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Energy and Rural Electrification Planning, The role of GIS in **The Gambia**

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GIS for Energy Planning on the ECOWAS
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OUTLINE

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- Energy and Rural electrification planning
- National Goals
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- Rural Electrification in The Gambia
 - Criteria for selection of communities
 - Bottlenecks
 - Recommendations

COUNTRY BACKGROUND

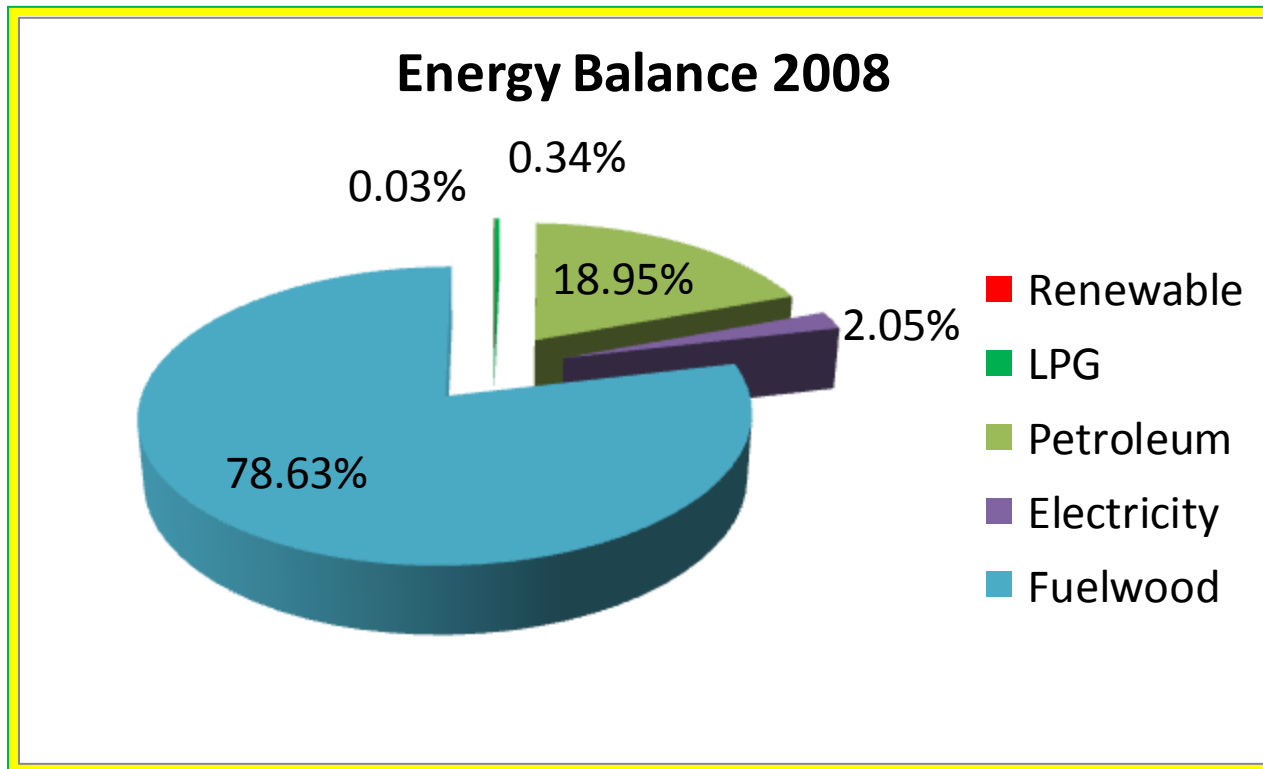
- ▶ The Gambia has a land area of **11,300 sq km**
- ▶ It has a population of approximately **1.8 million** (**Prem. Results 2013 census**)
- ▶ Pop. growth rate of 3.3% per annum (2003-2013).
- ▶ Real GDP growth averaged at 5.5% a year (2007- 2011)
- ▶ It has per capita income of about **US\$ 510** (**World Bank Report, 2010**)
- ▶ The economy is predominantly agrarian, with agriculture employing about **70%** of the labor force and accounts for **19%** of the GDP. (**World Bank Report, 2010**).

Energy Situation

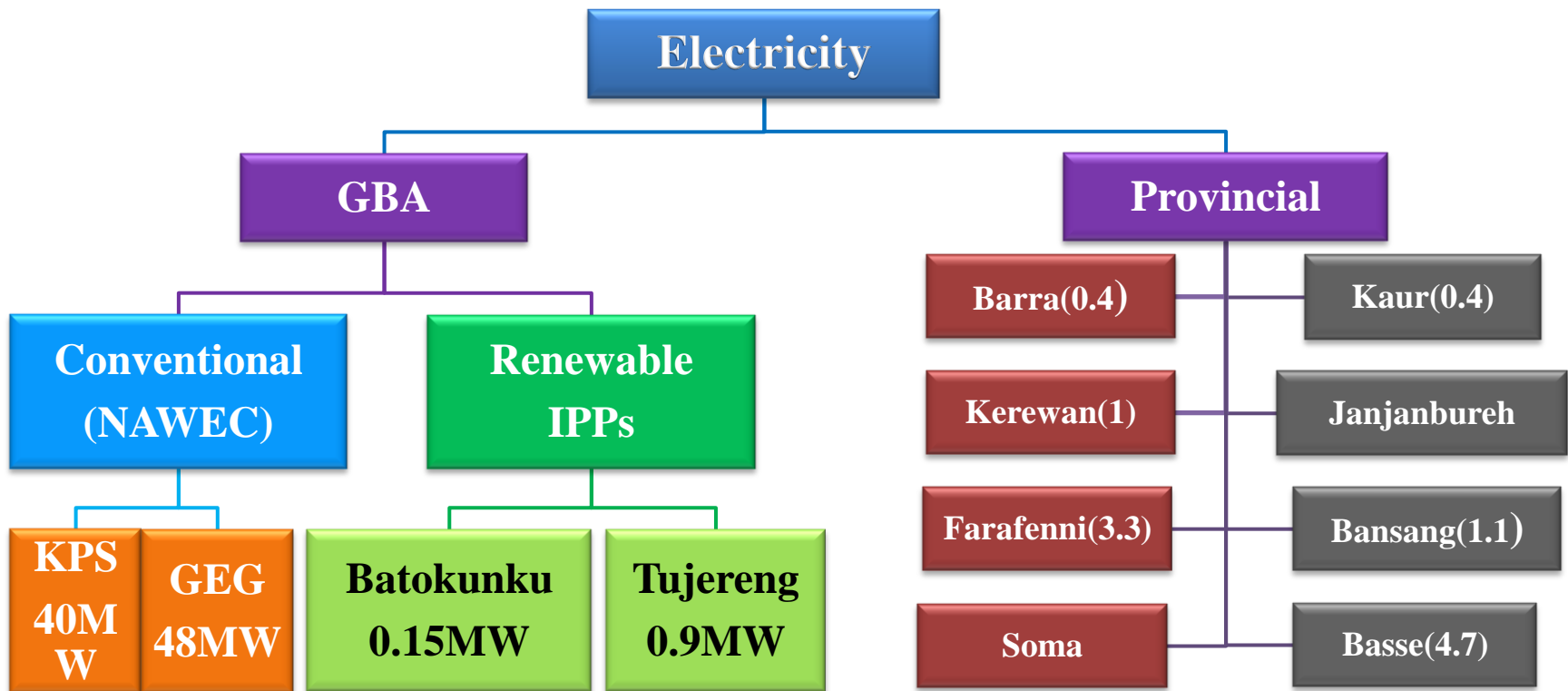
THE RESOURCE BASE IS MODEST

- FUELWOOD (firewood & Charcoal)
- PETROLEUM PRODUCTS (including LPG)
- ELECTRICITY and
- RENEWABLE ENERGY

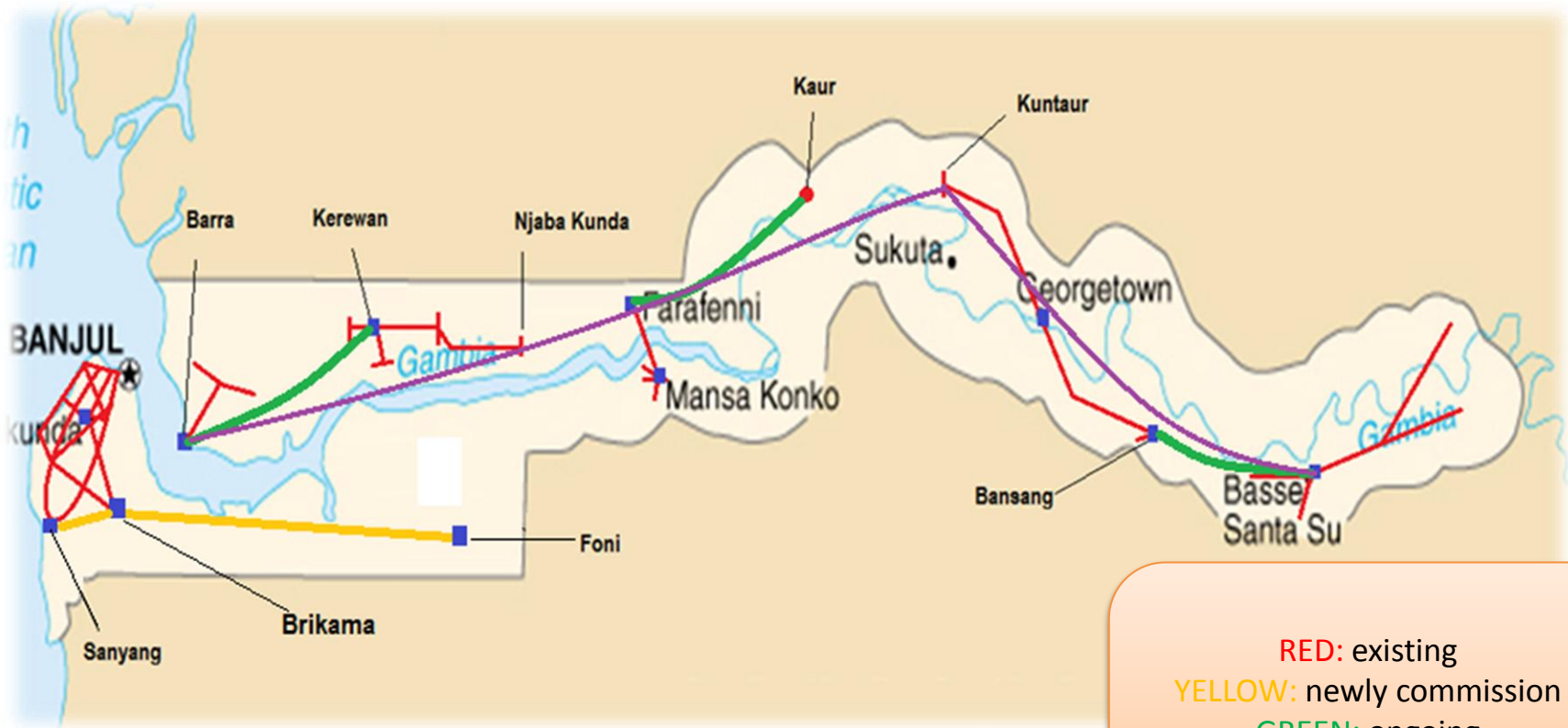
Graphical representation of 2008 Energy Mix



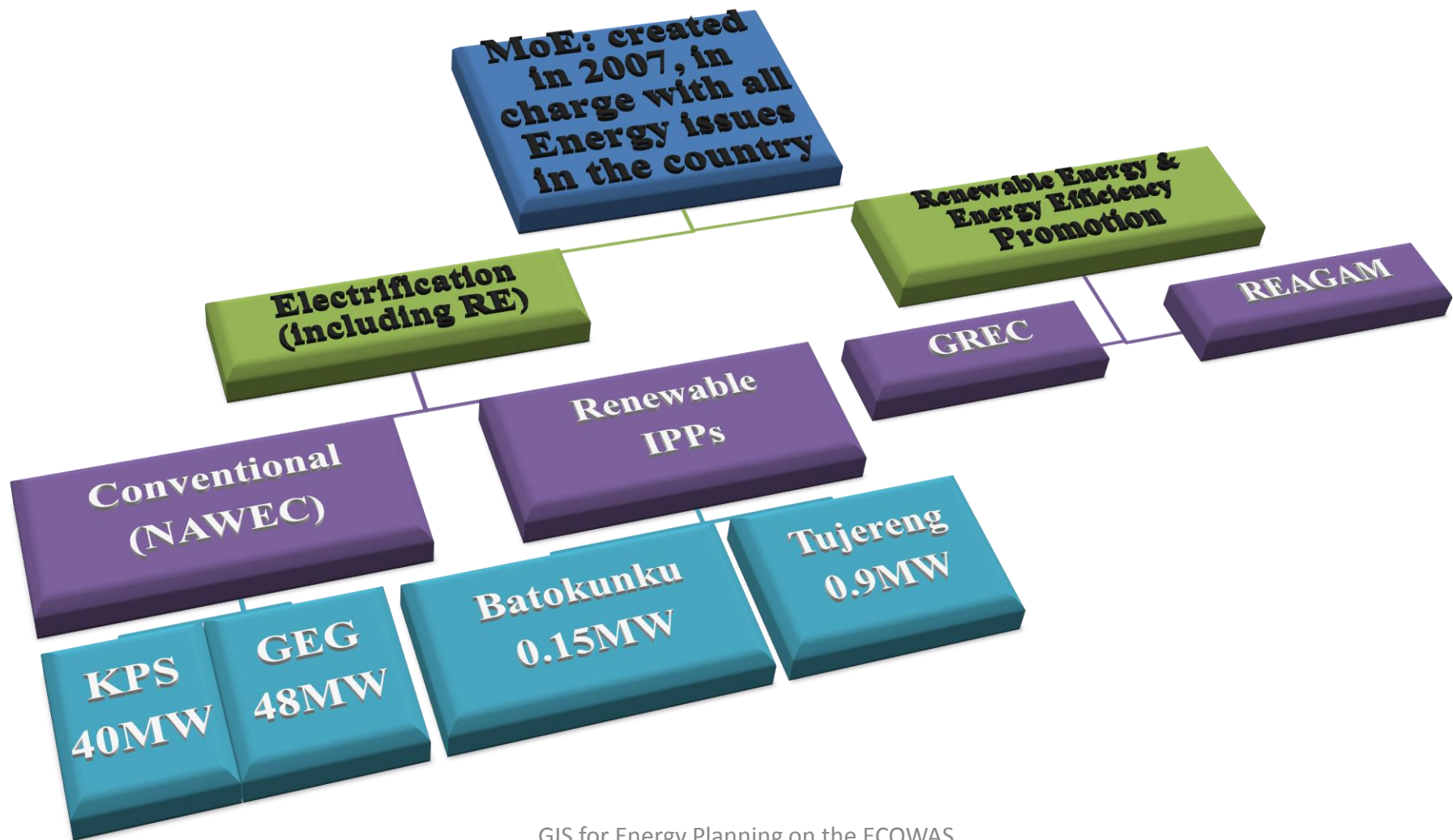
Electricity Generation



Electricity Interconnections



RED: existing
YELLOW: newly commission
GREEN: ongoing
VIOLET: proposed
BLUE DOT: substations



National Goals

- *Increase the adequacy, accessibility and reliability of electricity supply nationwide*
- *Reduce the cost of electricity*
- *Encourage private sector participation in the electricity supply industry*
- *Provide energy security through sub-regional and international cooperation*
- *To stimulate rural development*
- *Increase the efficiency and productivity in the use of electricity*

GIS – Energy Planning

- Energy in general, GIS is not being used, even, with regards to electrification especially rural electrification.
- However, work is being done to fully equipped NAWEC (Utility) with GIS experts and to introduce GIS in its planning functions.

Rural Electrification

- In the Gambia, the rural electrification programme is done in Phases by the Unit (PSO) housed at NAWEC in collaboration with MoE.
- *1st Phase:* completed with 46 villages and towns electrified via 6 power stations/stand alone in the rural areas.
- *2nd Phase:* ground operation on the way and 44 villages and towns are expected to be connected to the grid with expected additional capacity of 11.2MW

RE Criteria

As there is not a clear lay out strategy for rural electrification, however, the criteria used for determining the electrification of off grid rural settlements are as follows:

- *The village size(population):* On average 2000ppl
- *Proximity to network:* max. 80km from power plant
- *Commercial activities*
- *Political activities*

Rural Electrification - bottlenecks

- There is suppose to be compete Department/Body set up to effectively handle the RE programme instead of a unit (PSO) with very effective RE strategy;
- There is also no Fund established for the programme;
- Too much political presence in the programme

RE-Recommendations

- A more coordinated and effective RE Strategy is needed to meet the electricity needs of the rural population. The strategy should define short, medium and long-term access targets supported by technology specific targets within defined geographic areas for off-grid electrification.
- Another way would be to introduce rural energy service concessions. This would allow an entity (private sector, NGO, community organisation *etc.*) to exclusively serve one or more defined areas under a concessionary agreement.
- The resource assessment carried out shows that provincial areas have adequate radiation all year round to enable renewables to play a significant role in off-grid electrification.
- Since solar radiation is abundant throughout the country, detailed feasibility data on hybridizing the diesel mini-grids with solar PV would help to demonstrate the economics of these systems to potential investors.

Jere Jeff!

Thank you for your kind attention

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