Power Generation Business, a Reinsurers view on changes, exposure and opportunities

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Agenda

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1. A market in transformation (Energiewende)
2. Changing portfolios
3. MunichRe’s recent experience
4. Changing exposures
5. Opportunities

A market in transformation

Topics discussed in the Power Gen Community

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- Old business models don’t work anymore
- The utility model is dead!
- Generators must invest in transition or they will disappear
- From power only to electricity, heat, fuel, chemicals, storage
- Distributed generation
- Flexibility will be the product
- Environmental politics are driving the energy policies
- The customers will be the king (no longer a rate payer)
- Smart generation, smart metering
- The system needs to change but the pie is getting bigger

Confusion

Changing portfolios

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	Coal	Oil	Gas	Nuclear	Hydro	Wind	Solar PV
OECD Americas	-11.0%	-33.0%	15.7%	0.0%	5.2%	77.6%	400.0%
OECD Europe	-6.7%	-40.3%	25.0%	-4.7%	6.4%	76.4%	71.0%
OECD Asia, Oceania	7.5%	-44.8%	34.6%	-1.5%	2.9%	200.0%	490.0%
Non OECD Asia	32.6%	3.1%	59.4%	216.0%	49.0%	158.9%	1,266.7%
US	-12.1%	-42.2%	13.5%	0.0%	4.0%	61.0%	400.0%
Russia	-9.8%	-16.7%	5.4%	20.0%	10.2%	0.0%	0.0%
China	23.3%	-9.1%	125.6%	328.6%	50.6%	169.3%	1,328.6%
India	65.2%	12.5%	95.7%	100.0%	38.1%	116.7%	1,500.0%
Middle East	0.0%	16.2%	36.7%	200.0%	28.6%	0.0%	0.0%

Source of values: World Energy Outlook 2014 IAEA

Changing portfolios

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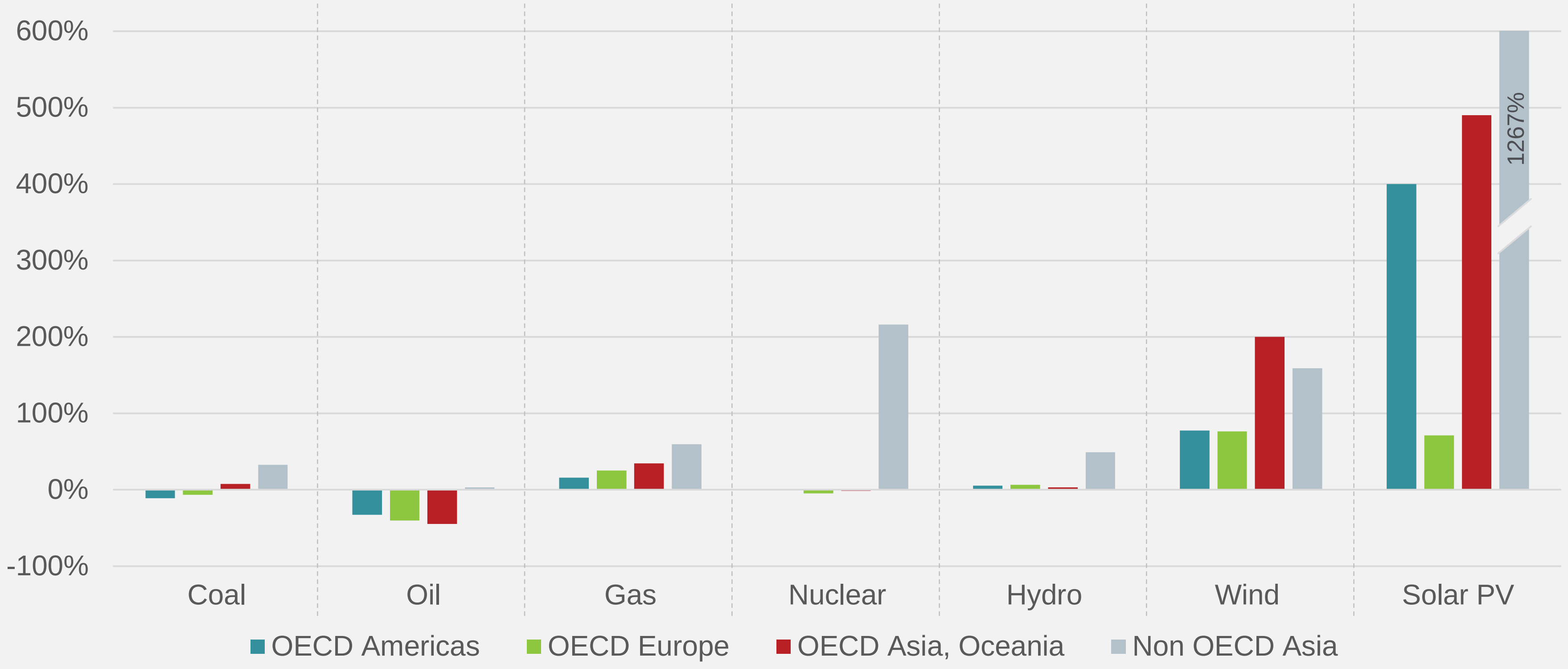

Source of values: World Energy Outlook 2014 IAEA

Changing portfolios

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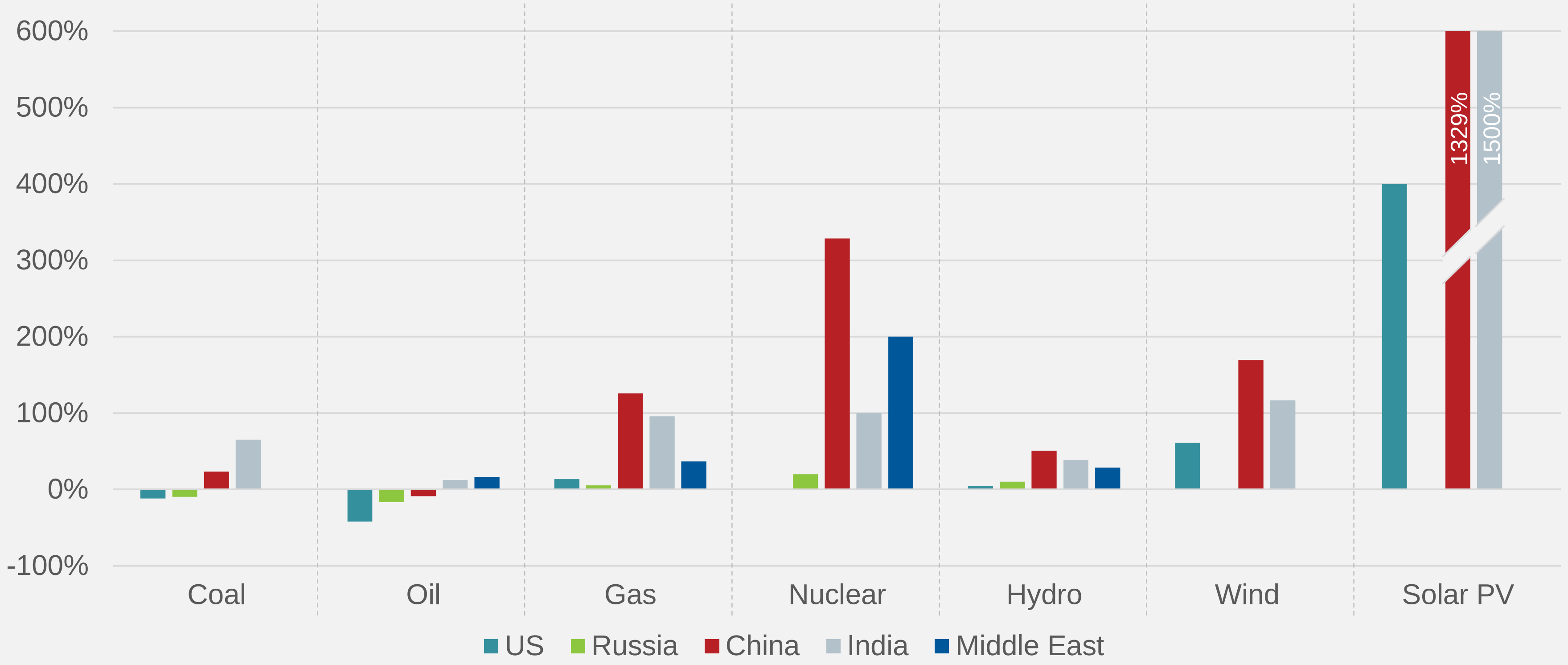

Source: XXXSource of values: World Energy Outlook 2014 IAEA

Our recent experience (worldwide)

Some issues

- Ageing Machinery
- Market Players
- Losses
  - Statistics
  - EAR example
  - Some large losses

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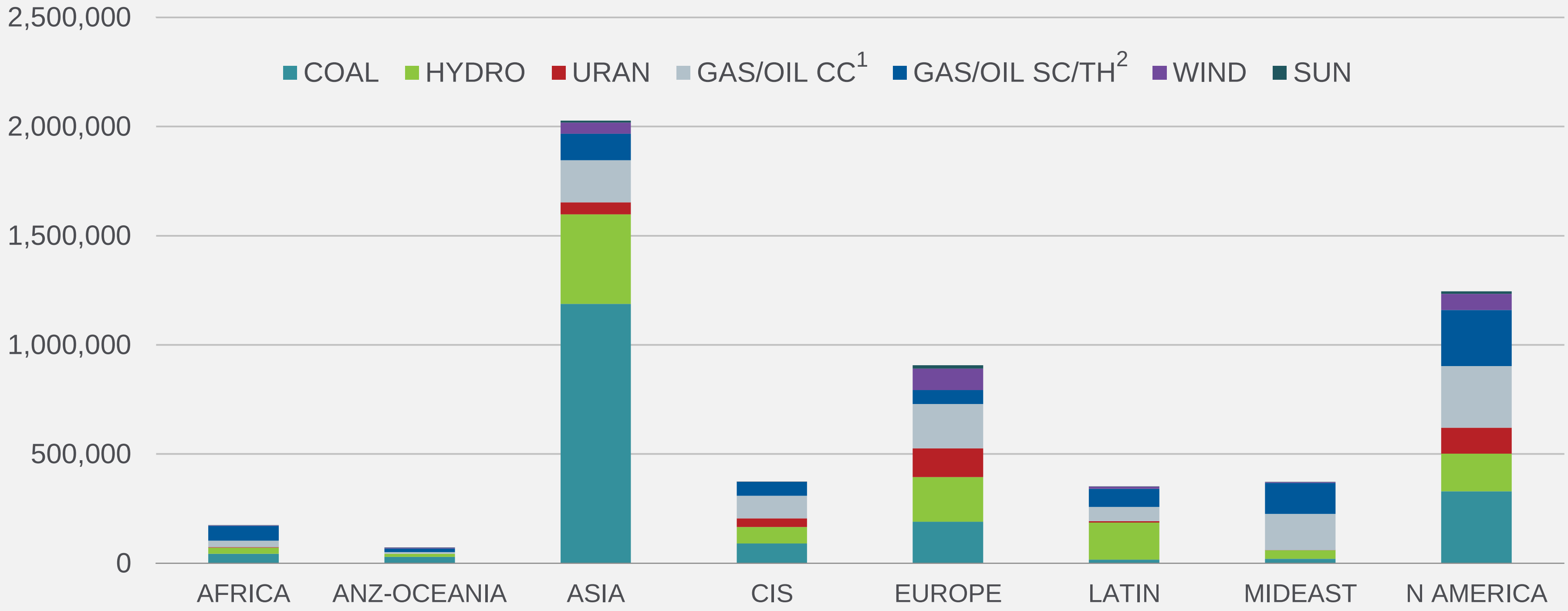
Ageing Machinery

Global Power Generation Fleet

Power Generation Capacity [MW] by area and fuel type [2015]

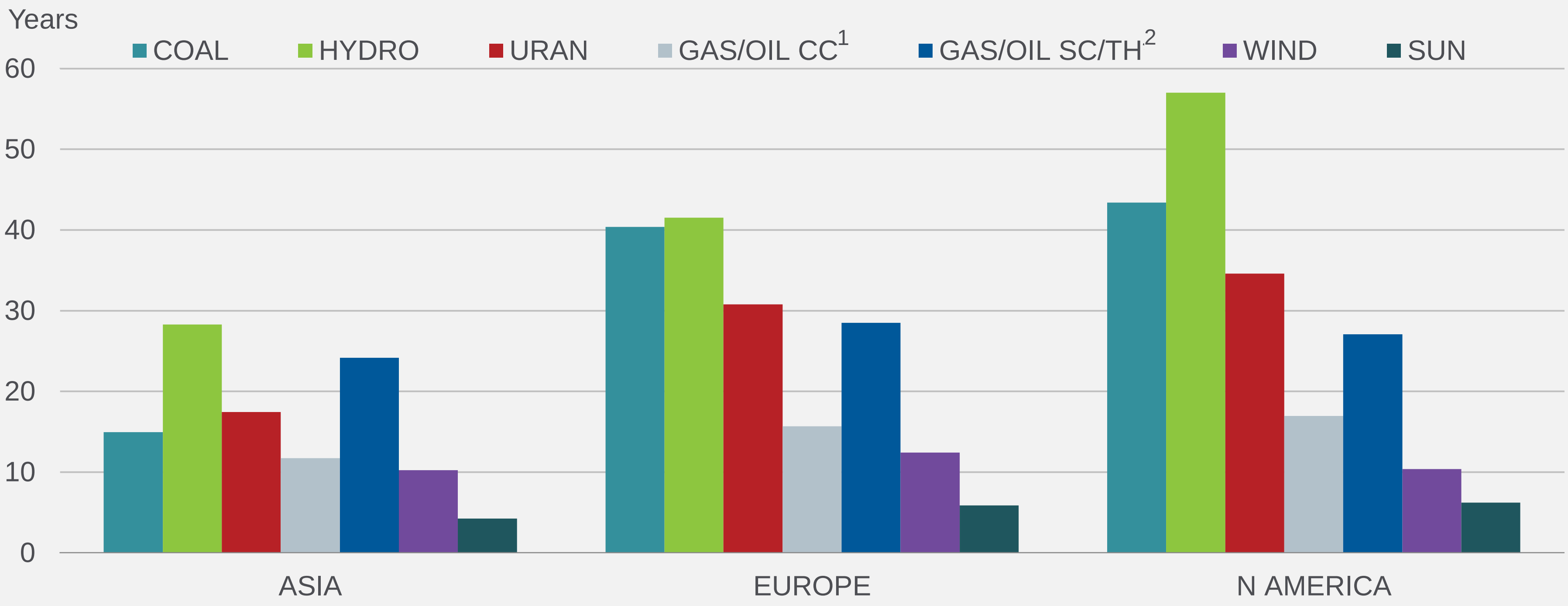


1 CC: Combined Cycle 2 SC: Simple Cycle, TH: Thermal
Source: PLATTS

Ageing Equipment

Age structure of Power Plants in different areas

Average age [years] per operational unit and fuel by area [2015]

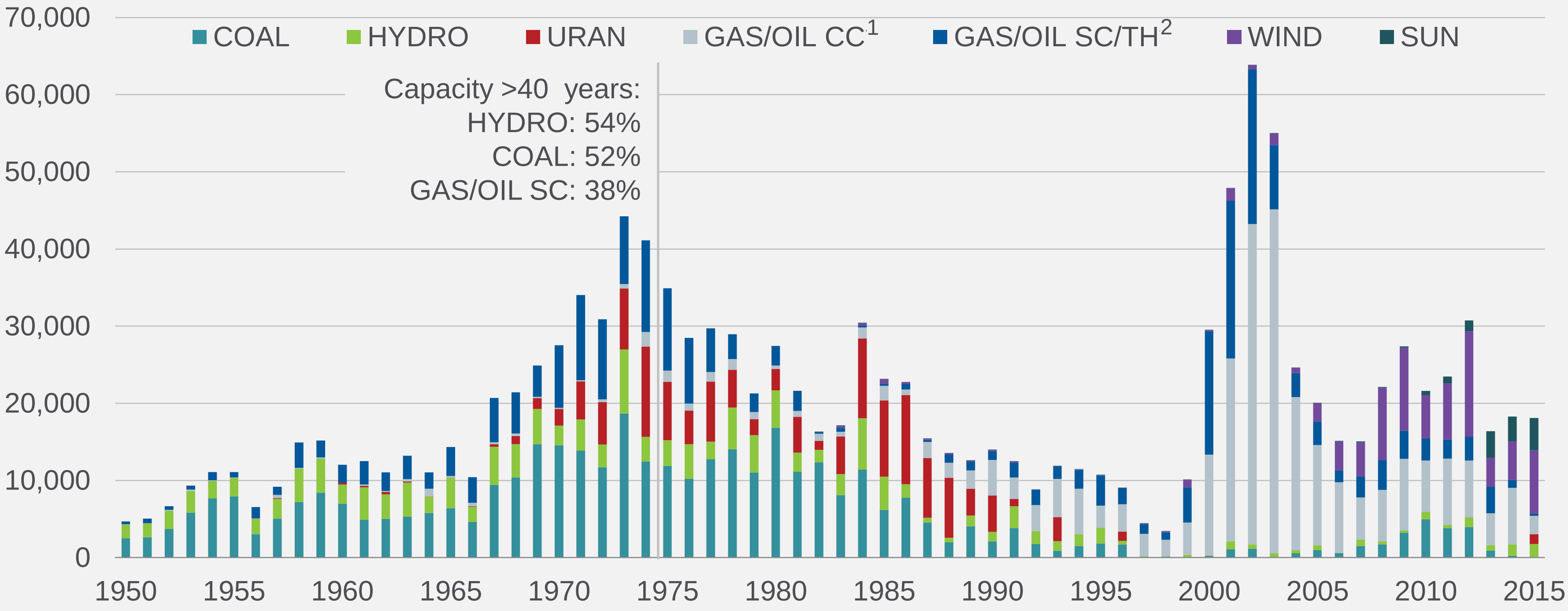


1 CC: Combined Cycle 2 SC: Simple Cycle, TH: Thermal
Source: PLATTS

Ageing Equipment

North American Power Generation fleet

Age structure of the current operational NA power generation assets [MW]



1 CC: Combined Cycle 2 SC: Simple Cycle, TH: Thermal
Source: PLATTS

Our recent experience (worldwide)

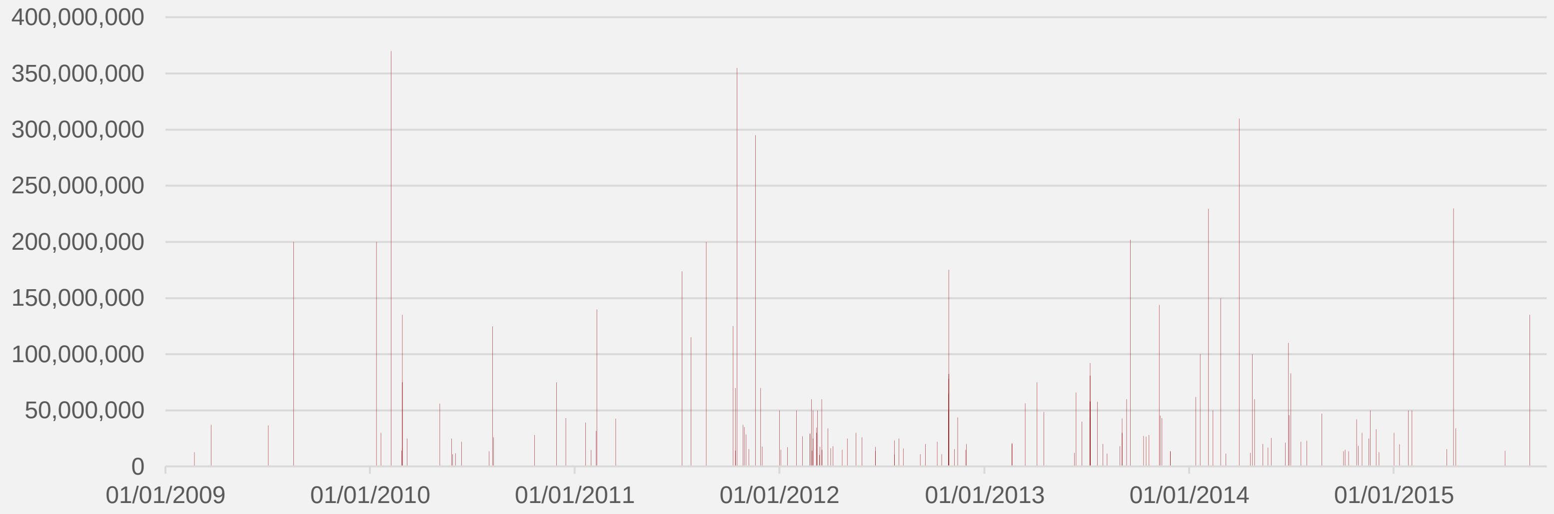
How are the market players reacting?

- New Players entering the market
  - Chinese manufacturers
  - Manufactures of new technologies
  - Google, Tesla ...
  - Strong investors on Renewable Energy
- Existing Manufacturers are restructuring
- Investor controlled Power Plants
- Conventional Power Generating Companies are restructuring

What about losses?

Power generation losses 2009–2015, losses higher than 10 M USD/GBP/€

Loss amount in US$/GBP/€



In 2014: 11 losses > 50m
6 losses > 100m

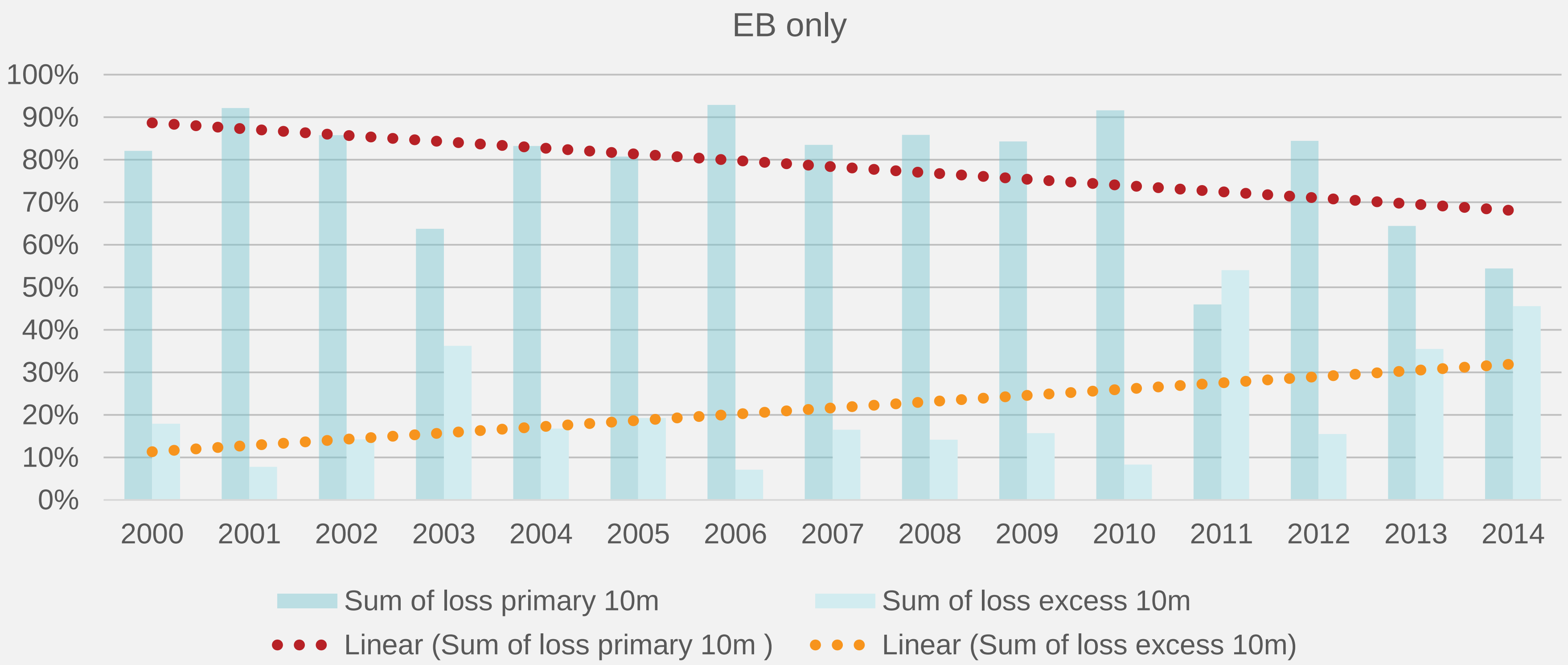
Source: MunichRe

What about losses?

A typical construction risk? (coal fired power station)

What about losses?

Loss Distribution Primary 10m vs XS 10m $



Source: MunichRe

Is the exposure changing?

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- Manufacturers
- Operators
- Newcomers
- Market
- Losses
- Insurers

- Need to operate power plants flexible
- Financial situation and maximization of income
- New and strong Investors
- Manufacturers under pressure
- Environment is changing (engineers vs. lawyers)
- Customers are changing

Are there opportunities around for Insurers?

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- New built required
- Renewable Energies will be pushed
- Capacity markets
- Non damage covers
- Weather derivatives
- Cyber
- Single perils like Earthquake, Flood or Storm
- Combined insurance products
- Special solutions for clients

Are there opportunities around?

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Manufacturers	?
Operators	
Newcomers	
Market	≠
Losses	!
Insurers	⬇
Opportunities	+++

Markets don‘t behave

Innovation will drive us!

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Taylor made solutions for our clients in a changing market

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Thank you very much for your attention!

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