

An aerial photograph of a tropical coastline, likely in the Caribbean or Central America. A large, dense, white and grey storm system, possibly a hurricane or tropical storm, is moving from the left side of the frame towards the land. The land is green and brown, with a prominent road or canal running along the coast. The ocean is a deep blue.

Natural catastrophes and their impact on reinsurance

Polska Izba Ubezpieczeń
Warszawa, 14th May 2012

AON BENFIELD

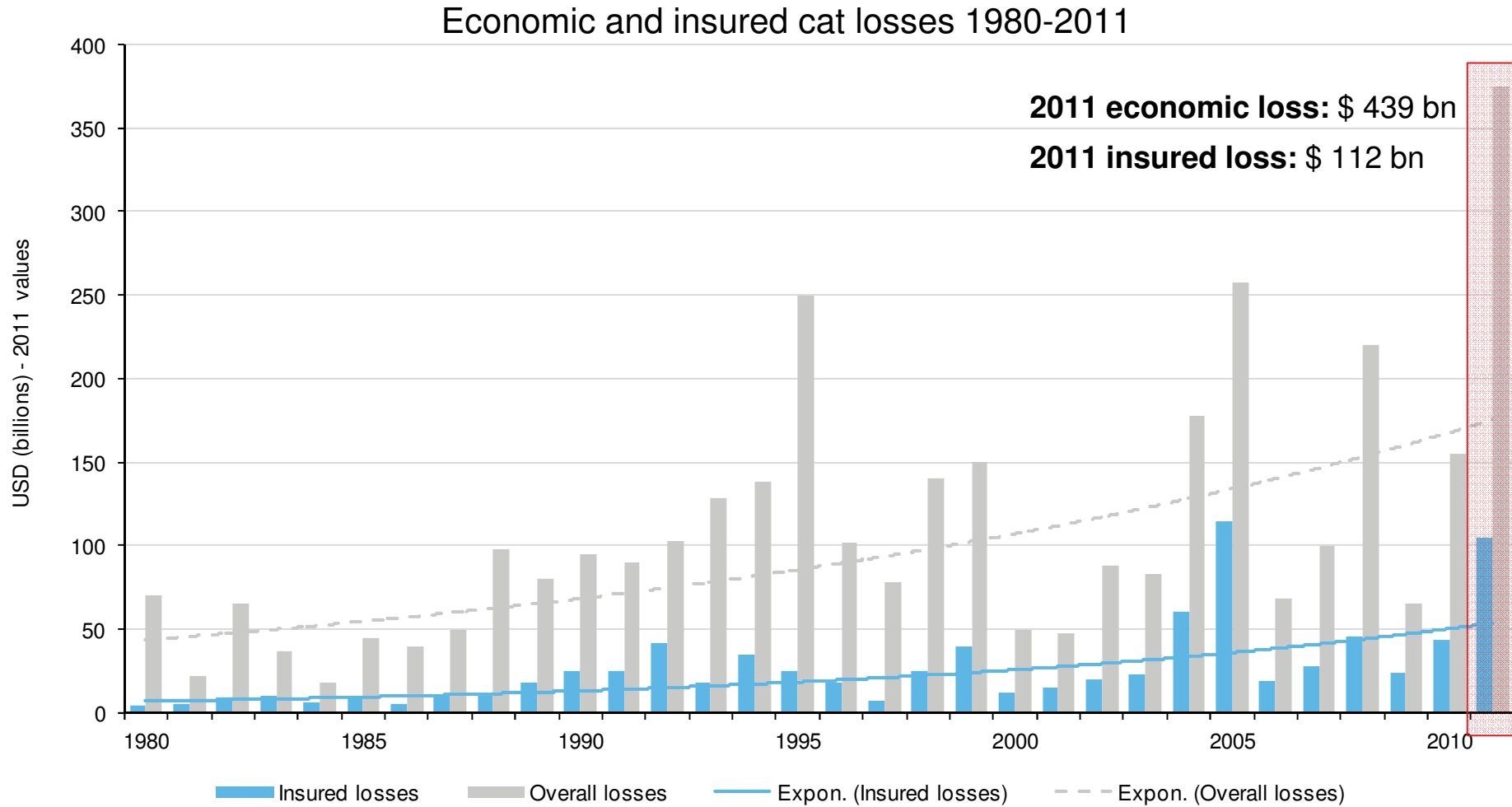


Content

- I. Nat Cat events in 2010 and 2011
- II. CEE Flood 2010
- III. Impact on reinsurance business

I. Nat Cat events in 2010 and 2011

2011: year with highest economic and insured losses



Source: Munich Re Topics Geo 2011

Top 10 Cat events based on insured losses

Event Date	Event Name Or Type	Event Location	Economic Losses (USD)	Insured Losses (USD)
8/25-30 2005	Hurricane Katrina	USA	125,000,000,000	66,900,000,000
3/11/2011	EQ/Tsunami	Japan	210,000,000,000	35,000,000,000
8/23-27 1992	Hurricane Andrew	USA	26,750,000,000	17,000,000,000
7-11/2011	Flooding	Thailand	45,000,000,000	15,500,000,000
9/6-14 2008	Hurricane Ike	USA, Carribean	37,600,000,000	15,000,000,000
1/17/1994	Earthquake	USA	41,800,000,000	15,300,000,000
9/7-21 2004	Hurricane Ivan	USA, Carribean	18,800,000,000	13,800,000,000
2/22/2011	Earthquake	New Zealand	30,000,000,000	13,500,000,000
10/19-24 2005	Hurricane Wilma	USA, Mexico, Carribean	21,000,000,000	12,500,000,000
9/22-24 2005	Hurricane Rita	USA	12,037,000,000	10,200,000,000



2010 and 2011 Top Cat events: World & CEE

2010

Event Date	Event Name Or Type	Event Location	Insured Losses (USD)	Event Date	Event Name Or Type	Event Location	Insured Losses (USD)
2/27	Earthquake	Chile	8,500,000,000	5/13-6/15	Flood	Central Europe	715,985,690
2/27-2/28	Windstorm Xynthia	Western Europe	3,650,000,000	8/6-8/8	Flood	Central Europe	201,977,880
9/4	Earthquake	New Zealand	3,050,000,000	6/22-6/30	Flood	Romania, Ukraine	150,000,000
10/5-10/6	Severe Weather	USA	2,500,000,000	11/26-12/7	Flood	Balkans	100,000,000
11/26-12/31	Winter Weather	Europe	2,250,000,000	8/15	Hailstorm	Czech Republic	94,515,290

2010 insured losses: medium from world perspective, high in CEE.

2011

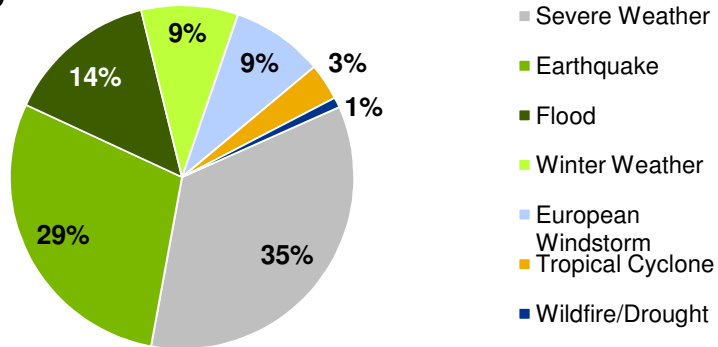
Event Date	Event Name Or Type	Event Location	Insured Losses (USD)	Event Date	Event Name Or Type	Event Location	Insured Losses (USD)
3/11	Earthquake	Japan	35,000,000,000	1/29	Earthquake	Hungary	4,604,178
7/29-11/30	Flood	Thailand	15,500,000,000				
2/22	Earthquake	New Zealand	13,500,000,000				
4/22-4/28	Severe Weather	USA	7,300,000,000				
5/21-5/27	Severe Weather	USA	6,750,000,000				

2011 insured losses: extremely high from world perspective, very small in CEE.

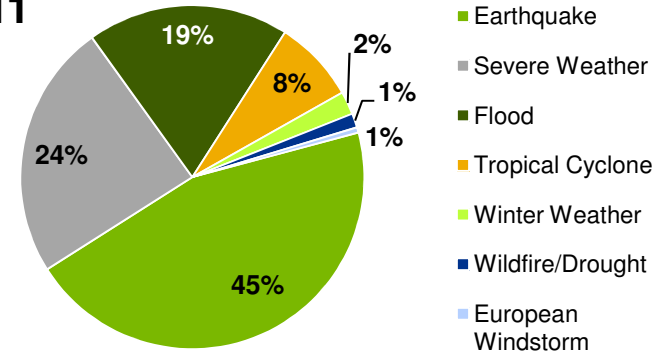
2010 and 2011 Natural Catastrophes per Peril

Insured losses – shares of perils

2010

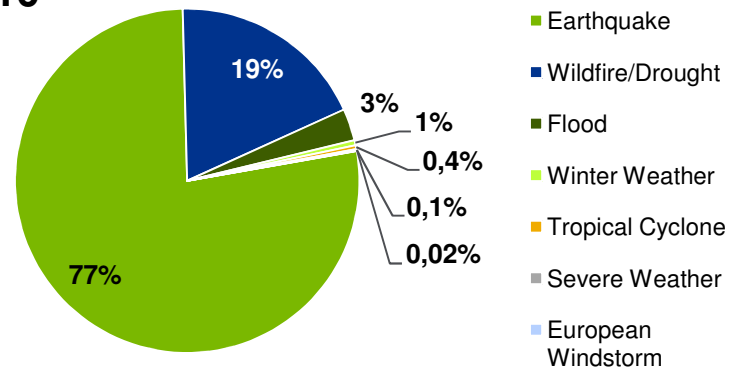


2011

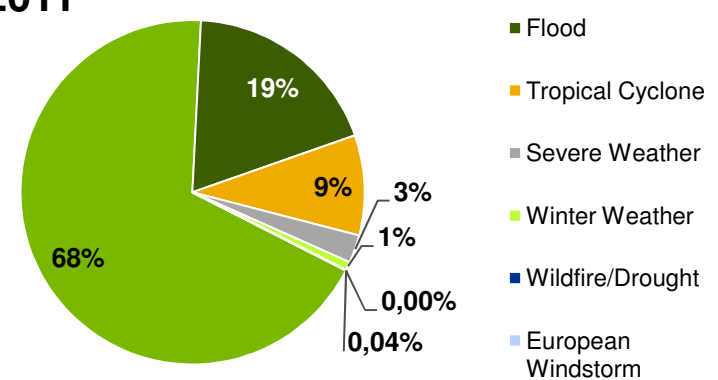


Fatalities – shares of perils

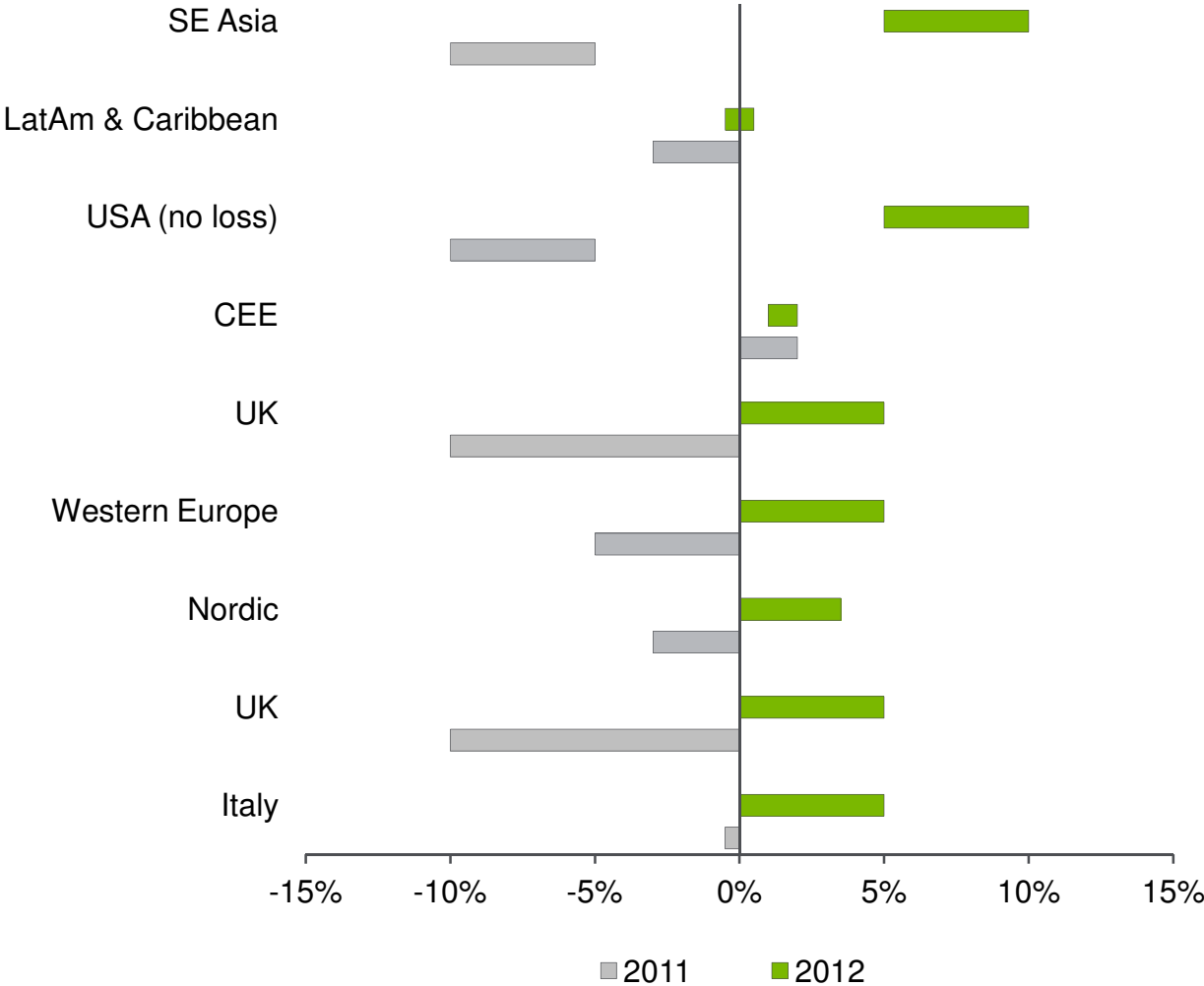
2010



2011



Property Catastrophe January 2012 Renewal Pricing



April Renewal Update

Thailand

- +100 to 600%
- Issues on Hours Clauses (no hours clauses in reinsurance contracts)

Japan

- EQ+100% (vs. 2010); WS/FL +10 to 15%
- Min. ROL 4% on top layers (3% on small programmes)

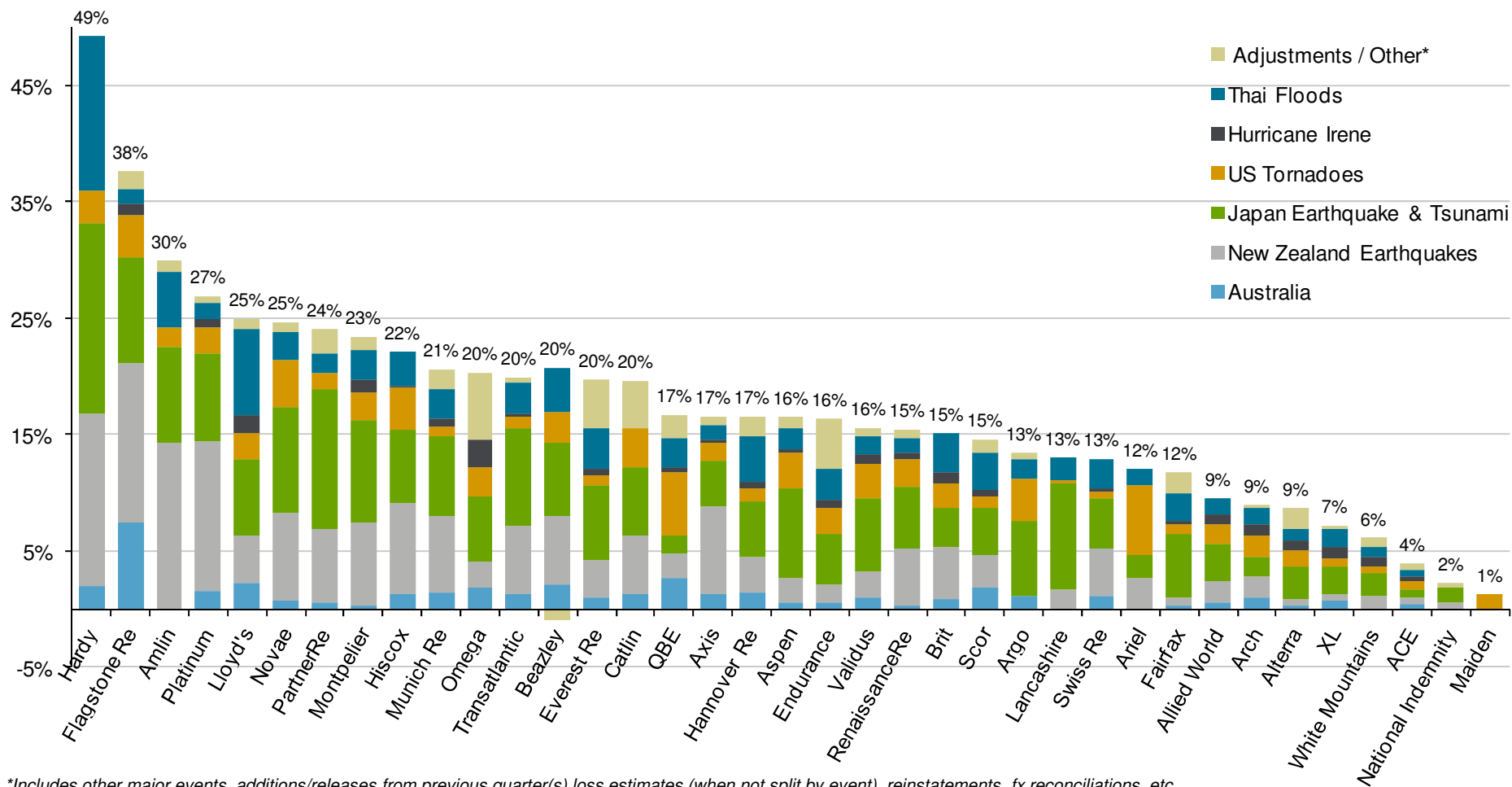
Korea

- +10%

India

- +10% to +20%

FY 2011 net natural catastrophe losses as % of FY 2010 shareholders' funds



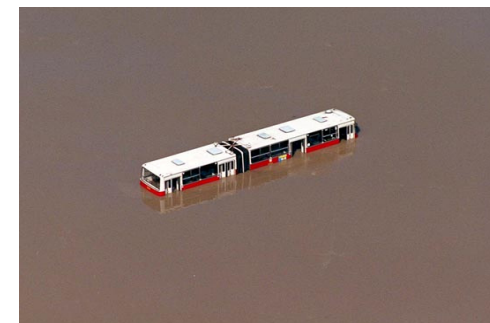
*Includes other major events, additions/releases from previous quarter(s) loss estimates (when not split by event), reinstatements, fx reconciliations, etc.
 Splits by event are shown as latest reported, i.e. could be from 1Q, 1H, 9M or FY 2011 results. Some Thai flood loss estimates are from preliminary announcements.
 All losses are assumed pre-tax except for Validus' Thai flood estimate
 All losses are net of reinstatement premiums except for Validus and ACE
 All losses converted to USD at 2011 full year average FX rates
 US tornadoes includes Hurricane Irene for Argo, Ariel and Novae
 Source: Company information, Aon Benfield Market Analysis

II. CEE Flood 2010

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CEE Floods in May/June 2010

- Caused by a low pressure system that stayed in Eastern Europe (with its centre in Ukraine) for several days.
- The system delivered relatively moist air to south Poland, Slovakia and east Czech Republic.
- During the first period of rain, soil became saturated and river levels rose to alarm levels.
- After a few dry days second period of rain occurred and water went directly to streams and rivers because soil could not absorb more precipitation – second wave of the flood.
- Slovakia and Hungary affected more than in 1997, Poland and Czechia less.
- Flows at a few gauging stations biggest since the start of the monitoring.



2010 May/June Flood in Poland

- Smaller peak flows in Odra than in 1997: substantially smaller losses from Odra basin
- Greater peak flows in Wisla and Warta basins: not much bigger increase in losses from these basins compared to 1997
- South Poland affected more, only large rivers flooded in the north
- Highest return periods (RP) of flows in upper Odra and upper Wisla
- Very slow propagation: flood wave in headstream reaches in mid-May, it reached the sea at the beginning of June.
- Different to **August 2010 floods**
- Features of August floods:
 - flash floods from local storms accompanied by heavy rainfalls
 - affected only a small part of north Czech Rep. and south-west Poland
 - Worsened by dam break in Poland
 - Despite the limited area there were quite substantial losses: 348.9 mil PLN

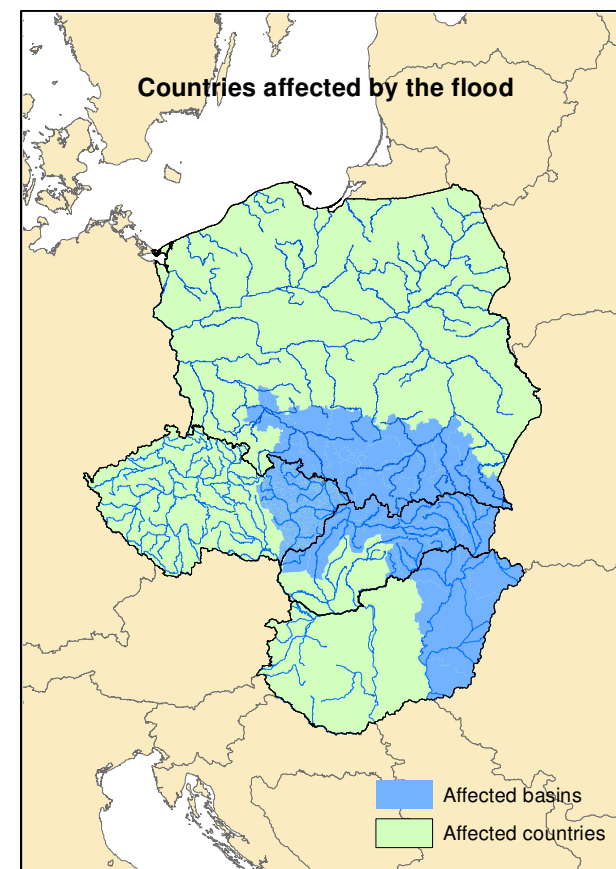
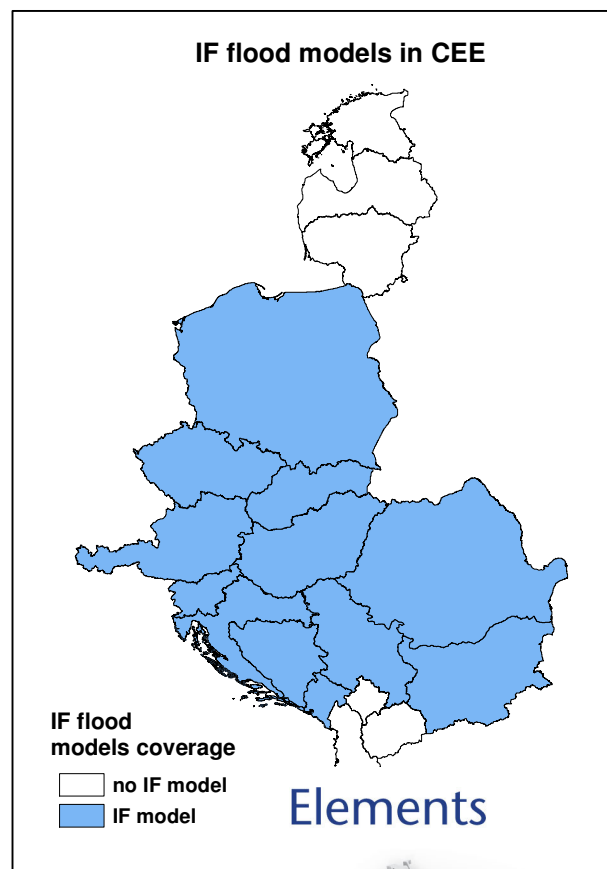
Affected Polish rivers



River	Station	Discharge (m ³ /s)	Return period	1997 Discharge
Upper Wisla	Nowy Bierun	846	124	666
Middle Wisla	Warszawa	5940	27	4730
Lower Wisla	Torun	6550	17	4140
Upper Odra	Raciborz-Miedonia	2060	95	3120
Middle Odra	Scinawa	2070	33	3000
Lower Odra	Gozdowice	2210	10	3180
Upper Warta	Sieradz	424	19	387
Lower Warta	Gorzow Wielkopolski	660	4	402

Modelling the 2010 May/June Flood in Aon Benfield flood model

- Event modelled in Impact Forecasting (IF) CAT modelling platform ELEMENTS
- Excellent opportunity to **validate the flood models**
- Modelling the as if was consistent with stochastic event set:
 - Actual peak flows at modelled gauging stations taken as input
 - Flood extent created within the model
 - Losses calculated
 - RP of as if checked against the RP of modelled stochastic event losses
- Important to bear in mind that RP of flood does not have to correlate with RP of losses

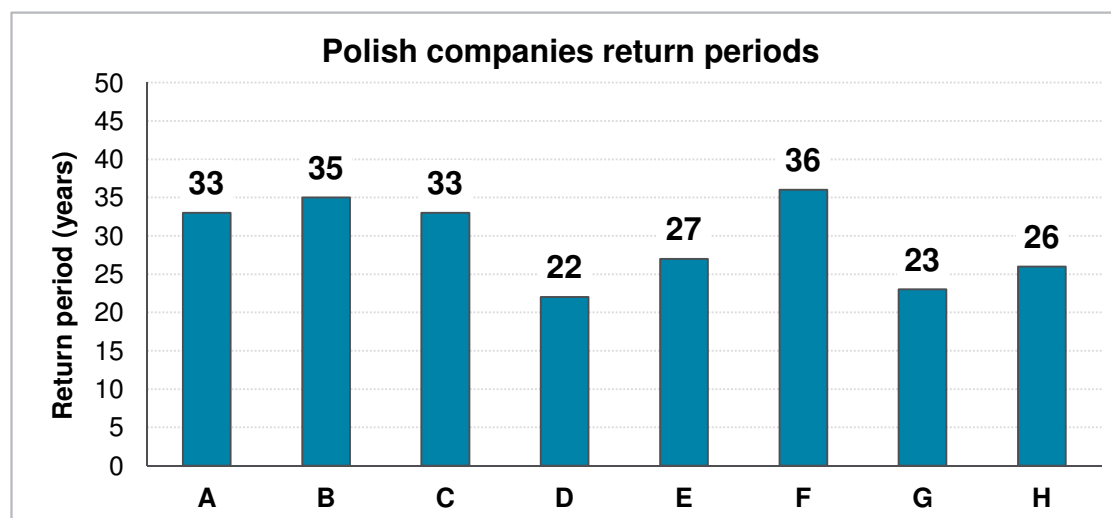
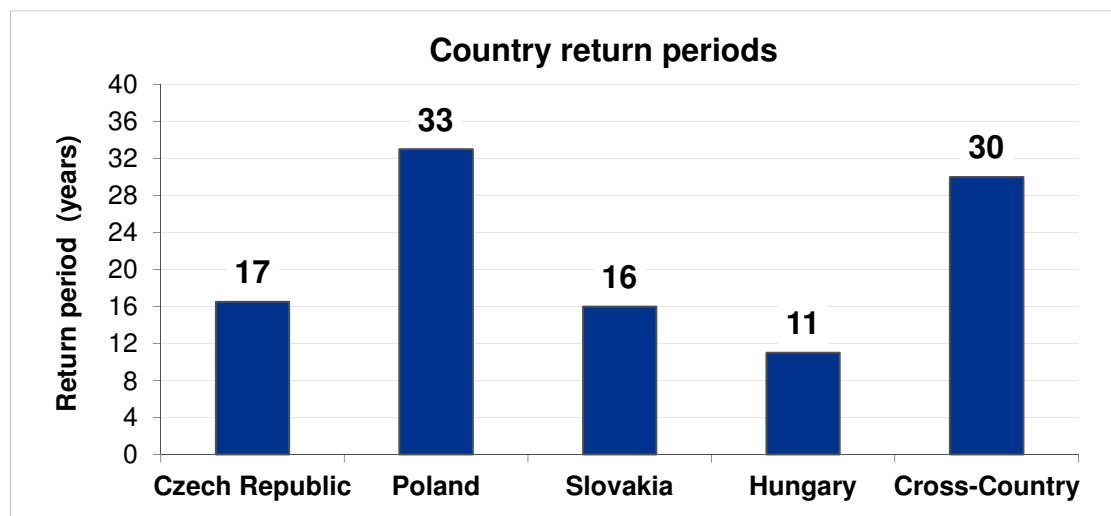


Impact Forecasting, LLC

AON BENFIELD

CEE Floods in May/June 2010 – Losses & Return Periods

- **Czech Republic**
 - Economic losses **EUR 190 m**
 - Total insured losses **EUR 75 m**
 - Modelled loss **EUR 72 m**
- **Hungary**
 - Economic losses **EUR 350 m**
 - Total insured losses **EUR 75 m**
 - Modelled loss **EUR 76 m**
- **Poland**
 - Economic losses **EUR 2.900 bn**
 - Total insured losses **EUR 343 m**
 - Modelled loss **EUR 271 m**
- **Slovakia**
 - Economic losses **EUR 695 m**
 - Total insured losses **EUR 60 m**
 - Modelled loss **EUR 61 m**
- **Cross country**
 - Economic losses **EUR 4.135 bn**
 - Total insured losses **EUR 553 m**
 - Modelled loss **EUR 480 m**



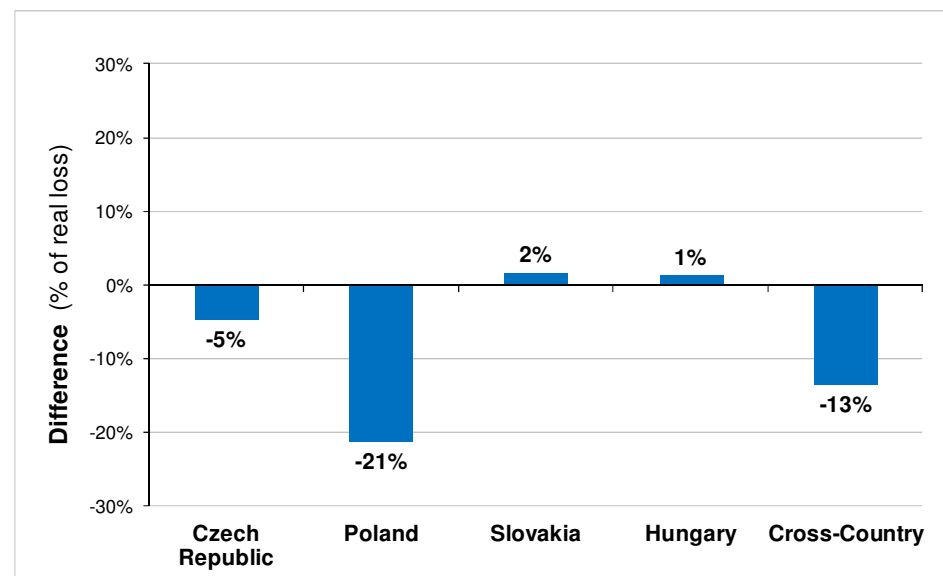
2010 Flood: Modelled vs. real losses

- Total insured losses: **1,371.4 mil PLN**
- Modelled losses: **1,082,203,390 PLN**
- Modelled return period: **33 years**

Reasons for underestimated Poland:

- Two flood waves, sometimes difficult to distinguish.
- The rivers were at alarm stages for a long time. Properties stood in the flood for many days which increased the damage. Dykes were soaked with water for a long time and some of them collapsed.
- Model does not take into account the length of the flood, just the peak flow.

Hit/Miss Ratio

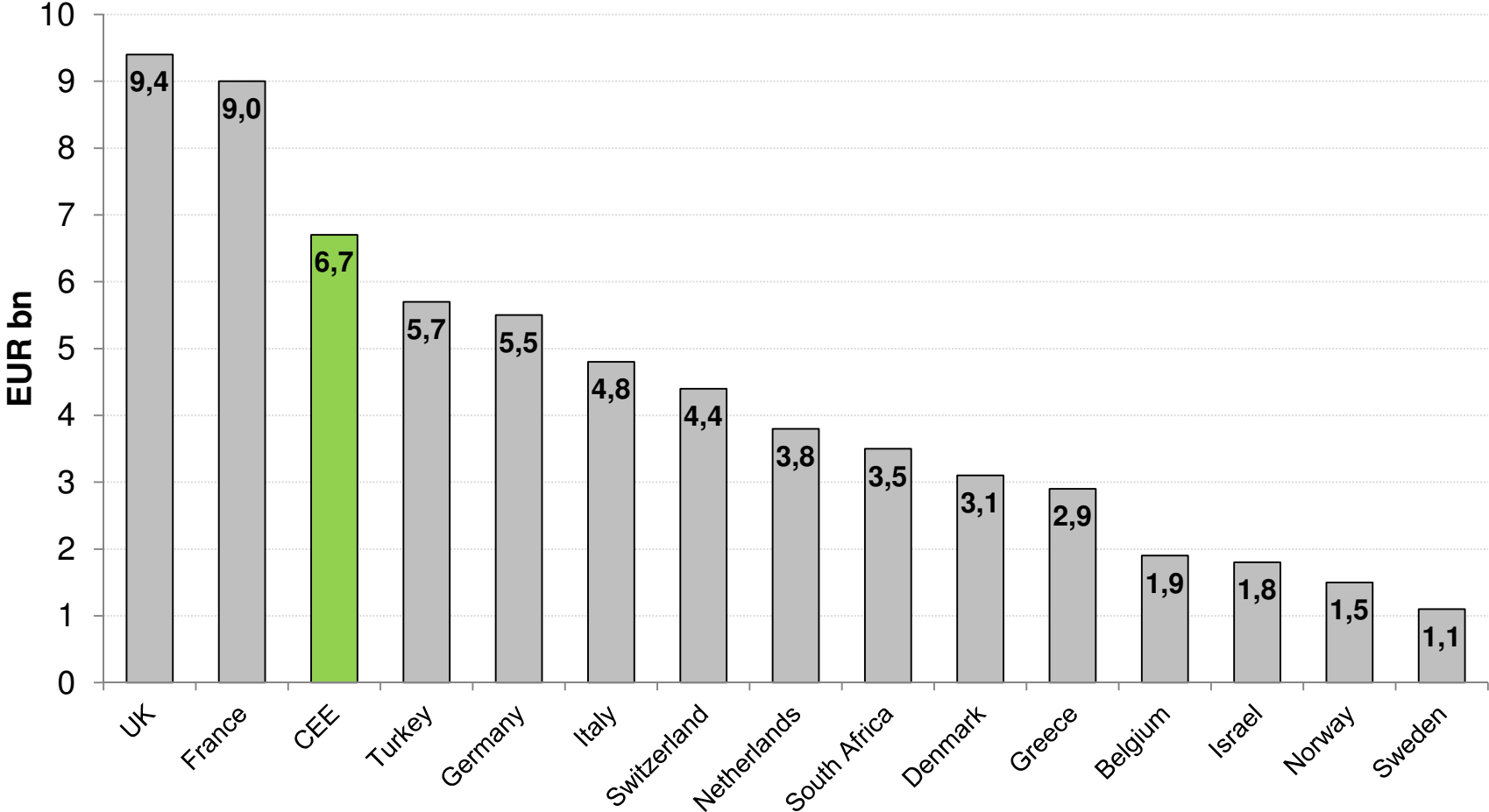


Modelled losses are very close to the real losses which proves that IF flood models are suitable for assessing the flood risk and they reflect the reality very well.

III. Impact on reinsurance business

CEE purchase compared to other European markets

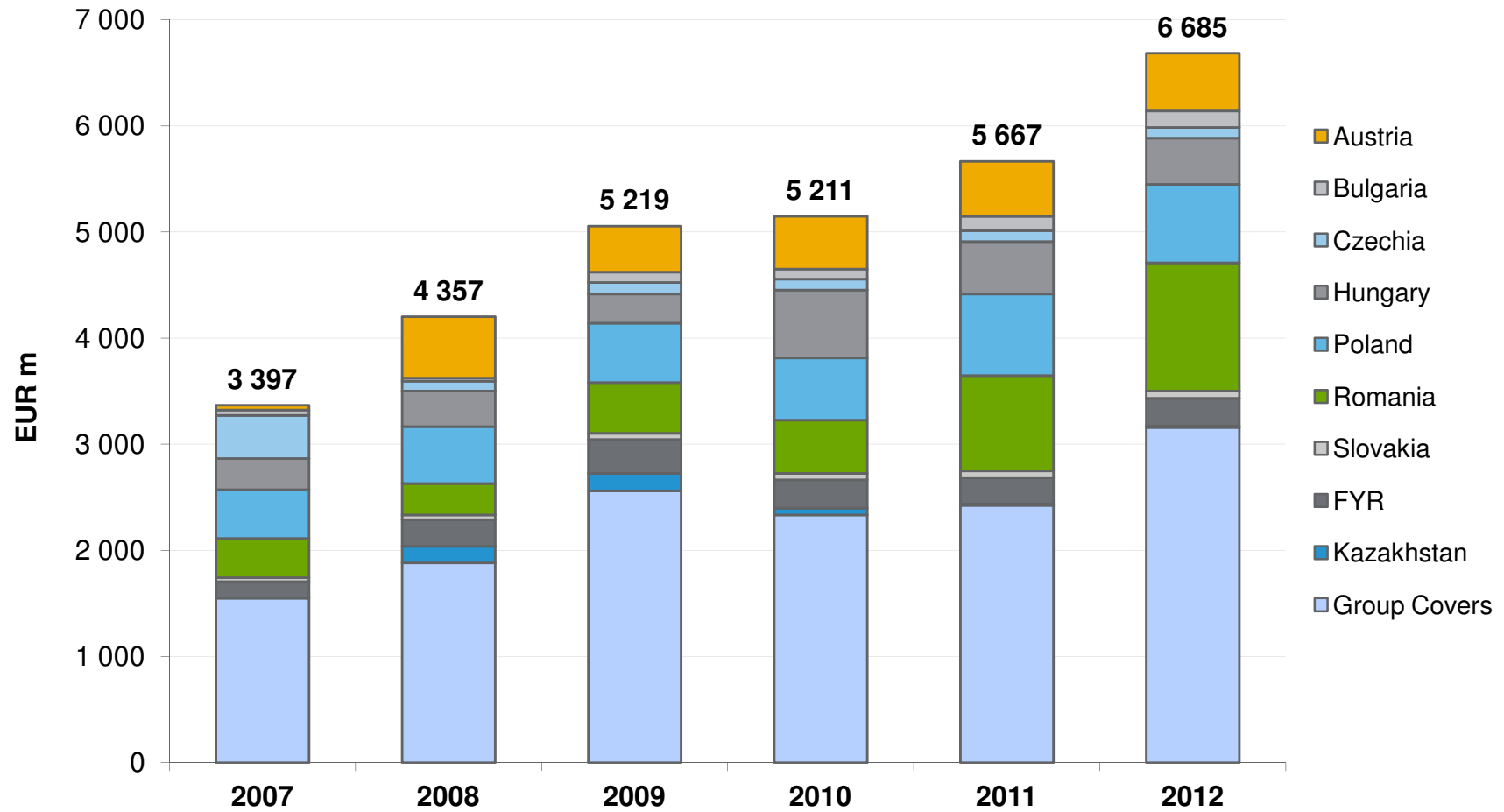
2011 EMEA CAT Capacity Purchase per Country



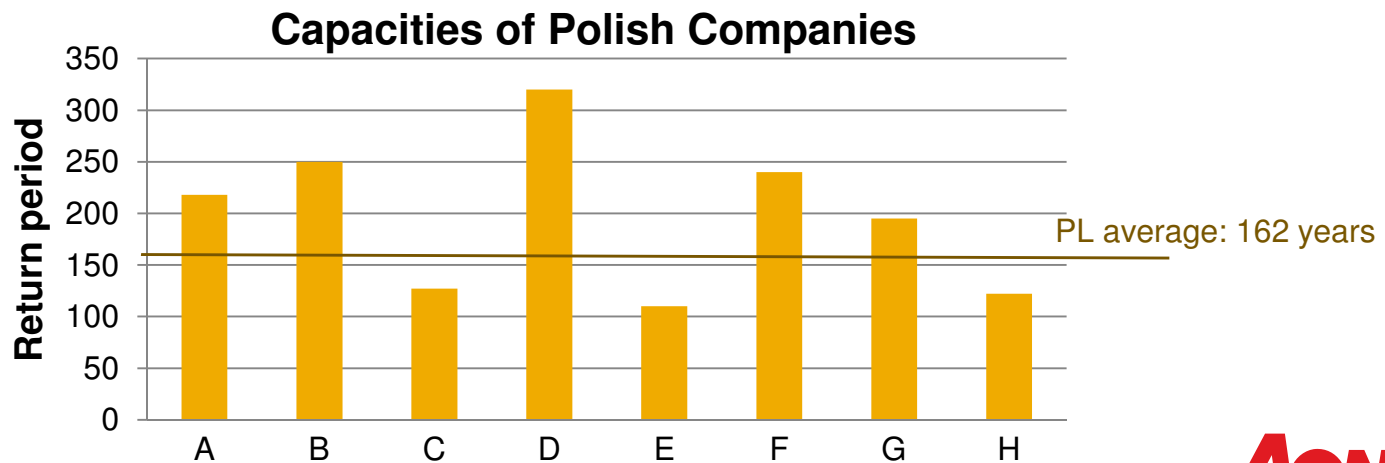
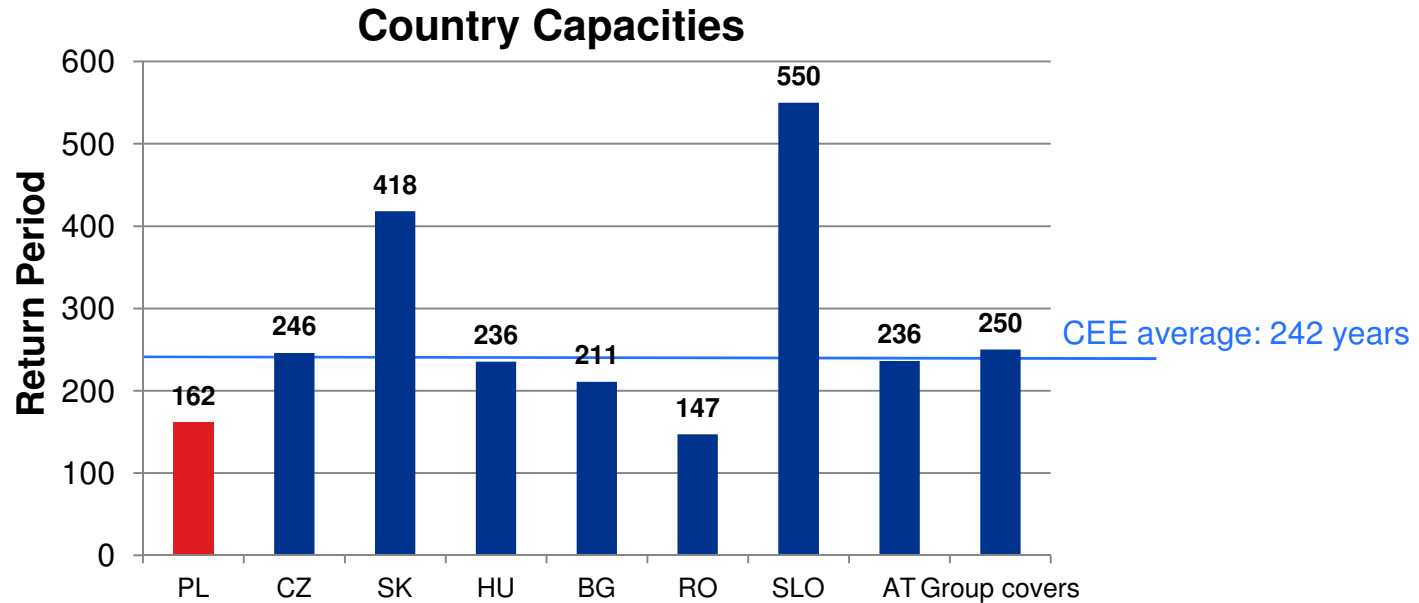
* CEE CAT Limit Purchase 2012

Growing demand for Cat in CEE

CAT XL Capacity Purchased in CEE

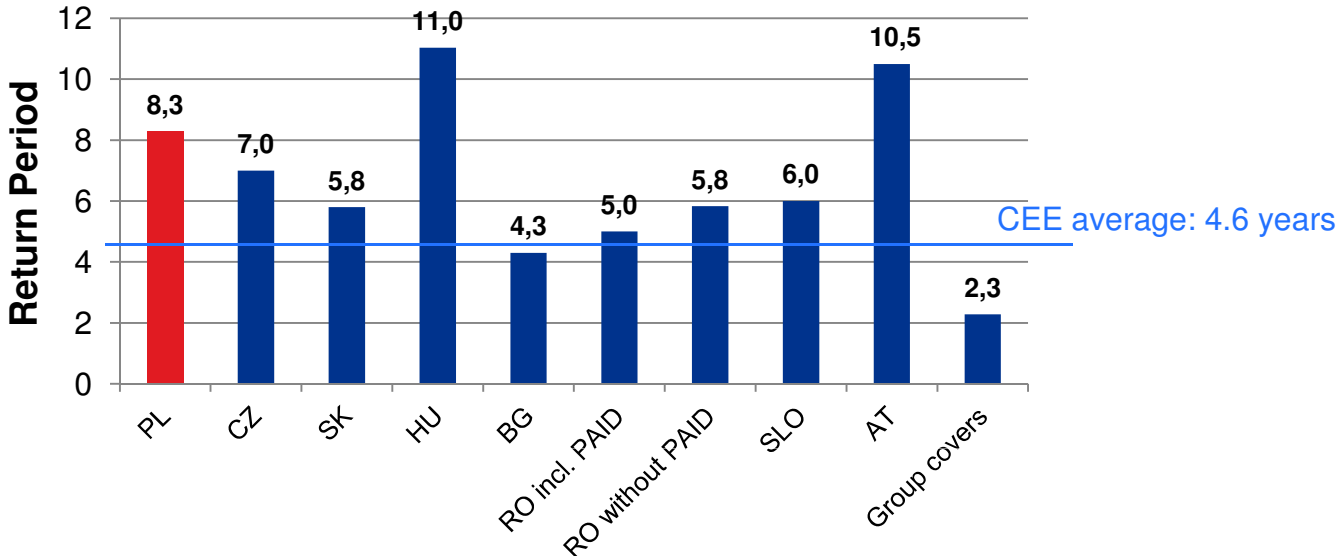


Capacities as Return Periods

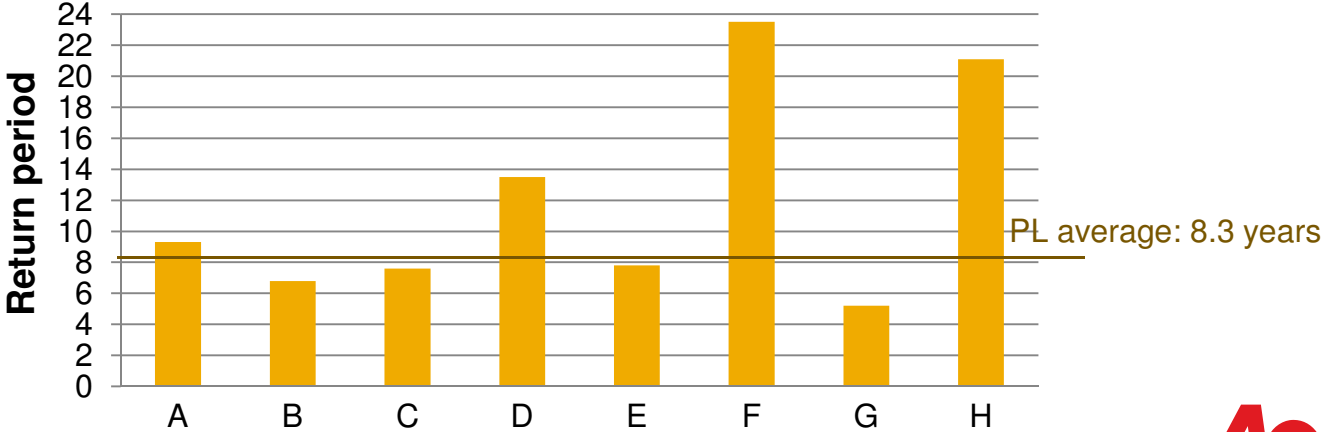


Deductibles as Return Periods

Country Deductibles



Deductibles of Polish Companies



Purchased Capacity and Average ROL: Recent Development

▪ Capacity Purchased

- Increased from 2010 to 2011 by 9%
- Increased from 2011 to 2012 by 7%

▪ ROL

- Increased from 2010 to 2011 by 5%
- Increased from 2011 to 2012 by 4%

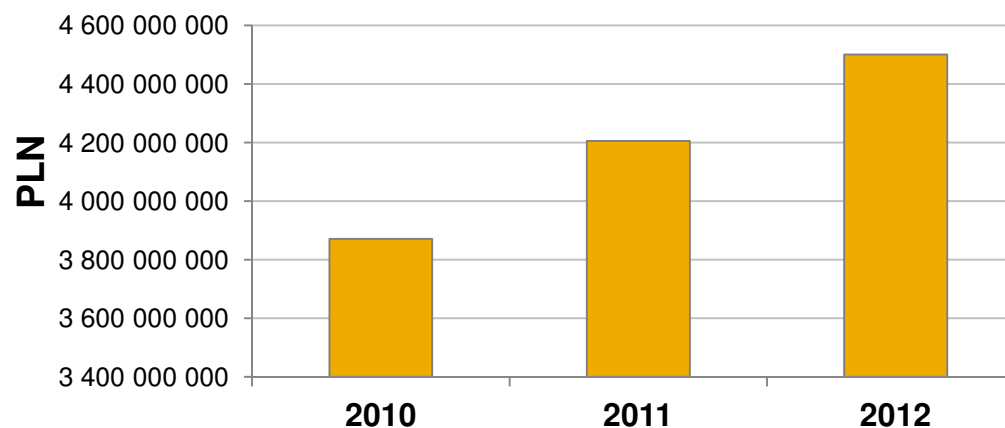
▪ Impact of flood 2010 on RI capacity

- None
- In CEE, Reinsurers are concerned only with Romanian quake (due to its potentially high severity)

▪ Impact of flood 2010 on prices

- Increase
- Reinsurers think the price before the flood was too low (below the burning cost) and they changed their minds
- They still think the current prices are fairly low

CAT XL Capacity Purchased in PL



Average ROL in PL

