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Status of Renewable Energy in Liberia

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Presentation Outline

- Background
- Renewable Energy Resource Potential
- Key Players and their Roles
- Results and Achievements
- Constraints
- Lessons Learned
- Conclusion

Background

Total geographic area:

111,370 km²

Total land area:

96,320 km²

Coastline:

579 km

Source: Ministry of Planning & Economic Affairs

Background Cont.

Relevant Indicators

Indicator	Value
Total Population	3.48 Million
Urban Population	38%
Rural Population	62%
Population Growth Rate	2.1%
GDP Per Capita (US$ and PPP$)	190.00
% of Population With access to grid electricity	<10
Current Power Generation by National Grid (diesel fuel)	9.6 MW
Current electricity tariff (National Grid)	US$0.46 per kWh
Current power generation from renewable sources (hydro & solar only)	4.1 MW

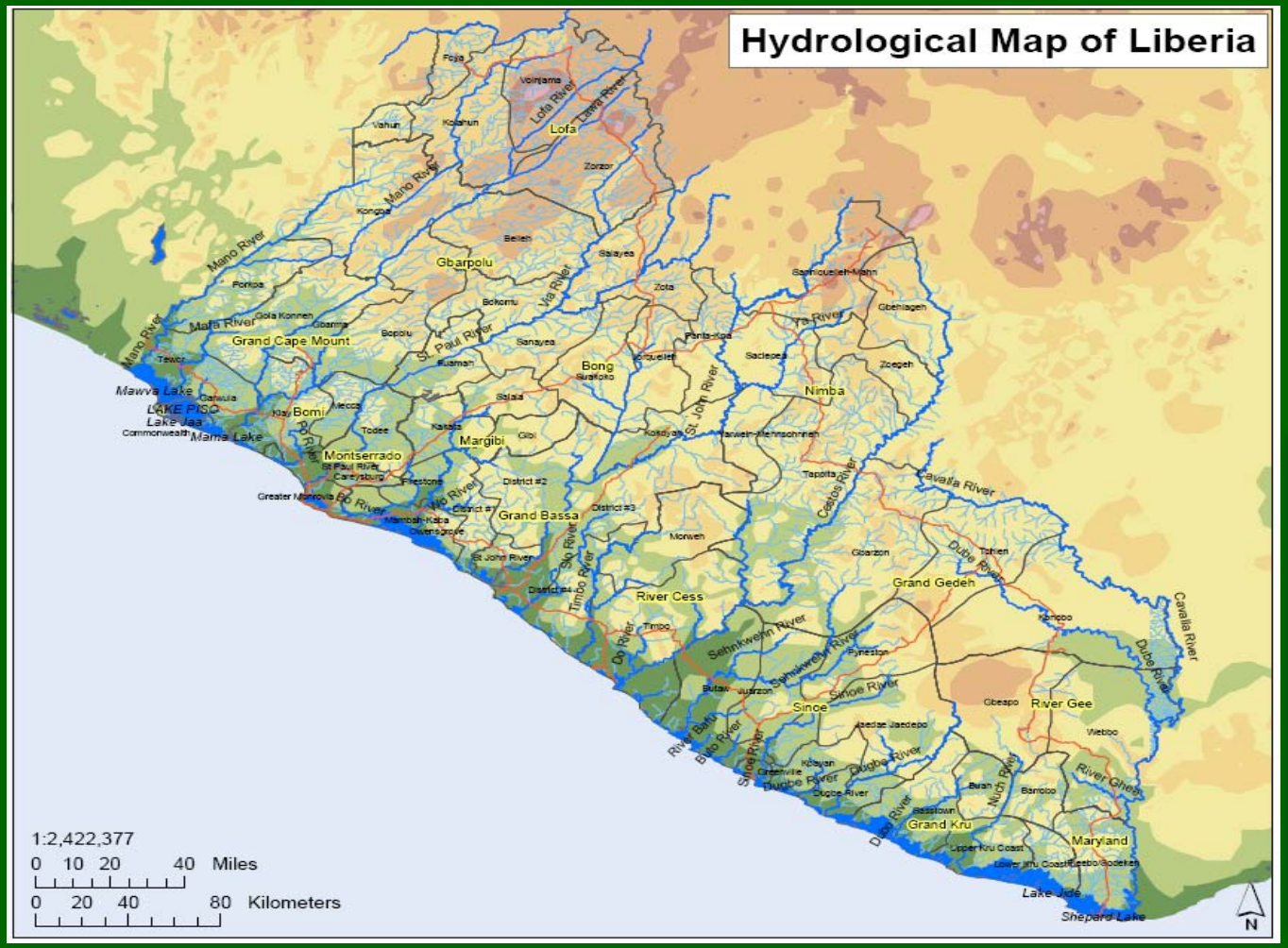
Source: Center for Sustainable Energy Technology

Renewable Energy Resource Potential

Liberia is endowed with enormous renewable energy resources:

- Hydro
- Biomass
- Solar
- Wind

Hydro Potential

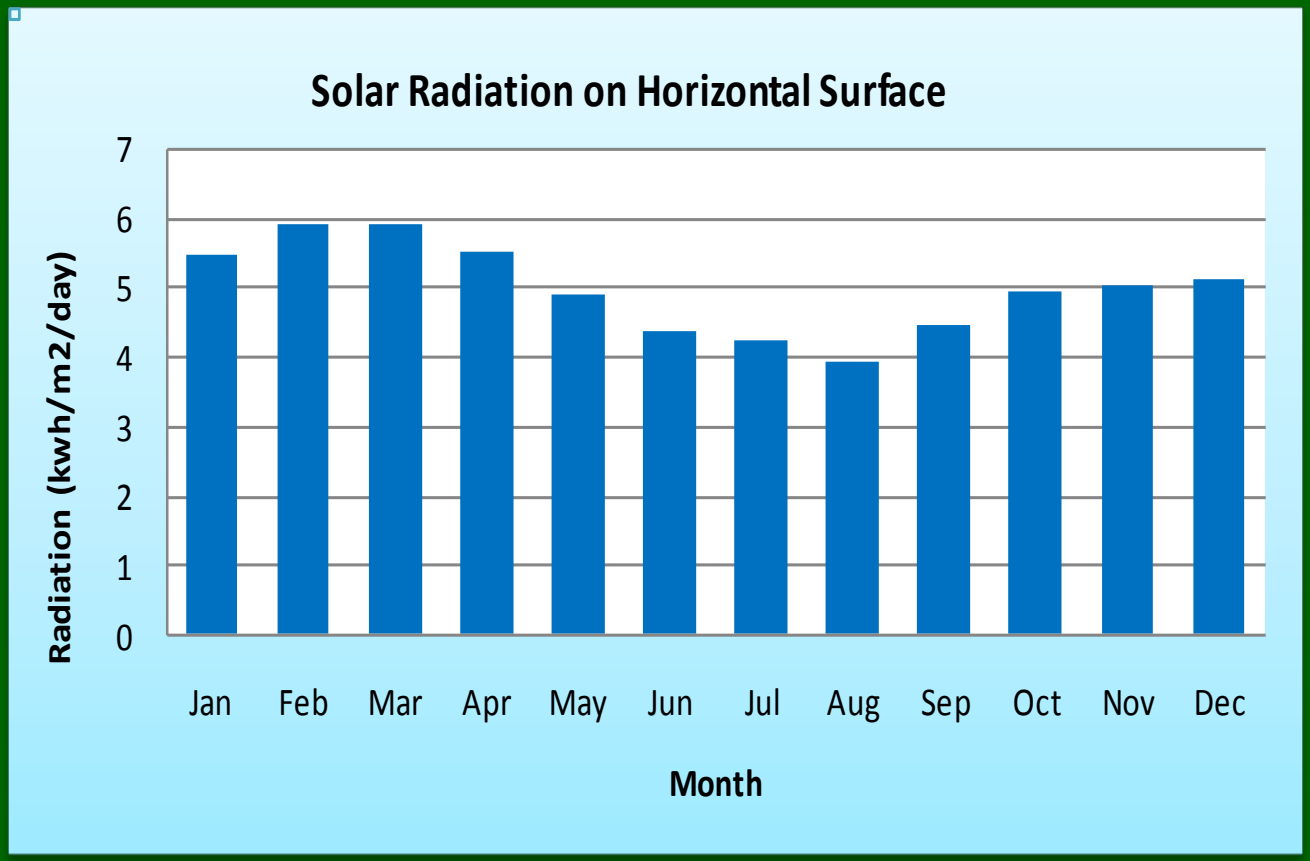


Liberia has six major rivers, which drain about 66% of the country's water.

Proven hydro power potential is in excess of 1,000 MW, out of which only 4MW is currently generated.

Source: United Nations Humanitarian Information Center for Liberia, Map Catalog # LIB178

Solar Potential



Monthly solar radiation on horizontal surface is about 4 to 6 $kWh/m^2/day$

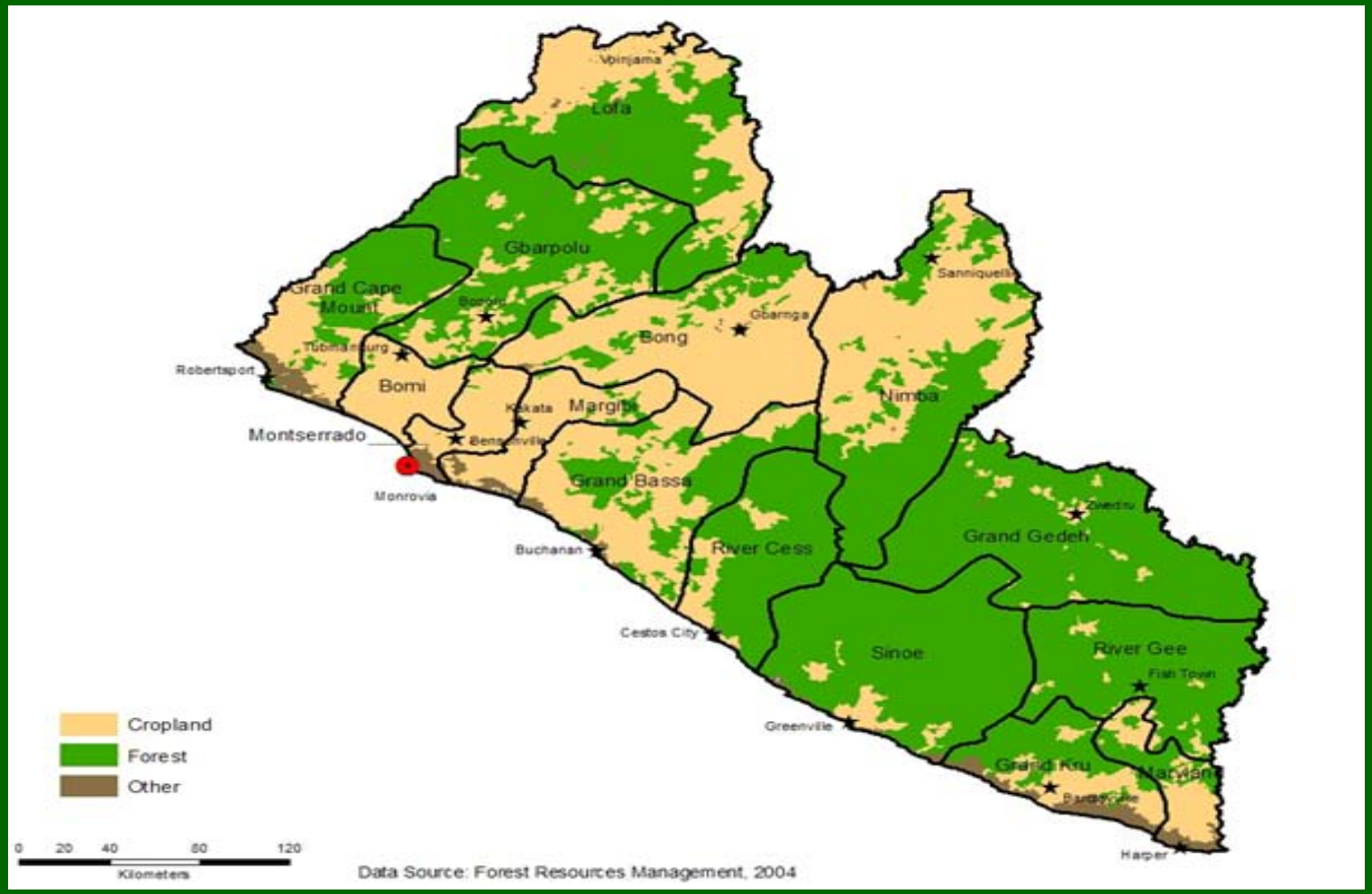
Total installed capacity is about 100kW

Source: Solar Technology, Inc.

Biomass Potential

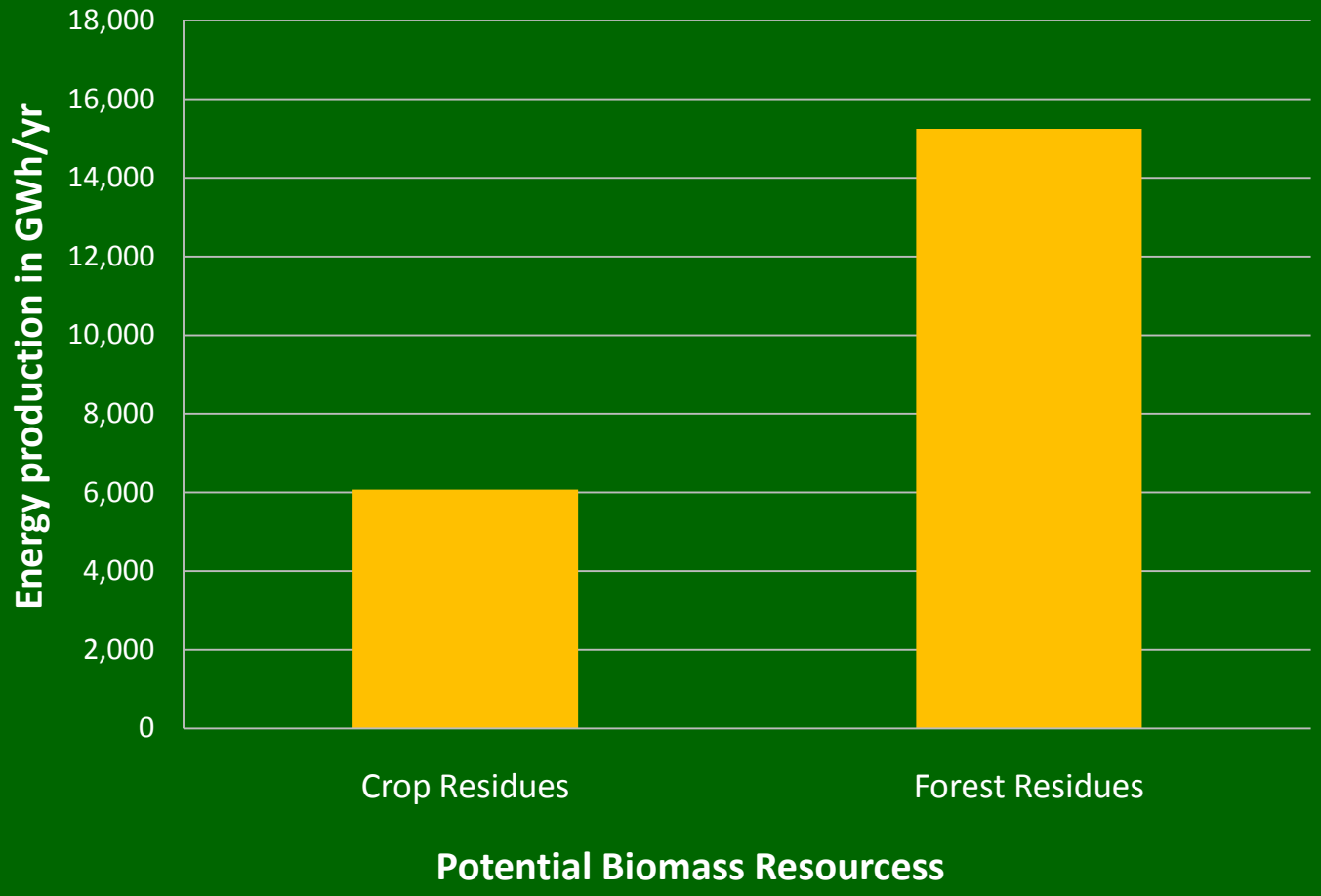
Because Liberian vegetation is mainly used for tree-crop and food-crop production and forestry, woody biomass is the predominant biomass resource available.

Land Cover



Source: Assessment of Biomass Resources in Liberia, NREL 2008

Biomass Energy Potential



Source: Assessment of Biomass Resources in Liberia, NREL 2008

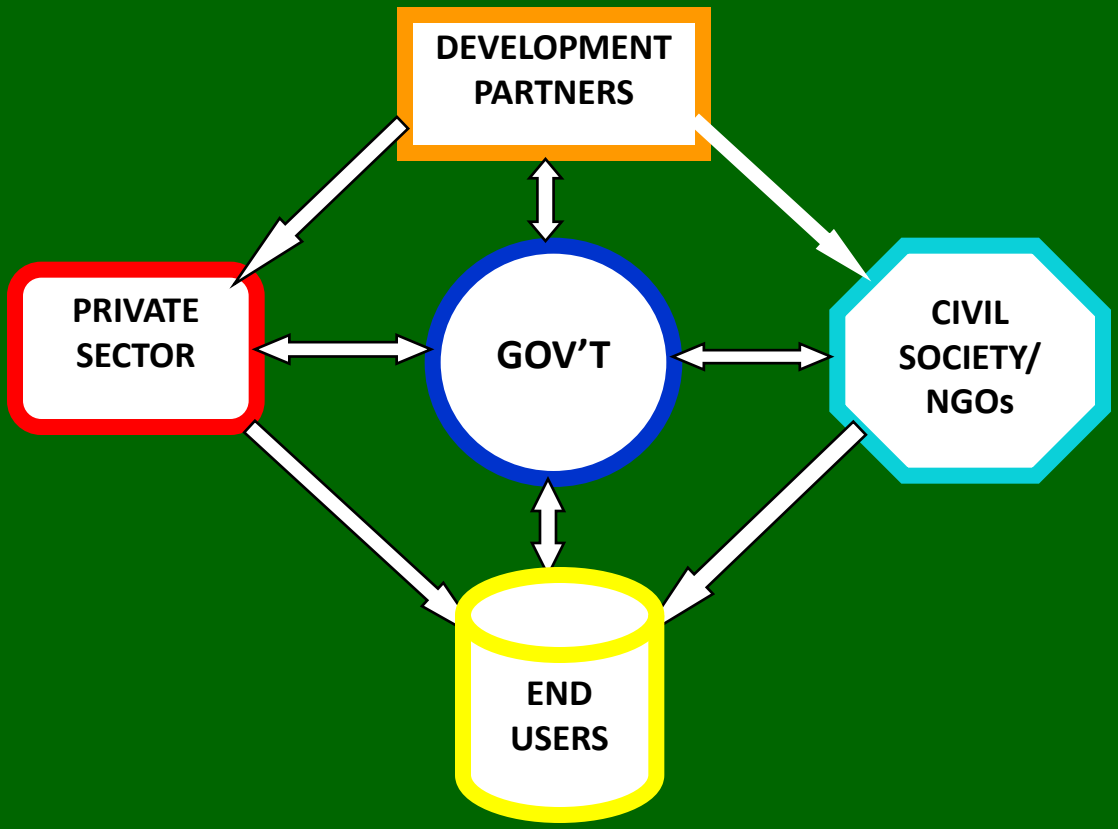
Wind Resource Potential

There is currently no reliable national wind resource data for Liberia. Notwithstanding, observations along coastal and mountainous regions show good prospects for wind power development in the country.

Key Players and their Roles

- **The Government** – Policy and regulatory framework to provide the enabling environment for inducing investments in the renewable energy sub-sector.
- **Bi- and multi-lateral development partners** – Funding and technical support for developing local capacity to facilitate the deployment of renewable energy technology and service delivery.
- **The private sector** – Investment in renewable energy technologies and service delivery.
- **Civil Society/NGOs** – Advocacy, public awareness, training and related support to increase access to renewable energy technologies and services.
- **End Users** – Provide the basis for market development and acceleration.

Renewable Energy service delivery linkages between key players in Liberia



Results and Achievements

- A National Energy Policy (NEP), which proposed the establishment of a ***Rural and Renewable Energy Agency (RREA)*** as been formulated and approved by Cabinet.
- The establishment of a prototype RREA has been approved by the President to oversee and coordinate past and ongoing projects pending its establishment by statutes.
- The NEP promotes public-private partnership in renewable energy development and service delivery.

Results and Achievements Cont.

- About 100kW of Solar power systems of various sizes have been installed across the country.
- An assessment of biomass resources was conducted in 2008;
  - Concluded that resources are more than enough to cover the country's annual electricity consumption of 297 GWh and oil consumption of 206 dam.
- The draft 2009 Energy law specifically addresses the deployment of renewable energy technologies and service delivery across the country.

Results and Achievements Cont.

- Feasibility study for the rehabilitation and upgrade of the damaged 64-MW Mount Coffee Hydro power plant near Monrovia has been completed.
- A power concession agreement between the Government and an independent power producer (Buchanan Renewable Energy) for the installation of a 35-MW biomass power plant has been signed.

Constraints

- Limited human and institutional capacity;
- High initial costs and lack of financing mechanism for project developers, entrepreneurs, and consumers;
- Low level of awareness and understanding of the applications and benefits of renewable energy technologies amongst policy/decision makers, private sector, and the consuming public;

Constraints Cont.

- Inadequate information on renewable energy technologies and resource potential;
- High transaction costs due to lack of local market for equipment and other products; and
- Insufficient information on demonstrated models for replication and scale-up locally.

Lessons Learned

- Public sector and donor resources remain crucial to stimulating investment in renewable energy technologies and facilitating scale-up and commercialization.
- Renewable energy technologies foster the development of home-grown energy resources that demonstrate clear cost advantage without relying on oil imports.
- The banking/financial sector is reluctant to finance renewable energy enterprises and investment projects because of their high up-front costs and slow returns on investment.

Conclusion

One of the four objectives of the Government of Liberia within the framework of the National Energy Policy is ***universal access***. This objective can only be achieved through increased investment in the deployment of renewable energy technologies across the country.

THANKS FOR YOUR ATTENTION !!!!

QUESTIONS ?