



Harmony – Bambanani

# THE STATE OF OCCUPATIONAL SAFETY IN THE SOUTH AFRICAN MINING INDUSTRY: PROGRESS, SUCCESSES, CHALLENGES AND PROPOSALS

MOSH Learning Hub Day of Learning – Avianto, Muldersdrift

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26 July 2024



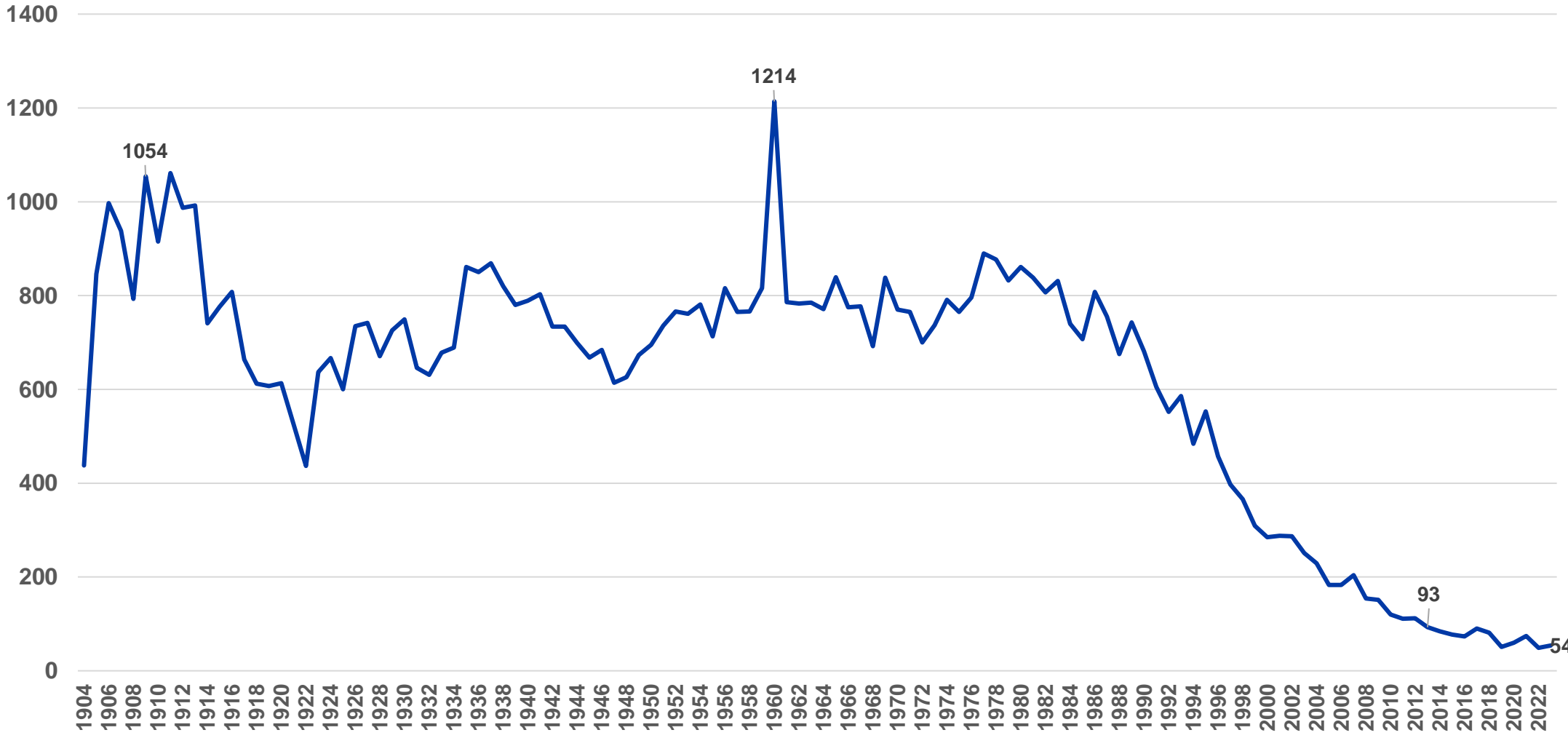
**MINERALS COUNCIL**  
SOUTH AFRICA

# 2024 Occupational safety and CTF milestones

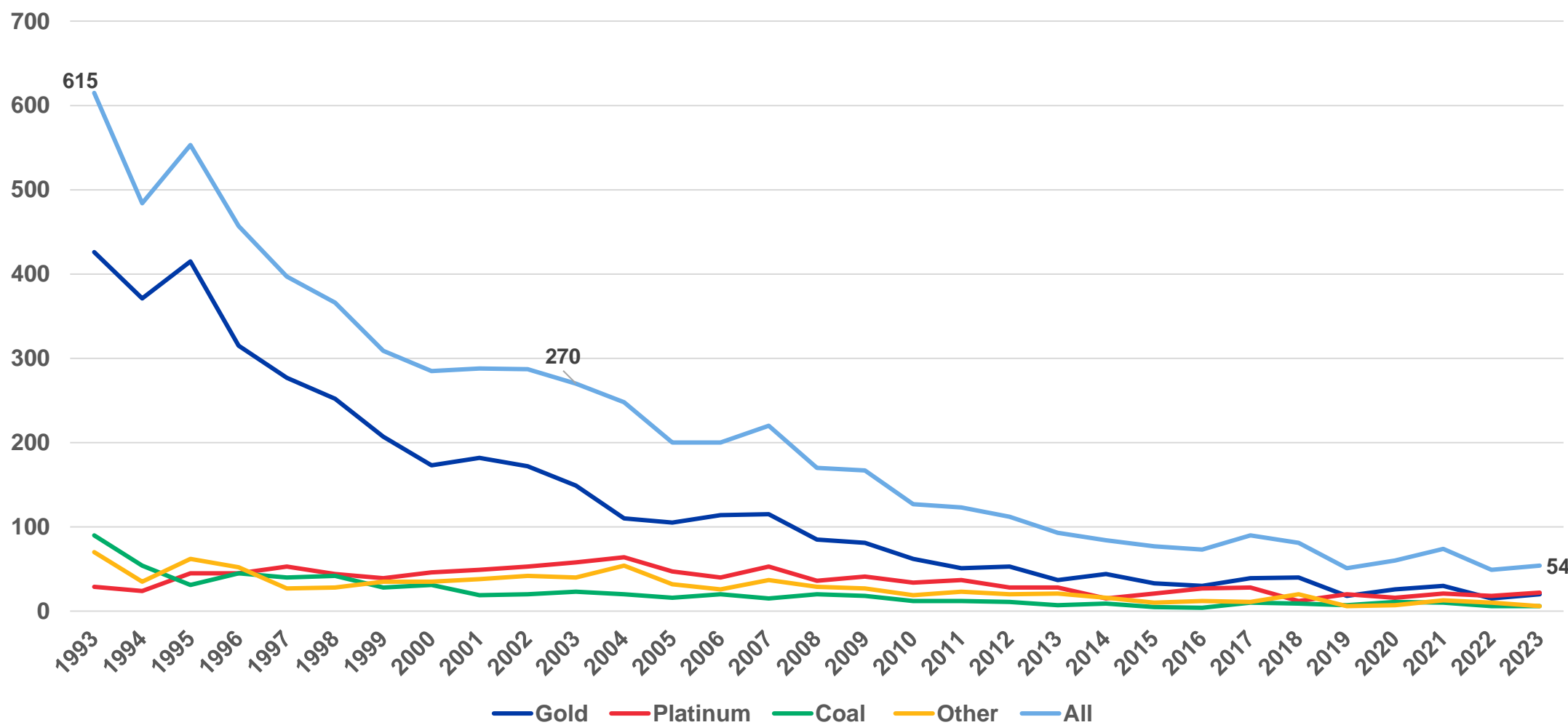
Objective	Milestone	Activity
<p><b>Elimination of fatalities and injuries</b></p> <p>Elimination of :</p> <ul style="list-style-type: none"> <li>• Rock related incidents</li> <li>• Transport and Mining incidents</li> <li>• Railbound Equipment incidents</li> <li>• Fires and Explosions</li> <li>• incidents under the classification of General types of accidents.</li> </ul>	<ul style="list-style-type: none"> <li>• Every fatality is one too many: We will eliminate fatalities by December 2020.</li> <li>• Every mining company must have a target of ZERO FATALITIES.</li> <li>• Up to December 2016, 20% reduction in Serious Injuries* per year.</li> <li>• From January 2017, 20% reduction in Lost Time Injuries (LTI**) per year.</li> </ul>	<p>Timely adopt identified leading practices in line with a guideline as per the Leading Practice Pillar of the CTF.</p> <p>Timely adopt identified research outcomes in line with a guideline as per the Leading Practice Pillar of the CTF.</p> <p>Investigate rehabilitation of employees who have been incapacitated also considering assistance provided to such employees.</p> <p>Programme of work per objective to be identified, developed and implemented.</p> <p><i>(Adoption refers to the full process as per the defined MHSC Guideline for Adoption <b>and must be fully inclusive of all stakeholders</b>).</i></p>
<p><b>Implementation of the approved Culture Transformation Framework (CTF)</b></p>	<p><b>Implementation of the approved framework</b></p> <p>By December 2020 there will be 100% implementation of:</p> <ol style="list-style-type: none"> <li>1) The Leadership Pillar of the CTF</li> <li>2) The Risk Management Pillar of the CTF</li> <li>3) The Bonus and Performance Incentive Pillar of the CTF</li> <li>4) The Data Management Pillar of the CTF</li> <li>5) The Diversity Management of the CTF</li> <li>6) The Leading Practice pillar of the CTF</li> </ol> <p>After December 2020 the remaining pillars will be implemented:</p> <ol style="list-style-type: none"> <li>7) The Integrated Mining Activity Pillar of the CTF</li> <li>8) The Technology Pillar of the CTF</li> <li>9) The Inspectorate Pillar of the CTF</li> <li>10) Tripartism Pillar of the CTF</li> <li>11) Regulatory Framework Pillar of the CTF</li> </ol>	<ul style="list-style-type: none"> <li>• Revise and implement the CTF plan in line with recommendations of the CTF assessment.</li> <li>• Annual programme of campaigns to be developed and implemented to popularise the MHSC CTF pillars.</li> <li>• Develop and implement a programme to deal with Women in Mining and the Rights of Workers.</li> <li>• Timely adopt identified leading practices in line with a guideline as per the Leading Practice Pillar of the CTF.</li> <li>• Develop a fully inclusive modern information system to monitor non-statutory and statutory information.</li> <li>• Develop a guideline for the adoption process as per the Leading Practice Pillar of the CTF; (including the identification of critical controls on OHS risks).</li> <li>• Conduct a two-yearly independent assessment of the entire action plan per stakeholder responsibility.</li> </ul>

# Historical safety performance trends in SA mining industry

The Bad Old Days (Safety in Mining)



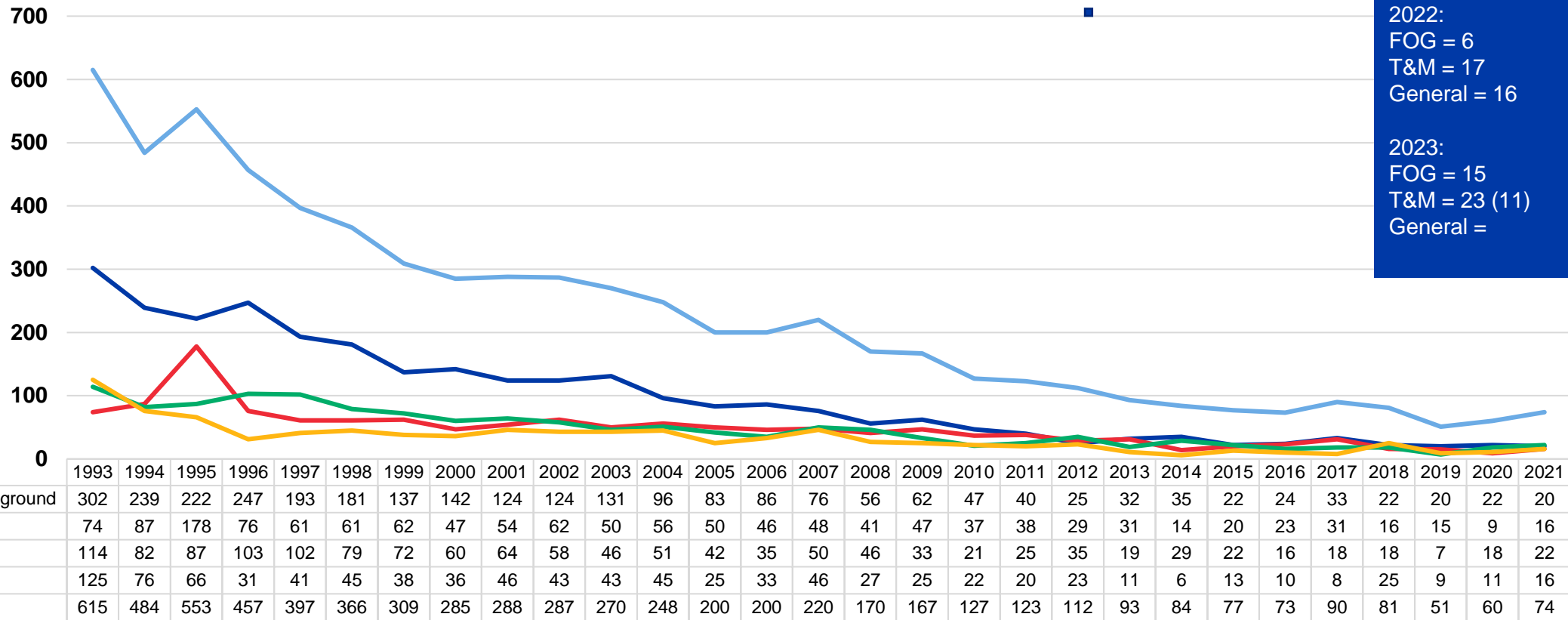
# Number of fatalities per commodity (1993 – 2023)



Reduction from 615 fatalities in 1993 to 54 in 2023 (89% reduction)

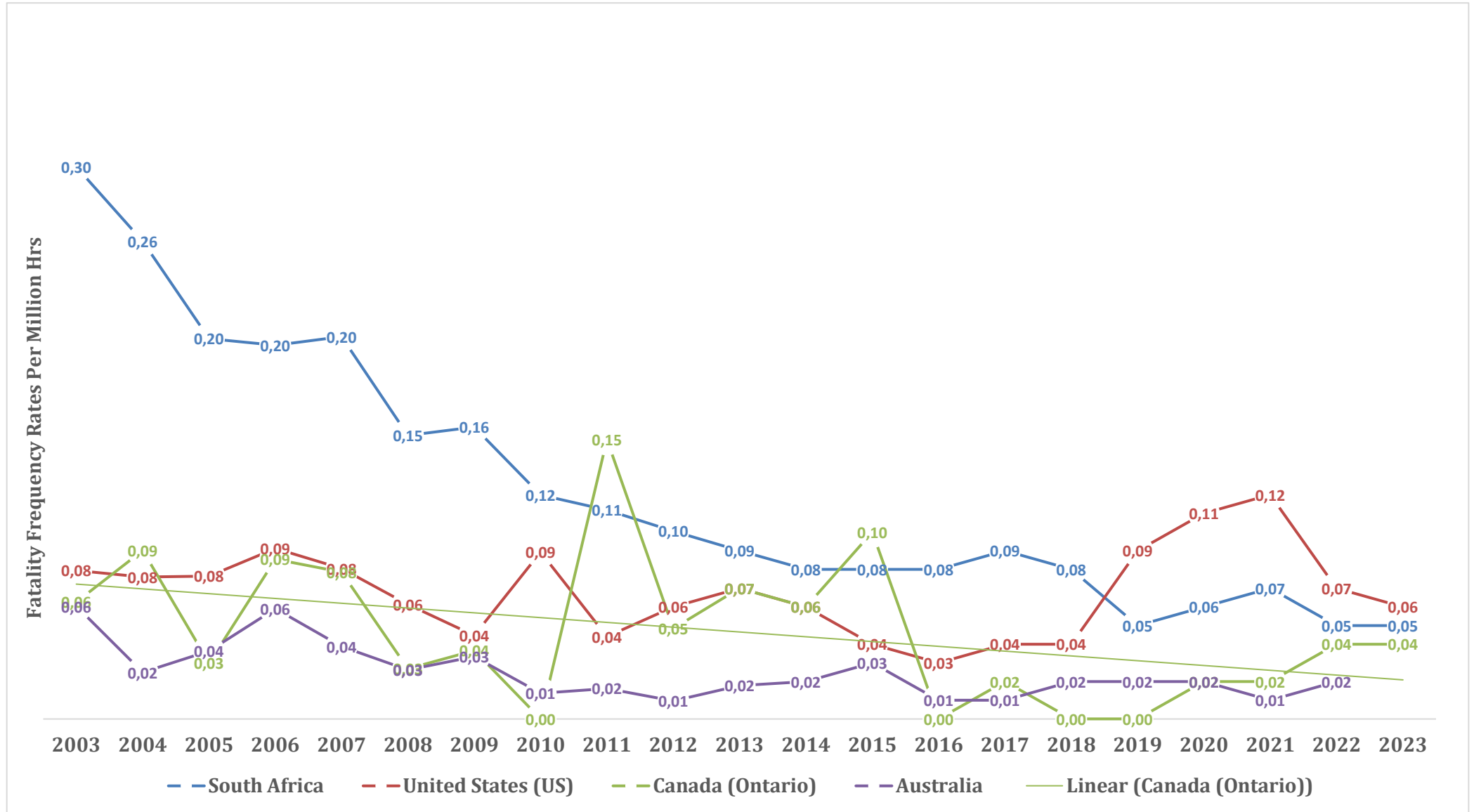


# Causes of fatalities (1993 – 2023)



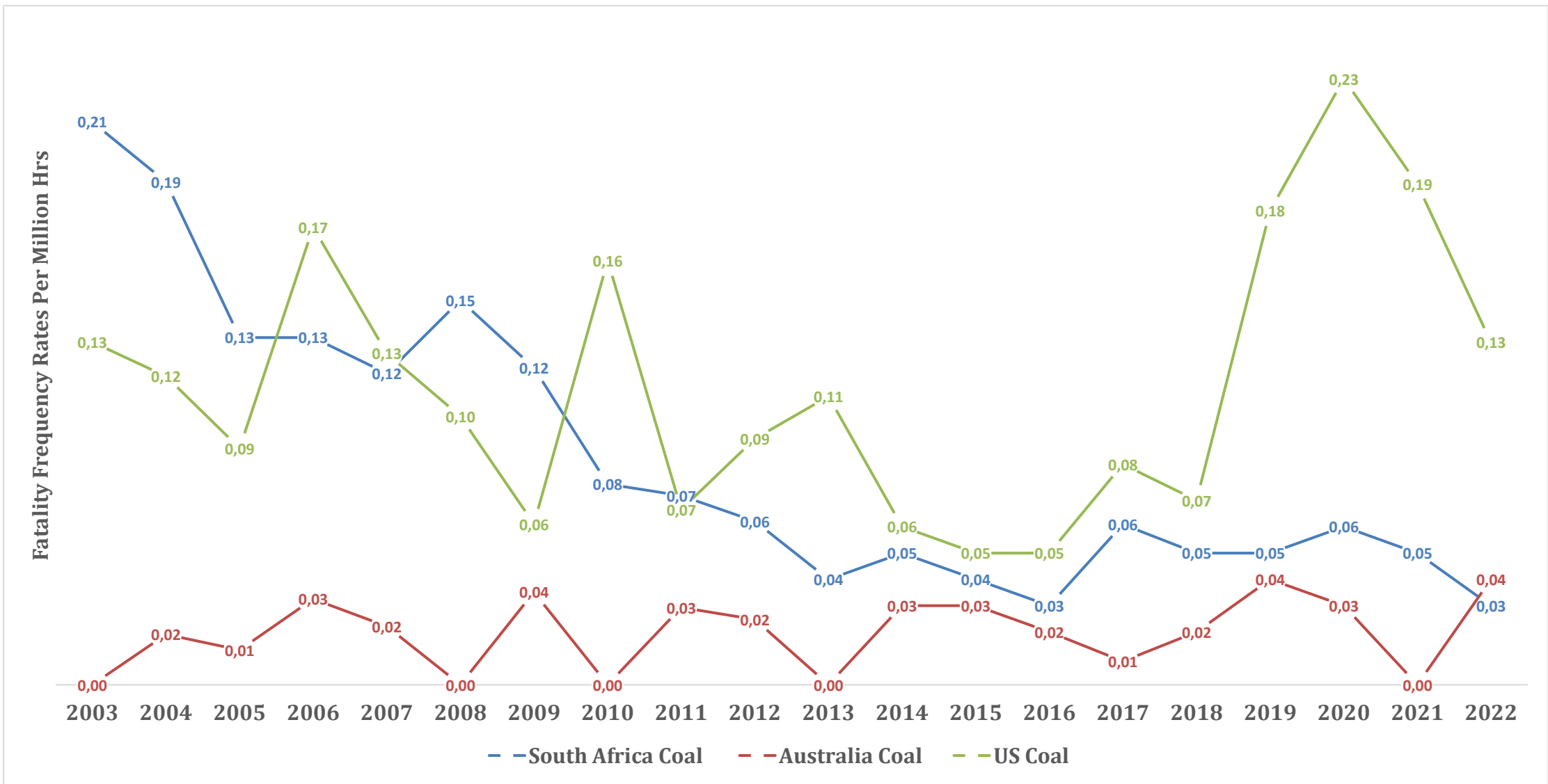
Major causes of fatalities include Falls of Ground, Transportation and General

# SA mining and international mining fatality frequency rates



Comparable to global benchmarks and surpassing ...

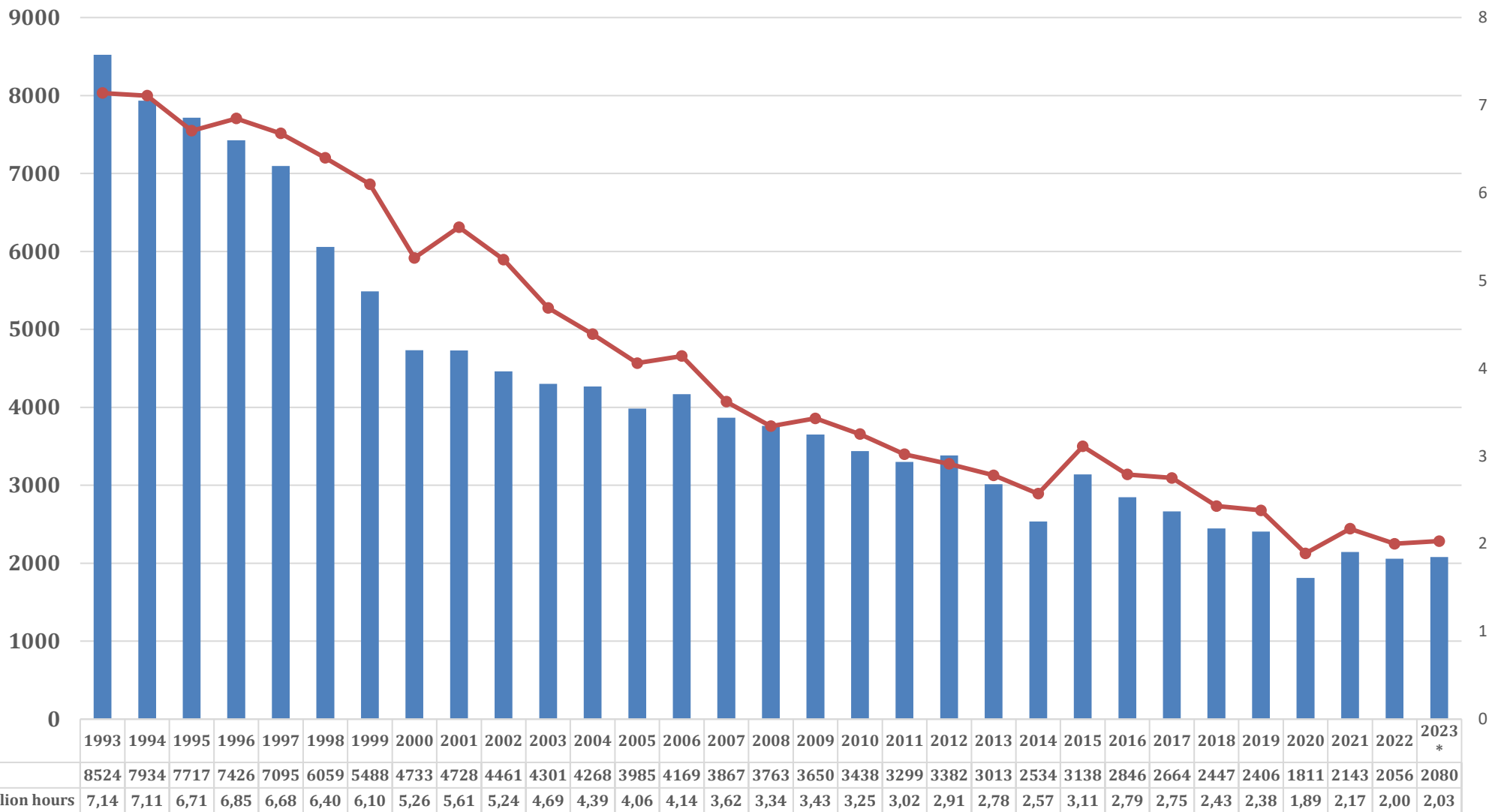
# SA coal mining vs international coal mining fatality frequency rates (2003 – 2023)



SA coal mines safer than coal mines in the US



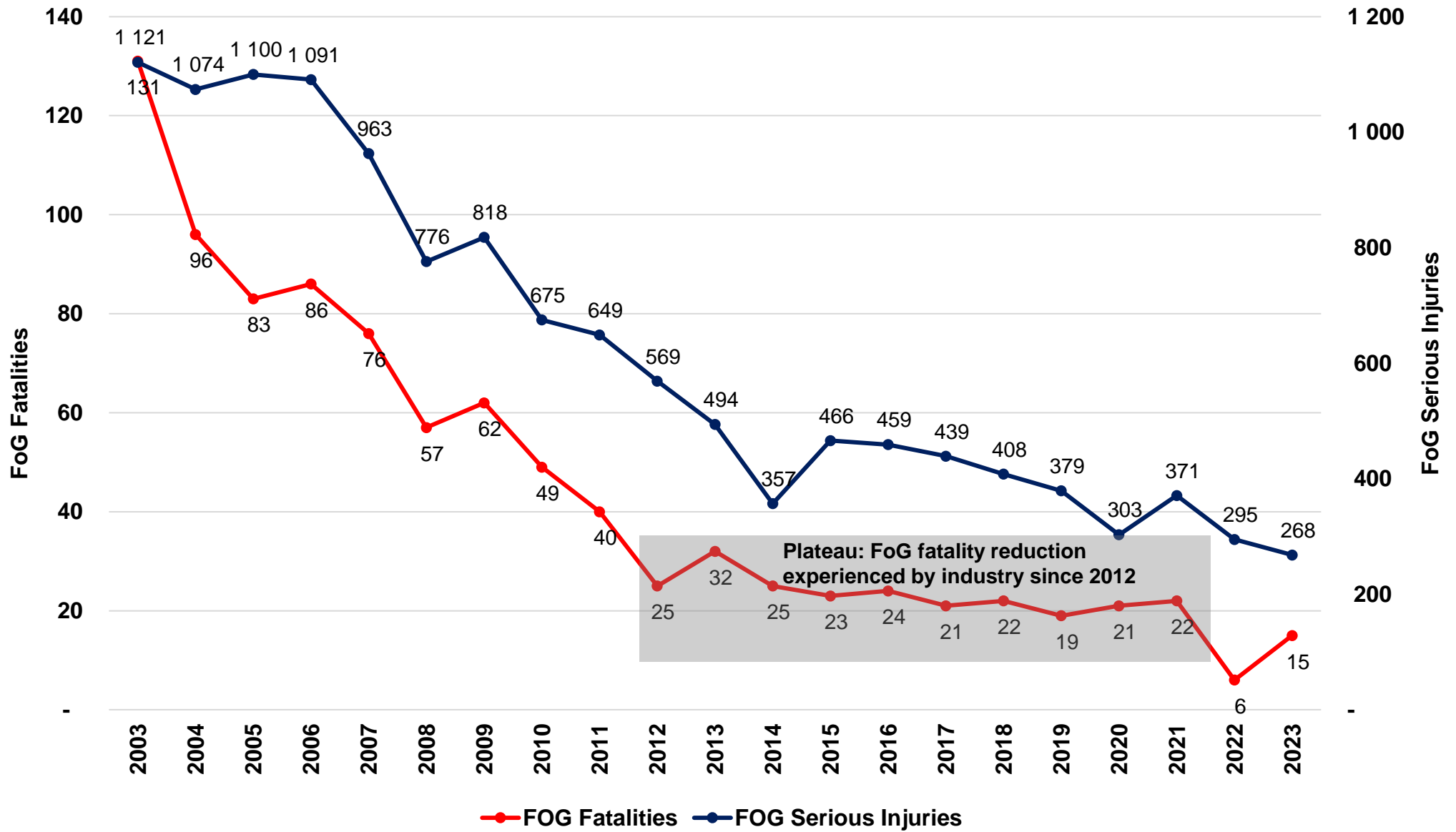
# SA mining industry injuries and injury frequency rates (1993 – 2023)



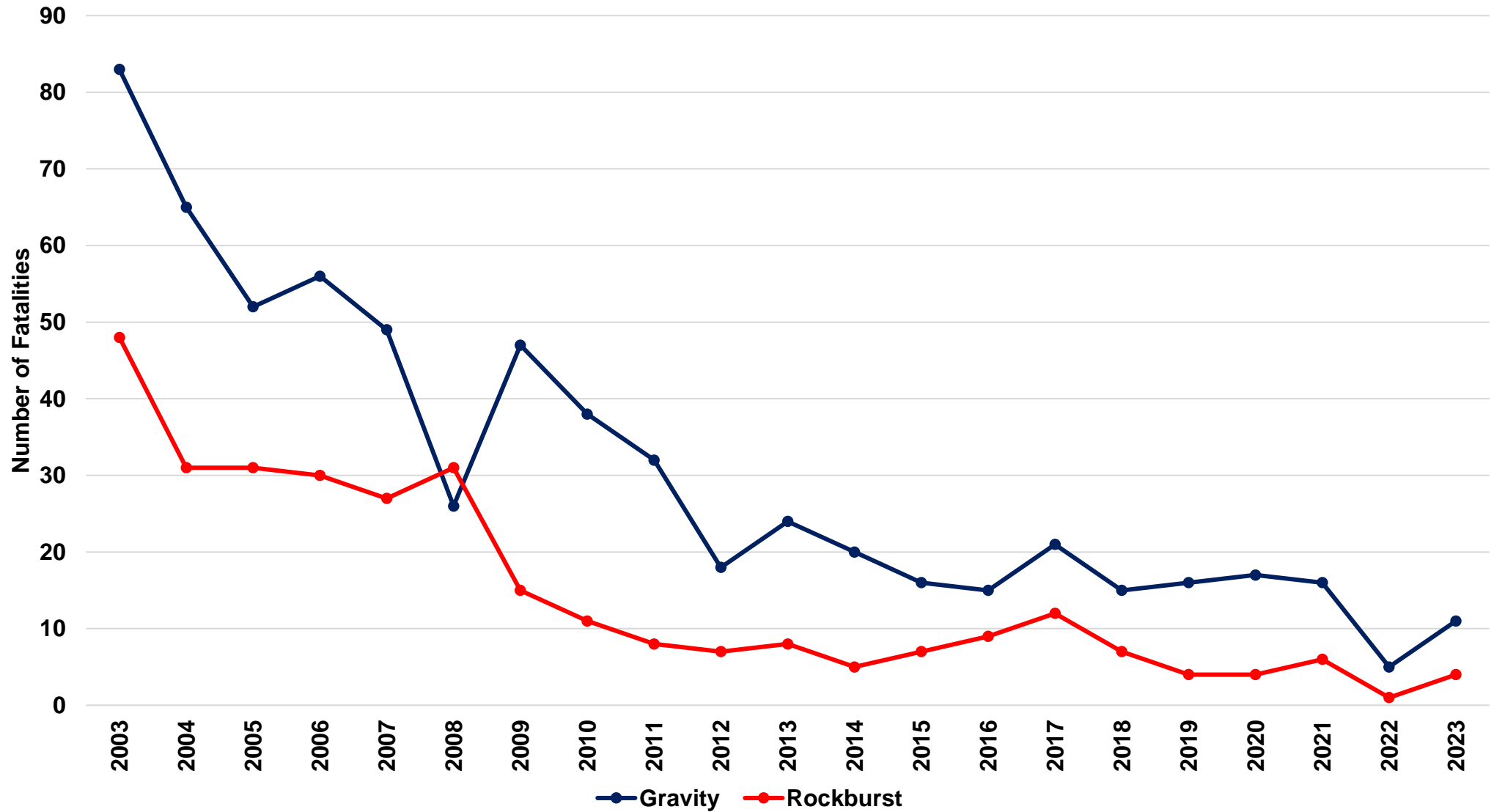
■ Injuries    ● Injury rate per million hours



# FOG serious injuries and fatalities (2003 – 2023)

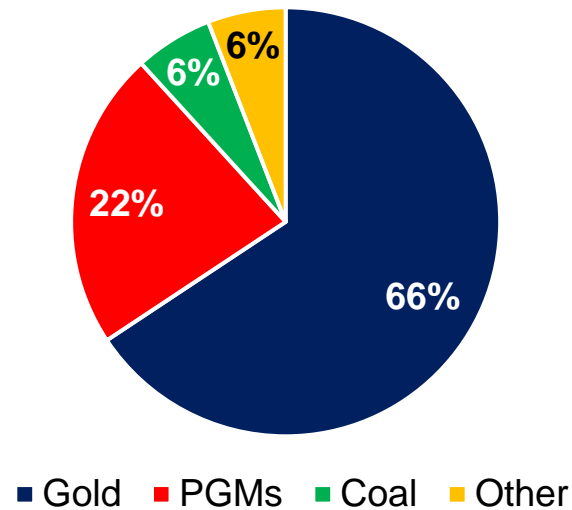


# FOG fatalities – Gravity Falls vs Rockbursts (2003 – 2023)

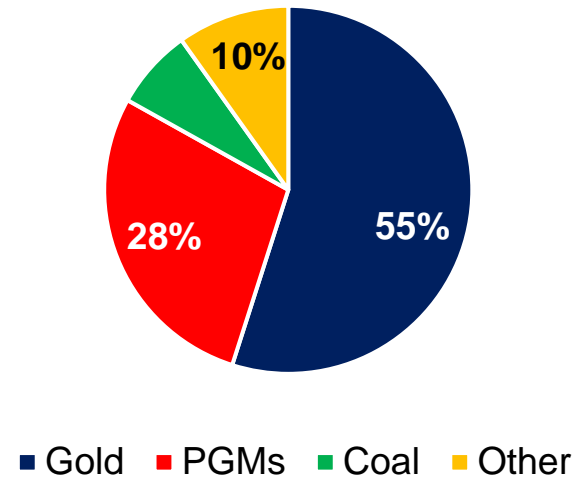


# Percentage contribution of FOG fatalities per commodity (2003 – 2023)

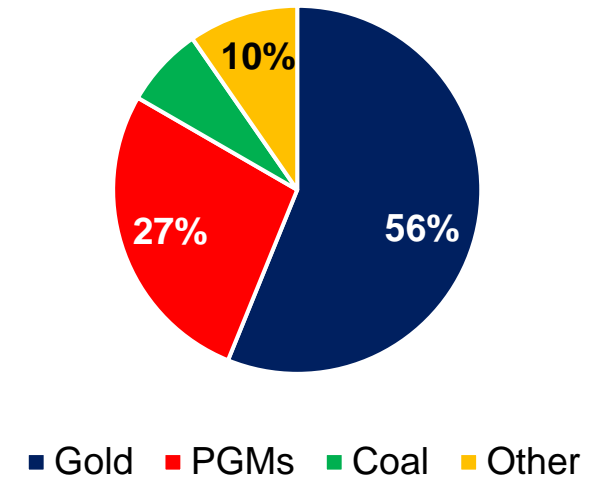
Percentage Contribution per Commodity (2003 to 2012 Fatalities)



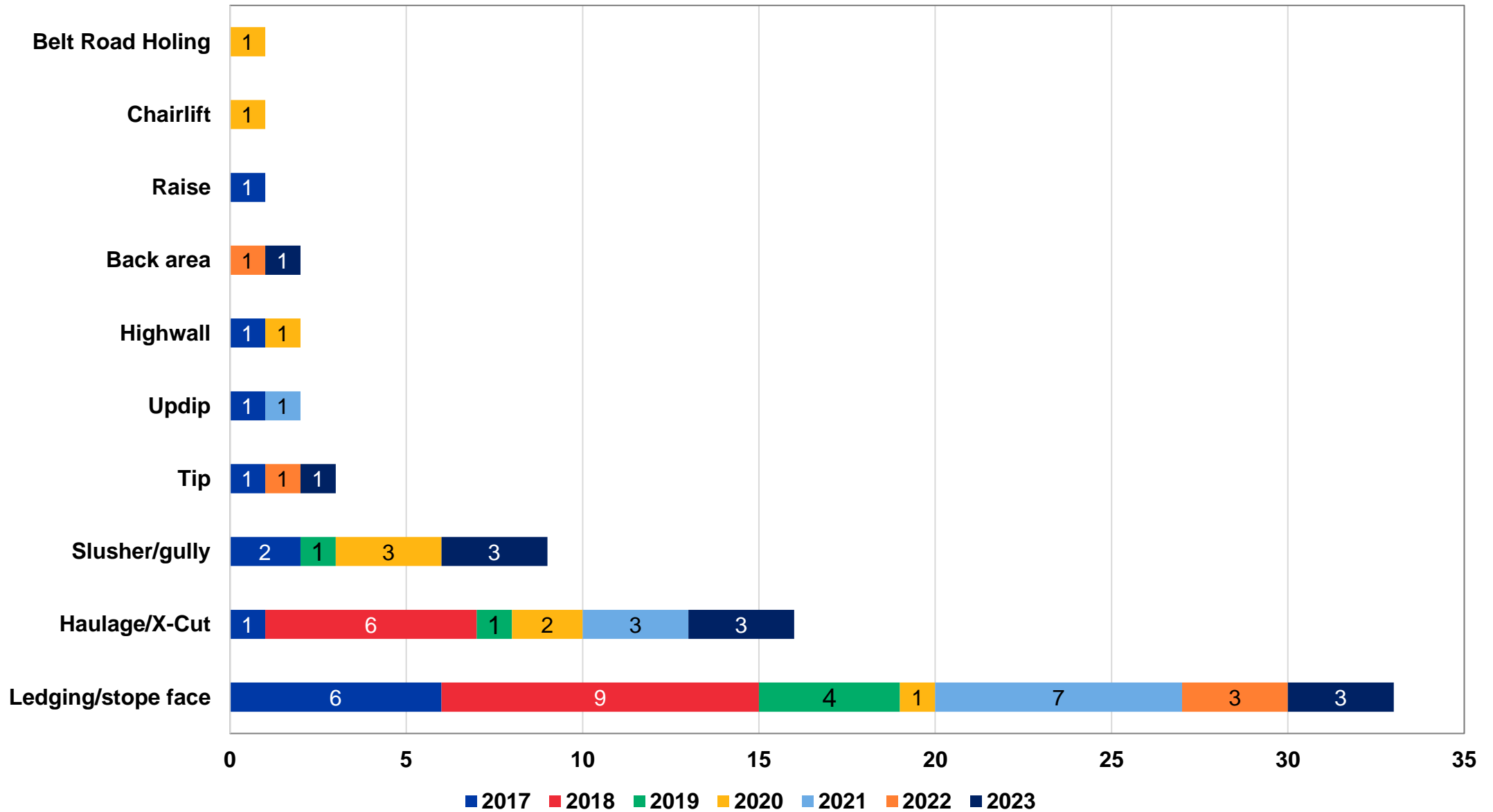
Percentage Contribution per Commodity (2013 to 2022 Fatalities)



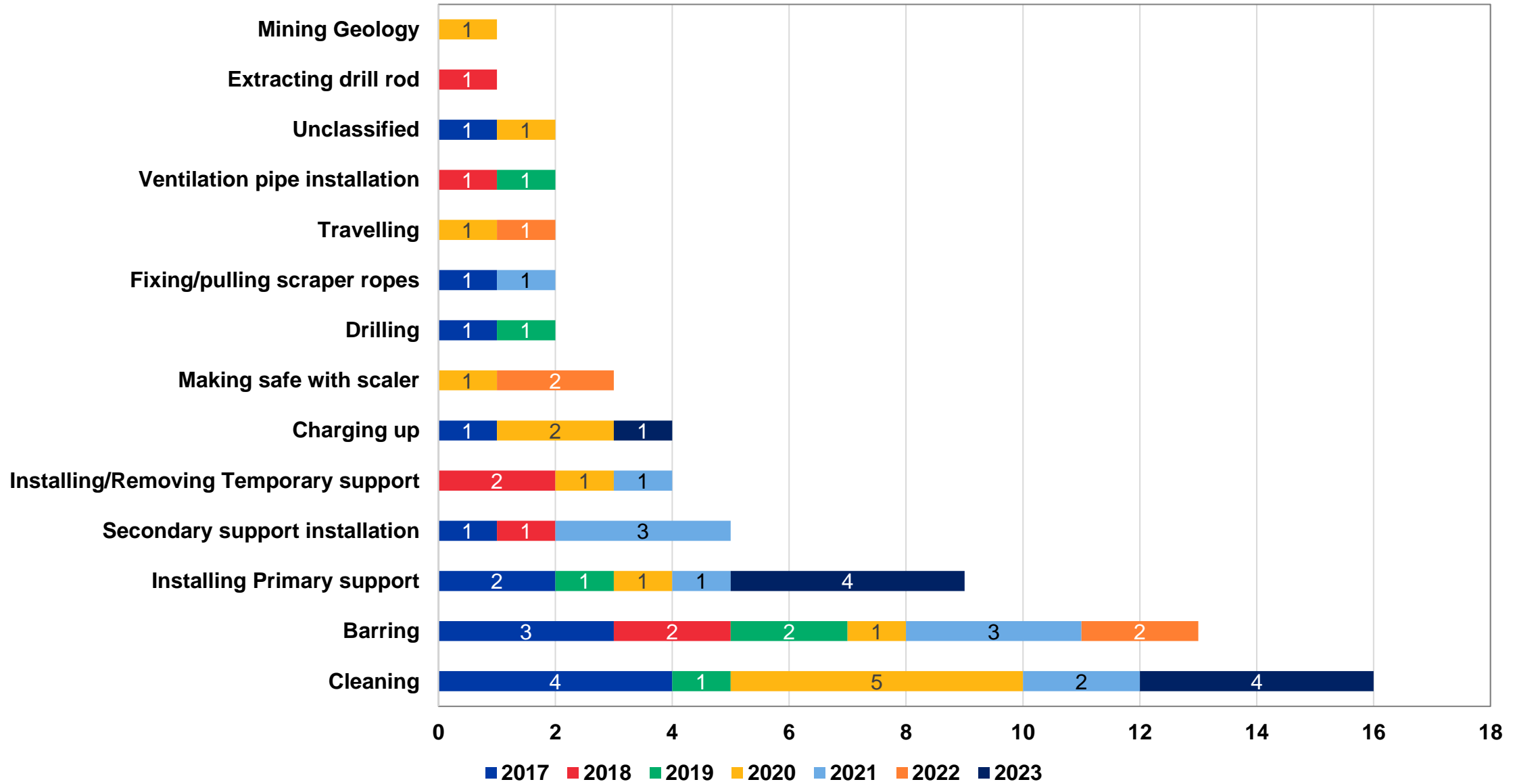
Percentage Contribution per Commodity (2013 to 2023 Fatalities)



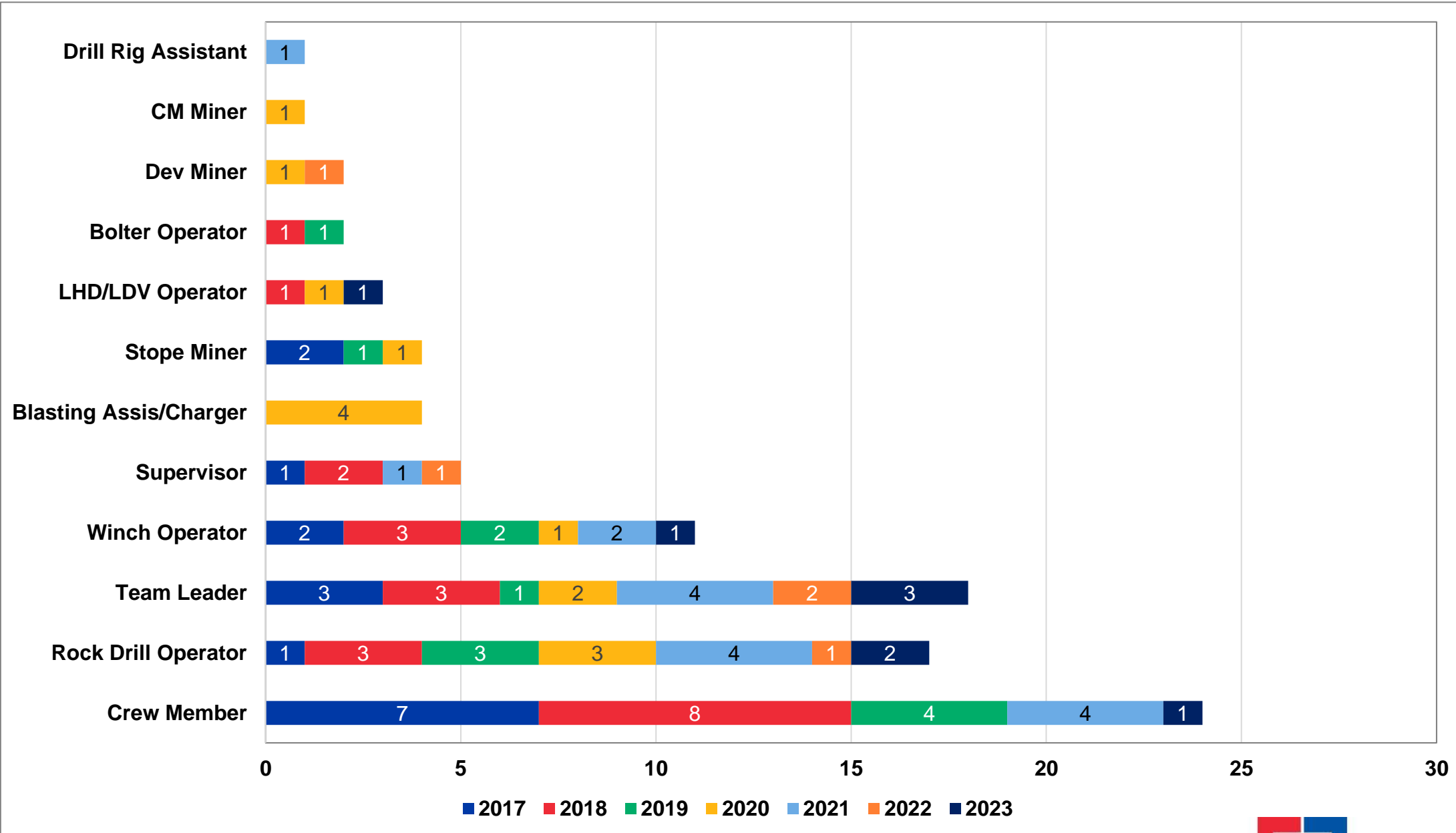
# FOG fatalities by location (2017 – 2023)



# Leading activities during FOG fatalities (2017 – 2023)



# FOG fatalities by designation (2017 – 2023)

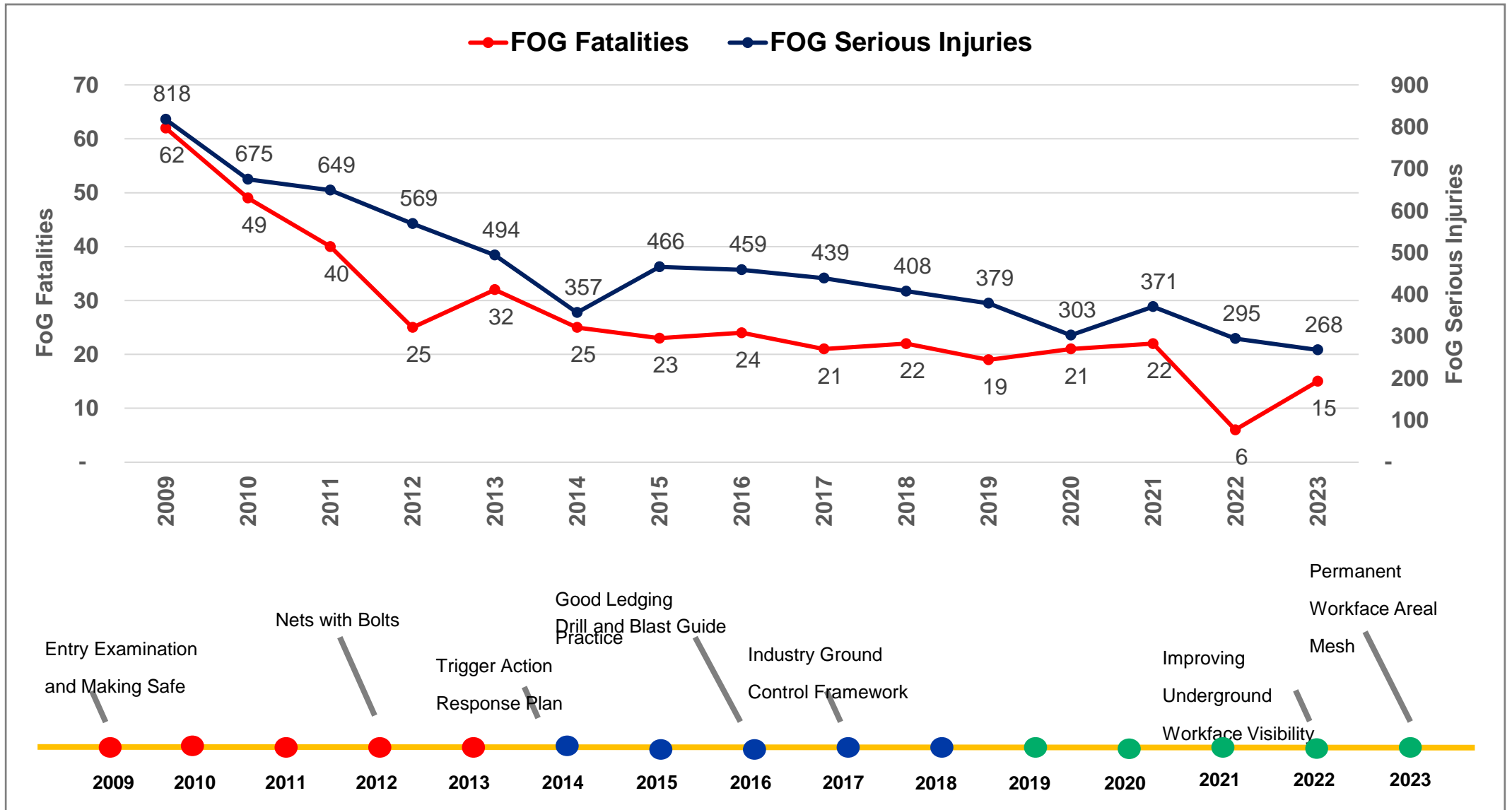


# Progressive and Successful Industry Interventions and Initiatives Towards Zero Harm

# A journey of collaboration

1996	<ul style="list-style-type: none"> <li>Establishment of Leon Commission</li> <li>Introduction of Mine Health and Safety Act (MHSA)</li> </ul>
1998	<ul style="list-style-type: none"> <li>Establishment of the Mine Health and Safety Council (MHSC)</li> </ul>
2003	<ul style="list-style-type: none"> <li>Agreement on 2013 Occupational Health and Safety (OHS) Milestones by stakeholders</li> </ul>
2008	<ul style="list-style-type: none"> <li>Development of Tripartite Action Plans to achieve OHS Milestones</li> <li>Establishment of MOSH Learning Hub within Minerals Council</li> <li>Regional Tripartite Health and Safety Forums</li> </ul>
2010	<ul style="list-style-type: none"> <li>OHS included in Mining Charter</li> </ul>
2011	<ul style="list-style-type: none"> <li>Approved Culture Transformation Framework for South African mining sector with 11 pillars to focus on behavioural aspects</li> </ul>
2012	<ul style="list-style-type: none"> <li>Established Minerals Council CEO Zero Harm Task Team</li> </ul>
2014	<ul style="list-style-type: none"> <li>Stakeholders agreed 2024 milestones on OHS and launched Centre of Excellence</li> </ul>
2015	<ul style="list-style-type: none"> <li>Launch of ICMM Critical Control Management Leading Practice Guide and Adapted to SA Mining Context</li> </ul>
2016	<ul style="list-style-type: none"> <li>Signed MHSC Tripartite Summit Pledge on Health and Safety with Declaration of Actions</li> </ul>
2017	<ul style="list-style-type: none"> <li>Launch of Minerals Council National Day of Health and Safety in Mining</li> </ul>
2019	<ul style="list-style-type: none"> <li>CEO Heartfelt Conversations on Health and Safety</li> <li>Launch of Khumbul'ekhaya Strategy on Health and Safety</li> </ul>
2020 & 2021	<ul style="list-style-type: none"> <li>Just Culture Accountability Framework Leading Practice</li> <li>Resuscitation of MineSafe Conference</li> <li>Innovation and Technology (R&amp;D outcomes)</li> <li>Much more collaboration with OEMs, suppliers, research organisations and universities</li> <li>Collision Prevention Systems (CPS)</li> <li>Fall of Ground Action Plan (FOGAP) – with Six Pillars             <ul style="list-style-type: none"> <li>Improved Workface Visibility (Lighting)</li> <li>Permanent Aerial Mesh Coverage</li> <li>FOG Days of Learning</li> </ul> </li> </ul>
2022	<ul style="list-style-type: none"> <li>Promulgation of Chapter 6 Sub-Regulations (TMM)</li> </ul>
2023	<ul style="list-style-type: none"> <li>CEO/Board Hourly Safety Shares</li> </ul>
2024	<ul style="list-style-type: none"> <li>Review of Implementation of 2024 Milestones on Occupational Health and Safety</li> <li>New Set of Post-2024 Milestones on Occupational Health and Safety</li> </ul>

# Fall of Ground Leading Practices and Initiatives (2009 – 2023)



# Challenges and Proposals

# Challenges

- Major causes of accidents – FOG, Transportation and General
- Industry plateauing trend in safety performance a great concern
- Organisational safety cultures and management of change
- Reconciliation of production pressures and safety demands (Section 54 impacts)
- Frontline supervision (miners, shift-bosses, mine captains) and their leadership
- Worker absenteeism – ageing workforce, wellness, malingering
- Critical control management and performance (efficacy of engineering controls)
- Empowerment and authority of Safety Officers (in decision making processes)
- Mental health
- Psychological safety

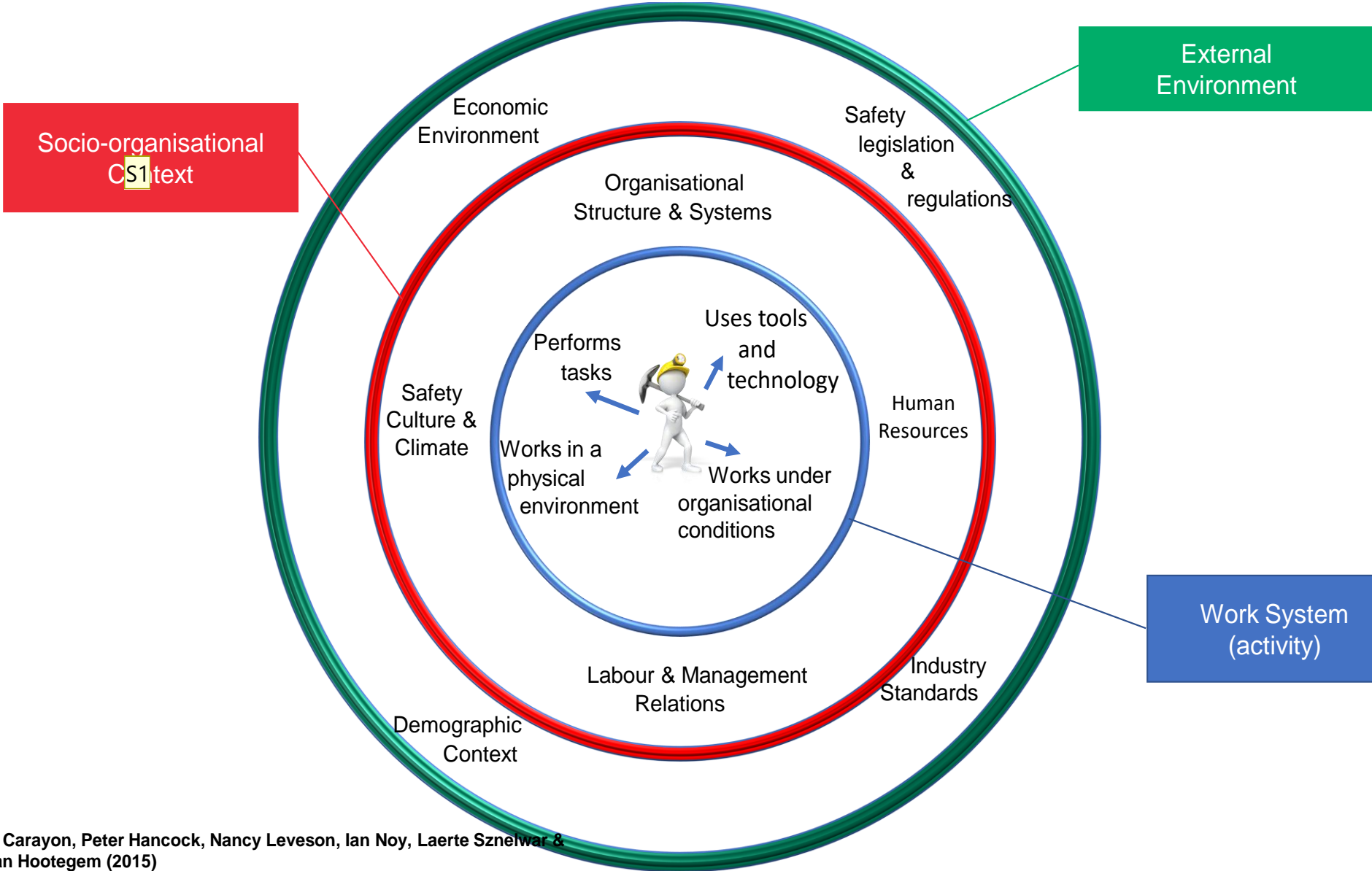
# Proposals

- Identification and adoption of leading practices (FOGs, Transportation and General)
- Implementation of R&D outcomes, innovation and technology (MHSC, Mandela Mining Precinct, OEMs, suppliers, research organisations, universities)
- Effective, management monitoring and improvement of critical (engineering) controls
- Effective organizational safety culture transformation and sustainable (just) management of change
- Effective implementation of mining industry Culture Transformation Pillars (CTF) pillars
- Empowerment of frontline supervisors (transformational leadership)
- Effective resourcing of crews (shortcuts, absenteeism, etc.)
- Education and training technologies
- Digitisation of data and effective decision making processes
- Mental health and psychological safety
- Personalisation of safety at all levels

# Sustainable Safety Performance Improvement and the Socio- Technical Systems (STS) Approach

*It is not only technical systems but also people and society*

# The Socio-Technical Systems Framework

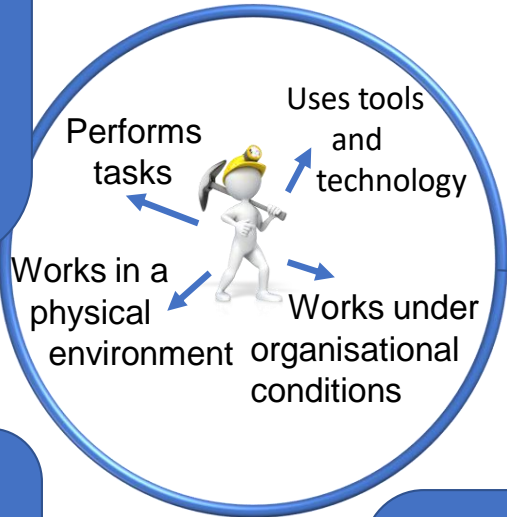


Pascale Carayon, Peter Hancock, Nancy Leveson, Ian Noy, Laerte Sznelwar & Geert van Hooftgem (2015)

# The Socio-Technical Systems Framework

1. Quality of supervision
2. Conflicting demands (safety/ production)
3. Time pressure
4. Coaching and work/task direction
5. Job/ task execution
6. Standards/ Operating procedures
7. Capability (Skill, competence, knowledge, experience)
8. Physical capability and fitness
9. CCM and Control management execution

1. Availability of equipment
2. Right tools and equipment
3. Training & competence



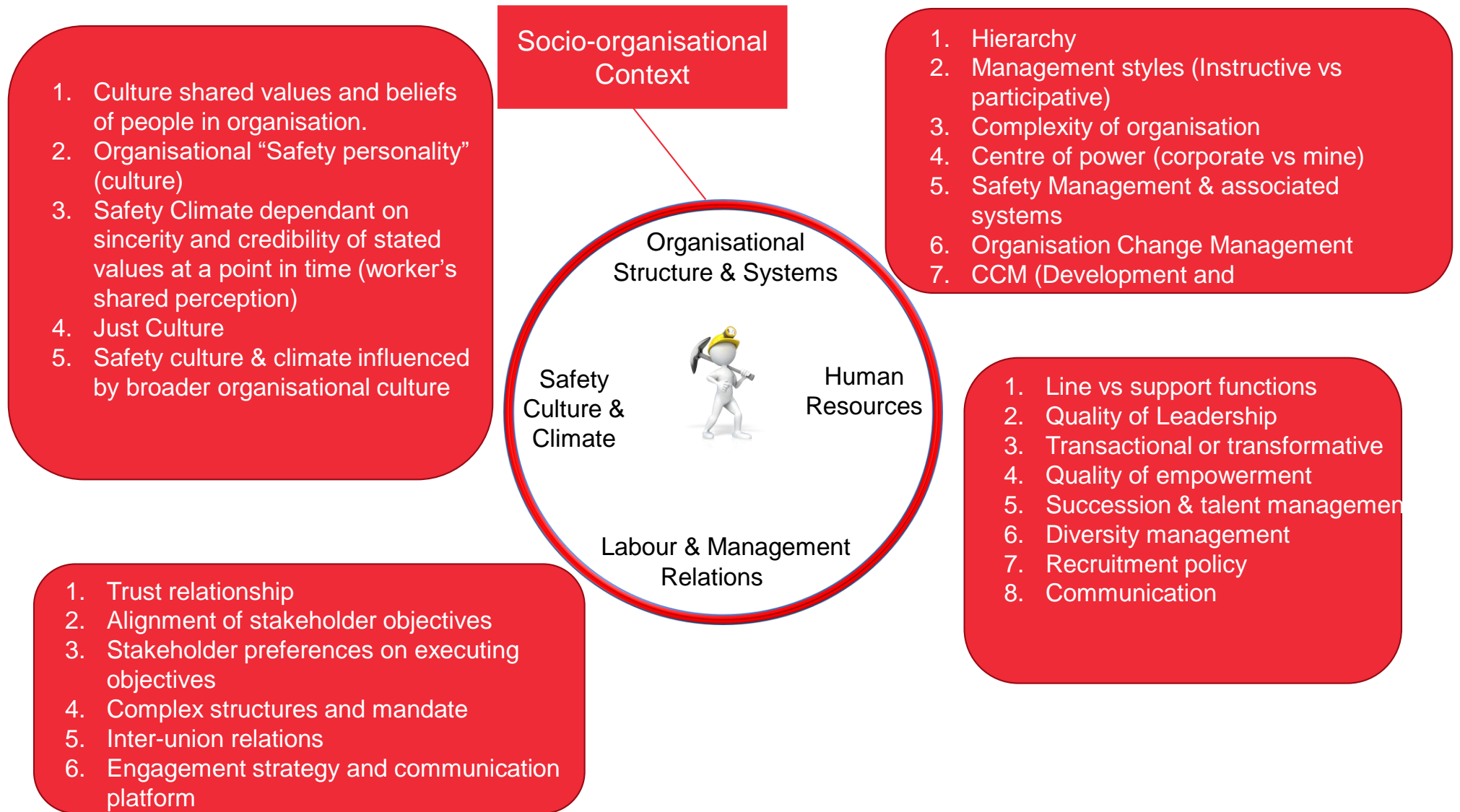
Work System (activity)

1. Environmental stressors (heat, noise etc)
2. Workplace design
3. Hazards
4. Inherent Risk
5. Ergonomics

1. Culture
2. Profitability
3. State of Certainty/ Uncertainty
4. Norms
5. Values
6. Priorities
7. Incentives
8. Individual and team engagement



# The Socio-Technical Systems Framework



# The Socio-Technical Systems Framework

