Thailand Biomass Open Research Center

Paritud Bhandhubanyong

Panyapiwat Institute of Management, Thailand

1. Introduction of Thailand

THAILAND

Location	ASEAN
Surface Area	320.7 million rai*
Agricultural Area	130.3 million rai
Plantation Area: Rice	69.1 million rai
Rubber	16.3 million rai
Cassava	7.4 million rai
Sugarcane	6.6 million rai
Oil Palm	3.4 million rai

RICE:
- World Top Exporter since 1981
- In 2007, Export 9.19 M.ton of milled rice
- Share market 29%

SUGAR
- The 4th of world producer
- 70% of sugar production for export
- The 2nd of world exporter

*1 rai= 1,600 m^2 or 513,000 km^2

Source: http://en.wikipedia.org/wiki/File:Location_Thailand_ASEAN.svg and http://www.oae.go.th

Development of Biofuels: Royal Projects

His Majesty the King has applied his idea of "Self – reliance" to the development of alternative energy. This is evident in his far-sighted organic fuel research and in experimental efforts initiated and continued under his numerous development projects.

ETHANOL

1985	HM the King Bhumibol Adulyadej's Chitralada Project started a project to distil fuel for gasohol production
2000	The Cabinet approved in principle the project to produce alcohol from plants and establish the National Ethanol Committee
2001	The commercial sale of gasohol started in Thailand

Accompanied by H.R.H. Princess Maha Chakri Sirindhorn, His Majesty inaugurated alcohol transformation facilities under the Royal Chitralada Projects on May 1986.

Development of Biofuels: Royal Projects

2000	**HM the King Bhumibol Adulyadej's Chitralada Project studied on the use of palm oil as fuels in agricultural machinery**
2004	**HM the King Bhumibol Adulyadej's Chitralada Project started a project to produce biodiesel**
2005	**The commercial sale of biodiesel started in Thailand**

In 1983, His Majesty the King suggested that the Prince of Songkla University build a small palm oil refinery at the Aeo Luk Nikhom Cooperatives in Krabi. He also had a small palm oil refinery, with a daily capacity of 100 liters, constructed at the Pikul Thong Education Development Centre in Narathiwas.

BIODIESEL

National Alternative Energy Plan (2008-2022)

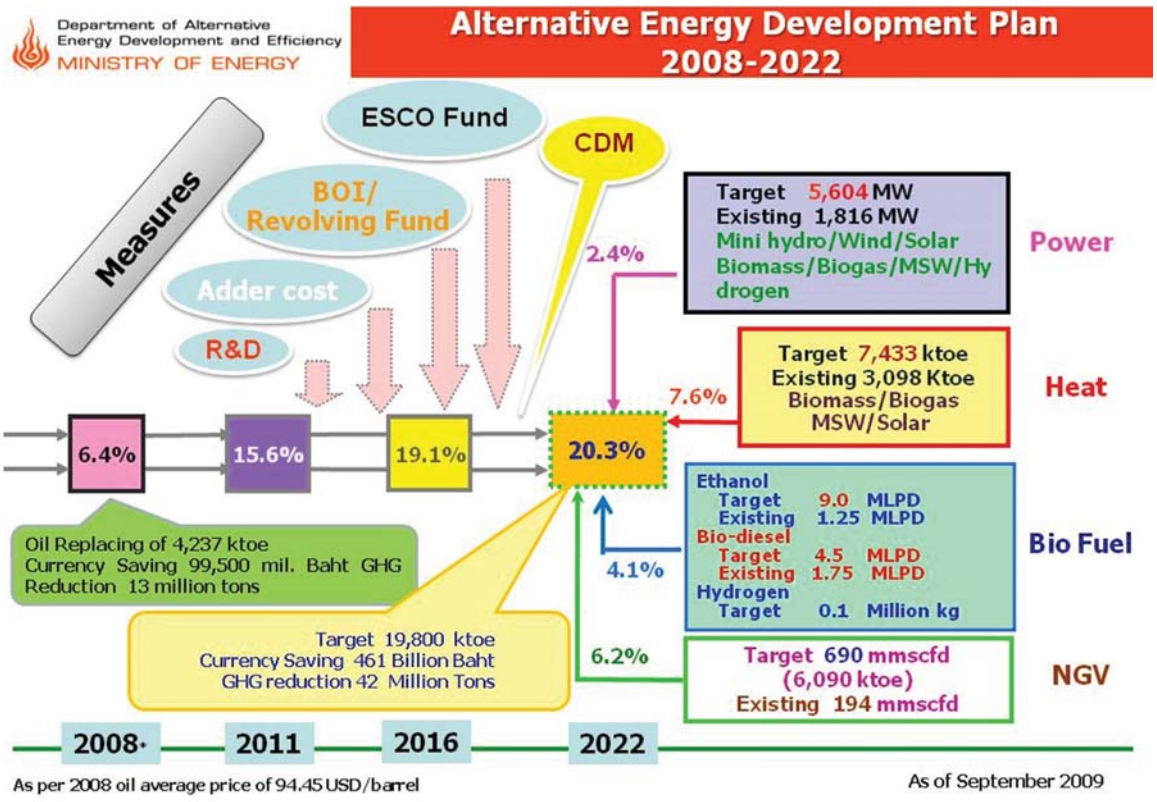
Objective:

1. To use mainly alternative energy instead of importing energy
2. To enhance the energy security in supply energy for the country
3. To promote the implementation of green community energy
4. To support the local manufacturing of alternative energy technology
5. To promote the R&D on the high efficient technology for alternative energy production

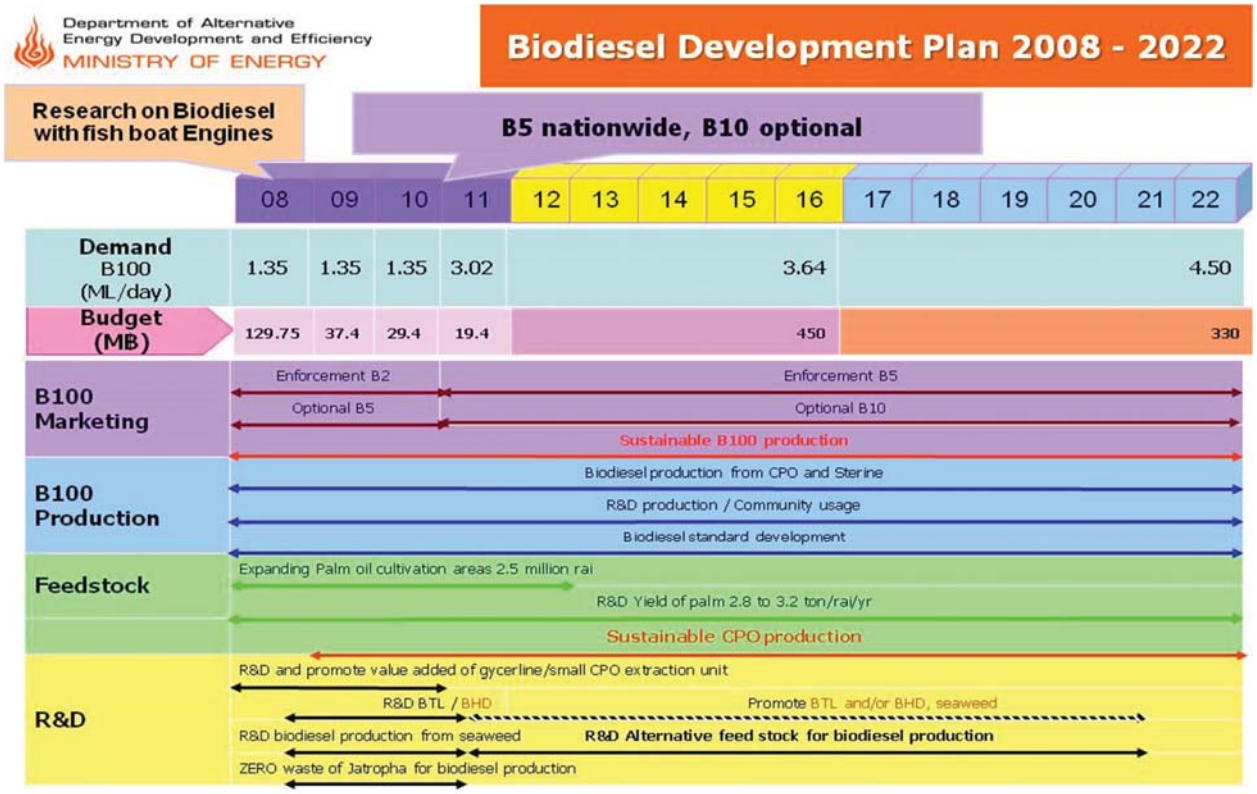
Target in 2022:
20% of final energy consumption

- 2.4 % Electricity generation
- 7.6 % Heating generation
- 4.1 % Liquid biofuels: Ethanol and Biodiesel
- 6.2 % NGV

Source: EPPO



Source: DEDE, Ministry of Energy

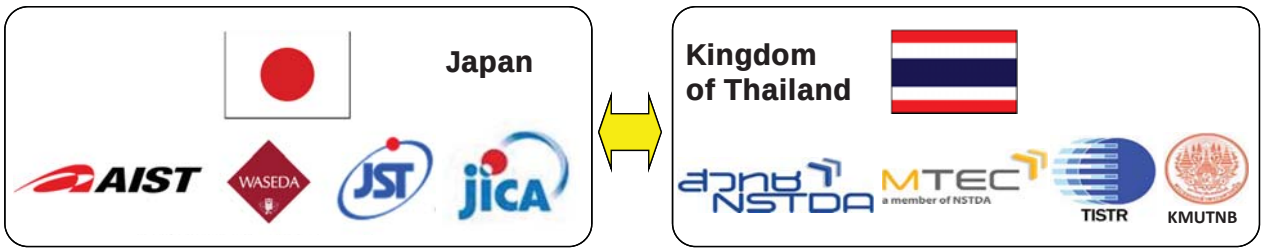


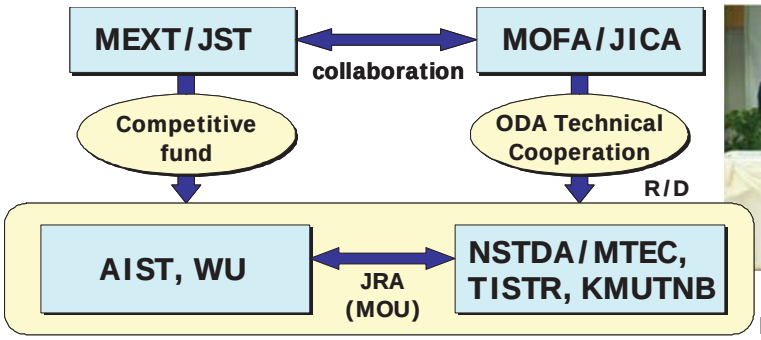
Source: DEDE, Ministry of Energy

International Collaboration

- ERIA project on Biofuel standardization
  - East Asia Standard for BDF standard
- JICA/JST R&D project on Biomass to Liquid
  - Project on "*Innovation on Production and Automotive Utilization of Biofuels from Non-Food Biomass*"
- GBC = Governors' Biofuel Coalition
  - Policy and Strategies on Bioethanol

Innovation on production and automotive utilization of biofuels from non-food biomass (FY2010 - FY2014)



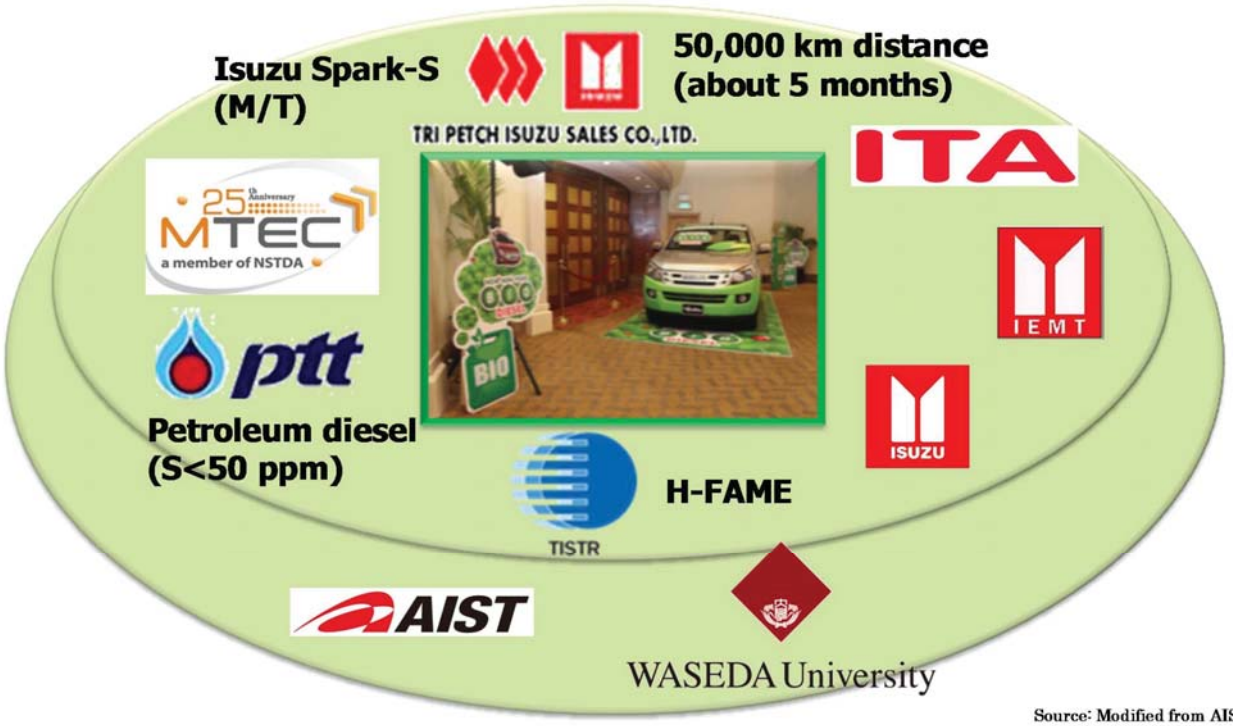


Collaboration network

R/D signing ceremony on Feb.25,2010

JST-JICA project started on May 16, 2010

Collaboration network of vehicle test using B10



Source: Modified from AIST

Current Status of Biomass Research in Thailand

- *Report status from JGSEE ….. Thailand and ASEAN*
- *Report status from NSTDA …. NSTDA supported programs and projects*
- *Report from KAPI/KU …non-food biomass research projects, yeast, napier grass, linkage with Japan*
- *Biochemical, bio based products*

Current Status of Biomass Research in Thailand

- *KAPI… Bioenergy working group; soil remediation by fast growth plant , FS for electricity generation plant ….. Community based*
- *Set up Bioenergy working group, study for potential of biomass in ASEAN*
- *TISTR …. From RM through various process to biofuel*
- *STI …. Compiles data from 5 Ministries*

Forums

- *R and D forum …. NSTDA, TISTR, KU, KMUTT, KMUTNB, CU, KKU, MU, MUT, CMU, MJU, NRU, SUT*
- *Policy and Funding agency forum…. STI, NRCT, TRF, EPPO, ARDA, BEDO*
- *Private sector forum …. SCG, PTT, Mitr Phol, EGAT, MEA, PEA, Bangchak, AA, UAC, FTI/RE group*

Thailand Biomass Consortium Charter

- *To build collaboration including information sharing among stakeholders in the value chain of biomass*
- *To achieve international collaboration through open innovation research mechanism*
- *To create optimum outcomes relevant to national and international sustainable development policy e.g. overall biomass value chain*

Mission

- *TRM of biomass development and identification of technology gap for Thailand*
- *Data base for biomass research …. Technology, expert groups (domestic and overseas)*
- *(Know Why, Know How, Know What, Know When, Know Who?)*
- *Create mechanism and opportunity for joint investment/ research to serve common needs.*

TBC operation mechanism

- *Joint committee ….. Representatives from R and D Organizations, Policy and Funding, and Private Sector*
- *BORC Select 1 Representative from Joint Committee to be in the International Committee … presumably 9 members + 1 in the international committee*
- *President …. Taking turn among member countries.*
- *VP and Secretariat from host country*
- *Legal status…. Pending for study …e.g. Financial related matter.*

Fund for TBC

- *Host organization support the meeting budget*
- *Rotation of sponsorship*
- *Joint funding for projects … e.g. Annual Conference, Symposium*
- *Future Consideration: Need legal identity to get funding support esp. from government agency and private sector into TBC*
- *Membership fee for operating fund*

Time Frame and Budget

- *January 2013 – February 2014 : Thailand Biomass Consortium…. TBC*
- *August 2014 – April 2015 : Biomass Open Research Center ….. BORC*
- *TISTR provided initial budget for US$ 10,000*
- *Office Space and secretariat person provided*

Feasibility Study for Public Demonstration of SATREPS' Biofuel Technology

First project for Thailand Biomass Consortium… in collaboration with Waseda University

Key Success Factors for TBC and BORC

1. *Long term relationships of key persons among parties concerned*
2. *Commitment of executives of participating organizations*
3. *Communication and communication*