

## Energy Policy for Petro-State

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**Abstract:** This policy paper considers a hypothetical country named “petro-state” with oil exports that contribute to 60% of its GDP. Considering present energy needs, budgets, available natural resources, expected economic and population growth, and taking in global plans for access to available energy resources in an affordable manner, reduction in carbon emissions, different challenges and opportunities have been identified. Objectives, Policies and Strategies on energy are provided to help the country achieve sustainable development. Recommendations on how a 100unit budget on energy could be distributed to enhance access to environmentally friendly energy resources between now and 2050 and collaborations with relevant central government Ministries, local organisations and regional countries have been provided.

### 1. Background

The name of this country is “Petro-State”. It is a country whose wealth stems from the sale of oil. Oil was discovered here in the 1970s and since then has contributed more than 60% to the nation’s annual GDP. Earnings from oil exports have been used to fund and subsidised social programmes and jobs in the oil industry are many and well paid, with the effect that few people have incentives to complete higher degrees. However, even though the price of oil has fluctuated on the world market, the government has been “locked-in” to funding social programmes, even during periods when the price of oil is low. This has forced the government to borrow money, as it would be deeply unpopular to cut such projects, and despite the income from oil, the country has a large unpaid debt. Based in the tropics, the country has abundant supplies of other alternative resources such as solar energy and forest.

Based on this background, the Workshop on “Innovative Energy Policies for Sustainable Development” in Trieste, Italy from 8-13 December was held as part of the TWAS-AAAS International Science & Diplomacy Programme of the world academy of sciences. In the breakout session three, a team of seven members from five different countries was assigned the task of developing this white paper on an energy policy for a hypothetical developing country named “petrol state”.

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## 2. SWOT Analysis

In order to better understand the present status of this country with respect to its energy sector, a SWOT analysis was used to define the present strengths, weaknesses, future opportunities, and threats. This has helped in formulating objectives that are built upon present strengths and future opportunities. Moreover, the proposed strategies attempt to solve present weaknesses and mitigate future threats.

|   |   |
|---|---|
| <b>2.1 Strengths</b>  | <b>2.3 Opportunities</b>  |
| <ul style="list-style-type: none"> <li>• Oil resources</li> <li>• Well-paid (low skilled) jobs</li> <li>• Abundance of considerable untapped alternative resources and technologies</li> <li>• Social programmes</li> </ul>   | <ul style="list-style-type: none"> <li>• Use of renewable energy sources</li> <li>• Energy efficiency</li> <li>• Localize oil processing using sustainable procedure</li> <li>• Green jobs</li> </ul>                               |
| <b>2.2 Weaknesses</b>   | <b>2.4 Threats</b>  |
| <ul style="list-style-type: none"> <li>• No mix of energy generation</li> <li>• Low diversification of GDP</li> <li>• Unpaid Debt</li> <li>• Low literacy rate (low capacity)</li> <li>• No incentives for higher education</li> <li>• Pollution (air, land, water)</li> <li>• Lack of awareness on green energy</li> </ul> | <ul style="list-style-type: none"> <li>• Financial crisis</li> <li>• Oil Price fluctuation</li> <li>• Future unskilled labour</li> <li>• Dependency on fossil fuels</li> <li>• Social conflict</li> <li>• Climate change</li> </ul> |

## 3. Assumptions

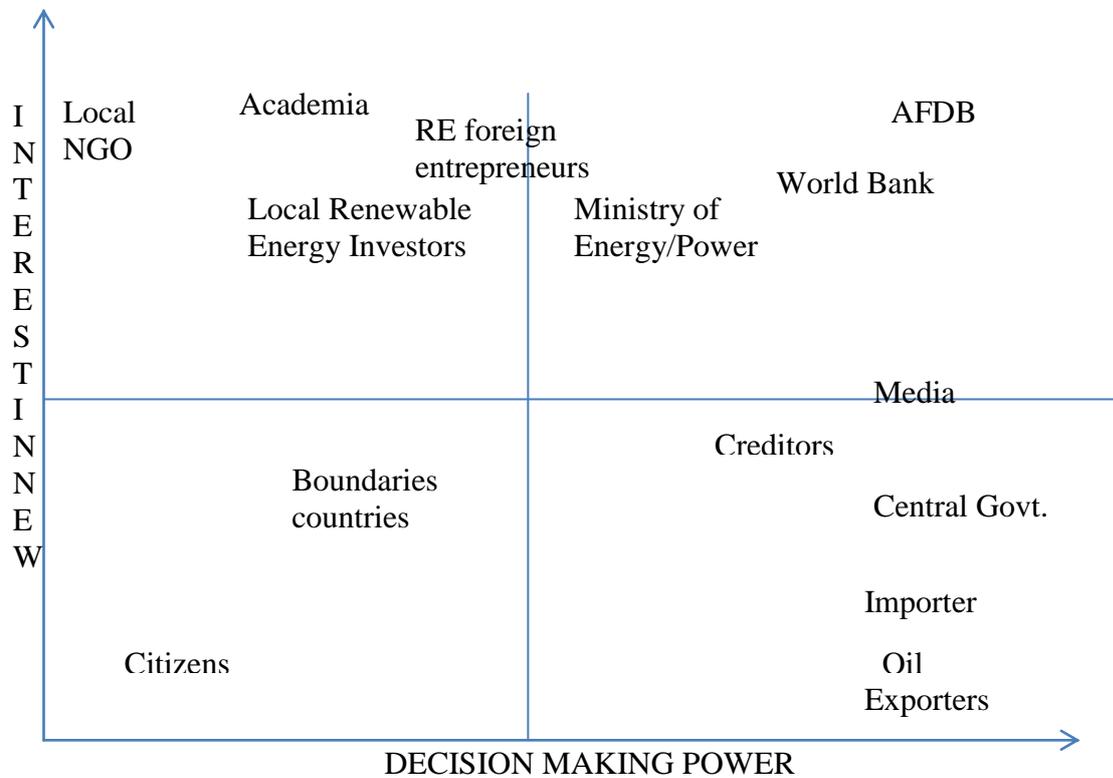
A number of assumptions were made to clearly define the economic and social conditions in the specified country. These assumptions were mainly drawn from the state description provided during the work session and the team’s understanding of the country’s context.

- Access to electricity is less than 50%
- Population of about 100million people
- Human Development Index (HDI) = 0.5
- GINI coefficient is greater than 0.6
- Present renewable energy supply of 0%
- Total (100%) dependence on Oil for energy supply
- The country is democratic formally but does not allow citizens to participate in decision making, which means there is no good governance.

## 4. Stakeholder Analysis

After analysing the current status with respect to energy sector, a stakeholder analysis was carried out as shown in Figure 1.0. This was done to identify each stakeholder’s position with respect to “interest” in developing a sustainable energy policy and the extent to which they have “power” to influence decision making process. This analysis provides a practical tool to identify how to approach and motivate each stakeholder to achieve the proposed goals.

For example: the local Non-Governmental Organisations (NGOs) who have a great interest in a new energy policy can utilize the media to build the awareness of the citizens and influence the central government and other influential stakeholder to take interest in this new energy policy.



**Figure 1.0 Stakeholders Analysis of Petro-State: stakeholder’s position with respect to interest in developing a new energy policy and the amount of power in the decision making process**

**5. Main Goal: Sustainable Energy Sector**

The main goal for the energy sector in Petrol State is to develop a sustainable energy sector where there is adequate access to the available energy resources in an affordable manner. This goal can be realized through a number of specific objectives and their subsequent strategies and actions.

**Specific Objectives, Policies and Strategies**

**5.1 Objective One**

**Economy:** To develop a resilient (strong, flexible, growing) economy

**5.1.1 Policy**

- (i) The nation shall develop a resilient (strong, flexible and growing) economy

**5.1.2 Strategies**

- (i) Reducing the oil contribution to GDP from 60% to 40%
- (ii) Localizing oil processing / increasing added value
- (iii) Providing enabling market for renewable energy and energy efficiency

## 5.2 Objective Two

**Environment:** To adopt measures to reduce climate change

### 5.2.1 Policy

(i) The nation shall adopt measures to reduce climate change

### 5.2.2 Strategies

(i) Utilizing more efficient oil chain

(ii) Adopting, promoting and implementing Renewable Energy and Energy Efficiency

## 5.3 Objective Three

**Society:** To promote equity and inclusiveness

### 5.3.1 Policy

(i) The nation shall promote equity and inclusiveness that is consistent with the overall national development goals

### 5.3.2 Strategies

(i) Creating awareness on climate change

(ii) Enhancing capacity building on renewable energy and energy efficiency sector

**Above all, for these policies to be effective in this country, Good Governance practices are considered a cross cutting objective in all sectors.**

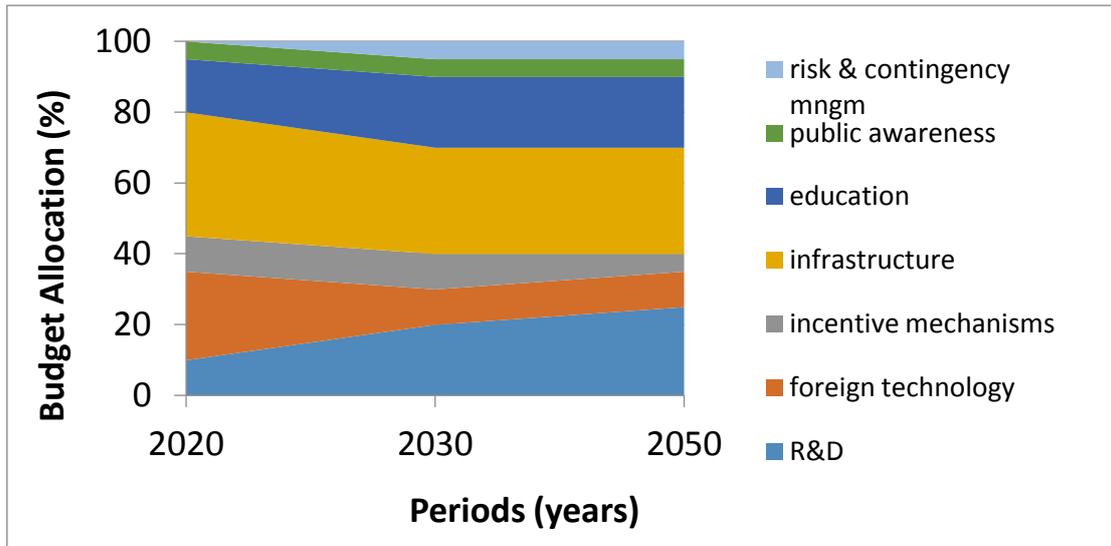
## 6. Budget

A number of sustainable energy related investments that would constitute the various budget items and the allocation of a 100-unit budget are as presented in Table 1.0. The allocation given to each of the budget items is expected to change periodically as the country transits from a complete dependence on oil to the adoption, promotion and utilization of the abundance of untapped renewable energy sources and energy efficiency concepts and diversification of the sources of GDP in the energy sector. This gradual transformation is as shown in Figure 2.0.

In the Implementation of these policies and budget items, the Ministry of Energy and/or Power shall regularly collaborate with relevant Ministries, Departments and Agencies of Government, Development Partners, Private Sector, Local and International Investors and Regional Countries.

**Table 1.0: Proposed energy budget of Petro State**

| S/N          | Budget items  | Now-2020    | 2030        | 2050        |
|--------------|---|-------------|-------------|-------------|
| 1            | Research & Development (R&D): Energy efficiency, Renewable Energy, Technology, Oil processing, Discovery of new resources | 10%         | 20%         | 25%         |
| 2            | Foreign technology  | 25%         | 10%         | 10%         |
| 3            | Incentive mechanisms  | 10%         | 10%         | 5%          |
| 4            | Infrastructure  | 35%         | 30%         | 30%         |
| 5            | Education   | 15%         | 20%         | 20%         |
| 6            | Public awareness  | 5%          | 5%          | 5%          |
| 7            | Risk and contingency management   | 0%          | 5%          | 5%          |
| <b>Total</b> |   | <b>100%</b> | <b>100%</b> | <b>100%</b> |



**Figure 2.0: The distribution of a 100-unit budget on energy sector of Petro-State**