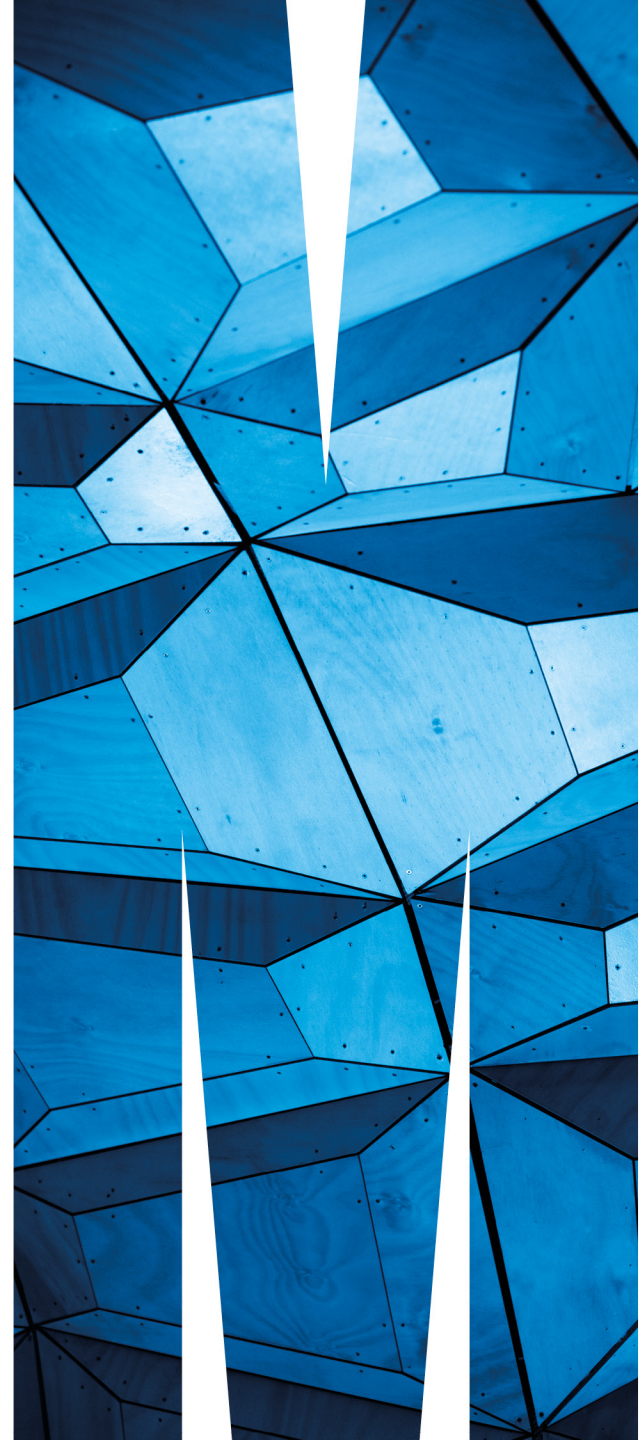


# ACX2900

## Accounting for sustainability

Sustainability performance measurement



# INTRODUCTION AND OUTLINE

- Hand-in of Task 1, Assignment 1 (A3 Poster)
- Recap Week 3 – Film and Assignment Task 2
- Overview of Sustainability Performance Measurement Models
- Introduction to Simulation Game



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## Recap Week 3

- Focus on **economic** and **social** sustainability
  - Unsustainability of shareholder model?
  - Sustainability of stakeholder model (Co-ops?)
  - What does “survival of the fittest” really mean?
- **Assignment 1, Task 2**
  - 3-page reflective piece
  - 1.5 pt line spacing
  - To be uploaded in dropbox via Moodle
  - Due Week 6
  - Make sure to read instructions on Moodle carefully



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# Performance Measurement

# Quick Introduction - Performance Measurement

- Regular measurement of outcomes and results
- Through reliable data on the effectiveness and efficiency of programs
- **Input:** Resources, for example
  - Human resources
  - Funding
  - Resources in kind (e.g., water, machinery etc)
  - Time
- **Output:** Generally: products and services delivered
  - Completed result of a specific activity, whether executed internally (e.g., by the organization) or externally (e.g., by an external contractor)
- **Outcome:** *Specific result a program is intended to achieve*
  - Can also be defined as specific objective
  - Not what the program actually produced itself (the output), but the consequences of those products, services, or assistance

# Quick Introduction - Performance Measurement

- KPIs
  - Key Performance Indicators
- Set of **quantifiable measures**
- Tool that is used to measure how effectively goals are being achieved
- Quantification of (business, national, international, or personal) objectives
- Helps to review performance to determine areas of success and improvement



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# Overview of Sustainability Performance Measurement Models

# RECAP – Scientific definition of sustainability

- Karl-Henrik Robèrt
  - Swedish cancer scientist,
  - Important figure in the worldwide sustainability movement: *The Natural Step Framework* (1989)
- Sustainability is the capacity of our human society to continue indefinitely with the natural cycles (**Intergenerational equity/equality**)
- *The Natural Step* believes the root causes for unsustainability should be taken into account when designing for sustainable solutions and satisfaction of fundamental needs
- Root causes are derived from a scientific understanding of our socio-ecological systems: the interactions between humans in society and between humans, their organisations and the ecosystem

# RECAP – Root causes of unsustainability

- Root causes of unsustainability:
  1. Society mines and disperses materials from the lithosphere into the biosphere faster than they are returned to the Earth's crust (e.g. oil, coal, minerals, metals).
  2. Society produces and concentrates substances faster than they can be broken down by natural processes — if they can be broken down at all (e.g. plastic, dioxins).
  3. Society inhibits physically nature's ability to run cycles/regenerate (e.g. over-harvesting of trees, fish, fresh water or other disturbances like over-paving fertile land or soil erosion).
  4. Social structures: Barriers to people meeting their basic needs (e.g. economic and financial systems that lead to inequality and that allow or even promote the three ecological causes above).

# And then there is... The Doughnut!

- [Kate Raworth's Doughnut Economics](#)
- Challenge to meet the needs of all within the means of the planet



# Need for new measurement models

- If a business wants to contribute towards sustainable development they **need to set targets** in these areas and **be able to measure progress towards these**
- It is obvious that **conventional, monetary performance measurement models are insufficient** for these areas
  - Discounted Cashflow Analysis (considering the time value of money) such as through Net Present Value (NPV) Method
  - Required rate of return (ROR), which is basically the weighted average cost of capital (which may be risk adjusted)

# Classification of sustainability performance measurement models

- For this overview, it is beneficial to use a classification like the following (see Couckuyt *et al.* (2018)):

**Table 1.** Preliminary classification framework of sustainability models and indicators.

| Sustainability         |                     | Performance measurement model |                                     |
|------------------------|---------------------|-------------------------------|-------------------------------------|
|                        |                     | Organizational                | Business process                    |
| Performance indicators | Operationalized     | e.g. GRI, CSDI                | e.g. gCO <sub>2</sub> eq/kWh, Ws    |
|                        | Non-operationalized | e.g. SBSC, ISO 14001:2015     | e.g. ‘Green KPIs’, ‘sustainability’ |

- GRI = Global Reporting Initiative
- ISO = International Organization for Standardization
- CSDI = Composite Sustainable Development Index

# Organizational performance measurement models – standardized

- Intend to provide a **holistic view** of a nation's/an organisation's performance
- When indicators are concretized by means of a formula, the model includes standardized performance indicators
- Examples:
  - **Global Reporting Initiative – GRI Standards**: goals and operationalised indicators with respect to environmental but also economic and social sustainability
  - **Composite Sustainable Development Index ( $I_{CSD}$ )**: composed of the economic sub-index ( $I_{S,1}$ ), the environmental sub-index ( $I_{S,2}$ ) and the social sub-index ( $I_{S,3}$ ), in turn composed of normalised economic, environmental and social indicators extracted from other frameworks (including GRI) (see Krajnc/Glavic (2005) as provided on Moodle)
- For both GRI and CSDI, extensive standardization **allows to benchmark (=compare)** with other businesses
- However, standardization also **impedes the integration of nation/company-specific sustainability endeavors**

# Organizational performance measurement models – non-operationalised

- Offer more flexibility
- Examples:
  - Balanced Score Card (BSC) provides four perspectives
    - Financial, Customer, Internal processes, Learning and growth
    - can be extended to the Sustainability BSC (SBSC), that integrates strategically relevant environmental goals (see Möller/Schaltegger (2005))
  - International Organisation for Standardization [ISO 14001:2015](#) provides a framework for environmental management in organizations
    - Provides guidelines that can be applied to the environmental aspects of activities, products or services in line with organisational objectives
- Both defined and operationalized at the individual nation/company level, meaning less appropriate for bench-marking

# Business process models – operationalised

- Focus on a single business process, generally less holistic, but provide concrete measurements
- Example:
  - Green Business Process Management (see Ghose et al (2009))
  - A framework that models the relationship between resources and activities to inform the business process with its carbon emission impact
- These indicators are operationalised with figures and formulas provided by environmental authorities
  - For example, grams of CO<sub>2</sub> equivalent per kilowatt hour of generation, [gCO<sub>2</sub>eq/kWh]),
  - or rely on accepted measurement units (e.g. Watt seconds [Ws])

# Business process models – non-operationalised

- Individual, non-correlated indicators at business process level
- Example:
  - ‘Green KPIs’ at the business process level, such as
    - Power usage effectiveness,
    - data center infrastructure efficiency,
    - data center energy productivity
- Generally of lesser value because they do not reflect interdependencies between sustainability factors
- However, important as basis for understanding processes and as input for operationalised indicators.

- After having explored various approaches how to measure sustainability we will discuss a specific reporting framework in more detail: [Integrated Reporting](#)