#### Climate change impacts on the Greek mining industry: perceptions and attitudes among mining industry practitioners operating in the Mediterranean islands of Cyclades

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# Climate change is affecting the mining sector

- Acute and chronic (slow onset) phenomena affect the mining sector in many ways
- Climate change implications have significant economic impacts

Where	Company	Costs
NWT, Canada	Rio Tinto	C\$11,25m <sup>1</sup>
C. Queensland, Australia	Ensham	AUD\$300m <sup>2</sup>

 CRingersland Australia affecting the Mining sector who needs to adapt.

<sup>1</sup> Pearce *et al.*, 2009, <sup>2</sup> Sharma *et al.*, 2013, <sup>3</sup> Grossman, 2012

#### Bottom-up survey performed in Cyclades, Greece during 2014 Scope

- Climate Change beliefs, perceptions, attitudes
- Impacts (frequency, vulnerabilities, costs)
- Adaptation (actions, drivers, barriers, costs)
- Mitigation (attitudes, measures, drivers)

Characteristics

- Face-to-face semi-structured interviews
- 41 practitioners
- 30 companies (total active mining companies)

#### Past experienced impacts

- Most mining companies are already experiencing negative impacts due to extreme weather events
  - Intense rainfall 81%
  - Windstorms 76%
  - Heat waves 51%
  - Cold spells 29%

#### Vulnerabilities - Costs

- Most reported vulnerabilities are related to:
  - management of excess rainwater
  - strong winds
  - high temperatures
  - low temperatures
- Rainfalls costs: €50k-€150k annually
- Windstorms costs: €35k-€115k annually

#### Knowledge gap and Perceptions

- Limited scientific knowledge
- Knowledge deficit exacerbated in small companies
- Observed changes during the past 10-20 years are:
  - Increased temperature
  - More intense rainfall
  - More frequent droughts
- Beliefs about future climate change:
  - Shaped mainly by past experiences
  - Experiences ↔ Perceptions ↔ Expectations
  - 39% are negative. 39% are neutral and 22% are

### Adaptation

- 24% take adaptation measures
- Most adaptation actions are only reactive responses to past adverse impacts.
- Mostly engineering measures
- Common barriers: cost, uncertainty
- Adaptation deficit: Even though climate change is perceived as a threat mining practitioners choose not to invest in adaptation for future climatic conditions

## Mitigation

- 49% take mitigation measures
- Mitigation actions were mostly related to energy efficiency improvements
- Mitigation was aiming to achieve better economic outcomes

#### Increased Institutional Burden

- For better future climate change resilience of the mining sector
- ≻Academia should:
  - Research impact projections at mine site-level
  - Research for robust adaptation strategies
- Governments and Institutional Stakeholders should:
  - Raise awareness
  - Disseminate successful adaptation actions
  - Promote adaptive management

#### Thank you for your attention!