Penetration.
- As at the end of 2018, National Electricity Access was 84.32% with 93% Urban and 60.2% Rural coverage.



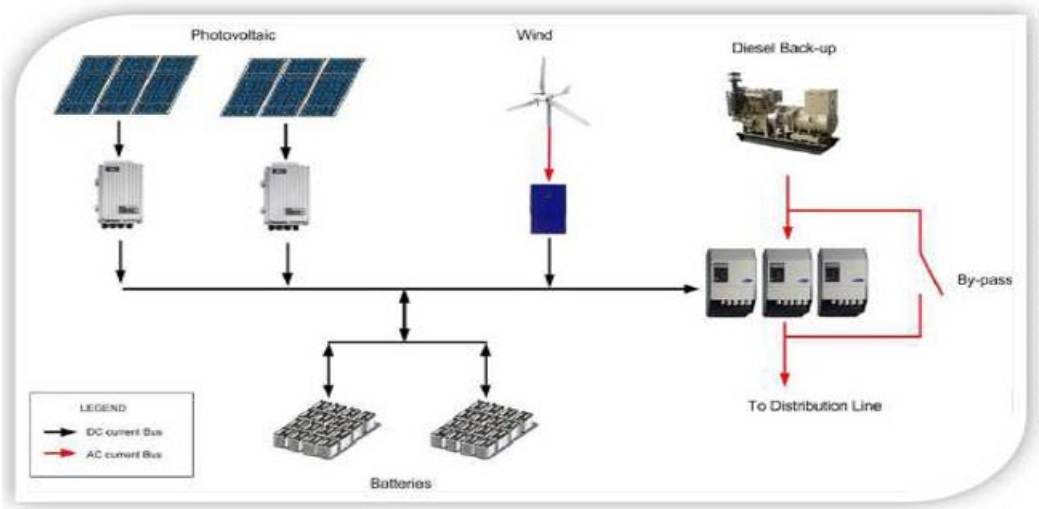
Technical Solutions

- **National Grid Extension**

- Adequate Generation from Hydro, Thermal and Renewable Energy Sources
- Resilient Transmission Systems
- Distribution System - HV (3PH or 1PH) : LV (3PH or 1PH) : HVDS : SWER.

- **Mini-grid Systems**

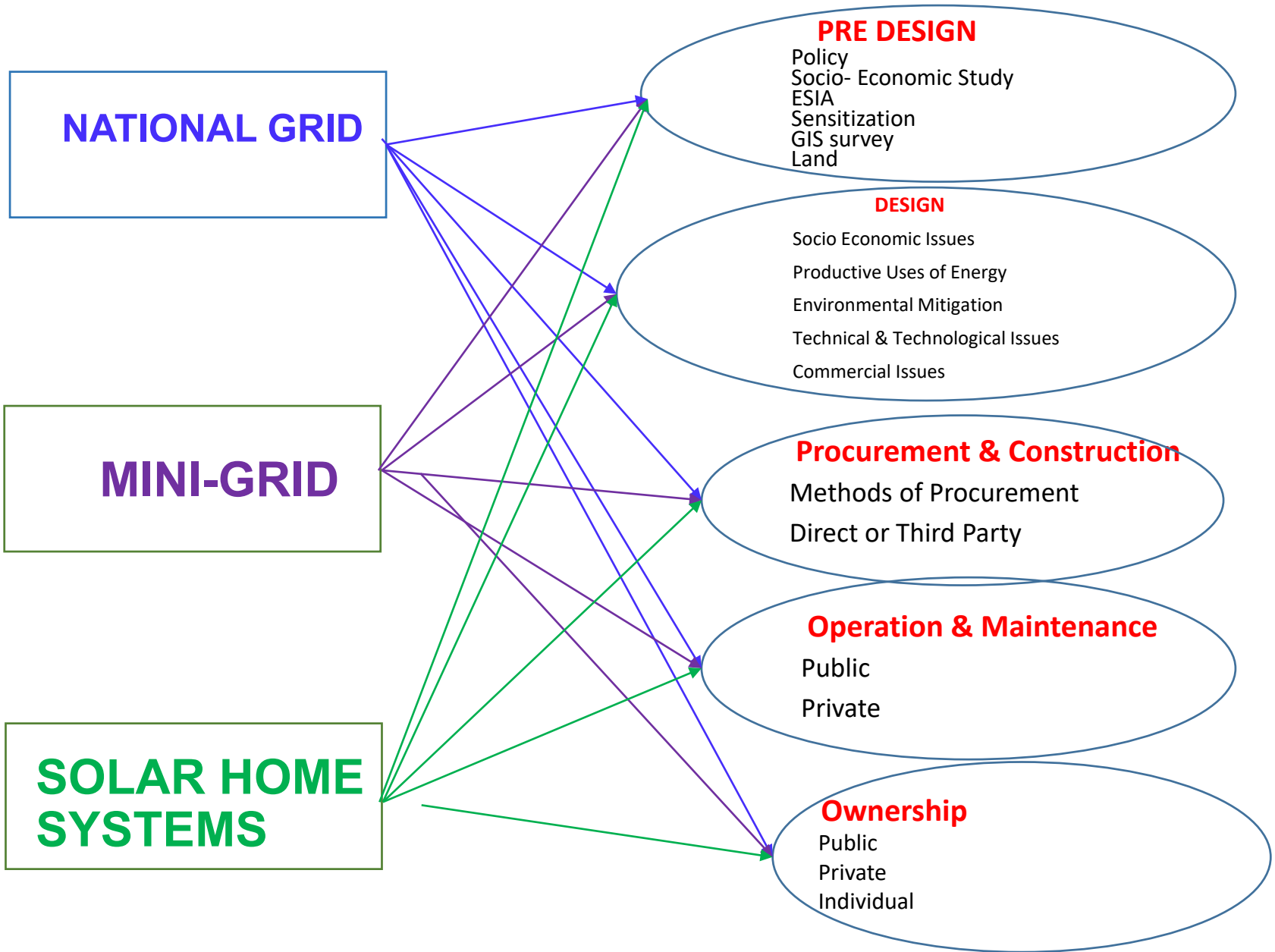
- Using Solar, Wind, Diesel
- or a Hybrid
- Controllers & Inverters
- Battery Storage
- Distribution Network



- **Solar Home Systems**

- Provision of a 50- 200Wp Solar PV Panel, a Battery, a Controller and an Inverter.
- Energy Consuming Appliances (T.V, Lamps, Radio, Fridge, Mobile Phone)
- Individual Ownership or Third Party Leasing.

Procedures for Electrification Models



CRITICAL TECHNICAL ISSUES

1. **How to overcome high cost of electricity**
   - Generation issues
   - Capacity charges-take or pay & take and pay
   - Contractual arrangements/procurement models
   - Fuel supply obligations
2. **Addressing transmission constraints for utility scale variable renewable energy integration**
3. **Do we promote HVDS technology for reduction of technical losses?**
4. **Can smart metering and prepayment systems be considered for last mile electrification?**
5. **What incentives should be provided to spur mini-grid development?**
   - Subsidies (capital, performance based, tariff, etc.)
   - Viability gap financing,
   - Tariff based subsidies
6. **Should mini-grids be designed to strictly conform with standards and regulations? What are the likely cost implications?**