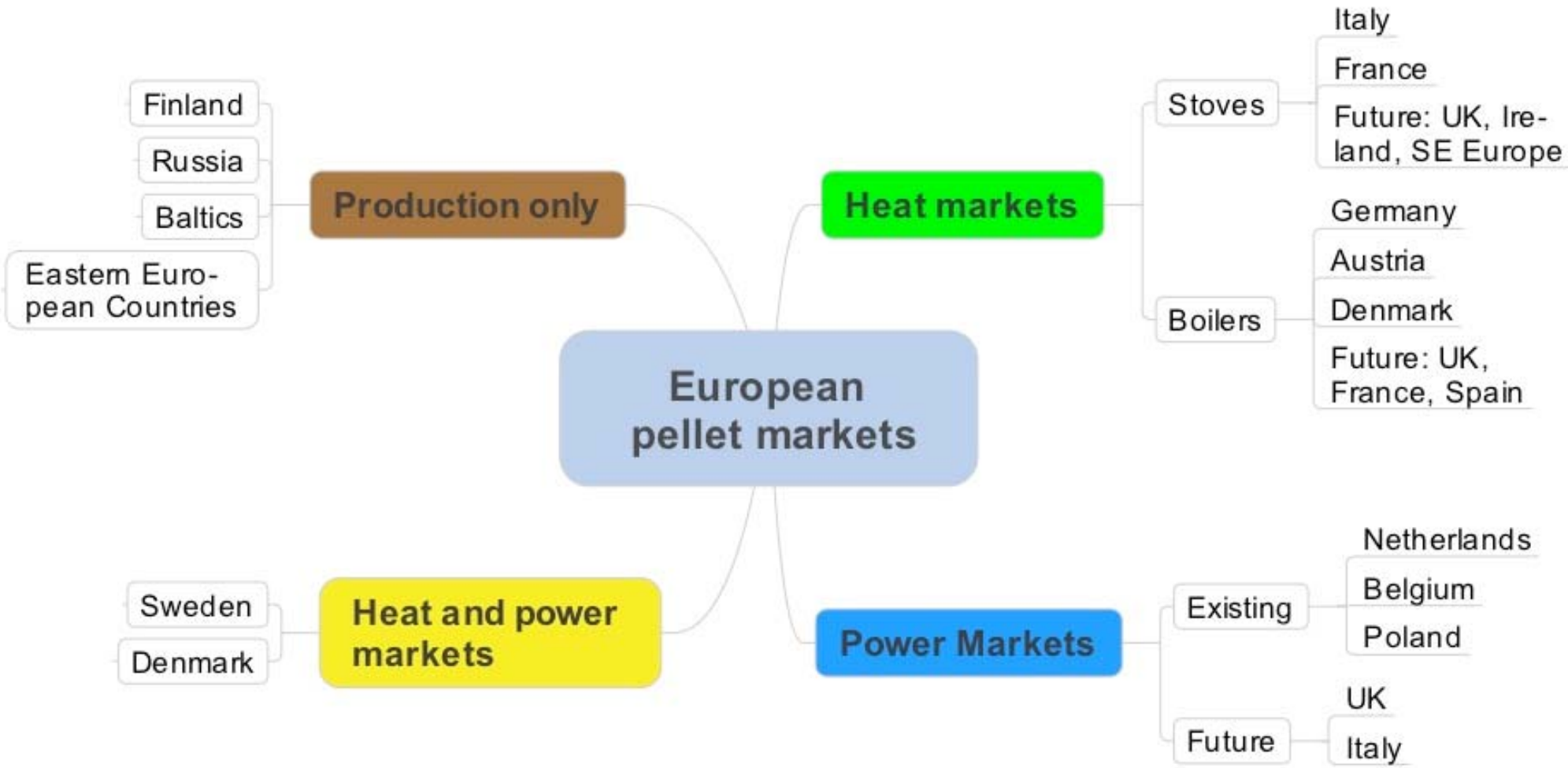
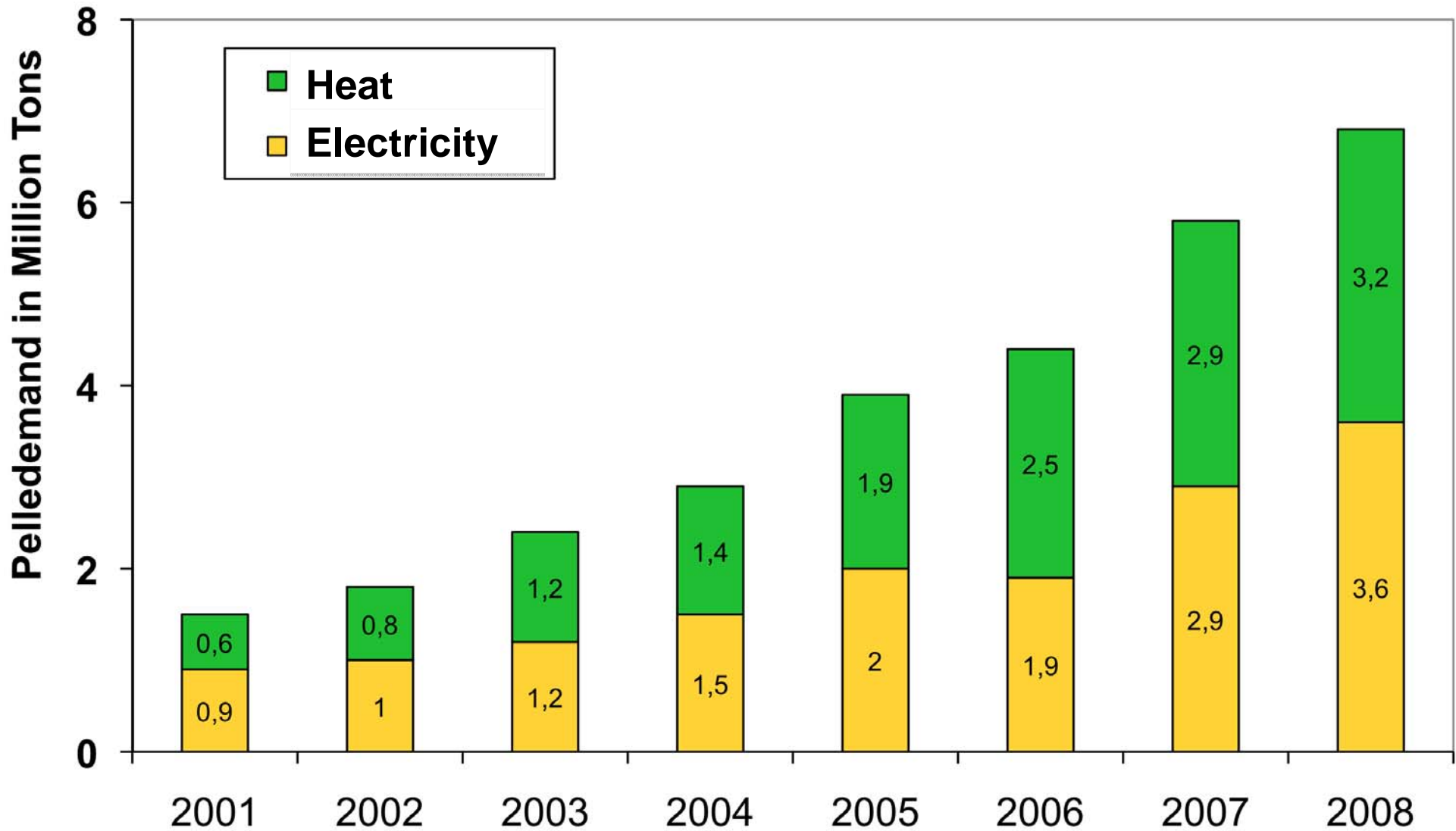


European Pellet Markets

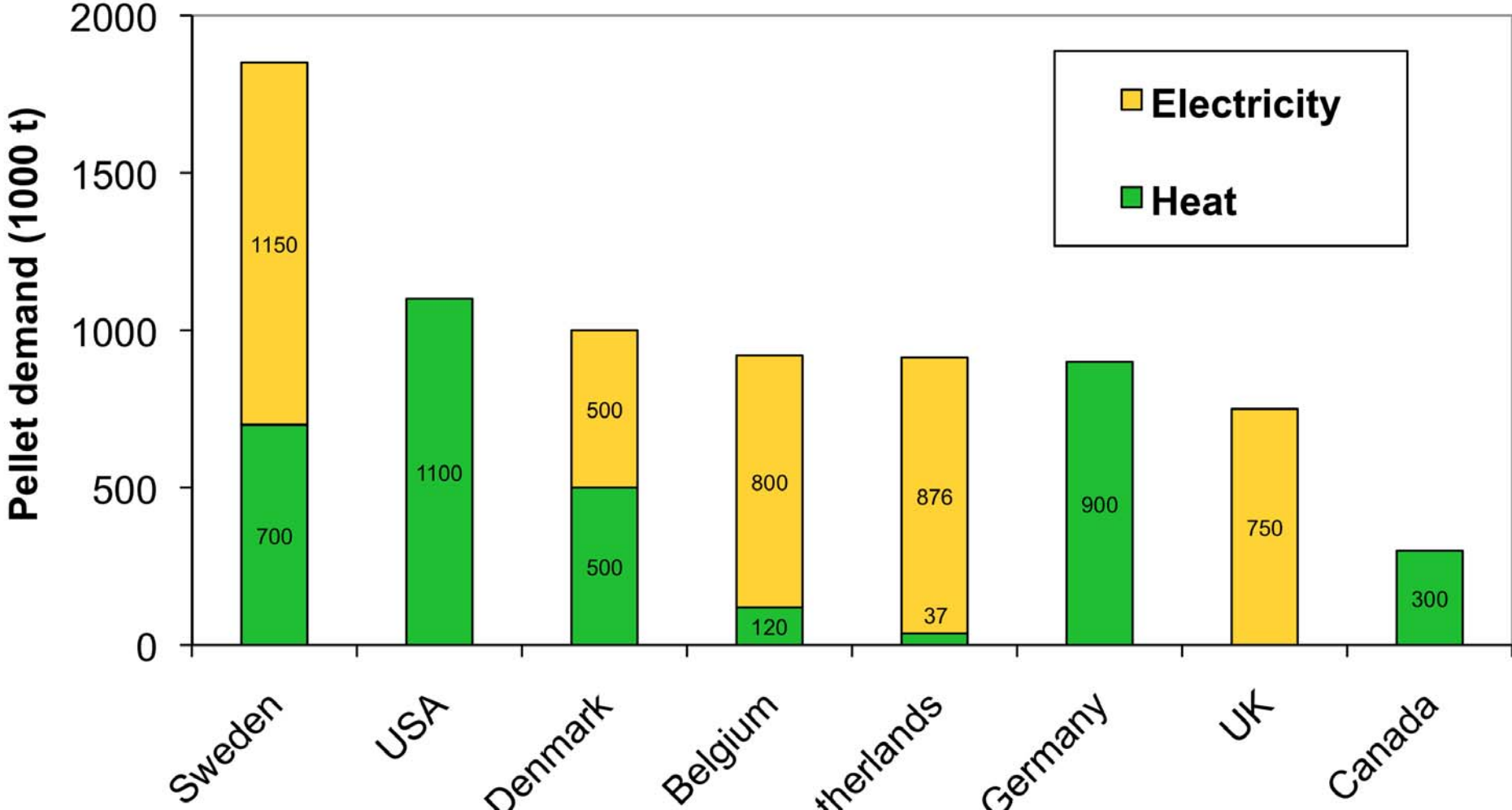
Christian Rakos, proPellets Austria



Pellet Demand in Europe

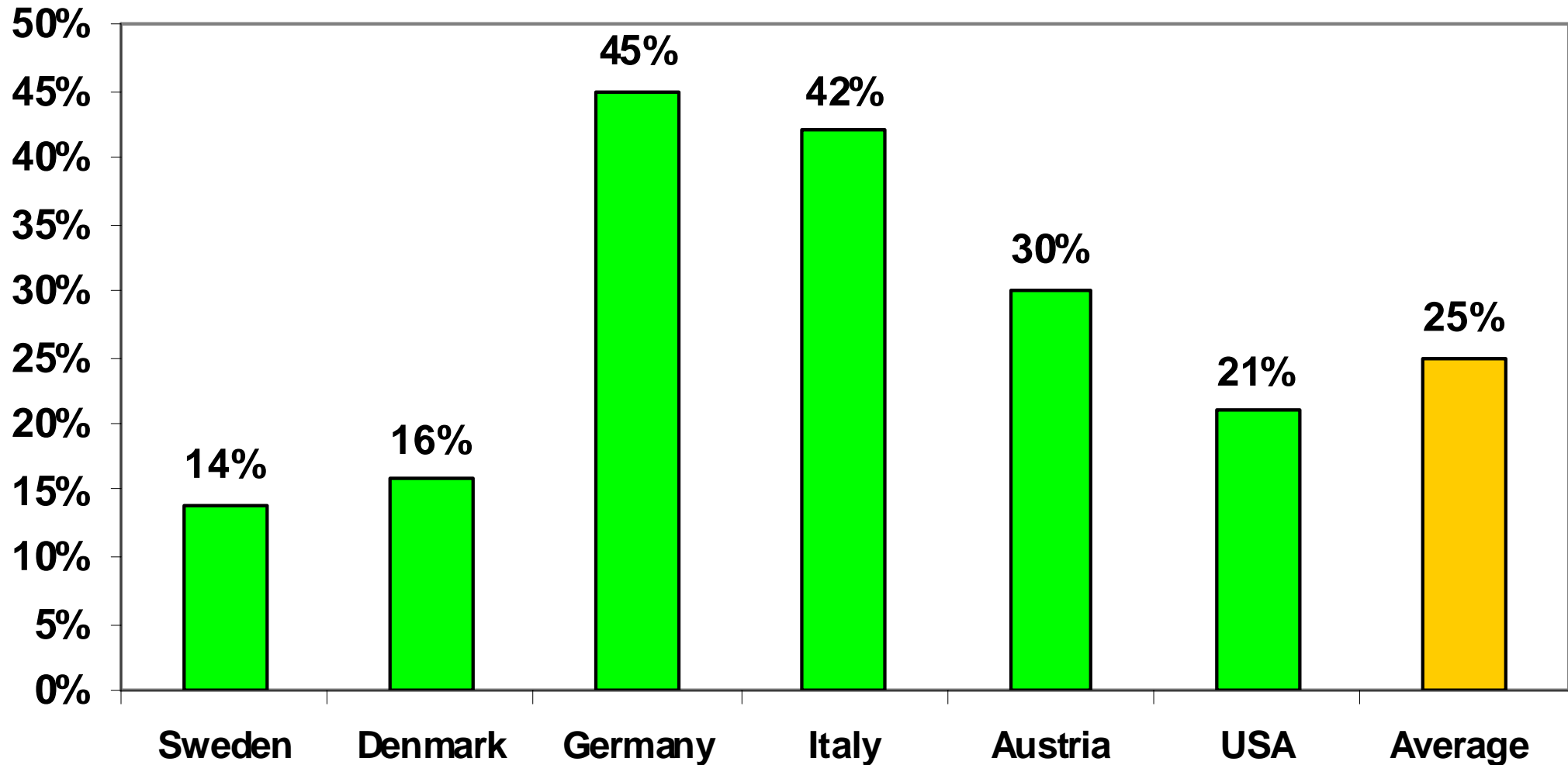


International Pellet Markets



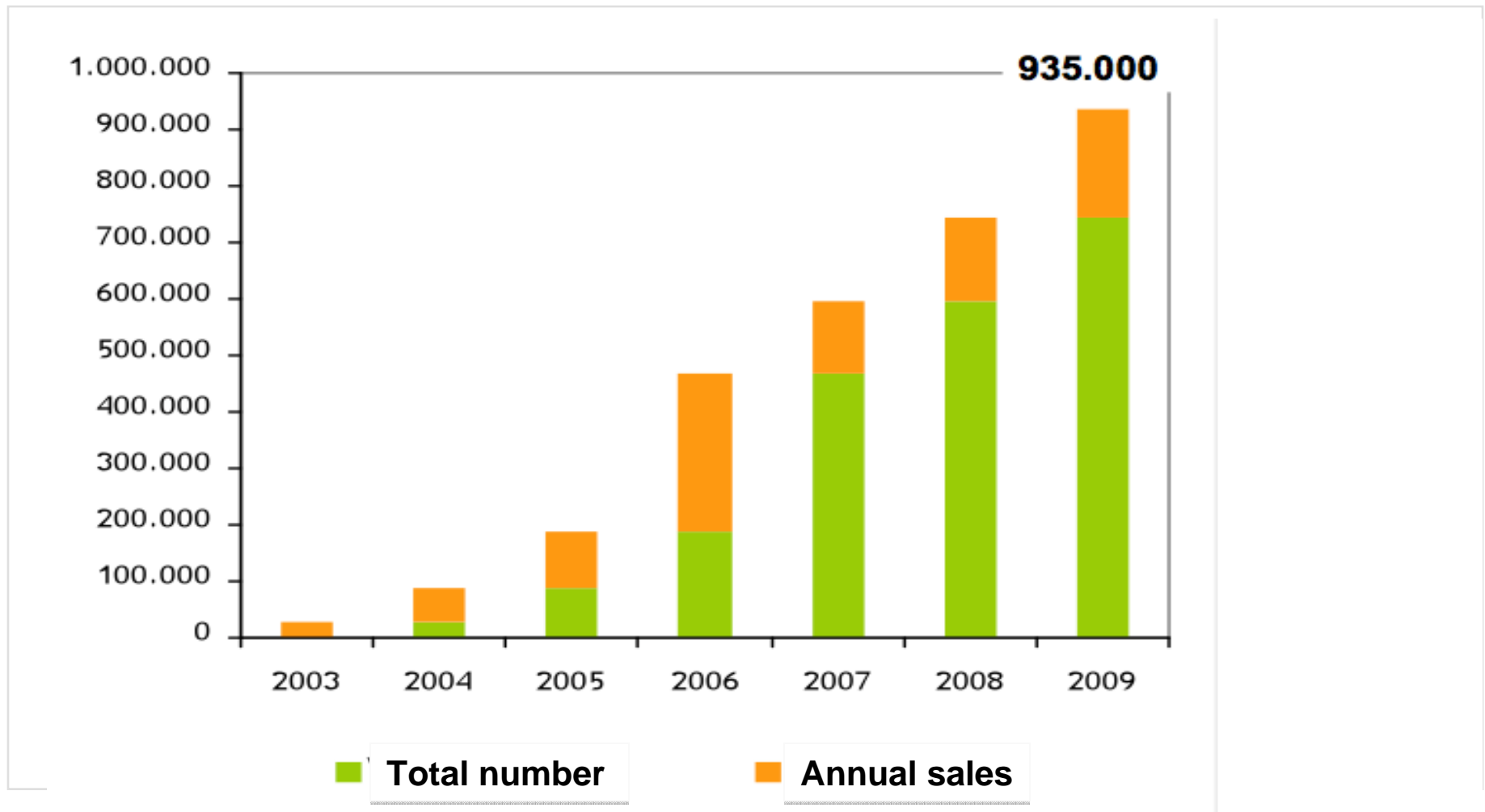
Quellen: pellet@tlas, Bioenergy International

Average growth of pellet demand between 2003 and 2008



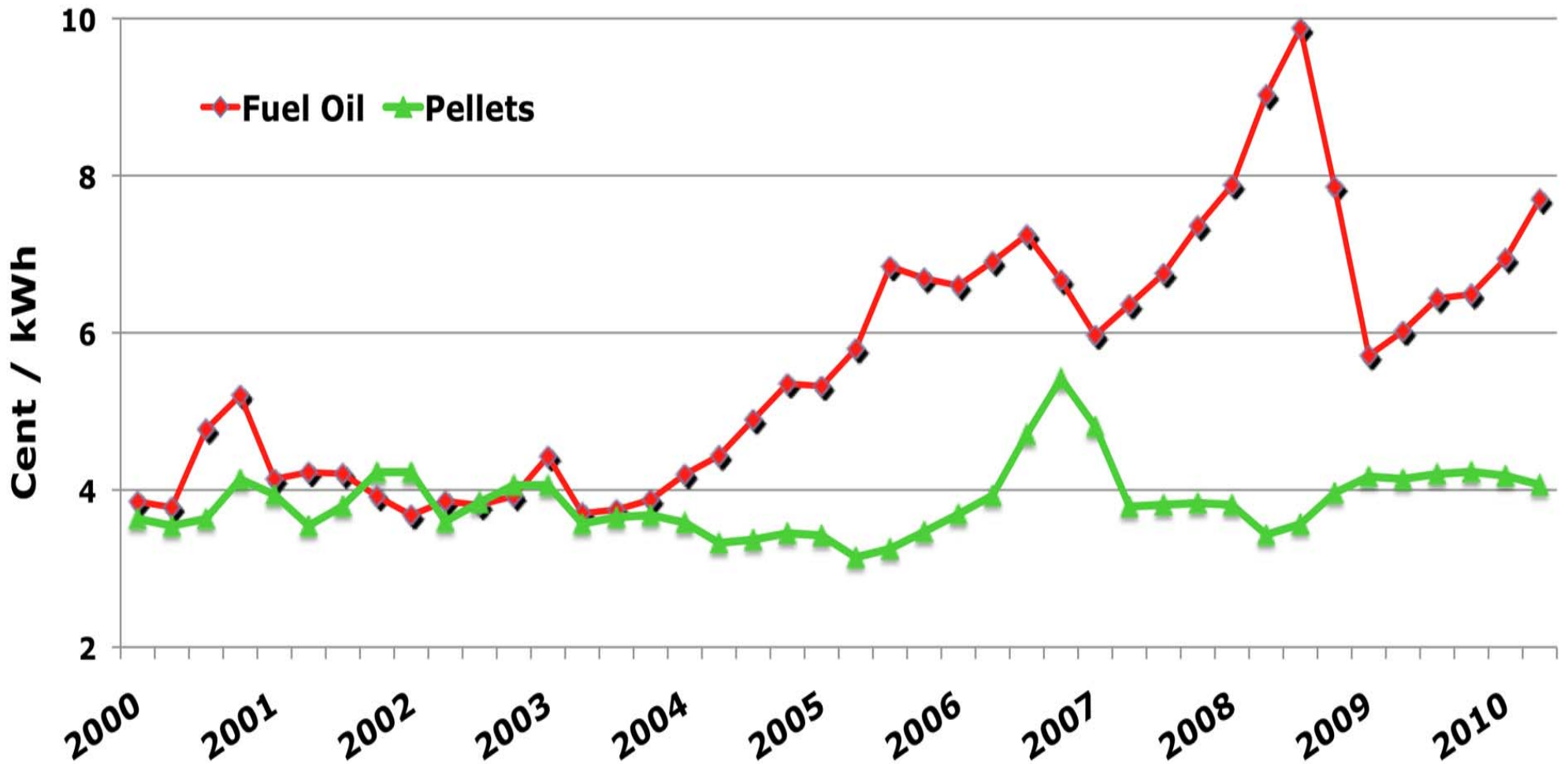
Quellen: PIR, FORCE, DEPV, AIEL, proPellets 2009

Italy: Pellet Stove market development



Source: CECED – Data processing: A.Paniz

Quarterly Prices: Fuel Oil - Pellets



Source: IWO, WKO, proPellets Austria; Date: 9. June 2010

Projections for future growth of global pellet markets in million tons

	Poyry	RWE (Europe)	Mitsubishi
2008	11,8	11,8	11,8
2015	24		
2020		140	228
2025			
2030			400

The policy of the European Commission: driving force for renewable energy development in Europe

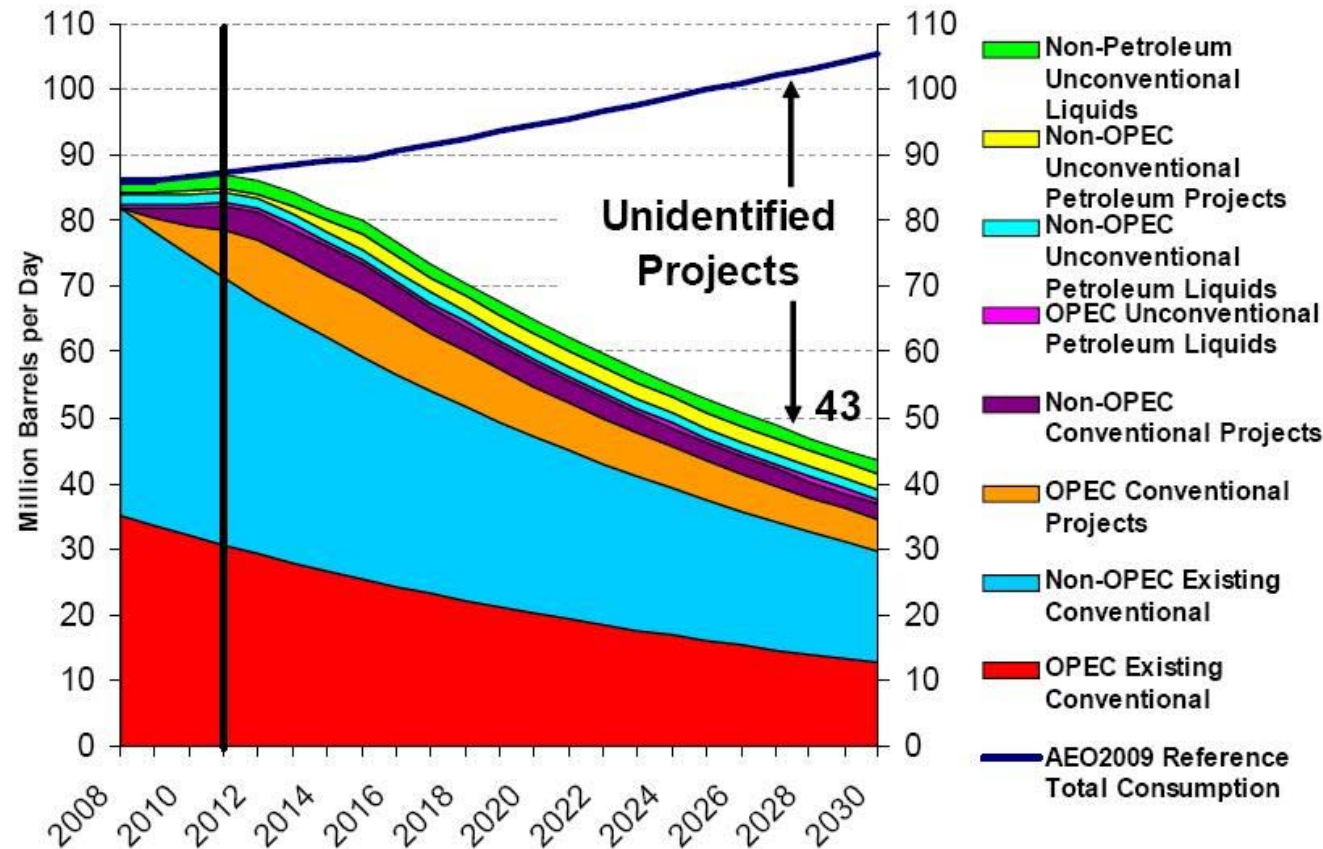
- » 20/20/20 goal: 20% less CO₂, 20% share of RES, 20% increase of energy efficiency
- » Binding targets for every member country for RES use
- » National Renewable Energy Action Plans had to be submitted by Jun 30, 2010
- » http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

The big question: how serious is the commitment of national governments to change energy policies

- » Very ambitious rethorics
- » Influence of traditional energy industry on politics is clearly visible (Nuclear, CCS, heat pumps ...)
- » Renewable Energy lobbies are still very weak in comparison
- » Economic crisis replaced energy as key policy issue
- » Serious action only as crude oil supply crisis builds up?

Depletion of currently producing oil fields will likely lead to overall decline of global oil production

World's Liquid Fuels Supply



Source: EIA, AEO2009

Pellets on their way to a commodity market

- » Increasing role of wholesale trade
- » Pellet price indices
- » Tradefloor for pellets?

Wholesale pellet traders

»» Energy traders:

- GEE – Energy: www.gee-energy.com
- GF Energy : www.gfenergy.eu

»» Agricultural commodity traders.

- NIDERA: www.nidera.com

»» Commodity traders for forest industry products:

- Cellmark: www.cellmark.com
- Ekman: www.ekmanonline.com

Pellet price indices

» Key role for mitigation of risks

» Currently 3 price indices are provided:

- ENDEX: power exchange, index based on opinions of market actors
www.endex.nl
- ARGUS: energy market reporting agency, index based on opinions of market actors www.argusmedia.com
- FOEX: specialised index provider for pulp markets, index based on actual deals, www.foex.fi

Recent developments in the European Pellet sector

- » Establishment of new national pellet associations (CH, HU, FR, FI, ...)
- » Establishment of the European Pellet Council as umbrella organisation in Brussels
- » Development of EN plus as new standard for pellet quality certification

pro»pellets

Austria

The EN plus certification

Striving for uniform pellet qualities in Europe

The new European wood pellet standard EN 14961-2

» Defines 3 pellet qualities

- A1 Ash $\leq 0,7$ %
- A2 Ash $\leq 1,5$ %
- B Ash $\leq 3,5$ %

» Will replace national pellet standards

» Will be published 2010

Certification of producers: ensuring consistent quality of pellets – several systems in place

» ÖNORM geprüft

» DIN plus

» FN

» Pellet Gold

» Etc.

EN plus – an initiative to create a EU wide used certification scheme

- » Initiated by German Pellet Assoc.
- » Developed by German Biomass Research Centre
- » Participation of proPellets Austria
- » Extensively reviewed by industry & certification experts
- » Handbook of certification finalised in March 2010
- » www.enplus-pellets.de/downloads.php



Key features of EN plus

- » For A1 pellets dedicated to end users production AND supply chain are certified (Lack of quality control in supply chain can lead to poor pellet quality)
- » EN plus introduces (limited) traceability of pellets
- » EN plus includes provisions regarding sustainability of feedstocks
- » EN plus includes additional quality requirements
- » EN plus will be managed by sector

What does certification of producers include?

- » Audits of the production facility, annually by certified institutions
- » Audits can come unannounced, probability increases with number of filed complaints
- » Tests of pellets
- » Certification by accredited certifying bodies

What does certification of bulk delivery include?

- » Quality criteria for pellet storage & manipulation
- » Quality criteria for delivery vehicles
- » Requirements for quality management of distributors
- » Requirements for product information (e.g. on bags)
- » Training requirements for workforce
- » A system of identification numbers for traceability
- » Etc.

Sustainability requirements

- » Heavily debated
- » Current approach: producers outside the EU have to prove the wood comes from certified forests (e.g. PEFC, FSC, other forest certification systems)
- » Will need further discussions

Additional requirements for pellet quality

- » Heavily debated
- » Requirement for ash melting point analysis
- » Exclusion of chemically treated wood also for Class B pellets

Management by the sector

- » The European Pellet Council has been established July 1st 2010
- » It will become responsible for managing the EN plus system at the EU level – review of hand book, management of license issues

The role of national pellet associations

- » local management : e.g. negotiations with certifying bodies and test labs, information of industry, feedback to the EPC
- » Communication and promotion of EN plus
- » Will receive license payments from trademark users - this will strenghten sectoral interest organisations

My vision

- » EN plus is developed in such a way, that it is also useful for certifying industrial pellets
- » If industrial pellets and pellets for the heat market use the same certification scheme markets would get much more flexible
- » Technically A2 quality can be used in the heat and the power market
- » Upcoming US certification system should allow easy certification also to EN plus

Next steps

- »» In Germany market introduction has started
- »» Contract between German Pellet Association and European Pellet Council is in negotiation phase
- »» European market introduction of EN plus could start 2011

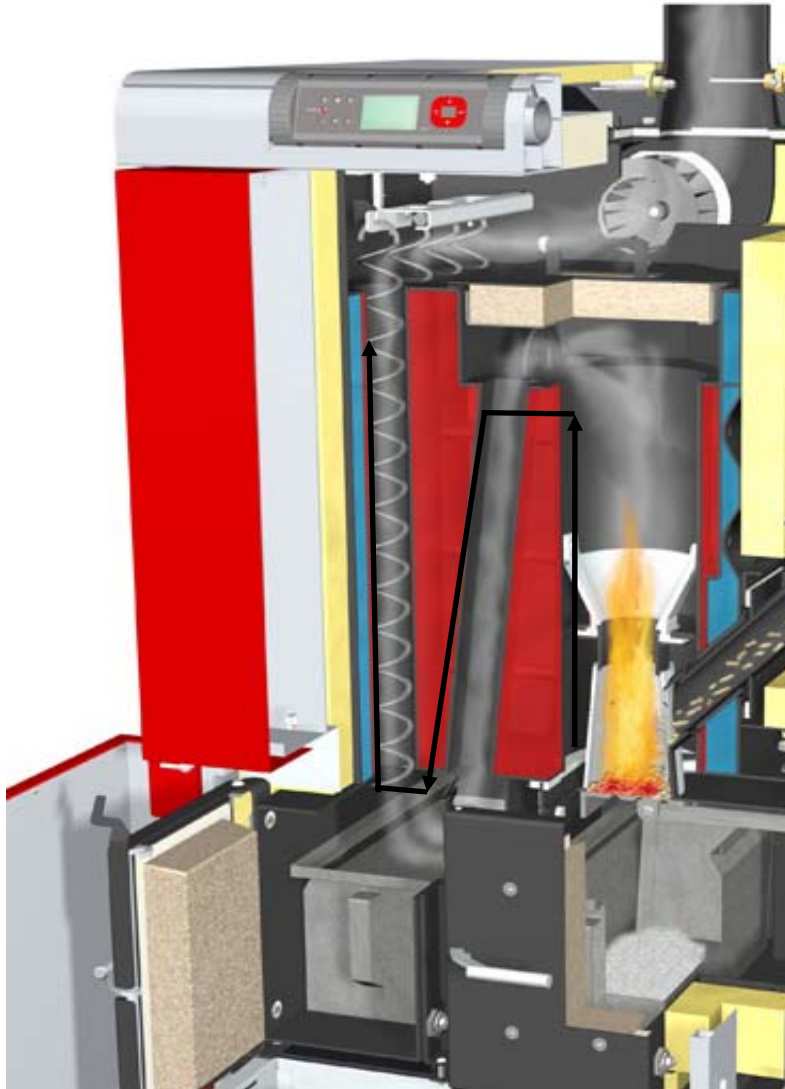
Technology & Innovation

A few examples from Austria

Innovations for domestic pellet boilers

- »» Further improvement of comfort
- »» Fully integrated renewable energy systems
- »» Balanced flue & flue gas condensation
- »» Full remote control (SMS, Internet)

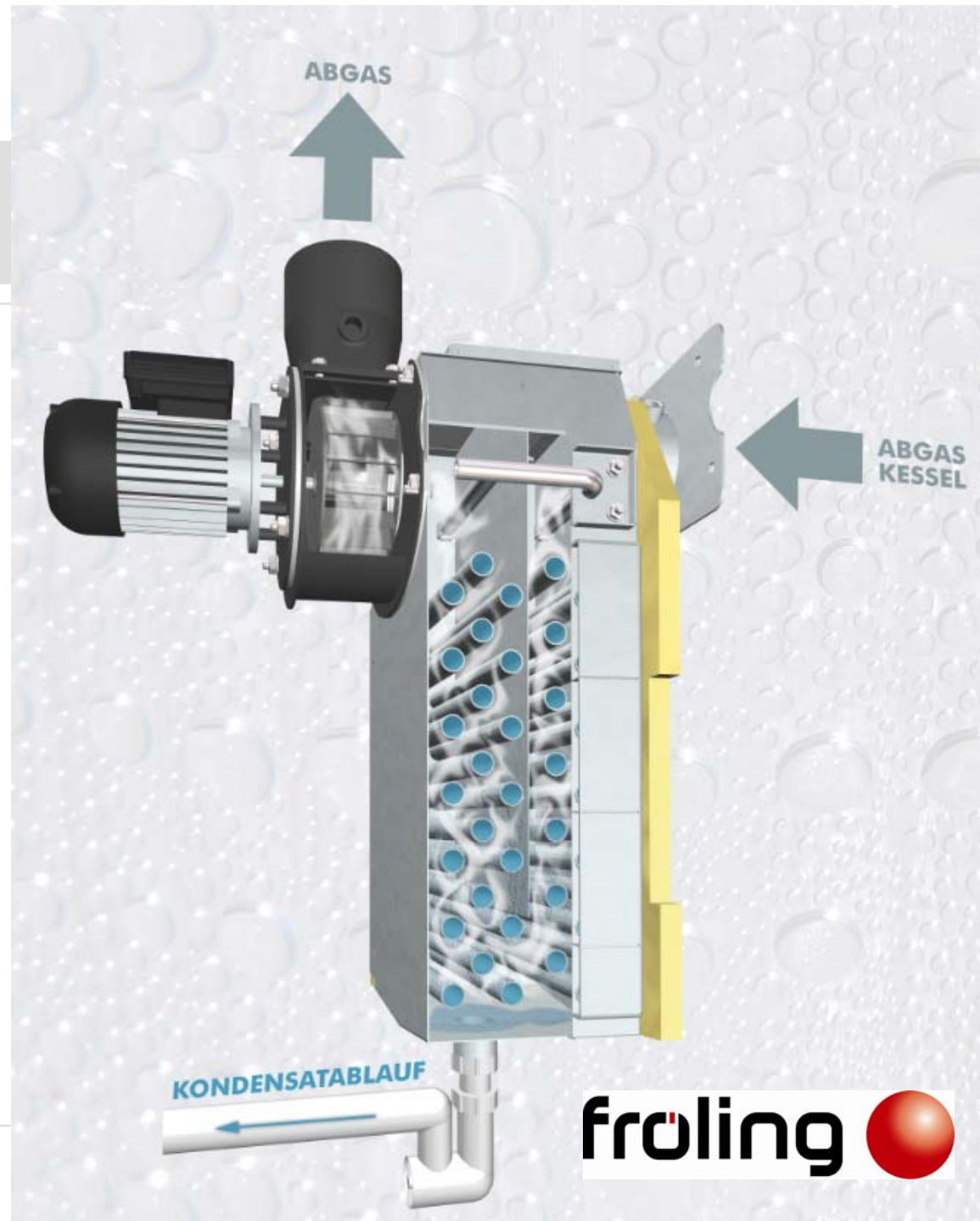
State of the art domestic boiler design



- » Perfect combustion conditions
- » Very low emissions
- » Remote control via SMS or internet
- » Ash removal only 2-3 times a winter
- » www.bioheatusa.com

Flue gas condensation

- » Stainless steel tubes
- » Automatic flushing
- » 106% of lower heating value



Pellet burner integrated in storage tank

- Perfect solution for low energy housing

- Ash removal only once per year

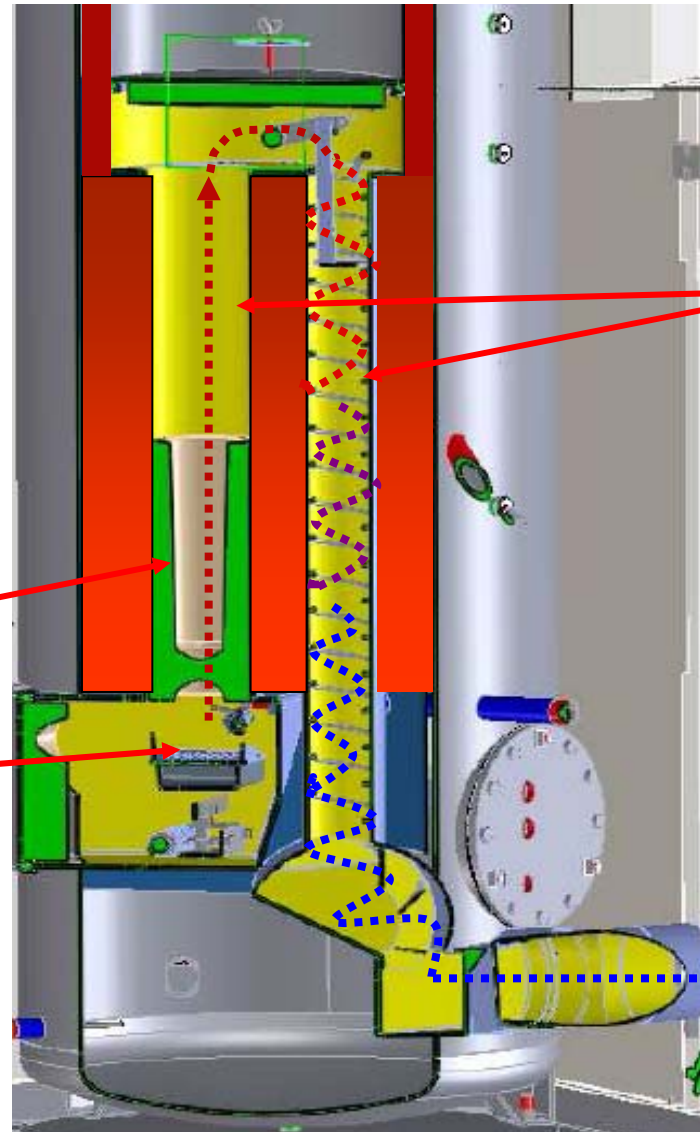
Combustion chamber

Burner plate

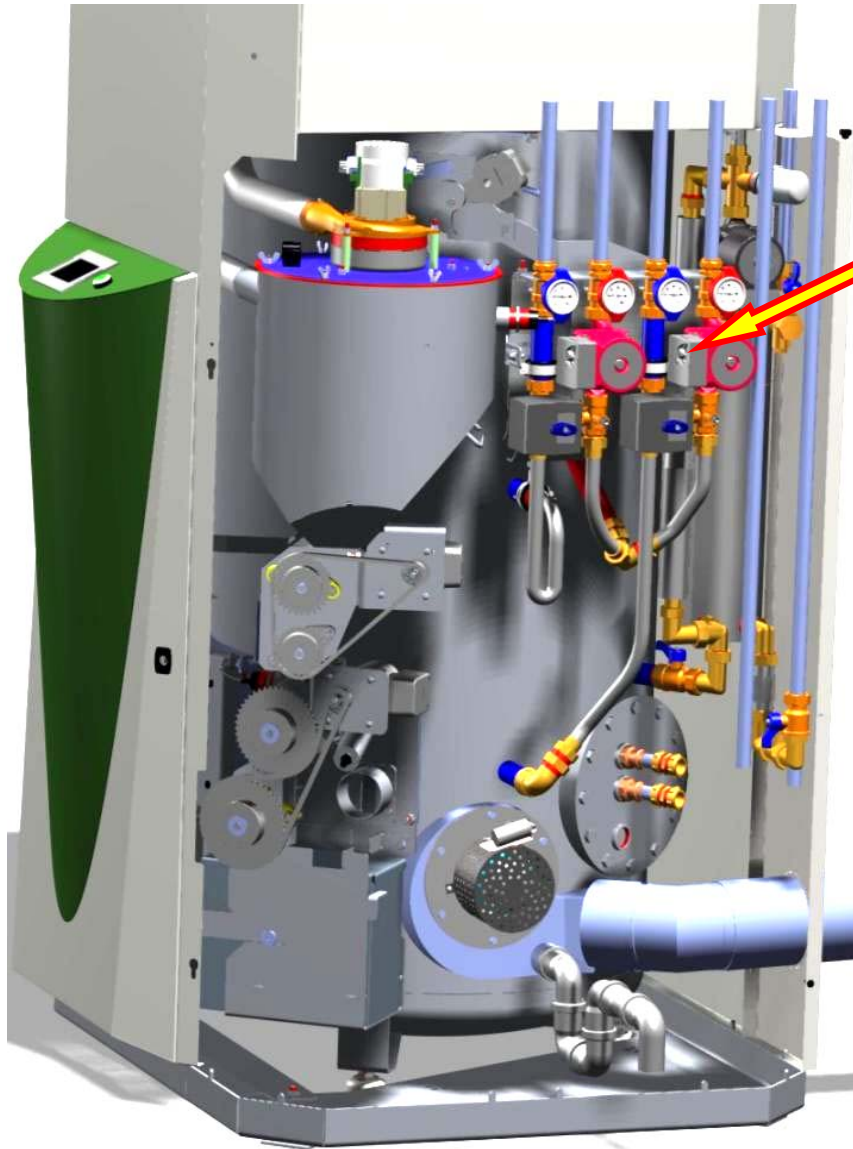
Stainless steel

Stainless steel chimney is required
Ø 5 in

85°-100°F



Hydronic components preinstalled **pro»pellets** Austria



- Heating circulators and mixer valves
- Heat exchanger for domestic hot water
- Heat exchanger for Solar collectors preinstalled

pro»pellets Austria

**Space requirement
16.5 ft²**

Capacity Range:

14,000 BTU/hr

20,000 BTU/hr

27,000 BTU/hr

www.mainenergysystems.com



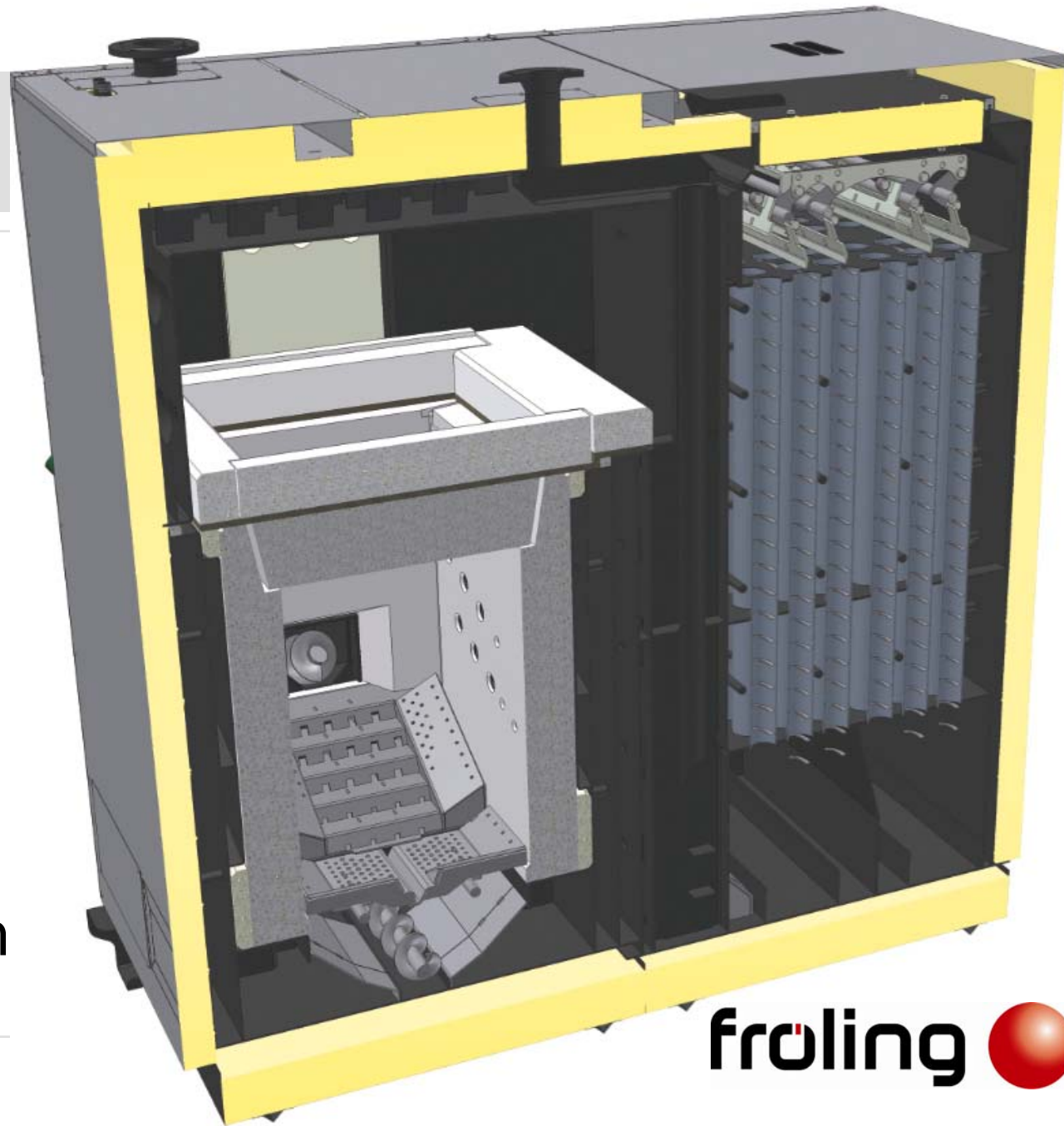
Flexible pellet and logwood boiler

- » Large logs or pellets
- » Automatic ignition
- » 93% Efficiency (LHV)
- » 10mg/m³ CO
- » www.woodmaster.com



Commercial boilers

- » Fuel flexible!
- » Chips & Pellets
- » 500.000 BTU /h
- » Best commercial results
- » www.bioheatusa.com



froling 

Pellet tower

- » Complete production line – vertical arrangement
- » Highest safety standards
- » Automatic operation
- » High quality pellets
- » www.teccon.at



Vyborgskaya Cellulose, Russia – 900.000t /a



ANDRITZ
Feed & Biofuel

Project completion: August 2010

Pellet production

900.000 ton/year

16 grinding machines

36 pellet machines

Final remarks

Where are European pellet heat markets heading for?

- » Very strong increase of demand in power sector after 2012: UK, NL
- » Predictions how fast heat market will grow more difficult – oil price key factor
- » But: heat markets WILL grow !
- » EU pellet production capacity is limited – imports will play an increasing role

Comparing costs and benefits of power & heat from pellets

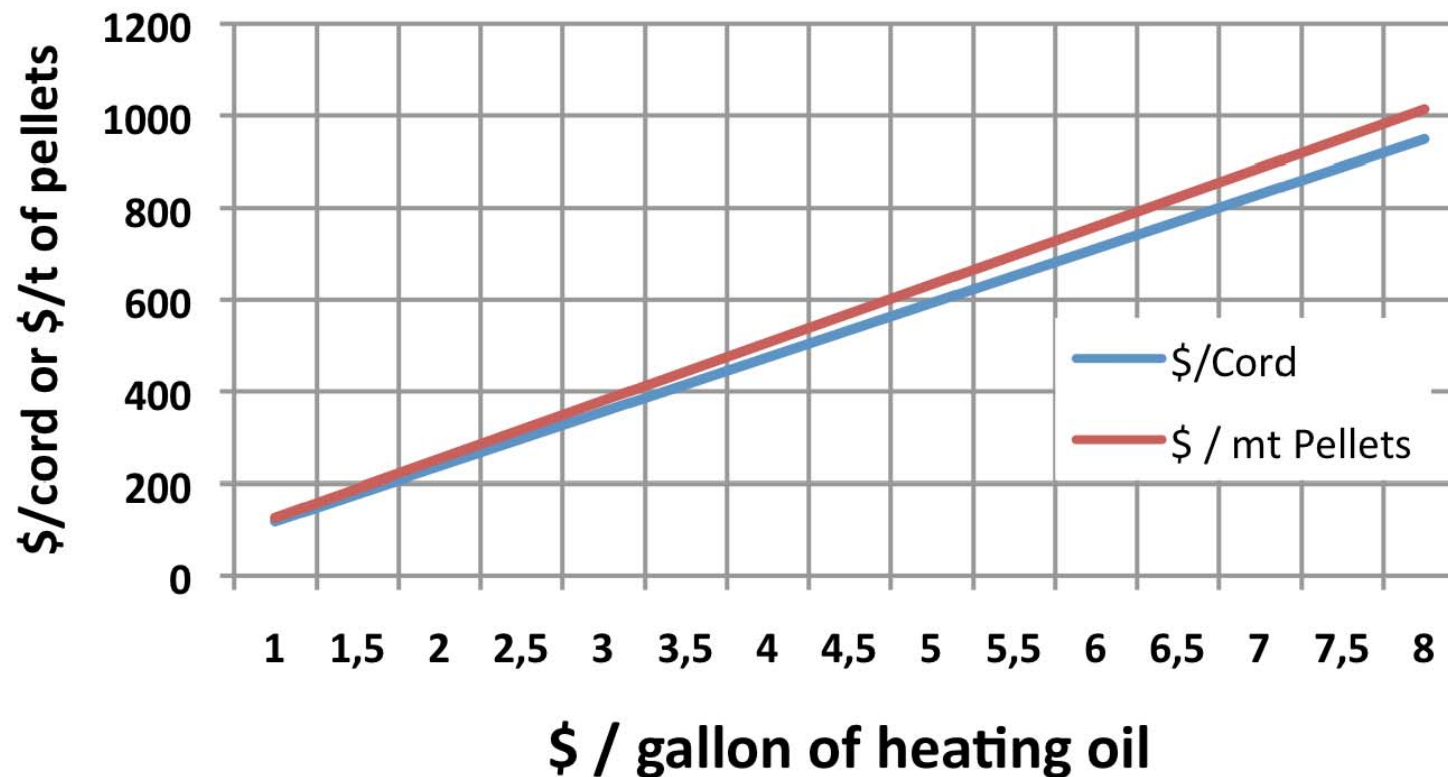
125.000 t Pellets p.a. 15 years	Pelletstoves	Powerplant
Number of users	50.000	1
Subsidy	650 \$ per stove	feed in premium 7,8 cent/kWh
Total costs of subsidy	32,5 Million \$	272 Million \$
Savings consumer	292 Million \$	0
Renewable energy delievered	9187 GWh	3491 GWh
Ex works price pellets	170 - 240 \$/t	110 – 130 \$/t

**Recommendation: increase effort to develop heat market
in the US**

- » Lower transport costs
- » No currency risk
- » Significantly higher profits
- » BUT: requires stronger efforts in advocacy and public relations

How do wood prices and heating oil prices compare?

Prices for cordwood and pellets if they would be equally priced as heating oil

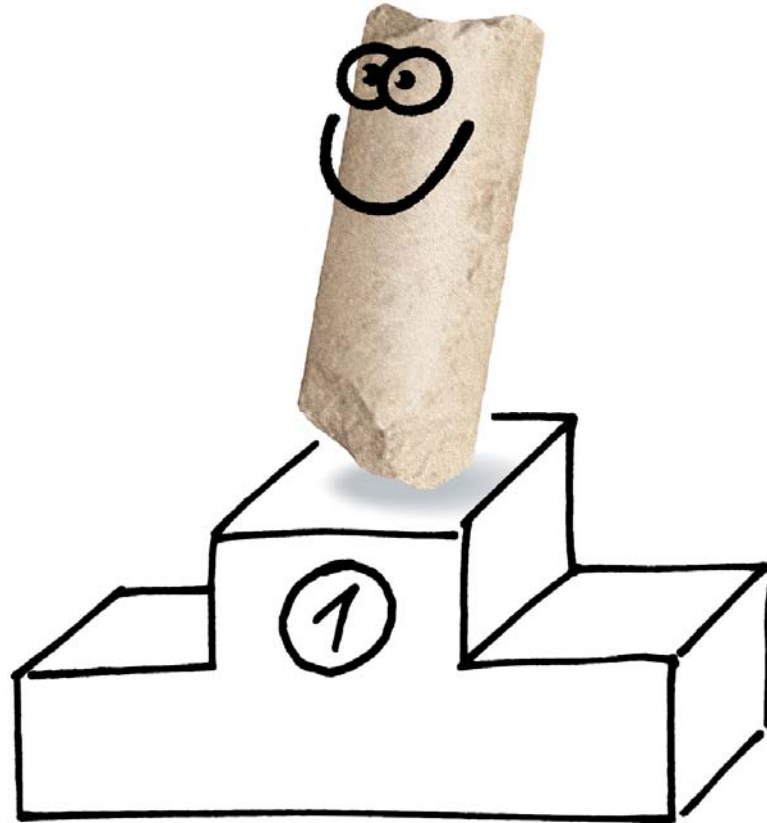


The crystal ball

- »» There is a bright future for pellets
- »» EU demand will grow massively in the years to come
- »» Share between power and heat market unclear & dependent on oil price

How to get prepared for the big boom?

- » Produce high quality certified pellets that can be sold in both markets
- » Establish preconditions for local heat market development
- » High quality standards for equipment – labeling
- » High quality of installation and after sales services
- » **Strong efforts in public relations and advocacy**



Thank you for your attention!