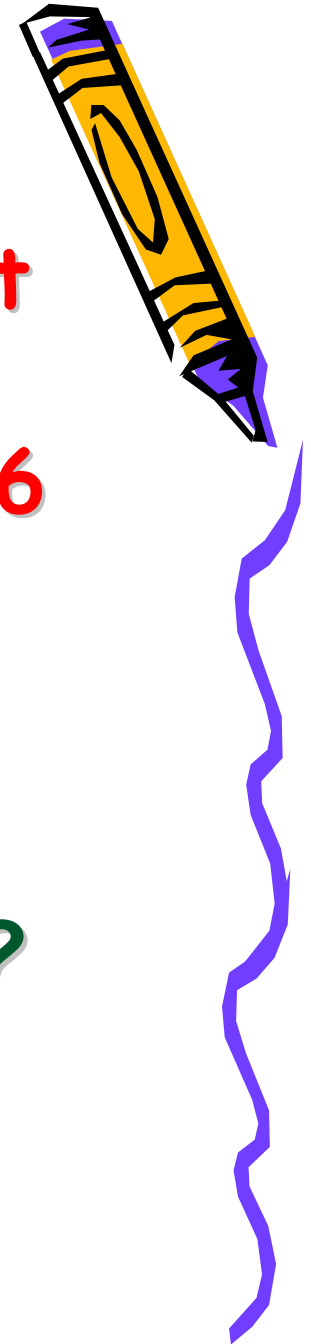
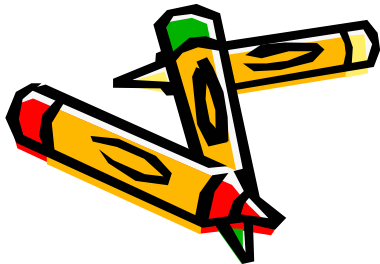


**Jean-Michel Glachant
(Univ. Paris Sud)
Bonn, 25th April 2006**



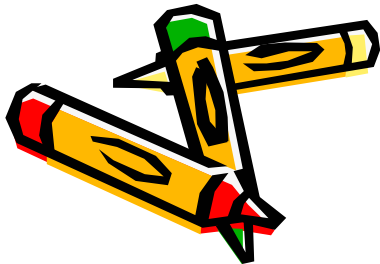
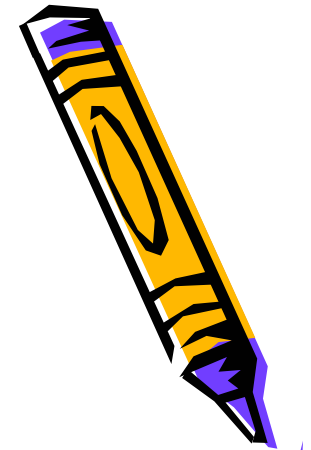
***Energy Reforms:
Theories, Models,
Facts... and more?***



I- Ways to competitive energy markets: diverse, long & changing...

II - A "European Internal Market" dimension to be added
>> more diverse, more long, changing more?

III (and conclusion) - *Is such an EU Internal Market actually feasible?*

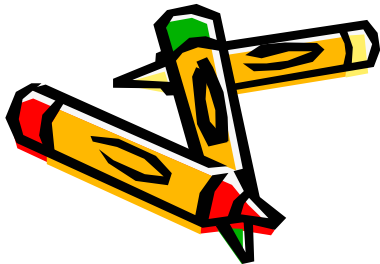


Part I- Ways to competitive energy markets: diverse, long & changing...

1° First Step = Opening the reform: a great diversity of arrangements at the start of the reforms (will see 3 examples)

2° Second Step = Reforming the reform (Strengthening Competition & fixing initial Flaws): + or - diversity

3° Third Step = Adapting to Long Run Sustainability?



1° First Step to competitive energy markets = Opening the reform

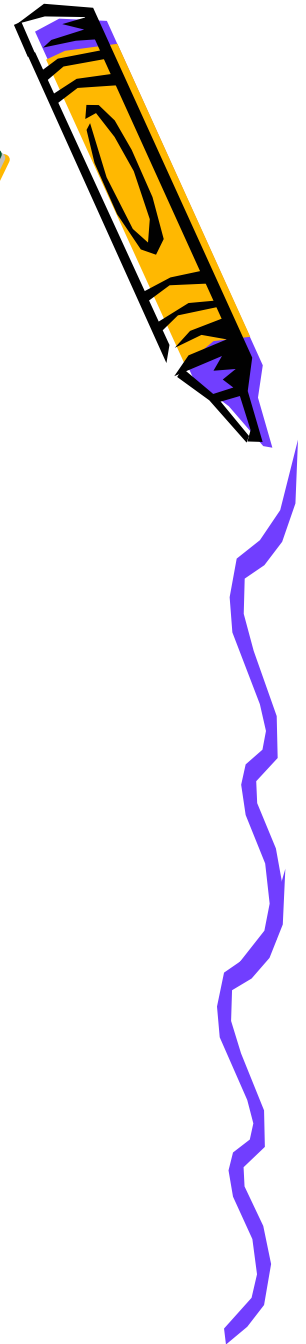
A great variety of arrangements at the start of the reforms.

Let see 3 "examples" of Market Opening:

3 Reform Pioneers (GB 1989;

California 1996; Sweden 1994)

2 EU Followers (Germany 1998;
France 2000)



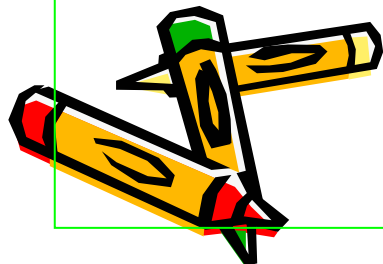
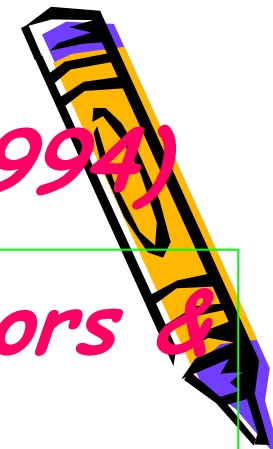
English Opening Features (1990-1994)

1° Industry restructured 3 generators & 12 suppliers vertically & horizontally unbundled

2° Day Ahead Wholesale Market (Electricity Pool) mandatory for generators and suppliers both vertically unbundled

3° Pool a 'non profit' organization governed by generators and suppliers

4° Unb. TSO operated Pool & TRSM services under supervision of generators and suppliers



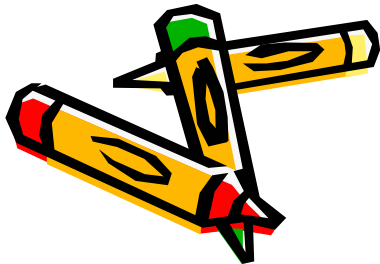
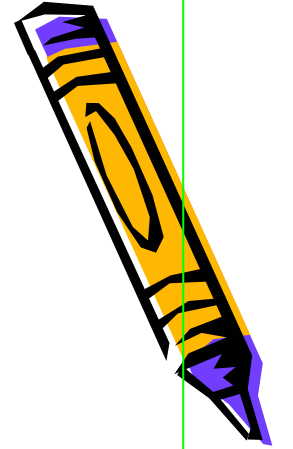
• Who set the rules (1990-1994) ?

1° Day Ahead Wh. Market: Pool members

(Gen. & Suppliers)

2° Balancing Mechanism: Pool members

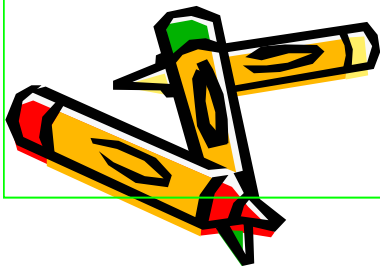
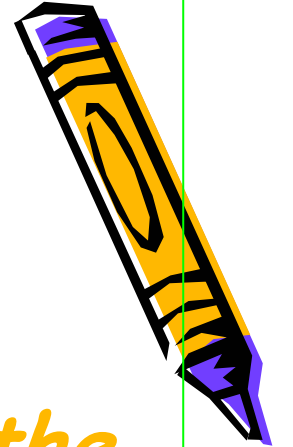
3° Congestion Management: Pool members



*4° Transmission Tarif: Regulator
(OFGEM):*

*except for losses managed by the
Pool*

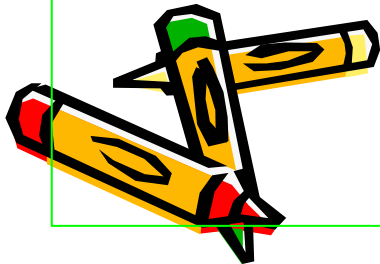
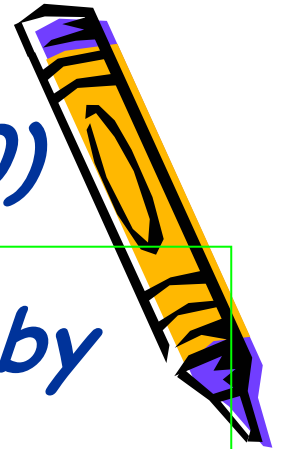
- >> Operation of Wh. Market & TRSM
services mainly self-regulated*
- >> Transmission Regulation by Regulator
was mainly for Fixed Costs &
Infrastructure*



Californian Opening (1998-2000)

1° Industry restructured generation by divestiture (no one > 20%) or contracting rules

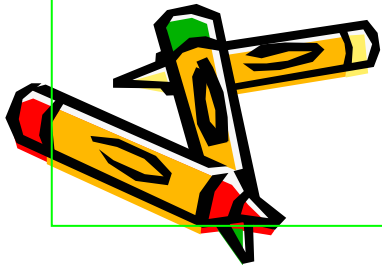
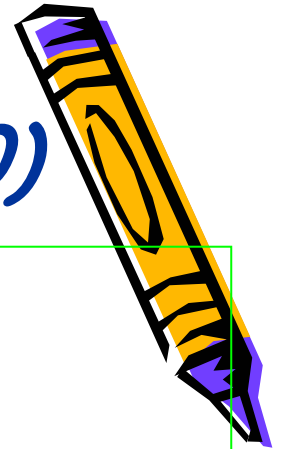
2° Day Ahead Wholesale Market (CA PX) mandatory for incumbent generators & suppliers



Californian Opening (1998-2000)

3° CA PX a 'non profit' organization governed by stakeholder board (Incumbent gen. & supp. + IPP + Consumers)

4° TSO (CA. ISO) didn't operate PX. It operated TRSM services within its own markets under supervision of its own stakeholder board (Incumbent gen. & supp. + IPP + Consumers)

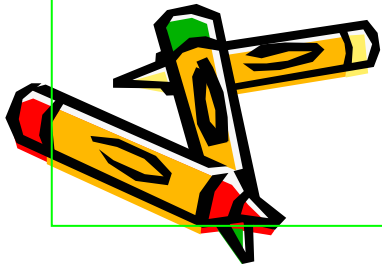
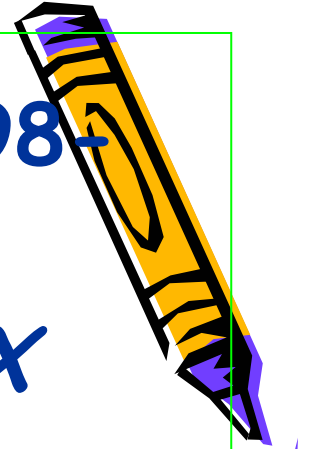


- **CA. Recipe: who set the rules (1998-2000) ?**

*1° Day Ahead Wh. Market: CA.PX
Stake. Board*

*2° Balancing Mechanism: CA.ISO
Stake. Board*

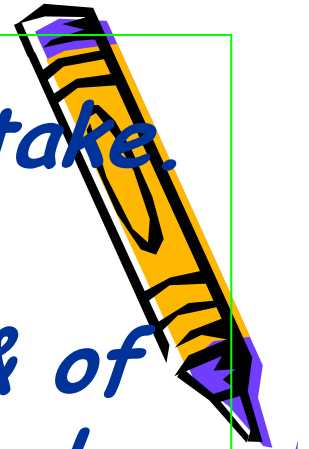
*3° Congestion Management: CA.ISO
Stake. Board*



4° Transmission Tarif: CA.ISO Stake Board

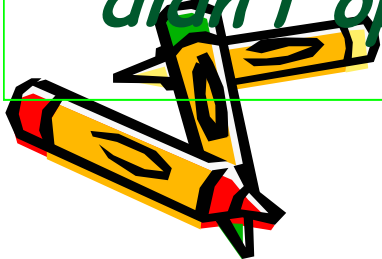
- >> Operation of Wholesale Market & of TRSM services mainly self-regulated*
- >> Transmission itself self-regulated too*
- >> CA. Regulator (CPUC) didn't regulate that (Regulate Retail & Distribution tariffs).*

Fed. Regulator (FERC) acted more as 'Light Handed' regulator (only at 'Arm's Length' but owning a real approval & veto right)



Swedish Wholesale Features (1996-2003)

- 1° No industry restructuring = 3 main generators and 100 suppliers*
- 2° Day Ahead Wholesale Market (Nord Pool) voluntary and competing with bilateral market & self-dealing (integrated firms)*
- 3° Nord Pool a 'for profit' company owned and operated by the Nordic Unb. TSOs (with a core being the Norwegian TSO)*
- 4° Nord Pool managed interconnection congestion with no external supervision but didn't operate the balancing markets*



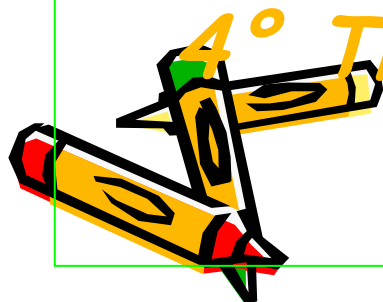
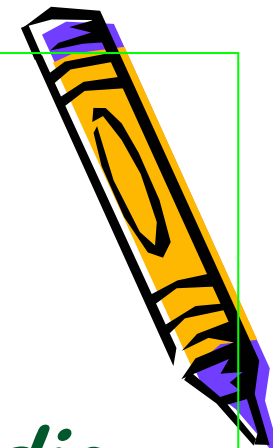
- **Swed. Recipe:** who set the rules (1996-2003)?


1° Wh. Markets: NordPool & Nordic TSOs; or Bilateral Trade or Self-dealing

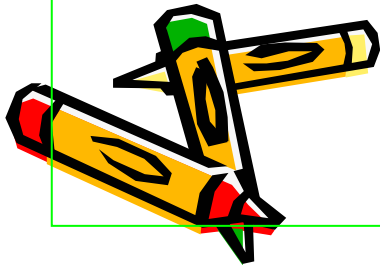
2° Balancing Mechanism: Swedish TSO

3° Congestion Management: internat (NordPool & Nordic TSOs); national (Swedish TSO)

4° Transmission Tarif: Swedish TSO



- 
- >> Operation of Wh. Market & of TRSM services mainly self-regulated*
 - >> TRSM access tarif (incl. losses) could be ex post challenged by Swedish Regulator*
 - >> Swedish Regulator didn't really regulate this area. Pretty similar to California & G-B.*



Concluding on "Opening Models"



- 1° *Industry restructured in England & California (at least generation) >> didn't immune them from Market Power abuse*
- 2° *Day Ahead Pool mandatory for generators and suppliers in England & California >> didn't immune them from Market Power abuse*
- 3° *Pool a 'non profit' organization governed by generators and suppliers in England & California >> didn't immune them from Market Power*
- 4° *Further Step needed to "reforming the reform" and fixing flaws in initial design*

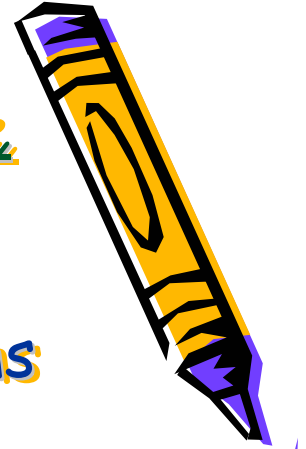


Part I- Ways to competitive energy markets: diverse, long & changing...

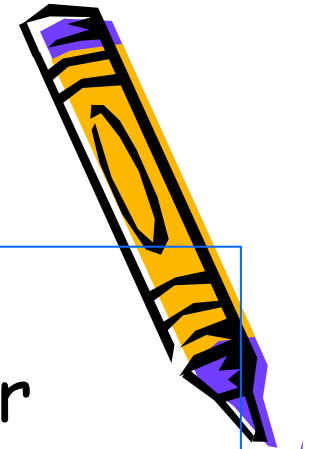
1° First Step = Opening the reform: a great diversity of arrangements at the start of the reforms (will see 3 examples)

2° Second Step = Reforming the reform (Strengthening Competition & fixing initial Flaws): + or - diversity

3° Third Step = Adapting to Long Run Sustainability?



Reforming English Reform

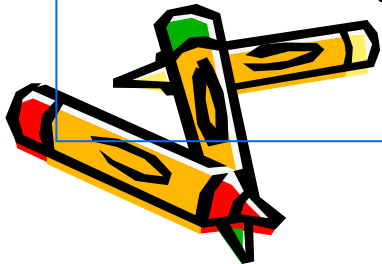


TSO 1- 1990 (partial incentive regulation)

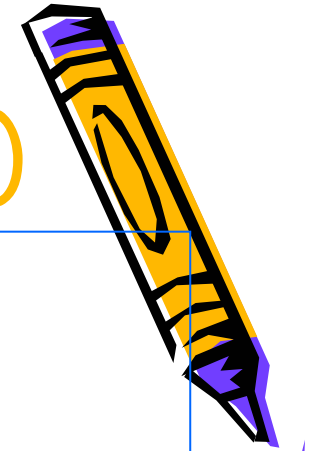
- network tariff regulated by the Regulator ($G > 0$) and Price Cap
- BUT losses, congestion and balancing rules set within the Pool and "cost past through" to consumers

TSO 2- (extended incentive regulation)

- share the cost changes of losses and congestion with generators and consumers
- manage losses, congestion and balancing in relevant markets



Reforming English Reform (2)

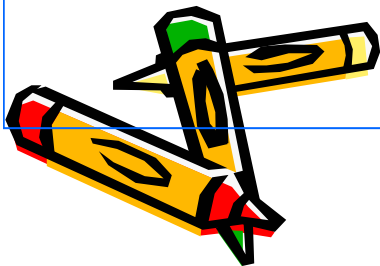


1- Pool (England & Wales - 1990)

- mandatory and private "club"
- set rules for losses, congestion, & balancing; s operated by the TSO

2- NETA (England & Wales- 2002)

- El. Pool suppressed; new UK PX = 1% market
- losses, congestion & balancing managed on a market separated from the TSO (Elexon)



Reforming English Reform (3)

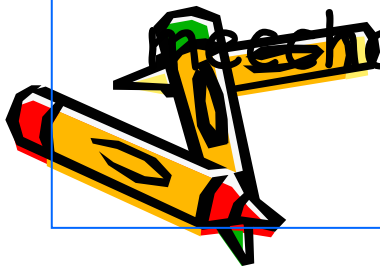


1- OFFER(1990)

- regulated access to networks (& tariffs; $G > 0$)
- not the E. Pool itself (= losses, congestion & balancing self-regulated by the Pool)

2- OFGEM (2002)

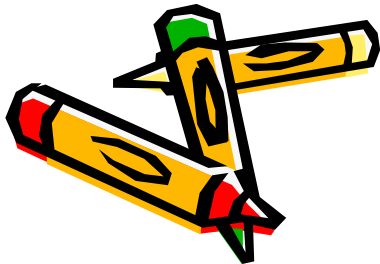
- suppressed Pool; doesn't regulate the UK PX; doesn't not monitor the bilateral market
- monitor rules & behaviours on the real time mechanism managed by d'Elexon (losses, congestion, balancing)



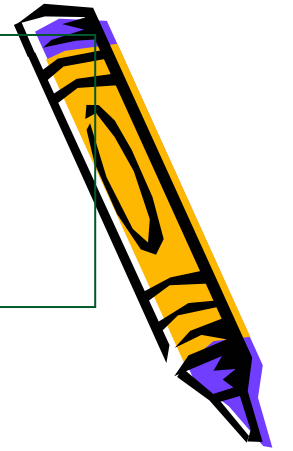
Concluding on "Reforming the Reform"



- 1° *Second Step in Reforms does not deal only with Market Design - Market Power issue*
- 2° *It deals with procurement of these Transmission services by TSOs (losses, congestion, balancing) since these services deeply interact with Wholesale Market functioning*
- 3° *It deals too with the way TSOs transmit these costs to generators and consumers*
- 4° *Second Step of reform deepens Competition into the Markets as well as "Incentive Regulation"*



Third Step "Adapting to long run sustainability" - Security of Supply:
by Market? Or not by Market?



- 1° Electricity >> YES > Massive investment possible with competitive markets + demand response could be incentivised
- >> NO > Spot markets can't drive investment efficiently + 'Public Good' Security can't be marketed



Third Step SoS:
by Market? Or not by Market?



2° Gas EU exemptions to secure LongTerm investments (pipes to LNG terminals & storage) exemptions as standard?

EU Gas supplied + & + by external sources. These external suppliers + & + asked by non EU thirsty consumers

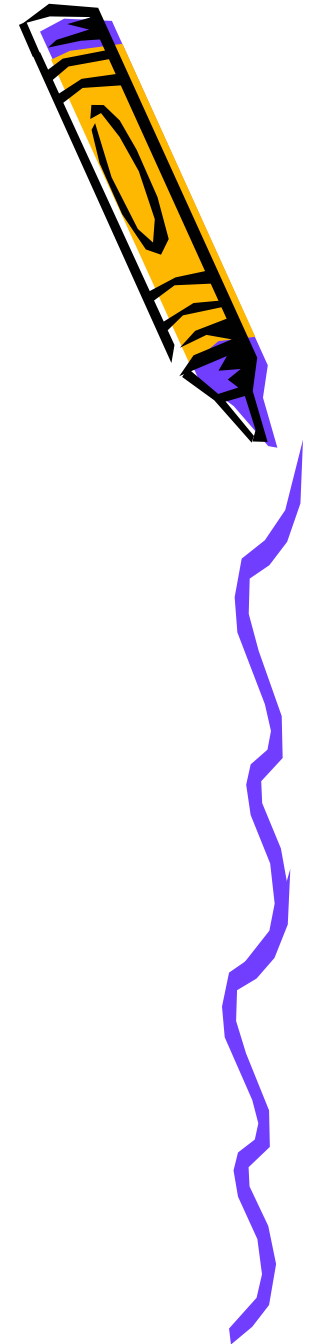
>> Will any kind of EU internal Gas market influence any of these external players?



I- Ways to open competitive energy markets:
diverse, long & changing...

II - A "European Internal
Market" dimension to be added
>> more diverse, more long,
changing more?

III - Is such an EU Internal Market actually
feasible?

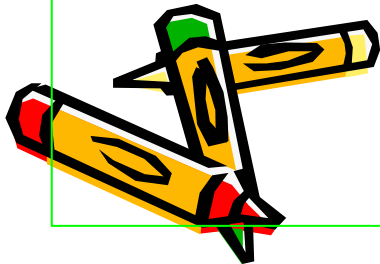


European Internal Energy Market: Which critical areas?

EU single energy market most ambitious project in the world BUT not yet achieved. 10 to 15 years long journey from 1999?

>> In UK electricity system changed again a decade after the start.

EU market achievement and performances (notably efficiency & reliability) do not depend on only one critical factor but the interplay of 4 critical areas.



European Internal Energy Market:

Four critical areas

- ***MARKET RULES***

- *Area 1 Member States' Market Design*

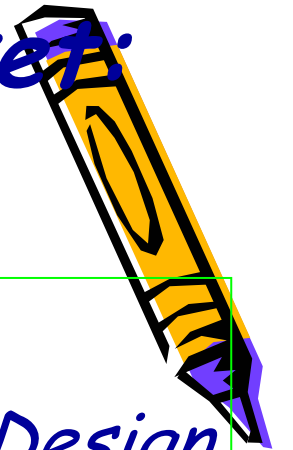
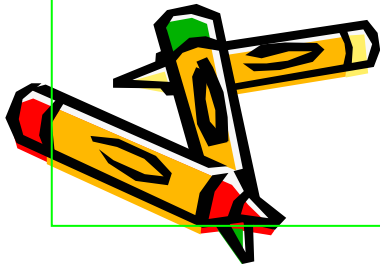
- ***MARKET PLAYERS***

- *Area 2 Industry Structures*

- ***AUTHORITIES DEFINING or IMPLEMENTING the RULES***

- *Area 3 Transmission-and-System Operators*

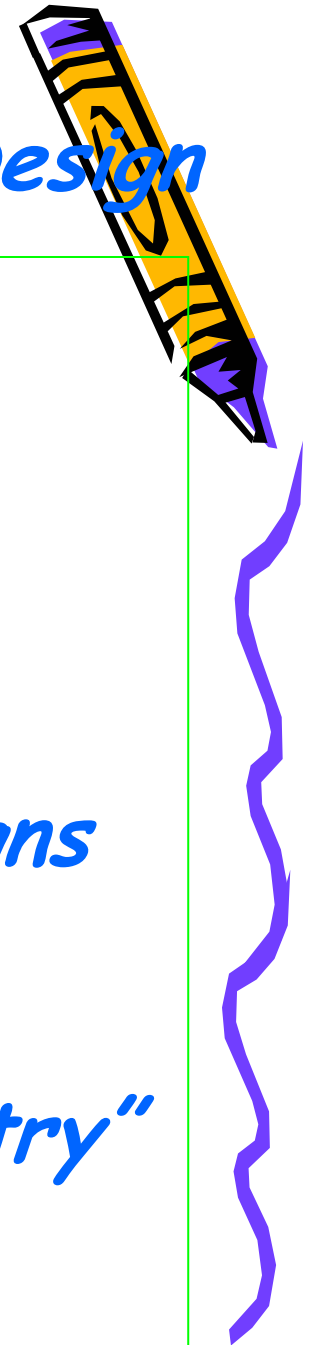
- *Area 4 Regulatory Governance*



Area 1 - Member States' Market Design

➤ Overall

- * Market design = set of several mechanisms >> Modularity of each Design*
- * No consensus on a single "perfect" market design >> Diversity of Designs*
 - A market design recognized as "workable" could be insufficiently efficient, insufficiently "open to entry" or insufficiently reliable*

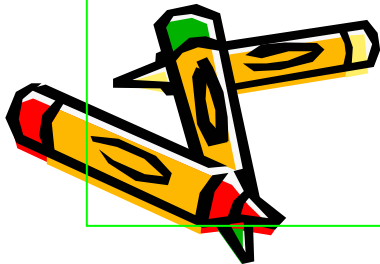


Member States' Market Design: Critical issues

CORE issue = Entry

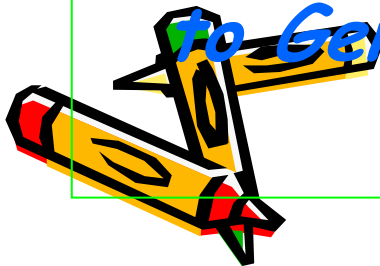
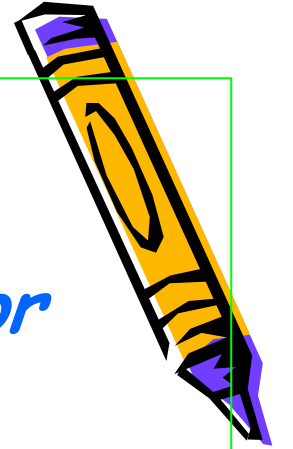
**Balancing Arrangements being
Transparent & Robust in Gas & in Elec (&
not hostile to entry or to non integrated
firms)*

*** In Gas Markets: Offer of Long Term
Contracts to Buyers (permitting Generator
entry)*



Complementary measures

- 1 To end old "non competitive" bilateral agreements & old "regulated tariffs" for eligible customers*
- 2 To link PXs' Rules with System Operation (congestion & balancing)*
- 3 To promote Congestion signals giving incentives to users to behave efficiently*
- 4 To promote Balancing Markets favouring efficient behaviour of generators*
- 5 To promote Capacity Mechanisms as remedy to Generation Investment Cycle*



Area 2 Industry Structures

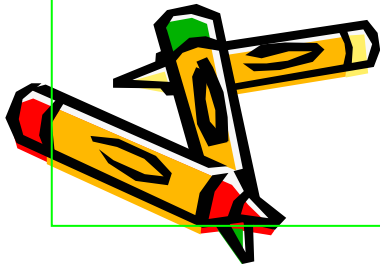
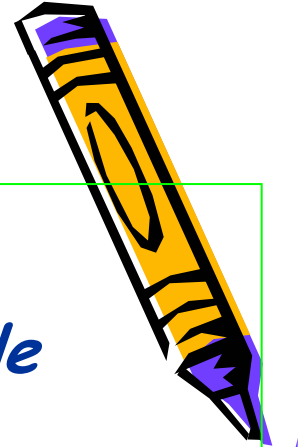
➤ Overall


**Disintegrated model (merchant plants + wholesale traders + independent suppliers) is over*

Plenty of M&As are for vertical reintegration + horizontal concentration + Gas & Electricity integration

**A kind of EU electricity oligopoly of "seven brothers" is foreseen*

**Many markets deal with an incumbent monopoly or duopoly + 1 or 2 new entrants.*





→ Will EU market building go faster than industry consolidation? Is that oligopoly yet coherent or still feeble (gas poor vs gas rich)? Will oligopoly of vertical firms invest more (less?) better (worse?) than a fragmented industry?

→ Will Member States' governments play more "national championship" than pushing towards larger & deeper EU competitive market?

→ Will Competition Authorities and Energy Regulators succeed in ex ante preventing or ex post contesting the establishing of dominant positions?



Industry Structures:

CORE issues

N°1 Prevent increase market power

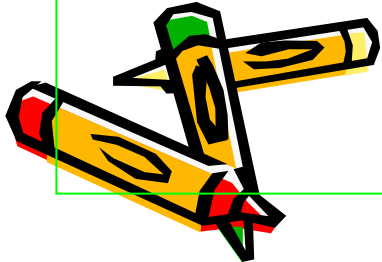
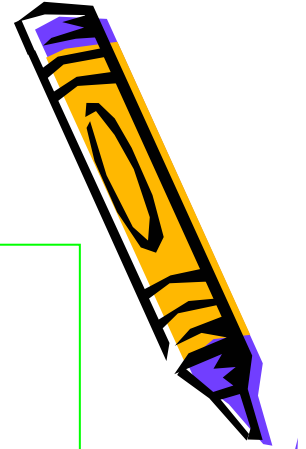
**in gas-elec M&A (access to fuel's closure)*

** in cross-border M&A (adjacent competition's closure)*

N°3 Use M&As

**to force divestiture (from network assets) **

to have swaps (new entry "paid" by smaller incumbent position)

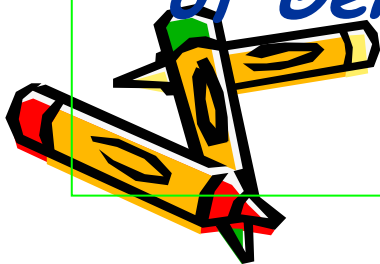
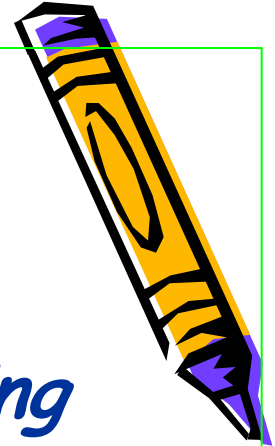


Complementary issues

**Vertical Integration dries Day Ahead & Forward markets' liquidity > To push to Regional PXs & To promote real Balancing Markets*

**To create a permanent EU Task Force Investing in Market Surveillance tools & techniques - To cooperate in data collection & screening with independent TSOs (1st: Balancing)*

**Push towards an EU "Seven Years Statement" of Gen & TRSM invest.*



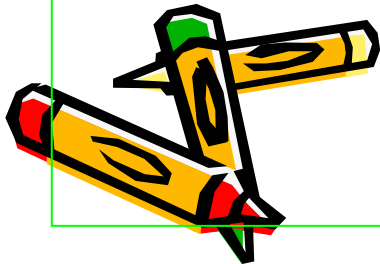
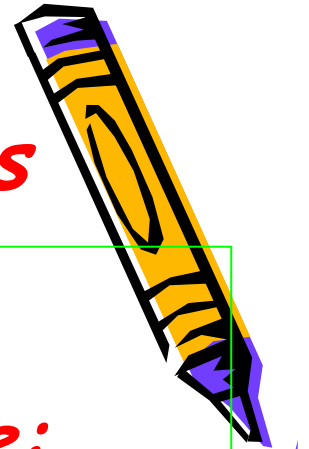
Area 4- Transmission and TSOs

➤ Overall

*TSOs are critical to EU success or failure:
They *manage the national gates to EU
internal market ;*

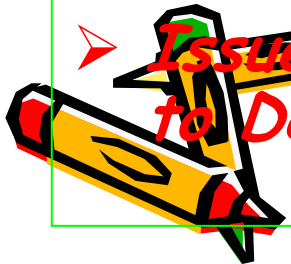
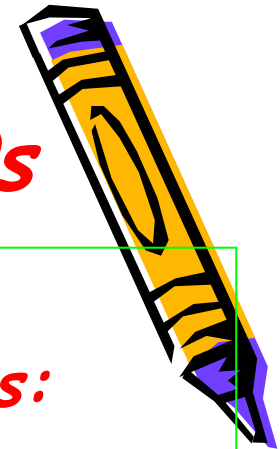
***implement the flows corresponding to
wholesale & retail transactions*

*TSOs were born national but will have to
behave as EU internal market's agents >
Results in many Organization, Coordination &
Incentives PBs.*



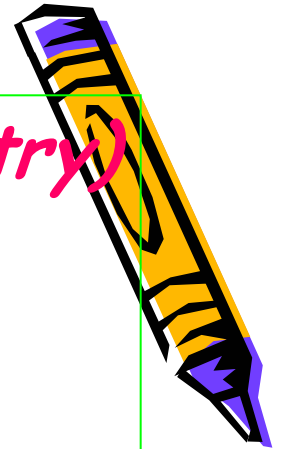
Area 3- Transmission and TSOs

- *Issue 1 ORGANIZATION (Independence as Structural Safeguard in their 2 basic functions: Access to TRSM facilities + Operation of the System)*
- *Issue 2 System Operation Coordination (from "Independent control areas" to "Coordinated control areas") and System Operation Incentives (from "Costs Past Through" to "Costs Sharing")*
- *Issue 3 Interconnection Capacity Expansion (from "National Veto" to "International Codecision")*
- *Issue 4 TRSM Access tariff (from one "Single Postal Stamp" to several differentiated tariffs)*
- *Issue 5 Connection Costs Allocation (from Shallow to Deeper Costs)*



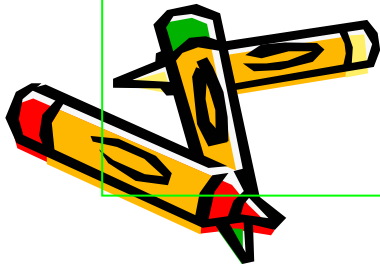
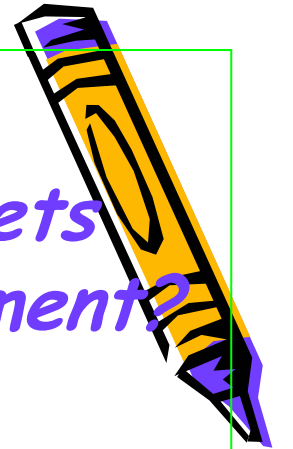
CORE issues (efficiency + reliability + entry)

- 1 Independence of TSOs - Should be expanded to property
- 2 Coordination of TSOs' System Operation between their control areas ("seamless operation")
- 3 TSOs' Incentives to actual costs & benefits of "Cross Border" Operations (some sharing rules)
- 4 EU & ERGEG assess the interconnection expansion process and financing

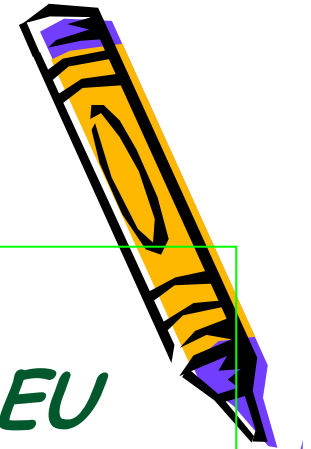


Complementary issues

- * Will "I-SOs" not owning any TRSM assets ensure better independence & management?*
- * Will R-TSOs or R-ISOs coordinate & manage better?*
- * To harmonize Postal Stamps' Scope, Structure and Allocation (G / L) towards Generators' Incentives to System Operation Costs*
- * To harmonize Connection Charges towards Generators' Incentives to Grid Expansion Costs*



Area 4 Regulatory Governance

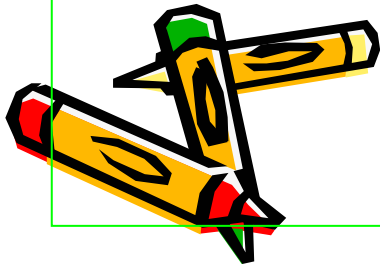


➤ Overall

NRAs as (or more) critical than TSOs to EU success or failure.

At least three functions:

- *defining regulatory rules with enough operational details to make it work on the battle field;*
- *monitoring the observance of rules by players;*
- *settling conflicts between these players*

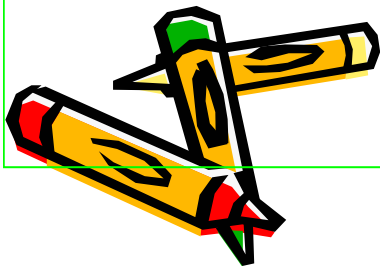


→¹ (Like TSOs) Regulators were born national but have to behave as EU internal market's agents > Organization, Cooperation & Incentives PBs.

→¹ Nat. Regulators have regulatory powers DG Energy doesn't have and vice versa.

→¹ DG & Nat. Regulators' Cooperation (ERGEG) core tool if no new EU Directive in sight

→¹ Both have to share the regulatory governance with DG Comp, National Competition Authorities or Nat. Financial Authorities (PXs).



CORE issues

1° *Independence of regulators from government veto or appeal and for their budget funding*

2° *Their powers' scope for tariffs*

**network*

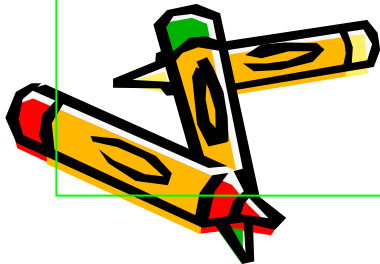
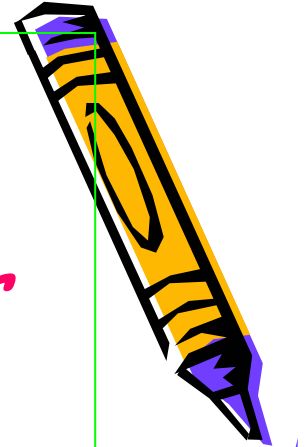
**reg. energy*

**public service charges*

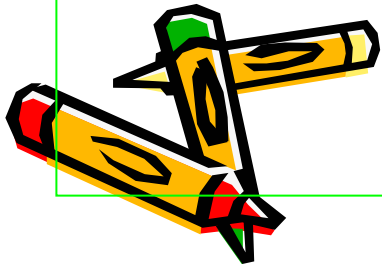
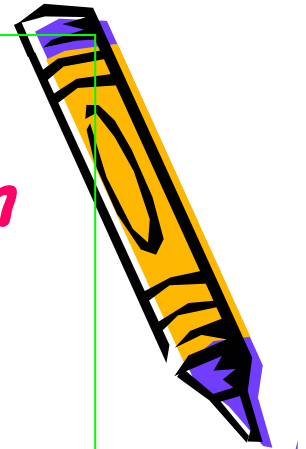
** congestion & balancing rules*

** Interco. Access*

+ Sufficient staff & budget



- 3° Organization of regulators' cooperation by regional Forums & Regulators' collective decisions*
- 4° The replacement of Comitology by a formal power of decision given to ERGEG (at least congestion and other cross-border issues)*
- 5° Organization of EU cooperation between energy regulation and Competition Authorities*



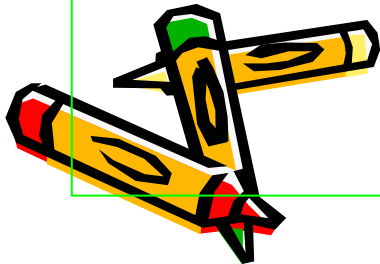
Complementary issues

1° *Accountability of national regulation at EU level (through participation to benchmarking process?)*

2° *Could energy regulation benefits from operation with non energy regulation (Germany)?*

3° *How to combine national welfare & EU welfare in regulators' decision criteria (ex. Interco.)*

4° *To Share with Competition Authorities a co-training in "Energy Market Monitoring" techniques & tools?*



I- Ways to competitive energy markets: diverse,
long & changing...

II - A "European Internal Market" dimension to be
added >> more diverse, more long, changing more?

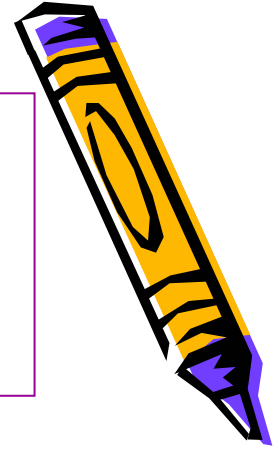
III (and conclusion)- *Is an EU
Internal Market actually
feasible?*



EU Market Design recipe
«ma nouvelle cuisine»

Ingredient 1: *EU Market Design = only subpart of Market Design issues = only Seams' Design*

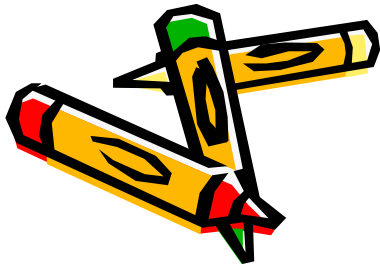
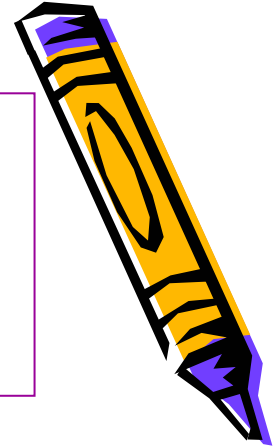
Ingredient 2: *Existing Market Designs show a Diversity of Seams' Designs*



EU Market « nouvelle cuisine? » [Cted]

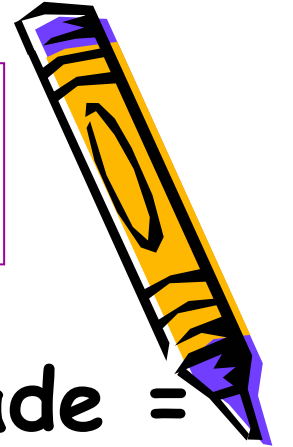
Ingredient 3: *Institutional Feasibility of 'Great Leap Forward' in EU Market Design*

Ingredient 4: *A possible Agenda for EU Market Design Improvement*



1: *EU MD = only subpart of MD issues*

- 'EU' MD = MD of cross border trade = MD of 'seams effects'. WHY?
- EU MD in 1st package (1996): allows wide diversity of States' designs = NO SMD



1: *EU MD [Cted]*

- **EU MD in 2nd package (2003):**
reduces diversity & adds 'formal regulation' of CBT **but** fails to define operational rules > neither SMD nor EU.MD > No clear rules = no clearly defined commodity

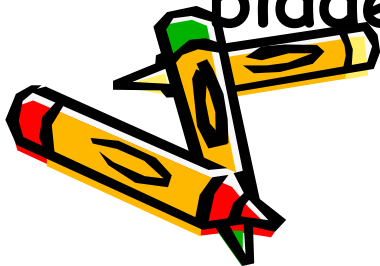
- **Smeers' Theorem** => If you can't define an EU commodity then how can you EU trade it?



2: MD allows Diversity of Seams' Design

*PJM[Nod.DayAhead><Nod.GridAccess=Balancing] *Seams °supressed by new nodes
°°or virtually supress by co-run of common algorithm

*NordPool[Zon.DayAheads><ZonGridAccess]Zon.Balancing *Seams °supressed by new zones °or managed as ad hoc 'virtual bidder' within existing zones (Baltic Cable)

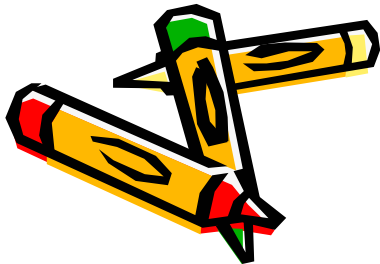
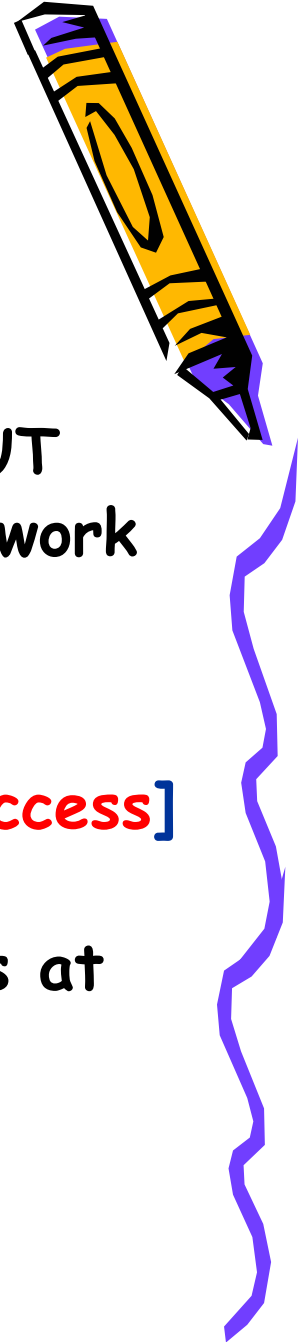


2: MD Seams' Design [Cted]

*ERCOT (Bilateral)>[Zon.GridAccess=Balancing]

*No seams in Texas (Lone State as Star) BUT shows single ISO can run rather meshed network like set of zones

*EUWestCont(Bilateral)(Z.DayAheads)[Z.GridAccess] ZBalancing *With less Energy & Grid Access coordination Seams stay seams traders cross at their peril



3: *Weak Institutional Feasibility of 'Great Leap Forward' in EU Market Design*

- **Before RTO:** *TSOs' Independence to finalised (France, Germany) > *Splitting 'T' + merging 'SOs'? *US ISOs 'self-regulated' with FERC overview > EU self-reg ISO? (Swede: Yes) Elsewhere: ??!! * EU 'Market Design Rights' splitting
- **PXs independent from TSOs (OMEL) + nat. PXs:** A Single R.PX linked to single RTO won't be for tomorrow



3: *Weak Institutional Feasibility [Cted]*

- State Regulators key role in 'incremental' EU MD: *IT doesn't exist in the US *EU has no Fed Reg but EU Minister acting within EU laws or pushing new one (*Great Leap*)
- State Governments key roles in 'incremental' & 'Great Leap' EU MD : *Comitologie gives 'horse trading' rights on new EU regulation *Conseil Européen & Conseil des Ministres give 'horse trading rights' on new EU law package



4: *A possible Agenda for EU Market Design Improvement in four Steps*

- **Compliance with 2nd Directive:** *TSOs' Unbundling *National Regulators with power & staff * Eligibility vs Regulated Tariffs
- **Refining existing designs:** *Operational Harmonization of registration, nomination, gate closure time... *Transparency on TRSM operation & allocation + Market significant informations (see Nordic example)



4: *A possible Agenda [Cted]*

- **Enhancing existing EU MD:** *Explicit capacity auctioning instead of administrative allocation
*Opening of Balancing Mech. through interco.
*Evolution of Balancing Mechanisms towards Balancing Markets
- **Upgrading of EU MD:** *Market Coupling (coordin. allocation of capacity & energy by a set of PXs)
*EU MD set at the regional level (mini Fora) to limit 'horse trading rights' by focussing on elec. trading interests?



Other conclusion suggested by friendly former Regulator (a):



*Jean-Michel, just conclude!
Avoid any Horsetrading with
EU reality!!*

Other conclusion suggested by friendly former Regulator(b):



*Jean-Michel, You must find
a "Da Vinci Code for EU Achievement"
hidden there!!*

