



ESG – WHAT MATTERS FOR ENGINEERS

Presented by:

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Session I: 22nd August 2023



MATRADE Hall,
MATRADE Exhibition & Convention Centre



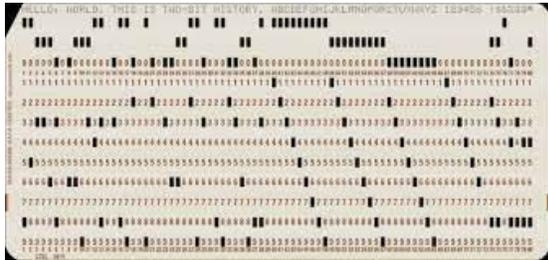
My Personal Technology Shifts



Gadgets



Slide rule



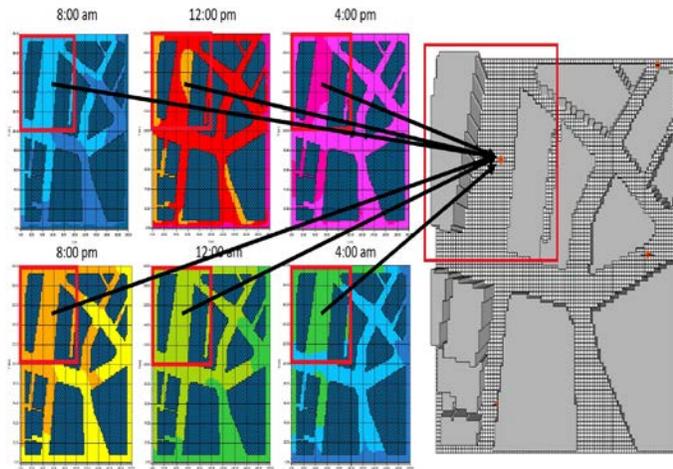
Punch card



Scientific calculator



ASPEN Simulation tool



ENV_-MET
PhD Thesis on Urban Heat Island 2021

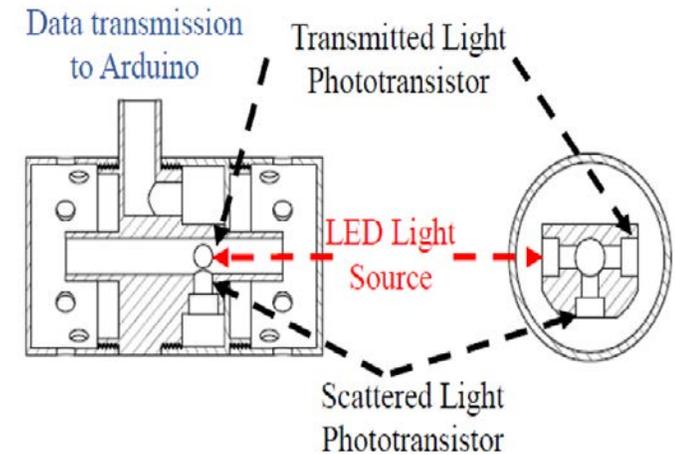
Research



Weather station
Old and automated

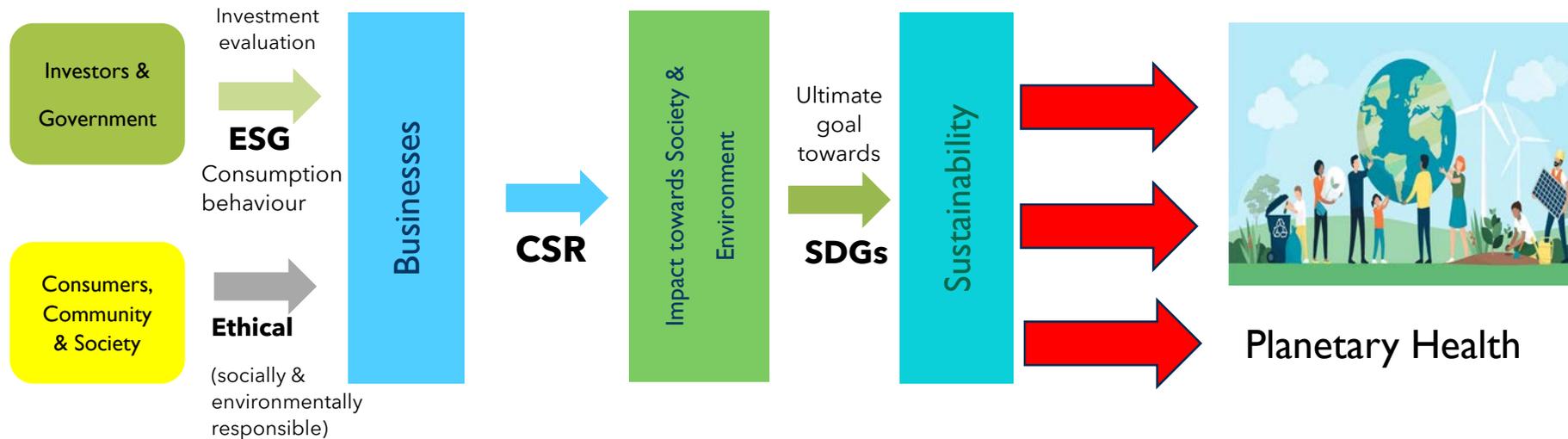


Air sampling at Scotts Base
Antarctica 1999



Ref: Toward industrial revolution 4.0: Development, validation, and application of 3D-printed IoT-based water quality monitoring system 2022 J. Cleaner Production

ESG and Sustainability – different but related



Return of Value ROV

Nair, Pervaiz and Vaithilingam
SUNWAY University, 2022

Relationship between SDGs, CSR and ESG

(Created by Raja Ehsan Shah, R.S.S. June 2022)

A key concept of ESG is 'materiality' - the importance or significance of an issue. For ESG and sustainability, the term 'double materiality' is used

Sustainability: Inside Out Focus on earth and social system

Earth Systems and Society: how to operate within a 'safe space for humanity' based upon environmental thresholds and societal foundations

Quantifying the status of threshold issues such as climate, inequality and nature

Quantifying the current performance of business and finance with respect to the safe operating space

Identifying the societal value at risk and non-financial impact of current financial performance

ESG: 'Outside In' Focus on enterprise value

Business & Finance: how sustainability concerns impact enterprise value at risk

Quantifying impact of sustainability concerns on financial performance

Identifying financial investments needed to improve non-financial performance

Identifying forward risks of current business model with respect to safe operating space

Ref: Pollard and Bebington, University of Lancaster



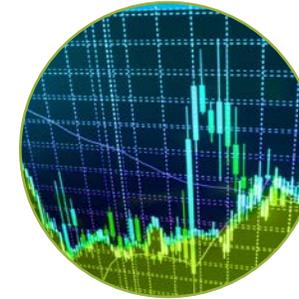
ESG Matters for Engineers



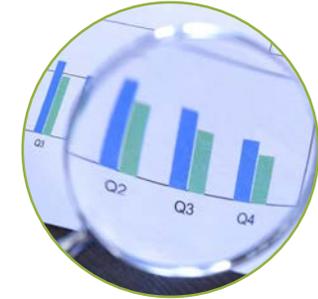
TECHNOLOGY
Innovative
Clean Technology
Smart & Green
Circular Economy



TALENT
Education &
Training
Skills
Competencies



**DATA MANAGEMENT &
ANALYTICS**
Complete -4A
Integrity
Traceable
AI & ML



REPORTING
Disclosure
Document
Mandate
Framework
Standards



ESG Materiality Component Mapping-Ecosystem Approach



Lifecycle stages

Upstream

Midstream

Downstream

Phases

Start/Production/Decommissioning

Start/Production/Decommissioning

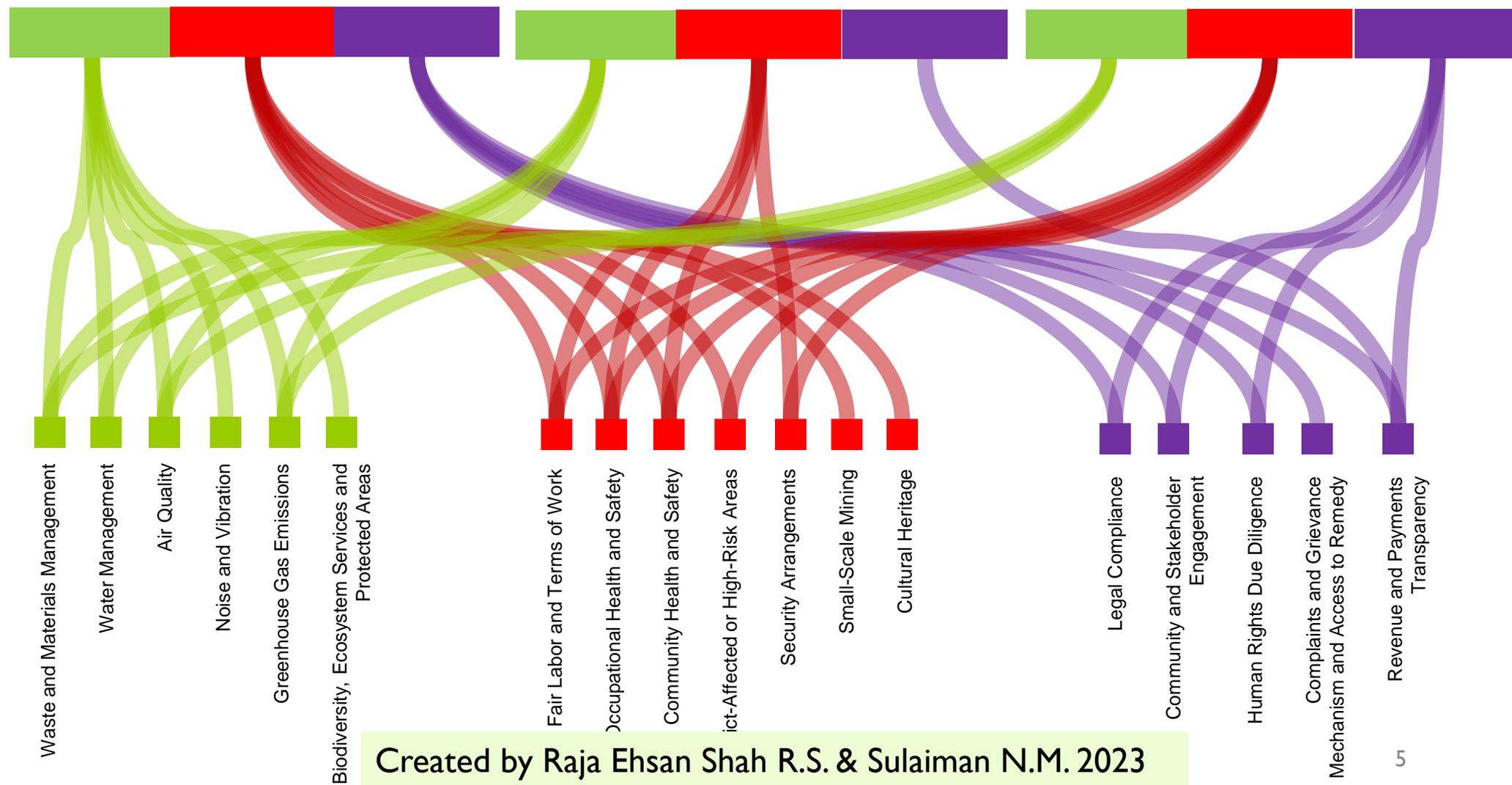
Start/Production/Decommissioning

Interaction with materiality topics

Colour Guide

- Environmental
- Social
- Governance

Materiality topics to be considered



Created by Raja Ehsan Shah R.S. & Sulaiman N.M. 2023



Q & A





THANK YOU



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