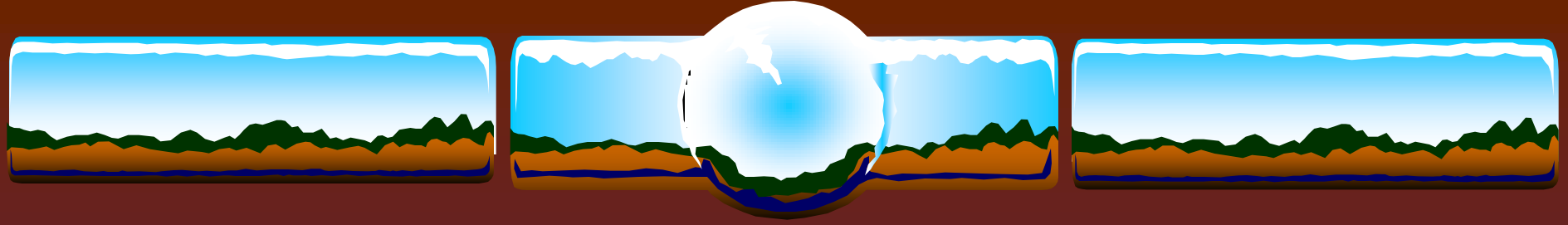
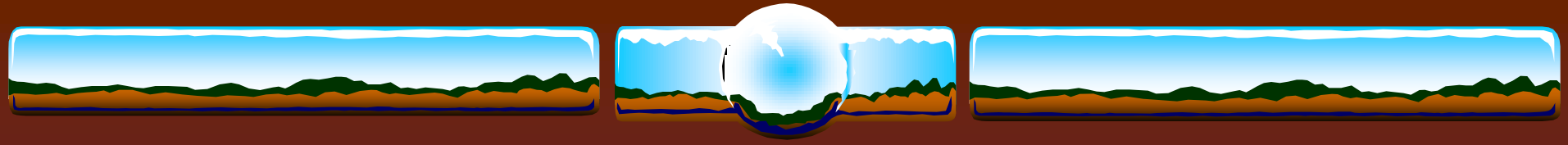


Towards Universal Energy Access in the ECOWAS Region: The Role of RE

By Dr Oyenike Adeyemo



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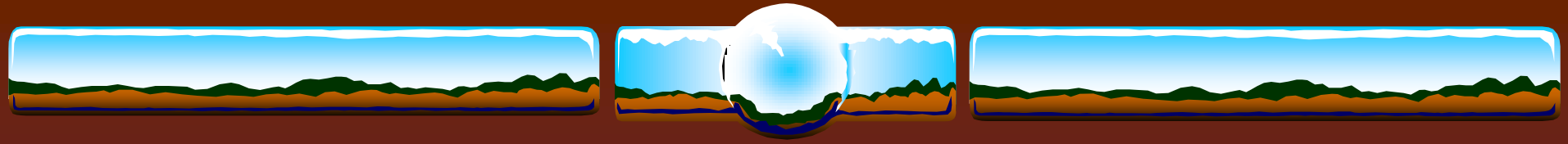
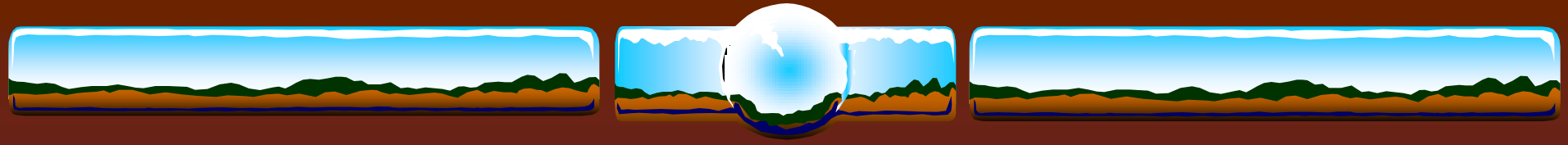


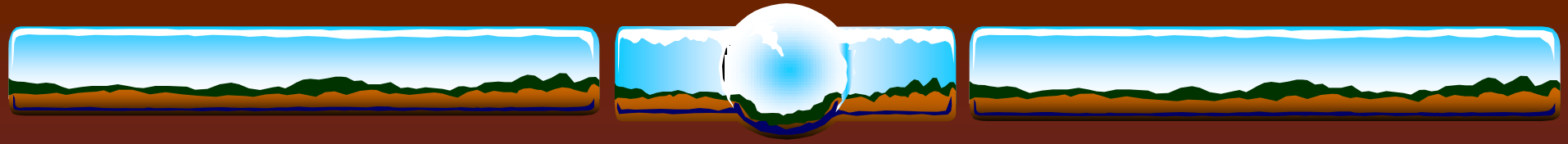
INTRODUCTION

- Renewable Energy- “any sustainable energy source that comes from natural environment
- Some Characteristics of RE
  - Exists perpetually and in abundance
  - Inexhaustible
  - Clean alternative to fossil fuels



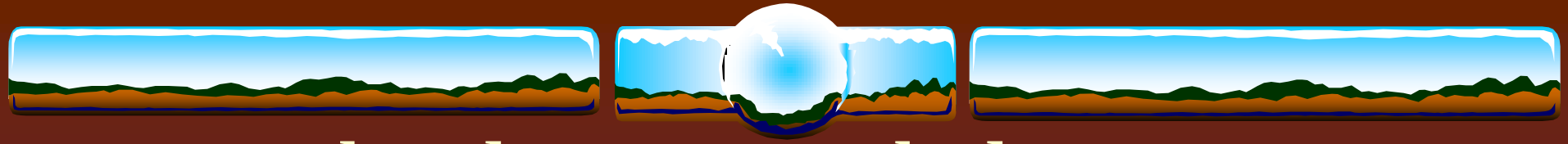
INTRODUCTION

- Major Renewable Energy Sources
  - In general there are 10
  - Only 5 are exploitable so far in ECOWAS
    - Hydro power
    - Solar
    - Geothermal
    - Biomass
    - Wind



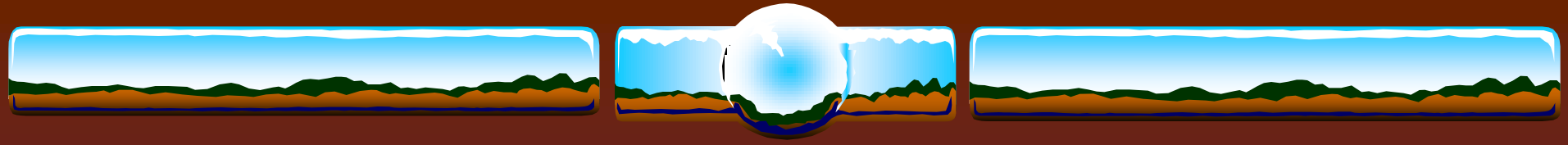
INTRODUCTION

- Role of Energy in meeting the MDGs
  - Health
  - Education
  - Environmental Sustainability
  - Reducing Poverty and Hunger
  - Gender Equility/Women Empowerment



RE technologies can help ECOWAS attain the following:

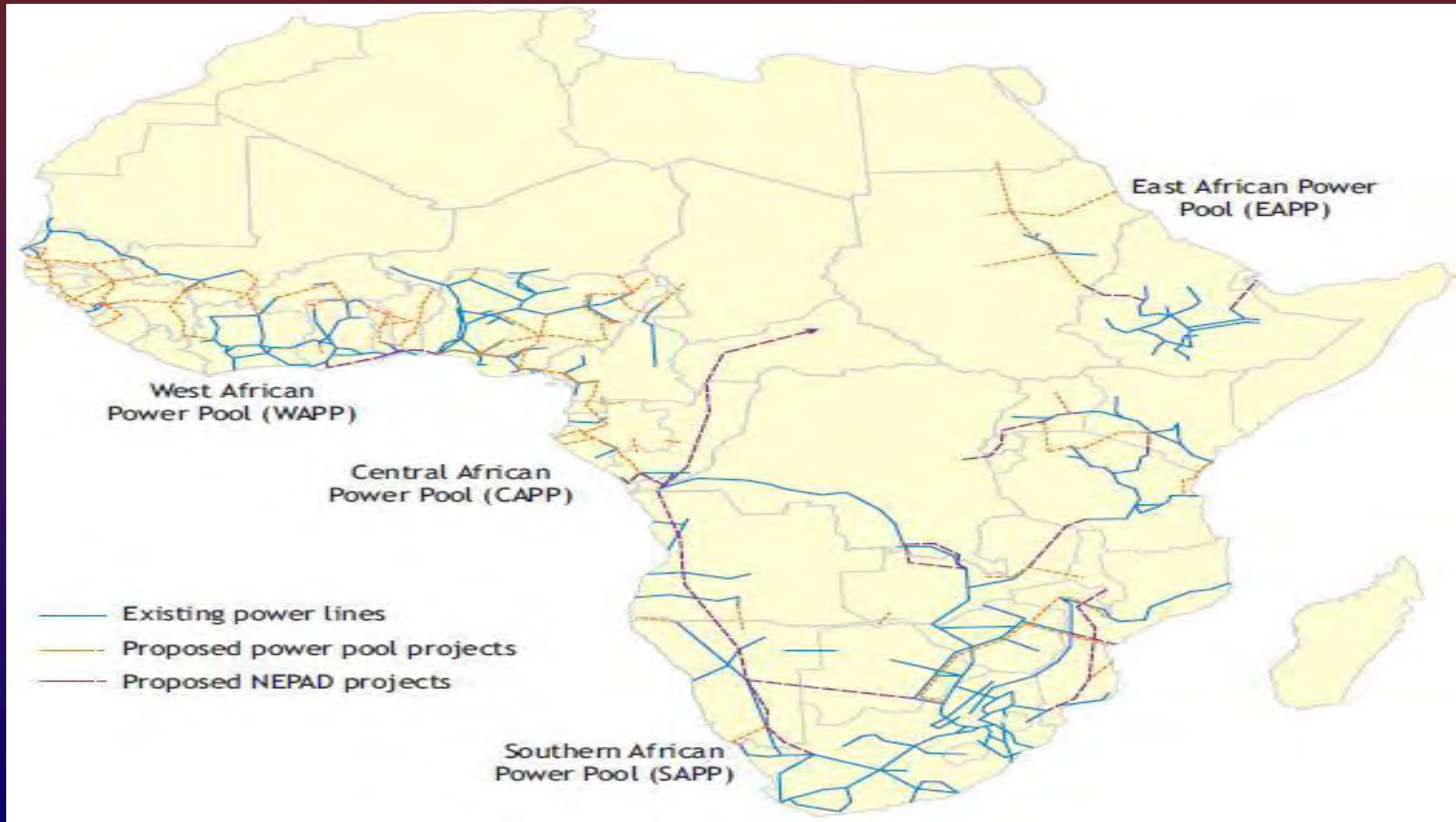
- Economic and social gains, such as through the deployment of cleaner energy technologies and improved access to energy services
- Improved resource efficiency through investments in cleaner production approaches;
- Increased food security through the use of more sustainable agricultural methods; and
- Access to emerging new markets for their RE goods and services.



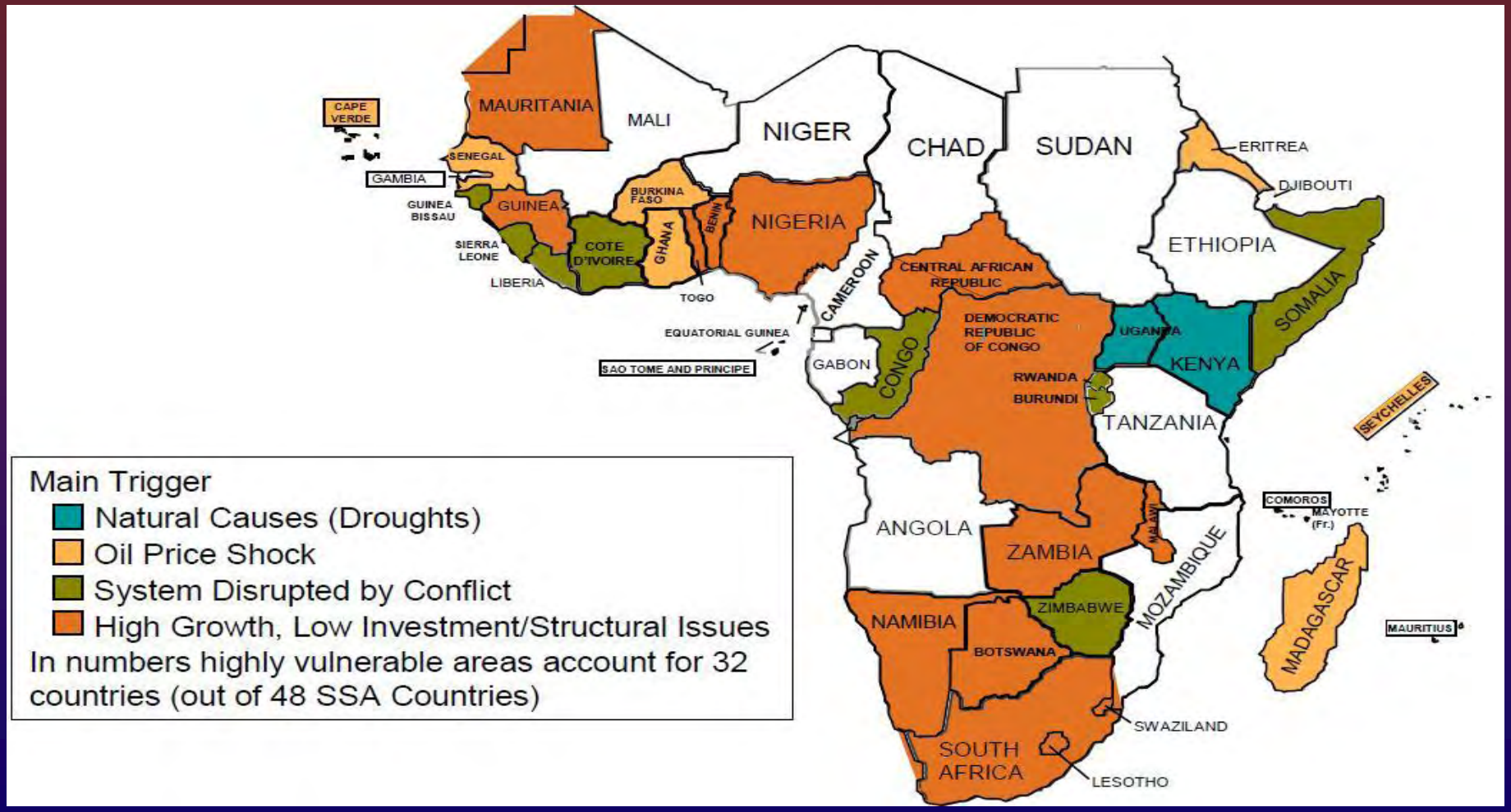
INTRODUCTION

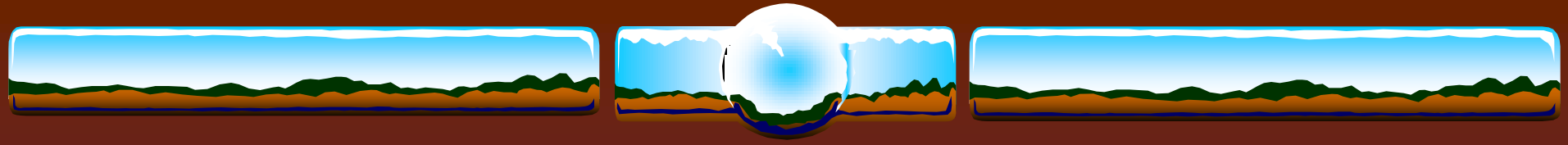
- More than 95% of those without electricity are either in sub-Saharan Africa or developing Asia, and 84% live in rural areas.
- Lack of energy remains a major obstacle to any progress in global development.
- Lacking access to electricity affects health, well-being and income
- The World Health Organisation estimates that more than 1.45 million people die prematurely each year from household air pollution due to inefficient biomass combustion.

Regional power pools in Africa



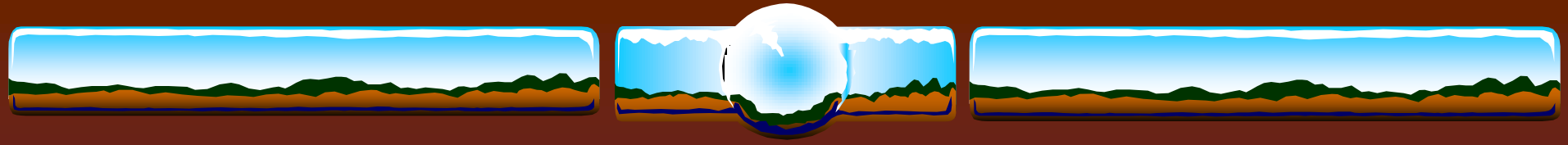
Power shortfalls in SS Africa





ECOWAS energy context

- Huge demand and supply gap (more than 40 %) in modern energy services
- <10 % of the rural population have access to electricity and modern energy services
- **Hydro electric -** in 9 states (25,000 MW), - only 16% is currently exploited
- **Fossil fuels** – Nigeria alone is endowed with 98%
- **Biomass (**mainly in form of firewood)
- **Wind power -** high wind speeds along coastal lines or in desert zones

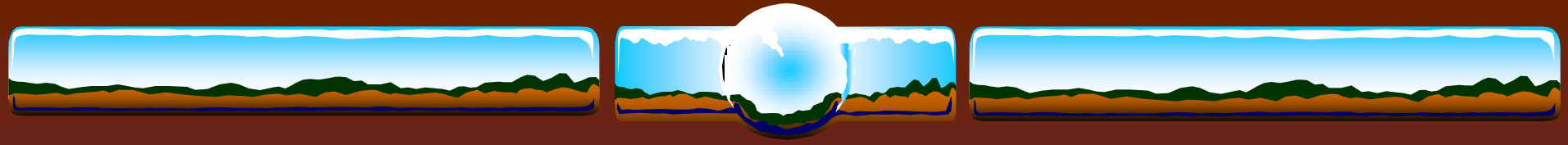


ECOWAS energy context

- **Solar -** the average sunshine potential in WA is around 5 to 6 kWh/m2/ day

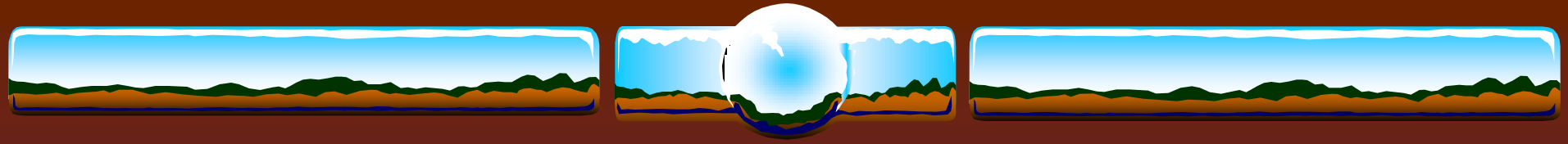
RE Energy potential in ECOWAS

- Wind and Solar energy - All countries show high potentials
- Hydro – 10 countries – Cameroon, Nigeria, Benin, Cote d'Ivore, Guinea, G-B, Mali, Niger, SL & Togo
- Biofuels - All countries show high potentials



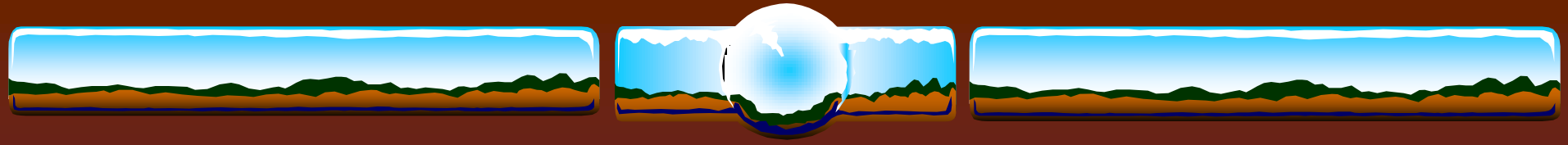
RET options for ECOWAS

Energy Source	Present	Near term	Medium term	Long term
Electricity	Grid or no Grid	Biomas-based generation using gasifier coupled to internal combustion engines	Biomas-based generation using gasifier coupled to micro-turbines and integrated gasifier	Grid connected photovoltaic using gasifiers coupled to fuel cells
Fuel	Wood, charcoal, dung, crop residue	NG, LPG, producer gas, biogas	Syngas, DME	Biomass derived DME
Cogeneration		Internal combustion engines, etc	Microturbines & integrated gasifier	Fuel cells, fuel cell/turbine hybrid



RET options for ECOWAS

TASK				
Energy Source	Present	Near term	Medium term	Long term
Cooking	Woodstove	Improved woodstove	DME stoves, NG and PG	Electric stoves, catalytic burners
Lighting	Oil/kerosene lamps	Electric lights	Florescent lamps	Improved florescent lamps
Motive power	Human/ animal powered devices	Internal combustion engines, electric motors	Biofueled prime movers, improved motors	Fuel cells
Process heat	Wood, biomass	Electric furnaces, NG, PG	Solar thermal furnaces	Solar thermal furnaces with heat storage



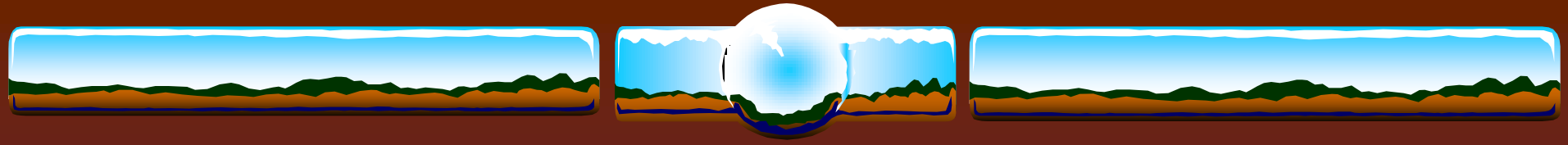
Renewable energy policies at Regional level

- The Common Energy Policy
- The ECOWAS Energy Protocol
- The White Paper
- The West African Power Pool
- Energy Program for West Africa
- The Programme Régional de Promotion des Énergies Domestiques et Alternatives au Sahel (PREDAS)

Renewable energy policies at Regional level

- The Multi-Functional Platforms Project (MFP)

  initiated in Mali in 1996 with the backing of UNDP and UNIDO and has since then been extended to Senegal, Burkina Faso, Ghana, Nigeria and Guinea



Renewable energy policies at country levels

- Benin - PV electrification of 38 villages & Energy Services Supply Project
- Burkina Faso - National White Paper
- Cape Verde - Cape Verde's energy policy to reinforce the rural electrification
- Cote d'Ivoire – None

Renewable energy policies at country levels

- Gambia – None. Only incentives (zero import tax) for RE
- Ghana - National Electrification Scheme – Energy Plan 2006-2020
- Guinea – None
- Guinea-Bissau - None

Renewable energy policies, country at country levels

- Liberia – Renewable energy policy to build and increase the application of renewable energy and energy efficiency technologies
- Mali - Energy policy
- Niger - Energy policy

Renewable energy at country levels

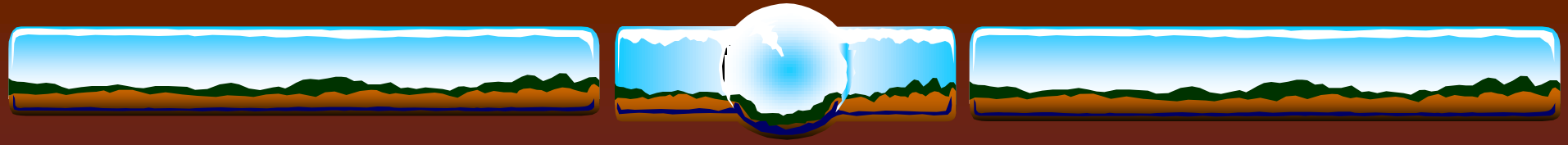
- Nigeria – National Energy Policy, Rural Electrification Agency and Importation of RE Equipment" bill
- Senegal – National energy Policy
- Sierra Leone - National energy policy
- Togo - Implementation of policies for the promotion of RE, the increase of electricity supply of rural areas and the implementation of regulatory institutions

Constraints and barriers for deployment of RE in Rural areas

- Finance
- Technical
- Awareness
- Capacities
- Legal

Conclusion

- There is high potential for RE in ECOWAS
- Some progress have been made in introducing the technology in many of the rural areas but the penetration is still very low



CONCLUSION

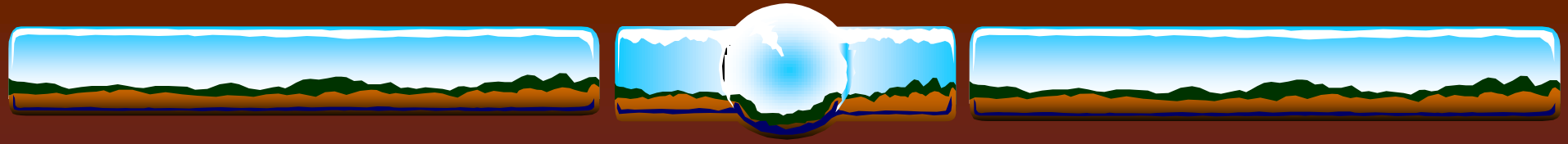
- A short term program of 1-5 years that would plan to implement low-risk and low-cost near term initiative.

  - Biomas-based co-generation

  - Small-scale renewables (improved cookstoves, solar water heater

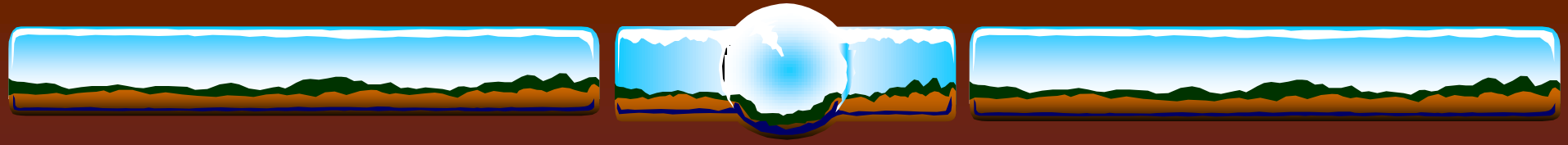
  - Small scale windpump and small hydro(where applicable)

  - PVs



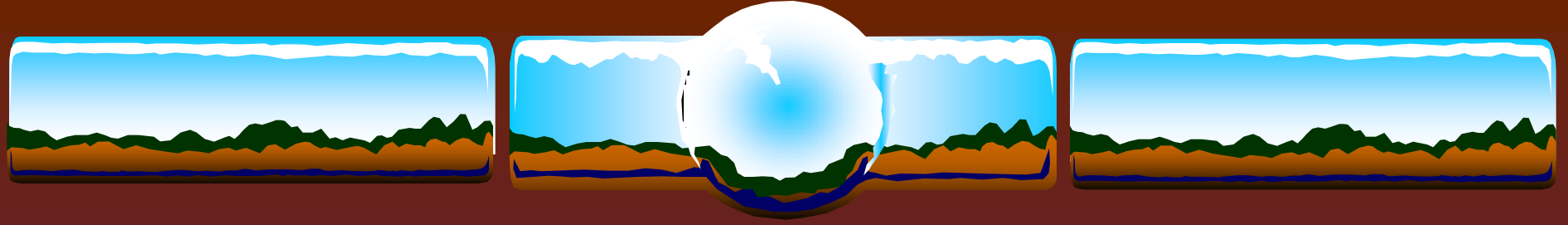
CONCLUSION

- A long-term program of 5-10 years built around major RE sector initiatives already in existence
  - Skill development and capacity building
  - Long-term policy and financing programs
  - Large scale hydro
  - Large scale bioenergy
  - Big wind power projects
  - Large urban waste to energy projects



WAY FORWARD

- Reduction in the initial cost (or form of subsidy) of RE technologies to make it more competitive to conventional technologies
- RE has to be free for it to be adopted in rural areas
- Promote communication and awareness of RE and RETs
- Skill development essential
- Funding
- There is need for individual country to adopt a specific energy access target



THANK YOU