



# The Futures of Low-Carbon Society

- A systematic visioning of the future of LCS beyond 2050 was done by the APEC Center for Technology Foresight in 2010
- Looking at 5 key areas of the future, necessary STI policies were identified and proposed



# Visioning of LCS 2050

## Climate change and its impact

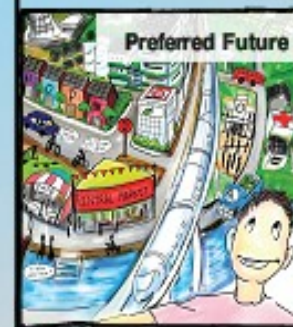
Trade of goods  
and services



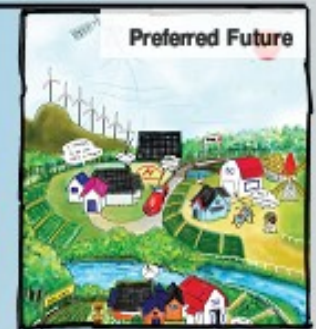
Migration, rural life  
and natural  
resources



Society and  
health



Housing,  
construction,  
urban life,  
transportation



# Some Indications of the future LCS

## (from Delphi Survey)

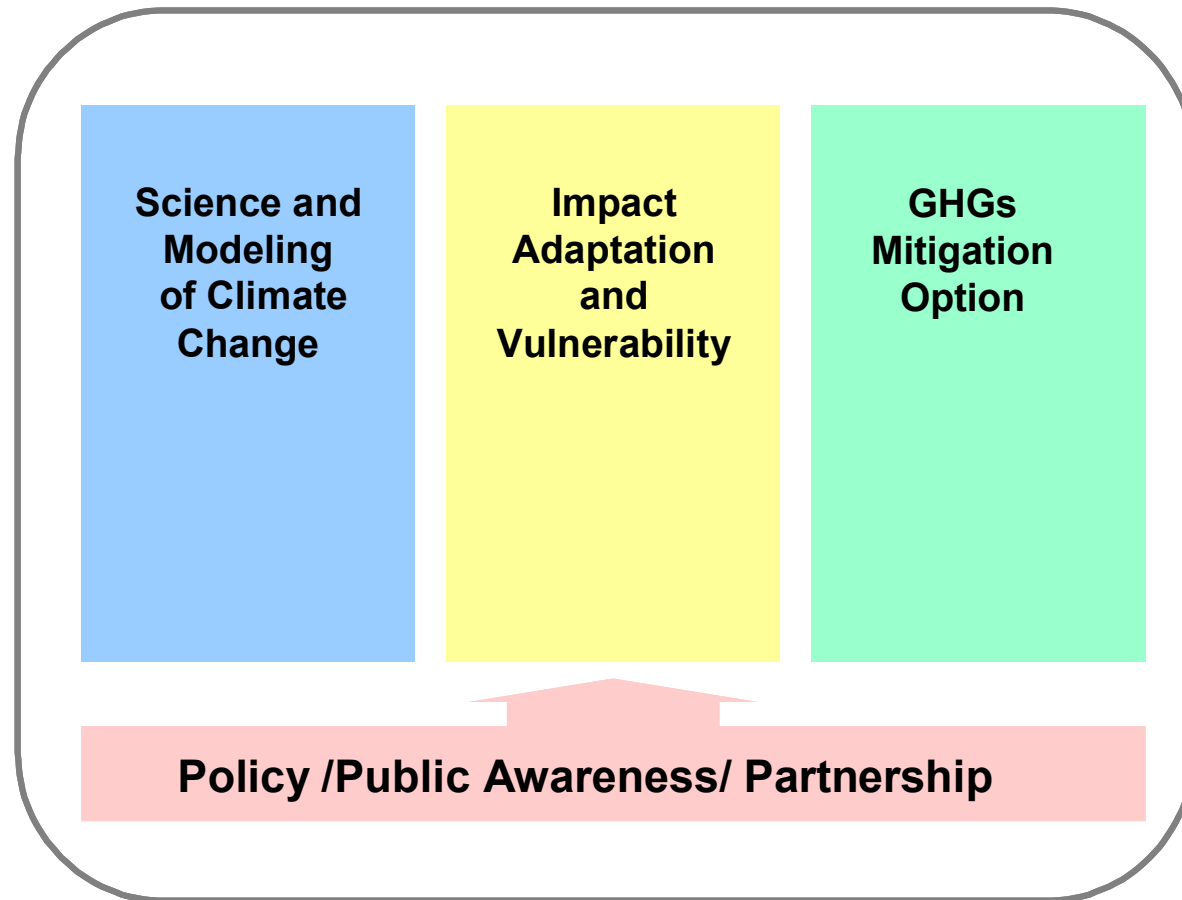
- Low Carbon Economy
  - Most existing **commercial buildings are retrofitted to save 50%** of energy use on average
  - Energy efficiency of **home and office appliances increases by 50%**
  - **20% of electricity is generated by decentralized sources**
  - **Carbon capture and storage (CCS)** is effectively and fully implemented
  - **Algae technology** capable of producing fuel (H<sub>2</sub>, oil, or ethanol) becomes commercially widespread



# Some Indications of the future LCS (from Delphi Survey)

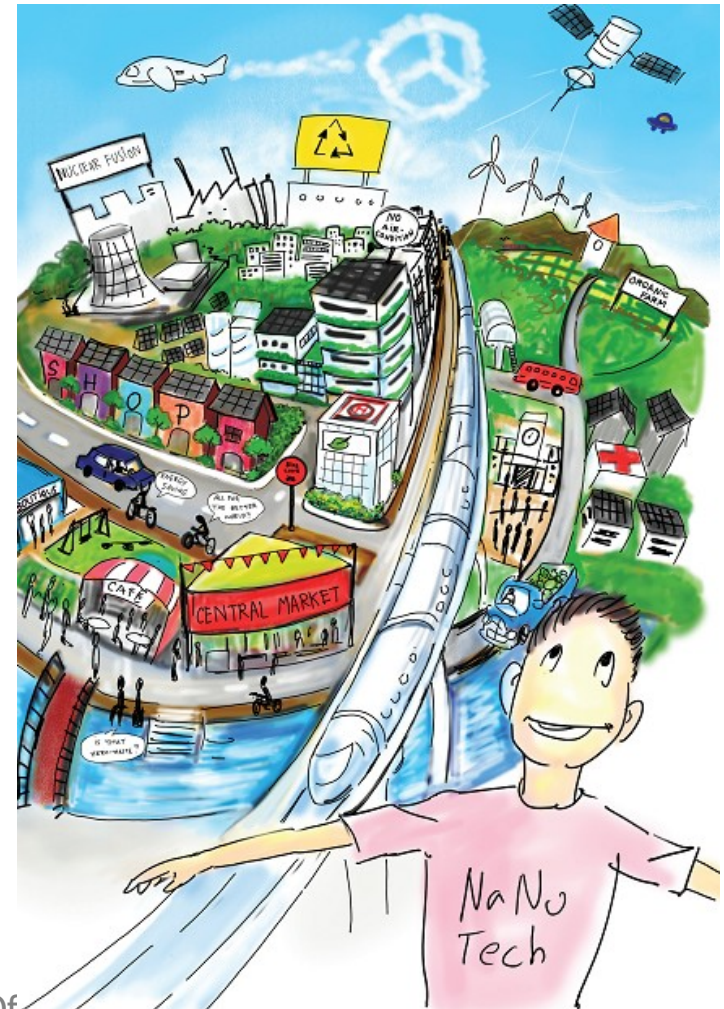
- Adaptive Lifestyle
  - **Shift of farming land to higher altitude and colder areas cause** major destruction of the most important carbon sink (forests)
  - **Migration of people from coastal area towards inland induces** major conflicts over land and resources
  - Technologies significantly improve the **healthcare system** to cope with new infectious diseases stimulated from global warming
  - **Global IT network** will reduce the traveling of people to the 1990 level
  - **Emergence of computerized farming.**

# Key Areas of STI Policy



# Science and Climate Modeling

- Earth science
- Remote sensing
- Mathematics
- Databases
- Computing power
- Software



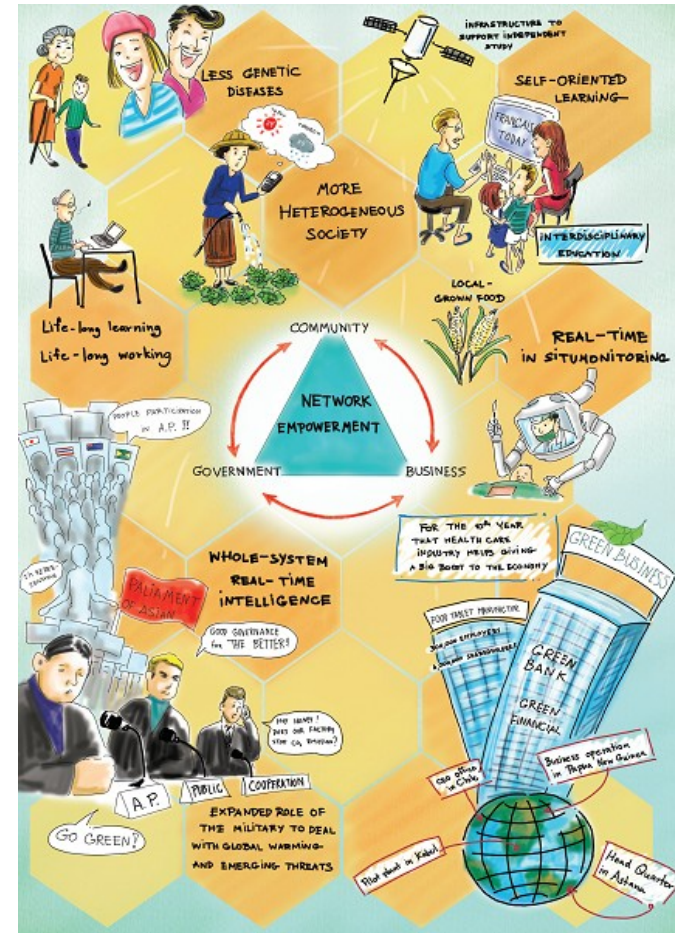






# Public Awareness and Partnership

- Regional cooperation
- Science diplomacy
- Clear national agenda
- Clear role of the private sector



# What hinders policy implementation

- Financial restrictions
- Obsolete regulations
- Obsolete industrial practices
- Bad governance
  - Lack of transparency in public procurement
- Mindset



# Situations, Trends, and Problems Facing Thailand



## Natural Resources (Natural Resources Capital)

## Energy



Forest area now covers only 30% of the country



**CITES**



Reduced mangrove forest coverage to 1.5 m.rai from 2 m.rai



**Reduced biodiversity**



**Water supply is unbalanced**



**Degraded Soil**



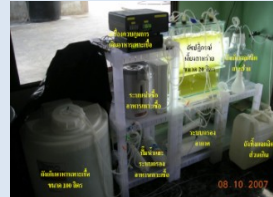
**Global Warming and Climate Change**



**Natural disasters more severe and frequent**



**Degraded air and water quality**



**Hazardous waste increasing**



**Carbon emission is 26th in world ranking**



**Rapid and chaotic urbanization**



**Rising energy cost**



**Depleted fossil fuel sources**



**Import of energy >10% of GDP**



**Natural gas accounts for 70% of electricity source**



**Low utilization of clean energy**



**High cost of clean energy/ hard to commercialize**

# Draft National STI Policy and Plan (B.E. 2555-2564)

**Geopolitical  
Change**

**Climate  
Change**

**Sustainable Growth  
on Knowledge-Based Society**

**Science, technology, and innovation for stable, competitive  
economy and quality society**

**Increase  
competitiveness,  
flexibility, and  
innovation in  
agriculture, industry,  
and service sectors**

**Empower local  
grassroot  
communities to  
strengthen the  
country's foundation**

**Strengthen the nation's  
energy, natural  
resources and  
environmental security**

**Develop and increase the potentials of the nation's human capital**

**Develop infrastructure and enabling factors to meet the country's  
STI demands**

# Strengthen the nation's energy, natural resources and environmental security

## Strategy 1: Promote the development of natural resources and environmental forecasting models

- Promoting natural resources and environmental modeling
- Promoting the utilization of models

## Strategy 2: Promote the development and utilization of STI for adaptation

- Developing natural disaster warning systems
- Reducing the impact to topographical change, agriculture, trade, services, public health, and biodiversity



# Strengthen the nation's energy, natural resources and environmental security

## Strategy 3: Promote the development and utilization of STI for mitigation (GHG emission reduction)

- Promoting STI for energy efficiency
- Strengthening energy security with renewable energy and alternative energy
- Developing new knowledge or technology to reduce green house gases (GHG) emission
- Promoting efficient waste management and reduction

## Strategy 4: Balanced management of natural resources

- Inspecting, controlling, maintaining, and restoring the natural resources and biodiversity
- Using STI to support efficient and systematic management of natural resources

# Vision for STI's Future Energy Systems

- Energy-efficient economy
- Low-carbon energy system
- Leadership in green energy in the ASEAN region
- Technological self-sufficiency and exporter of clean-energy related products and devices





# Target Technologies

1. Technology that enhance energy efficiency
2. Renewable energy technology
3. Alternative transportation fuels
4. Fossil fuel technology (including carbon capture and storage)
5. Power electricity and energy storage
6. Rural energy technology
7. Nuclear technology



# Proposed strategic programs in the first 5 years

1. Biogas system for the improvement of environment quality
2. Large-scale bioenergy production
3. Electric motorcycle for cleaner cities
4. High energy efficiency appliances and devices
5. Net zero energy buildings





<http://www.lcs2050.com/>



National Science Technology and Innovation Policy Office