

EUBCE IBO.8.2

Bioenergy's Additional Values

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**BENGT
LÖFGREN**
CEO/Founder, AFAB and
Swedish Pellet Association

Bengt-Erik Löfgren is co-ordinator of Swedish pellet association PF and chief executive and founder of Sweden-based consultancy AFAB. He has worked in both academia and enterprise since 1984. Bengt-Erik is one of the best-known experts in small and medium-scale bioenergy in Sweden and has worked on the front line along with bioenergy industry for more than 30 years. He is the founder of a number of companies and organisations that are working to create new business opportunities, particularly for small and medium-sized enterprises. Bengt-Erik has been involved in many types of committees from making new EN standards for pellet burners to the distribution of government grants.

“ *Bengt has a deep and thorough understanding of the supply and demand sides of the biomass sector in Sweden, where 100% of bioenergy comes from forest industries' residues.* ”



TOP 36 MOST
INFLUENTIAL LEADERS
in the biomass industry

SWEDEN

Surely we are on track

Climate agreement in brief:

*The most important part of the agreement is the goal that the increase of the **global average temperature should remain well below 2 degrees** and efforts should be made to keep the temperature rise below 1.5 degrees, that **the countries should update their climate measures every five years** and that the **climate assistance should increase.***

...but there are also some dark and troublesome clouds...





Electrification does not solve all problems...



Think Electricity Shortages.....



Let me briefly introduce Sweden....

You borrowed my future
and you expect ME
to pay it all back?



- We have a population of about 10.0 million....
- About 85% of our population live in urban areas...

- GDP per capita* is about \$48,853 US (Germany is \$48,943 US)

- We have no oil, gas, or coal resources of our own.....
- ..but we are at the forefront of environmental thinking....

* source: OECD (2016)

Sweden is in the lead (!)

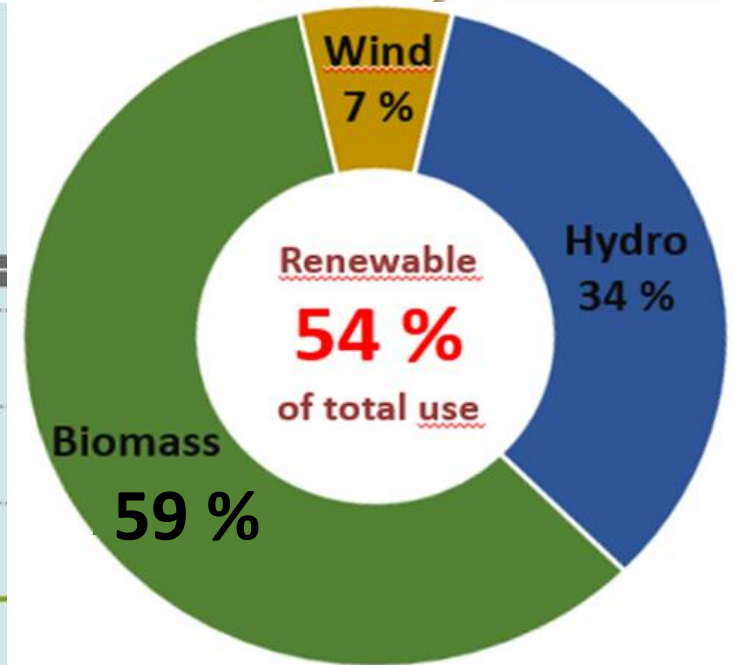
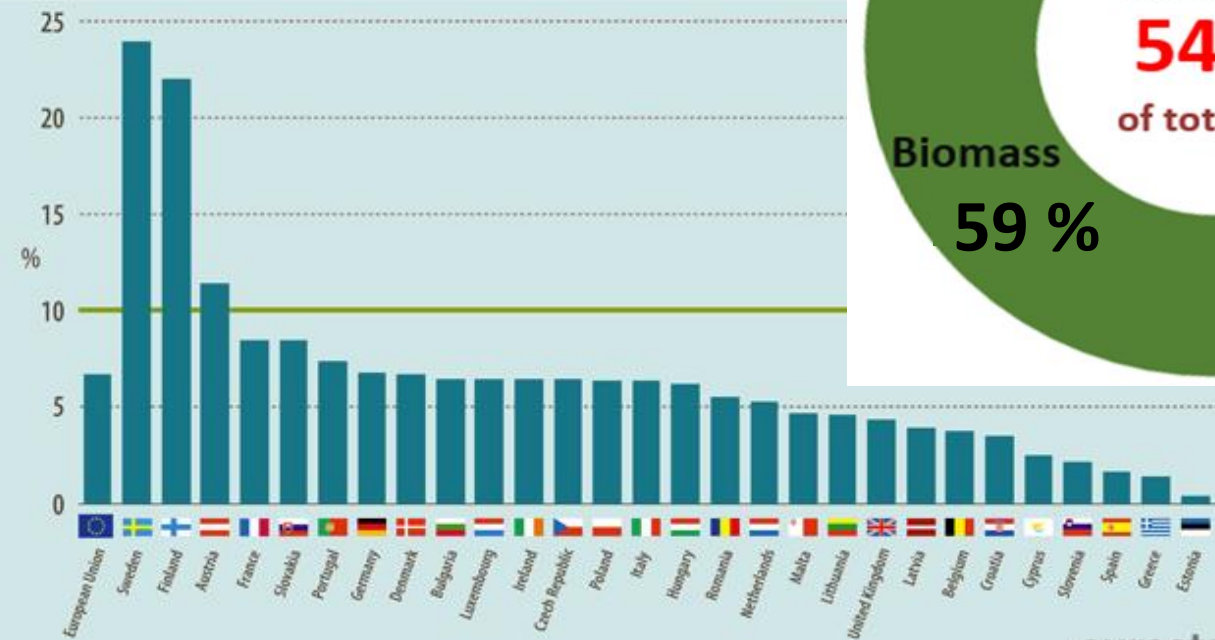
Share of energy from renewable sources in the EU Member States

(in % of gross final energy consumption)



Share of energy from renewable sources in transport

(in % of gross final energy consumption)



Sustainable Bioenergy

Seen through my Swedish eyes

- Combustion can never produce more CO₂ than the plant once taken out of the atmosphere
- We do not cut any trees for heat and power – we use byproducts from forest industry
- Forest growth is worldwide larger than our harvesting – our planet become greener
- Responsible forest management is necessary for a sustainable production
- Biomass provides work and welfare in rural areas



First conclusion



- **We will not solve climate change without bioenergy**
- **Lack of knowledge is our greatest enemy**

A wide political backing is necessary for a long term and credible agenda



~~disagree~~

A smart move is to give priority to increase the cost of all kinds of fossil energy, and **NOT TO GIVE HIGH SUBSIDY** directly to renewable energy

This act gives the result that all renewable energy competes on equal terms, which develops the whole renewable industry

Our roadmap is simple and easy to understand



Replace fossil energy
with renewables
55,000 employees

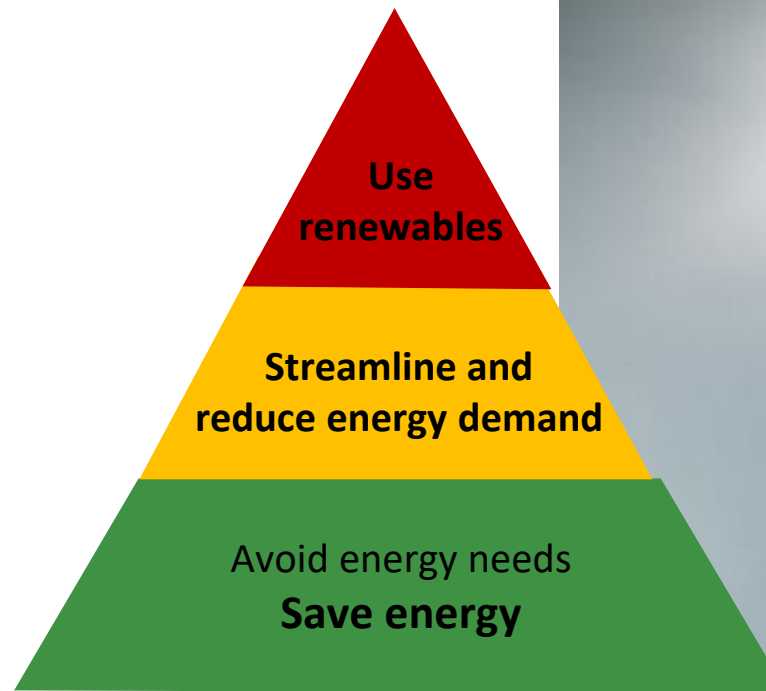
Cut the losses – save energy
13,000 employees



Maximum
RECYCLING
18,600 employees

Always focus upon *sustainable resources* that are not "running out"


Swedish Pellet Association



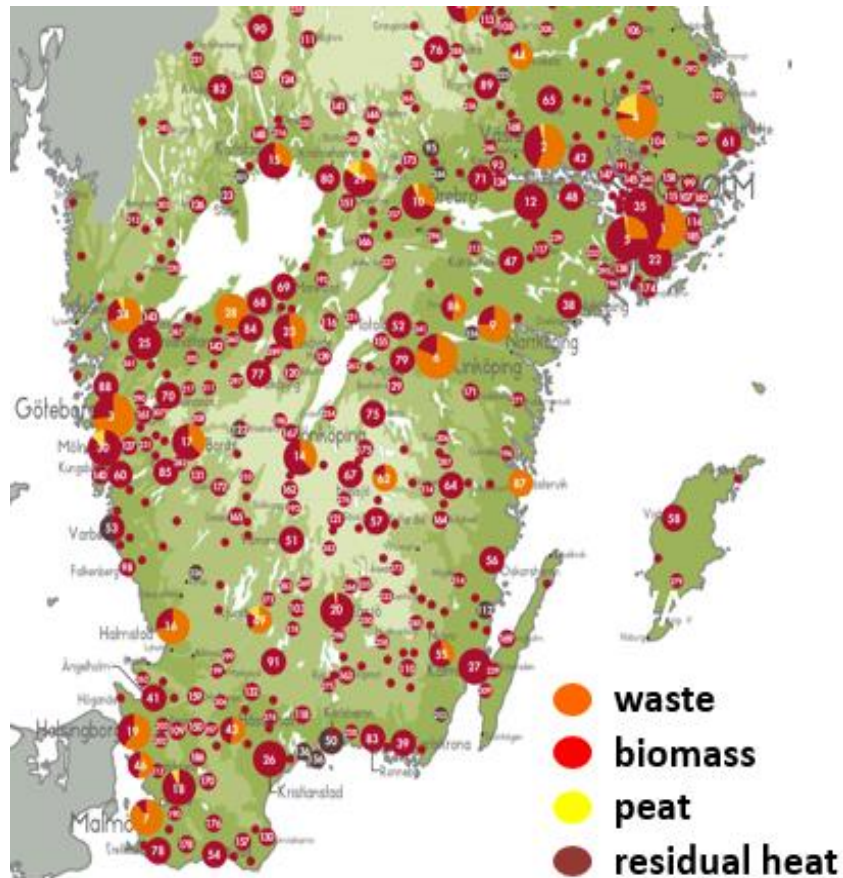
Second Conclusion



**Brave politicians, skilled
installers & wise consumers**

We should not close our eyes to bioenergy

If you look at the Swedish roadmap – you can all make it a little bit better...



- 37% of all energy in Sweden is currently from biomass, most of our use are by-products of the forestry industry
- Globally, bioenergy provides more energy than all other renewable energy sources together
- Sweden has valuable expertise in combustion plants of different types of biofuels, either for heat generation or for co-production of electricity and heat, as well as for biofuels
- Within the district and local heating market is our business and knowledge in the world top rankings.
- New advanced fuels and combustion technologies are constantly being taken by our companies and researchers

Bioenergy has many advantages

- Active forestry management boosts growth
- Increased profitability for the forest industry
- Create sustainable jobs in rural areas
- Reduces the cost of heating
- More money stays in the local economy
- Reduces greenhouse gas emissions
- Storageable packaged ready to use



The climate challenge requires both energy efficiency and more renewable and sustainable biomass

Always look for smart business opportunities...



Waste incineration



4%

of Sweden's trash goes to landfill...

The rest creates energy.


Swedish Pellet Association



Biogas production

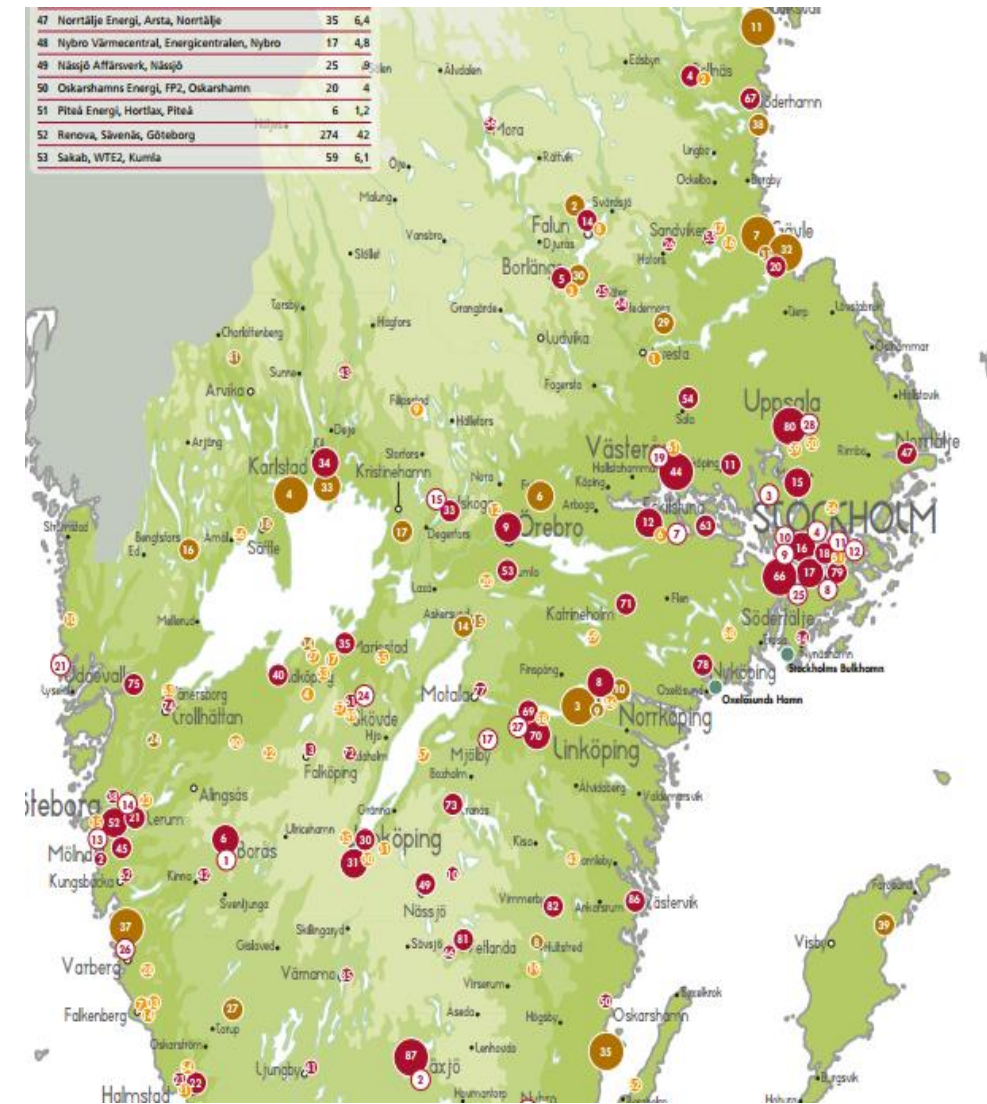
Pick the low hanging fruits first...

- All kinds of waste is a resource
- Excess heat from industrial production
- Low value byproducts from forest industry
- Refine your sawdust into high quality premium pellets
- Look for profitable business in which companies and authorities cooperate



CHP production units in Sweden 2015

- Today there are 202 biomass CHP plants in operation and 30 more are under construction
- BioPower from CHP can be used as a balance power to windmills and pv solar cells
- In a normal year BioPower produces about 12- 15 TWh of electric energy (12 %)
- BioPower has a potential to generate more than 35 TWh of electricity per year.



Biomass for small industrial heat and public buildings...

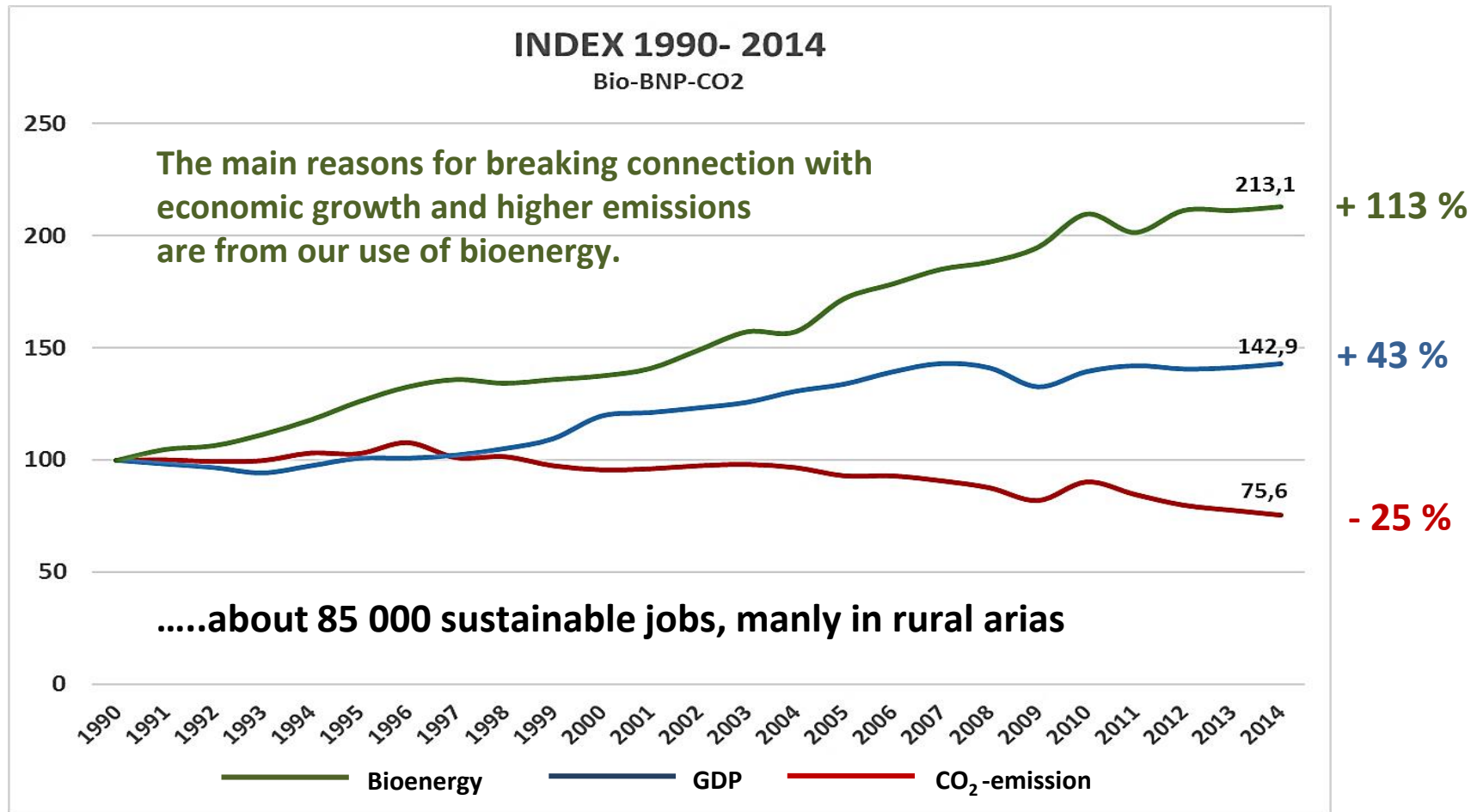


- For example:**
- Laundries
 - Concrete Industry
 - Food Production
 - Process steam and others...

- For example:**
- Grain & chip drying
 - Space heating
 - Hot air bakery and others...



Swedish GDP increased while CO₂ emissions went down



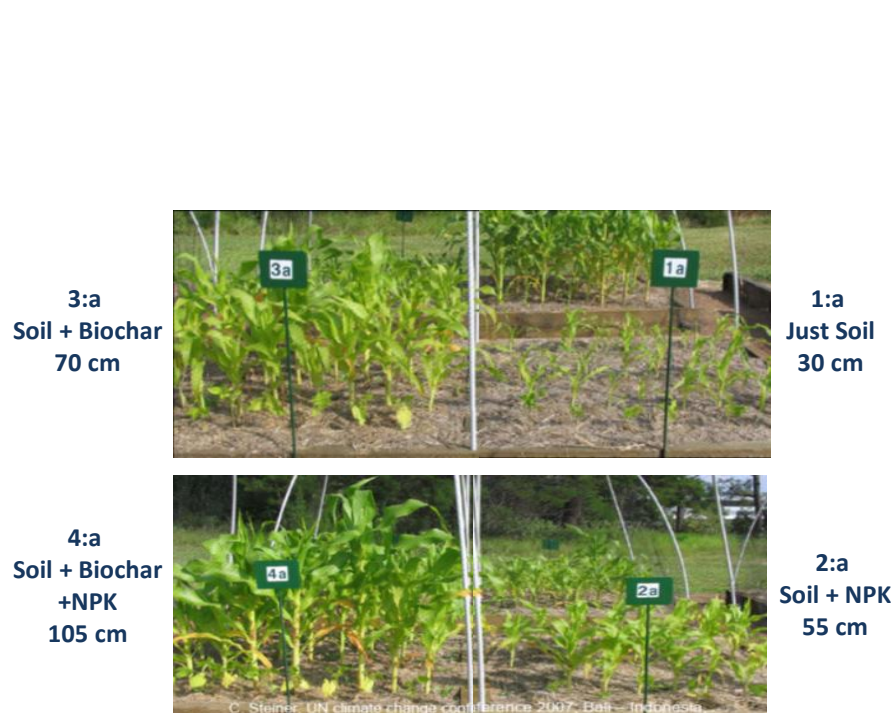
Burning biomass is almost entirely carbon neutral...



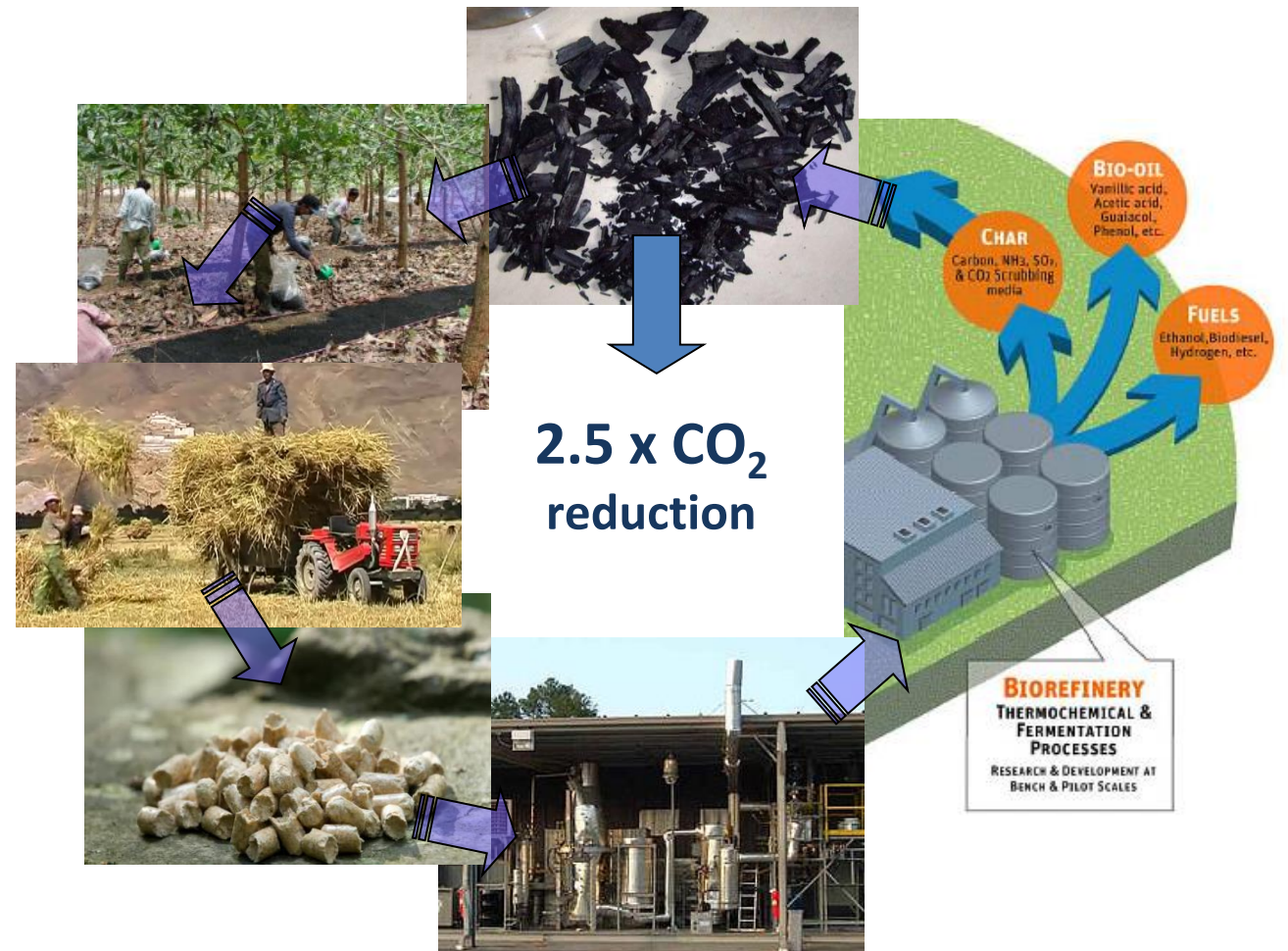
....but it is good enough?

Carbon negative = Climate positive

Carbon sequestration for 1000's of years ...



Biochar as a soil fertilizer...



Biochar is probably the best way to repair the mistakes we already made...



- By utilizing biochar you can *delete your carbon footprint* from your use of fossil energy

- Our politicians can "*buy time*" to find a sustainable energy
- ...and then take advantage of already made investments and use them during its *hole technical life*



Conclusions in summary



- All kinds of waste is a resource
- Create demonstration projects
- Long-term energy policy
- Knowledge and cooperation
- Take advantage of entrepreneurship and SME companies creativity
- Communicate cross-disciplinary and cross-sector
- Take advantage of academic research to make bioenergy values visible
- Develop clusters of financiers, authority, researchers and companies
- Educate widely around bioenergy additional values
- Always “Polluter pays principle” in the first room

We've probably made all the mistakes that can be made....

....so now we Swedes surely can tell you what NOT to do.....



Let's do it together!!!



THANK YOU!

Bengt- Erik Löfgren

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