

Bioenergy, job creation and growth of economy

Vilnius, Independent energetic- strong economics, 2010-10-07
Kent Nystrom, World Bioenergy Association

World Bioenergy Association

A global non profit NGO with 3 main purposes:

1. Spread information about the possibilities being available by utilization of the great amount of biomass resources.

2. Develop sustainable criteria that guarantee that bioenergy

- could be supplied in sufficient amounts
- could be supplied without threatening food supply
- could be supplied without threatening water supply
- could be supplied without threatening the rain forests and the biodiversity
- could be supplied without threatening the economical growth

3. Spread knowledge and technology by BioenergyConnect, a web based portal where paying subscribers have virtual meetings, discussions, share information. It is an important tool to start projects. WBA bring our networks of buyers and sellers of bioenergy equipment and fuels together with investors and researchers.

www.worldbioenergy.org



REN Alliance partners are:



Geothermal



Hydro



ISES

Solar



Bioenergy



Wind

Working with joint projects formulated in the Strategic Plan, where WBA has the responsibility for Sustainability Assessment. More projects related to and in cooperation with Masdar Initiative, Abu Dhabi and the intergovernmental organisation IRENA.

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WBA Position Paper on Global Potential of Sustainable Biomass for Energy

- A project realized by the Swedish University of Agricultural Sciences, SLU and financed by the Swedish Board of Agriculture will result in three World Bioenergy Association Position Papers:
- WBA Position Paper no 1: **Global Potential of Sustainable Biomass for Energy** (Report 013, ISSN 1654-9406, Swedish University of Agricultural Sciences)
- WBA Position Paper no 2: **Certification Criteria for Sustainable Biomass for Energy**
- WBA Position Paper no 3: **Biomass for Energy versus Food and Feed, Land Use Analyses and Water Supply**
- All of them will be released in 2009/2010

World Bioenergy Association's message to COP 15

Global Potential for Bioenergy Sufficient to meet Global Energy Demand

A position paper by World Bioenergy Association (WBA) based on a report by the Department of Energy and Technology at the Swedish University of Agricultural Sciences (SLU) shows that the maximum global potential to produce biomass for energy in a sustainable way is sufficient to meet global energy demand.

There is a lack of awareness of the **enormous potential of bioenergy** worldwide both among politicians, media and the public.

The Report, WBA Position Paper and press release can be found on our web site

www.worldbioenergy.org

Certification of biomass for energy

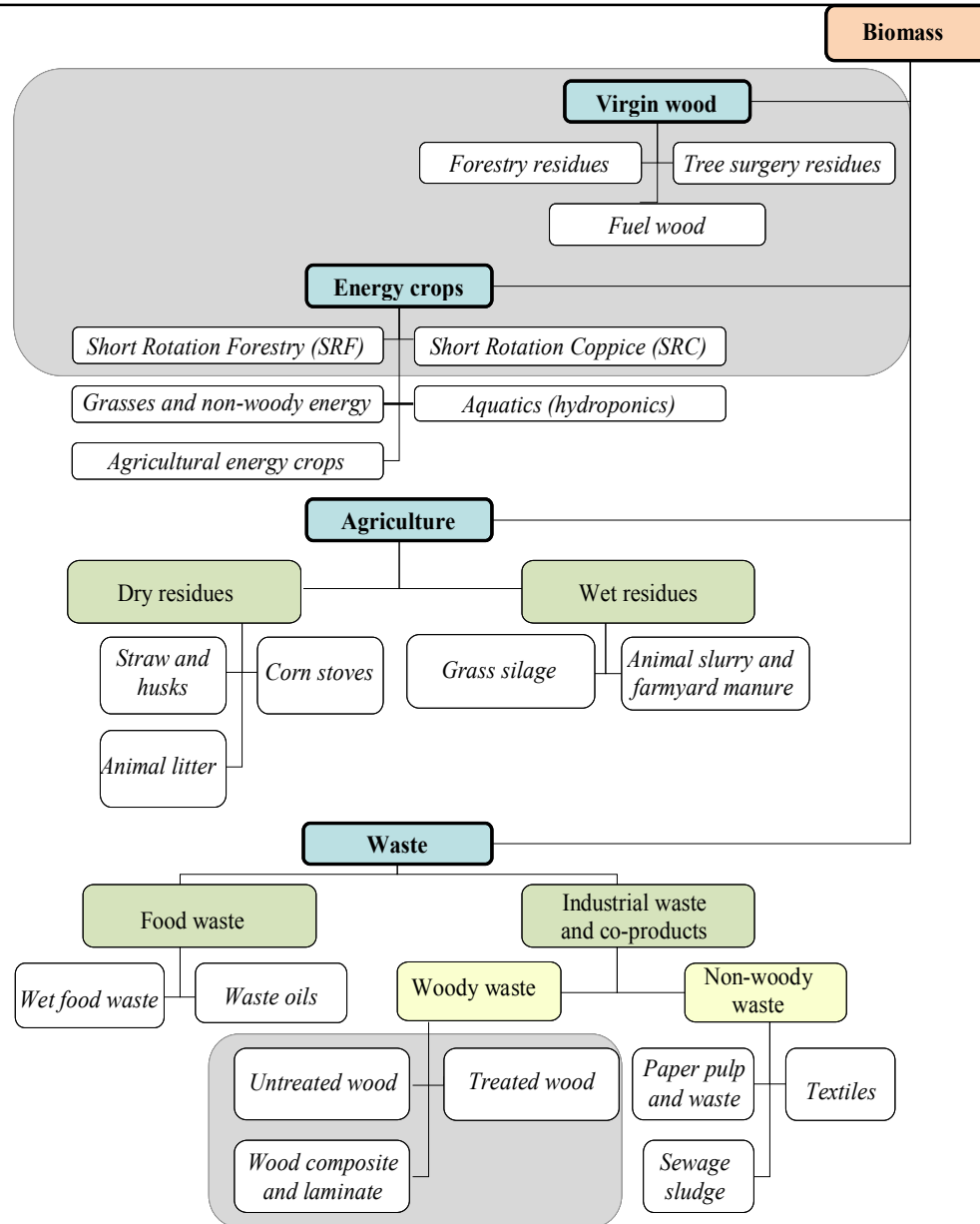
WBA consider it necessary to introduce a certification system to protect the environment and the sustainability.

Sustainability defined as in the Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

This definition is a minimum. We also have to consider socio-economic aspects. We don't want for example to exploit resources in developing countries without secure equitable benefits for the local (rural) population, their "needs of the present" due to Brundtland.

Don't forget that you are dealing with their source of livelihood! The result of renewable energy projects must be positive for the locals. You call it combat poverty.

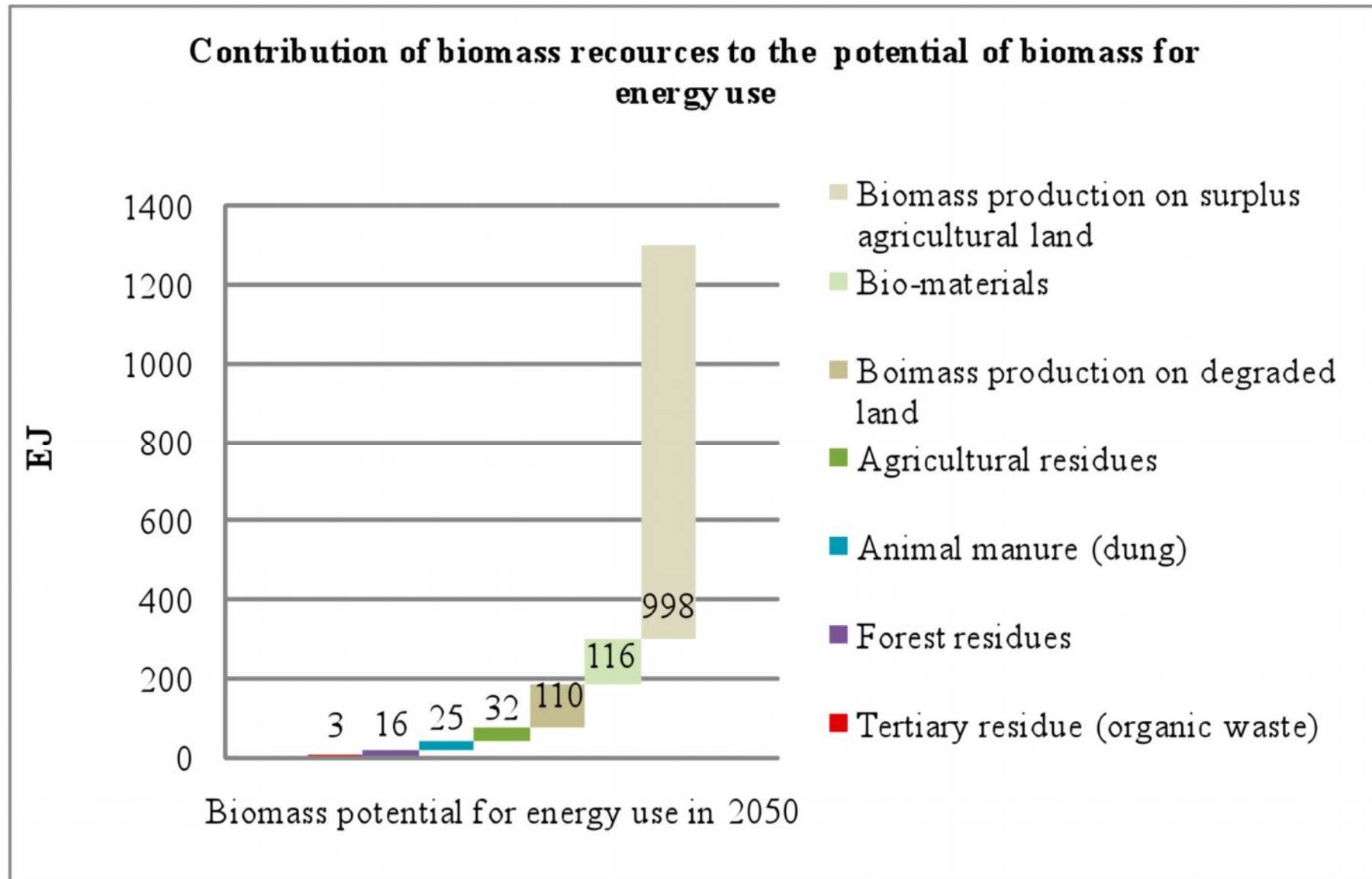
What's Biomass?



Note: Biomasses from woody materials are in the shaded areas.

Figure 5. Classification of sources of biomass for production of energy.

Where?

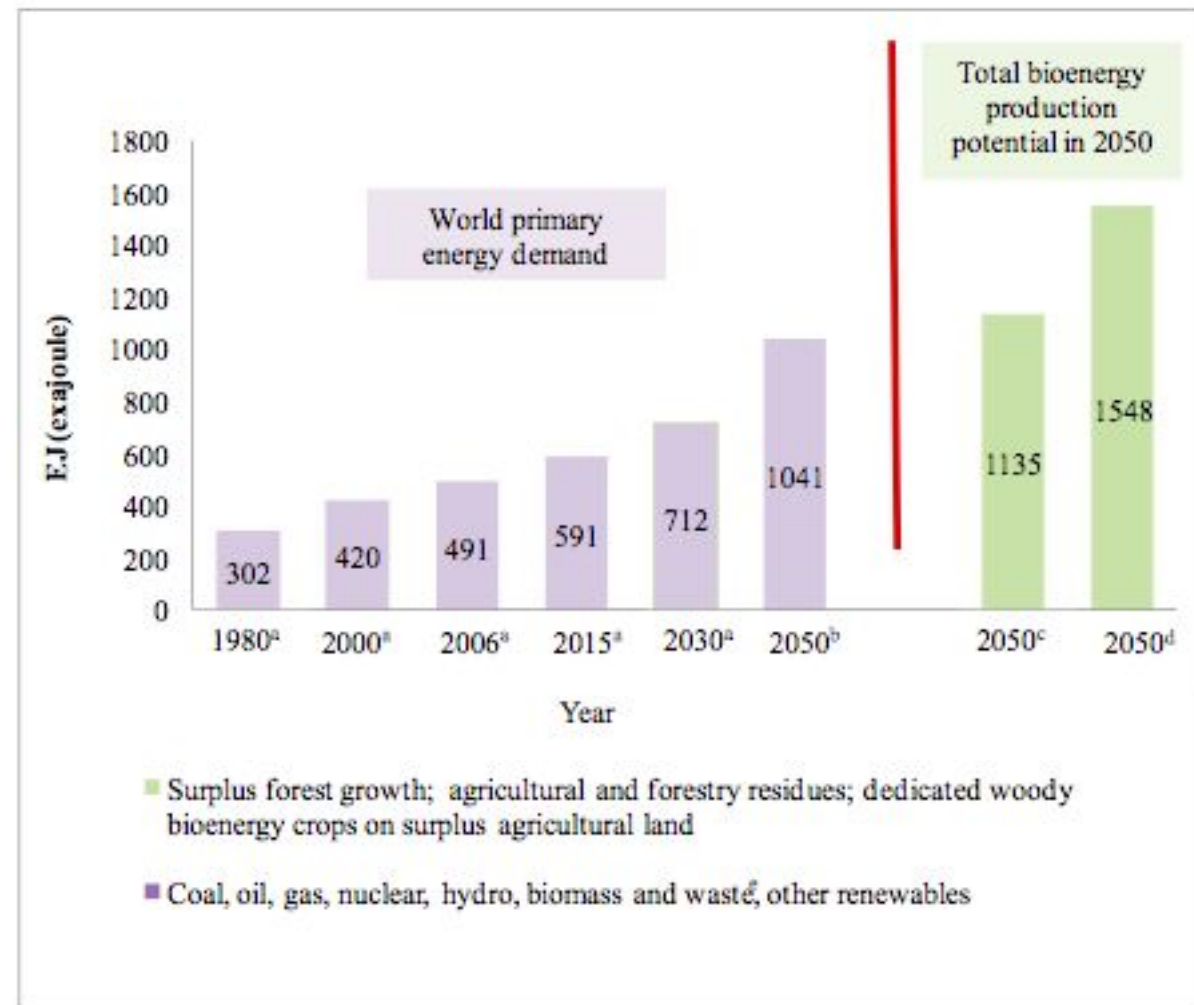


Contribution of each biomass resource categories to the global potential of biomass for energy use in 2050 (Source: Hoogwijk et al, 2003).

How much?

Total energy use versus total bioenergy maximum potential in 2050

Due to IEA 57% of the demand in 2050 is met by increased energy efficiency!



Notes: ^a IEA, 2008

^b Highest consumption scenario (Smeets et al., 2004)

^c Based on an upper limit of the amount of biomass that can come available as (primary) energy supply without affecting the supply for food crops (Hoogwijk et al., 2003)

^d Based on scenario 4 in the source, where a type of agricultural management applied is similar to the best available technology in the industrialized regions (Smeets et al., 2006)

^e Includes traditional and modern uses

Figure 7. World primary energy demand for years 1980, 2000, 2006 and forecasts for years 2015, 2030 and 2050 and estimates for total global bioenergy production potentials in 2050

Domestic job creation improves the trade balance

When changing from imported energy to domestic, you move the need for labour forces from abroad to your own country.

An increased amount of renewable energy is not only good for the climate and the security of supply but also job creating.

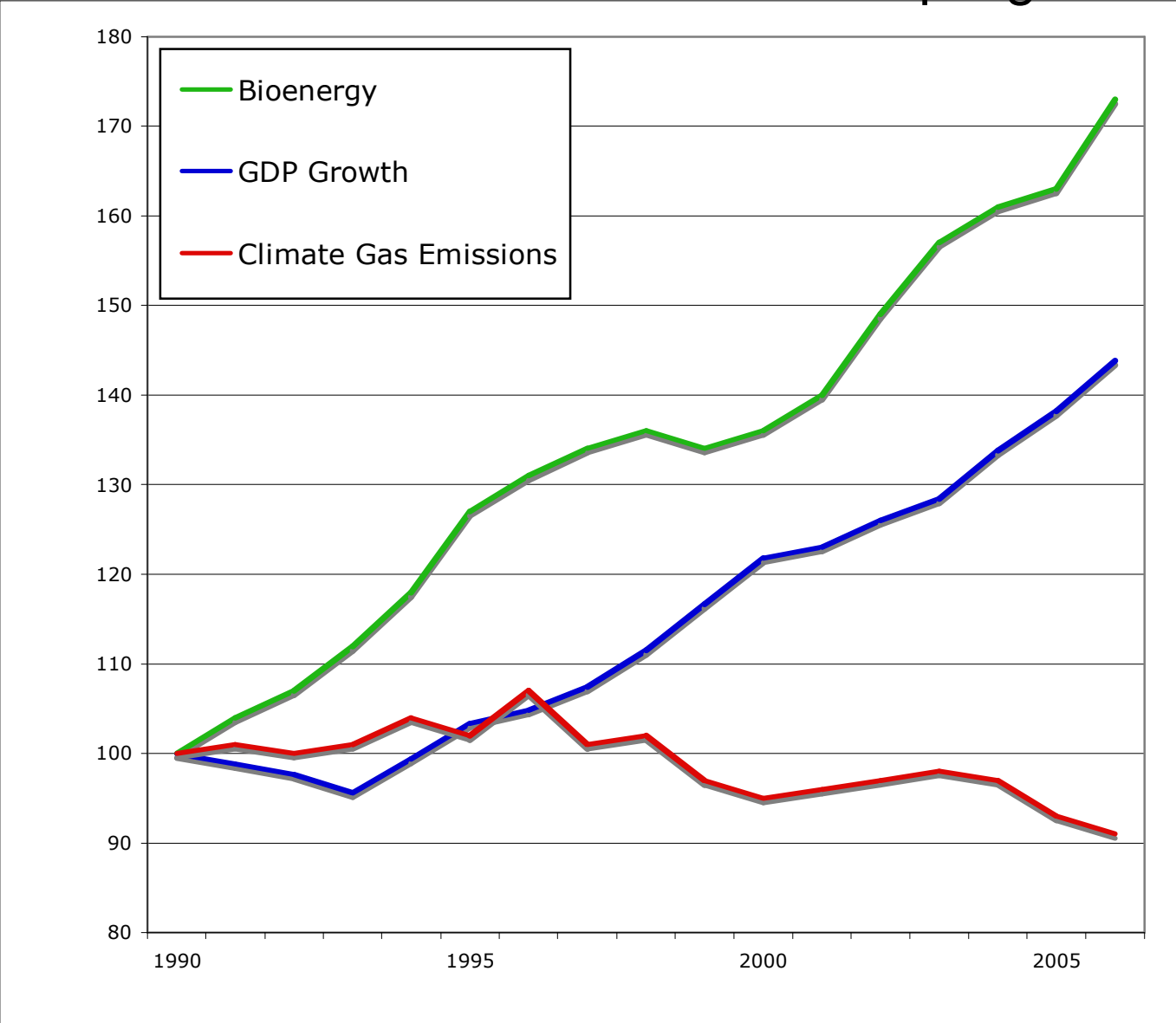
The local and national economies will be benefitting which means an improved trade balance for the country.

More than 50% of the biomass price is coming back to the society as taxes and fees.

In Sweden some scientific reports from SLU (the Swedish University of Agricultural Sciences) and SLF (the Swedish Farmers' Foundation for Agricultural Research) show that there will be 300-500 new domestic jobs per TWh when converting from fossil fuels to bioenergy. The higher figures are relevant if you must exchange the equipment.

Economical consequences of increasing biomass utilization

A case from Sweden: Decoupling



One example from Denmark: 100% renewables 2050!

The Danish Commission on Climate Change Policy has launched a programme on how the country will be **100% renewable until 2050** and by that **reduces its emission of greenhouse gases radically (with 80%)** and makes itself **energy independent** from abroad, which increases the security of supply.

The road map is: Increased fees on fossil fuels, and one to the building connected **energy conservation account** to finance the conversion, fee assumptions for **electric cars** and a radical enlargement of **off shore wind power**.

The consequences in the system will be **high energy efficiency** (50% reduction of the heating demand), increased **trade of electricity** in total, **smart grids**, increased **use of bioenergy**, more **heat pumps** and increased flexibility in the use of fuels in the **transport sector**.

But is this cost-efficient?

Yes, the Danish Commission says, because the alternative is more expensive depending on constantly increasing prices on fossil energy and gradually decreasing costs for the developed green technology. The system will be more capital-intensely but with lower fuel costs.

Denmark Energy demand (TWh)

	2008	2050	
Transport	56	38	
Industry	38	42	
Trade and Service	24	24	
Domestic	<u>54</u>	<u>35</u>	
Total	172	139	(20% less energy demand)

Potential from Danish sources of renewables (TWh)

	current supply	total resources	amount of total energy demand 2050
Wind power	7	340	>250%
Wave power	0	10	<10%
Solar, PV and heat	0	70	<50%
Bioenergy and waste	25	70	<50%
Total RES, exclusive geothermal and heat pumps	32	490	>300%

Theoretic (scientifically based) biomass potential in Lithuania

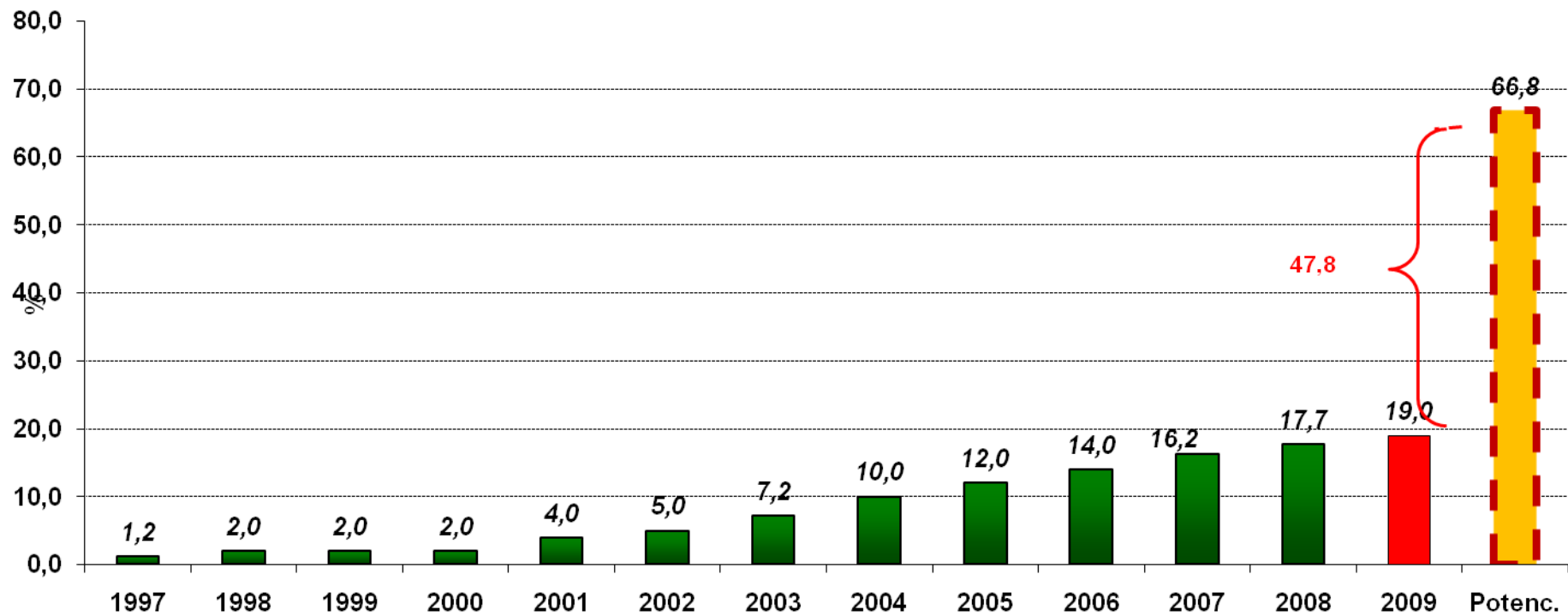
Straw- 2,4 million tones per year. Energetic potential- 850 ktoe.

Municipal waste- 1 million tones per year. Energetic potential- 200 ktoe.

Biomass from wood	Year 2020
	Firewood (<i>thousand m³ / ktoe/GWh</i>)
Wood industry residues (<i>thousand m³ / ktoe/GWh</i>)	1627/283/3291
Forest cutting residues (<i>thousand m³ / ktoe/GWh</i>)	1085/185/2152
Total (<i>thousand m³</i>)	5930
Total (<i>ktoe/GWh</i>)	1033/12014
Energy plants plantations (<i>ktoe</i>)	70
Total (<i>ktoe/GWh</i>)	1103/12828



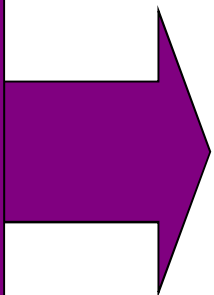
Biomass share in district heating



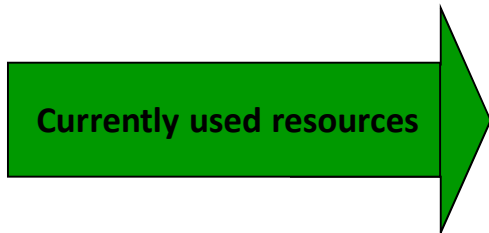
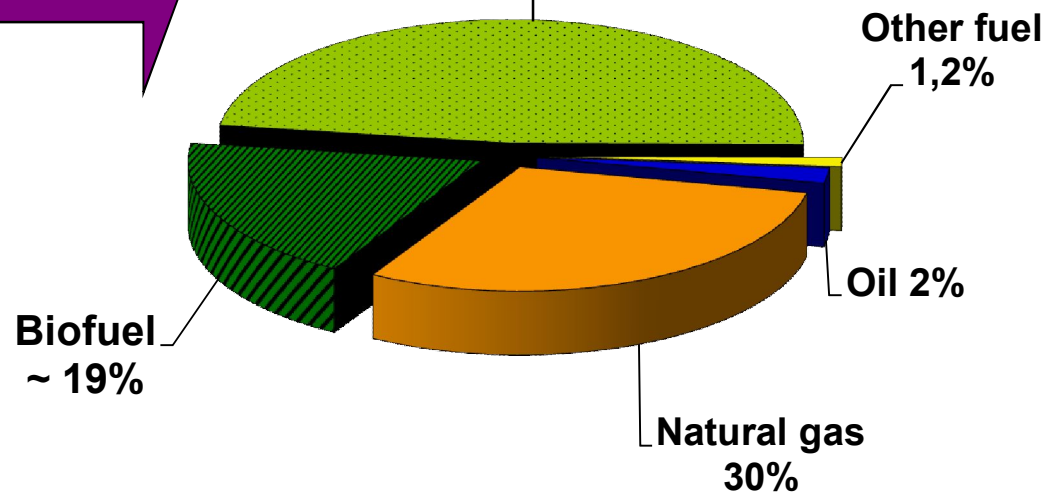
Fuel Consumption Structure for District Heating Production in Lithuania having Evaluated Reserves of Biomass

Reserves of local biomass available for use
(based on *National Energy Strategy, 2007*):

Forest logging residues	180 ktoe
Straw	120 ktoe
Municipal waste	200 ktoe
Short rotation coppices	70 ktoe
<hr/>	
Total	570 ktoe



Unemployed
potential 47,8%



Currently used resources

Final energy consumption in Lithuania (source: Lithuanian energy institute)

Form of used energy	Yearly amount, 2008	
	Kt _{oe}	TWh
Production of heat	2277	26,49
District heating	863	10,04
Decentralized heating	1414	16,45
Use of electricity	778	9,05
Transport	1848	21,49
Total	4903	57,02

Source: Litbioma

Lithuanian RES potential

In December, 2008 LITBIOMA has finished a scientific research, which put foundation for Lithuanian action plan for promotion of use of RES from 2010 to 2020.

Contribution of 10 most eminent Lithuanian scientists in different fields of renewable energy.

The result in TWh	2007	2020
Wind power	0,1	2,9
Hydro Power	0,4	1,2
Geothermal	0,1	0,3
Biogas	0	0,7
Biofuel	0,8	5,2
Biomass potential, straw		9,9
Biomass potential, Municipal waste		2,3
Biomass potential, wood		<u>12,8</u>
Total		35,3

Danish results transformed to Lithuanian conditions

If we look at the result from the 2,5 years studies of the scientific Danish Commission on Climate Change Policy and pretend that the government of Lithuania gives a corresponding mission to a Lithuanian Commission on Climate Change Policy with tasks based on the experiences in Denmark:

1. Efficient (intelligent) utilisation of energy to decrease the demand.
2. Increasing the security supply. Independent of political instability (no energy imports) and price fluctuations (sustainable energies will not decrease). Domestic energy resources increases the security supply.
3. Reduction of the greenhouse gases (in Denmark with 75%).
4. No negative impact on the trade balance.
5. Promote a positive enterprise development and its international competition ability.
6. High economical growth.

If we use the Danish example and make Lithuania 100% renewable 2050, the figures might be...

Lithuanian energy mix 2050

The result in TWh	2007	2020	2050	
Wind power	0,1	2,9	34	10% of Denmark
Hydro Power	0,4	1,2	1	
Geothermal	0,1	0,3	6	Heat pumps in decentralised area, District heating in centralised
Biogas	0	0,7	2	
Biofuel	0,8	5,2	10	Small vehicles mostly electricity, heavy fleet mostly biofuels
Biomass potential, straw		9,9	7	70% available
Biomass potential, Municipal waste		2,3	2	80% available
Biomass potential, wood		12,8	10	80% available
Solar,PV			4	20% of Denmark
Solar, heat			10	20% of Denmark
Total		35,3	86	50% more than the demand 2008

Conclusions

We can identify a tremendous amount of bioenergy resources. More than the total, global demand for energy 2050.

If the politicians want to get rid of the threat from the greenhouse gas, it's possible to do that. And the earlier they decide to do it, the cheaper it will be.

We can't exploit great resources of biomass for energy without certification criteria, which guaranty sustainable production.

Increasing the utilisation of biomass creates jobs (300-500/TWh), improves the trade balance, reduces the greenhouse gas emissions and increases the security of supply.

Denmark has recently launched a programme for 100% renewable 2050.

Lithuania has the same possibilities.