Africa Energy Market Place (AEMP)

Côte d’Ivoire Government Presentation
Section 1

Country Energy Sector Overview
## I. Long term Vision & Objectives

**Ethiopia’s strategy to light up and power Africa by 2025**

### Milestones

<table>
<thead>
<tr>
<th>2018 - 2020: 10 Billion USD</th>
<th>2021 – 2025: 3.41 Billion USD</th>
<th>2025 - 2030: 3.1 Billion USD</th>
</tr>
</thead>
</table>

### The government’s objectives are:
- Reliability and Security of Supply
- Access to Energy
- Consideration of Environmental Concerns
- Strengthening its position as a Regional Energy Hub

### Policy

**Generation & Transmission Investment**

- 2018 - 2020: 10 Billion USD
- 2021 – 2025: 3.41 Billion USD
- 2025 - 2030: 3.1 Billion USD

**Increased Capacity**

- About 4,000 MW in 2020
- About 5,000 MW in 2025
- About 6,000 MW in 2030

**Transmission Distribution**

- Creation of HV substations and lines
- Reinforcement and extension of distribution network
- Rural electrification

### Technical & Financial Assistance

- World Bank
- JICA
- European Investment Bank
- KfW
- AfDB

**2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025 – 2030**
I. Sector Snapshot

### Potential
- Moderate to high solar potential, ranging from 4.5 to 6 kWh per m² per day, with an average of six hours of sunshine per day.
- Hydroelectric capacity is estimated at about 2,500 MW, which can produce about 12,500 GWh per year.
- The annual production of hydroelectricity is approximately 2,500 GWh: 12%
- Equipped potential: about 35%.
- The government plans to reach 200,000 boe by 2020.
- Only 20% of the deep-water oil basin has been explored. Oil reserves are estimated at 100 million barrels and gas reserves at 1.1 Tpi.
- Annual biomass production capacity of 15 million tonnes, with an important raw material available thanks to the development of the agro-industrial sector
- 70% of national primary energy consumption comes from biomass.

### Generation
- **2 199 MW**
  - Total Installed Capacity
  - Of supply is generated by IPPs
  - Hydro, 40%
  - Thermal, 60%
  - Hydro, 21%
  - Thermal, 79%

### Consumption
- **54%**
  - Coverage Rates
  - Number of electrified localities/Total number of localities
- **82%**
  - Access Rate
  - Population electrified localities/Total Population
- **1 388 MW**
  - Maximum recorded peak
- **6%**
  - Average growth in demand per year
I. Gaps to Close

**Gap 1: Financial Viability of the Sector**
- Reduction of losses (technical and non-technical)
- Reduction of production costs
- Improved collection
- Rate adjustment

**Gap 2: Security of Natural Gas Supply**
- Set up a Liquefied Natural Gas unit
- Continue the development of gas infrastructure
- Carry out studies on the security of natural gas supply
- Establish a technical assistance consortium to support the government and Petroci

**Gap 3: Project financing / Policy and regulatory adaptation (Off-Grid)**
- Promote funding focused on low-income consumers
- Subsidize mini-grid infrastructure
- Encourage concessions that facilitate bank financing
- Use of asset-backed guarantees
- Develop complementary regulations for the development of the renewable energy sector
- Create and operationalize a dedicated fund for RE
- Reduce customs duties and taxes for REs

**Gap 4: Procurement Process**
- Deploy a competitive bidding process
- Set up technical assistance for the structuring of calls for tenders and negotiations
## Resources Required

<table>
<thead>
<tr>
<th>Govt. Key Reforms/Actions</th>
<th>Main Challenges</th>
<th>Donor Initiatives</th>
<th>Gaps to Close</th>
<th>Estimated Costs</th>
</tr>
</thead>
</table>
| **Sector Viability**     | • Reduction of costs  
• Revenue growth | World Bank       | • Reduction of losses (technical and non-technical)  
• Reduction of production costs  
• Improved collection  
• Rate adjustment | **350M USD** |
| **Securing the supply of electricity** | • Securing natural gas supply  
• Diversification of the electricity mix | N/A               | • Intensify natural gas exploration,   
• Developing LNG  
• Developing Renewables  
• Developing the coal sector | **220M USD** |
| **Strengthening the regulatory framework** | Adaptation of policies and regulations (Off-Grid) | European Union   | Adopt an effective legal framework that provides incentives | **20 – 30M USD** |
| **Implementation of Priority Investments** | • Procurement Process  
• Coordination and monitoring of project implementation | Technical and Financial Partners | • Deploy a tendering process in accordance with the regulations in force  
• Capacity building of structures | **6.51B USD** |
Section 2

Regulatory and Investment framework
II. Institutional and Regulatory framework

- **MINISTERE DE L’ECONOMIE ET DES FINANCES**
  - SECRETARIAT D’ETAT AUPRES DU PREMIER MINISTRE CHARGE DU BUDGET ET DU PORTEFEUILLE DE L’ETAT
  - Contrats d’Achat d’électricité

- **MINISTERE DU PETROLE, DE L’ENERGIE ET DU DEVELOPPEMENT DES ENERGIES RENOUVELABLES**
  - Direction Générale de l’Energie (DGE)

- **TUTELLES ETAT**
  - ANARE-CI
  - CI-ENERGIES (275 MW)
  - Maîtrise d’oeuvre des travaux
  - Planification de l’offre et de la demande d’énergie électrique
  - Suivi de la gestion et de l’exploitation du service concédé
  - Contrôle de l’équilibre financier

- **SOCIETES D’ETAT**
  - CIE (704 MW)
  - Relation Acheteur et Vendeur

- **OPERATEURS PRIVES**
  - PRODUCTEURS INDEPENDANTS D’ELECTRICITE
    - CIPREL (569 MW)
    - AZITO (441 MW)
    - AGGREKO (210 MW)
  - Règlement des factures sur ordre irrévocable de CI-ENERGIES

- **CONSOMMATEURS**
  - EXPORT
    - (Ghana, Togo, Bénin, Burkina Faso, Mali, Libéria)
  - Encaissements des factures

- **CONVENTION DE CONCESSION DU SERVICE PUBLIC DE L’ELECTRICITE**
  - Convention de Concession du Service Public de l’Electricité

- **FOURNISSEURS DE GAZ NATUREL**
  - PETROCI CI-11 (15 Mpc/j)
  - FOXTROT (160 Mpc/j)
  - Canadian National Ressources (60 Mpc/j)

- **CLIENTS**

- **NATIONAUX**
II. Political priorities and reforms

Policy Priorities

1: Reliability and security of supply
- Increasing electricity generation capacity
- Develop the transmission and distribution network
- Set up a Liquefied Natural Gas (LNG) unit

2: Energy access for all
- Electrify all localities by 2025

3: Environmental Concerns
- Develop renewable energies in the energy mix (34% and 42%, respectively in 2020 and 2030)

4: Regional energy hub
- Further develop electricity interconnections between States
- Ensure the adaptation of the legal framework linked to the advent of the regional market

Recent and Prospective Reforms

1: Network
- Law 2014 on the Electricity Code
  - 8 decrees adopted 2016
  - 4 AIs and 6 A pending adoption (2018-2019)

2: Off-Grid
- Preparation of the strategy document
- Pending decrees / orders (2018-2019)

3: Renewable Energies
- Elaboration of a Renewable Energy Roadmap
- Preparation of a strategy document
- Adoption of pending decrees/orders (2018-2019)

4: Tariffs
- Adoption of appropriate and cost-reflective pricing
Section 3

Sector Mobilization Strategy
## Priority Projects & Programs

### ELECTRICITY GENERATION PROJECTS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Size (MW)</th>
<th>Technology</th>
<th>Sector</th>
<th>Project promoter/Developers/Consortium/Type of contract</th>
<th>Project Costs (MW)</th>
<th>Funding gap / Support sought</th>
<th>Risks / Major problems</th>
<th>Implementation date / Financial closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-hydro portfolio</td>
<td>76 MW</td>
<td>Micro-hydro</td>
<td>Public/Private</td>
<td>GoCI / Private</td>
<td>266</td>
<td>266</td>
<td>Lack of feasibility studies</td>
<td>2020-2025</td>
</tr>
<tr>
<td>Biomass portfolio</td>
<td>190 MW</td>
<td>Biomass</td>
<td>Private</td>
<td>Private</td>
<td>365</td>
<td>365</td>
<td>Lack of feasibility studies</td>
<td>2020-2025</td>
</tr>
<tr>
<td>Solar Portfolio</td>
<td>175 MW</td>
<td>Solar</td>
<td>Private</td>
<td>Private</td>
<td>311</td>
<td>311</td>
<td>Lack of feasibility studies</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Scaling Solar (2 x 30 MW)</td>
<td>60 MW</td>
<td>Solar</td>
<td>Private</td>
<td>GoCI / IFC</td>
<td>100</td>
<td>100</td>
<td>Site Selection</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Singrobo</td>
<td>44 MW</td>
<td>Hydro</td>
<td>Private</td>
<td>IHE</td>
<td>84</td>
<td>N/A</td>
<td>N/A</td>
<td>2021</td>
</tr>
<tr>
<td>Ciprel V</td>
<td>390 MW</td>
<td>Thermal</td>
<td>Private</td>
<td>CIPREL</td>
<td>509</td>
<td>509</td>
<td>Seeking financing</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Azito IV</td>
<td>253 MW</td>
<td>Thermal</td>
<td>Private</td>
<td>AZITO</td>
<td>290</td>
<td>290</td>
<td>Seeking financing</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Coal-Fired (2 x 350 MW)</td>
<td>700 MW</td>
<td>Thermal</td>
<td>Private</td>
<td>SNEDAI</td>
<td>1750</td>
<td>1750</td>
<td>Lack of feasibility studies</td>
<td>2022-2025</td>
</tr>
</tbody>
</table>

### ELECTRICAL ENERGY TRANSPORT PROJECTS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Size (MW)</th>
<th>Technology</th>
<th>Sector</th>
<th>Project promoter/Developers/Consortium/Type of contract</th>
<th>Project Costs (MW)</th>
<th>Funding gap / Support sought</th>
<th>Risks / Major problems</th>
<th>Implementation date / Financial closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boucle 400 kV</td>
<td>151 km</td>
<td>Transport</td>
<td>Public</td>
<td>GoCI / FTP</td>
<td>172</td>
<td>172</td>
<td>Lack of feasibility studies</td>
<td>2020-2021</td>
</tr>
<tr>
<td>Boucle Est</td>
<td>513 km</td>
<td>Transport</td>
<td>Public</td>
<td>ETAT / FTP</td>
<td>156</td>
<td>156</td>
<td>Lack of feasibility studies</td>
<td>2021-2022</td>
</tr>
<tr>
<td>Corridor Nord</td>
<td>277 km</td>
<td>Transport</td>
<td>Public</td>
<td>ETAT / FTP</td>
<td>131</td>
<td>131</td>
<td>Lack of feasibility studies</td>
<td>2021-2022</td>
</tr>
</tbody>
</table>

| Total Costs | 4134 | 4050 |

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**Notes:**
- **ELECTRICITY GENERATION PROJECTS**
- **ELECTRICAL ENERGY TRANSPORT PROJECTS**
III. Aligned Interests – Working Better Together

**Government perspective**
- Updating the incentive regulatory framework
- Financial sustainability of the energy sector
- Capacity Building
- Quality of service and access to electricity for all
- Completion of projects at competitive costs
- Transfer of competence to local actors

**Private sector perspective**
- Availability for investment opportunities
- Transfer of green technologies

**Perspective of development partners**
- Support to States for capacity building
- Creating an environment conducive to investment
- Financing of projects at concessional rates

**Aligned interests**
- Sustainable and sustainable development of the electricity sector
- Socio-economic development of the country favorable to emergence
Section 4

Proposed Government Action Plan

Addressing investment risks and bottlenecks
<table>
<thead>
<tr>
<th>No.</th>
<th>Most Pressing Issues / Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Financial balance of the electricity sector by reducing costs, increasing revenues, reducing production costs and optimizing operating and maintenance costs</td>
</tr>
<tr>
<td>2</td>
<td>Development of electrical infrastructure (Production, Transmission, Distribution, Automation and Remote Control)</td>
</tr>
<tr>
<td>3</td>
<td>Improvement of technical and commercial performance</td>
</tr>
<tr>
<td>4</td>
<td>Access to electricity in abundance and at lower cost for populations, industries and export partners</td>
</tr>
<tr>
<td>5</td>
<td>Development of a regulatory framework to promote the development of Renewable Energies</td>
</tr>
</tbody>
</table>
### Current Resources (1/2)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Resource(s)</th>
<th>Available Budget (M$)</th>
<th>Budget Timeline</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAN</td>
<td>195</td>
<td>2018-2020</td>
<td></td>
<td>Electrification of 130 rural communities; 225 kV substation in Bingerville, Duékoué and Zagné and restructuring of the HTA networks; Doubling of the 225 kV Soubre and San-Pédro lines and extensions to 225 kV substations in Soubre, San Pedro</td>
</tr>
<tr>
<td>LOAN</td>
<td>800</td>
<td>2018-2021</td>
<td></td>
<td>Electrification of 500 rural communities, Construction of 945 km of 225 kV grid, Construction of 736 km of 90 kV grid, Construction of 15 substations 225 kV, Construction of 12 substations 90 kV</td>
</tr>
<tr>
<td>LOAN</td>
<td>325</td>
<td>2018-2020</td>
<td></td>
<td>225 kV substations in Gagnoa, Yopougon1, Treichville, Bia Sud; Supply and installation of transformers, Kossou, Ferké, Man, Abobo, Taabo; Extension of distribution networks in 10 regional capitals; Underground passage of Abidjan’s overhead HVA networks; Replacement of CPI-type HVA cables in CIS and electrification of 200 rural communities</td>
</tr>
<tr>
<td>LOAN</td>
<td>140</td>
<td>2018-2020</td>
<td></td>
<td>Electrification of 200 rural localities; extension and strengthening of distribution networks in 12 regional capitals and Rehabilitation of the BUYO power plant (165 MW)</td>
</tr>
</tbody>
</table>
### Ressources actuelles (2/2)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Resource(s) Type</th>
<th>Available Budget (M$)</th>
<th>Budget Timeline</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAN</td>
<td>137</td>
<td>2018-2021</td>
<td>Construction of the Yamoussoukro dispatching centre; Extension and reinforcement of the Abidjan, Bouaké, San-Pedro and efficient public lighting distribution networks</td>
<td></td>
</tr>
<tr>
<td>LOAN</td>
<td>156</td>
<td>2018-2019</td>
<td>225 kV Azito, Djibi, Bingerville, Anani 1, Yopougon 3; 90 kV Anoumanbo, Grand Bassam; 90 kV Yop1-Yop2 link; extension of distribution networks in Abidjan and securing of source stations and HTA networks</td>
<td></td>
</tr>
<tr>
<td>LOAN</td>
<td>23</td>
<td>2018-2020</td>
<td>Construction of the 225 kV substation at Adzopé, construction of the 225 kV Akoupé Zeudji - Adzopé line and restructuring of the HTA network.</td>
<td></td>
</tr>
</tbody>
</table>
# Closing the Gap

<table>
<thead>
<tr>
<th>#</th>
<th>Issue</th>
<th>Propositions</th>
<th>Expected Costs (M$)</th>
</tr>
</thead>
</table>
| 1  | Financial viability of the electricity sector                        | • Fight against fraud  
• Performance improvement  
• Continuation of recoveries  
• Rate adjustment | 350 |
| 2  | Security of fuel supply                                              | • Installation of an LNG unit  
• Development of new gas infrastructure  
• Safety of the installations  
• Diversification of supply sources | 220 |
| 3  | Adapted regulatory framework for the development of the renewable energy sector | • New implementing decrees for mini-network concessions  
• Establishment of a dedicated fund for the development of renewable energies  
• Application texts of the Energy Management Fund  
• Tax exemption measures for solar equipment | 20 – 30 |
| 4  | Contracting Appeal Process                                           | • Implementation of a competitive bidding process  
• Setting up technical assistance for the structuring of calls for tenders and negotiations  
• Inventory of the potential of RE by source/feasibility studies to make them available in the context of PPPs | 500 |
| 5  | Financing                                                            | • Appropriate guarantee mechanisms for companies  
• Concessional financing | 6510 |