

*Bioenergy Strategy and policies Issues  
in the world.*

Author: Gladys Hernandez.  
CIEM. Cuba .  
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*Humanity is witnessing the beginning of a  
revolution in biosciences and engineering that  
will transform life during this century.*

- Bioenergy resources such as woody crops, biomass residues and wastes already provide about 14% of the world's primary energy supplies. For the future, bioenergy offers cost-effective and sustainable opportunities that have the potential to meet up to 50% of world energy demands during the next century,

*These future changes largely depend on how wisely and effectively people can work together  
national partnership*

- This is not only a challenge to increase the nation's use of biobased products and bioenergy in a short period.
- is a challenge to the way people do business—to the way, people see their roles and relationships

*Bioenergy is a more complex renewable energy system than other renewable energy systems*

- In addition to this basic technological complexity, the authorities are confronted with multiple uncertainties about the potential of expanding bioenergy based on mostly undeveloped feedstock supply systems.

*Bioenergy is currently being asked to compete on an uneven playing field where its fossil fuel competitors are heavily subsidized*

- There is no generally available market established for energy crops and agricultural residues. Most of the infrastructure required to support a renewable energy fuel cycle dependent upon farm produced feedstocks has yet to be developed.

### **The Challenges:**

- To advance science and develop technologies to overcome difficulties posed by the complexity of biomass resources and processes.
- To coordinate government policies to meet the national and international goals.
- To accelerate the commercialization of new and emerging technologies and products to meet the national goal.

## ***The Challenges:***

- To ensure that new technologies and increased use of biomass will not adversely affect land, water, air, and public health, but rather provide environmental benefits.
- To provide information for institutions, enterprises, industry, farmers, landowners, and the people in general that will help them understand biobased products and bioenergy
- To coordinate efforts to encourage the growth of an integrated industry.

## **Bioenergy Strategies**

***Bioenergy and environment***



- Monitor and evaluate the environmental and ecosystem impacts of biobased products and bioenergy systems at all stages of development.
- Identify and foster R&D on biobased products and bioenergy areas that have substantial potential to replace fossil-based fuels.
- Establish specific committees with broad public representation and open processes to oversee environmental monitoring and evaluation, in-field biomass production,

*R&D and Human resources*

- Strengthen and integrate basic scientific research programs and complementary competitive grant programs across the nations and their laboratories, academic institutions, and private-sector firms.
- Enhance human resource development to support scientific R&D programs.
- Strengthen partnerships between the public and private sectors.
- Evaluate biobased products and bioenergy R&D portfolio to identify gaps in frontier science and technology.

*Market and other policies*

- Incentives to stimulate the creation and early adoption of technologies needed to make biobased products and bioenergy competitive with fossil-fuel-based alternatives
- This may include tax incentives, environmental offsets, risk mitigation mechanisms in early deployment, buy-down mechanisms, and others.
- Identify existing state authorities that can be used to facilitate early adoption of biobased technologies and products.
- Link environmental benefits of biobased products and bioenergy to public policy development.

*Assistance and R&D.*

- Promote the deployment of technologies with important local and global environmental benefits.
- Recognize technologies with local or regional economic benefits or employment opportunities that contribute to a secure energy supply.
- Examine the implications for embedded generation and the role of utilities in deployment of bioenergy products and services.
- Encourage deployment of bioenergy products and services in developed and developing countries.