

The image features the Aurecon logo in white lowercase letters with a green dot above the 'a'. Below the logo is the tagline 'Leading. Vibrant. Global.' in green, followed by the website 'www.aurecongroup.com' in white. The background is dark grey with a large, stylized green globe in the center-left, surrounded by white and green wavy lines and a pattern of small green dots. The bottom right corner has a grey and green geometric design.

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**METAMORPHIC RISK –
DISASTER VS
OPERATIONAL RISK**

- 1. Risk Management: Disaster vs. Operational Risk**
- 2. Operational Risk – A disaster waiting to happen**
- 3. Flipping the risk coin**
- 4. Addressing operational risk management**
- 5. Operational risk management – narrowing the gap**
- 6. Questions**

1. Risk Management: Disaster vs. Operational Risk

- Risk Management is dependant on the context of a risk niche.
 - Examples: disaster risk specialists consider only hazards that could result in catastrophic impacts (e.g. earthquakes, hurricanes, tsunamis, bombs, explosions, acts of terrorism etc.);
 - Operational risk specialists focus on risks relating to an organisations' activities (e.g. crane failure, conveyor belt malfunction, occupational injury, ergonomics, etc.);
- 'Risk Management' = more than an assessment, evaluation or treatment of a particular risk niche (disaster or operational), therefore a consolidation of both risk niches which result in a comprehensive risk assessment within a certain context.

Disaster Risk Management

Response to a natural disaster comprises several operational response mechanisms (e.g. fire brigade, ambulances, etc.) each of which are subjected to operational risks , for example:

- vehicle accidents
- injury to people

This can result in a disaster becoming worse due to lack of essential resources and/or services.

**Comprehensive
risk assessment**

Operational activities can lead to disaster impacts

E.g.: Chernobyl Nuclear Disaster

Operational Risk Management

2. A DISASTER WAITING TO HAPPEN

- Paradigm shift from 'traditional' approaches and concepts of disaster risk management, fresh focus on operational risk management as an integral part of disaster risk management;
- **OPERATIONAL RISK** = 'a risk resulting from a company's business functions, including the people, systems and processes through which a company operates. It also includes other categories such as fraud risks, legal risks, physical or environmental risks.¹
- Prevention is better than cure; operational risk management has something to offer in the 'disaster risk management challenge'

Operational risk can lead to disaster risks. As a case in point, there are a number of well documented cases whereby operational activities of an organisation lead to disasters that cause loss of human life, damage to assets and degradation to the environment (in some cases, irreversible).

1. Operational Risk. 2001. [Online] Retrieved from: http://en.wikipedia.org/wiki/Operational_risk (2011.08.18)

2. A DISASTER WAITING TO HAPPEN cont.

- Cases illustrating how operational risk could lead to disaster risk:



NUCLEAR ~ 1986, Chernobyl, Ukraine

- Nuclear accident;
- Occurred on 26 April 1986 at the Chernobyl Nuclear Power Plant in Ukraine (officially Ukrainian SSR);
- An explosion and fire released large quantities of radioactive contamination into the atmosphere, which spread over much of Western USSR and Europe.



MINING ~ 2010, Pike River Mine disaster (New Zealand)

- Ranks as New Zealand's worst mining disaster;
- Resulted in the country's worst loss of life caused by a single disaster since the 1979 crash of Air New Zealand Flight 901, although this was surpassed by the 2011 Christchurch earthquake.

2. A DISASTER WAITING TO HAPPEN cont.

OIL SPILLS ~ 1989, Exxon Valdez oil spill



- In Prince William Sound, Alaska, on March 24, 1989, when the Exxon Valdez, an oil tanker bound for Long Beach, California, struck Prince William Sound's Bligh Reef;
- 260,000 to 750,000 barrels (41,000 to 119,000 m³) barrels of crude oil was spilled;
- Was considered to be one of the most devastating human-caused environmental disasters prior to the 2010 Deepwater Horizon oil spill, in terms of volume released.

2010, Deepwater Horizon (BP) oil spill



- Also referred to as the BP oil spill, the Gulf of Mexico oil spill, the BP oil disaster, or the Macondo blowout;
- In the Gulf of Mexico;
- Flowed for three months in 2010;
- Impact of the spill continues even after the well has been capped;
- Largest accidental marine oil spill in the history of the petroleum industry.
- Spill resulted from an explosion of Deepwater Horizon, which drilled on the BP-operated Macondo Prospect;
- Explosion killed 11 men, injured 17 others;
- Leak ~ 53,000 barrels per day (8,400 m³/d)

3. FLIPPING THE RISK COIN

Operational Risk leading to Disaster Risk

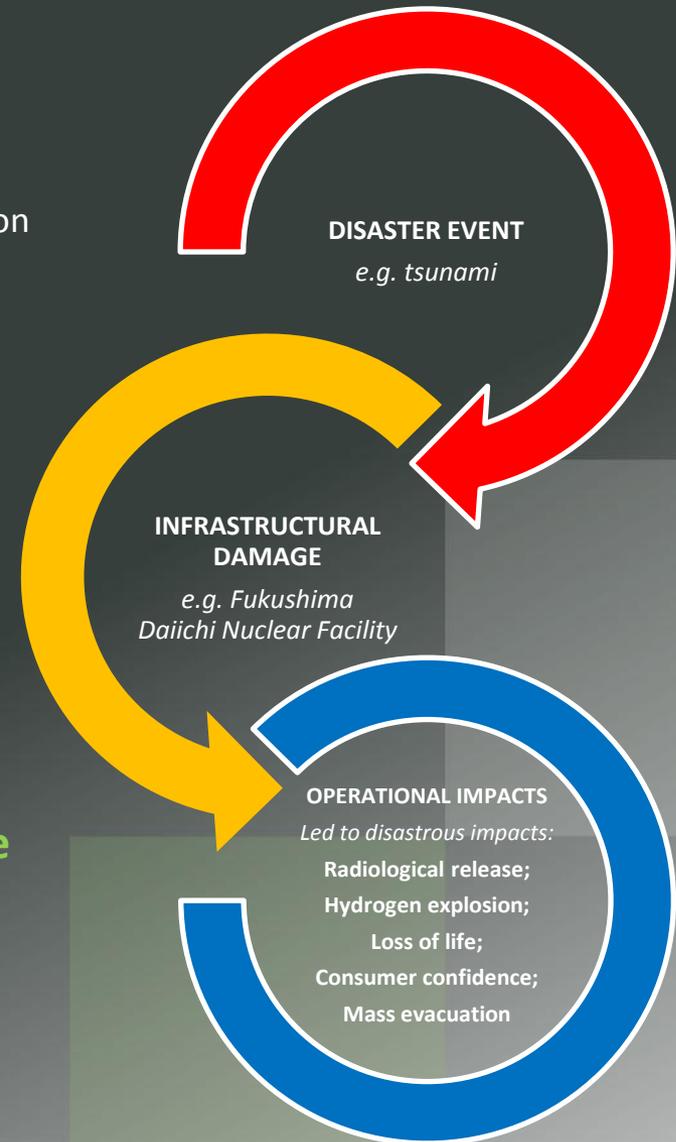
Appropriate risk management can become the 'lifeline' to curb unnecessary impacts in terms of loss of life, environmental degradation and a wave of economic ripple effects ;

VS

Disaster events increasing Operational Risk

Disaster event can in turn lead to operational risks with disastrous impacts

Multi-Scalar Multi-Dimensional Disaster Risk: An illustration of the effect of a natural hazard on Operational Risk'



3. FLIPPING THE RISK COIN cont.

The 2011 Tōhoku earthquake (Great East Japan Earthquake) and consequent tsunami led to severe infrastructure damage to the Fukushima Daiichi Nuclear Facility.

Destruction due to a ‘natural’ hazard caused operational risks that culminated in:

- Damage and/or destruction to 32 600 buildings and 3700 roads;
- 16 000 deaths, 5717 injuries, 4 666 people missing;
- Evacuation of ~ 200 000 people from radiation zone.



3. ADDRESSING OPERATIONAL RISK MANAGEMENT

- Risk Management ~ underpinned by pro-active mind-set;
- Traditional Risk Assessment methodologies *inter alia*:
 - International Standard for Risk Management – ISO 31000:2009 & ISO 31010:2009;
 - $R=V \times H/C$
 - **Operational Risk Assessment**



★ Quantitative methodology
frequency + probability + severity = risk classification
coupled to accident scenario based risk assessment methodologies



operational decision making

4. NARROWING THE GAP

- The Operational decision making process then involves the following elements:
 - Risk Tolerance** = An organisation's level of risk that they will accept in order to balance risk, probability and impact costs;
 - Willingness to Accept** = the organisations' reasoning for their level of Risk Tolerance;
 - Willingness To Pay** = The motivation for paying to mitigate a risk instead of recovering from a possible incident.
- A gap exists between an organisation's **Willingness to Accept** and **Willingness to Pay**
- At the same time, no matter how many mitigation measures you have in place, there will always be a possibility of an incident occurring;

The challenge is therefore to minimise this gap – highlighting the pro-active approach to all risk management.

Risk management incorporates both disaster risk and operational risk that are not mutually exclusive in the realm of risk management.

5. QUESTIONS

