

Evolution of Electricity Markets:

***Current Status and Future Investment
Opportunities***

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El modelo público - privado en el sector energético

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Outline

- Understand the evolution of deregulated electricity markets
 - *from uncertainty to maturity to.....*
- Deregulation in Colombia
 - *the state of the Colombian system*
- The new (geographical) frontier
 - if South American markets are maturing – where to invest

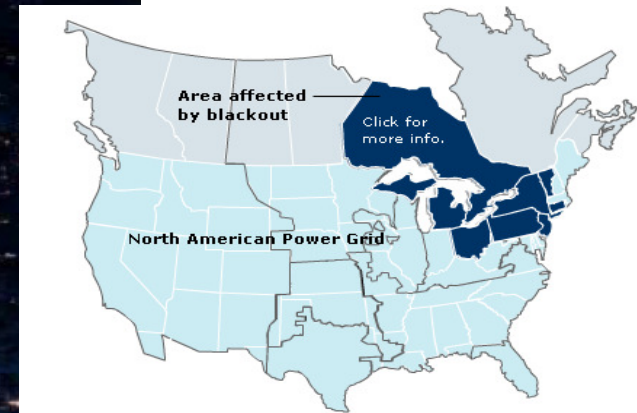
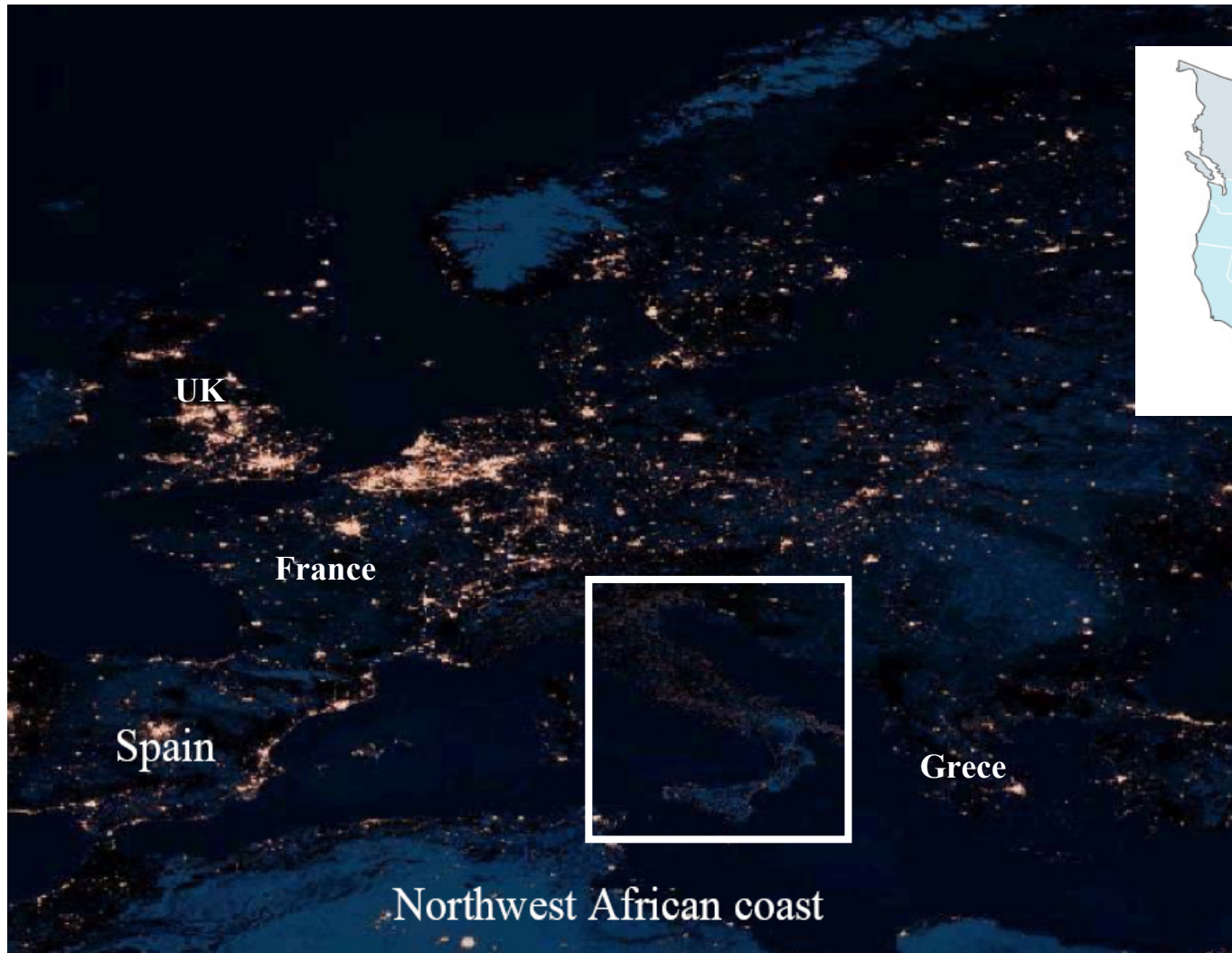
Electricity Markets Evolve

- All markets move down a learning curve
 - Companies learn how the market reacts to initiatives and firm strategies
 - Regulators learn what to look out for
 - Customers learn about how and when to contract and with whom as well as how to manage risk
 - This imply that the initial market is very different from the market 10 years later

“Evolutionary Balance”

- What happens if all parts of the system does not evolve at the same speed?
 - Markets might mature, but the regulation is lacking behind
 - Investments are not made in all part of the system
- “If it is not broken – do not fix it” syndrome
- Problems will take long time and become increasingly difficult to correct

When it Goes Wrong



Major blackout in Europe and the US in 2003, mainly due to underinvestment in transmission

When It Goes Wrong

- **Brazil**

Crisis in 2000-2001, was predicted from 1996.

- **California**

Rapid growth in demand (4%) while it could take up to more than 10 years to build a new power station

- **Argentina**

Very low regulated gas price lead to no new investments and rapid growth in demand (40+% in 4 years)

- **European Union**

Single market in electricity still far from achieved partly due to national interests

Evolution in Colombia

- Colombia has done well so far as the deregulation has delivered in many areas:
 - enough capacity to avoid blackouts
 - increased the fraction of thermal generation
 - made electricity more accessible
 - has generated success stories such as EEB and ISA
 - and many other positive aspects

Problems Ahead?

- The real question for a deregulated system is if it can deliver enough investments.
- Low return on investments over the last years leading to few new investments in generation since 2000
- “Updating” the regulatory environment
- High economic growth -> growing demand
- What about the next Niño?

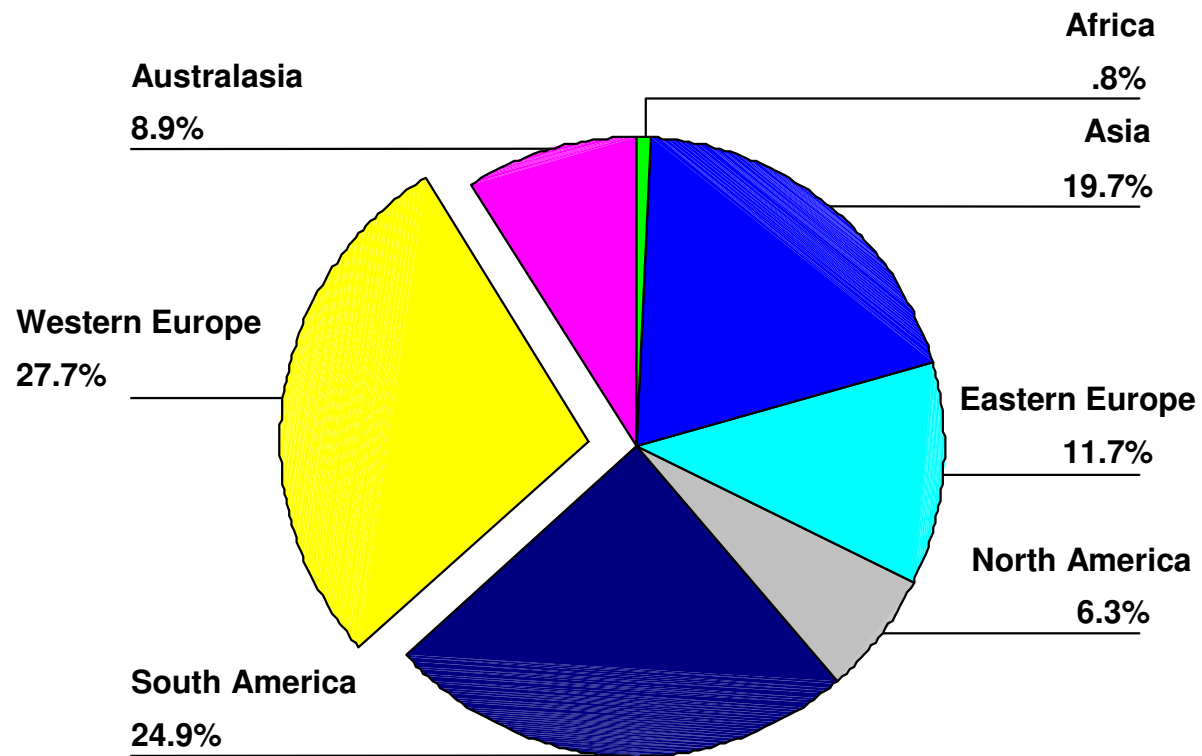
Can it be Solved?

- Long lead time
- Many examples where decisions was not made early enough although the problem could be foreseen (as discussed earlier)
- Develop sustainable solutions – not fixes
- Make it attractive to invest, but make sure to keep the balance

Where to Invest Next?

- While there are still possibilities in South America for investments, it might be time to look at other parts of the world as potential interesting places for investments
- There will be need for investments on most continents, although in some cases the returns might be greater (as well as the risk)

FDI Investments 1994-2004



Investment Locations

Area	Advantages	Disadvantages
South America	<ul style="list-style-type: none">• Cultural similar• Existing experience• Some growth in demand	<ul style="list-style-type: none">• Best opportunities gone?• Some political risk
North America	<ul style="list-style-type: none">• Well established markets• Need for new investments• Low risk	<ul style="list-style-type: none">• Uncertainty about deregulation• Established large players• Relative low return?
Europe	<ul style="list-style-type: none">• Well established markets• Relative clear rules• Need for new investments (G, T)• Low risk	<ul style="list-style-type: none">• Some nationalism• Established large players• Mature markets
Africa	<ul style="list-style-type: none">• Large Growth in Demand• Collaboration with Int. Org	<ul style="list-style-type: none">• Political risk• Different culture• State of enforcement

Core Expertise of Colombian Companies

- Experience from operating in, at times, difficult environment
- Many companies have reached “maturity” in most respects, e.g. management, understanding of customers, dealing with non technical losses, risk etc.
- Where can this expertise be applied?

Example: Nigeria

- 140 mill people
- Biggest oil producer in Africa
- Installed Capacity 6.500MW
- Max production this year 3.410 MW
- Estimated demand 10.000MW but....
- 70% thermal and 30% hydro generation
- 40% of population in areas with access
- Problems with payment systems, management, old plants, little investments

The Nigerian Reform

- The *National Electricity Power Authority* (NEPA) in 1972
- Deregulation and Privatisation in 2005 the “*Electricity Power Sector Reform*”
- Set out the framework including the creation of a Regulatory Committee (NERC)
- Adopted a version of the UK system

Major Challenges

- Improvement of the whole system
- Coverage – provide electricity for the other 60%
- Reliable generation and distribution
- Foreign investments
- Reduction of corruption
- Human resources – capacity building

Nigeria: an Opportunity?

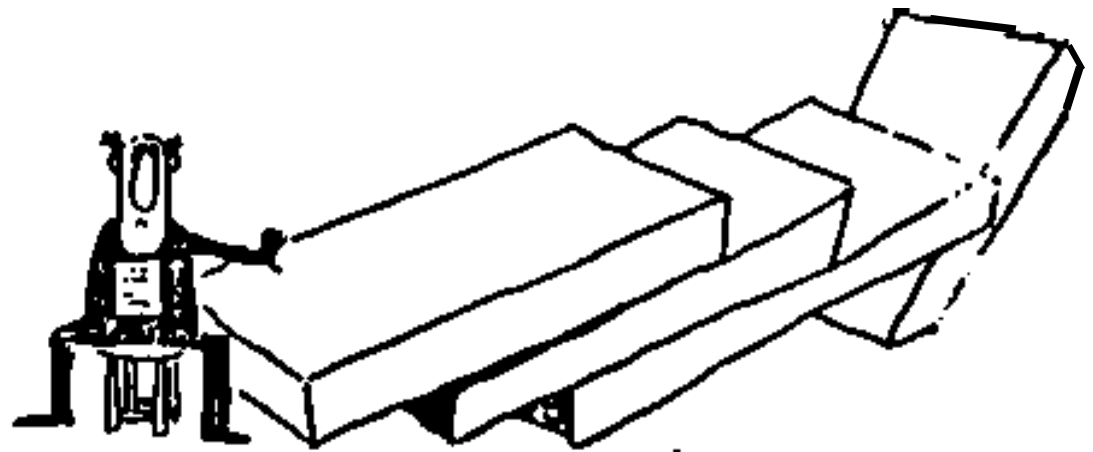
- Government commitment to improve the situation – NIPP plan to build 21 power stations and then sell them off
- State of the “federal” system
- But also major investments in transmission and distribution will be required
- Management practices, work practices, and ICT needs major upgrade

Concluding Remarks

- It is important to understand the dynamics of the market – to avoid future problems. In particular one needs to look sufficiently ahead and act to avoid problems as it is too late when we actually see the problem
- Colombia has done well compared to the rest of South America and the world, but needs to be careful in the future

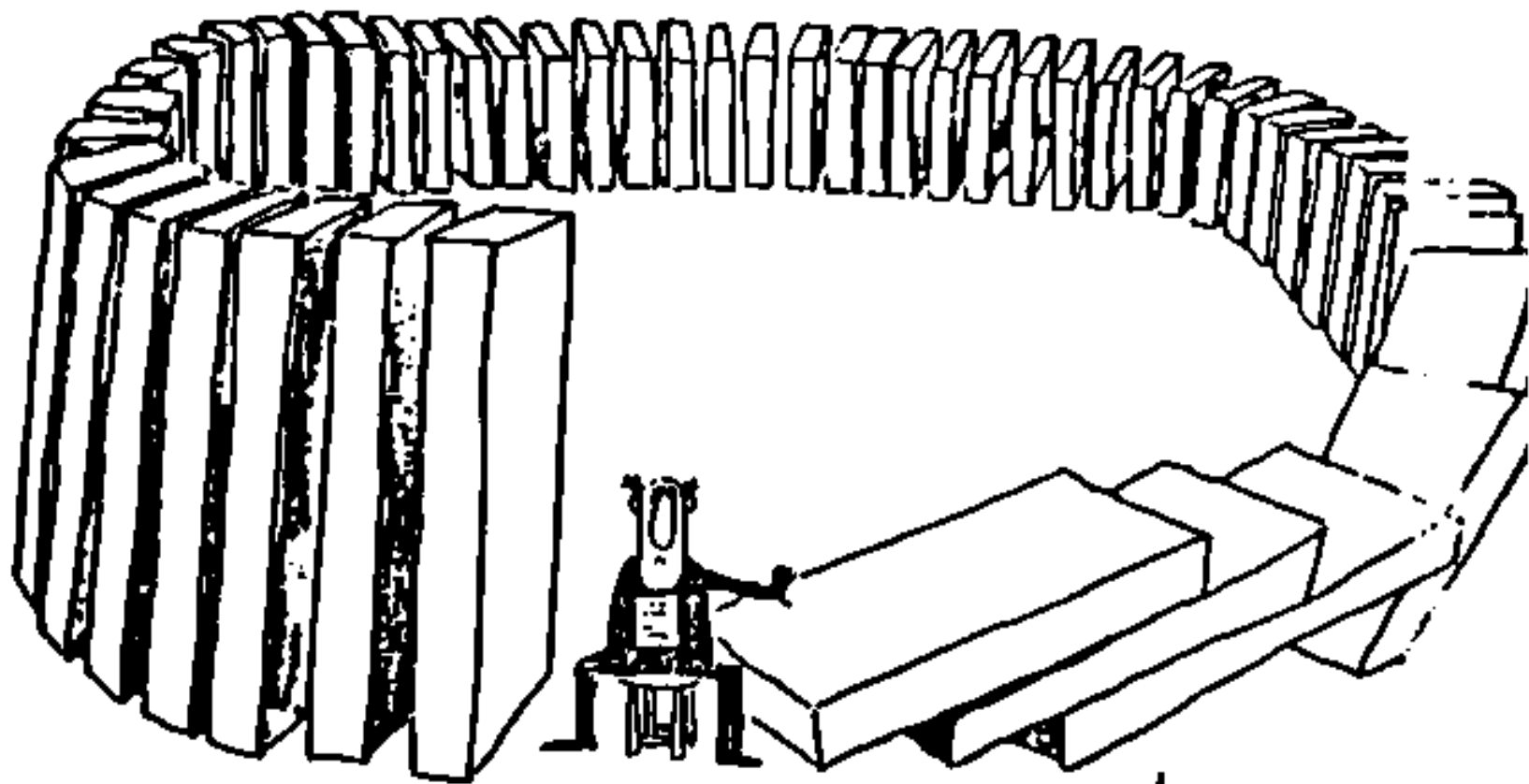
Concluding Remarks

- Colombian companies have become international by investing in other Latin American countries, it might soon be time to consider where the experience from Colombia can be used in markets outside the region



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**Thank You for
Your Attention**
