

Why Europe will face more US-style blackouts

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A: Looking at the facts - The Italian blackouts in 2003:

Italy had in fact two different types of blackouts over the last summer.

The first being the **blackout occurring during the day of June 26th due to missing preparation to an extremely hot summer** and the second being **the blackout of September 28th 2003, at a low demand moment in the middle of the night.**

1. The blackout on June 26th

On June 26th during the day, without any pre-alert, parts of Italy (industry, offices, homes, lifts, traffic lights) went off electricity. This blackout was due to *extreme raises in electricity demand combined with a reduction of the production capacity of large-scale power plants* because of scarce water resources and thus insufficient water capacity for cooling heated water from large-scale power plants.

1. Extreme rise in electricity demand

Electricity consumption in Italy has risen sharply these last years, above all, but not exclusively during the summer months:

Rises in summer peak in Italy:

48.634 MW on 12 July 2001

50.974 MW on 21 June 2002 (+ 4, 81 % compared to July 2001)

53.105 MW on 17 July 2003 (+ 4, 18 % compared to June 2002) ¹ for the first time ever in Italy the summer peak was higher than the winter peak from December 2002).

The rise in August 2003 compared to August 2002 was even 11,7%!!!! Even when adjusted for higher temperature ("climatic effects") and more working days, this still amounts to an increase of 8,3%.

But also the winter consumption peak has increased from 42.985 MW in 1995 to 52.900 MW in 2002.

¹ Speech by Paolo Bertoldi, European Commission - DG JRC, at EEDAL Conference "Energy Efficiency in Domestic Appliances and Lighting, EEDAL" October 2003, Torino, organised by the European Commission and the International Energy Agency.

This steady increase is not just in peak power (implying the need for more power stations and lines), but also in electricity consumption: this means more CO2 emissions and is one of the main reasons why Italy is completely off track concerning their Kyoto commitment (see recent reports by the European Environmental Agency).

Interestingly, other countries such as Germany had a more or less stable electricity demand over the same period of time, despite the hot summer it encountered.¹

The rise in demand in Italy comes along with a lack of policy measures on demand side management: Contrary to countries like Japan or China, Italy and the rest of Europe have not yet introduced minimum standards for air conditioning. As a result, hundreds of thousands of very inefficient air-conditioners came to the grid the last summers, a development epitomised with an ENEL marketing campaign hiding negative effects of cooling equipment.

2. Reduction in supply due to missing cooling water resources

During this summer 2003, a new phenomena influencing Italy's balance of demand and supply could be observed: A limit of availability no longer accruing from energy sources, but limits imposed by the lack of cool fresh water needed to absorb the "heat waste" produced in large centralised electricity plants:

Situation on 15th July at noon for certain Italian power plants

Power Station	Water level with respect to zero level	Where	Installed Power (MW)	% power output as a percentage of maximum output
Castel s. Giovanni (Piacenza)	-3,26/-0,67	ponte della becca/piacenza	1100	75%
Isola serafini (Piacenza)	-3,26/-0,67 depending on the river section	ponte della becca/piacenza	145	75%
Edipower (Piacenza)	-3,26/-0,67	ponte della becca/piacenza	660	91%
Ostiglia(Mantova)	-3.31	borgoforte	400	0% (closed)
Sermide(Mantova)	-6.89	ficarolo	1280	50%
Porto Tolle (Rovigo)	Sea level		2460	50%

Total installed power 6045 MW, of which available at July 15th 3404,35 MW, that is 56%.

Source: Corriere della Sera 17th July 2003.

In fact, during summer 2003 there was a big battle around water resources between the agriculture sector (and the minister responsible) and the energy sector - both sectors usually being amongst the most - water intensive sectors of economies. Despite the Italian minister for agriculture's statement "*Irrigation has priority:(...) It is now clear that climate change is happening*" agricultural activity had to be reduced by 30 % this summer due to the lack of water because the amounts available were not enough to both satisfy energy industry and agriculture needs.

¹ <http://www.bmwi.de>,

The scarcity of cooling water was not only an Italian, but also a French problem. France had to reduce and to shut down coal and nuclear power plants this summer and even abridge existing laws on environment and safety. Therefore, the Italian June 26th blackout was also partly due to the scarcity in EDF production that of course reduced electricity exports to Italy.

Conclusions:

Summer day blackouts occurring during days with extremely high temperatures and a simultaneous extreme rise in energy demand are a chronic weakness of Italian (South European) electricity systems: Spain had similar problems during the last years. Athens risks major blackouts during 2004 Olympic Games.

2. The huge blackout on September 28th - Europe's largest blackout since WWII

Looking at the facts:

This blackout happened during *low peak* time (Saturday night at 3 o'clock when most industry does not work and most people are asleep). The demand at that time was only 24 GW (compared to summer peak of 53 GW). Hence, the problem was not a lack of capacity of power production but rather an extremely bad systemic management of the Italian electricity system.

For purely economic reasons, Italy usually cuts off its own (ENEL) production plants (basically oil fuelled and therefore extremely expensive) during the night and relies on cheaper electricity imports. This means that for purely commercial reasons the stability of Italy's electricity depended on three or four high voltage grid lines that night!

What happened on September 28 th 2003?

03:01 h: Tripping of the 400kV Mettlen-Lavorgo line in Switzerland

There are even indications that the original incident (an electric arc on the Swiss line Mettlen-Lavorgo) was due to the fact that that night Italy asked higher imports. The line overheated because of high amount of electricity transported, consecutively expanded and touched a tree created an electric arc which than triggered a domino effect and a series of blackouts.

03:15 h: GRTN reduces the import from abroad by 200 MW, reaching the total import level of 6,400 MW

03:25 h: Tripping of the 380 kV Sils-Soazza line in Switzerland

03:28 h: The frequency on the Italian grid drops to 47,5 Hz, preceded by automatic load shedding and the loss of some power plants. Except for the power grid of Sardinia and for limited load islands, the entire power system reaches a state of black-out

13:00 h: The import level reaches again its normal value

only late evening: last regions in Southern Italy re-connected!

The incidents are currently under investigation and it will have to be cleared where the responsibilities lied but without anticipating the results of this investigation it should be noticed that experts have been alerting for years that the choice of Italy (ENEL) to rely for purely commercial reasons on such huge amounts of imports was dangerous. See for example UCTE 's press release from 29th September 2003:

"The UCTE system adequacy reports have repeatedly warned over the especially tense situation in Italy with a structural dependency on bulk electricity imports"

Italian authorities have thus ignored the warnings by UCTE and others during years and allowed for a risky policy.

B: What has the Berlusconi government proposed in order to solve this problem?

In general there was little differentiation in commenting the "high peak" and the "low peak" blackout.

1) New nuclear or coal power plants

First of all, this decision contradicts today's Italian public opinion that is in majority against nuclear power.

Apart from democratic concerns, it is also not convincing from a technical point of view:

It would simply take years to build such facilities and, because nuclear power is the energy source with the highest need for cooling water - a resource Italy no longer has abundantly has an inherent long-term risk. Furthermore, Italy and Greece face the fact that due to geographical and climatic reasons not only their rivers, but also the Mediterranean sea's temperatures are far too hot in Summer to provide with large amounts of cooling water.

Coal is not an alternative for Italy partially because of water scarcity, but also because of Kyoto commitments. CO2 sequestration which could in theory mitigate this effect will - if ever available at industrial scale at competitive prices - only be ready around 2025.

Alternatives such as small-scale steam and gas turbines run on gas or biomass and/or combined-heat-and-power stations do not depend on water-cooling but are simply cooled by air. Renewables like solar or wind produce electricity without any cooling needs at all. All these technologies combined with demand side management would also bring back Italy on its Kyoto track.

2) Additional imports

It is difficult because in Summer capacity of high voltage grid is smaller due to higher temperatures and reliance on France has also problems in summer because of problems of cooling down French nuclear reactors during summer time. What is more important, reliability of large-scale electricity imports is dangerous as this year's second Italian blackout shows (see later).

What would be possible real solutions?

Short-term solutions (before next summer):

Even if you want you cannot build new additional power plants or new high voltage grid in a years time. On very short term and to bring Italy through next summers new crises the only "realistic measures" are:

1. Radical energy efficiency measures (see proposals by International Energy Agency: "Saving electricity in a hurry") based on practical experience from California, Brazil, New Zealand where up to 20% of the electricity demand could be saved.

Examples for policy measures:

- ✂✂ Search for quick reductions in industry appliances
- ✂✂ Establish temperature limits for thermostats controlling air conditioning (air temperature shall not be lower than 28 degrees or alternatively, shall indoor not be more than five degrees below outdoor temperature (which is also beneficial to human wellbeing)
- ✂✂ Introduction of minimum standard for several electric appliances (on power supplies, mobile air conditioners)
- ✂✂ Launch of promotional campaigns to anticipate the replacement of light bulbs (which would reduce not only direct electricity consumption, but also "heat" input in office buildings, as well as the replacement of old refrigerators and freezers (Italy has the oldest "refrigerator and freezers fleet in Europe")¹ (this is could also be a mean to help low income households to save a lot of their electricity costs) and could benefit European (Italian) appliance industry)
- ✂✂ Information campaigns on "good and healthy cooling" practice (shade during day, use fans during night to evacuate heat.

All these measures have the advantage to help also Italy to fulfil its Kyoto targets

2. Speeding up some power plants already under construction

For the mid term Italy has to develop an "intelligent" energy policy mix with ambitious policies on end use electricity efficiency. A reduction of cooling needs could be achieved by a rapid application of the new EU building directive. The promotion of combined power, heat and cooling generation also constitutes a good possibility to reduce the peak load demand in summer months.

New power plants have to be in line with Kyoto long-term commitments.

C: What are Commissioner de Palacio's proposals to prevent future blackouts:

Quote:

¹ Sales of A class refrigerators in Italy make up 42 % of total sales but more than 80 % in the Netherlands. Italy also has fewer sales in new domestic appliances than other EU countries. Finally energy labelling requirements were introduced years later than in other EU countries.

" It (the blackout) results from a combination of the decision to close down Italy 's three nuclear reactors following a referendum in the 1980ies and very strict environmental planning laws" ¹

This statement gives a rough summary of De Palacio's intern communication to her services, but also the messages send to the outside world.

This completely ignores the facts that:

✂✂The blackout did NOT occur during a high peak demand ? missing capacity argument is misleading!

✂✂Speculation instead of secure provision: Instead of securing energy supply (the base load) with own capacities, ENEL It is taking the risk of importing 1/4 of its electricity needs for purely speculative reasons.

✂✂Italy is not the only country in the world that decided to phase out or not even launch nuclear energy: How could countries like Denmark, Austria, Portugal manage to survive without nuclear power? Also in the US the last nuclear plant was built in 1978! The fact that Italy did not build a lot of new power plants since 1980 is not a problem of planning procedures but the problem is that ENEL was in a monopoly situation - controlling both most of investment in Italy and the grid and for purely short term income reasons decided not to invest in new generation with a triple benefit: saving money for investment, driving electricity prices in Italy up through this scarcity to one of the highest in Europe and than earning money through cheap imports.

✂✂It is rather the lack of investment in other production facilities for the last twenty years illustrated very well:

✂✂

1. By the case of **cogeneration plants**: Once a legislative framework for CHP was set up in 1992, a halt in CHP plants during the 80ies could be overcome - until a decree in 1997 temporarily cancelled it leaving legal uncertainty for potential investors and thus leaving a potential of 40 % savings in electricity demand² unused.

"In general terms, Italy s relatively unstable political environment has tended to undermine long -term planning for cogeneration"³

2. By the fact that new investors face enormous administrative and technical hurdles to get connected to the grid, as well as by the fact that requests for about 600 new plants have not yet been authorised (source: GRTN October 31st, 2001) and

3. By the fact that an energy bill is pending in the Italian administration for 21 months already and instead, on October 2nd 2003 the Marzano-decree allowing for waste water abrogation was

¹ Source: Internal Communication note to the College des Commissaires, SEC (2003) 1079, Texte E: La Coupure electrique en Italie, 30th September 2003)

² Energy for Sustainable Development (ESD) Ltd Overmoor: The future of CHP in the European market - The European Cogeneration Study Country Report Italy, p. 7.

³ See above, p. 5.

pushed through parliament within days adding even more uncertainty for investors about the legal environment.

✂✂ Environmental legislation as the reason for lacking investment is not convincing as Italian environmental legislation derives as much as 95% from EU legislation. On the contrary, there is a trend in Italy towards the de-penalisation of environmental legislation in several respects (see amnesty for illegal constructions recently)

De Palacio is clearly abusing her position and taking highly biased conclusions in the name of the European interest.

Beyond Italy - large-scale bulk electricity flows - a chronic disease of the future internal market?

The EU Commission DG TREN headed by Commissioner De Palacio and Director General Lamoureux, as well as big energy companies and EURELECTRIC have a certain vision of what a internal electricity market should look like which can be described as a consolidated market with only 5 to 7 big European players left that will dominate the market. These companies will produce electricity mainly in large-scale centralised (nuclear and coal) power plants. The competition between these large players will be organised through potential big bulk imports and exports over long distances.

But what are the weaknesses and implications of such a strategy:

1) Large scale bulk electricity transfers over long distances increase the system instabilities

In fact, as an effect of liberalisation, the exchanges of electricity in Europe have already increased during the last years.¹

*"Pending greater integration, the possibility that network overload may trigger a wave of power cuts or domino effect cannot be excluded"*²

*"If national energy policies would continue to give wrong or even contradictory investment signals and lead more countries to also rely on imports instead of own generation and transmission infrastructure, this would lead to the concentration of generation in a few areas and to long-distance bulk electricity transits (as in North America from Canada to the New York area) which would be detrimental to the reliability of the European grids"*³

The Italian crisis shows that these priorities are inherently putting into danger the stability of the EU energy system; the actual existing grid system in Europe was not designed for large scale exchanges of electricity.

¹ See: <http://www.ucte.org>.

² Andre Merlin, head of ETSO, Le Monde from 16th/17th August 2003.

³ UCTE, Press release: UCTE investigation committee set for interim report on Italian black-out to be released on 20th October 2003 from 29th September 2003

2) Upgrading of the existing grid system will cost enormous amounts of money and has no public acceptance

Theoretically, through the construction of an enormous amount of new grid infrastructure, it could be possible to lower somewhat the risk of system instabilities. This seems to be the main strategy of EU Commission who is pushing through new obligations for Member States to interconnect - the famous target of a 10% minimum target of interconnection agreed by the European Council in Barcelona in March 2002.

This target was randomly and arbitrarily chosen and has no scientific, physical or technical justification. It is vague since it denies the fact that there is a difference between capacity (measured in MW) and actual energy output of a grid (measured in MWh) and it is not clear what it is referring to.

The only scientific facts are that there are clear technical limits for high voltage grid transmission that do not allow for more than 12-15 % of cross-border exchange and that there are losses related to long distance transmission that can amount to up to 3 % of the produced electricity.

The 10 % target was also never discussed and agreed upon by the European Parliament, nor by discussed by EU energy ministers. It was attached as a document to the so-called Barcelona summit and endorsed by Heads of States without any technical background.

Finally, since Italy has, according to the latest edition of the Statistical Yearbook of the UCTE, already a net import percentage of 15 %, the strategy to focus solely on interconnections cannot present the only solution to the problem!

In addition EU Commission tries to earmark more money from EU budget to new grid infrastructure (20% instead of 10% for studies for new projects) paid with European taxpayer's money!

The Commission' s strategy to build huge amount of new infrastructure has to be questioned on cost terms, since theoretically the invisible hand of the market, as well as " the threat of entry, via open access to robust European transmission network should be sufficient to force even national monopoly generating firms to behave as if they were in a competitive single market" (..) an alternative approach based on existing EC regulatory powers would be a quicker and cheaper, solution with an identical impact on prices." ¹

Thus if investment needs a doubled share of public subsidies to be materialised, there is a policy and regulation problem and the conclusion would be that this public money would be better spent on favouring access of new actors (producers) to the market who are located in those places where the consumption is needed. This would enhance competition and at the same time stabilise the grid system.

¹ John Bower, Senior Research Fellow at Oxford Institute for Energy Studies, in an article in Platts, Power in Europe. Special Edition West. European Electricity Review 2002.

But even if we assumed that Commission, Member States and the private sector would be ready to spend billions on bringing new grid, the question of public acceptance is still to be raised. Citizens and politicians both at national, regional and local level have good reasons to oppose new high voltage grid which spoil landscapes and pose serious health risks that have not yet been tackled.

The strategy of ETSO and De Palacio to create EU legislation to undermine the legal rights of citizens at national level concerning their choice of energy sources and energy systems is not just arrogant, but represents a real threat to democracy in Europe: If we want more citizens opposing further European integration, this is exactly the type of declarations that would have to be made

There is an alternative to the internal market strategy of EU Commission that minimise risks and costs at the same time: Enhancing competition on the existing electricity markets by favouring new entrance and focussing on regional European markets instead of national markets or visionary markets from "Lisbon to Vladivostok".

D: Can liberalisation be blamed for the recent black outs in Italy, Sweden/DK and UK?

A lot of the opponents to liberalisation of electricity markets are using the blackouts as an argument against further liberalisation efforts. Can this be justified at this moment?

Given, that liberalisation in **Italy** is only starting with Italy being one of the last countries to transpose the 1996 electricity liberalisation directive only in 2001, it is not consistent to blame the structural issues such as under investment and lacking new investments in new capacity, as well as and poor demand side policies on liberalisation, but rather on the implications of a badly managed state monopoly.

Italy's decision to divest ENEL in 2000 can also not be used to explain lack of investment in Italian power supply during late 1980 and 1990.

Contrarily to this, **the DK/Sweden blackout** is related to a sudden shutdown of a Swedish nuclear reactor which then destabilised the whole system. As the fact that also nuclear power stations are a risk to electricity supply systems does not fit De Palacio's arguments in favour of more nuclear power stations, it is not surprising that there was no major communication done by EU Commission on this issue. UCTE has repeatedly warned that reliance on big centralised power plants threatens the stability of the system.

The blackout in **London** has been thoroughly analysed by OFGEM:

“It is clear from our investigation that these powercuts were isolated incidents on the National Grid. While they were very regrettable for those affected, customers should not see them as signs that the network is suffering from lack of investment. (...) Total investment since privatisation in the electricity network is over £16 billion a level which is much higher than before privatisation. The national grid network in this country is 99.9999 per cent

reliable and powercuts on the low-voltage distribution networks have fallen by 11 per cent since 1991/92.”¹

Thus, one cannot blame the mere fact of liberalisation to be at the origin of security of supply problems, but rather lacking grid management or wrong policy options.

One has to distinguish clearly between **liberalisation, privatisation and (de/re-) regulation** and the real risk to security of energy supply comes from deregulation of electricity markets.

There are two inherent risks to security of supply resulting from bad or insufficient regulation:

1. Under-investment in grids within not yet unbundled markets

There is a real risk that integrated companies abuse the fact that they own the grids - the segment that constitutes a natural monopoly - divert money from this segment and cross-subsidise their own electricity production and distribution/retailing instead - the segments where competition is introduced.

This is one of the reasons of under investment in US grid system.

In order to prevent this, a lot of experts propose to entirely unbundle grid activities (above all transmission) from production, trading and retail activities. ("ownership unbundling").

2. Under-investment in new production capacities even within unbundled markets

Even with unbundled companies, there is still a need for regulation due to mere speculation of big utilities that only look at short-term profitability and thus prefer cheap imports instead of building up new capacities. (ENEL case)

In order for new capacities to be built in unbundled markets, one of the most important issues will be market transparency and the opportunity to enter the market for independent power producers, but also for local utilities or industries investing in cogeneration units or by new entrance through investors in renewables.

Reasonable end use efficiency policies both at national and European level can also ease the problem of lacking long-term investment since it helps to reduce the electricity demand that has to be met. Every kWh that will not be consumed will also not have to be produced or imported.

The European Climate Change Programme has identified huge potential for such policies and several EU and national policy measures are already in the pipeline.

E: What should be the real priorities on the EU agenda after the biggest European blackout since World War II?

1. Improve information exchange between network operators

The Italian blackout shows that there is much more a need to improve with some millions of investment in adequate information technologies the information flow between the network operators than investing billions in new transmission lines.

¹ See: [www://ofgem.gov.uk](http://www.ofgem.gov.uk)

The liberalisation creates much more complex physical flows on the EU grid system. Neither the UCTE rules and criteria's nor interaction between relevant players are up to these new challenges

2. Re-regulate and strengthen control on the EU energy market by full and speedy implementation of the new II directive on electricity and gas package

Due to the input from the European Parliament the directives on electricity and gas and the regulation on cross-border trade was strengthened in relevant areas.

- Unbundling between grid activities and production, retail and trading of electricity

The recent events show clearly that the demand of EP to ask for ownership unbundling of transmission networks is a pre-requisite for a functioning electricity market. Scandinavian and UK have not even better regulation of the grid investments but also better market transparency because they had the political courage to separate "monopoly activities where heavy regulation is needed from the parts of the market where competition can make sense (production, retail, trade).

Unbundling is also important on distribution. Because of the importance of having new market actors in the field of decentralised power production and to ensure that the big incumbents who control the centralised power production assets are not continuing to use the control of the grid against potential competitors, governments should use the transposition of the directives into national law to push re-regulation further on this aspect.

- Use new powers of the regulators

A market cannot function without stringent application of the rules. The EP has been successful in strengthening the powers of the national regulators.

These regulators have now to take up there new functions and above all define clear criteria for security of supply on two aspects: sufficient investment above all in distribution networks and defining sufficient reserve capacities on their relevant market.

A new Commission proposal on security of supply is not necessary if all the possibilities of the electricity directive (defining criteria, monitoring application, use of call for tenders) are used consequently.

National regulators have also to fully apply monitoring of market dominance and use of their power of intervening if necessary (divestment obligations,

3. New demand-side initiatives

"The cost of saving off-peak electricity by demand management is often half of the kWh price consumers pay to use electricity. Reducing peak consumption by saving energy can be 75% cheaper than buying it. In addition, implementing energy efficiency measures is normally a

faster and easier process than increasing supply" (Information memo from Mrs De Palacio to the Commission after US blackout 14 August 2003)

Already during the debate on the liberalisation directives, that EU Parliament asked for new EU initiatives on end-use efficiency being aware that in a liberalised energy market new dynamics which favour energy consumption risk to be established when retailers of electricity solely consider short-term benefits and try to sell/produce as much as possible.

- Strengthen the eco-design proposal to bring push ambitious minimum standards for energy use of appliances and office equipment

EU Commission has tabled after months of internal struggles a weak proposal for a new directive on minimum standards of energy-using appliances and office equipment (so called eco-design directive). EP and EU Governments will have the occasion to strengthen the actual proposal and bring back Europe to an international leadership in this important field.

- Force EU Commission to propose after more than one year of empty promises the directive on "energy services"

EU Commission has promised EP such a directive for more than a year. The proposal is now on the table of EU Commissioner De Palacio.

The new directive on "energy services" which will impose efficiency performance targets for retailers of energy and thus help to set up a EU market for investments in energy efficiency.

Both issues should also be priorities for the Italian EU Presidency.

4. Promotion of decentralised energy production

All experts agree, that it is the most efficient way to make production of electricity happen as close as possible to the points of consumption in order to minimise stability risks to the grid management and thus insure security of supply. Most decentralised power productions - gas driven gas and steam turbine up to 350 MW, large and small scale heat and power productions, micro cogeneration (as a pre-stage to fuel cells) and renewables (biomass, small scale water, wind, solar) will enhance not only security of the grid, but also bring Europe back on the Kyoto track.

What should be done to favour decentralised electricity production

- The new CHP directive should be strengthened and adopted in short time

There is a new EU directive in discussion between EP and Council. In first reading EP had strengthened the directive on a number of relevant points like security of supply as a priority aim of the directive, a concrete EU wide target going from 9% today to 18% in 2012, reduced administrative burden on grid access, plug and play authorisations for micro-cogeneration.

Unfortunately Council (EU government) rejected these points. The recent blackouts should be used to bring more pressure on governments to accept Parliaments improvements.

- Promote locational signals to favour production where consumption is

The new regulation on cross-border electricity trading (Mombaur report) contains important provisions on locational signals. These price signals should favour in the short-run the dispatch of those power stations, located in areas where there is a lack of electricity. Locational signals can also be used to favour new investments to be done where there is a need which is close to the place of final consumption. Sweden and UK have successfully implemented such policies in the past years.

- Promote long term avoided cost principles in calculating network charges

The electricity liberalisation directive (Turmes report) also contains an important instrument favouring decentralised production: the "long term avoided cost principle". This implies costs savings for decentralised power productions reflecting the fact that they do not need to be transmitted via high-voltage, but are only fed into lower and middle voltage grids.

5. Moratorium on EU funded new transmission lines

The idea of an EU internal market based on a competition through large distance bulk electricity transports is dead with the Italian blackout and the conclusion from the US blackout.

For reasons of stability of the grid system and for reasons of "good governance" e.g. investing public money where it brings most benefit, there should be a moratorium on new EC sponsored transmission lines until a cost-benefit analyses has identified those which are really of economic benefit and in the general interest of EU tax payers (e.g. favouring integration of off-shore wind through cables between).

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