

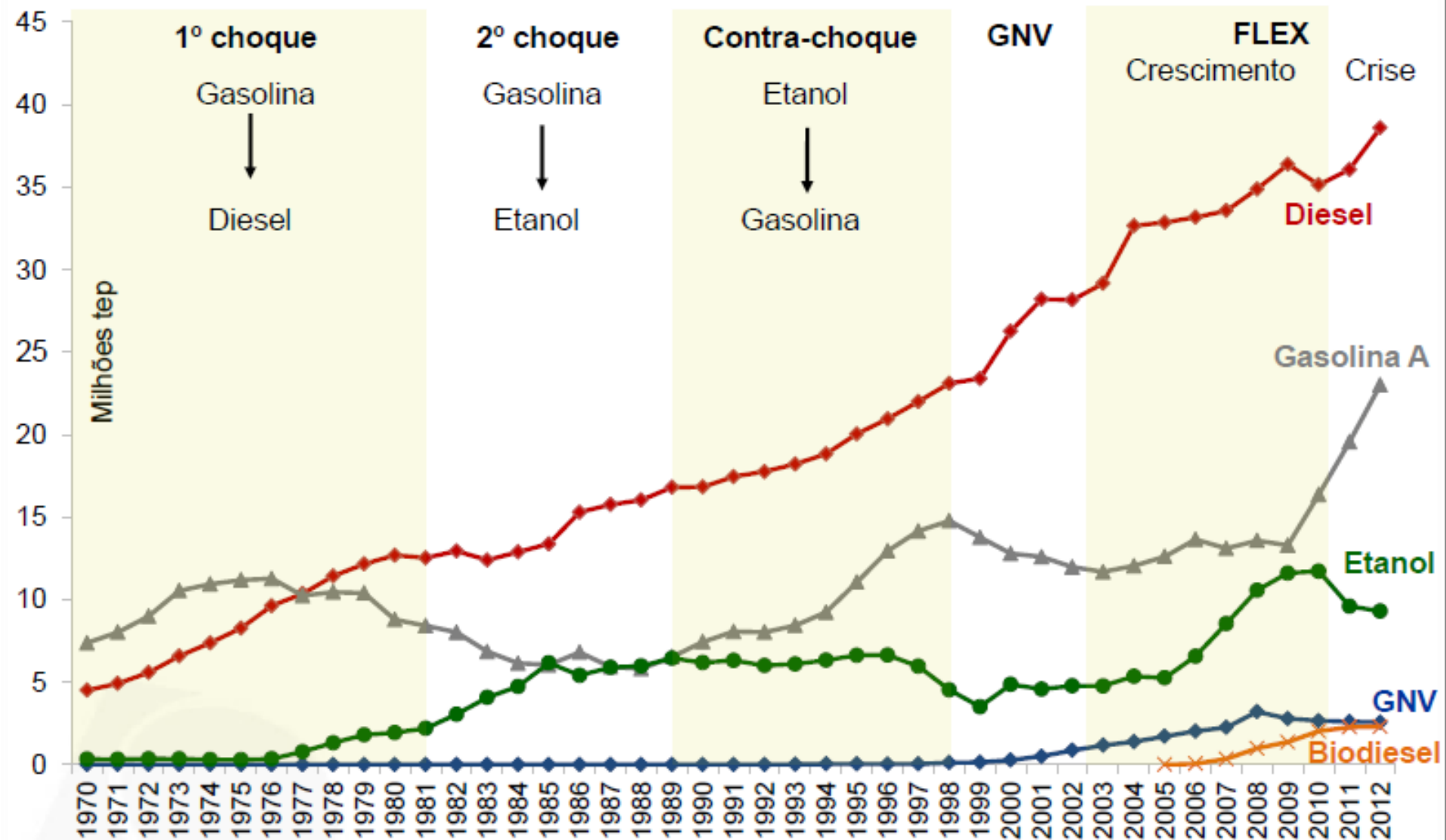
Sustainable biomass as a driver for green growth in SEE

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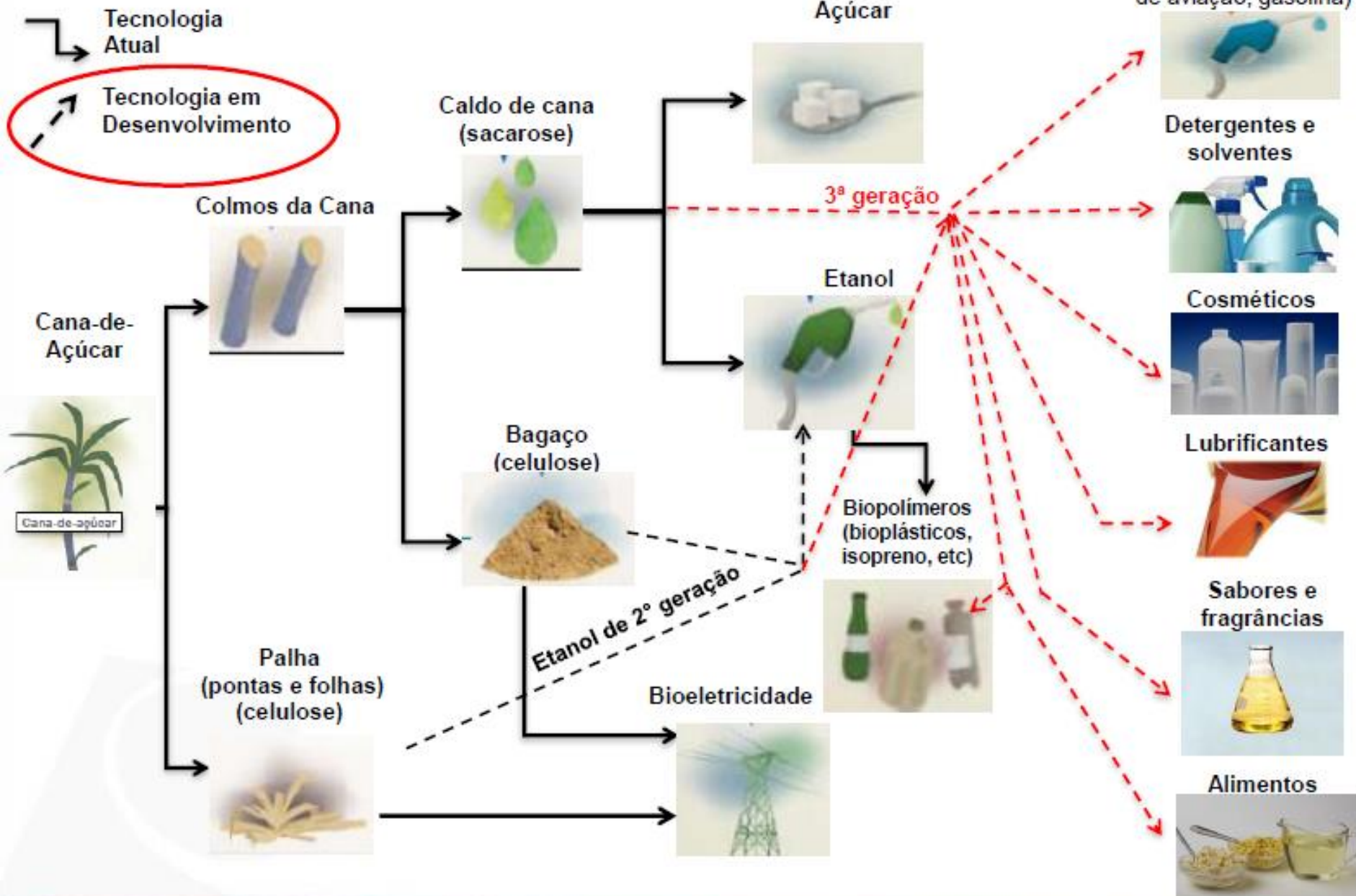
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Ciclotimia das Políticas de Combustíveis no Brasil



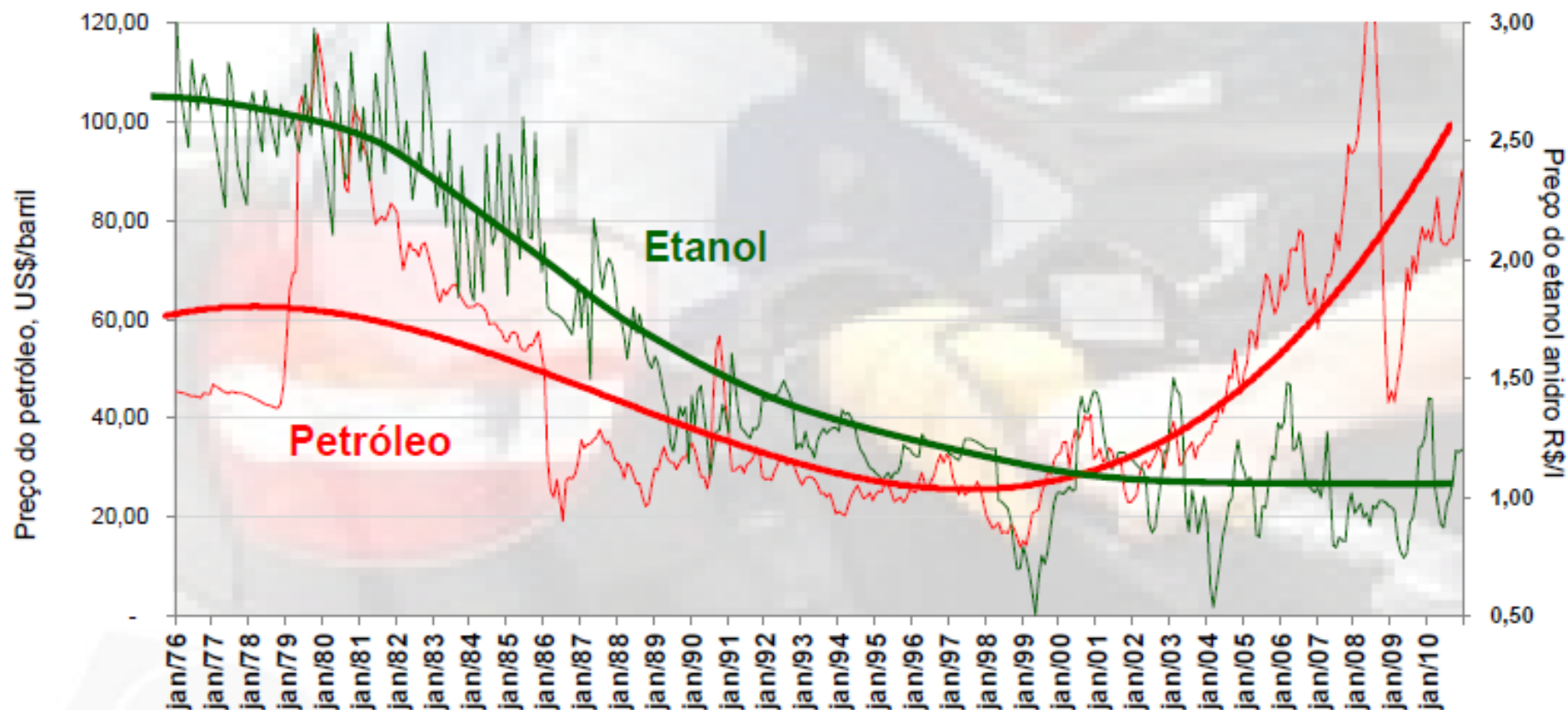
Fonte: MME, ANP, Agroconsult. No diesel atualmente 22% do consumo interno de Diesel é importado acrescentando 6700 mi tep (toneladas equivalente petróleo).

Principais produtos da cana-de-açúcar



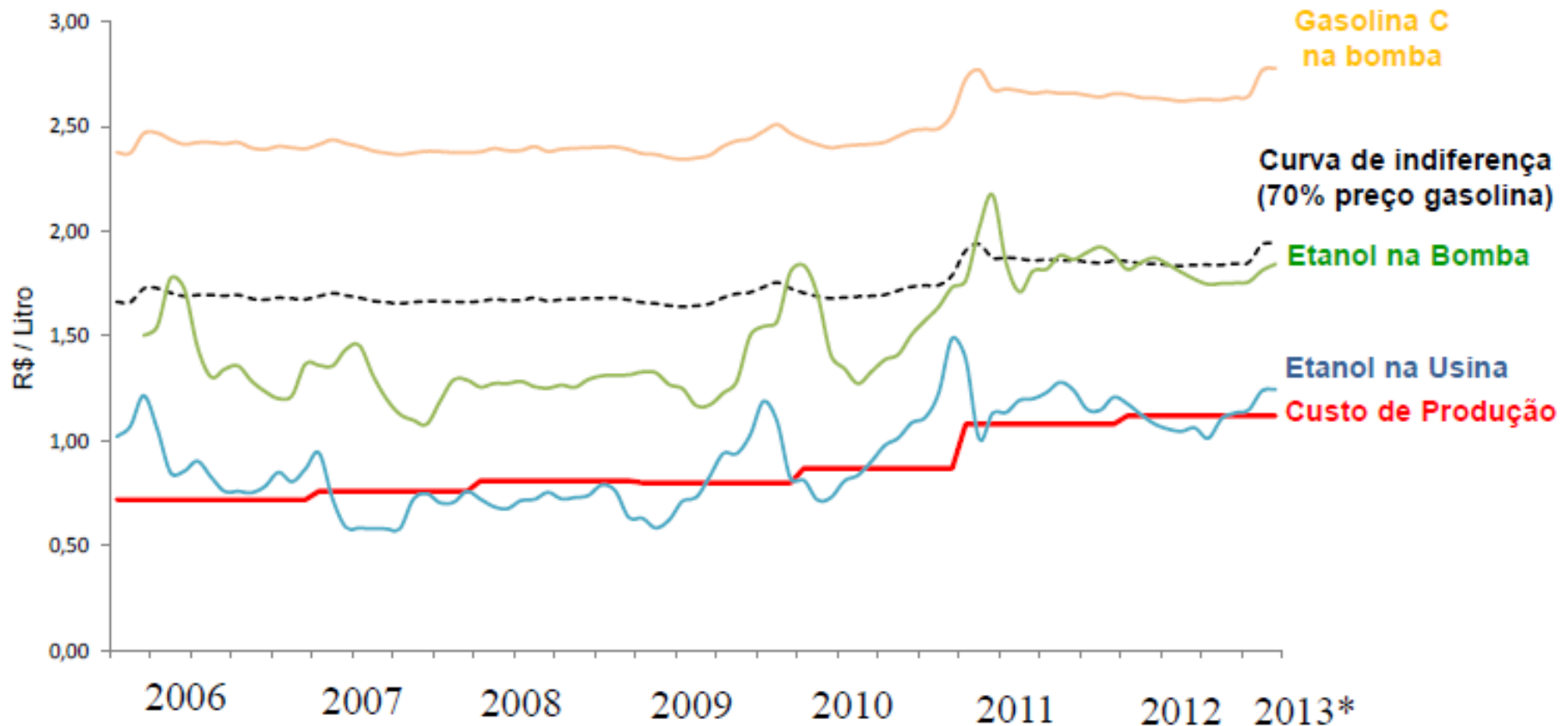
Tendências de Longo Prazo são Positivas

Evolução do preço do etanol anidro recebido pelo produtor e do preço internacional do petróleo (valores reais)



Fonte: UNICA e Banco Mundial. Nota: valores deflacionados para dezembro de 2010 usando IGP-DI (preços do etanol anidro) e o CPI (preços do petróleo).

Preços e Custos do Etanol



- Desde 2006, a relação de preços com a gasolina se tornou um limite virtual no preço do etanol.
- Ausência de transparência na política de precificação da gasolina afasta investimentos para expandir a produção de etanol.



Sugar

JUL 27 2012 01:55 PM

O:23.92 H:24.00 L:22.20 C:22.56

-1.36 (5.69%)

finviz.com

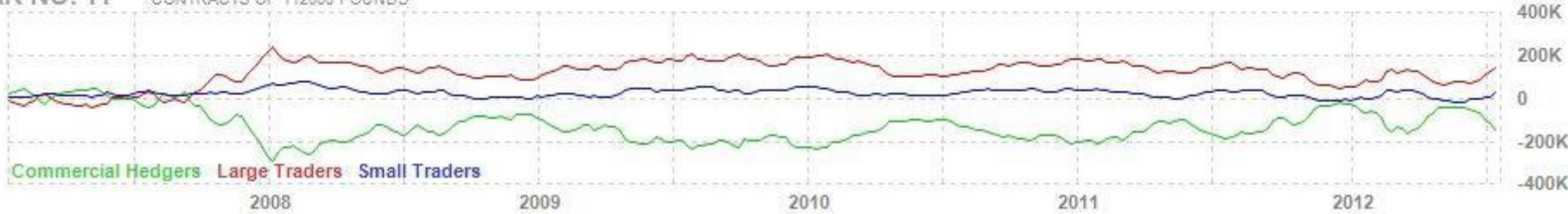
WEEKLY



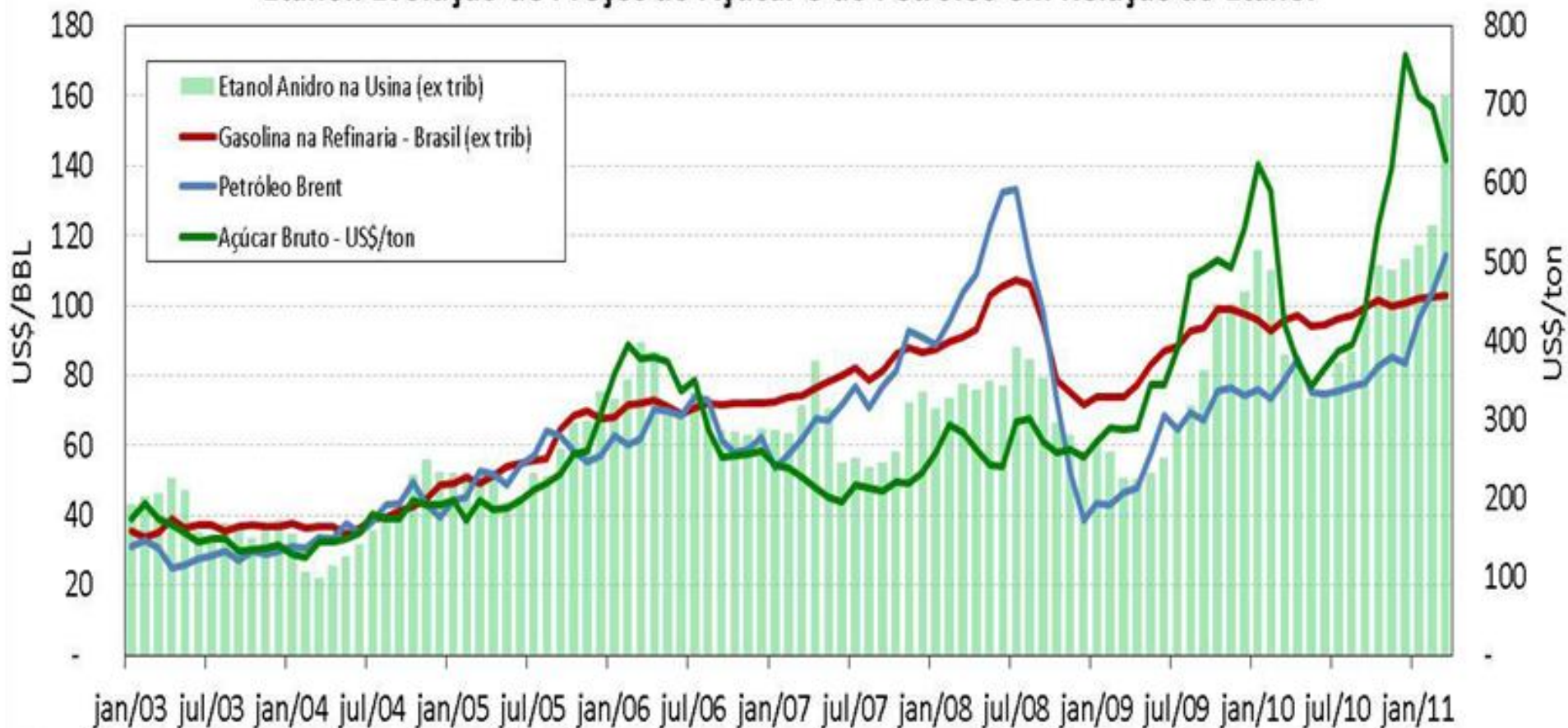
SUGAR NO. 11

CONTRACTS OF 112000 POUNDS

COT



Etanol: Evolução de Preços do Açúcar e do Petróleo em Relação ao Etanol



Elaboração: MME

Fonte: CEPEA/ESALQ, Platt's e Boletim Flextrading

- Biomass for energy competing with other land uses, as food, wood for construction, furniture, biodiversity, etc.
- Biomass for electricity? 2% photosynthesis efficiency, 20% Rankine cycle efficiency, $2\% * 20\% = \mathbf{0.4\%}$ vs. PV **17%**?
- Biomass for heat? 2% photosynthesis efficiency, 90% conversion to fuel efficiency, $2\% * 90\% = \mathbf{1.8\%}$ vs. PV 17%, COP 3
 $= 17\% * 3 = \mathbf{51\%}$

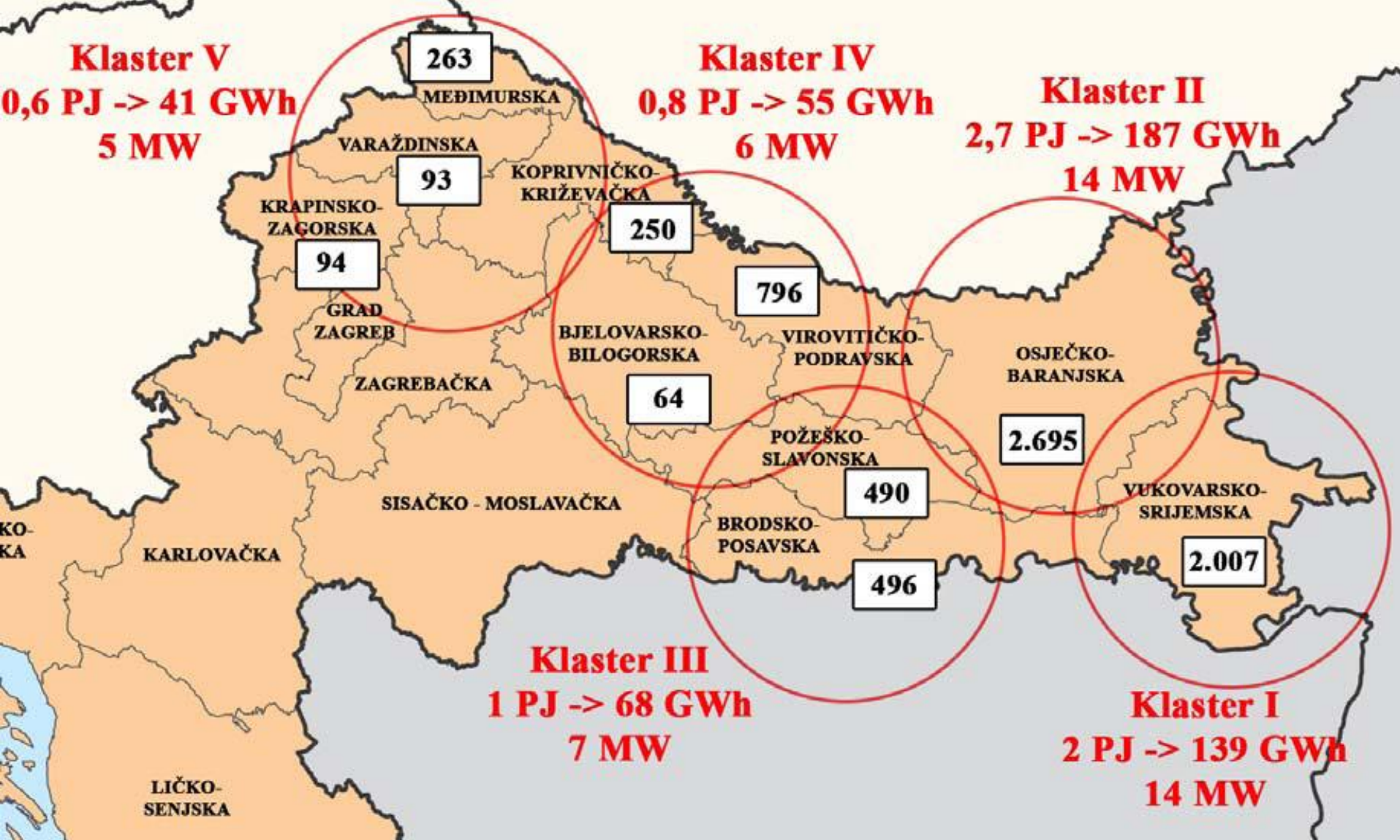
- Biomass for transport? 2% photosynthesis efficiency, 50% conversion to fuel efficiency, 20% IC engine efficiency, $2\% * 50\% * 20\% = \mathbf{0.2\%}$
vs. PV 17%, transmission 70%, car 90%
 $= 17\% * 70\% * 90\% = \mathbf{11\%}$

- Sustainable use of biomass mostly means using biomass waste from other uses ...
- Sometimes coproduction ...
- Biomass is good for employment and regional development, but limited

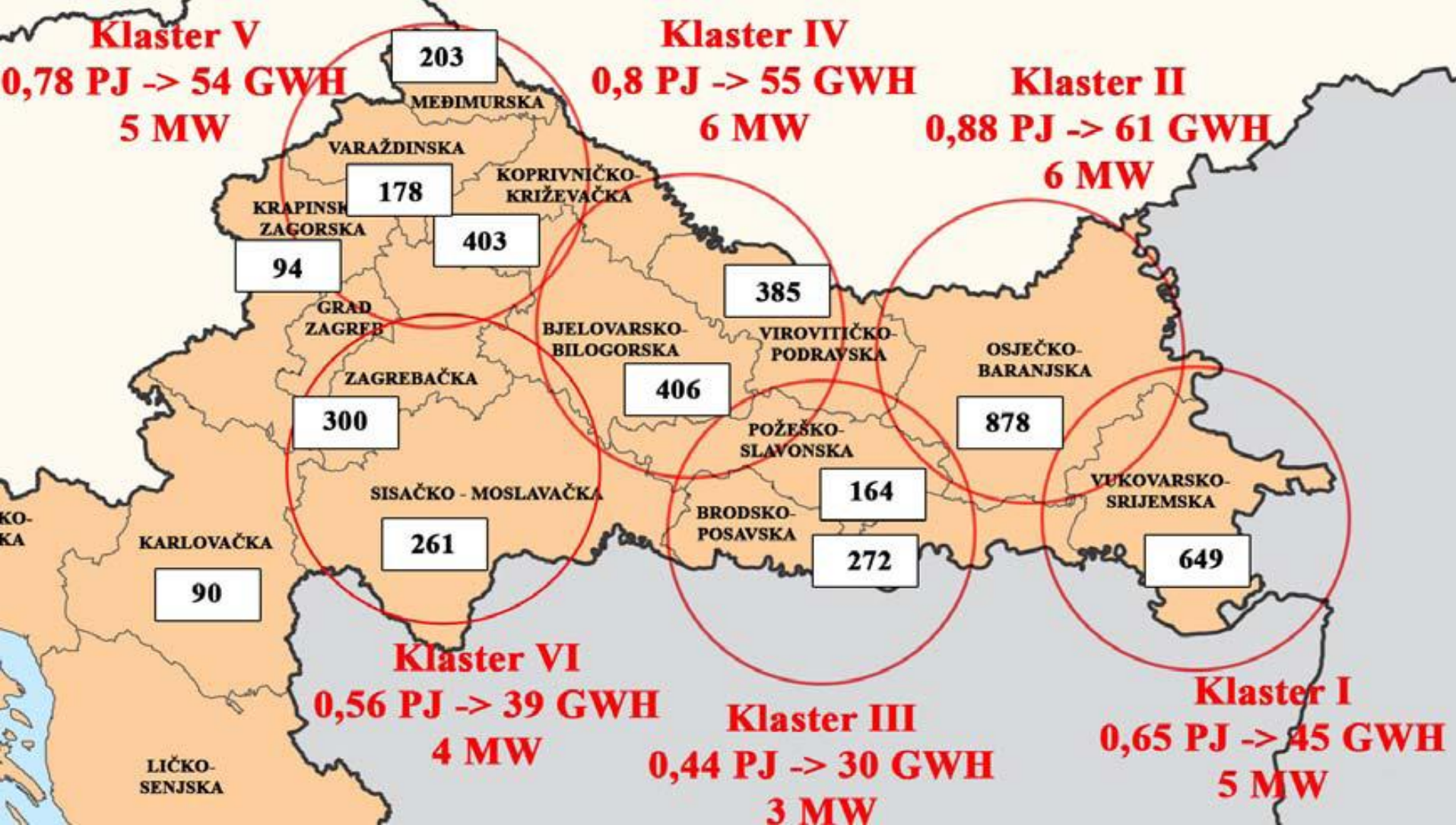
SEE Biomass potential

Biomass potential of countries located in SEE (Bulgaria, Greece and Romania, Albania, B&H, Croatia, Macedonia, Montenegro and Serbia, Kosovo and Slovenia)

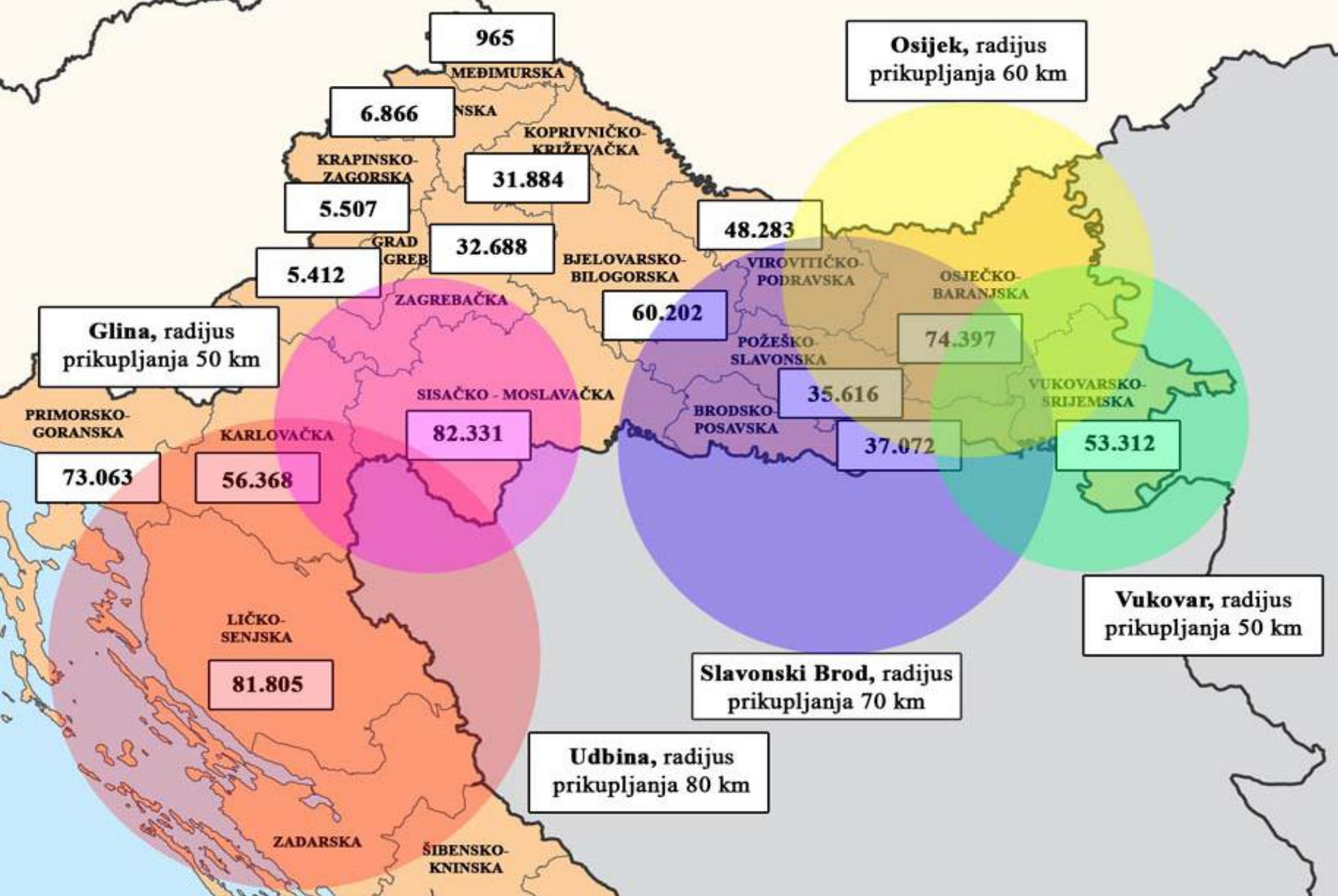
Biomass potential	PJ	TWh
Slovenia	19.6	5.4
Greece	27.10	7.5
Croatia	56.14	15.6
Montenegro	12.03	3.3
Serbia	136.8	38.0
B&H	56.41	15.7
Albania	29.79	8.3
Kosovo	4.85	1.3
Macedonia	21.61	6.0
Bulgaria	44.36	12.3
Romania	318.03	88.3



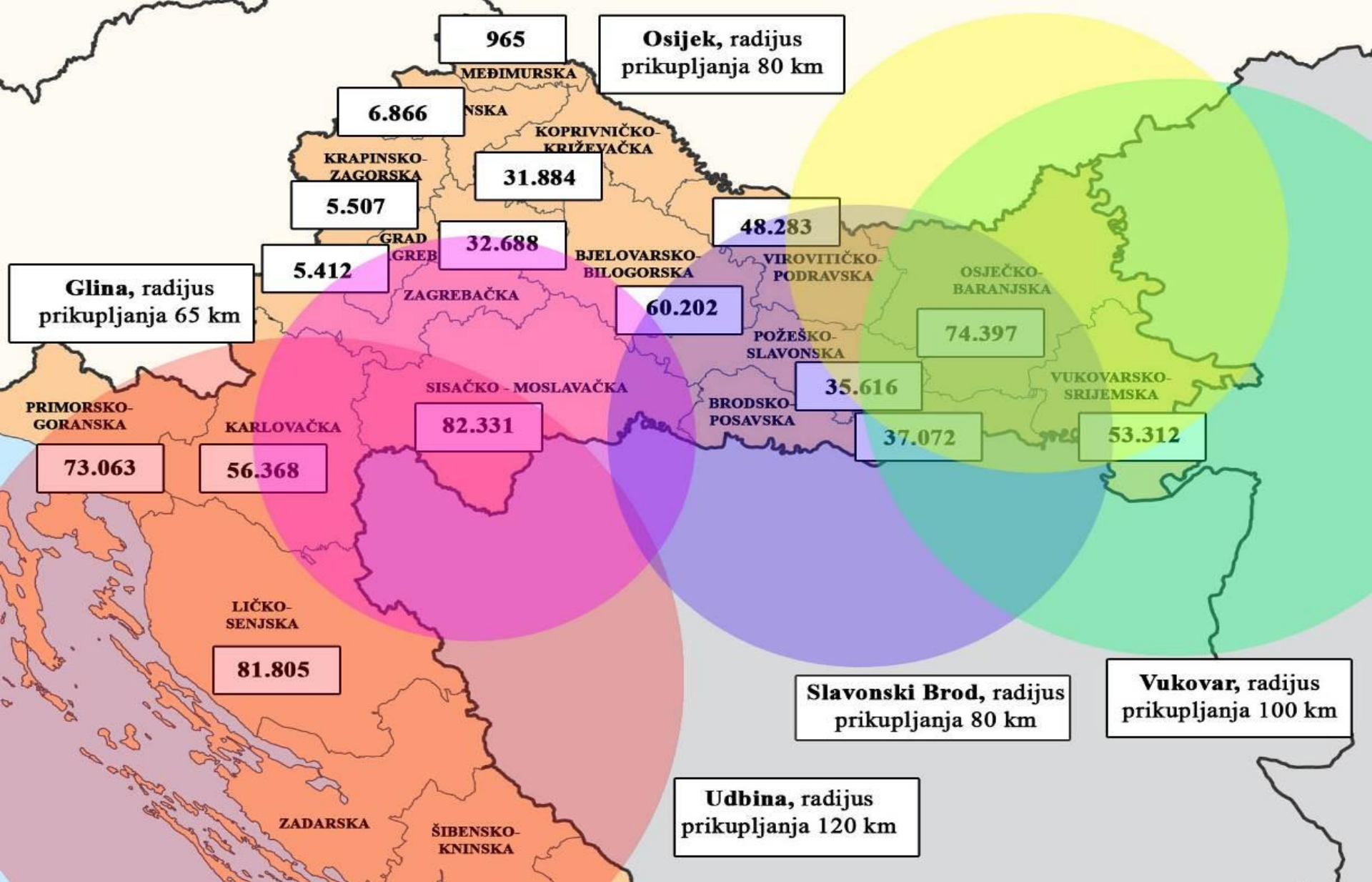
- Regionalni raspored tehnički iskoristivog energetskog potencijala slame u 1000 GJ, te mogući klasteri (tehnički iskoristivi energetski potencijal PJ, potencijalna proizvodnja električne energije GWh, maksimalna veličina postrojenja MW)



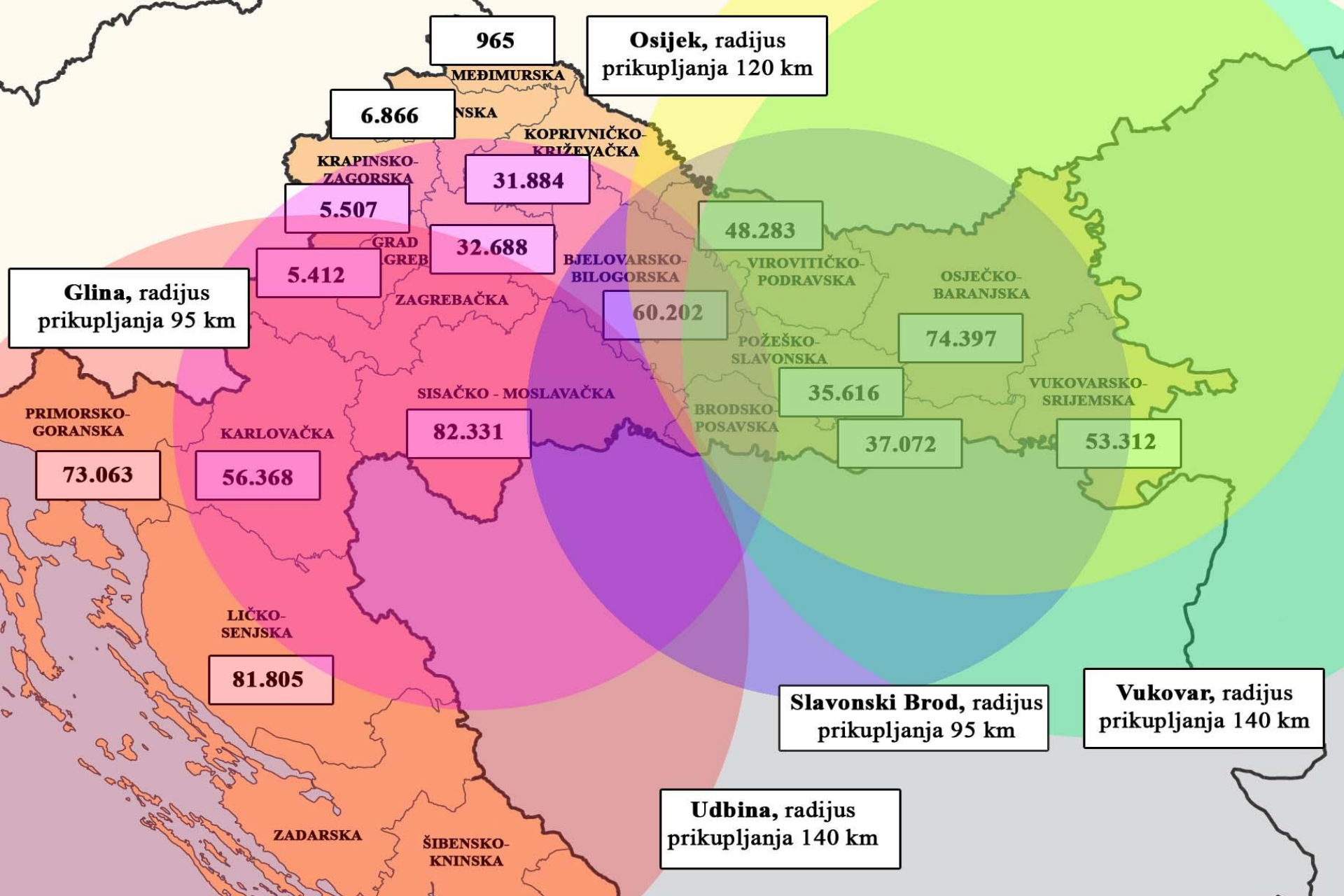
- Regionalni raspored tehnički iskoristivog energetskeg potencijala kukuruzovine u 1000 GJ, te mogući klasteri (tehnički iskoristivi energetskeg potencijal PJ, potencijalna proizvodnja električne energije GWh, maksimalna veličina postrojenja MW)



Lokacije za prikupljanje 100.000 t sječke, radijusi prikupljanja za pojedine lokacije i količina sječke u županijama



Lokacije za prikupljanje 200.000 t sječke, radijusi prikupljanja za pojedine lokacije i količina sječke u županijama



Lokacije za prikupljanje 300.000 t sječke, radijusi prikupljanja za pojedine lokacije i količina sječke u županijama

Solid biofuels production & export

Proizvodnja krutih biogoriva u Hrvatskoj 2012. godine

Solid biofuel production in Republic of Croatia for 2012

Vrsta krutog biogoriva Solid biofuels	Proizvodnja Production
Drveni peleti Wood pellets	147 498 t
Drveni briketi* Wood briquettes*	35 116 t
Drveni ugljen* Charcoal*	5 033 t
Drvena sječka Wood chops	317 250 t
Ogrjevno drvo Firewood	2 307 700 m ³

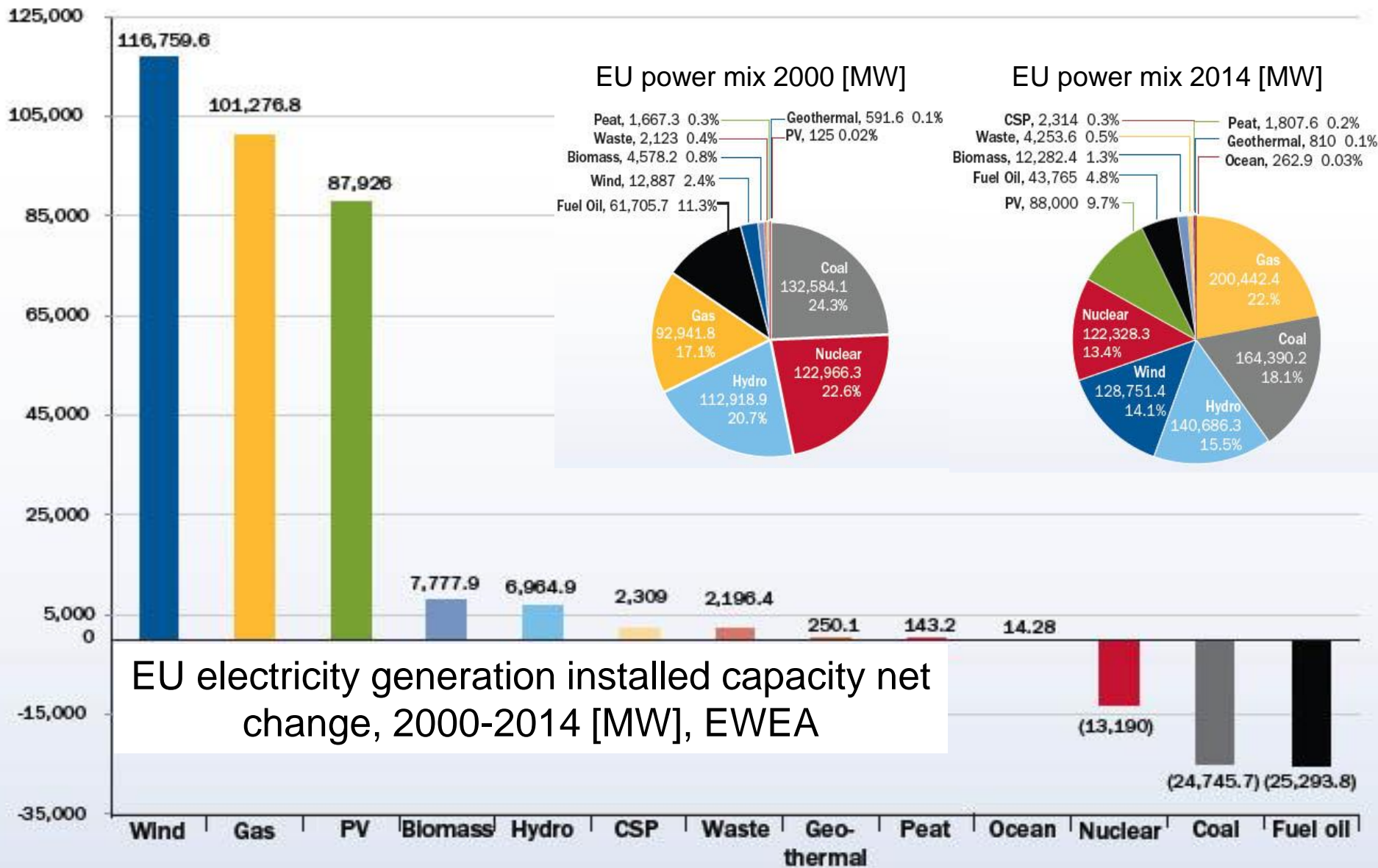
Main Suppliers of Wood Pellets to EU
(1,000 MT)

Calendar Year	2009	2010	2011	2012
United States	535	763	1,029	1,764
Canada	520	983	1,174	1,346
Russia	379	396	475	637
Ukraine	30	57	149	217
Croatia	72	95	115	136
Belarus	75	90	100	112
Other	160	226	226	279
Total	1,771	2,610	3,226	4,491

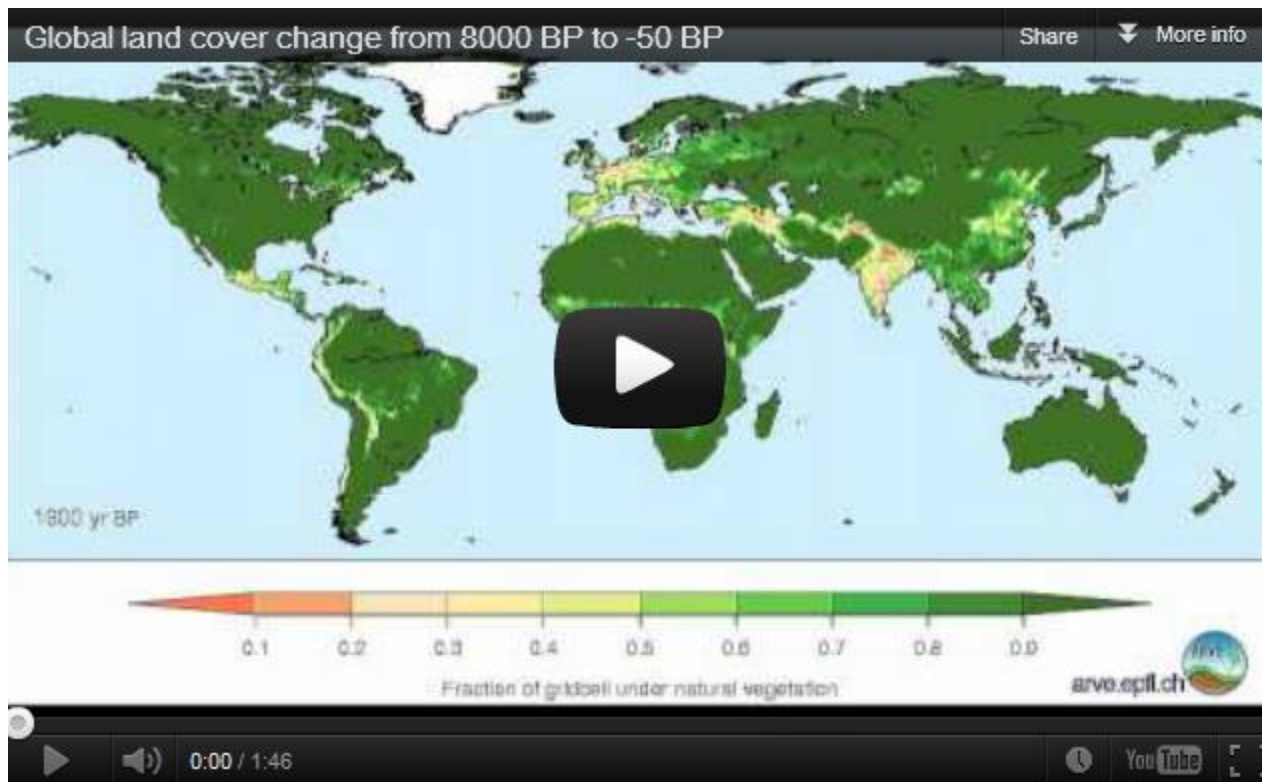
Source: GTIS (HS Code: 44013020 in 2011 and 440131 in 2012)

Export of pellets from B&H:

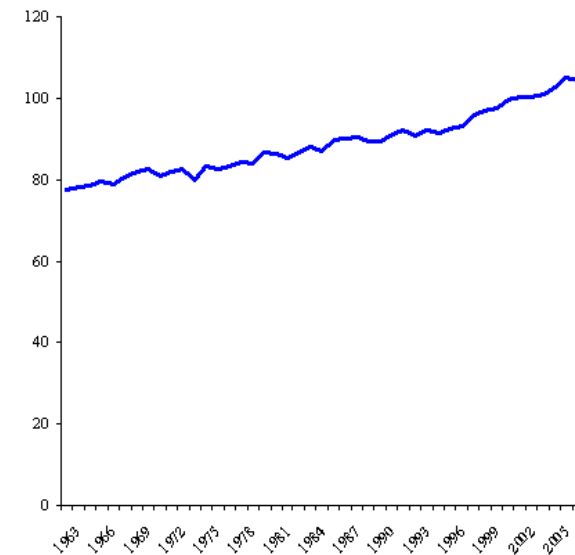
- In 2012 – 67.815 tons
- In 2013 – 170.389 tons



Food security – a new revolution needed



Food production per capita index 1961-2005





Thank you for your attention!
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