Welcome and Introductions

President: Micheline Dionne (Canada)

Immediate Past President: Roseanne Harris (South Africa)

President-Elect: Charles Cowling (UK)

Executive Director: Mathieu Langelier (Canada)
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IAA Town Hall – Lisbon, Portugal – November 18, 2023
Water-Related Risks

Lylah Davies
Policy Analyst at OECD - OCDE Environment Directorate
Water Risk
International Actuarial Association – Town Hall

Lylah Davies Lylah.davies@OECD.org

18 October 2023
The OECD, the Committee on Environmental Policy and Water

Climate, Biodiversity and Water Division

Policy Dialogues
Finance
Water Quality
Adaptation

COUNCIL
Oversight and strategic direction

COMMITTEES
Discussion and review
300+ committees, expert groups and working groups

SECRETARIAT
Evidence and analysis
14 substantive directorates
8 special entities

Policy makers and policy shapers
Collaboration and exchange
Key messages

- Water-related risks are increasingly material
- Awareness of exposure and vulnerability is insufficient
- Need to improve data, tools and frameworks to address water-related risks
What do we know about water risk?

Safely managed water supply and sanitation

- 2 billion people (26% of the population) do not have safe drinking water and 3.6 billion (46%) lack access to safely managed sanitation

Flooding

- 1.2 billion people are exposed to floods (2020) - expected to increase to 1.6 billion by 2050
- In 2021 alone, flood events resulted in combined economic losses of more than USD 80 billion – USD 20 billion of which were insured

Drought

- 2-3 billion people experience water shortages for at least one month per year
- By 2050, over half of the global population, and nearly half of global grain production, will be at risk from water stress

Socio-economic impacts of water risk

Western Europe
Record-breaking heatwave in Germany, UK, France, Portugal and Spain; in July the River Po reached a historic minimum level

Afghanistan
July-August floods: 156 casualties, 250,000 people affected

India and Bangladesh
In India floods/lightning led to over 700 casualties and evacuation of 1.3 million people; in Bangladesh flooding affected 7 million people

China
Prolonged extreme heat caused the worst drought in decades in the Yangtze river basin; almost 5 million people were affected

Philippines
Tropical storms Megi and Nalgae caused 200 and 150 deaths, respectively

Pakistan
May-September floods affected 33 million people, leading to over 1,700 casualties and up to USD 30 billion in damage

Horn of Africa
Persistent drought conditions continued in 2022; 36 million people were affected, with 21 million facing food insecurity

South Africa
300 mm of rainfall on 12 April caused flooding, with 448 casualties and 40,000 people displaced

Brazil
Heavy rainfall and landslides caused 230 deaths

Colombia
Extended La Niña led to flooding in Magdalena river basin, causing 53 casualties

Florida, USA
Hurricane Ian and associated flooding caused 152 deaths and USD 113 billion in damage

Western/Central USA
Persistent drought caused USD 22 billion in damage and 136 casualties in 2022

Argentina
Persistent conditions led to flood damage, with over 1,400 people affected

Source: WMO (2023) State of Global Water Resources 2022

Figure source: WMO (2023) State of Global Water Resources 2022
Global implications of water-related events

Panama Canal
- ~5% of global maritime trade volumes
- Critically lowered water levels due to insufficient rainfall in the Gatún Lake and subsequent drought restrictions
- Canal passages set to half by February

Flooding in Thailand in 2011

Drought in Chinese Taipei in 2021
What is water?

Blue water
Rivers, lakes, aquifers, glaciers etc...

Green water
Soil moisture, flows of vapour, plants...

Planetary boundaries - processes that regulate the stability and resilience of the Earth system
Green water and moisture recycling – the case of Brazil

Source: Potsdam Institute for Climate Impact Research (PIK)
Defining water-related risks

Disruption to freshwater systems

<table>
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<tr>
<th>Millennium Ecosystem Assessment</th>
<th>Examples</th>
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<tr>
<td>Provisioning services</td>
<td>Ground water</td>
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<td></td>
<td>Surface water</td>
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<td>Regulating services</td>
<td>Filtration (water)</td>
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<td>Disease control</td>
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<td></td>
<td>Climate regulation</td>
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<tr>
<td>Cultural services</td>
<td>Physical and psychological experience</td>
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<td>Identity and religious practices</td>
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<td>Supporting services</td>
<td>Soil quality</td>
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<td>Flood and storm protection</td>
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</table>
Drivers of water-related risks

- Climate change
- Overexploitation
- Land use change
- Pollution
- Invasive species

Climate

Nature
<table>
<thead>
<tr>
<th>Type of risk</th>
<th>Water-related risk</th>
<th>Economic impact</th>
<th>Financial risk</th>
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<tr>
<td><strong>Physical risks</strong></td>
<td>Flooding</td>
<td>Disruption of activities</td>
<td>Credit</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Water scarcity</td>
<td>Disruption of value chain</td>
<td>Market</td>
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<tr>
<td>Land use change</td>
<td>Polluted water</td>
<td>Raw material price-volatility</td>
<td>Liquidity</td>
</tr>
<tr>
<td>Overexploitation of natural resources</td>
<td>Disruption to freshwater system</td>
<td>Adjustment or relocation of activities</td>
<td>Business</td>
</tr>
<tr>
<td>Pollution</td>
<td></td>
<td>Capital destruction</td>
<td>Underwriting risk</td>
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<td><strong>Transition risks</strong></td>
<td>Policy and regulation</td>
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<tr>
<td></td>
<td>Technology</td>
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<td>Business model innovation</td>
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<td></td>
<td>Consumer or investor sentiment</td>
<td></td>
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<td><strong>Liability risks</strong></td>
<td>Litigation</td>
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</table>
Use case: select heavy industry companies in East Asia

Stress scenario: disruption to water supply by non-climate drivers for 3 months

Notable impact on credit risk
- Deterioration of the average portfolio credit risk rating
- Over 1/3 moved Investment Grade to Speculative
- The sample’s RWA increased by ~20% in the year following the shock
Increasing frequency and losses from secondary perils

Reoccurrence of high-loss secondary peril

In 2021, 2 secondary perils events caused losses in excess of USD 10 billion each:

- The winter storm Uri in the US
- Floods in central-western Europe

Secondary peril events have been less well monitored and modelled, which is problematic given the rise of their associated losses.

New York Federal Reserve – blog series
Flood risks in the Fed’s second district

SwissRE (2022) Natural catastrophes in 2021: the floodgates are open
Capital depletions would increase quickly if more severe floods were to hit the densely populated western part of the Netherlands.

Potential losses estimated from USD 10 billion to USD 25 billion depending on the severity of flood.

Implications for financial stability
CDP water security questionnaire

2020 data set
• Identified USD 301 billion at risk
• The cost of response is estimated at USD 55 billion

2021 data set
• USD 13.5 billion in assets already stranded
• USD 2 billion is at risk due to water issues

2022 data set
• Unexplored water-related opportunities amongst reporting entities worth at least USD 436 billion
Need to build future resilience through understanding of risk

Basin physical risk (water scarcity, flooding, water quality, and ecosystem services)

Thank you!

Reshaping the Actuarial Landscape

A Report of the IAA Future Actuary Taskforce

Presenters: Jill Hoffman

IAA Townhall, Lisbon
November 2023
Who is the Future Actuary?
Actuaries Today Harnessing Our Strengths

Skills

Domain Knowledge

- Emotional Intelligence
- Artificial Intelligence
- Leadership
- Strategic Thinking
- Climate Risk
- ESG
- Data Science
- Banking
- Governance
- Risk Management
- Government / public sector
- Pension
- Insurance
- Analysis
- Mathematics
- Programming
- Growth Mindset
- Ethics
- Synthesis
- Customer Focused
The Landscape of Tomorrow Domain Opportunities

- Artificial Intelligence
- Mature Economies
- Public Sector
- Risk Management
- Common Domains
- Banking
- ESG
- Traditional Fields
- Climate Risk
- Fast Growing
- Pension Development
- Regulatory Roles
What is the key skill you want to develop?

ⓘ Start presenting to display the poll results on this slide.
What is the biggest domain for growth for actuaries in the next 5 years?

Start presenting to display the poll results on this slide.
Thank you for your attention

• Chair: Jill Hoffman (Singapore)
• Officer support: Roseanne Harris (South Africa)
• Members:
  • Simon Brathwaite (Caribbean)
  • David Dubois (France)
  • Abe Hernandez (Mexico)
  • Jette Lunding Sandqvist (Denmark)
  • Michael Storozhev (Australia)
  • Victor Wang (Canada)
• IAA Staff: Amali Seneviratne

Report Link
Diversity and Inclusion
A Report of the IAA Diversity and Inclusion Taskforce

Presenter: Lisa Wade
IAA Townhall, Lisbon
November 2023
Diversity is part of a Journey

**Diversity**
- Improving tactical diversity (gender, geography, age, etc.)

**Diversity of thought**
- Improving results (diverse views, practice areas, experience, employment)

**Inclusion**
- Improving access (easier entry into the profession, particularly in countries where the profession is evolving)
Avenues for changing our profession

Good intentions are not enough; one of the best ways to be an ally is to educate yourself and prepare for action.

Leaders can often do the most to make their team feel safe and supported at work.

Nearly 80% of workers in CNBC/SurveyMonkey Workforce Survey want to work for a company that values DEI.

A global economy with diverse stakeholders and consumers requires a profession to be diverse and inclusive in order to remain relevant.
Diversity and Inclusion: Gender Representation

Proportion of Male and Female Candidates: Recommended (2015) and Proposed (2024)

- Male
- Female

2015:
- Male: 85%
- Female: 15%

2024:
- Male: 62%
- Female: 38%
Proportion of NNE and NE Candidates: Recommended (2015) and proposed (2024)

<table>
<thead>
<tr>
<th>Year</th>
<th>Non Native English Speaker (NNE)</th>
<th>Native English Speaker (NE)</th>
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<tbody>
<tr>
<td>2015</td>
<td>43%</td>
<td>57%</td>
</tr>
<tr>
<td>2024</td>
<td>51%</td>
<td>49%</td>
</tr>
</tbody>
</table>
Proportion of Candidates by Region: recommended (2015) and proposed (2024)

- **ALOA** = Africa, Latin America, Oceania, Asia.
- **EUR** = Europe.
- **USC** = United States and Canada.

<table>
<thead>
<tr>
<th>Region</th>
<th>2015</th>
<th>2024</th>
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</thead>
<tbody>
<tr>
<td>ALOA</td>
<td>29%</td>
<td>20%</td>
</tr>
<tr>
<td>EUR</td>
<td>36%</td>
<td>38%</td>
</tr>
<tr>
<td>USC</td>
<td>35%</td>
<td>43%</td>
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</tbody>
</table>
“Everyone Thinks of changing the world, but no one thinks of changing themselves.”

~ Leo Tolstoy
Have you attended Diversity & Inclusion training in the last 2 years?

Start presenting to display the poll results on this slide.
Do you think that Diversity & Inclusion training should be mandatory for IAA Leaders?
Would you be willing to attend Diversity & Inclusion training from the IAA?

Start presenting to display the poll results on this slide.
Diversity and Inclusion Update

Current Work Plan:

• FMA Survey
• Webinar with a panel discussion on Gender and Pricing
• Training sessions on unconscious bias for IAA Leaders
• Diversity Workshop during Seoul 2024

IAA Town Hall - 18 November 2023
Possible actions for the IAA

**Facilitate conversations**
IAA is uniquely placed to help global associations learn from each other
- Seminars and Panels
- Sharing of Information
- Polls

**Education for volunteers**
Build, revise and connect to foster success.
- Coaching
- Mentoring
- Sponsoring

**More diverse leadership**
Diversity may not happen naturally; it often requires intention.
- Assign with intent
- Building Capacity
- Widen the pool

**Actuarial elements of diversity**
Evaluate the who, what, where, and how of your business model.
- Pricing
- Products
- Impact of D&I

• Global profession, inclusive, interconnected, growing
• Need to shift to association of associations + Scientific Sections
• Build common critical mass of actuarial knowledge & tools
• Ensure quality of actuarial services around the world
• Respect subsidiarity and local autonomy
• Enable the profession to better help optimize fact-based decisions
• Become a partner for supranational entities
1998
Full Members
Associate Members
Non-member Association
Actuaries, No Association

41 Full Members, 31,366 Actuaries, average 765/Member
73 Full Members, 89,702 MWAC, average/Member: 1229, 19 Associations with 1000+ actuaries

MWAC: 286%/1998
4,3%/yr

2023
- Full Members
- Associate Members
- Non-member Association
- Actuaries, No Association
Score card and moving forward

• Proud that the IAA achieved most objectives!
• Number of actuaries increased by 4,3%/yr, approximately
  – G7 population growth about ½%/yr from 2000 to 2021 vs ~3,1% GDP
• Recognition of the profession greatly enhanced, with high credibility
• But need to deepen risk management vs risk measurement
• Life/death, health, physical & financial risks but also climate, AI, truth
• Increase research on strategic policy options, eg. optimal mitigation paths
• Increase outreach and communications: key challenges are external!
  – May 2023 Adaptation Gap paper should be widely promoted
  – Same with November 15 News release on Climate Risk Management