

Renewable Energy in Mississippi

Sumesh Arora, Ph.D.

NNSP
October 6, 2011
Jackson, MS



Strategic Biomass SolutionsTM

www.technologyalliance.ms

MISSISSIPPI TECHNOLOGY ALLIANCE



MTA Mission:

...To Drive Innovation
and Technology based Economic
Development.



HPiIES

*MTA Mantra: “Drive Innovation to
Market”*

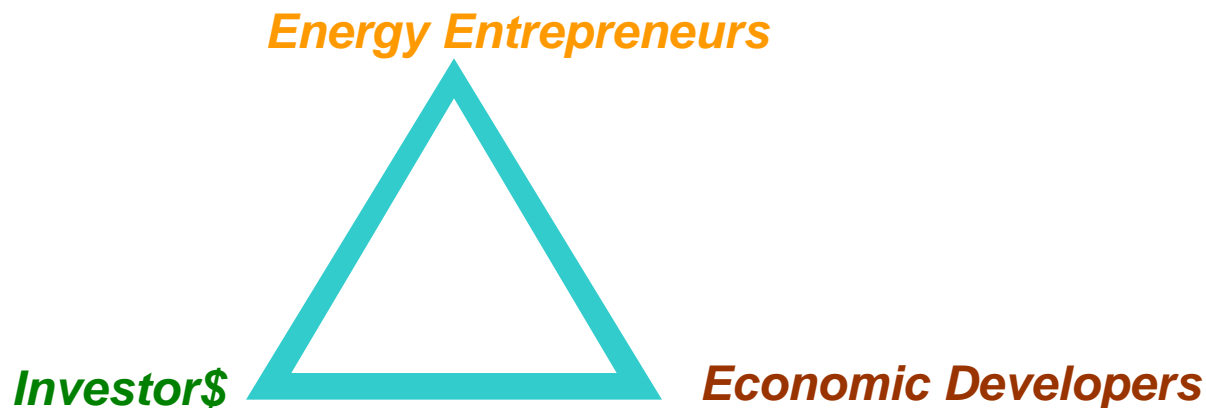
High Performance Innovation Intensive Enterprises

MTA is a private, non-profit Economic Development Organization



Strategic Biomass Solutions™

- Help commercialize renewable energy technologies by making them investor ready.



- SBS is funded in part by the U.S. Department of Energy.



Strategic Biomass Solutions (SBS) Portfolio

- 50+ entrepreneurial ventures (> \$500,000,000)
- 21 projects (> \$3,000,000)
- 6 Universities
 - (MSU, USM, UM, JSU, U Arkansas, U Michigan)
- 9 States (MS, AR, TN, KY, MO, IL, MI, NC, GA)



SBS Services

- Business Plan Review
- Project Evaluation/Feasibility Studies
- Access to capital (Seed, Angel, Grants)
- Supply chain logistics analysis
- Energy efficiency
- **Renewable Energy Venture Development Academy**

Connecting entrepreneurs, investors, and economic developers



Strategic Biomass Solutions™



First Annual Mississippi Renewable Energy and Energy Efficiency Report

A snapshot of related activities in the State of
Mississippi

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Joseph A. Linton, M.S.

May 11, 2011



Strategic Biomass Solutions™

www.mta.ms/biomass

Helping commercialize renewable energy technologies

Download the
full report
from
www.mta.ms



Current Information

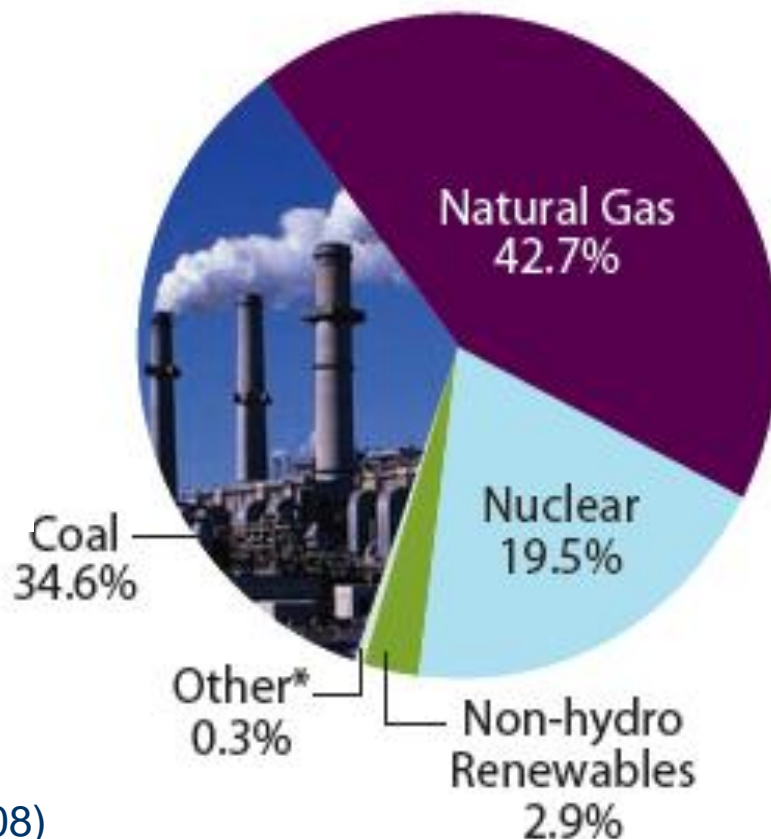
- Mentions 175 projects
 - Biomass based energy (52)
 - Solar energy (38)
 - Energy efficiency (82)
- Projects are a mix of funding types
- Research
- Stakeholder organizations
- Current policy



Mississippi's Power Generation

Mississippi relies on coal for more than a third of its in-state electricity generation, and imports more than 70 percent of that coal.

* "Other" includes oil, municipal solid waste, tires, propane, or other manufactured and waste gases from fossil fuel.





Timber Cover

- 30.5 million acres of productive land
- 65% covered by forest
- 77% privately owned

Data from Mississippi Institute of Forest Inventory (MIFI)

Legend

- Hardwood Timberlands
- Pine Timberlands
- Open Lands
- Water
- ★ Jackson, MS
- County Lines

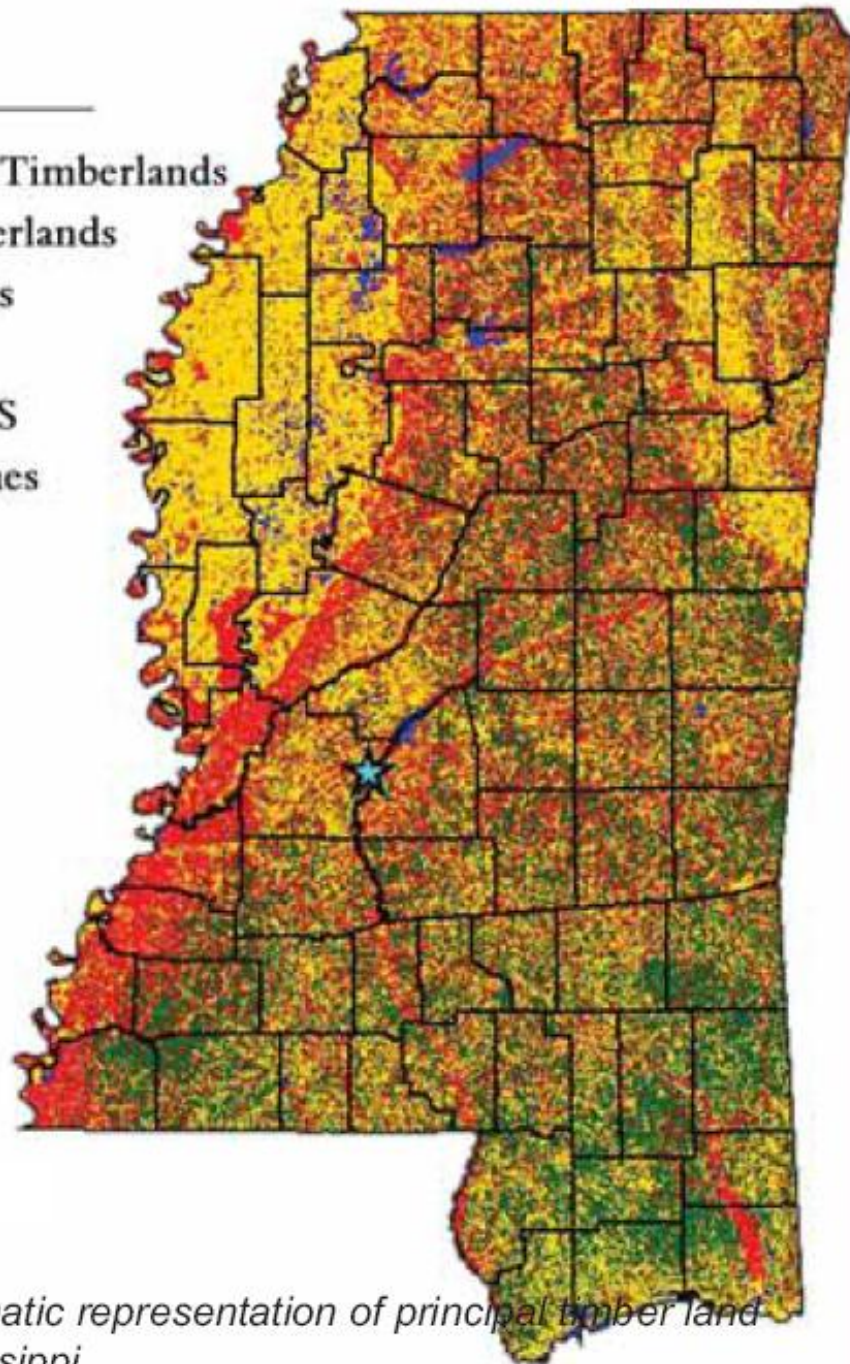


Figure 1. Thematic representation of principal timber land cover for Mississippi.



RE Commercial Activity

- KiOR
- Enerkem
- BlueFire Renewables
- Elevance Renewable Sciences
- HCL Cleantech
- Scott Biodiesel
- Eagle Green Energy
- Stion Solar
- Twin Creeks
- CaliSolar
- Soladigm
- Bunge-Ergon Vicksburg
- Enviva Pellets
- New Biomass Energy



Technologies

- Acid hydrolysis
- Anaerobic digestion
- Biomass catalytic cracking
- Fast pyrolysis
- Fermentation
- Gasification
- Silicon production
- Metathesis
- Pellets
- Solar panel (thin film and crystalline manufacturing)
- Torrefaction
- Trans-esterification



Strategic Biomass Solutions™

Poultry Litter Anaerobic Digester

Eagle Green Energy



Prentiss, MS



Solar Energy



- Widespread throughout Mississippi
- Variety of applications
 - Residential
 - Agricultural
 - Academic
- PV Manufacturing (Twin Creeks, Stion, CaliSolar)



Solar Power in Mississippi



Source: Mississippi Business Journal/Miss Solar



Houston, MS Champions





Research

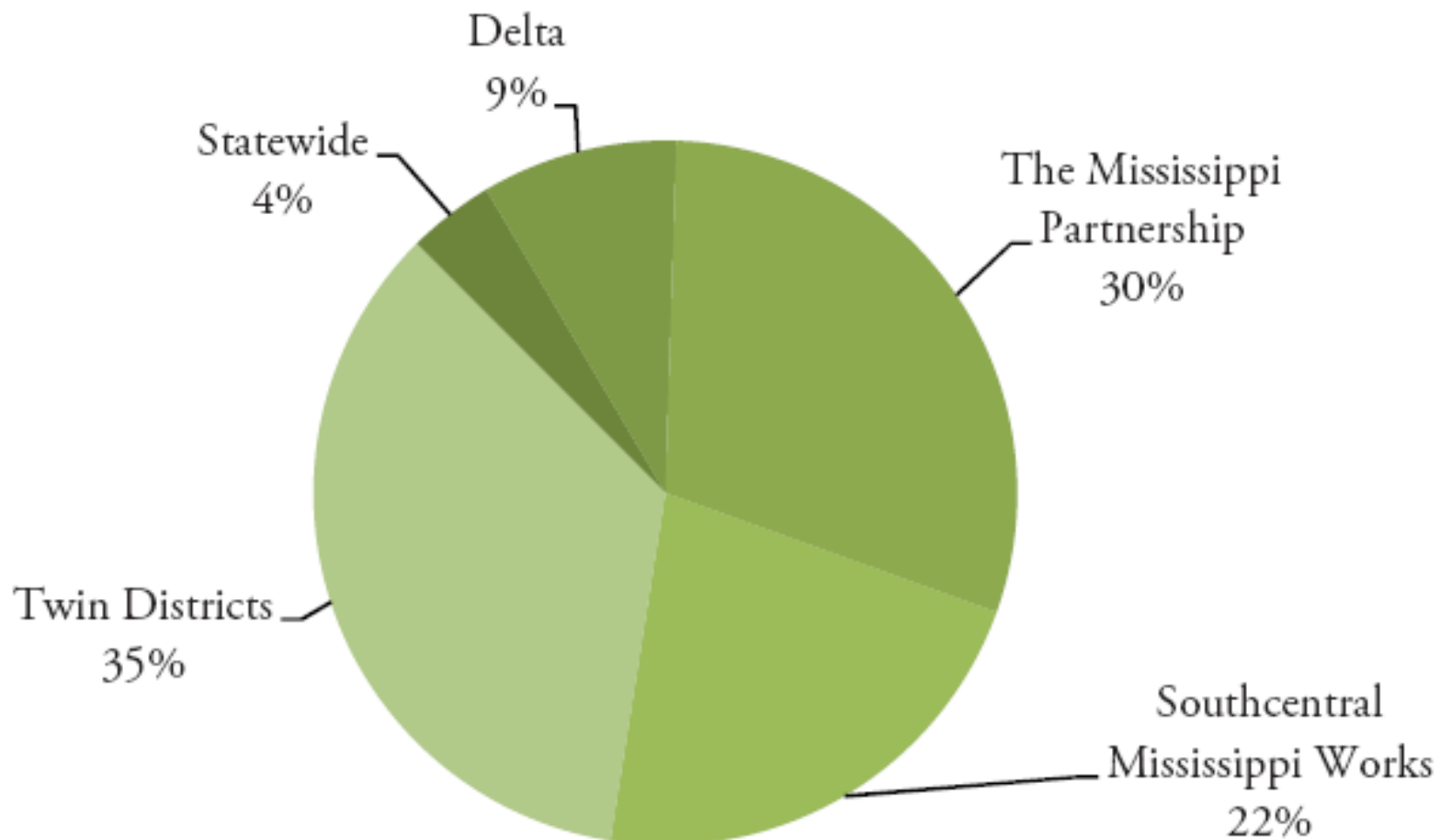
- Sustainable Energy Research Center
- Institute for Clean Energy Technology
- Combined Heat and Power Center
- Industrial Assessment Center
- National Center for Natural Products Research
- Small Farm Development Center
- National Center for Physical Acoustics
- Mississippi Polymer Institute
- USDA-ARS Research Center



Policy and Outreach

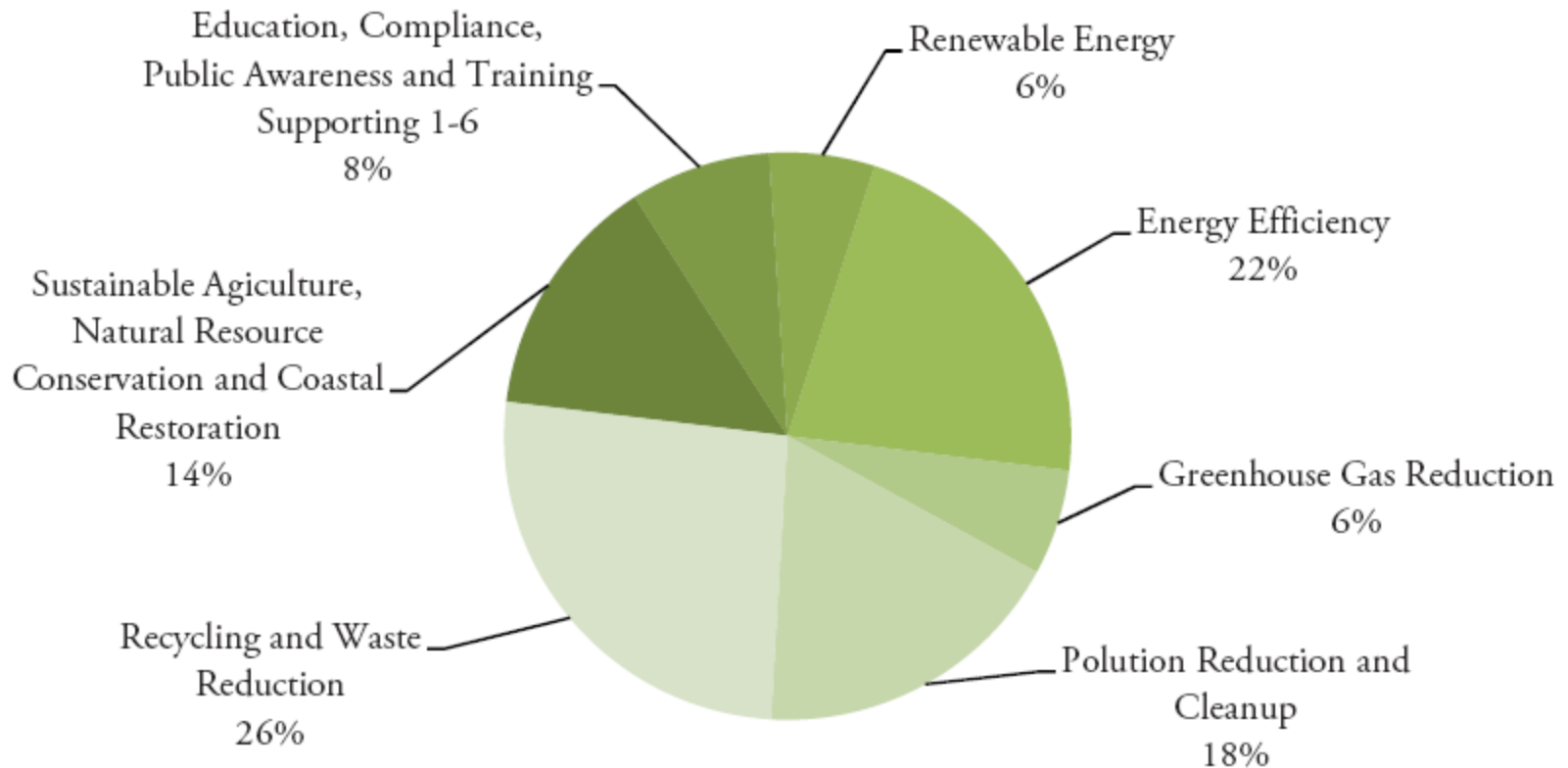
- Advance Mississippi
- LA-MISS Green Jobs Consortium
- MS BIO
- MS Biomass and Renewable Energy Council
- MS Development Authority – Energy Division
- Mississippi Energy Policy Institute
- MS Energy Workforce Consortium
- MS Technology Alliance – Strategic Biomass Solutions
- U.S. Green Building Council (Miss Chapter)

Mississippi's Primary Green Jobs by Workforce Investment Area



Source: Miss Dept Employment Security (MDES)

Mississippi's Primary Green Jobs by Activity Category



Source: Miss Dept Employment Security (MDES)

Mississippi's Primary Green Jobs as a Share of Regional Employment

Work Force Investment Area	Primary Green Jobs	Employment ⁱ	Percent Primary Green Jobs
Delta	1,516	100,104	1.5
The Mississippi Partnership	5,297	274,508	1.9
Southcentral Mississippi Works	3,783	315,550	1.2
Twin Districts	6,049	354,468	1.7
Totalⁱⁱ	17,360	1,083,896	1.6

ⁱ Employment data from Mississippi QCEW 2010 2nd Quarter

ⁱⁱ Employment figures in the total row exceed the sum of regions due to inclusion of establishments not assigned to a Work Force Investment Area.



Top Ten Industry Sectors by Number of Primary Green Jobs



Source: Miss Dept Employment Security (MDES)



Economics of Energy Efficiency

- Reducing the state's electricity use by just **ONE percent** (1%) annually could save consumers:
\$18 Million in the first year alone
- Avoid as much as \$13 Million of coal imports (value of imported coal burnt in 2008 was \$457 million)



Investment and Jobs Scenario

- Current Scenario:
 - ~\$150 million investment as of May, 2011
 - Over 1,000 direct and indirect jobs
- Plans for the Future
 - New investments around \$3 Billion over next 5 to 10 years
 - 2,000 or more direct and indirect jobs



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Learn How to Assess Risk in:

- Technology
- Markets
- Finance
- Management
- Execution

REVDA

RENEWABLE ENERGY VENTURE DEVELOPMENT ACADEMY

Course Schedule:

October 5, 2011: MSU BIOFUELS CONFERENCE; Starkville, MS

February 13, 2012: Renewable Energy World Conference
Long Beach, California.

<http://www.renewableenergyworld-events.com/index.html?ID=7611>



Strategic Biomass Solutions™

Investing in renewable energy is like investing for your retirement....

You must **diversify** and you **can't wait** till you are about to retire!

© Arora



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