



# Solar Energy Opportunities in Ghana

By:

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# Outline

- Policy/Regulatory Framework
- Current Development in Solar Sector
- Market Opportunities
- Conclusion

# Regulatory Framework



## 2 Regulatory Institutions



Financial/Tariff  
Regulation



Technical  
Regulation



1. **Regulate** the pricing of **electricity**, water & natural gas
2. Monitor and enforce **standards of performance** for utility services
3. Protect the interest of consumers and provides of utility services
4. Address disputes between consumers
5. Ensure the financial health of public utilities

1. **Policy recommendations** to the Minister for Energy
2. **Regulation** of electricity, natural gas and **renewable energy**;
3. Development of **indicative national plans**
4. **Promotion** of Renewable Energy Resources & Energy Efficiency
5. **Local Content Regulations** for electricity supply industry

# Policy Target



## Renewable Energy Policy Target:

- - Universal electricity access by 2020; and
- - 10% renewable energy penetration target by 2030.

NB: Large Hydro is currently/officially considered RENEWABLE ENERGY SOURCE

# Status of Installed Capacity



- Population (est. 2018)  $\approx$  **28 million** people
- Electricity Access (2018) is  $\approx$  **84%**
- Electricity Installed capacity (2018) - **4,443MW**
- Current Peak Demand (2018) - **2,334MW**
- RE in generation mix (incl. large hydro) is **1,647MW ( $\approx$  37.06%)**
- Modern RE in generation mix is  $\approx$  **1.6%**
- mRE Installed capacity (2018) -  $\approx$  **71.35 MW**
  - Large scale solar PV plants - 42.5 MW
  - Small-scale solar/wind systems -  $\approx$  24.7 MW  
(incl. stand-alone & grid-tied)
  - Biogas (W2E) - 0.01MW
  - Biomass CHP -  $\approx$  1.3 MW

# Current Policy Issues

## Oversubscription of RE Power Purchase Agreements (PPAs)

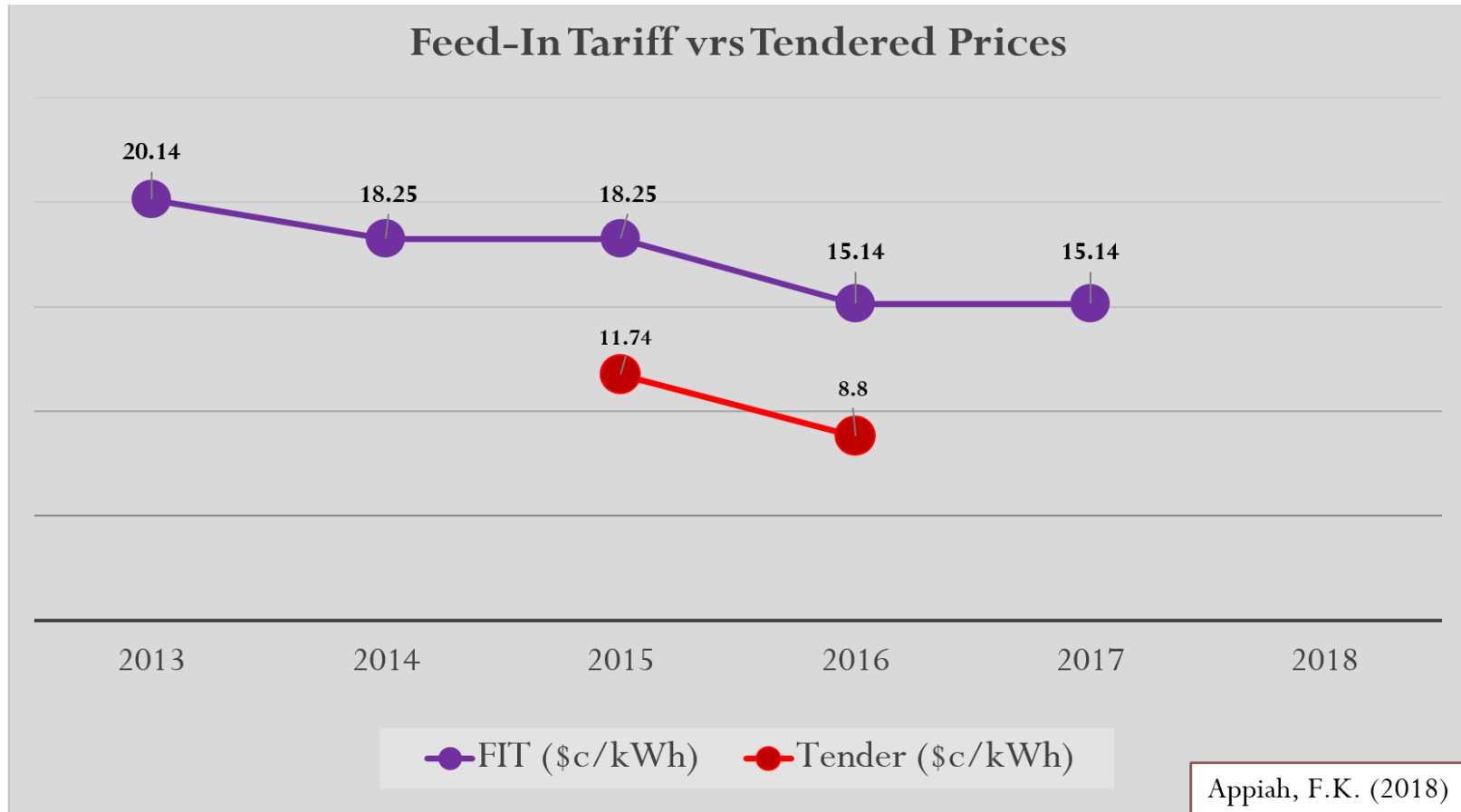
Measures to address over-subscription of RE PPAs:

- Moratorium on the signing of PPAs by public DISCOs.
- Scheduling of signed PPAs from 2020 to 2027
- Suspension of issuance of Provisional Licence by the Energy Commission for solar PV and wind energy projects whose potential off-takers are the public DISCOs.
  - *Buyer's Intent is required for processing and renewals.*
  - *Bulk Customers are excluded.*
  - *Off-takers in West Africa sub-Region is also excluded.*

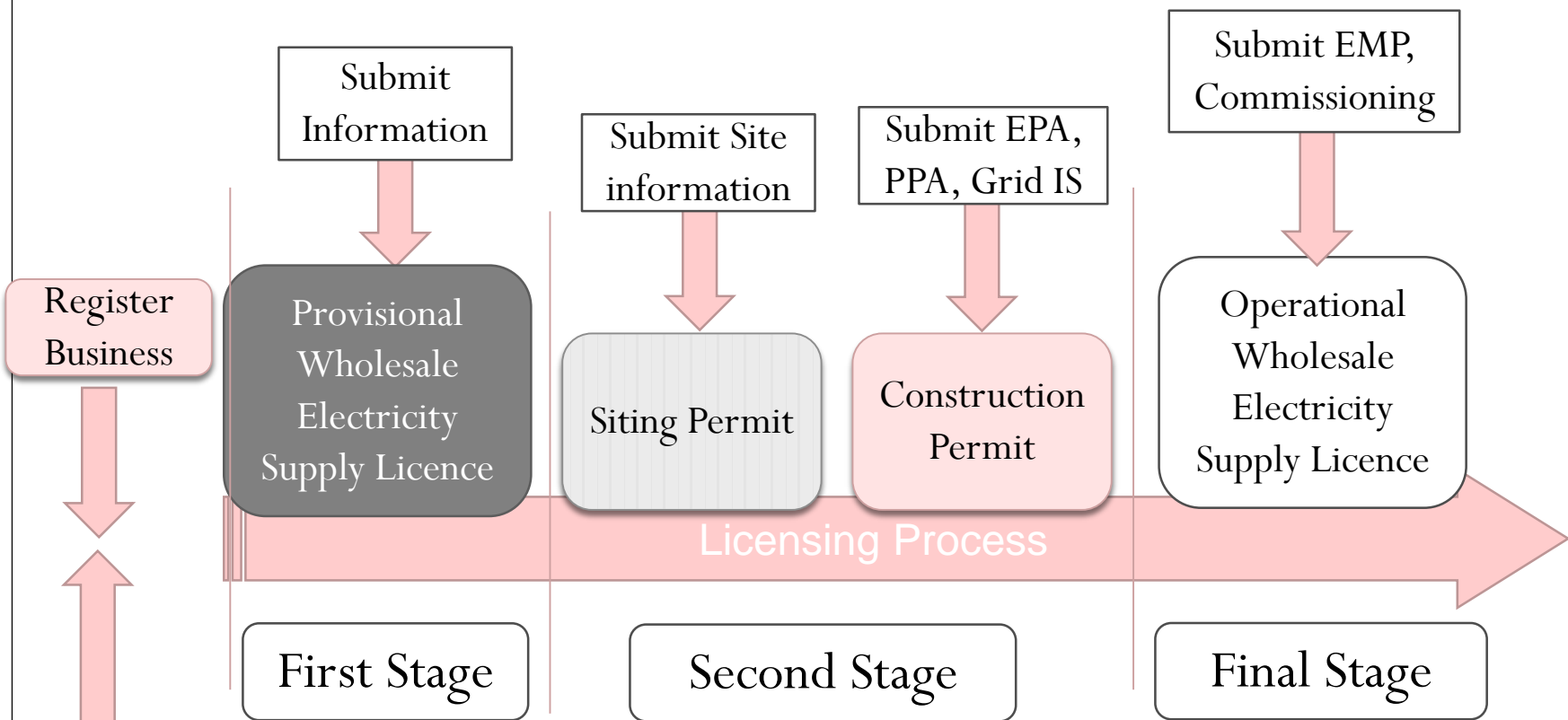
# Procurement of Power

## Tendering replaces Feed-in-Tariffs

- Procurement of RE power through Competitive Process





# Licensing Framework

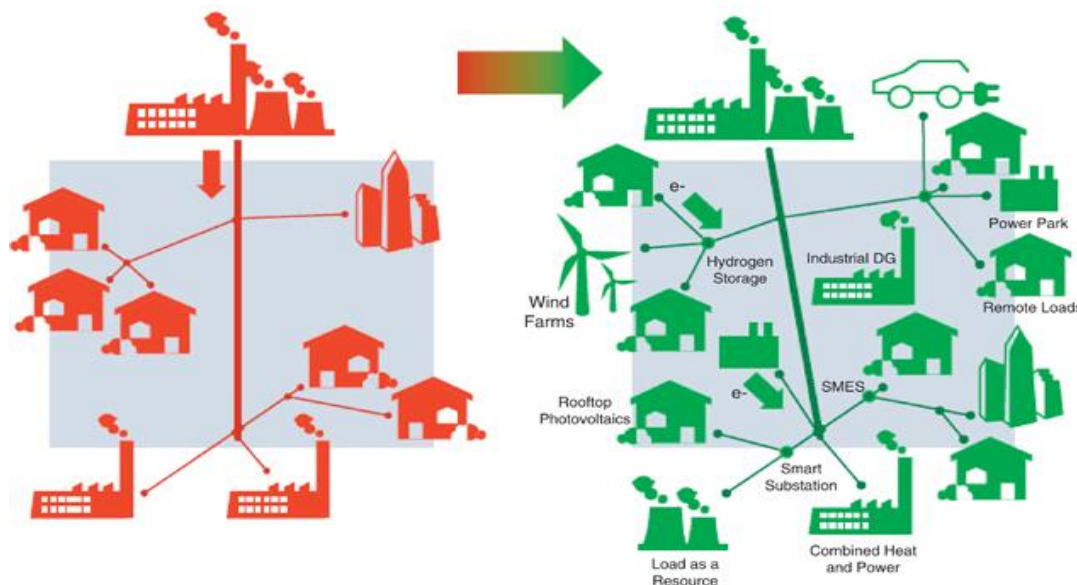


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# Market Potential/Opportunities

- The solar PV market is swinging from;
  - utility scale  distributed generation
  - public distribution utilities  private large consumers/Bulk Customers



- Net-Metering – full scale implementation in the offing

| TECHNOLOGY / INTERVENTION           | UNIT | REFERENCE (2015) | 2020 | 2025 | 2030 |
|-------------------------------------|------|------------------|------|------|------|
| Distributed Solar PV (net metering) | MW   | 1.7              | 20   | 120  | 200  |

# Market Potential/Opportunities

- Off-grid Solutions for Last-Mile Rural Electrification
  - Ghana's electricity access rate is currently  $\approx 84\%$
  - Policy target is **Universal Access by 2020**
- Concession/Operational Zones
- Selling/Distribution of power is a **regulated activity which requires a Licence** from Energy Commission



# Policy Framework for Mini Grid Development



- Part of the National Electrification Scheme (NES)
- Public Sector led
  - Meaning: generation, operation, maintenance, revenue collection will be in the hands of public utilities
    - Volta River Authority (**VRA**) - **Island Communities on the Volta Lake**
    - Electricity Company of Ghana (**ECG**) - **Lakeside/Main Land Communities in the ECG Concessional Area**
    - Northern Electricity Distribution Company (**NEDCo**) - **Lakeside/Main Land Communities in the NEDCo Concessional Area**
- Zero Connection Fees
- Uniform Tariff Policy

Section 20 of Act 538. Uniform Rates of Tariffs

  - The Commission may fix a uniform rate throughout the country, any region or district for any service provided by a public utility.
- Private sector role will be Engineering Procurement and Construction (EPC)

# Market Potential/Opportunities

Other opportunities include;

- Applications in agriculture – irrigation and crop drying
- Reuse and recycling of e-wastes resulting from use of some solar systems
- Solar Water Heaters in commercial, public and private facilities.
- Local manufacturing/assembling of RE products
  - A Local Content and Local and Participation Regulations for Electricity Supply Industry (ESI) (L.I. 2354) have been passed and operational
- A draft REMP has been developed and submitted to Cabinet. 3 x 5year Plan up to 2030.

# Market Potential/Opportunities

## Projects/Programmes to promote/support Solar PV

1. Scaling Up Renewable Energy Program (SREP) From 2020 - 2023
  - **55** RE based Mini-grids for island and lakeside communities
  - **33,000** Stand-Alone Solar Home Systems for off-grid areas
  - **15,000** solar PV based Net Metering with Battery Storage for households and SMEs
  
2. National Rooftop Solar Programme (NRSP) From 2020 - 2023
  - Support the installation of **200,000 solar rooftop systems**
  - Focus is now rural off-grid households
  - Support is being sought from the Green Climate Fund (GCF)
  
3. Sustainable Use of Natural Resources and Energy Finance (SUNREF) Programme by French Dev. Agency From 2019 - 2022
  - A green credit facility to support RE&EE projects.

## 4. REACT Household Solar Programme: From 2019 - 2022

- The UK Government funding through Department for International Development (DFID)
- **50,000** solar home systems in rural off-grid areas in Ghana
- Targets private sector financing; Interest Free Loans, grants, TA

## 5. Solar Lantern Promotion Program (SLAPP) From 2013-2020

- to replace kerosene lanterns in off-grid rural households.
- Target is **2 million** solar lanterns in off-grid rural homes

## 6. Government Go Solar - Agenda for Government Agencies to go solar

- Programme in its infancy-Discussions ongoing
- Some Agencies have already started.



Thank you for your attention