

Energy Security of Odisha and Role of Forest

By

Prof. Haribandhu Panda, Ph.D.



**HDF School of Management
Bhubaneswar**

Plan of Presentation

- Introduction
 - Conceptual Framework for State Level Energy Security
 - Potential of Forests for Energy Security
 - Potential of Non-forest Based Biomass for Energy Security
 - Concluding Remarks
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Introduction

- Presently, Energy-wise Odisha is Insecured
 - Demand:Supply Gap of Commercial Energy
 - Unsustainable Use and Misuse of Biomass
 - Comparative Advantage of Primary Energy Resources of the State can Bring Sustainable Energy Security
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Introduction

- Demand:Supply Gap of Electricity
 - With peak power supply of 3120 MW, power deficit of 2.1% and energy deficit of 0.9% in 2009-10.
 - 27% rural HH electrified (March 2008)
- Unsustainable Use and Misuse of Biomass
 - Dwindling quality of forest
 - Increasing Distance traveled to acquire fuel-wood
 - Inefficient and polluting chullahs

Introduction

- Effect of air pollution due to chullahs

“About one-third of the adults and half of the children in the survey had experienced symptoms of respiratory illness in the 30 days preceding the survey, with 10 per cent of adults and 20 per cent of children experiencing a serious cough” (Duflo, et al, 2008).

Introduction

Comparative Advantage of Primary Energy Resources

- Coal reserve 65,353 million Ton, R/P of 0.13% in 2006-07 (OES, 2008-09)
 - Large-hydro electric capacity of 2142 MW and small hydro (up to 25 MW) potential of 295.47 MW
 - Biogas potential 6 lakh family size plant (40% realised)
 - Biomass potential (8 million Ton/year)
 - Improved Chullah potential 55 lakh
 - Biomass power potential 350 MW (Small fraction realised)
 - Solar PV potential 14000 MW (Small fraction realised)
 - Wind power potential 1700 MW (Small fraction realised)
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Conceptual Framework for State Level Energy Security

- Electricity GSDP Linkage (2006/07)

State	kWh/capita/year	GSDP/capita (Rs)
Odisha	665	19407
WB	397	29440
Kerala	441	37372
India	672	31605

(Ref: TEDDY 2010)

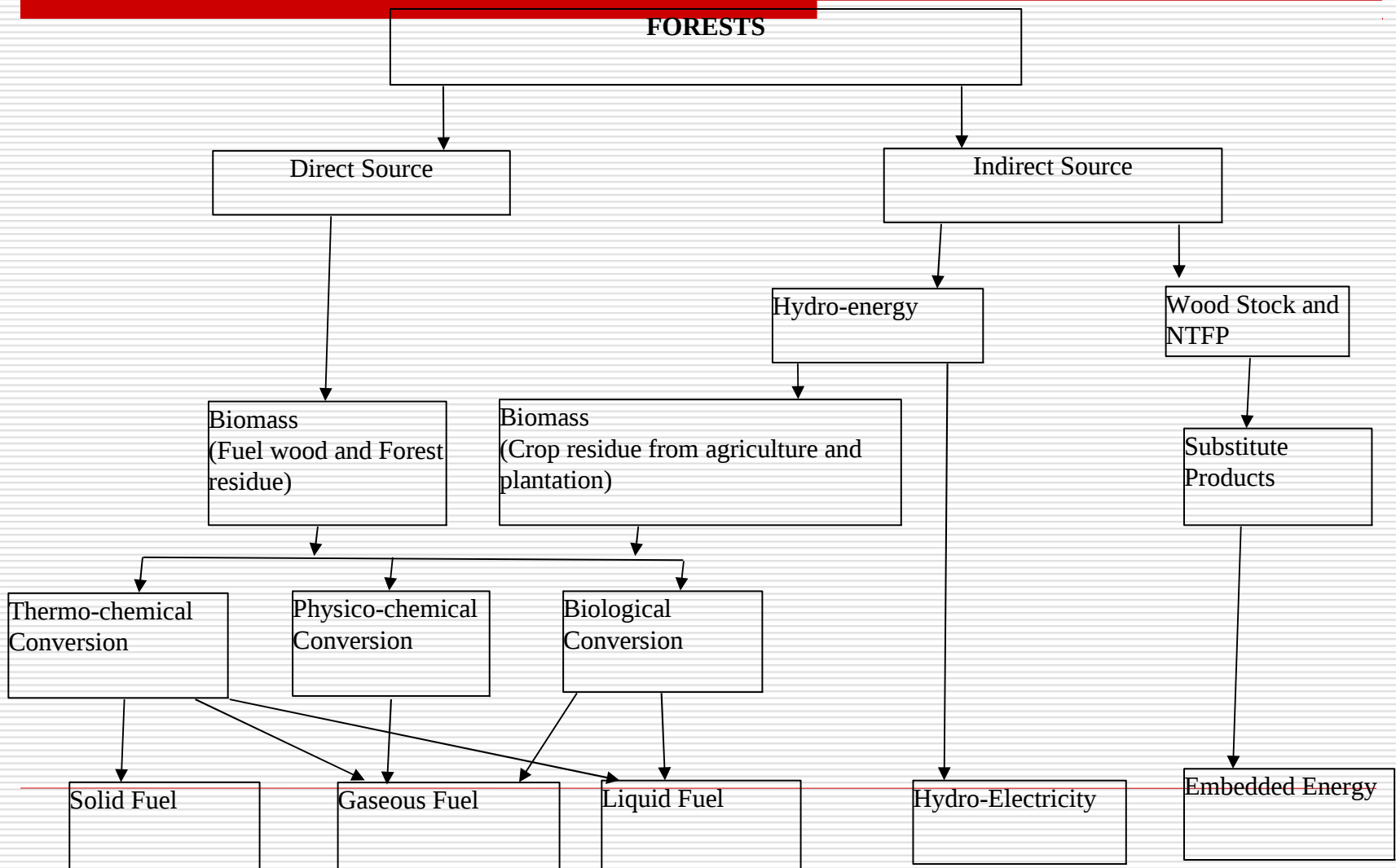
Conceptual Framework for State Level Energy Security

- Energy security includes
 - availability of a variety of energy sources of large quantity,
 - right quality and
 - affordability of energy with its spatial and temporal dimensions
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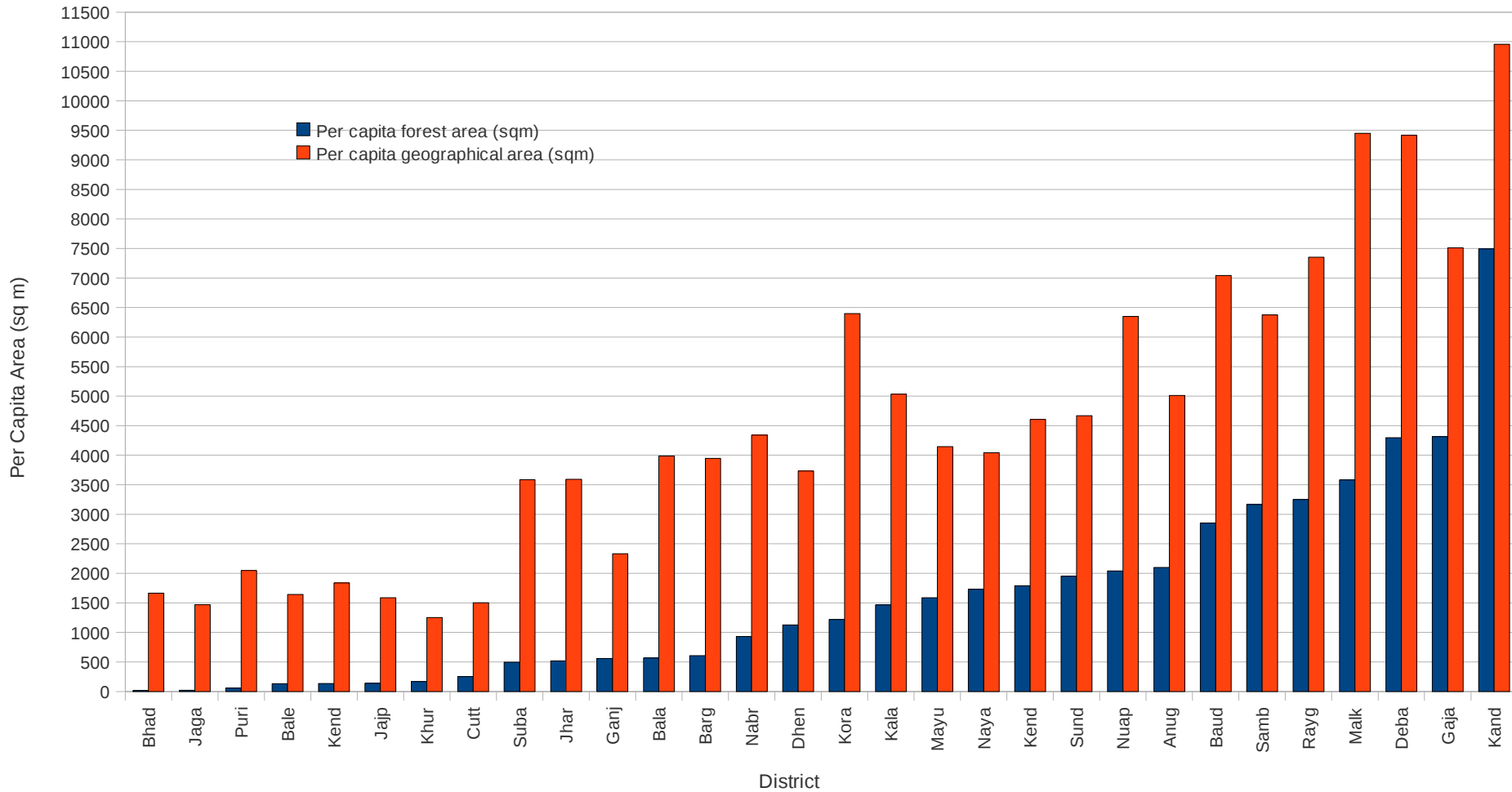
Conceptual Framework for State Level Energy Security

- Domestic per capita per month electricity consumption (NSSO 66th Round, 2010)
 - Rural: 8 kWh
 - Urban: 24 kWh
 - Any large scale increase will have severe implications of availability and affordability !!
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Potential of Forests for Energy Security



Potential of Forests for Energy Security



Potential of Forests for Energy Security

District	Potential Fuelwood Production/Consumption
Baleshwar, Bhadrak, Jajpur, Jagatsinghpur, Kendrapara, Cuttack, Khurdha and Puri	< 1
Ganjam, Balangir, Bargarh, Jharsugda, Subarnapur, Dhenkanal and Mayurbhanj, Kendujhar, Sundergarh, Nabrangpur and Kalahandi	1 to 3
Kandhamal, Gajapati, Malkangiri, Debagarh, Rayagada, Baudh, Sambalpur, Anugul, Koraput, Nuapada and Nayagarh	> 3

Potential of Forest and Non-Forest Based Biomass for Energy Security

- Forest Residue 20.8 MT
 - Crop residue 25.2 MT
 - Municipal waste 0.5 MT
 - Agro-industrial waste 5.5 MT
 - Bovine dung 27.9 MT
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Estimated Annual Domestic Consumption of Energy in Odisha, 2011

(NSSO, 66th Round)

Type	Quantity (Rural)	Quantity (Urban)	Quantity (Total)
Fire Wood and Chips (million kg)	7912.7	98.7	8011.4
Kerosene (million lit)	185.0	9.3	194.2
Electricity (million kWh)	2284.9	1722.6	4007.5
LPG (million kg)	19.85	90.99	110.84

Concluding Remarks

- Energy security of Odisha should be based on resources it has
- It can be around biomass, solar, hydro, wind and coal
- Its biomass energy resources can sustainably meet state's rural domestic cooking energy and partly rural electricity and partly industry's thermal energy need.

Concluding Remarks

- Without agricultural biomass and cattle dung
 - coastal districts: Baleshwar, Bhadrak, Jajpur, Jagatsinghpur, Kendrapara, Cuttack, Khurdha and Puri have large deficit to meet their cooking energy need.
 - Ganjam, Balangir, Bargarh, Jharsugda, Subarnapur, Dhenkanal and Mayurbhanj Kendujhar, Sundergarh, Nabrangpur and Kalahandi will slide to vulnerable condition unless forest conservation initiative is taken up vigorously.
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Concluding Remarks

- Districts having low forest residue have significant amount of crop residue.
- District specific biomass security plan must be developed and it should be compatible with government's subsidised provision of LPG, kerosene, electricity, biogas plant and solar energy in rural areas.
- Diffusion of advanced biomass based technology through strengthening of innovation triangle is the need of the hour

Concluding Remarks

- Odisha must have a policy to move away from present petroleum based energy centric development to coal and other renewable energy centric energy dependent system.
 - Co-management of energy, water and forest needs to be undertaken.
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THANK YOU
