Soil Natural Capital – valuation needs for sustainable management in agribusiness

Dr Victoria Janes-Bassett and Dr Jess Davies
Natural capital synthesis report project:
Soil natural capital valuation in agri-food business
www.valuing-nature.net/SoilNC
Outline of the project

• Scoping meetings with Olam
  • Business needs and opportunities
• Literature review
• Framework formulation
  • Further discussion with Olam
• Evidence chain mapping
  • Gap identification
  • Roadmap for soil natural capital research
The value of soil

- Food production
  - Provide 95% of food
- Water storage
  - Quality and quantity
- Climate regulation
  - Largest store of organic C
- Biodiversity
  - 25% of earth’s biodiversity
- Nutrient cycling

FAO, 2015
Soil degradation

- **Erosion** - Orders of magnitude greater than soil formation.
- **Pollution** – changes to soil chemistry and water quality.
- **Compaction** – reducing water storage, accelerating erosion.
- **Salinisation** – can leave land desertified.
- 50% of agricultural soils are moderately or severely degraded.
- Soil degradation reduces provision of ecosystem services.
Five benefits for business

Taking a natural capital approach to soils in agri-food businesses, and investing in improving soil natural assets offers five main opportunities:

1. **Business risk and resilience:** Understanding supply chain dependencies, exposure to risk, and how to increase resilience.
2. **Reducing costs:** Provides a business case for change in practice.
3. **Increased value:** Increasing both value of land, and of products.
4. **Co-benefits:** Benefits for both business and the wider community.
5. **Stewardship:** Decision-making that maintains or enhances soils is key to responsible business and maintaining licence to operate.

Natural capital key to long-term sustainable business model.
Natural Capital Accounting needs

**Understanding risk:** capture the whole pathway between drivers, supporting processes, soil natural capital stocks, services and benefits.

**Building a strong business case:** consider the range of soil benefits not only crop productivity:

- food production;
- soil carbon storage; and
- water regulation.

**Differentiating benefits:** recognising both private and public benefits, whilst acknowledging that public benefits also have private value.
Current approaches to soil natural capital

At present, there are:

**Few** natural capital frameworks that specifically address soil as a natural asset;

**Fewer** that meet the co-identified criteria for maximising the value of a soil natural capital approach;

**Fewer still** that have been applied in agricultural contexts.


Developing a framework for business

- A full pathway
- Current and future stocks
  - Acknowledge both natural and anthropogenic drivers
- Considering priority areas
  - Crop productivity
  - Carbon storage
  - Water regulation
- Acknowledgement of Supporting Processes - necessary for the production of other ecosystem services.
Carbon

Carbon storage
- Organic Carbon
- Soil depth

Climate regulation

Market value

Nutrient cycling

Soil biological activity

Soil formation

Climate

Geology

Land use and management
Gaps and future steps

Science understanding
• There are gaps, but we know enough to get started.
• Considering soil systems as a whole.
• Representation of land management options in models.

Bridging the science-business gap
• Closer partnership between science and business.
• More funding mechanisms that allow science-business co-creation.
• To develop a community of practice around soil natural capital.
Thank you
v.janes@lancaster.ac.uk
www.valuing-nature.net/SoilNC