

“ROENERGY 2012”

“Câteva consideratii despre integrarea SER in SEN”

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<http://automation.ro>

“Câteva consideratii despre integrarea SER in SEN

Unde suntem? Ce s-a intamplat in 2011 in Germania?

Ce s-a planificat? Nevoia unei viziuni.

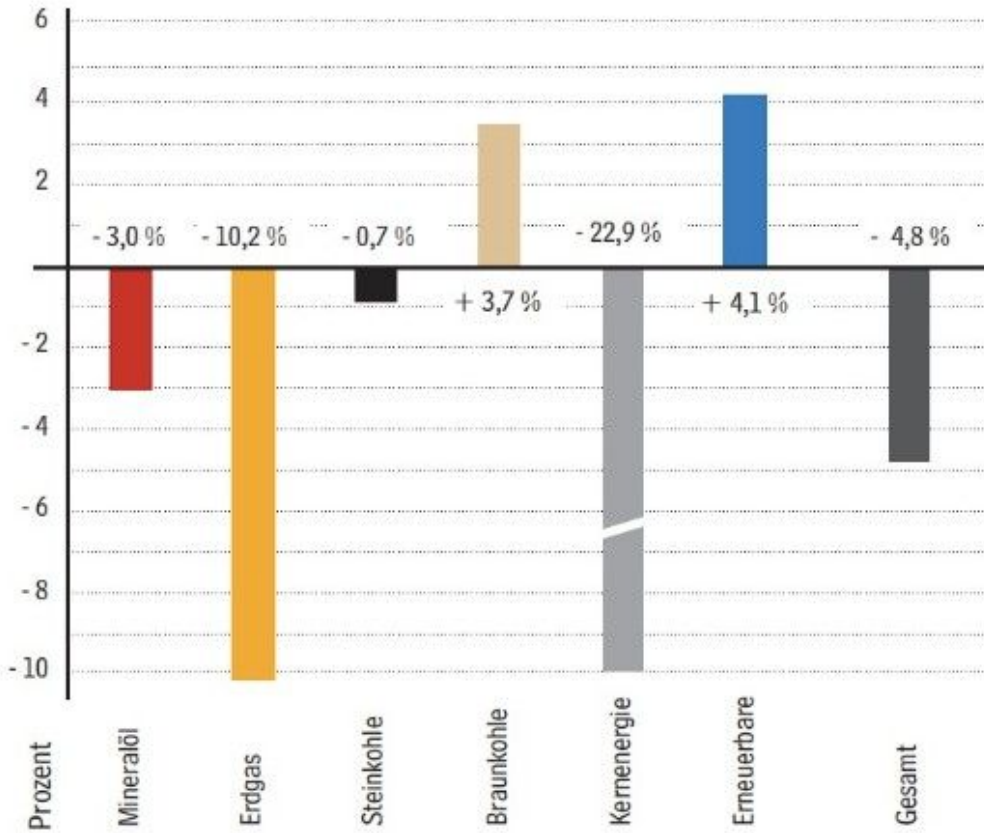
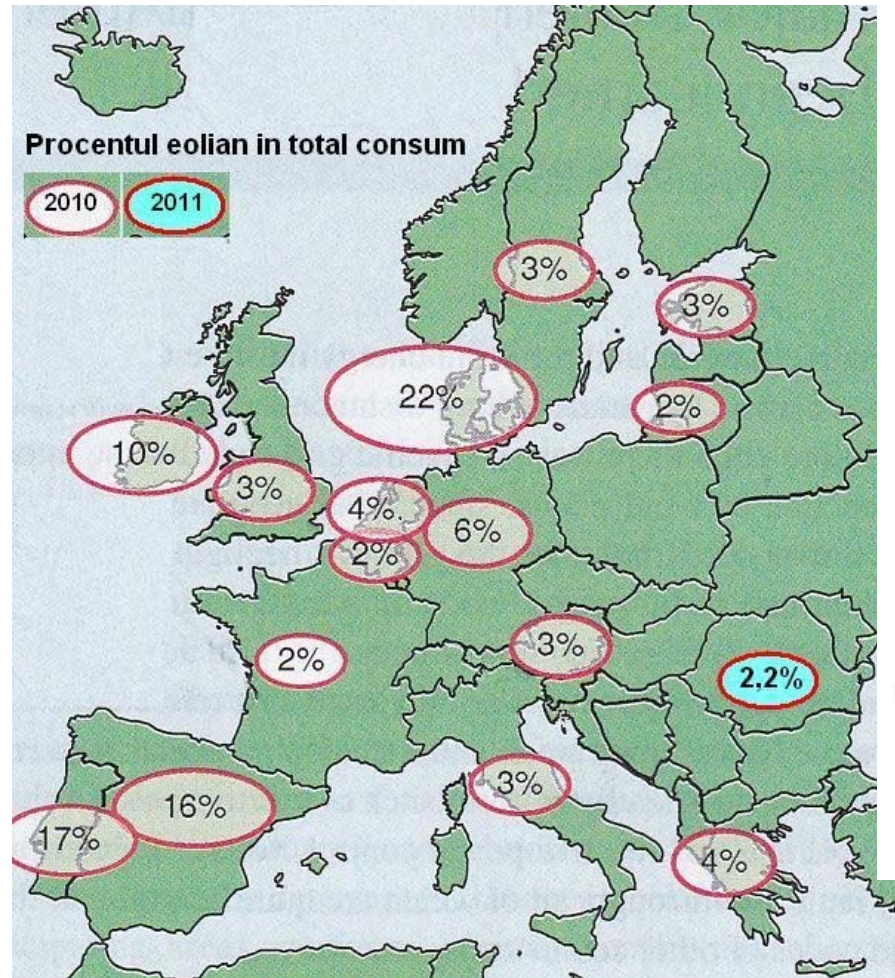
Un nou mod de a privi sistemul electroenergetic

Problemele SER

Efectele spatiale al distributiei SER: netezirea si prelungirea

Conceptul “facilitatile de conservare” trebuie largit

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2011 Germania

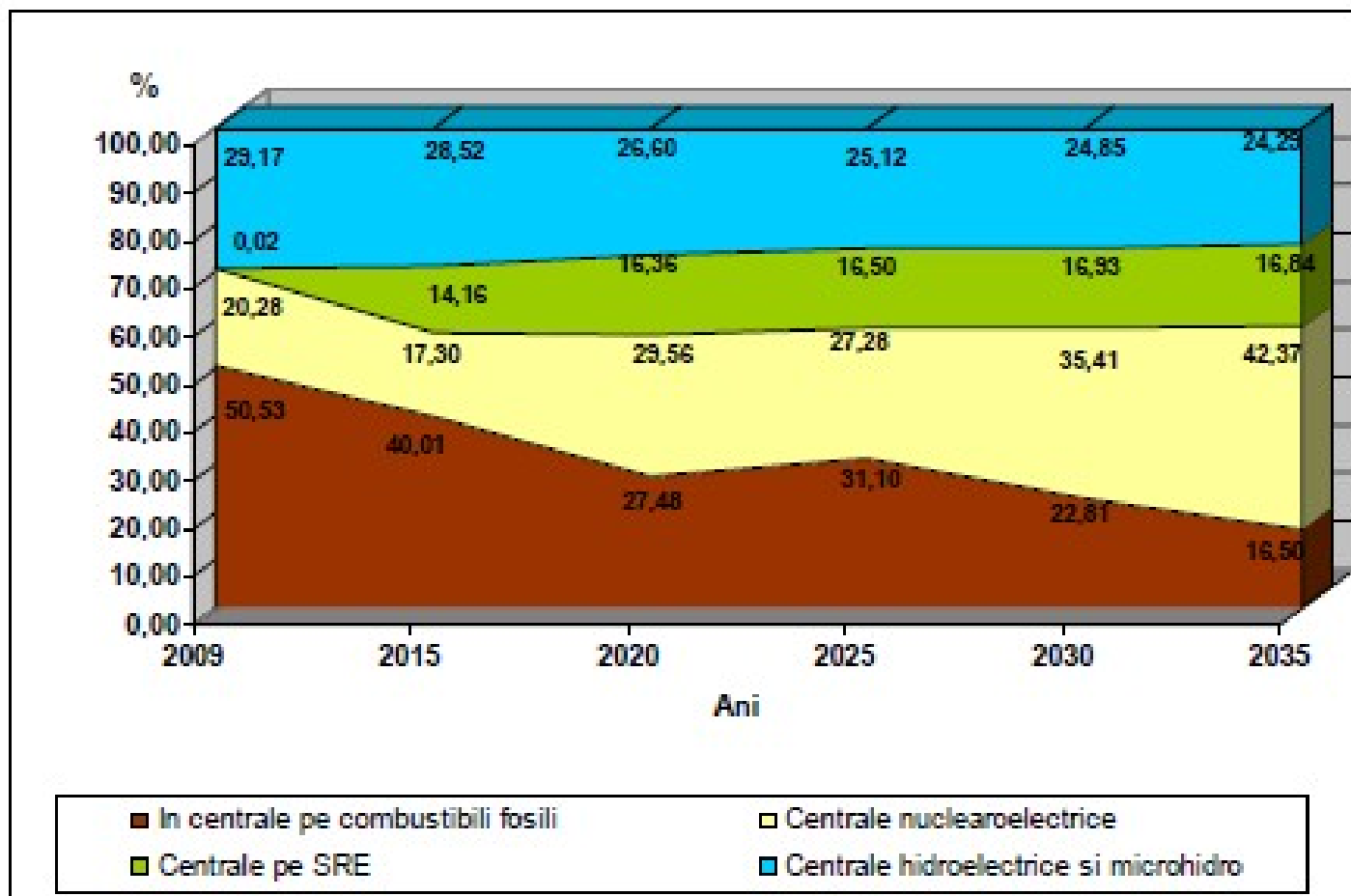
Consumul a scăzut cu 4,8%

SER au asigurat 20% din consum

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• Elemente de strategie energetică pentru perioada 2011 - 2035

**Figura 14. Structura producției de energie electrică în perioada 2011- 2035
Scenariul de referință**



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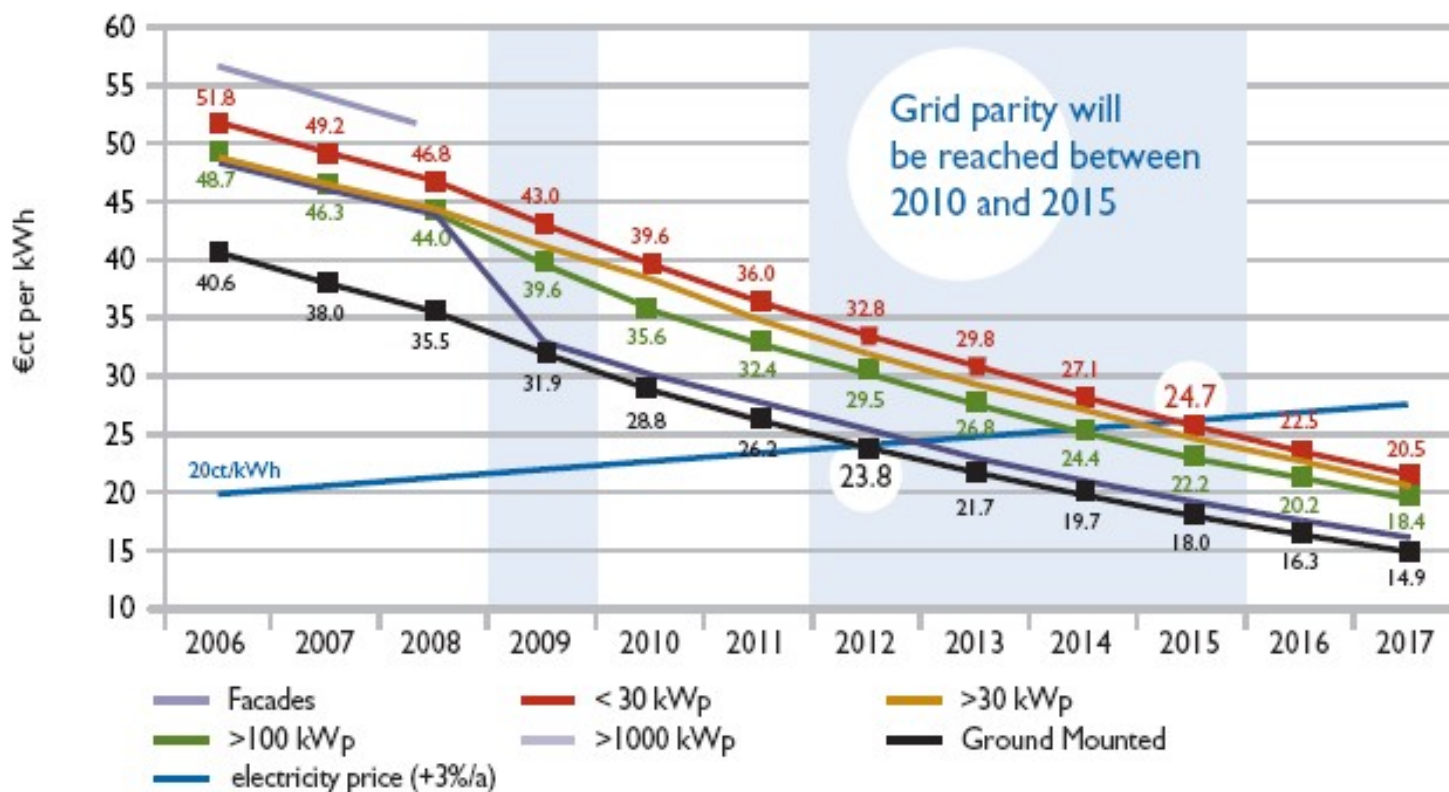
Din experienta altora: CERCUL VICIOS

- Uneori conectarea e mai scumpă și durează mai mult decât parcul eolian
- Constr. facilit. de conservare durează și mai mult decât liniile de conectare
- Rezultă nevoia de planificare. Cum să faci planificare dacă n-ai viziune?

VIZIUNE

- Socio - Economică

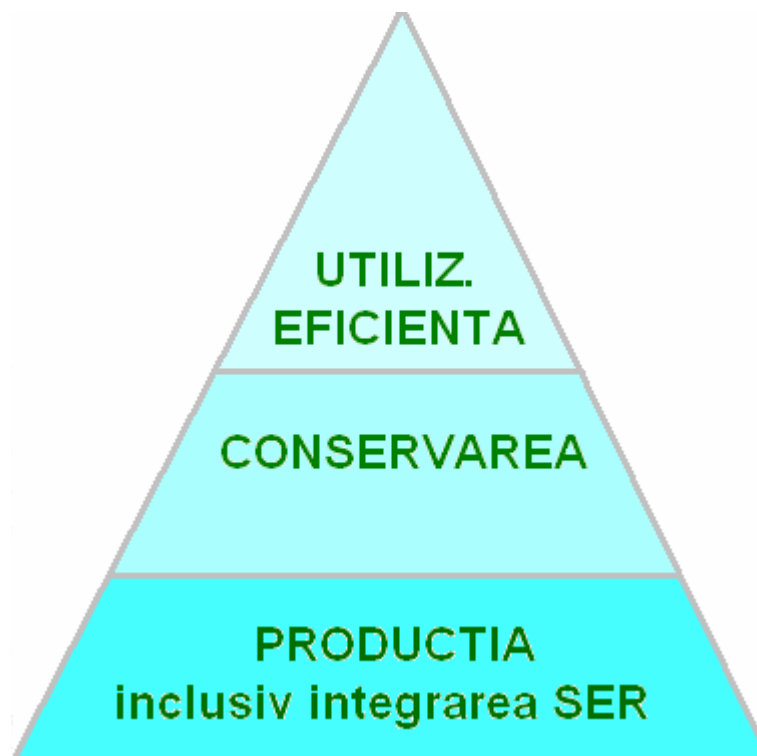
Feed-in Tariffs for PV within the German Feed-in Tariff, Based on Degression Rates Decided on June 6th, 2008)



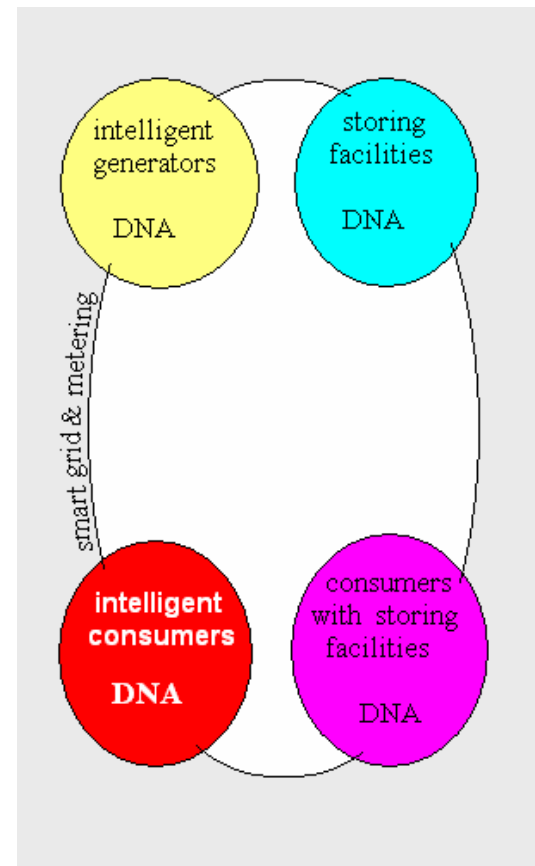
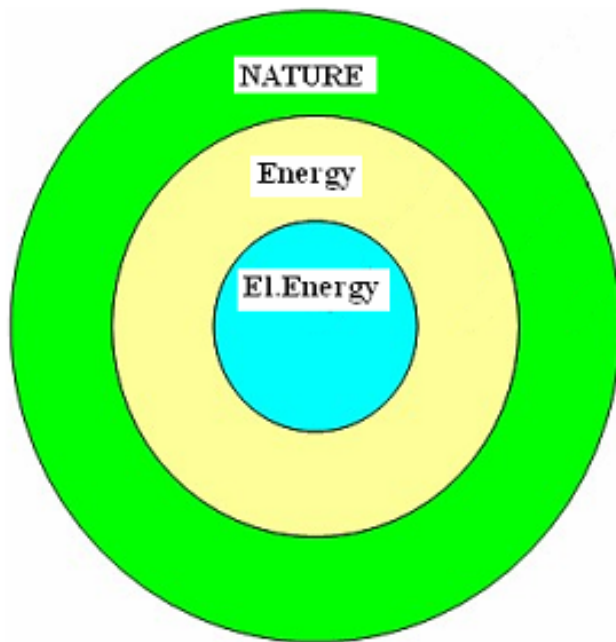
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VIZIUNE

•Tehnico - Economică



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Tot mai multe sisteme energetice vor fi izolate – și în ideea de a evita violentarea naturii dar și pentru a evita costuri mari

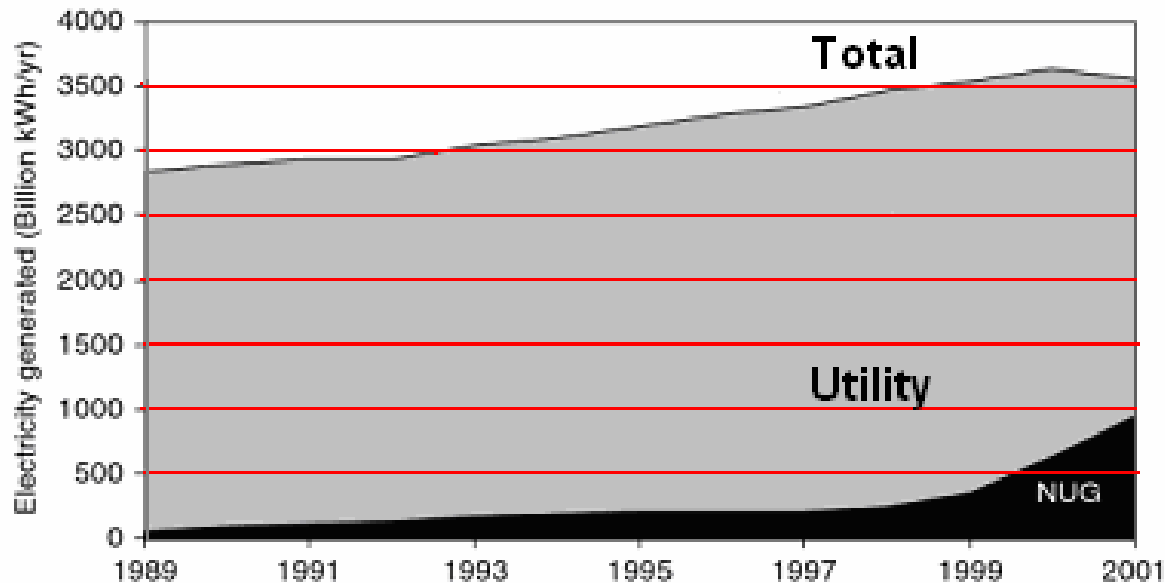


Figure 3.2 Nonutility generators have become a significant portion of total electricity generated in the United States. From *EIA Annual Energy Review 2001* (EIA, 2003).

4th key:

real time intelligent control

Results:

efficient, available & smooth energy without large construction

3rd key:

hybrid renewable with storage facilit

Remain drawback:

unsatisfied rate of efficiency

2nd key:

hybrid renewable energy

Remain drawbacks:

better but still fluctuating, unsatisfied of availability & efficiency

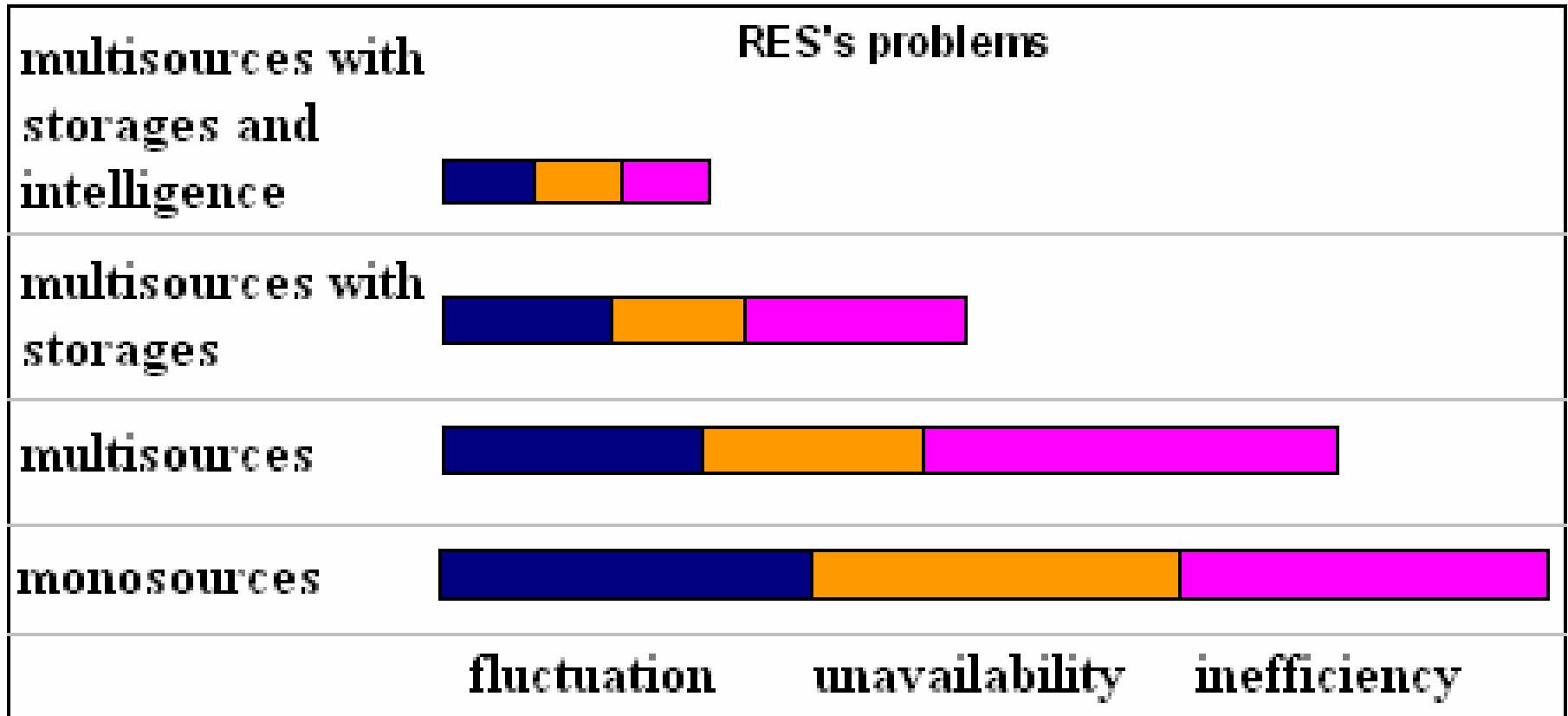
1st key:

renewable local energy

Drawbacks:

- fluctuating
- reduce rate of efficiency
- reduce rate of availability

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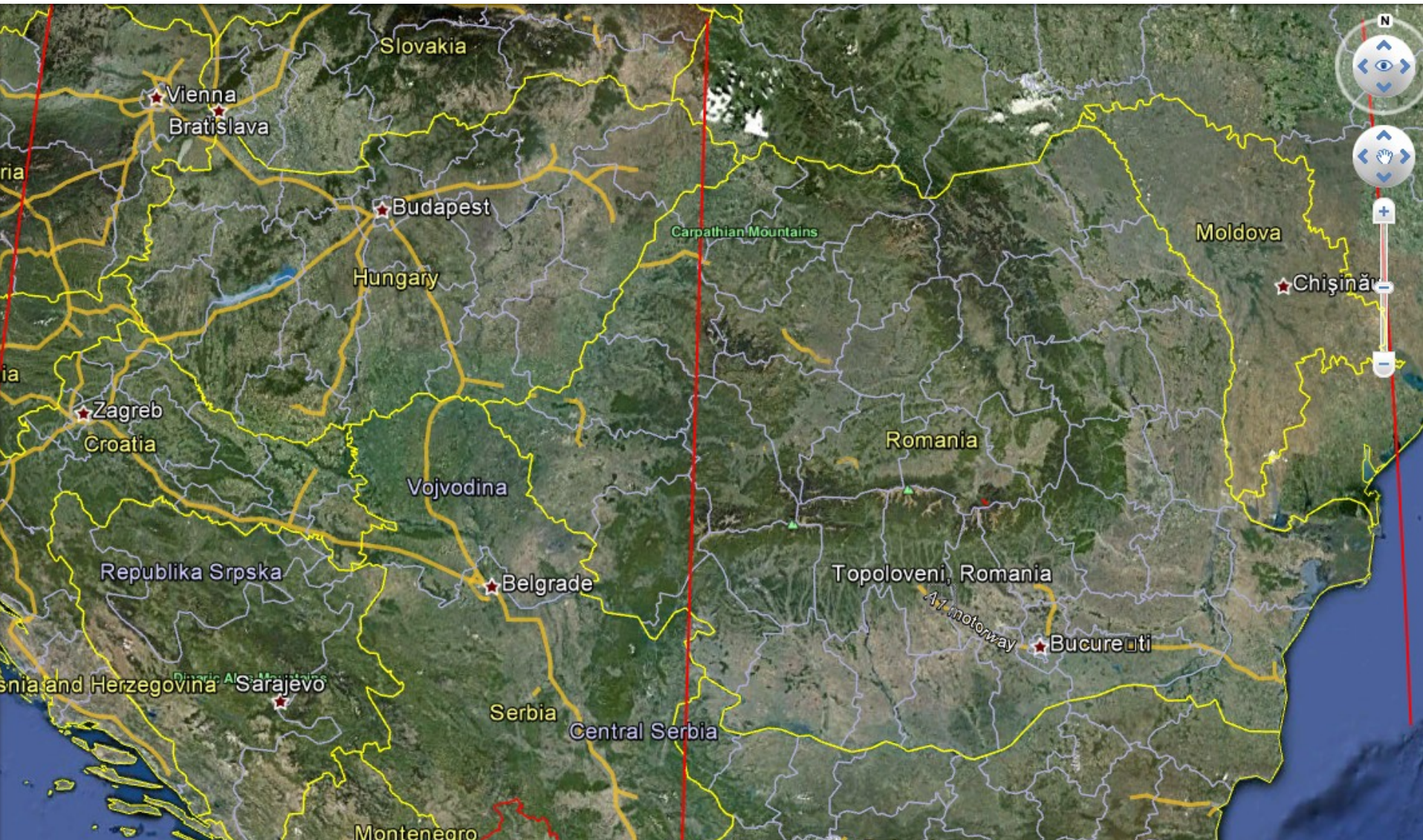


Mono sursă + efectul spațial // Multi sursă

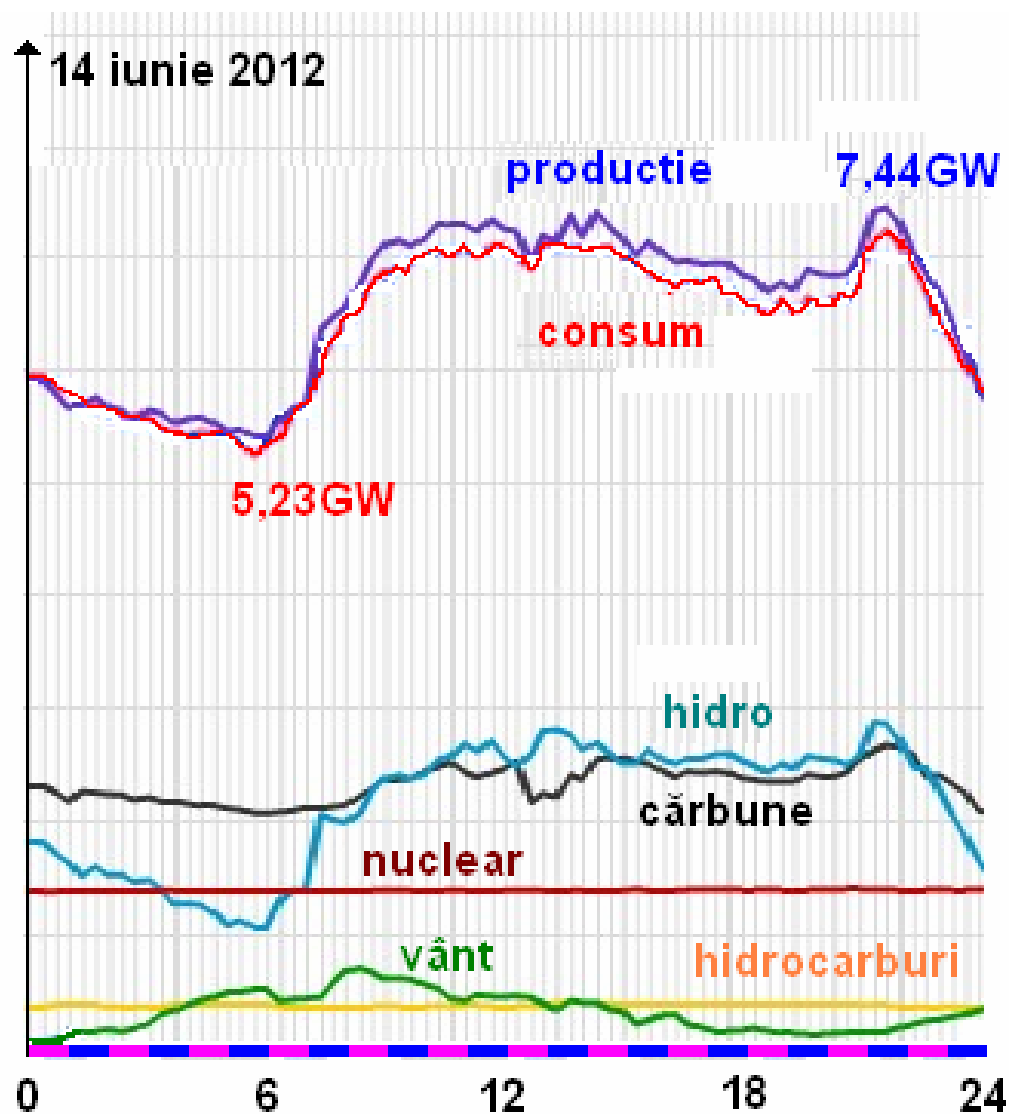
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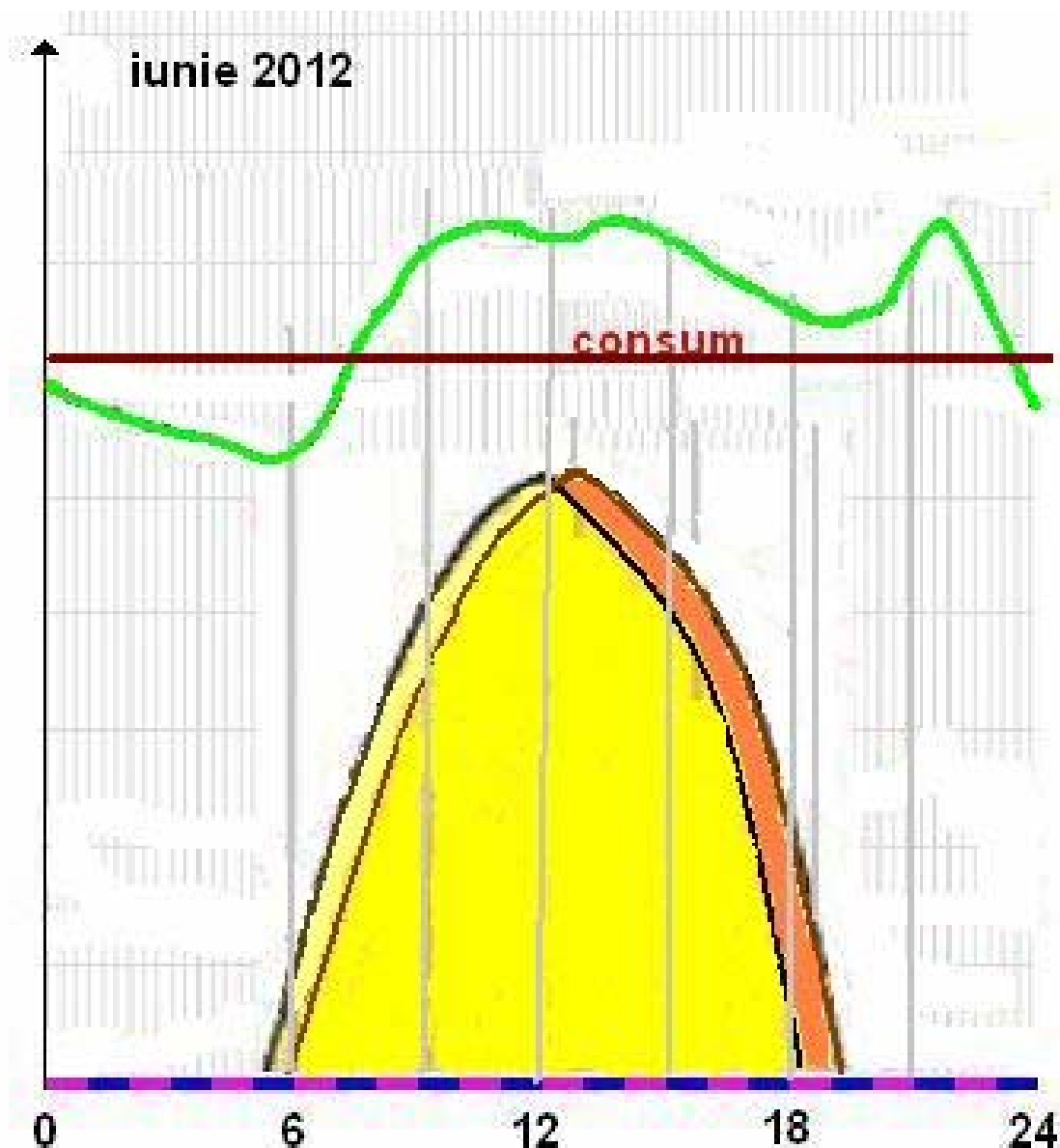


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Ef. Spațial:

curba de
consum -
curba radiatiei
solare

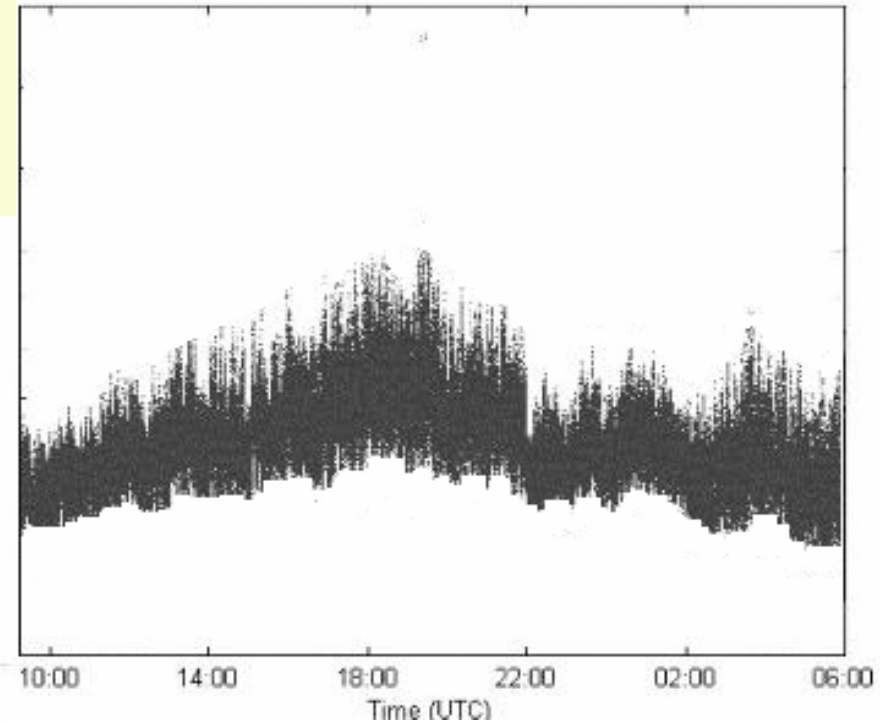
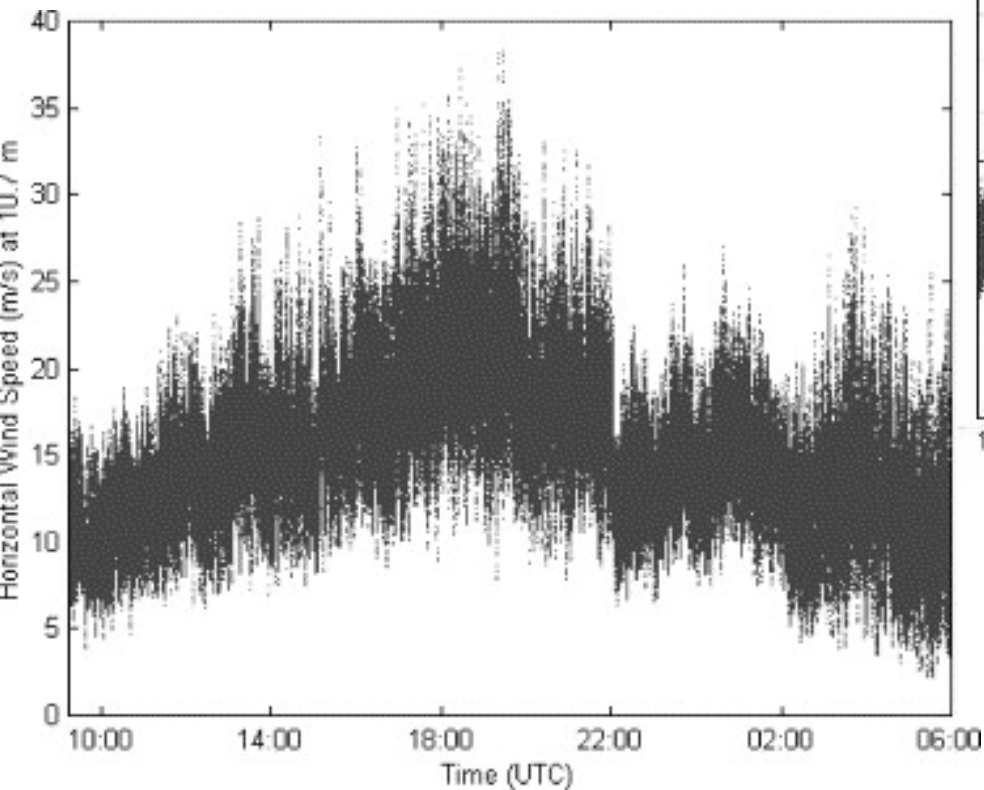
- Sulina
- Sânicolau



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Efectul spatial (1) netezirea

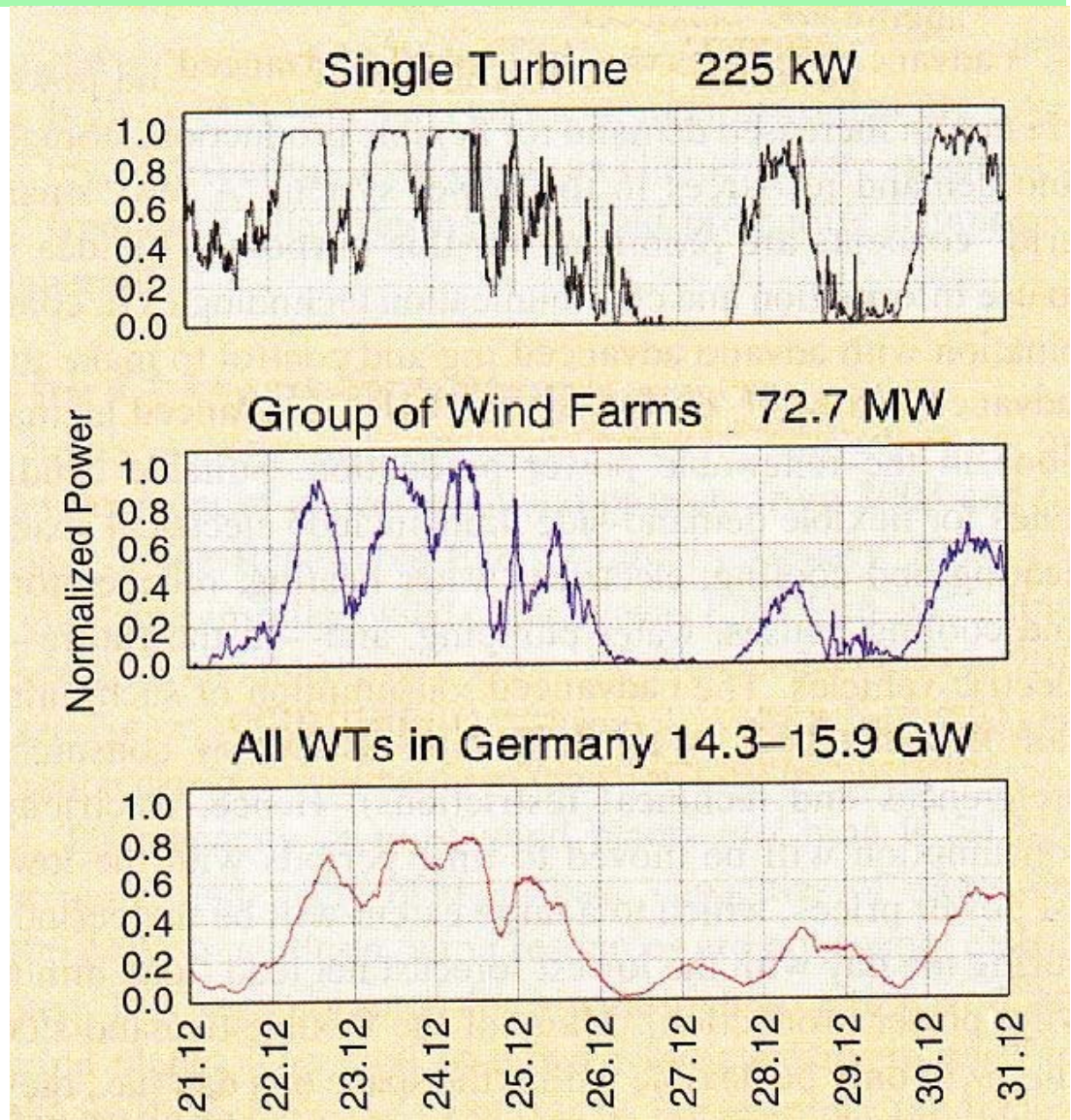
O inregistrare de vant



Energia dintr-un parc eolian “spalat” de vantul descris

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Efectul spațial la producerea energiei eoliene (2)



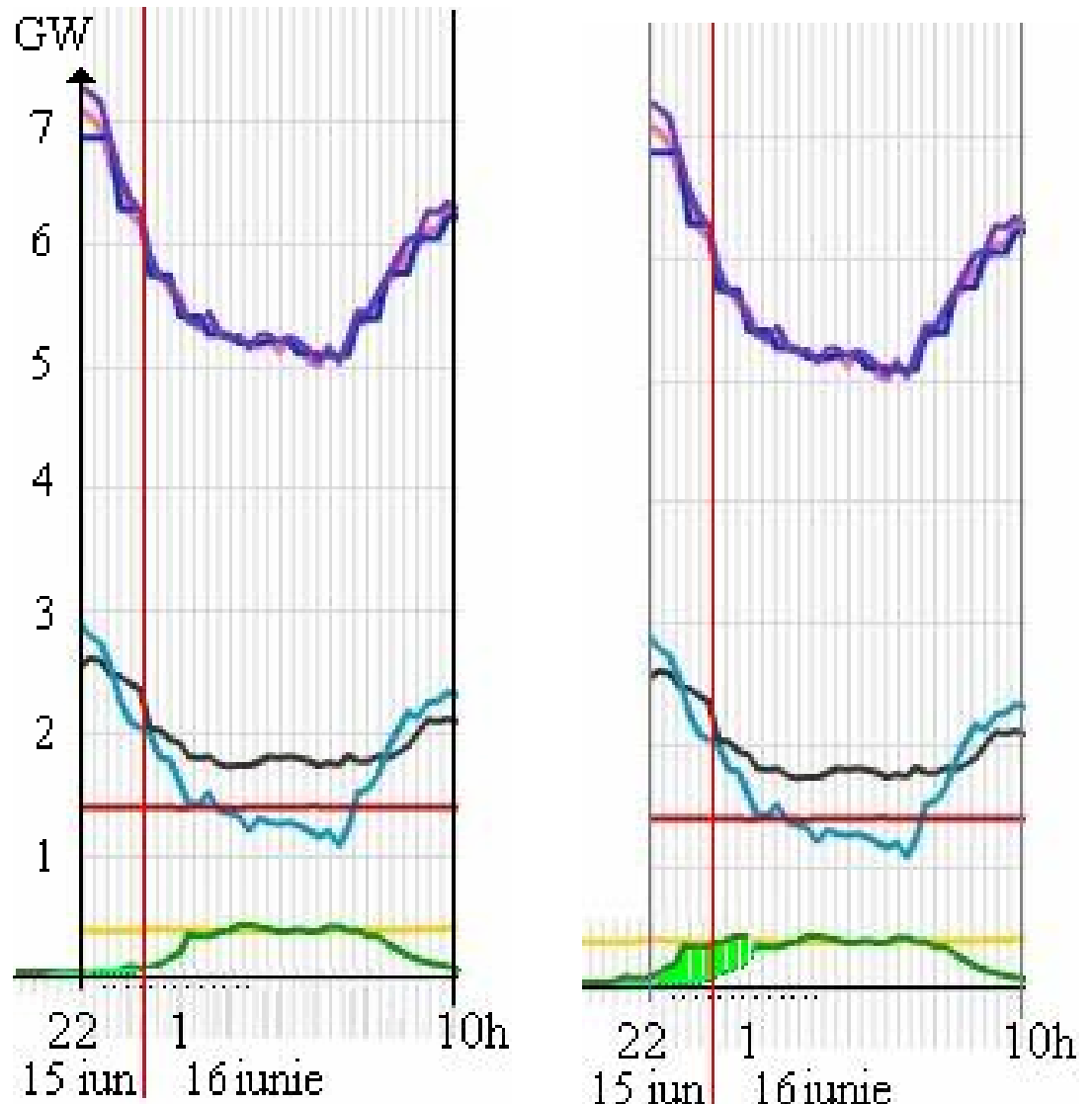
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Efectul spațial la producerea energiei eoliene (3) ef. cumulativ

Carpatii de curbura –
Dobrogea

~ 180 Km

~3h



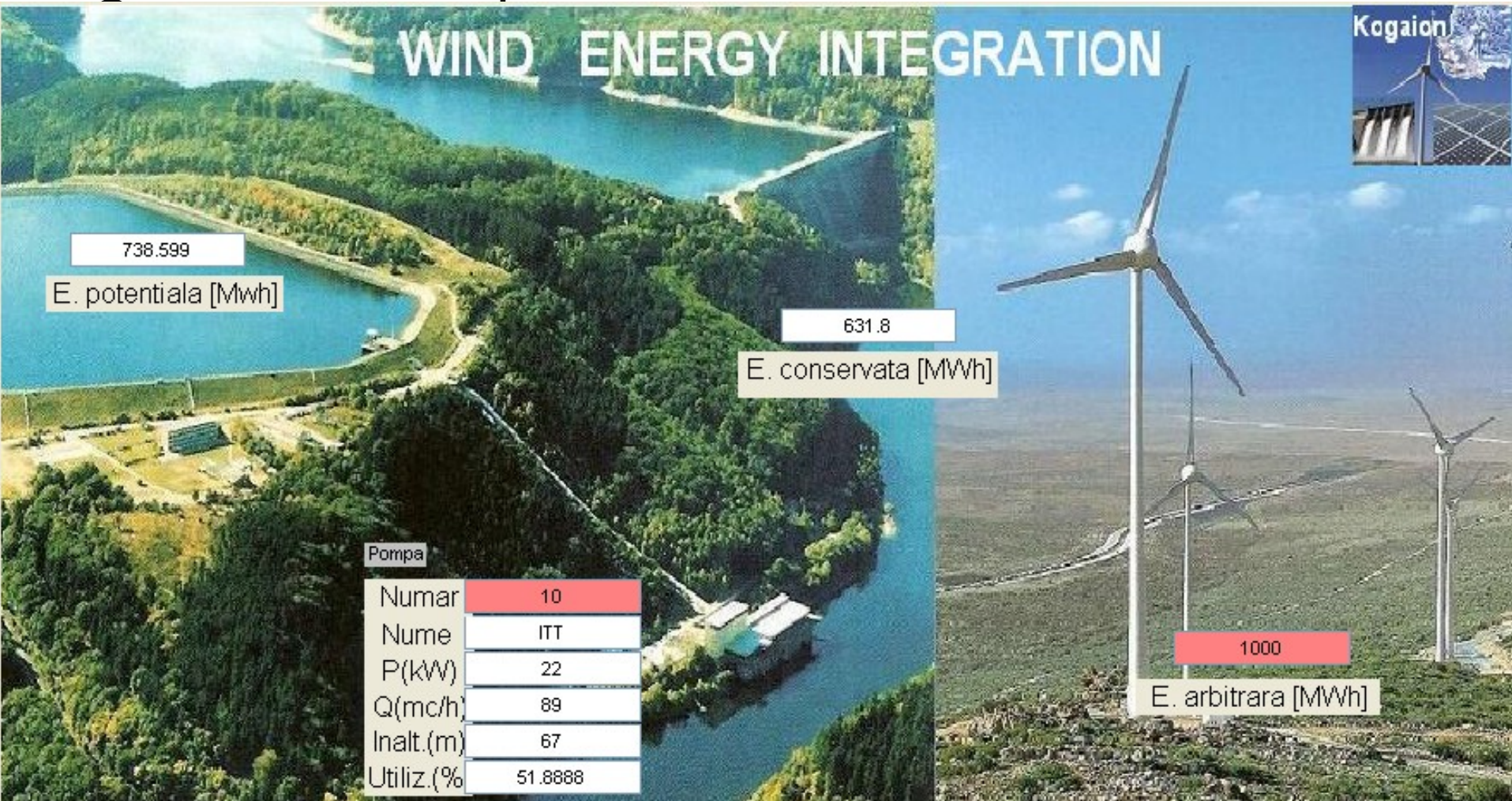
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Problema conservării energiei (electrice). Dincolo de granite.

STORAGE for RECOVERY and STORAGE in a USEFUL MODE

| Thermal | Mechanical | Chemical | Electrical |
|--|---|--|---------------------------------------|
| Refrigerating water for power plant CSP | Fly wheel Compressed Air Pumped storage hydro | Accumulators Hydrogen Fuel cells | Capacitators Superconducting coils |
| Space heating & cooling | Water pumping for irrigation | Chemical process heating | |

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Randamente [%]

| | | | | | | | |
|---------------|----|-----------------|----|-------|-------|-------|-------|
| Turbina hidro | 91 | Generator hidro | 94 | Pompa | 73.86 | Total | 63.18 |
|---------------|----|-----------------|----|-------|-------|-------|-------|

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Problema conservării energiei (electrice).

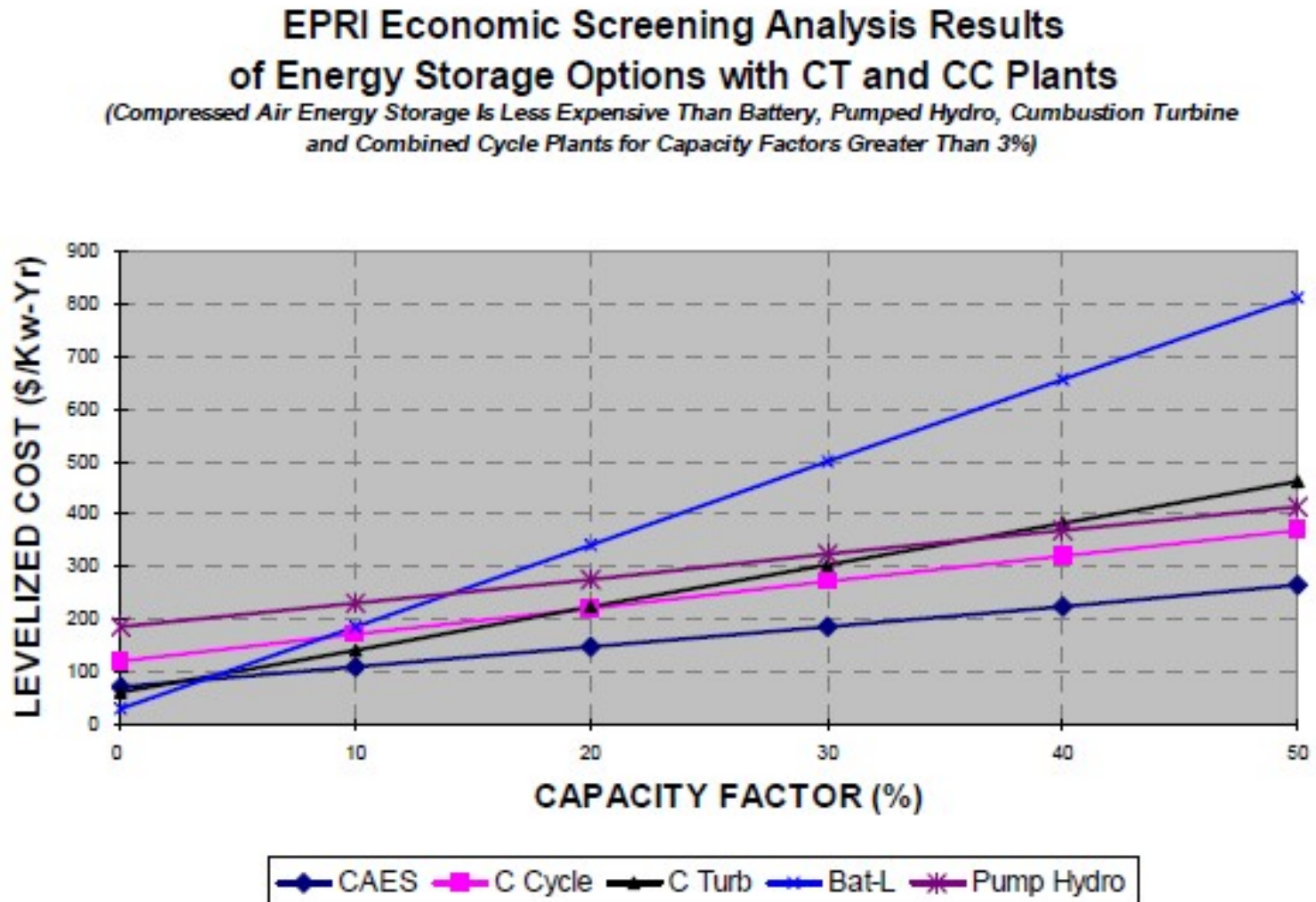
Au apărut mutații, tehnologii noi

1) Aerul comprimat

| | Capacity (\$/kW) | Storage (\$/kWh/an) |
|--------------------------|---------------------|------------------------|
| CAES for at least 300 MW | 440 | ~1 |
| Pumped hydroelectric | 900 | 10 |

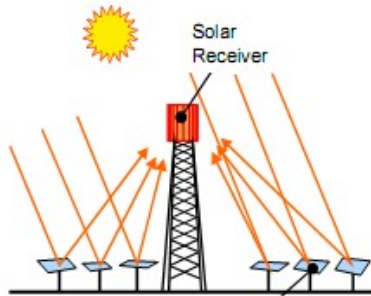
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Aerul comprimat



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2) Uzina electrica termo solara - CSP

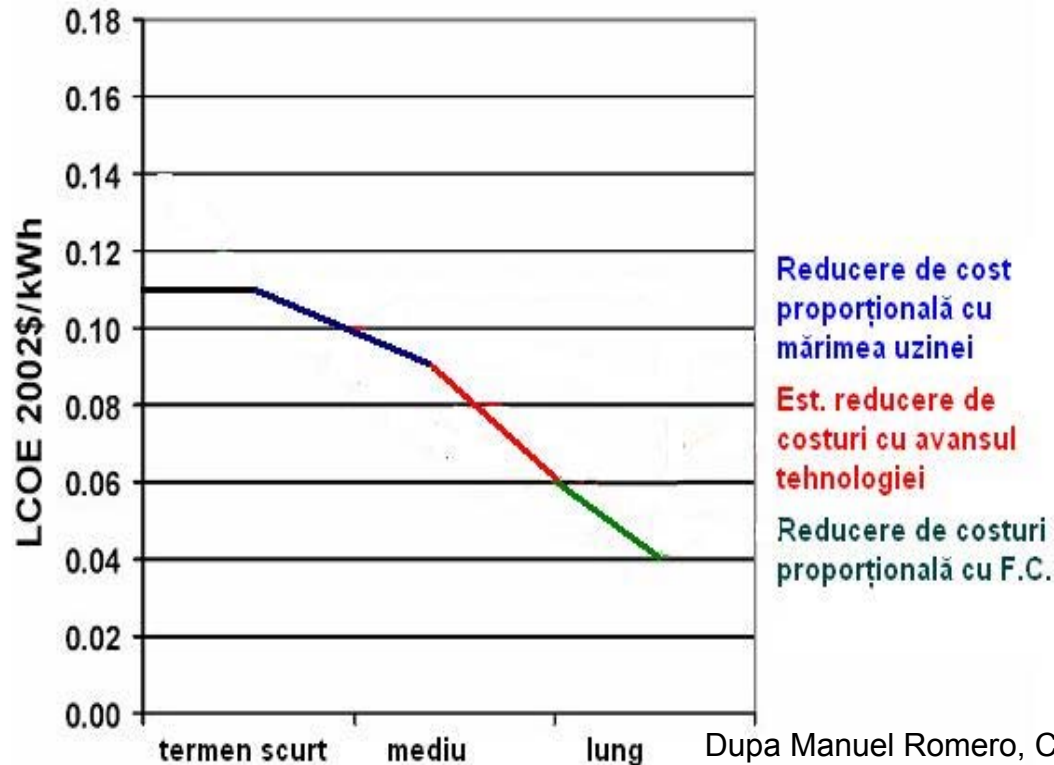


Incidenta radiantă de 3,5 KWh/mp/zi
medie anuala avem 1277KWh/mp/an

Energie electrica cu

fotovoltaice(15%) 170 KWh/mp/an

CSP 500 KWh/mp/an



adică un randament pe mp
de aprox. 3 ori,

Dar tehnologia inca nu e
maturizata

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3) Utilizarea caldurii, prin conservare, in **industria chimica**
30% din E.E. consumata in Germania e consumata de industrie, si o mare parte in ind. Chimica. Industria chimica foloseste multa caldura conservata pentru optimizarea proceselor de incalzire (capacitatea de stocare, timpul de incarcare/descarcare termica, perioada de stocare, numarul de cicluri de incarcare/descarcare, durata de viata, eficienta procesului, costul)

zeoliti, bentonita, nitrati, parafina, lichid ionic

4) Utilizarea vantului in irigatii

Unele vor fi conectate la retea, altele nu

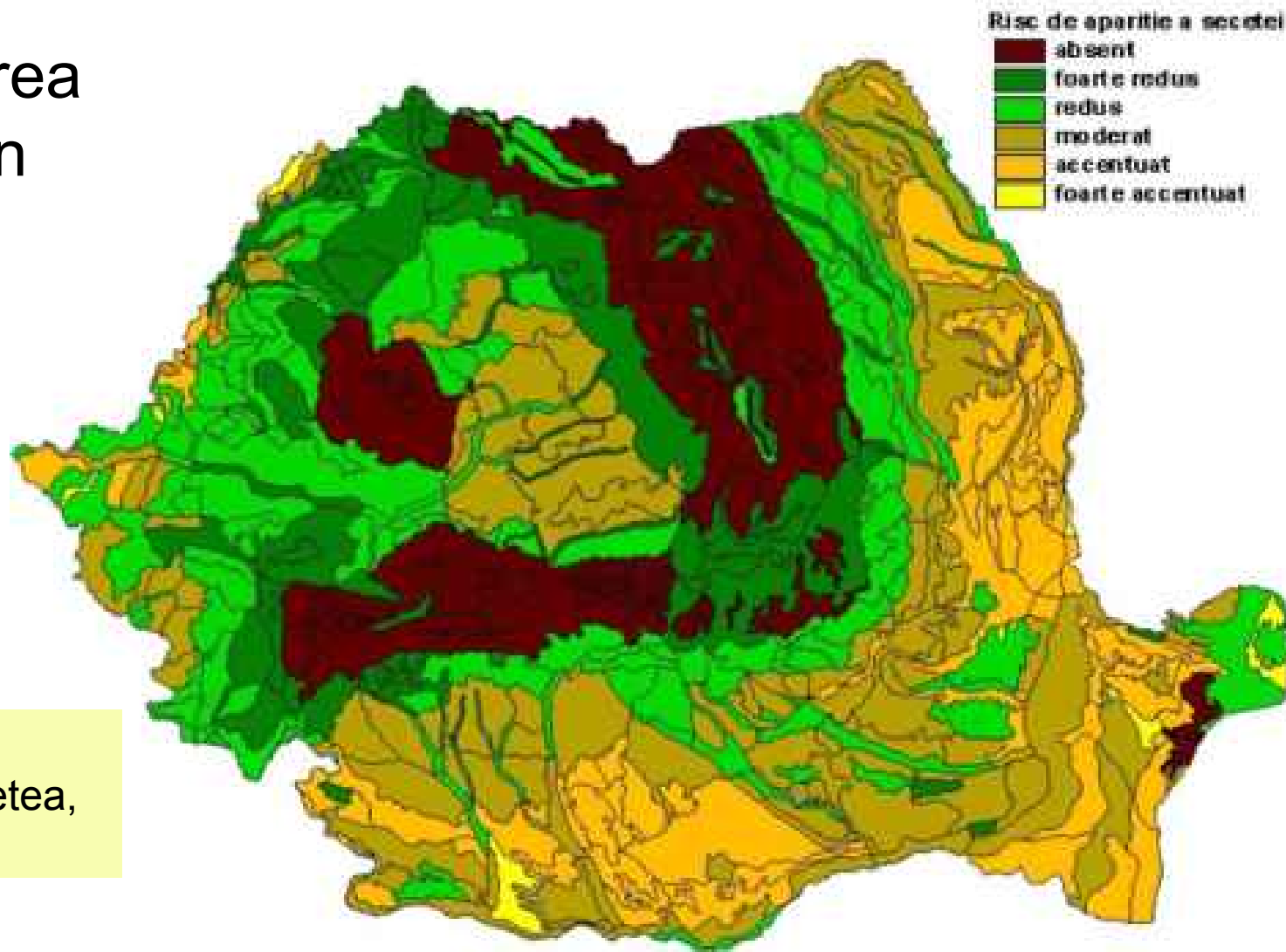


Fig. 2. Harta suprafetelor cu risc de aparitie a secetei

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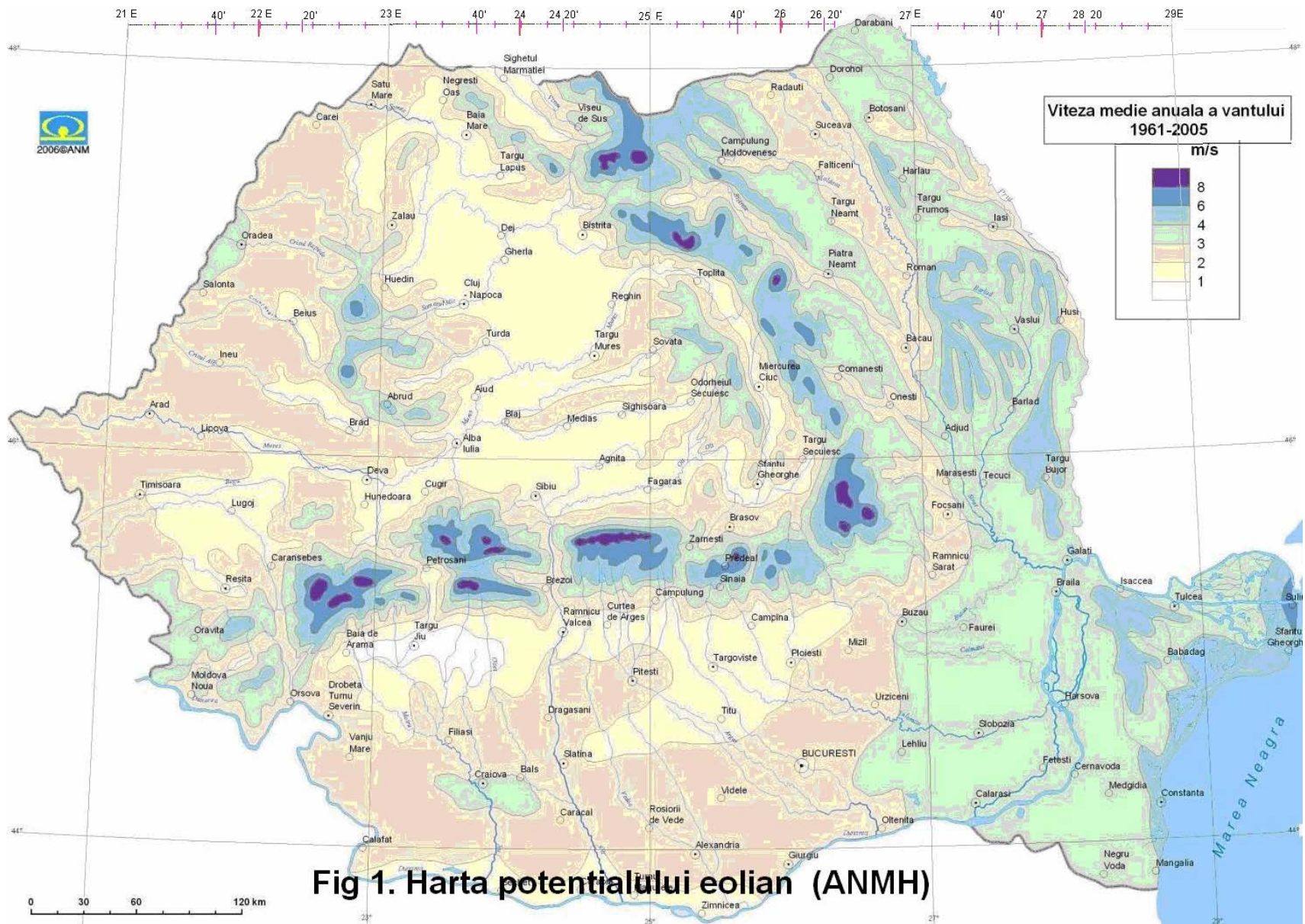


Fig 1. Harta potentialului eolian (ANMH)

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