Agro-food issues: current crisis in Tanzania

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Outline

• Energy crisis in the world
• Energy crisis in Sub-Saharan Africa
• Energy crisis in Tanzania agro-food sectors
• Way forward

Energy crisis

• "High oil prices slam the door on prospects for economic development in poor countries. The poorest of the poor will not feel the immediate effects. The 747 million Africans who still use firewood and dung to cook their meals, do not have access to electricity, don’t take shared taxis to market and don’t have motorcycles to fill up with gas. The poor and working classes who are relatively better off will be bitterly squeezed by rising oil prices”.

• Africa has plenty of opportunities to exploit renewable energy resources, namely wind, solar and geothermal power.

• Renewable biofuel production is equally promising.

Estimated energy consumption in Sub-Saharan Africa (1990)

<table>
<thead>
<tr>
<th>Fuel(s)</th>
<th>World Million</th>
<th>Africa Million</th>
<th>Africa as % of world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOE EJ</td>
<td>TOE EJ</td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>1,610 68.8</td>
<td>25 1.1</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>2,740 117.1</td>
<td>85 3.6</td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>3,180 135.9</td>
<td>86 3.7</td>
<td></td>
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<tr>
<td>Hydro (b)</td>
<td>630 26.9</td>
<td>14 0.6</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>8,160 348.7</td>
<td>210 9.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Biomass</td>
<td>600 25.6</td>
<td>140 6.0</td>
<td>23.4</td>
</tr>
<tr>
<td>Total</td>
<td>8,760 374.3</td>
<td>350 15.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Population (million)</td>
<td>5,300 208.5</td>
<td>650 12.3</td>
<td></td>
</tr>
</tbody>
</table>

Estimated energy consumption in Africa by region

<table>
<thead>
<tr>
<th>Fuel</th>
<th>North Africa</th>
<th>Sub-Saharan Africa (excl.)</th>
<th>Rep. of South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOE EJ</td>
<td>TOE EJ</td>
<td>TOE EJ</td>
</tr>
<tr>
<td>Non-biomass fuels</td>
<td>80 3.4</td>
<td>47 2.0</td>
<td>83 3.6</td>
</tr>
<tr>
<td>Biomass fuels</td>
<td>20 0.4</td>
<td>126 5.4</td>
<td>4 0.2</td>
</tr>
<tr>
<td>Total</td>
<td>100 3.8</td>
<td>173 7.4</td>
<td>87 3.8</td>
</tr>
<tr>
<td>Percentag e</td>
<td>26%</td>
<td>49%</td>
<td>25%</td>
</tr>
<tr>
<td>Population (million)</td>
<td>114 17%</td>
<td>497 77%</td>
<td>39 6%</td>
</tr>
</tbody>
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Contd..

• World Bank estimates that poverty has increased as much as 6% in some parts of the world due to hike in oil prices in recent years
**Tanzanian situation**

- Tanzania’s national economy is dominated by agricultural sector
  - 40% GDP
  - 80% export earnings
  - subsistence agriculture (87%) live in rural areas depending on agriculture for their livelihood
  - Food crops: maize, paddy, sorghum and wheat
  - Cash crops: coffee, cotton, tobacco, tea, cashew nuts, pyrethrum and sisal (where most of village industries are based).

  Per capita income: 142 USD/year

Principal difficulties:
- Population growth
- Chronic shortage of fuel wood and charcoal
- Villagers attitudes
- Environmental degradation
- Soil infertility

**Energy sources**

- More than one-third of world population depends primarily on renewable sources of energy for cooking and heating.
  
  Tanzania is not an exception

- At industrial level (village industries)
  - Tobacco curing
  - tea drying
  - fish smoking
  - pottery
  - brick making
  - Brewing
  - Baking

  Tanzania is a country where wood-energy needs are on a collision course with the natural environment.

**Examples**

- There is a chronic shortage of fuelwood
  - in many parts of Tanzania, e.g. semi-arid regions (Arusha, Dodoma, Singida Shinyanga, Tabora, Kagera, Mwanza and Mara regions.
    - gathering more difficult as forests shrink
    - General shortage of fuelwood
    - To conserve the scarce fuelwood and charcoal energy resources that we have, strategies are needed

**Tobacco curing**

- Need to employ appropriate technology in
  1. Tobacco processing: accelerates deforestation through forest clearing for growing tobacco and demand for curing tobacco. If allowed to go unchecked negative effects will include land deterioration, infertility and desertification. Shifting cultivation in tobacco production worsens the situation.
  2. Application of energy conservation techniques in processing small-scale industrial products is essential
  3. Village cooperative approach to avoid shifting cultivation.

To cure a hectare of tobacco requires a hectare of savanna woodland.

Tobacco growing in Tanzania is expanding at a rate of 20% annually and the savanna is disappearing at that rate.

**Free wood**

- A tobacco crop should be able to finance its own fuel wood
  - Some households spend 50% of their income on fuel wood and charcoal and go 100 km round trip to gather firewood

**Brick burning and pottery**

- Arises from policy strategies from the government for better low cost durable houses in the village
Tea drying and fish smoking

- Tea production: 50% private, 49% by smallholders and 1% by Tanzania Tea Authority
- Main energy used in tea processing is fuel wood but oil and coal are also used (43,600 m$^3$/year obtained primarily from natural forests).
- Fish smoking (coast, inland waters and L. Victoria) with fuel wood or charcoal obtained from forest land

A ton of fish requires 0.2-0.3 m$^3$ of fuel wood or 15-20 kg charcoal

Local brewing and baking

- To produce 73,500 m$^3$ of mbege requires 1,470 ha savanna woodland
- For kangara, 32,175 m$^3$ of fuel wood are cut and burned annually,
- 334,149 tons of wheat required 45,791 m$^3$ of fuelwood

Strategies to combat fuel crisis

- Establishment of village woodlots
- Reafforestation
- Afforestation programmes (to conserve soil and water, especially in urban areas)
- Reducing national demand through appropriate pricing policies, improving the current supply of fuel wood through a more efficient charcoal-manufacturing process
- Reducing fuel wood consumption patterns by increasing the use of conventional fuels (petroleum and its byproducts)
- Increase supply and use of new and renewable energy sources

New and renewable energy

- Hydroelectric power (Major source in SSA accounting for 70%)
- Thermal electricity (oil/kerosene, coal)
- Electricity accounts for 10% of total energy consumption in SSA. This is interfered by power outage. Most of it absorbed by mining and processing industries (80%)
- Solar photovoltaic systems
- Wind generators
- Gasifiers
- Biogas

Tropics are endowed with solar energy that is awaiting exploitation and the use of solar ovens look ideal if it is cost-effective and adaptable to rural population, majority of whom are rural-based

Conclusion

- Energy policy for village industries should be formulated and should be an integral part of the total rural energy policy which should in turn be part of the national policy
- Solar ovens are one of the options for protecting the forests to save environmental degradation and increase availability of water for drinking, agriculture and thus development.
- This should now be time for action regarding increased use of solar power in all avenues where it proves beneficial

Thank you for listening