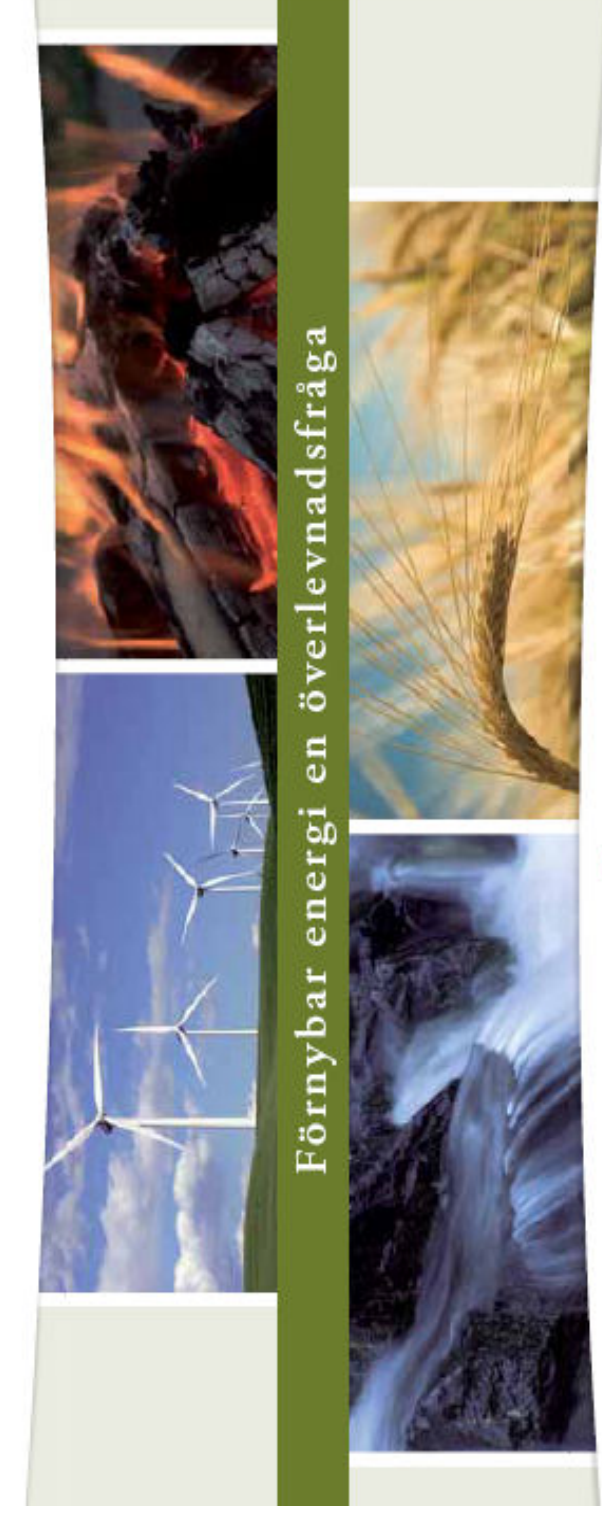


# International Collaboration for a Sustainable Energy System

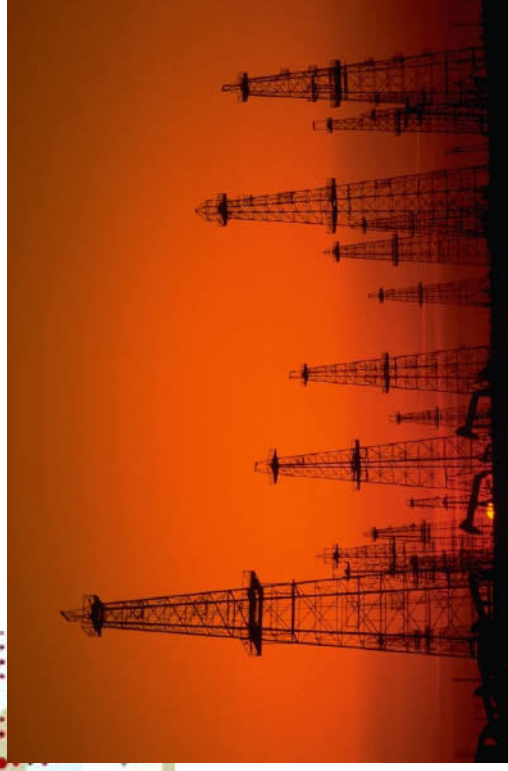
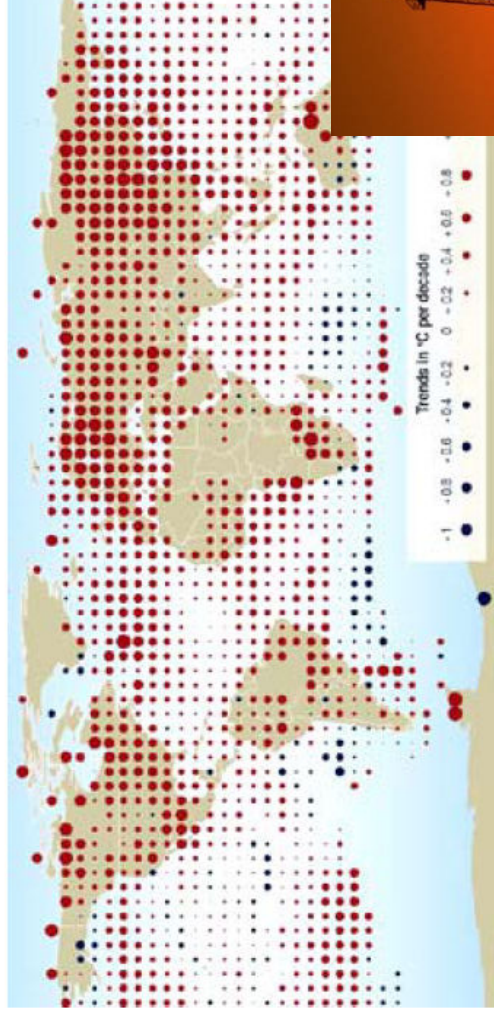
Lars Guldbrand  
Director of R&D Strategy  
Swedish Energy Agency





# Global Challenge Global Collaboration

Climate and Security of Supply





# A multitude of new technology solutions is needed

There is no "silver bullet"

Different natural resources, different industrial structures, etc →  
Different solutions ...

[article](#) [discussion](#) [edit this page](#) [history](#)

## Silver bullet

From Wikipedia, the free encyclopedia

*For other uses, see [Silver Bullet](#).*

The metaphor of the **silver bullet** applies to any [straightforward](#) solution perceived to have extreme effectiveness. The phrase typically appears with an expectation that some new [technology](#) or practice will easily cure a major prevailing problem.

The term originates from [folklore](#). Traditionally, the silver bullet is the only kind of [bullet](#) for [firearms](#) that is effective against a [witch](#), [vampire](#), [monster](#), or a person living a charmed life.



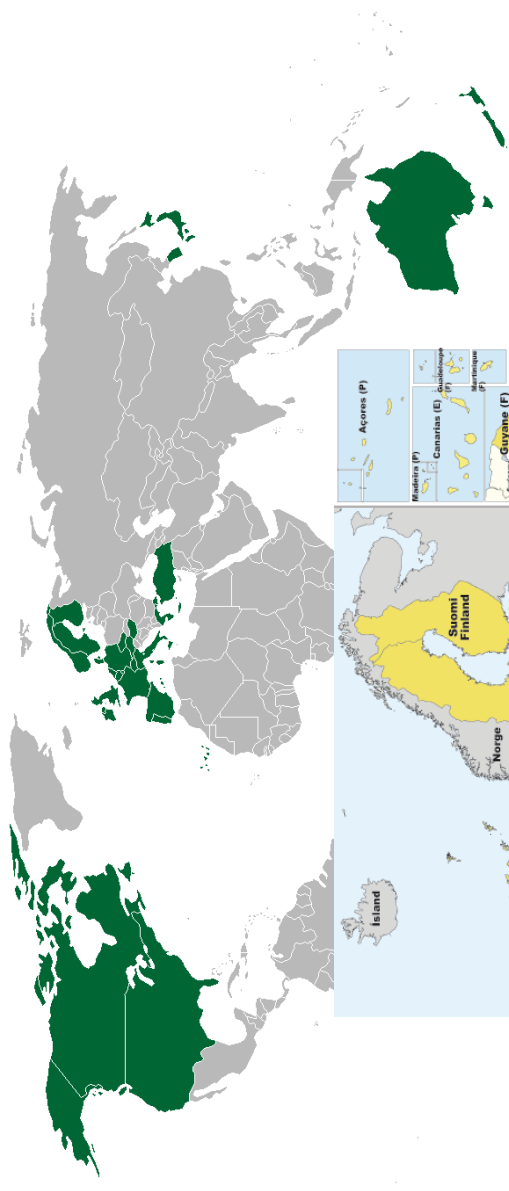
# The Swedish Energy Agency

## Main government agency in energy policy area since 1998

- Funding of energy RD&D
- Business development and commercialisation
- Electricity Certificate system
- EU Emissions Trading System
- Programme for Energy Efficiency, PFE
- Testlab
- Technology Procurement
- Promotion of Wind Power
- Sustainable Local Government
- Information dissemination
- Emergency authority for oil, gas and heating



# Multilateral Energy RD&D Collaboration



**Nordic Energy Research**

**EU FP7**

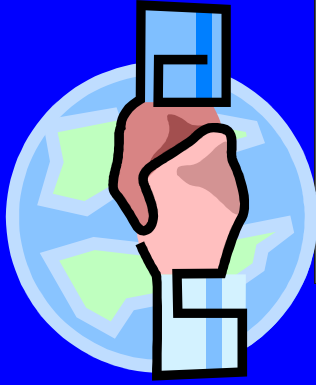


**International Energy Agency**



Lars Guldbrand / RENEK / 2008-04-25

# Bilateral Agreements US, Brazil and China



# US/SE Agreement

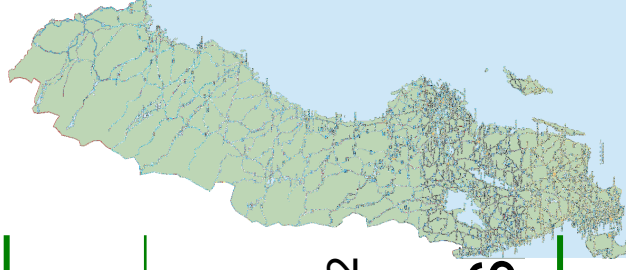
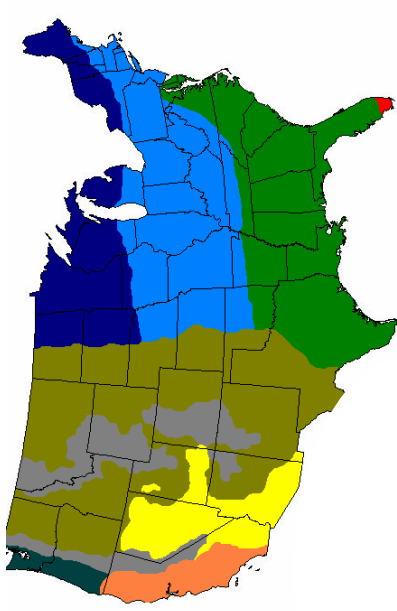


IMPLEMENTING ARRANGEMENT  
on  
COOPERATION ON RESEARCH AND DEVELOPMENT,  
NEW TECHNOLOGIES, NEW PRODUCTS, NEW SERVICES,  
AND ENHANCED RESOURCE BASE FOR RENEWABLE ENERGY

June 2007



# US/SE ...



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## USA

## Sweden

Population

300 million

~ 9 million

Area

9 000 000 km<sup>2</sup>

450 000 km<sup>2</sup>

GDP per capita

43 000 \$ US

31 000 \$ US



# Some Important Swedish Industry Areas

-  Aerospace Industry
-  Automotive Industry
-  Forest industry
-  Metallurgic industry
-  Pharmaceutical and biotech industry
-  IT and Telecommunications



# FOCUS

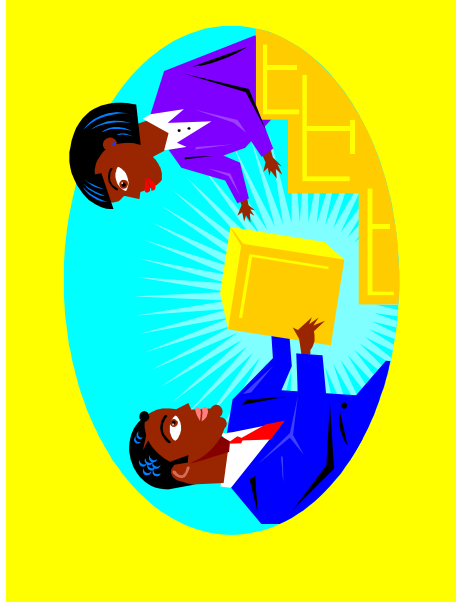
Co-operation in the field of development of renewable energy, giving priority to sustainable energy policies aimed at the rational development and deployment of diversified energy resources and technologies while protecting the environment and supporting their respective national economies.



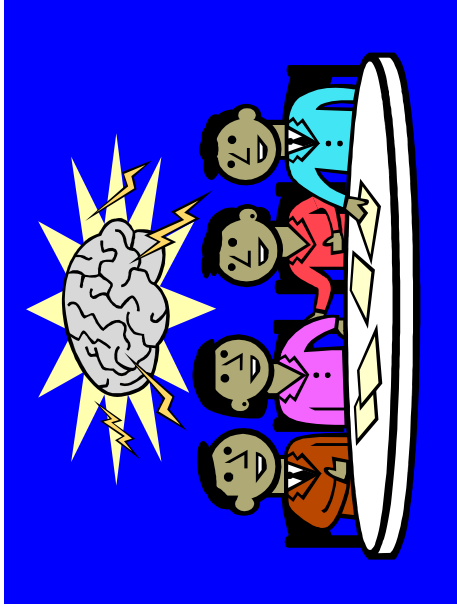
# Areas of Collaboration

- biomass production, i.e. biotechnology for development of fast growing crops including techniques for more efficient production systems in agriculture and forestry
- the transport sector, i.e. conversion processes for biofuels based on lignocellulose as well as
- advanced automotive technologies and automotive propulsion technologies, and
- efforts to reduce the cost of renewable electricity as well as energy efficiency

# Activities



- R&D for new and improved sources of biomass production for energy use,
  - R&D of conversion technologies for different types of liquid biofuels, bioproducts and other kinds of renewable energy,
  - R&D for more efficient engines and lightweight vehicles,
  - Research assessing implications on farmers and rural communities from biomass production for energy use, including traditional agricultural commodities, energy crops, and other forms of biomass
- Standardization of engines and fuels,
  - Information exchange on emission allowances and trading,
  - Market development and technology transfer to ensure sustainable biofuels production and consumption in third countries with a foresight to develop a world market for biofuels

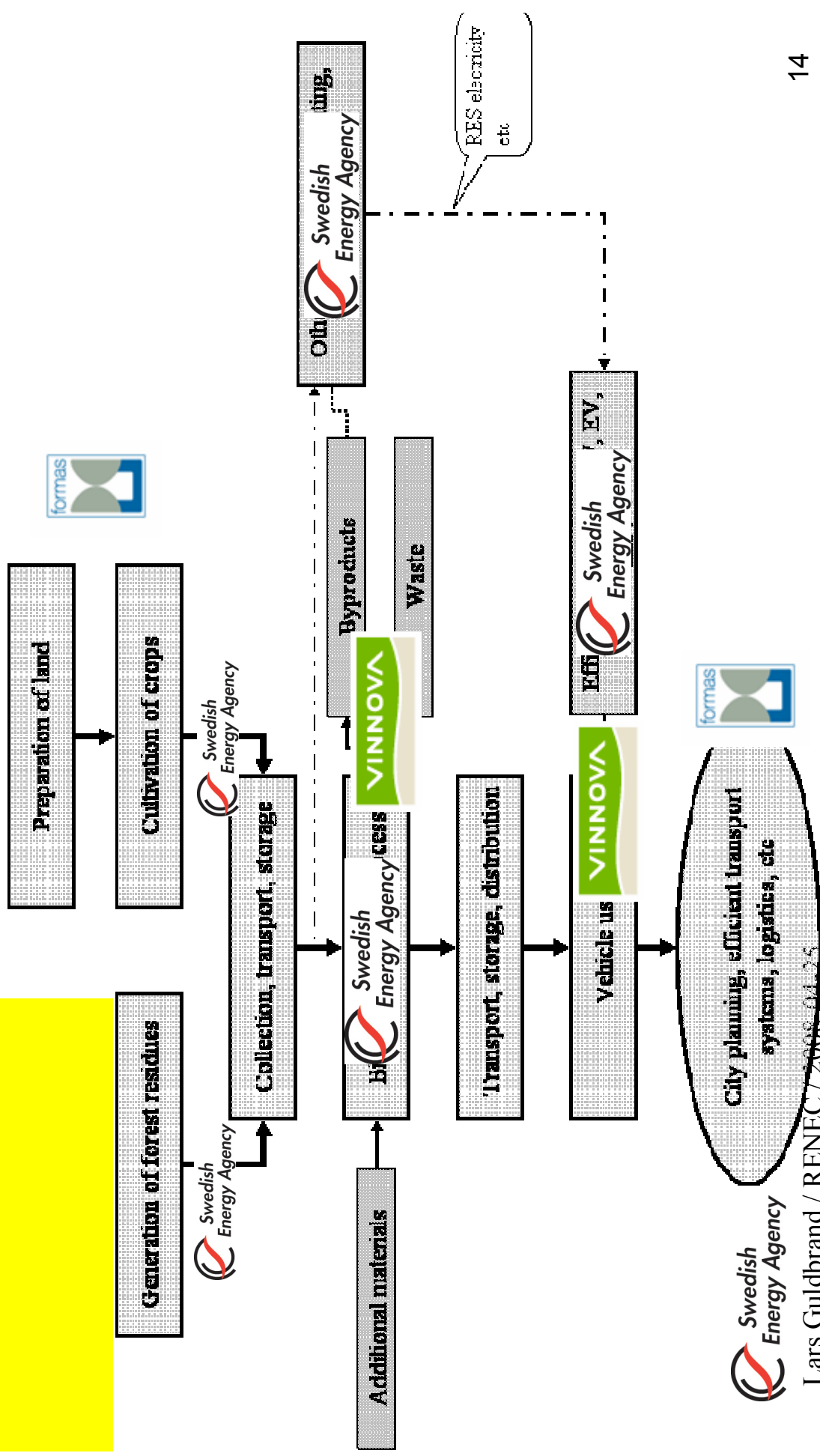


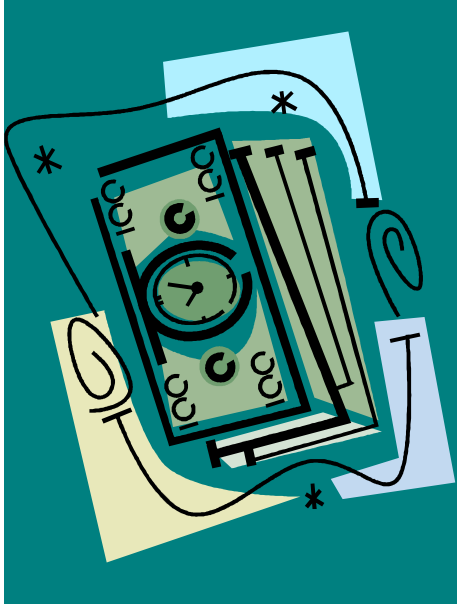
# Bilateral Working Group US SE collaboration on Renewable Energy

Swedish Energy Agency  
FORMAS  
Invest in Sweden Agency  
Swedish Board of Agriculture  
Swedish Forest Agency  
Swedish Road Administration  
Vinnova, Sw. Ag. f. Innovation Systems

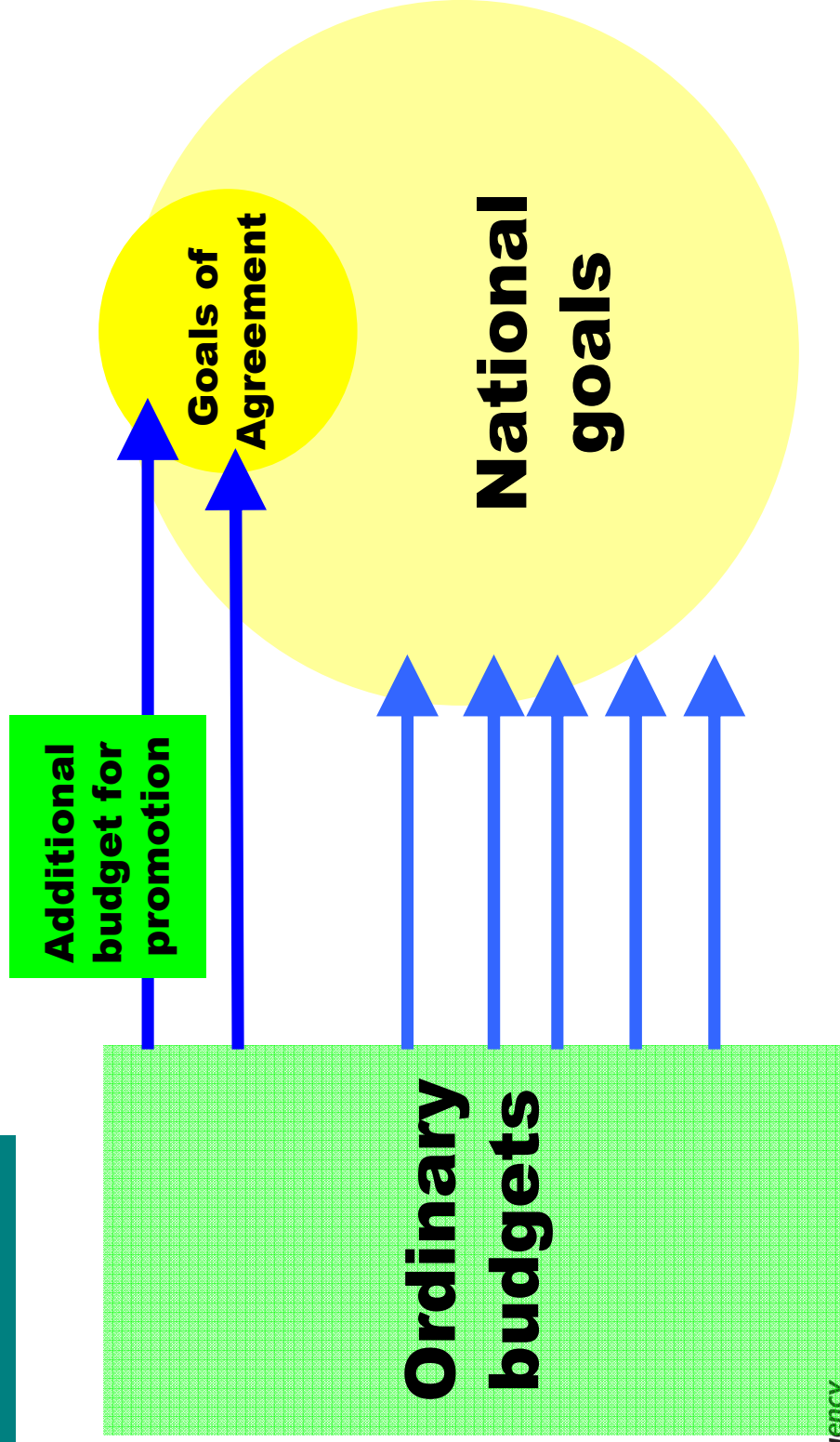
US DOE  
NREL  
USDA/Foreign Agr. Service  
USDA/ Forest Service  
NSF International office  
State Department  
US Environm. Protection Agency

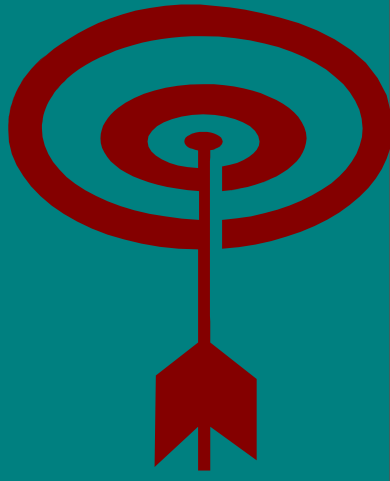
# Concentration and focus...





# Funding





# Clear overall objectives

The overall objectives of the measures concerning research, development, demonstration and commercialisation are:

- ↑ to build up the scientific and technical knowledge and expertise within universities, colleges, other higher education institutions, government agencies and in the business sector necessary to enable a transition to a long-term sustainable energy system in Sweden through application of new technology and new services, and
- ↑ to develop technology and services that, through the Swedish business sector, can be commercialised and thereby contribute to the transition and development of the energy system in Sweden and in other markets.



# **Projects: Ongoing, Preparatory, Under discussion**

1. Volvo/Mack - Hybrid Trucks etc
2. House of Sweden / WIREC 2008 4-6 mars 2008.  
Inventory of Swedish Cleantech Companies  
Study trip Swedish Forest Agency/NFS/Michigan  
Contact trip Swedish Cleantech Venture capital to US
3. Plug-in hybrids Argonne/TSS  
CHEMREC/NewPage

Biogas Flint

National Renewable Energy Laboratories.

# International Collaboration for a Sustainable Energy System

SENIOR MANAGEMENT

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Lars Guldbrand / RENEK / 2008-04-25