



THE ENERGY POLICY OF NIGERIA AND ITS IMPLICATION FOR DEVELOPMENT OF ALTERNATIVE ENERGY*

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1. Introduction



- All nations require, and strive to achieve development.
- National development in the economy indexed by the gross domestic product (GDP) and the standard of living of the citizens indexed by the human development index (HDI) are all driven by energy.
- Energy mainly in the forms of fuels, process heat and electricity, is required to run industrial machinery and equipment, drive transportation, facilitate agricultural production, enable us to cook our food, provide thermal comfort and operate appliances in our homes and offices, run health and educational facilities, amongst many others.
- Thus the significance of energy in national development.
- Energy policies therefore have traditionally been to facilitate adequate, reliable and cost effective supply of energy for development.



1. Introduction



- Modern nations, however, require that development be sustainable.
- Sustainable development is defined by the United Nations Brundtland Report on “Our Common Future” as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- This definition was brought in the state of our environment as one of the major factors to be considered in development.
- Final energies from fossil energy resources like, crude oil, natural gas, coal, etc. have been found to be depletable on consumption and negatively affect the environment, such that it inhibits the ability of future generations to meet their developmental needs.
- Fossil energy sources have therefore been considered unsuitable for driving sustainable development.



1. Introduction



- Sustainable development shall be driven by energy from sustainable energy sources. Sustainable energy has two key components:
 - Renewable Energy &
 - Energy Efficiency
- Renewable energy, unlike fossil energy, is energy from sources that replenishes itself through natural process within a relatively short-time.
- For example, solar, wind, biomass, hydropower, ocean waves and tides, geothermal, etc.
- It is relatively non-depletable and environmentally friendlier.



1. Introduction



- Energy efficiency is a phenomenon of using less energy for a given output.
- The National Energy Policy is therefore an omnibus and overarching energy policy that articulates sustainable development of our energy resources through the active participation of the private sector for adequate, reliable, cost-effective and environmentally friendly final energy in the economy as well as for foreign exchange earnings and as an instrument for international trade, cooperation and diplomacy.



2. Energy Resources & Infrastructure in Nigeria

a) Fossil Energy Resources and Nuclear Energy Sources

S/N	Resources	Reserves	Production (2016)	Domestic Utilization (2016)
1	Crude Oil	37.2billion barrels	0.670billion barrels	0.032billion barrels for local refineries (14% capacity utilization)
2	Natural Gas	187 Tscf	2.78Tscf	89% : Utilized 11% : flared
3	Coal	2.7 billion tonnes	0	Negligible
4	Tar Sands	31 billion barrels of oil equivalent	0	18.25 million barrels
5	Nuclear	Yet to be quantified	0	30kW experimental nuclear reactor

Source: NNPC/ECN



2. Energy Resources & Infrastructure in Nigeria

(b) Renewable Energy Resources

S/no	Resource		Reserve	Utilization Level
1	Large hydro power		11,250MW	1,972MW
2	Small Hydro power		3,500MW	64.2MW
3	Solar Energy		4.0kW/M ² /day 6.5kW/M ² /day	50 MW solar PV stand-alone No solar thermal electricity
4	Wind		2-4m/s at 10m height	2x2.5KW electricity generator; 10MW wind farm in Katsina
5	Biomass	Fuel wood	11 million hectares of forest and woodlands	43.4 million tonnes of firewood/yr
		Municipal waste	- 18.3 million tonnes in 2005* & about 30 million tonnes/yr now	-
		Animal waste	- 243 million assorted animals in 2001	-
		Energy Crops and agric waste	- 28.2 million hectares of Arable land	8.5% cultivated

Source: REMP (2005)

* FM EMV



3. Overview of National Energy Policy



- The National Energy Policy provides the overall direction government intends to develop its energy sector and is a document that is always sought for by investors, development partners and scholars/researchers.
- The first draft of a National Energy Policy was produced by the Federal Ministry of Science and Technology in 1984.
- Before then there have been sub-sectoral energy policies in petroleum, coal, electricity, etc.



3. Overview of National Energy Policy

- There were also energy related policies in sub-sectors, whose activities are strongly dependent on those in the energy sector, e.g. transportation, agriculture, science and technology, environment, etc.
- These sub-sectoral policies reflected the individual sub-sectoral perspectives.
- It therefore became imperative to have an integrated energy policy, which provides a guide for future energy and energy related sub-sectoral policy development, in order to avoid policy conflicts that could, otherwise arise.



3. Overview of National Energy Policy

- Consequently, and in collaboration with stakeholder ministries, departments and Agencies, as well as private sector and NGOs, the Commission midwived the production of a draft National Energy Policy in 1993.
- The draft went through a review in 1996; and in 1999, when a major economy policy of increased private participation was taken by government.
- After several inter-ministerial reviews, the draft National Energy Policy was approved in 2003 by the Federal Executive Council (FEC), ten (10) years after the first draft was produced.



3. Overview of National Energy Policy

- The 2003 NEP document was also reviewed ten (10) years later in 2013 in view of changes that took place nationally and internationally in the energy scene. These changes included:

- i. Petroleum Industry Bill (PIB);
- ii. Discovery of Commercial Petroleum in many neighbouring and African countries;
- iii. Exploitation of Shale oil and gas in major oil and gas consuming countries;
- iv. Privatization of Nigerian electricity sub-sector;
- v. UN Sustainable Energy for All Initiative;
- vi. Gender Issues in Energy Development;
- vii. Drive for Local Content and Indigenous participation.



3. Overview of National Energy Policy



- The National Energy Policy has therefore the following objectives:
 - (i) To ensure the development of the nation's energy resources, with diversified energy resources option for the achievement of national energy security and an efficient energy delivery system with an optimal energy resource mix;
 - (ii) To guarantee increased contribution of energy productive activities to national income.
 - (iii) To guarantee and efficient and cost effective consumption pattern of energy resources.



3. Overview of National Energy Policy

- (v) To guarantee adequate, reliable and sustainable supply of energy at appropriate costs and in an environmentally friendly manner, to the various sectors of the economy, for national development;
- (vi) To accelerate the process of acquisition and diffusion of technology and managerial expertise in the energy sector and indigenous participation in energy sector industries, for stability and self-reliance.
- (vii) To promote increase investments and development of the energy sector industries with private sector leadership



3. Overview of National Energy Policy

- (vii) To ensure a comprehensive, integrated and well-informed energy sector plans and programmes for effective development.
- (viii) To foster international co-operation in energy trade and projects development in both the African region and the world at large.
- (ix) To successfully use the nation's abundant energy resources to promote international co-operation
- (x) To promote research and development in, and
 - adoption of, sustainable low carbon and clean energy technologies to mitigate environmental pollution and climate change



3. Overview of National Energy Policy

- (xii) To promote gender sensitivity and special attention to rural energy needs.
- (xii) To promote efficiency, conservation and carbon management best practices in the nation's energy supply chain.
- (xiii) To ensure comprehensive and up-to-date availability of energy sector data and information
- (xiv) To ensure effective coordination of national energy planning, programmes and policy implementation.



3. Overview of National Energy Policy

- The 2013 Revised National Energy Policy, which emphasizes active participation of the private sector in the development of the energy sector in a sustainable manner has thirteen chapters.
 - a) Chapter 1: Introduction;
 - b) Chapter 2: Petroleum Policy;
 - c) Chapter 3: Coal and Tar Sand;
 - d) Chapter 4: Nuclear Energy Policy;
 - e) Chapter 5: Renewable energy Policy;
 - f) Chapter 6: Bio-energy Policy;
 - g) Chapter 7: Electricity Policy;
 - h) Chapter 8: Energy Utilization Policy;



3. Overview of National Energy Policy



- i) Chapter 9: Energy Efficiency and Conservation Policy;
 - j) Chapter 10: Environment and Climate Change Policy;
 - k) Chapter 11: Policy and Other Energy Issues;
 - l) Chapter 12: Energy Financing Policy; and
 - m) Chapter 13: Planning and Implementation Policy.
-
- Each of the Chapter of the NEP contain policy statement, policy objectives and strategies as well as the short, medium and long-term implementation strategies



4. Renewable Energy Policy



- As was earlier mentioned, renewable energy defines a component of sustainable energy and is said to be energy from energy resources that, on its consumption, replenishes itself within a relatively short-time through natural process; and is relatively environmentally friendlier.
- The renewable energy component in the national energy policy include, hydropower, solar, wind, hydrogen and other emerging renewables such as ocean thermal waves and tides as well as geothermal energy.
- The policy statements, objectives and strategies for solar and other emerging renewables would be provided as examples.



4. Renewable Energy Policy



(a) Solar Energy Development

Policies

- i. The nation shall aggressively pursue the integration of solar energy into the nation's energy mix, which should be based on the established potentials and available technologies nationwide.
- ii. The nation shall keep abreast of worldwide developments in solar energy technology and utilization to adopt global best practices.
- iii. The nation shall utilize solar energy resources where it is more cost effective and advantageous.
- iv. The nation shall support the establishment of local manufacturing industries for solar energy conversion technologies and applications.



4. Renewable Energy Policy



(a) Solar Energy Development

Objectives

- i. To develop the nation's capability and capacity in the utilization of solar energy.
- ii. To use solar energy as the main energy option in the rural and peri-urban areas with higher solar energy potential.
- iii. To develop the market for solar energy technologies and services.
- iv. To develop local manufacture capabilities for solar energy conversion technologies



4. Renewable Energy Policy



(a) Solar Energy Development

Strategies

- i. Intensifying research and development in solar energy technology and applications.
- ii. Intensifying human and institutional capacity building in solar energy technologies and applications.
- iii. Providing adequate incentives to suppliers of solar energy products and services.
- iv. Providing adequate incentives to local manufacturers for the production of solar energy systems and accessories
- v. Introducing measures to fast-track the development of local solar energy industries.



4. Renewable energy Policy



(a) Solar Energy Development

Strategies (Cont'd)

- (vi) Setting up extension programmes to popularize solar technology and solutions to the rural and peri-urban communities.
- (vii) Providing fiscal incentives for the installation of solar energy systems.
- (viii) Pursuing aggressive mass campaign and advocacy on the use of RE as alternative energy sources.
- (ix) Developing and enforcing standards for solar energy technologies, products, services and processes.



4. Renewable Energy Policy



(a) Solar Energy Development

Strategies (Cont'd)

Medium-Term

- (x) Reviewing, improving and continuation of short-term strategies.
- (xi) Setting up and maintaining a comprehensive information system on available solar energy resources and technologies
- (xii) Putting in place measures to leverage funding from international agencies and countries that promote the use of solar energy.

Long-Term

- (xiii) Reviewing, improving and continuation of medium-term strategies.



4. Renewable Energy Policy



(b) Other Renewables (Geothermal etc.)

Policy

The nation shall maintain an interest in other emerging sources of renewable energy.

Objectives

- i. To develop a database on the potentials of these emerging energy resources.
- ii. To keep abreast of international trends in energy technology development.
- (iii) To ensure incorporation of any new proven cost-effective energy resource into the energy mix.



4. Renewable Energy Policy



(b) Other Renewables (Geothermal etc.)

Strategies

Short-Term

- i. Gathering and disseminating information on the development of these emerging technologies.
- ii. Encouraging Research and Development in the technologies of the exploitation of these emerging energy resources.
- iii. Prioritizing the level of need, level of technological development and viability of emerging renewable energy resources

Medium-Term

- iv. Reviewing, improving and continuation of short-term strategies.



3. 4. Renewable Energy Policy



(b) Other Renewables (Geothermal etc.)

Long-Term

v. Reviewing, improving and continuation of medium-term strategies

- Geothermal energy is heat energy in the earth's crust emanating from radioactive decay in the earth's core.
- Evidences of geothermal energy in Nigeria include:
 - i. Akiri hot spring in Benue State (53.5°C);
 - ii. Warm spring at Wikki in Yankari Game Reserve, Bauchi State (32°C);
 - iii. Ruwan Zafi in Lamurde, Adamawa State (54°C)
 - iv. Warm springs in Awe, Nassarawa State (34°C – 43.5°C)



4. Renewable Energy Policy



- In 2005, the Federal Executive Council, approved a national Biofuel Policy, driven by the NNPC; it also approved a separate National Renewable Energy and Energy Efficiency Policy in 2015 that was driven by Ministry of Power.
- The NREEE Policy articulates for 30% renewable by 2030 in the energy mix for electricity generation.
- The biofuel policy provides for 5%-10% mix of bioethanol and biodiesel in our automotive fuel mix in the short term.



4. Challenges



- The National Energy Policy, the Biofuel energy Policy and Renewable energy and Energy Efficiency Policy are yet to be passed into Law.
- However, a National sustainable Energy Bill, which seeks to translate the National Energy Policy into Law is before the National Assembly for consideration.



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4. Conclusion



- The national energy policy approved in 2003 by the FEC and its 2013 review articulates active private sector participation in sustainable development of our energy sources, which includes both the fossil and renewable energy sources backed by energy efficiency best practices.
- With increasing concern about the negative effect of our environment from fossil energy sources, and the increasing research and development activities on renewable energy, our energy mix would increasingly be penetrated by renewables to a level of 30% by 2030 in the electricity sub-sector and 5%-10% in the fuels sub-sector.
- The speed of penetration of renewables will however depend on getting the National Energy Policy passed into law, so as to assure investors of stability in policy.



**Thank you
and
God Bless**