

BIOMASS ENERGY R & D FRAMEWORK OF ITDI

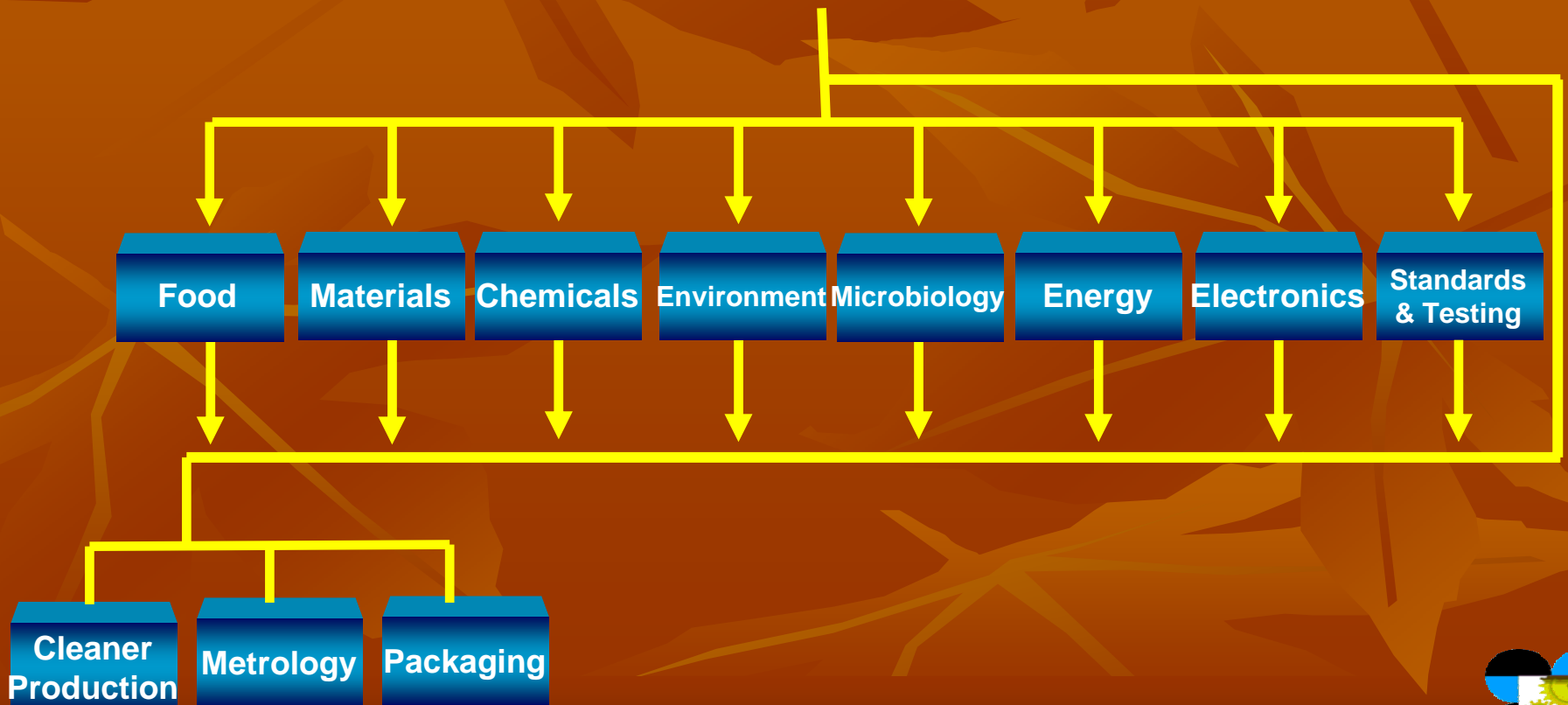


**Industrial Technology
Development Institute**

**DEPARTMENT OF SCIENCE & TECHNOLOGY
PHILIPPINES**

ITDI ORGANIZATIONAL STRUCTURE

Director			
Deputy Director for R&D		Deputy Director for ATS	
Economics & Planning	Technology & Information	Financial Management	Administrative



Mandate

Research & Development

Technology Transfer



Technical Services



FPD & MSD



MGD



NML, OD, ODD, EPD, FMD, ADM



CMD

ITDI Divisional Buildings at DOST Compound



STD



EnD



FED



EPCD & RTID

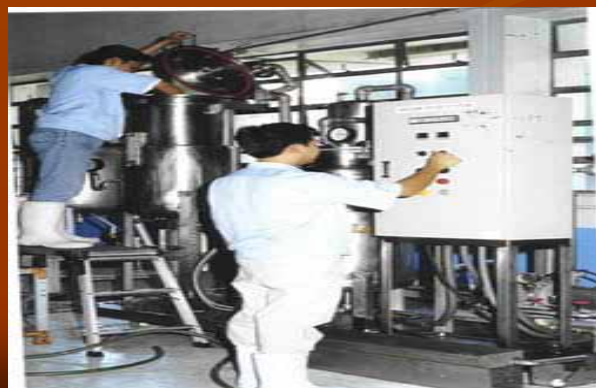
R&D LABORATORIES

- Industrial Microbiology
- Corrosion Control
- Fuels & Energy
- Process Lab for PCB fabrication
- Plastics Testing & Processing
- Surface Coatings
- Materials Characterization
- Glass/Glass
Ceramics/Advance
Ceramics/Concrete
- Inorganic & Organic
Chemicals Labs
- Pharmaceuticals Lab
- Chemical, Physical,
Biological & Metrology Labs



PILOT PLANT & OTHER FACILITIES

- Food Enterprise Modules
- Non-food Enterprise Modules
- Centralized Hazardous Waste Handling Facility
- Materials Processing (Ceramics, Glass, Plastics, Inorganic Minerals)
- Vegetable Oil/Seed Oil Extraction Plant
- Oil Refining System
- Coco Oil & Rice Bran Oil Processing
- Lab Scale Two Stage Aerobic Wastewater System
- Soap & Detergent Plant

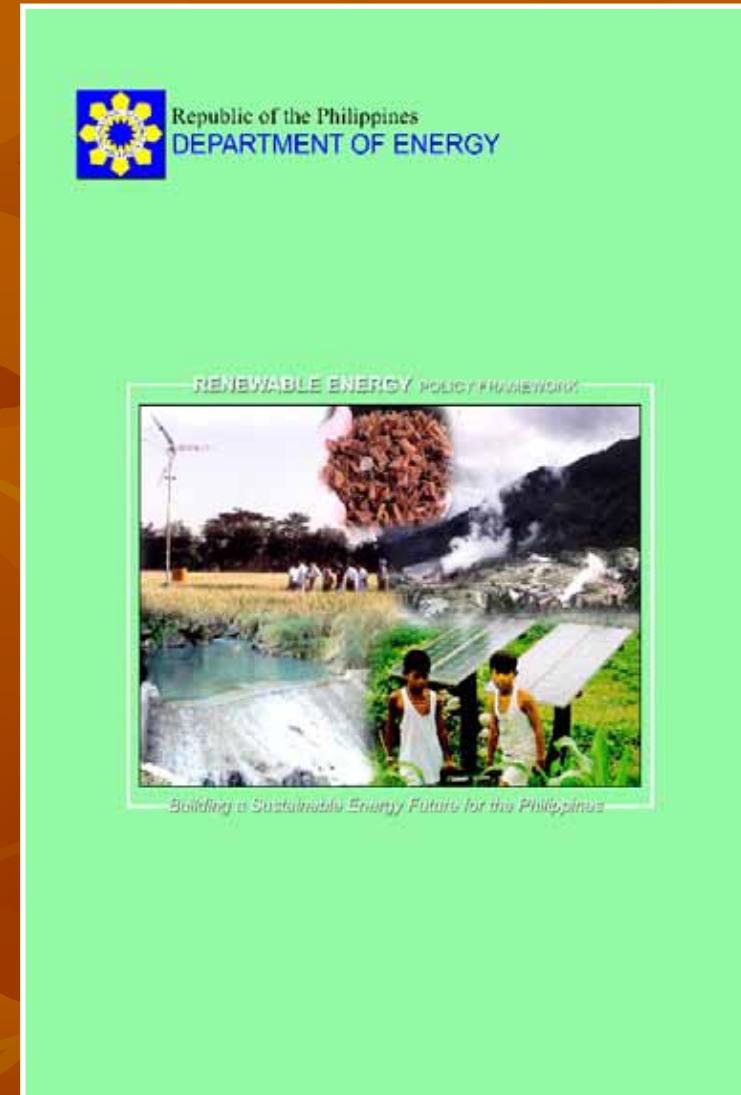


Why Biomass?



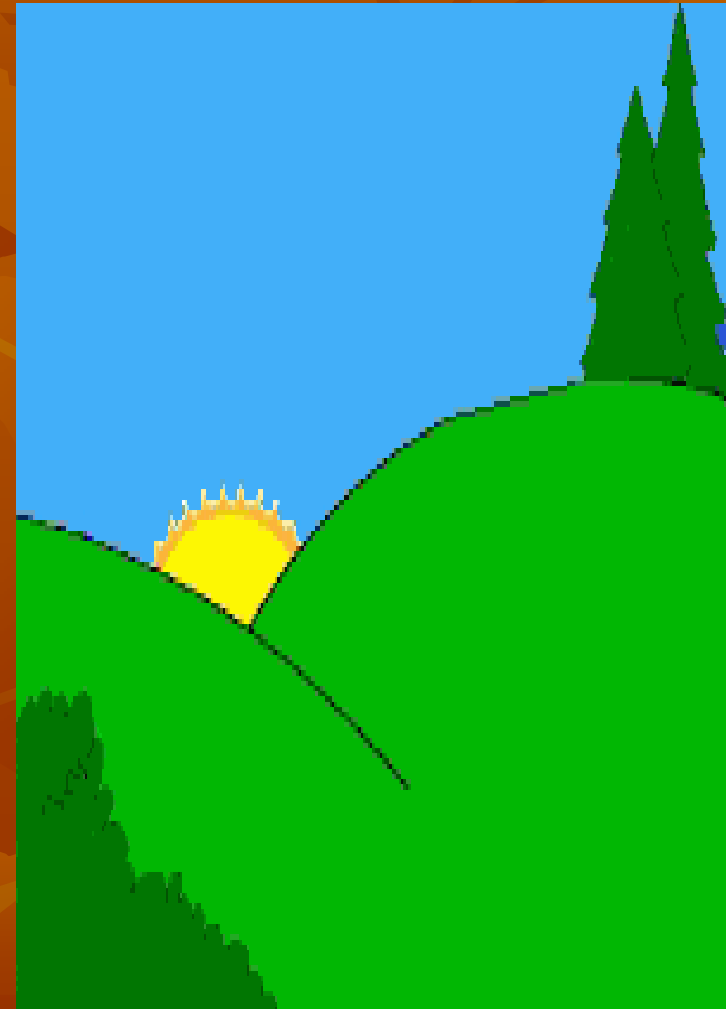
Overall Policy for RE Development

- Renewable Energy Policy Framework launched in August 2003
- Policy bias towards the development and utilization of renewable energy
 - Promote more private sector participation in RE development
 - Encourage the use of renewable energy in rural development & off-grid electrification
 - RE projects given “priority” for special incentives



REPF TARGETS

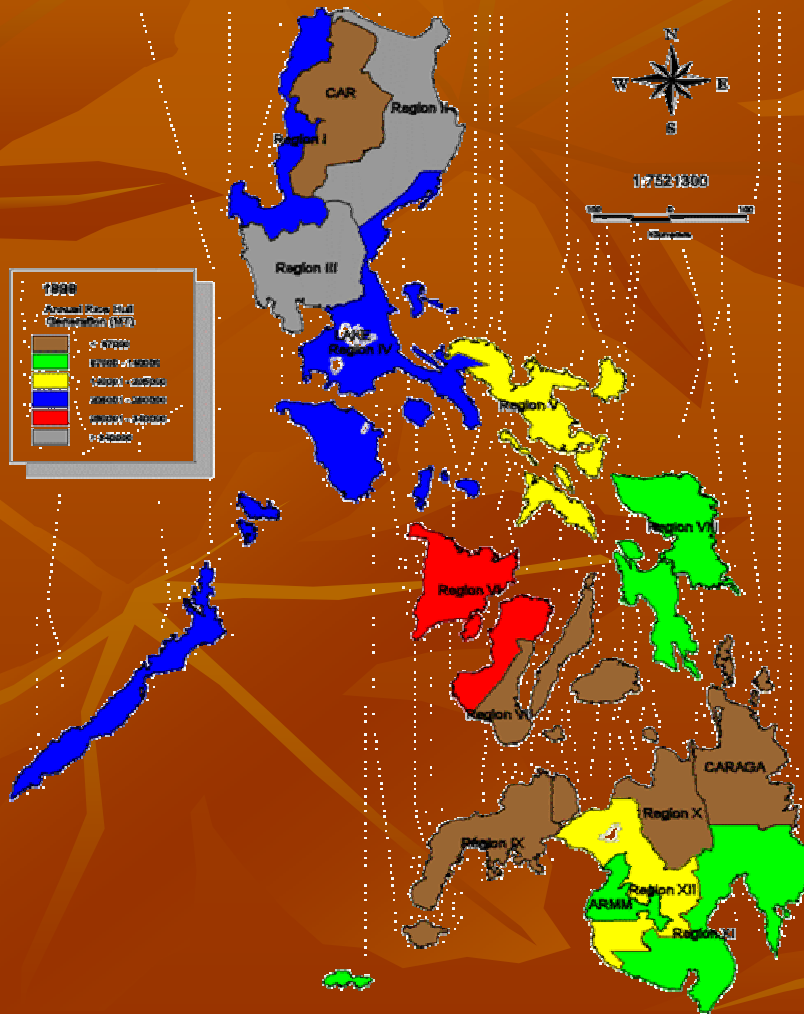
- Increase RE-based capacity by 100%
- Be the No.1 geothermal energy producer in the world
- Be the No. 1 wind energy producer in SE Asia
- Double hydro capacity
- Be the solar cell manufacturing hub in ASEAN
- **New contribution of biomass, solar and ocean by 100 MW**
- Increase non-power contribution of RE to the energy mix by 10 MMBFOE within the next ten years



RENEWABLE ENERGY RESOURCES

Biomass Potential

Biomass Potential



■ Sugar Cogeneration

- 39 mills spread over 16 provinces w/ an average of 4,600 tons of canes per day
- US NREL Study: 540 MW potential

■ Ricehull Power

- Annual production of 45.17M tons equivalent to over 4 million barrels of oil
- US NREL Study: 360 MW potential

■ Coconut Residues

- Few opportunities for heat and power
- UNDP/ESMAP: 20 MW grid potential

■ Project in Victorias Milling developing 50 MW Bagasse-fuelled plant Solid Waste

- 30 MW Bagasse-fuelled plant (Talisay Bio-Energy)



RENEWABLE ENERGY

Biomass Energy

- **Abundant supply**
- **Sustainable energy resource**
- **Presence of expertise and some facilities at ITDI**
- **Several conversion technologies can be tapped (densification, anaerobic digestion, esterification, fermentation, pyrolysis, combustion, gasification)**



BIOMASS ENERGY R & D PROGRAM

**BIOFUELS
PROGRAM**

**ALTERNATIVE
ENERGY
SYSTEMS
PROGRAM**



BIOFUELS PROGRAM



Ethanol

Jatropha



R & D Activities

Biodiesel

- Preparation of an Economic Feasibility Study for Commercial CME Production Using ITDI Technology
- Production of Biodiesel Using Other Cost Effective Raw Materials (e.g. used cooking oil, jatropha, etc.)
- Comparative Study of Commercial CME Producers (Benchmarking)



R & D Activities

BioEthanol



**ALCOHOL
FERMENTATI
ON**

**ALCOHOL
DISTILLATION**

**WASTEWATE
R
TREATMENT**

Ethanol

ELECTRICITY

METHANOL



R & D Activities

BioEthanol

- Identification of Process Improvements in Existing Alcohol Distilleries
- Preparation of a Set-Up for Alcohol Production
- R & D Studies on Ethanol Production Using Other Raw Materials



ALTERNATIVE ENERGY SYSTEMS PROGRAM

- **Charcoal Briquettes**
- **Biogas for Industries**
- **Biomass for Steam
and Power Generation**
- **Co-Firing of Coal and
Biomass**



ALTERNATIVE ENERGY SYSTEMS PROGRAM

Charcoal Briquettes

- Develop a Manual on the Production of Charcoal Briquettes

Biogas for Industries

- Evaluate ITDI UASB Technology vis a vis commercial technologies (e.g. use of HDPE)
- Develop a Manual on Biogas Production
- Methane Capture from Industrial Systems



ALTERNATIVE ENERGY SYSTEMS PROGRAM

Biomass for Steam and Power Generation

- Comparative Study on the Different Biomass Conversion Technologies (Combustion vs Gasification)

Co-Firing of Coal and Biomass

- Development of Co-Firing Scheme Using Coal and Biomass



ADVANCED ENERGY STUDIES

- Optimization Studies on the Production of Alternative Fuels from Biomass (Hydrogen, DME)
- Application Studies on MicroTurbines and Stirling Engines Using Biogas and Producer Gas
- Biomass Liquefaction
- Pyrolysis of Biomass





Thank You!

