Workshop & Webinar
Global Market Stats & Benchmarking
Actuarial basics - Campaign 2021

IRCI		**R**ate **C**hange	
ILORI	IMIA	**LO**ss **R**atio	**Index**
IMLI		**M**ega **L**oss	

& Cause of Loss (new)

https://www.youtube.com/watch?edufilter=NULL&feature=youtu.be&v=wLis6ysXzYo

https://www.imia.com/wp-content/uploads/2020/09/IRCI-ILORI-IMLI_2020.pdf

Nov 2020, Martin Kauth / Jindrich Wagner / Simon Dejung

IRCI / ILORI / IMLI – in accordance with IMIA's Anti Trust Statement

Anti Trust Statement

Anti-Trust Compliance Statement

Representatives of companies or trade associations participating in The International Association of Engineering Insurers (IMIA) are advised to bear in mind that their respective companies or the members of their respective associations are competitors in the marketplace outside their activities as participants in IMIA. Accordingly, company representatives and members of trade associations may discuss issues of a qualitative nature such as the impact of new legislation. However, they should exercise great care in discussing matters unrelated to IMIA policies or other proper business matters affecting IMIA.

1. **Anti-Trust Laws**

    1. Purpose. The purpose of Anti-trust legislation is to maintain free enterprise through fair competition. Agreements, understandings or concerted practices between competitors which (a) fix purchase or selling prices or other trading conditions, (b) limit or control production, markets, technical development, or investment or not compete in certain geographical areas or markets, (c) boycott actual or potential customers or suppliers or apply dissimilar conditions to equivalent transactions with other trading parties, (d) engage in a tying arrangement (i.e. agreement by a party to sell a product or service only if the buyer also buys a different (tied) product or service), and (e) share markets or sources of supply may be anti-competitive in various jurisdictions.

    2. Applicable Laws. Most countries have published and enforced anti-trust laws. They may apply to actions or agreements entered into abroad as well as domestically. Infringement of anti-trust laws may result in (a) fines against both the IMIA, its members and any trade associations (b) criminal sanctions and/or disqualification as a company director and (c) damages to injured third parties and (d) void or unenforceable agreements.

    3. IMIA Policy. IMIA recognises the importance of compliance with those anti-trust laws which are applicable to members of the IMIA. These laws generally prohibit underwriters from entering into any agreement, understanding or concerted practice, express or implied, on matters affecting rates or conditions of insurance. It is the policy of the IMIA to require its Members, Officers and all participants in IMIA activities to honour and abide by these prohibitions in all respects.

2. Anti-Trust Guidelines for IMIA Members, Officers and Participants in all IMIA Activities The following specific guidelines should be observed:

    1. Written Agenda. All IMIA meetings, including working groups, should have a written agenda. At the opening of each work session, the chairperson ought to make reference to this anti-trust document. Accurate and detailed minutes of each meeting (including reference to anti-trust guidelines) should be published. As a general rule, all involved should adhere to the written IMIA meeting agenda.

    2. Rates. All involved should not discuss or exchange information on their respective companies' intentions concerning rates (including "pure premium") and should not pressure other companies to raise rates or use a particular rate or cost factor as a "benchmark" in setting rates.

    3. Underwriting Guidelines. There should be neither discussion nor exchange of information between the participants about the underwriting guidelines of their respective companies.

    4. Policy Forms. All involved should not discuss what specific terms are appropriate in particular policies, such as provisions governing the coverage trigger, limits, exclusions or types of risks covered, which are all elements of competition between companies.

    5. Claims. All involved should not disclose their individual claims adjustment and cost containment practices.

    6. Reinsurance. All involved, whether primary carriers or reinsurers, should not disclose their plans for negotiating renewals, existing reinsurance arrangements purchased or provided by their companies.

    7. Markets. There should be no discussion of what market response companies should make, or threaten to make, in reaction to changes in governmental regulation. Specifically, there should be no suggestion that companies withdraw from a particular class of customers in order to induce, deter, or retaliate against such governmental action.

    8. Relationship with Distributors. All involved should not discuss their individual plans regarding competitively sensitive matters in this area.

    9. Report. All instances of meetings where the matters covered in this Appendix are raised or attempted to be raised should be reported to IMIA and to your respective company. If you are unsure or in doubt about what you can and cannot discuss at IMIA meetings, please take independent advice from your legal advisers before attending.

PERILS

Data collected, anonymized, validated, aggregated, handed over to IMIA (Antitrust & GDPR compliant)

Data processing

Data call

(Re-) Insurance Companies

IMIA Indices IRCI, ILORI, IMLI

Benchmarks (IRCI, ILORI, IMLI)

- in accordance with

data protection & antitrust law

IMIA has no access to raw data

| ASSESSMENT BY **INDEPENDENT** PARTY *(PERILS)*	**ANONYMIZATION**	**AGGREGATED** DATA **GDPR** COMPLIANT
NDA BETWEEN PERILS & DATA PROVIDING COMPANIES IF DESIRED	CONTEMPLATION OF THE **PAST**	VOLUNTARY PARTICIPATION **OPEN** FOR ALL INTERESTED PARTIES – ALSO NON-IMIA

PERILS

...please visit WWW.PERILS.ORG.

FY LR (claims/premium)
– missing link premium & losses = volatility

not suitable for long-term business (CAR/EAR)
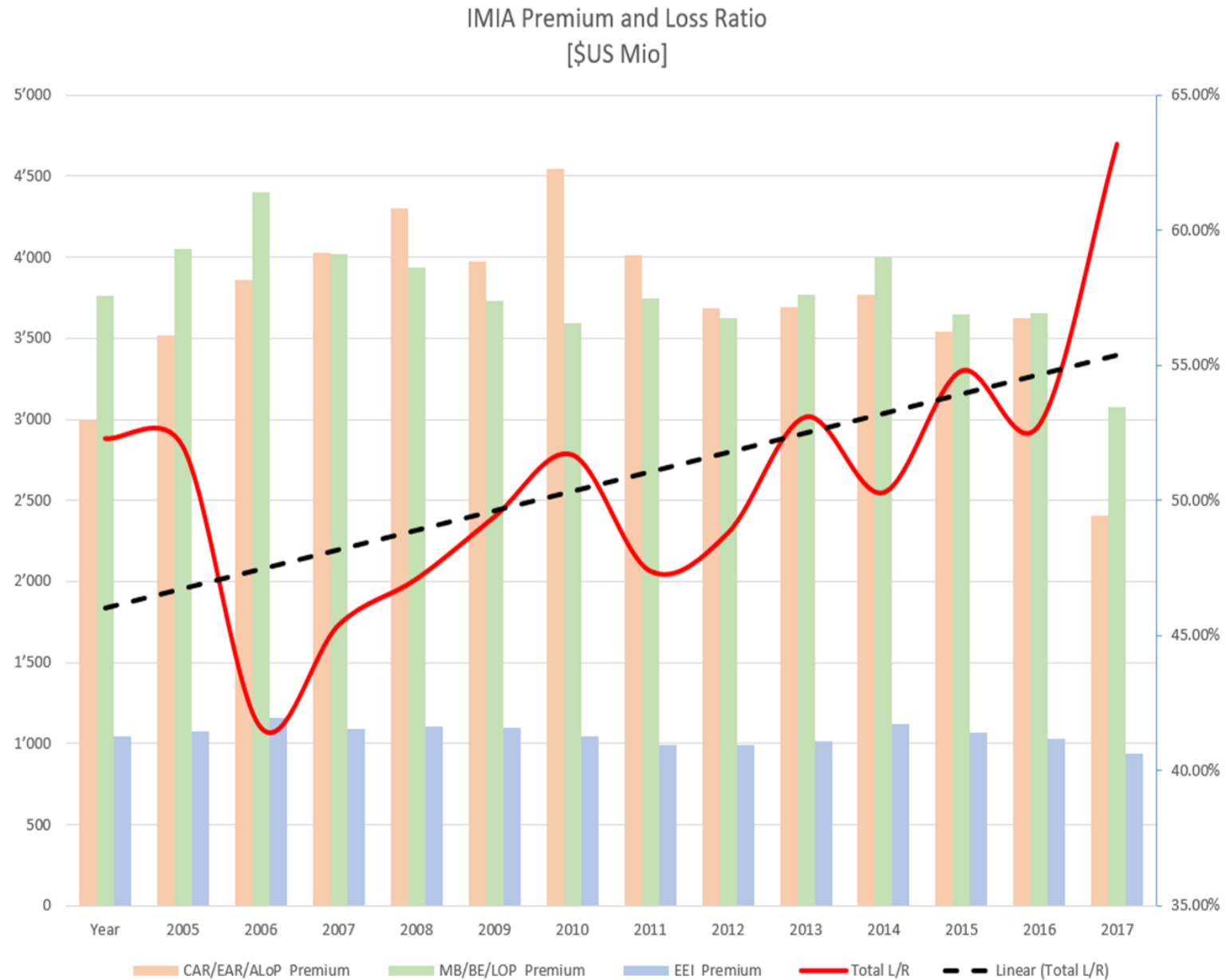

Incurred Losses of above Portfolio by Financial Year

Volatility & missing premium-claims link
= trends & patterns disguised
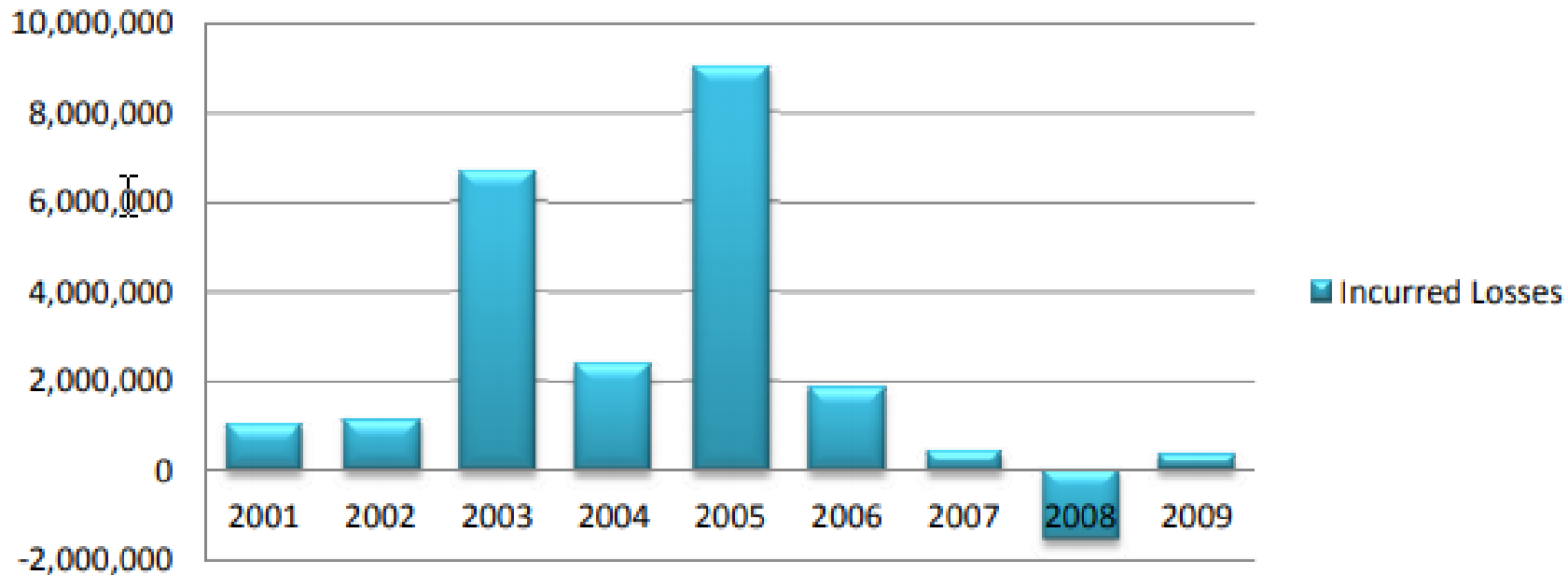
Volatility of FY disguises trends

Only long periods of FY stats reveal trends (e.g. 12 y IMIA Country Association Stats)

IMIA Premium and Loss Ratio
[$US Mio]

https://www.imia.com/premium-and-loss-statistics/

Working Group Paper 73 (11)

Reserving - how to reserve an
Engineering portfolio with its specific characteristics

Enough reserves ... ?

Prepared by:

Jürg Buff (Partner Re) Zürich (Chairman)
José Blanco (PartnerRe) Zürich
Pascal Bourquin (Partner Re) Zürich
Matia Cazzaniga (ZFS) Zürich
Brad Dalton (Vero) Sydney
Alain Favre (AXIS Re) Zürich
Andy Hottinger (AXIS Re) Zürich
Hari Radhakrishnan (HDFC Ergo) Mumbai
Jean-Marc Rossé (Nationale Suisse) Basel
Anne Sheehy (XL Insurance) Zürich
Marina Zyuganova (Renaissance) Moscow

Oscar Treceno (Nationale Suisse) Basel (Sponsor)

IMIA Claims Development Example of CAR/EAR Portfolio
UWY 2001 / Cumulated View

Legend:
- IBNR
- Closeing
- ACR
- Outstanding Losses
- Paid Losses
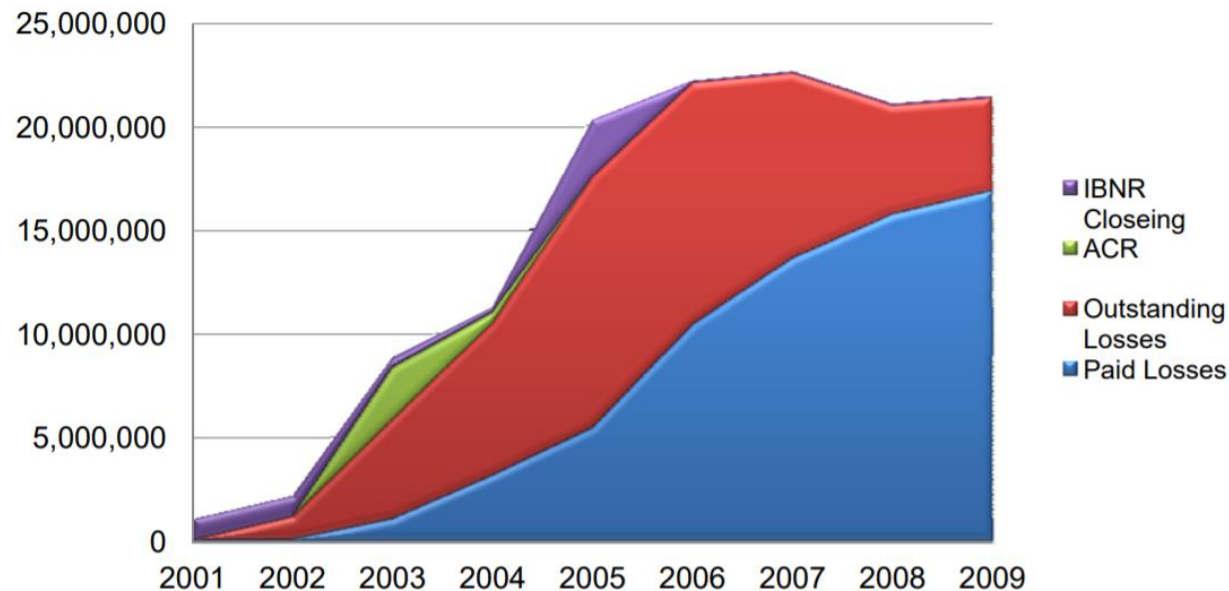
incurred Loss Ratio (claims/premium) per uwy

Premium Development Example of CAR/EAR Portfolio
UWY 2001
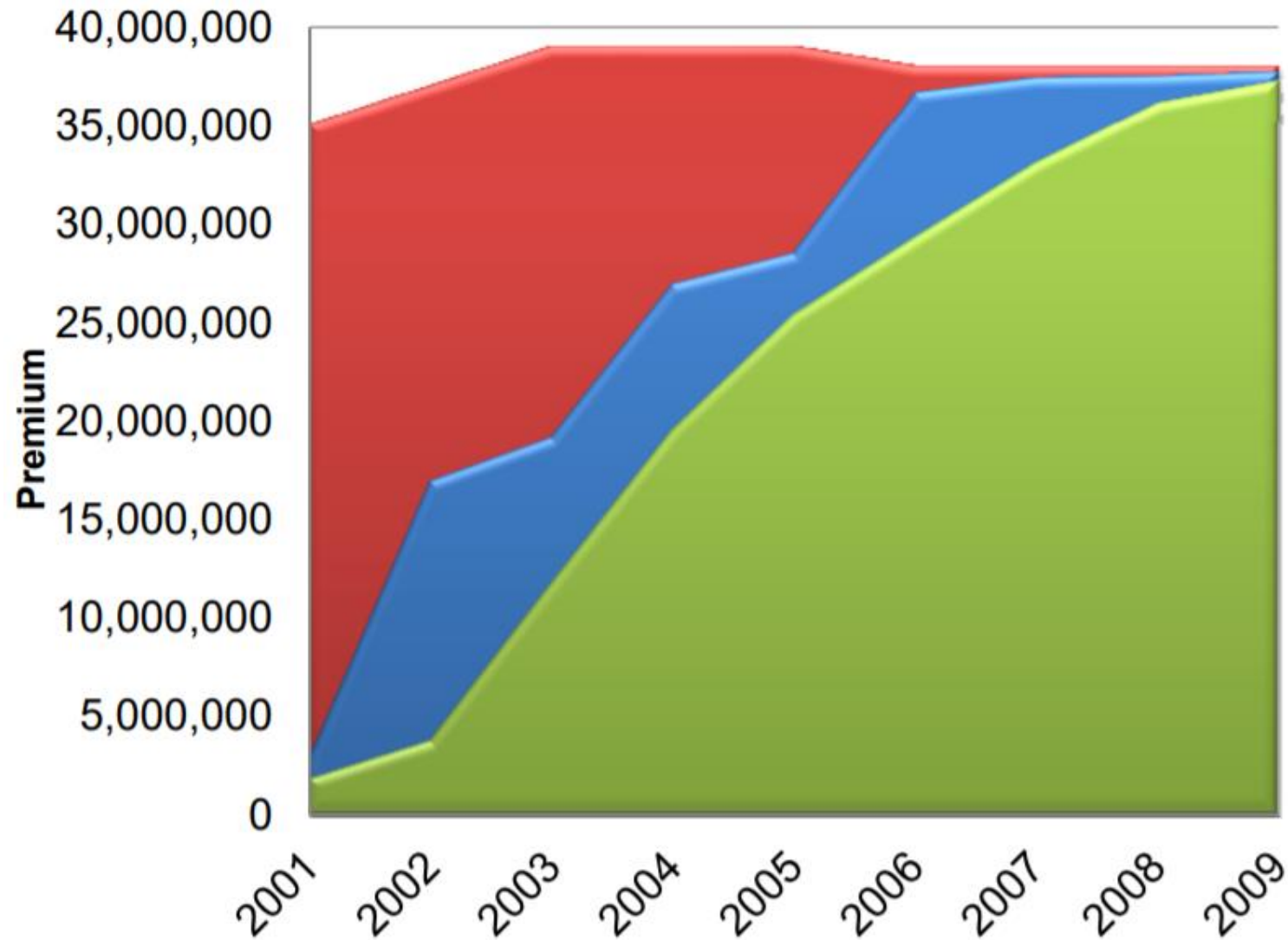
Written Premium
Premiums for all policies sold during UW period

Booked Premium
Booked premiums during specific accounting period

Earned Premium
Recorded revenue during specific accounting period
Earned premium = risk/exposure based
= consumed part of the risk

Unearned premium reserves (UPR)
- Premium written but not yet earned

Why do we want to reserve adequately?

- Stakeholders in respect of reserving quality

- Regulator

- Rating agency

- Capital market investor

- Tax

- Own management

- ➔ high consistency of reserving vs. actual results creates confidence

Internal\Standard Document

Balance Sheet / Income Statement

Balance sheet	Income statement
Assets Liquidity Assets Receivables DAC **Liabilities** Claims reserves Payables UPR Premium def. reserves **= Capital**	**Income** + Premium earned + Income on investment — **Outgo** - Claims incurred (Paid claims + Changes in reserves) - Commissions - Operational expenses **= Profit/Loss**

Internal\Standard Document

claims tree

```
Claims
├── Paid
│    ├── Losses
│    └── Loss Adjustment Expenses
└── Unpaid
     ├── Loss Reserves
     │    ├── Case Reserves
     │    │    ├── Outstanding Loss Reserves (OLR)
     │    │    ├── Additional Case Reserves (ACR)
     │    │    └── Premium Deficiency Reserves
     │    └── Bulk Reserves
     │         ├── Incurred But Not Reported (IBNR)
     │         └── Incurred But Not Enough Reported (IBNER)
     └── Loss Adjustment Expense Reserves
          ├── Allocated Loss Adjustment Expense Reserves (ALAE)
          └── Unallocated Loss Adjustment Expense Reserves (ULAE)
```

Types of claims reserves

Outstanding loss reserves (OLR)
- Notified claims
- for specific incurred claims - not (yet) finally settled

Additional case reserves (ACR)
- for individual losses in excess of OLR's
- applied if doubts exist that a claim is sufficiently reserved
- Particularly used in reinsurance

Incurred but not reported (IBNR)
- (Re-)insurer not aware of specific losses
- Future liabilities of in-force policies

ILORI iLR Triangle

uwy	devY 1	devY 2	devY 3	devY 4	devY 5	devY 6	devY 7	devY 8	devY 9	devY 10	devY 11	devY 12
2008	11.88%	33.28%	47.71%	55.44%	59.20%	59.64%	65.20%	74.32%	76.29%	76.17%	75.75%	75.47%
2009	10.94%	32.48%	43.38%	50.11%	51.55%	51.02%	51.66%	52.84%	53.24%	53.24%	51.30%	
2010	11.16%	32.68%	43.40%	51.51%	55.27%	58.13%	60.89%	61.67%	62.89%	62.01%		
2011	13.59%	31.54%	42.81%	51.23%	60.56%	65.32%	71.33%	100.78%	103.96%			
2012	14.97%	30.17%	40.76%	47.67%	53.13%	54.74%	55.13%	61.38%				
2013	20.44%	35.10%	48.18%	53.91%	56.44%	63.54%	67.08%					
2014	12.21%	30.45%	39.10%	47.02%	56.03%	66.07%						
2015	16.53%	32.33%	46.64%	55.28%	69.64%							
2016	18.77%	38.00%	54.27%	64.59%								
2017	16.95%	37.79%	53.86%									
2018	14.35%	42.26%										
2019	19.00%											
avg=	15.07%	34.19%	46.01%	52.97%	57.73%	59.78%	61.88%	70.20%	74.10%	63.81%	63.53%	75.47%
StDev=	3.26%	3.74%	5.13%	5.29%	5.63%	5.62%	7.46%	18.73%	22.04%	11.57%	17.29%	

Triangles - Reported claims

UW Year	Development Year			
	1	2	3	4
2012	100	140	145	145
2013	90	100	105	
2014	145	220		
2015	120			

Portfolio assumptions:

- Consistent claim processing
- Claims' types stable mix
- Stable policy limits

UW Year	Development Year		
	1-2	2-3	3-4
2012	1.40	1.04	1.00
2013	1.11	1.05	
2014	1.52		

Development Year		
1-2	2-3	3-4
1.37	1.04	1.00

Loss development factors

Reserving Methods - Chain Ladder

Development Year		
1-2	2-3	3-4
1.37	1.04	1.00

UW Year	Development Year			
	1	2	3	4
2012	100	140	145	145
2013	90	100	105	105
2014	145	220	229	229
2015	120	165	172	172

Ultimate Loss	IBNR
145	145-145 = 0
105	105-105 = 0
229	229-220 = 9
172	172-120 = 52

Actuarial reserving methods

- Chain Ladder
- Expected claims technique
- Bornhuetter-Ferguson
- Benktander
- Cape Cod

Data
- No matter which method is chosen the most important are the claims data of a portfolio to build the development triangles

Incurred but not reported (IBNR)
- (Re-)insurer not aware of specific losses
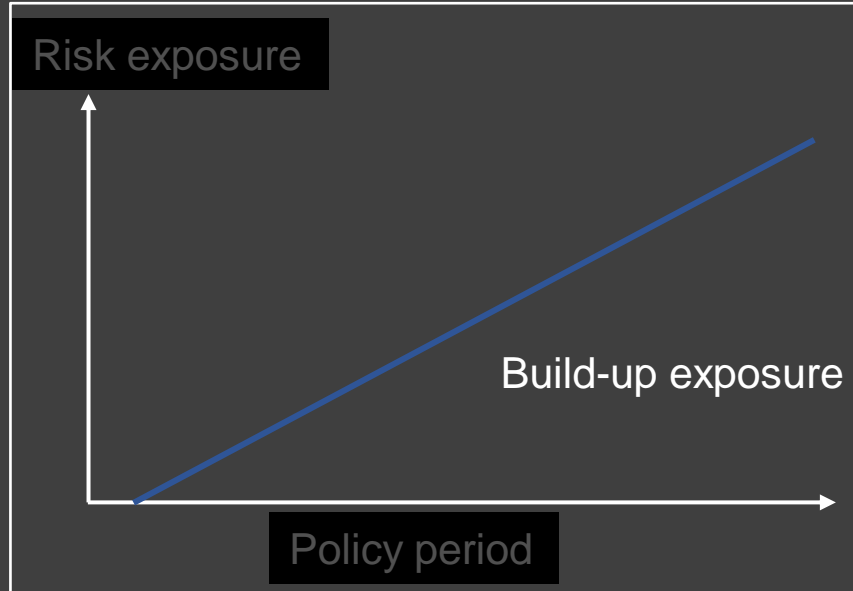- Future liabilities of in-force policies

What is an appropriate earning curve?

Fixed exposure (MB, EEI, Property)

Static exposure

=> a pro-rata temporis (proportional) earning curve is appropriate

Exposure increasing (CAR/EAR)
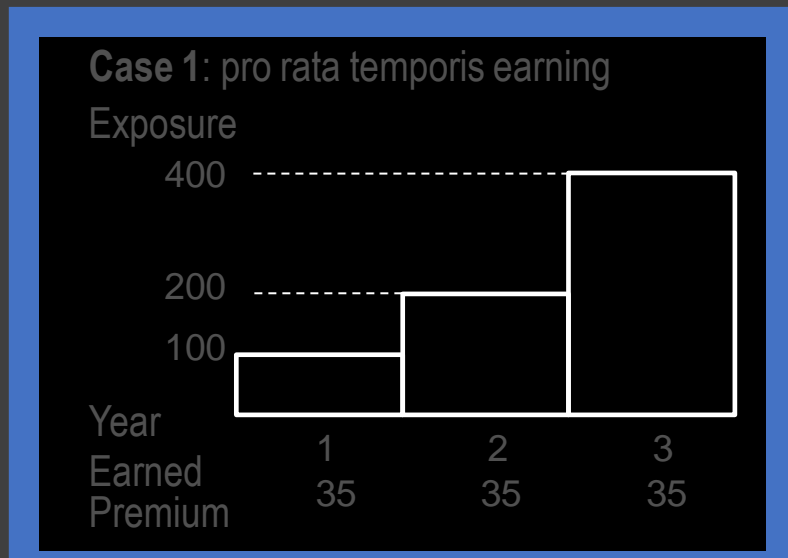

Build-up exposure

=> a pro-rata temporis (proportional) earning curve is not appropriate

From the exposure to an earning pattern

Illustration:
- 3 years construction policy
- exposure during the 1st year is 100, 200 in the 2nd and 400 in the 3rd
- premium generated: 105

What is an appropriate earning pattern?

Case 1: pro rata temporis earning

Exposure

Year	1	2	3
Earned Premium	35	35	35

Case 2: earning according to exposure by year

Exposure

Year	1	2	3
Earned Premium	15	30	60

The time to earn the premium considered but not the fact that the exposure is increasing year by year
=> NOT SATISFACTORY
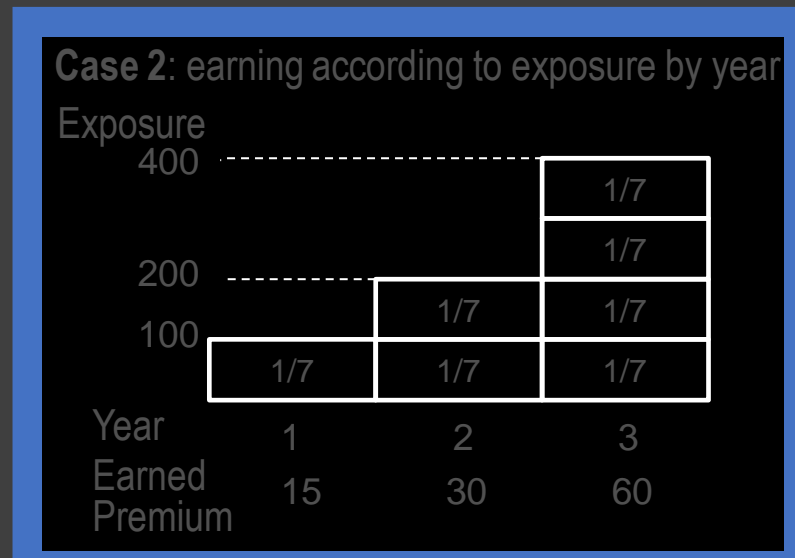
Time and exposure evolution considered

=> MORE APPROPRIATE ?

PERILS
Excellence in Insurance Industry Benchmarks

IMIA: IRCI – ILORI – IMLI Surveys 2021

Prepared for   IMIA

Prepared by   Jindrich Wagner

PERILS

Agenda

1. IMIA Roles & Responsibilities

2. PERILS Roles & Responsibilities

3. ILORI Survey 2020/21–weighted average approach

PERILS

IMIA role & responsibilities – pre send-out

► Setting the topic, objectives and scope of a survey

► Defining the concept, content and format of a survey, and

► Setting all necessary **dead-lines** for data responses, results delivery, etc.

► Implementing the survey in an appropriate tool (e.g. Word, Excel), incl.
  ► thorough testing of proper functioning before send-out
  ► all necessary accompanying text, e.g. how to enter data, in what format, etc.

► Assembling the list of **addressees** for the surveys

► Agreeing with PERILS the **process** of:
  ► Collecting/reminding the timely survey responses from the addressees
  ► How the individual data responses will be aggregated
  ► Delivering the anonymized results in desired format to IMIA

► Providing PERILS with a **«complete package»** for every survey, i.e. the data questionnaire, accompanying text, and list of addressees

Focus = CONTENT

PERILS

PERILS role & responsibilities

► Sending the «survey package» (provided by IMIA) to the addressees

► **Monitoring** the ongoing data responses from the addressees, incl. the quantitative and qualitative aspects of the back-flow

► Providing support to the addressees in case of minor problems with responding to the questionnaires, e.g. data format

► **Aggregating** the incoming data responses on an ongoing basis, informing IMIA-EC in a general and anonymous way about the progress

► **Providing** the anonymized **RESULTS** to IMIA in timely manner and in the pre-agreed format

► Summarizing the insights into the survey process to suggestions and feedback for possible further modification/improvement

► Participating in a few selected collaborative sessions together with IMIA, mainly to ensure smooth processes and sound mutual understanding, yet not to interpret/comment any individual responses nor the aggr. results
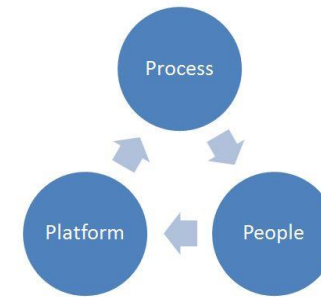
Focus = PROCESS

PERILS

IMIA role & responsibilities – post results

► **Interpreting** the aggregated results provided by PERILS

► **Presenting** the survey results, incl. interpretation and conclusions, to IMIA members and others

► **Evaluating** the quantitative and qualitative response from the addressees of the surveys, together with PERILS, always on anonymous basis

► Seeking feedback from the respondents iro every single survey, in order to modify / improve the survey

► Ensuring the post-survey suggestions and feedback for modification / improvement will form basis for the next year edition

Focus = QUALITY

PERILS

IMIA – PERILS work-flow
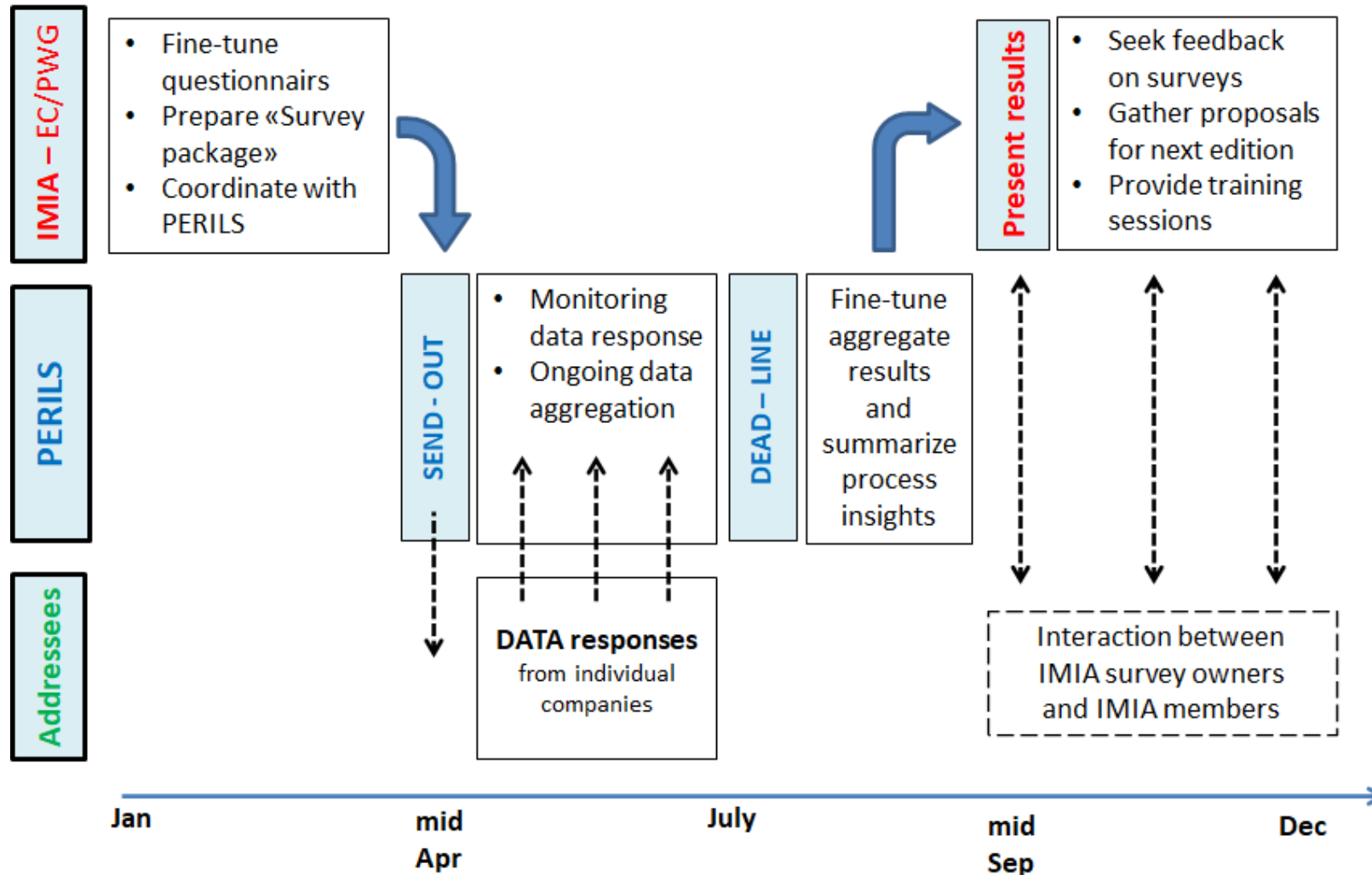
ILORI Survey 2020/21– weighted aggregation of Loss ratios

GWP avg	weight	B	dev 1	dev 2	dev 3	dev 4	dev 5	dev 6
75	0.37500	2012	3%	10%	18%	26%	50%	60%
75	0.37500	2013	0%	8%	20%	30%	46%	
75	0.16667	2014	1%	6%	12%	26%		
75	0.16667	2015	0%	4%	10%			

GWP avg	weight	A	dev 1	dev 2	dev 3	dev 4	dev 5	dev 6
125	0.62500	2012	5%	18%	32%	47%	90%	108%
125	0.62500	2013	0%	16%	40%	60%	92%	
125	0.27778	2014	2%	9%	18%	39%		
125	0.27778	2015	0%	9%	22%			

GWP avg	weight	C	dev 1	dev 2	dev 3	dev 4	dev 5	dev 6
0	0.0	2012						
0	0.0	2013						
250	0.55556	2014	10%	30%	60%	100%		
250	0.55556	2015	15%	45%	90%			

GWP avg	weight	W-avg	dev 1	dev 2	dev 3	dev 4	dev 5	dev 6
200	1.00000	2012	4.50%	15.00%	27.00%	39.00%	75.00%	90.00%
200	1.00000	2013	0.00%	)*$B20	32.	48.75%	74.75%	
450	1.00000	2014	6.14%	20.17%	40.3	70.72%		
450	1.00000	2015	8.33%	28.11%	57.78%			

GWP avg	GWP band /USD
35	< 50 mil
75	50 - 100 mil
125	100 - 150 mil
175	150 - 200 mil
250	> 200 mil

1 Sum-up band GWP avgs per UWY

2 Calculate weights per UWY + company

3 Calculate weighted LR's per UWY + devYr

ILORI Survey 2020/21– why weighted average?

▶ When aggregating two portfolios with very different volume (GWP) then the smaller one has much less «impact» on the overall LR than the big one

▶ The «overall LR» is equal to «all losses» divided by «all premiums», i.e.

$$total\ LR = \frac{Losses_1 + Losses_2 + Losses_3 + \ldots}{GWP_1 + GWP_2 + GWP_3 + \ldots} \neq avg\ (LR_1, LR_2, LR_{3\ldots})$$

▶ Example:

  ▶ GWP1 = 500mio USD,   Losses1 = 300mio USD -> LR1 = 60%

  ▶ GWP2 = 100mio USD,   Losses2 =   30mio USD -> LR2 = 30%

$$total\ LR_{1+2} = \frac{300mio + 30mio}{500mio + 100mio} = \frac{330mio}{600mio} = \textbf{55\%} \neq avg\ (60\%, 30\%) = \textbf{45\%}$$

PERILS

ILORI Questionnaire

IMIA Loss Ratio Index Survey by UWY

Global Engineering Market

1. What is the perceived volume, in terms of Gross Written Premium (USD), of the overall Engineering market for the current underwriting year?

Flag with (x)	Gross Written Premium (USD)
x	< 10 bil
	10 bil - 20 bil
	20 bil - 30 bil
	> 30 bil

2. What is the composition of the Global Engineering Premium for the current underwriting year?

Composition	%
Operational / Annual*	90%
Project (incl. project annuals)**	10%
IDI	0%

* Operational / Annual includes, but not limited to, EEI, MB, CECR, DOS, CPE/M, BPV, IAR (Industrial All Risk), OAR (Operational All Risk)
** Project (incl Project annuals), includes but not limited to, CAR/EAR including annual project covers (World-wide Open Covers, annual contractors etc.)

The information below will be provided to PERILS:

3. What is the size of your Engineering portfolio in terms of Gross Written Premium (USD)?

Flag with (x)	Gross Written Premium (USD)
	< 50 mil
	50 mil - 100 mil
x	100 mil - 150 mil
	150 mil - 200 mil
	> 200 mil

4. What is your Territorial Scope in the market?

Flag with (x)	Scope
	National
x	Regional
	Global

5. What is the split of your portfolio between Direct & Fac and Treaty, in percentage?

Position	%
Direct & Fac Market	70%
Treaty Market	30%

6. What is your portfolio composition, in terms of Gross Written Premium?

Portfolio composition	%
Operational / Annual*	90%
Project (incl. project annuals)**	10%
IDI	0%

7. Has IAR/OAR business been included?

IAR/OAR business included?	No

* Operational / Annual includes, but not limited to, EEI, MB, CECR, DOS, CPE/M, BPV, IAR (Industrial All Risk), OAR (Operational All Risk)
** Project (incl Project annuals), includes but not limited to, CAR/EAR including annual project covers (World-wide Open Covers, annual contractors etc.)

1. Please insert the **Original Gross Booked Premium**, before deductions, in your reporting currency (this will not be provided to PERILS):

UWY/DY	1	2	3	4	5	6	7	8	9	10	11
2008											
2009											
2010											
2011											
2012											
2013	4.00E+06										
2014											
2015											
2016											
2017											
2018											
2019											

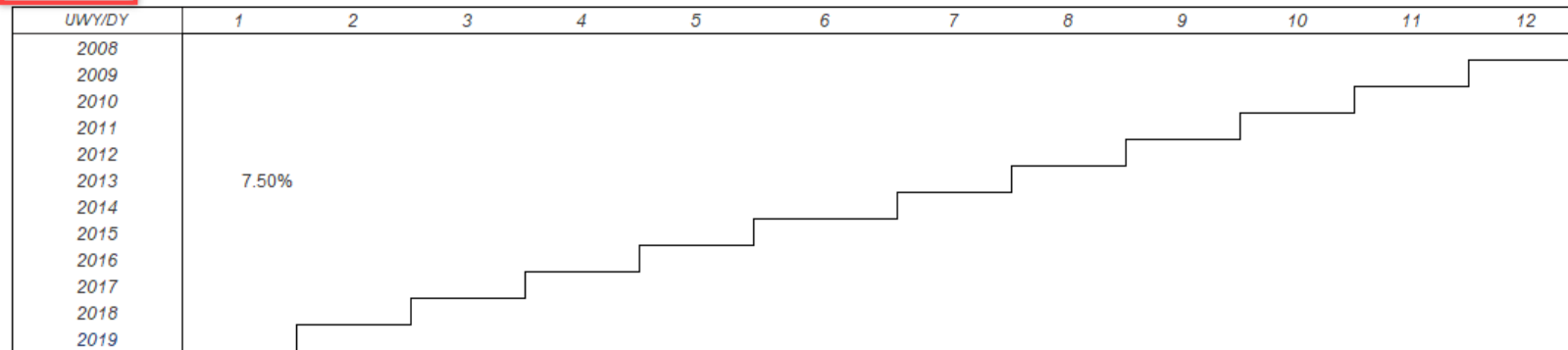| Type of Premium inserted:	Flag with (x)
Original Gross Booked Premium	x
Gross Written Premium	

Comments:

2. Please insert the **Gross Incurred Losses (before reinsurance recoveries and without IBNRs)** in your reporting currency (this will not be provided to PERILS):

UWY/DY	1	2	3	4	5	6	7	8	9	10	11
2008											
2009											
2010											
2011											
2012											
2013	3.00E+05										
2014											
2015											
2016											
2017											
2018											
2019											

ILORI Entries

ILORI

results sent to PERILS

IMIA Rate Index Survey - 2020

IRCI Questionnaire

1. What is the size of your Engineering Portfolio?

Values in $[US]

- ○ < 5 Mio
- ○ 5 Mio to 20 Mio
- ○ 20 Mio to 50 Mio
- ○ 50 Mio to 100 Mio
- ○ more than 100 Mio

2. What is your typical position in a placement?

- ○ Follower
- ○ Leader
- ○ More Follow
- ○ More Lead

3.1 What is your company's location?
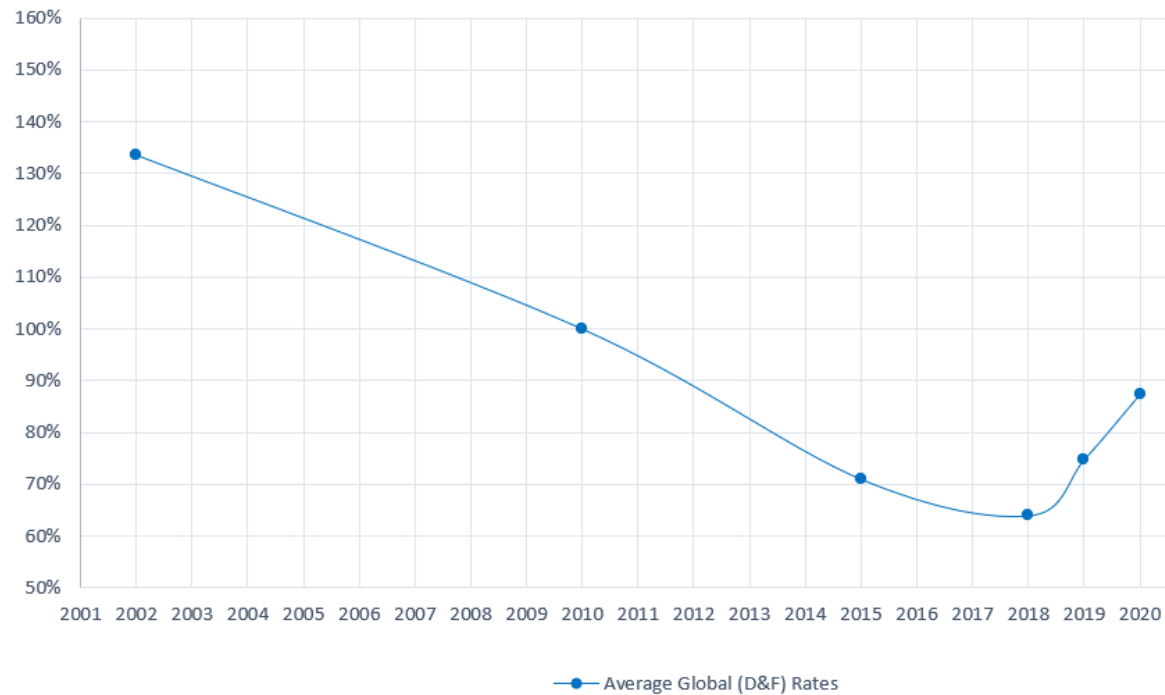
Please select your country ▼

3.2 What is your company's territorial scope of business?
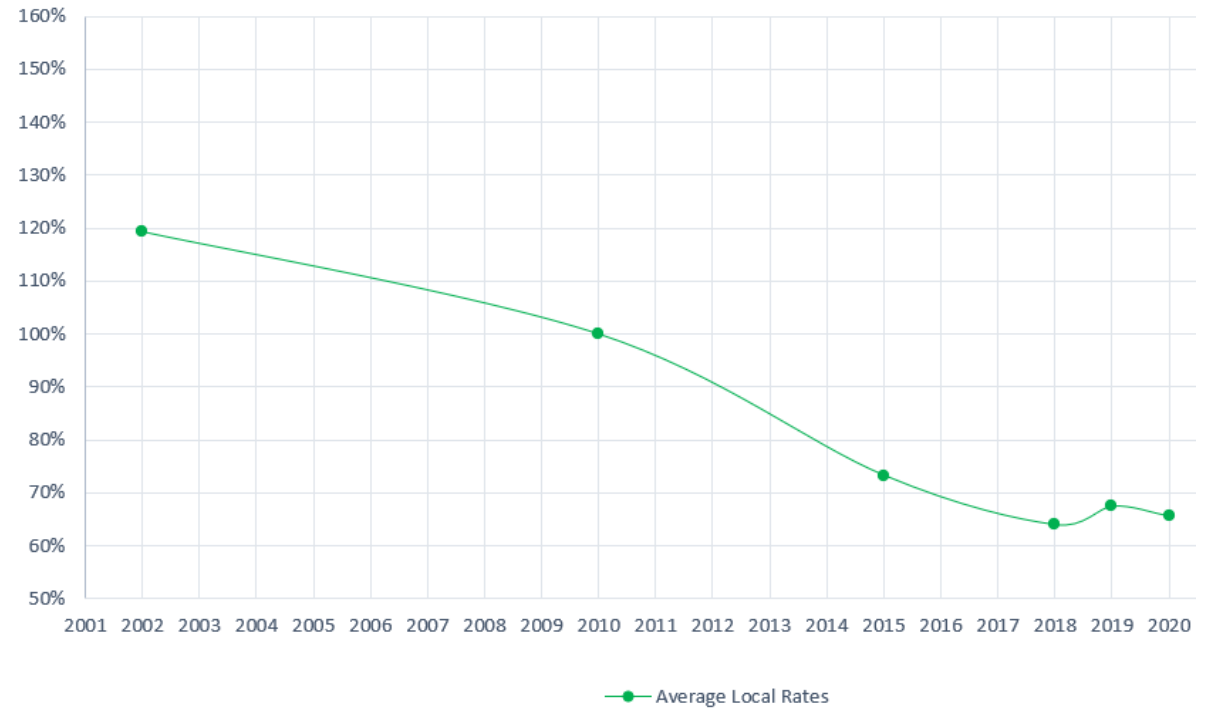
- ○ National
- ○ Regional
- ○ Continental
- ○ Global

Ø IRCI 2020

Global D&F vs. Local Markets

Rate Level Index 2020 (2010 = 100%)

Rate Level Index 2020 (2010 = 100%)

Average Global (D&F) Rates

Average Local Rates

IRCI Entries

4. For Rate Index purposes please consider the following Industry / Object Types and enter the rates in *per mill* for the respective underwriting year.

Conditions are assumed to be
- Low NatCat Exposure
- Standard scope of CAR/EAR cover, Material Damage only
- Typical deductibles for type of risk in question

Note: Default rates below are random figures and have no relevance whatsoever

Page 1

	2002	2010	2015	2019	Today	2021 Prognosis
4.1 Project Business (Construction / Erection)						
4.1.1 Civil / Infrastructure "Building", e.g. assume a 20 story office building with basements, **enter rates in per mill**	3.0	3.0	3.0	3.0	3.0	3.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%
4.1.2 Civil / Infrastructure "Road", e.g. assume a 50 km two-lane road, **enter rates in per mill**	2.0	2.0	2.0	2.0	2.0	2.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%
4.1.3 Erection / Power Plant, e.g. assume a 600 MW coal fired Thermal Power Plant, **enter rates in per mill**	4.0	4.0	4.0	4.0	4.0	4.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%
4.2 Operational Business incl. Machinery Breakdown						
4.2.1 Oil&Gas Industry, e.g. assume a refinery 3000 t/d, **enter rates per mill**	4.0	4.0	4.0	4.0	4.0	4.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%
4.2.2 Power Plant, e.g. assume CCPP with a 240 MW industrial proven type gas turbine set, **enter rates in per mill**	2.0	2.0	2.0	2.0	2.0	2.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%
4.2.3 Heavy Industries, e.g. assume a steel mill, **enter rates in per mill**	3.0	3.0	3.0	3.0	3.0	3.0
Index 2010 = 100 results in these indices (derived, no entry):	100%	100%	100%	100%	100%	100%

Values must range between 0.0 and 20.0 per mill.

1) Enter per mille rate values (or formulas) and press "F9" for final calculation after all entries

2) Click on button "Transfer Output" to transfer derived indices as values to sheet "Result"

Transfer Output

3) Then go to sheet "Result" for further action

**Check RC method!
e.g. "pure" vs. "risk adjusted" RC**

IRCI Demo

Rate Level Index 2020 (2010 = 100%)

uwy 2018 from IRCI 2018

— 4.1 Project Business (Construction / Erection)   — 4.1.1 Civil / Infrastructure "Building"
— 4.1.2 Civil / Infrastructure "Road"   — 4.1.3 Erection / Power Plant
— 4.2 Operational Business incl. Machinery Breakdown   — 4.2.1 Oil&Gas Industry
— 4.2.2 Power Plant   — 4.2.3 Heavy Industries
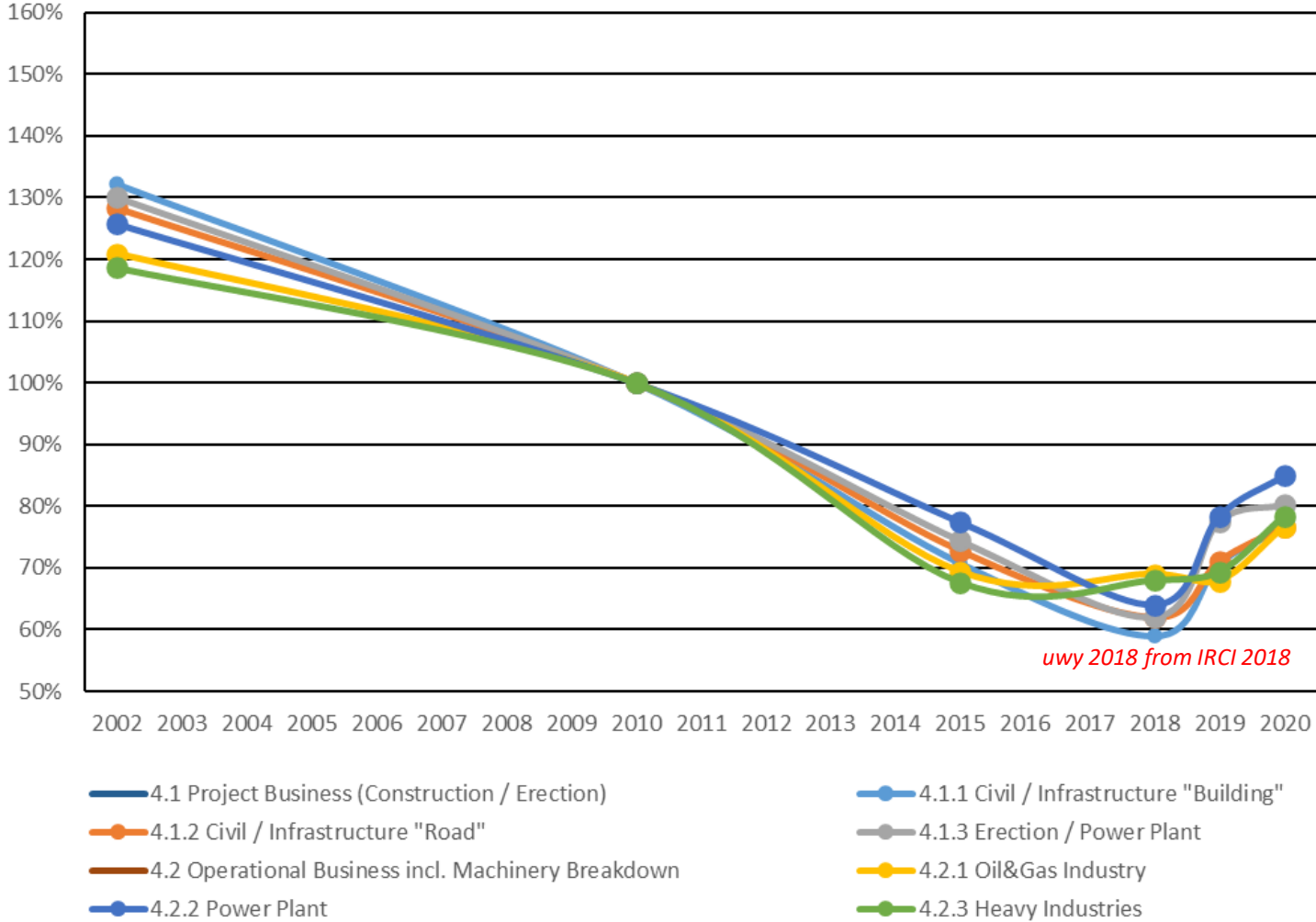
IRCI 2020 vs. Prognosis 2020 in 2019
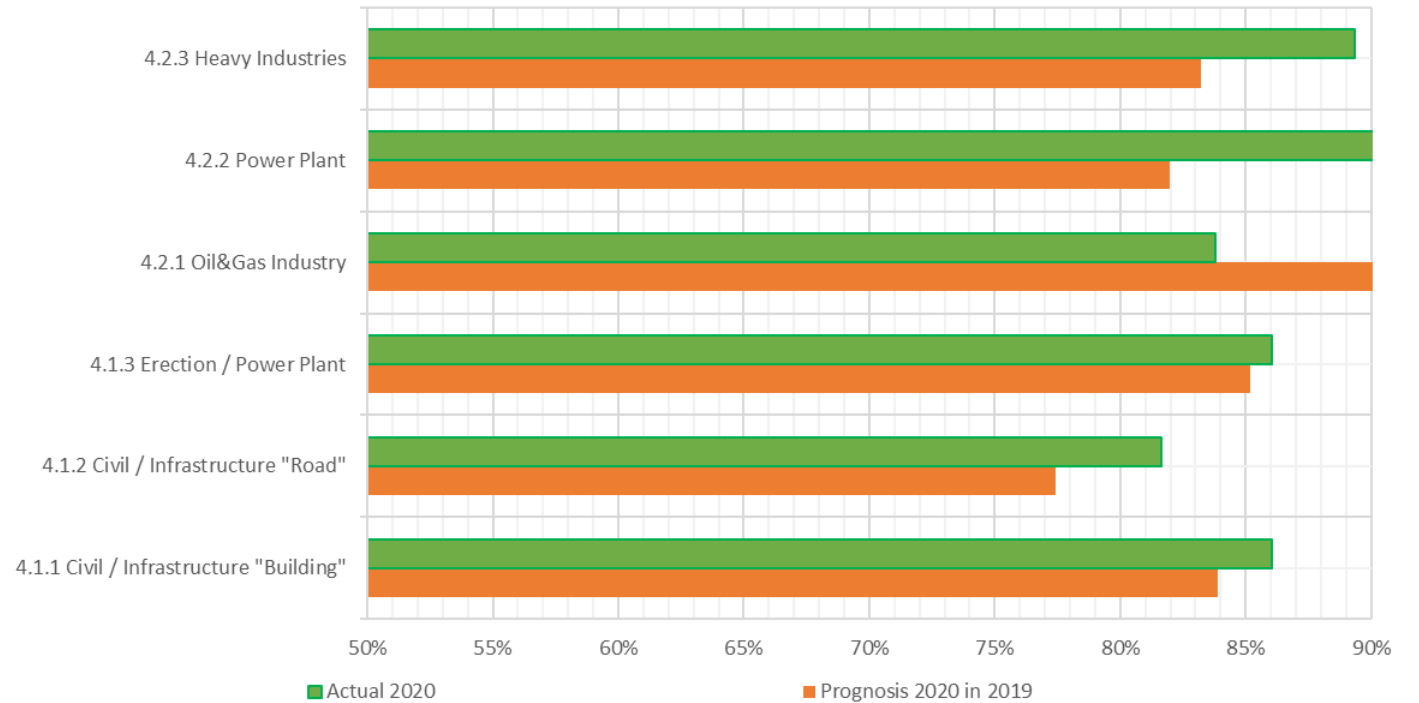
IMLI

The NEW Mega Loss Index

- FGU losses xs $50m since 1990ies

- CAR/EAR *(for the time being)*

- Agg. Losses = Frequency x Severity *(per uwy & occ. year)*

- Best estimate figures FGU

- Challenges: FX rates, indexation

IMLI snapshot

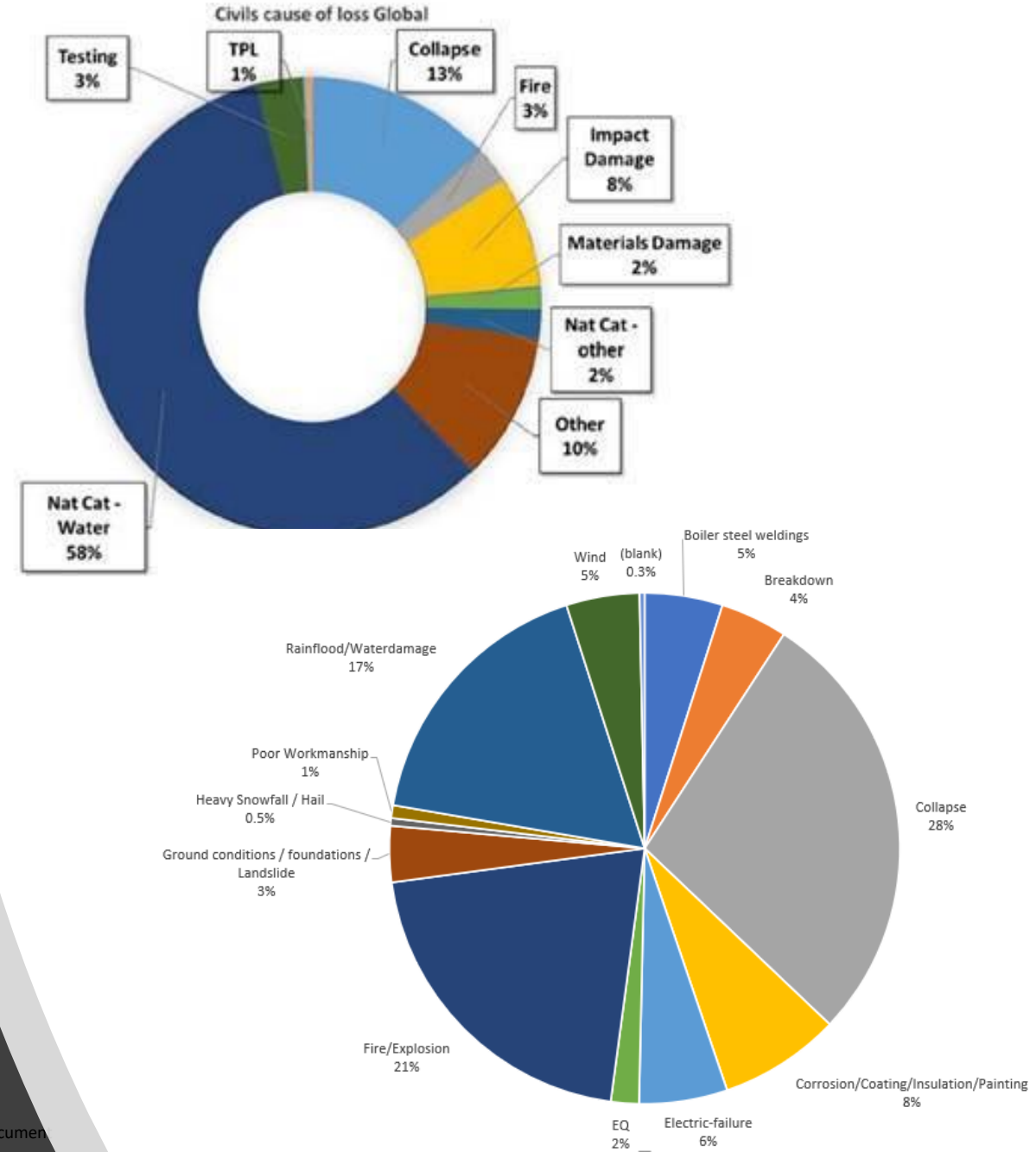| Region	Occurrence Year	Policy inception year	Duration till loss	CAR; Operational or EAR	Natural Cat?	Type of Risk / Project Type	Type of Loss	Settled	Public information available	FGU rounded	PD FGU Rounded	DSU / ALOP FGU Rounded	PD Limit Rounded	TPL Limit Rounded	DSU Limit Rounded
Europe	2009	2003	6	CAR	No	Infrastructure (Road/Railway)	Collapse	Yes	Yes	400'000'000	400'000'000	0	700'000'000	0	0
North America	2010	2008	2	EAR	No	Power Plant	Fire/Explosion	Yes	Yes	320'000'000	310'000'000	10'000'000	660'000'000	0	210'000'000
North America	2012	2010	2	CAR	Yes	Infrastructure (Road/Railway)	Rainflood/Waterdamage	Yes	Yes	290'000'000	290'000'000	0	1'000'000'000	0	0
North America	2011	2007	4	EAR	No	Power Plant	Breakdown	Yes	Yes	280'000'000	100'000'000	170'000'000	1'490'000'000	0	350'000'000
North America	2012	2010	2	CAR	Yes	Building	Rainflood/Waterdamage	Yes	Yes	250'000'000	250'000'000	0	500'000'000	0	0
Middle East	2013	2010	3	EAR	No	Smelter	Electric-failure	Yes	Yes	240'000'000	100'000'000	140'000'000	3'200'000'000	0	840'000'000
Europe	2014	2008	6	EAR	No	Power Plant	Boiler steel weldings	Yes	Yes	240'000'000	240'000'000	0	0	0	0
Middle East	2010	2007	3	EAR	No	Smelter	Electric-failure	Yes	Yes	200'000'000	60'000'000	140'000'000	0	0	0
Middle East	2015	2011	4	EAR	Yes	Power Plant	Wind	Yes	Yes	190'000'000	170'000'000	20'000'000	2'850'000'000	0	24 months
Asia	2017	2013	4	CAR	No	Building	Fire/Explosion	Yes	Yes	150'000'000	150'000'000	0	3'230'000'000	0	0
Asia	2008	2005	3	EAR	No	LNG/Petrochem/Refinery	Fire/Explosion	Yes	Yes	150'000'000	150'000'000	0	0	0	0
Europe	1994	1993	1	CAR	No	Infrastructure (Road/Railway)	Collapse	Yes	Yes	150'000'000	150'000'000	0	0	0	0
North America	2017	2014	3	EAR	Yes	LNG/Petrochem/Refinery	Rainflood/Waterdamage	Yes	Yes	130'000'000	130'000'000	0	3'000'000'000	0	0
Middle East	2017	2013	4	CAR	No	Hydroelectric	Rainflood/Waterdamage	Yes	Yes	130'000'000	70'000'000	60'000'000	0	0	0
Latam	2011	2008	3	CAR	No	Hydroelectric	Fire/Explosion	Yes	Yes	120'000'000	120'000'000	0	190'000'000	0	240'000'000
Europe	2013	2008	5	EAR	No	Power Plant	Boiler steel weldings	Yes	Yes	110'000'000	60'000'000	50'000'000	200'000'000	0	330'000'000
North America	2010	2007	3	EAR	No	Power Plant	Collapse	Yes	Yes	110'000'000	110'000'000	0	0	0	0
North America	2017	2016	1	CAR	Yes	Building	Rainflood/Waterdamage	Yes	Yes	100'000'000	100'000'000	0	100'000'000	0	0
Asia	1997	1995	2	EAR	Yes	Smelter	Rainflood/Waterdamage	Yes	Yes	100'000'000	100'000'000	0	0	0	0
Europe	1991	1989	2	CAR	No	Building	Fire/Explosion	Yes	Yes	100'000'000	100'000'000	0	0	0	0

CAUSES of LOSS (new)

mega & large & frequency

Overview of causes of loss on Civils projects

Civils cause of loss Global

- Testing 3%
- TPL 1%
- Collapse 13%
- Fire 3%
- Impact Damage 8%
- Materials Damage 2%
- Nat Cat - other 2%
- Other 10%
- Nat Cat - Water 58%

- Wind 5%
- (blank) 0.3%
- Boiler steel weldings 5%
- Breakdown 4%
- Collapse 28%
- Corrosion/Coating/Insulation/Painting 8%
- Electric-failure 6%
- EQ 2%
- Fire/Explosion 21%
- Ground conditions / foundations / Landslide 3%
- Heavy Snowfall / Hail 0.5%
- Poor Workmanship 1%
- Rainflood/Waterdamage 17%

IRCI/ILORI/IMLI 2021 –
Data call in spring 2021

Please contribute

For 2021 –   Thank you!

PERILS
Data collected, anonymized, validated, aggregated, handed over to IMIA (Antitrust & GDPR compliant)

Data processing

Data call

(Re-) Insurance Companies

IMIA Indices IRCI, ILORI, IMLI

IMIA
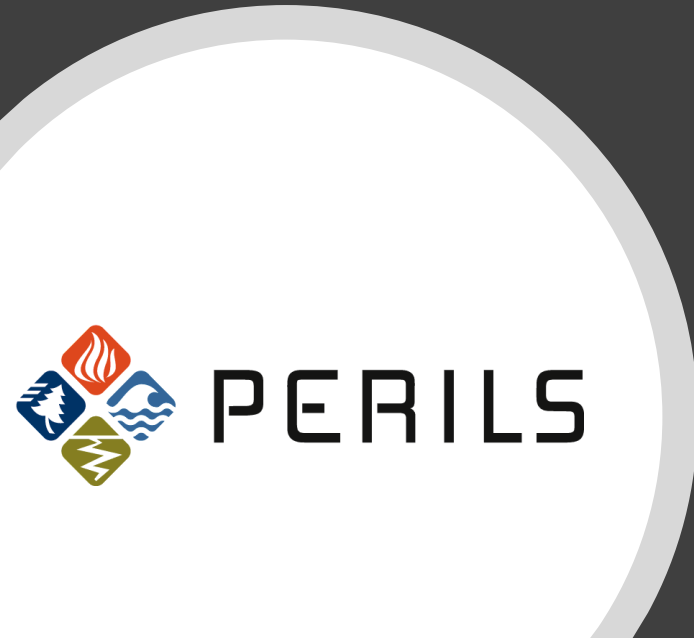The International Association of Engineering Insurers
™
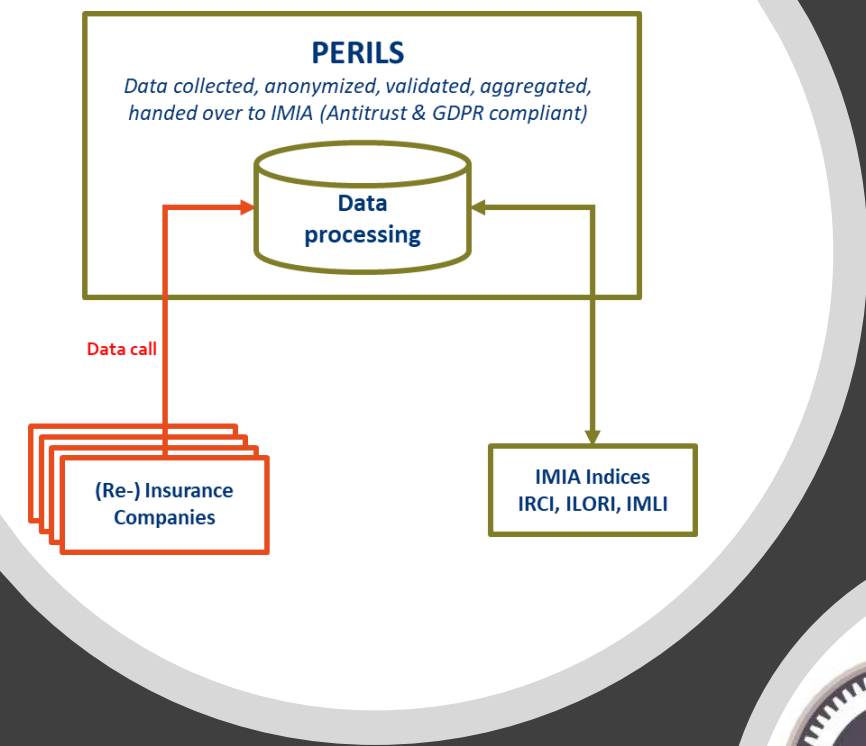
PERILS

Vision
"IMIA makes the complex engineering insurance market tangible"

Mission
"IMIA & PERILS produce reference points which help the engineering insurance markets to benchmark their activities"

Internal\Standard Document

Questions ?