The Pentland Centre for Sustainability in Business

Soil Natural Capital – valuation needs for sustainable management in agribusiness

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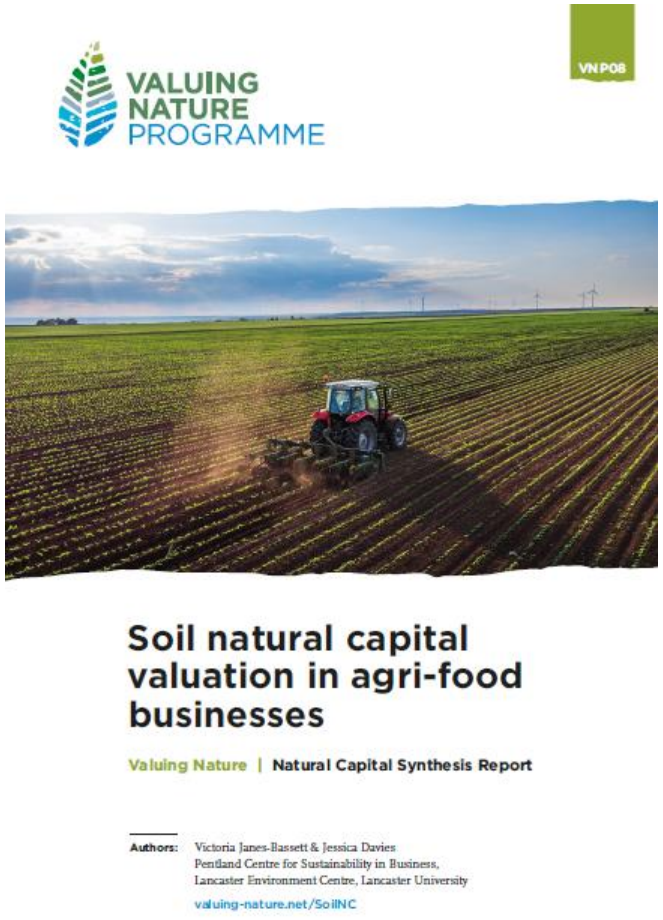

Natural capital synthesis report project:

Soil natural capital valuation in agri-food business

www.valuing-nature.net/SoilNC

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Olam

VALUING NATURE PROGRAMME

NERC SCIENCE OF THE ENVIRONMENT

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

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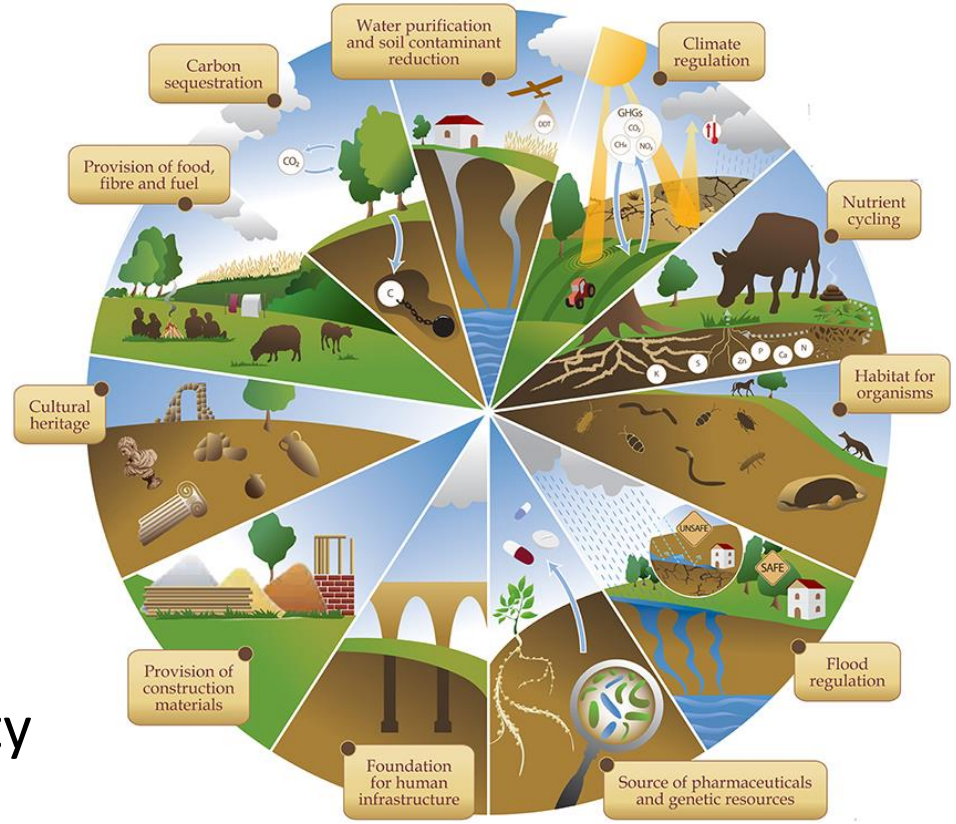
The value of soil

- 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

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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.

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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.

Olam

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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.

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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.

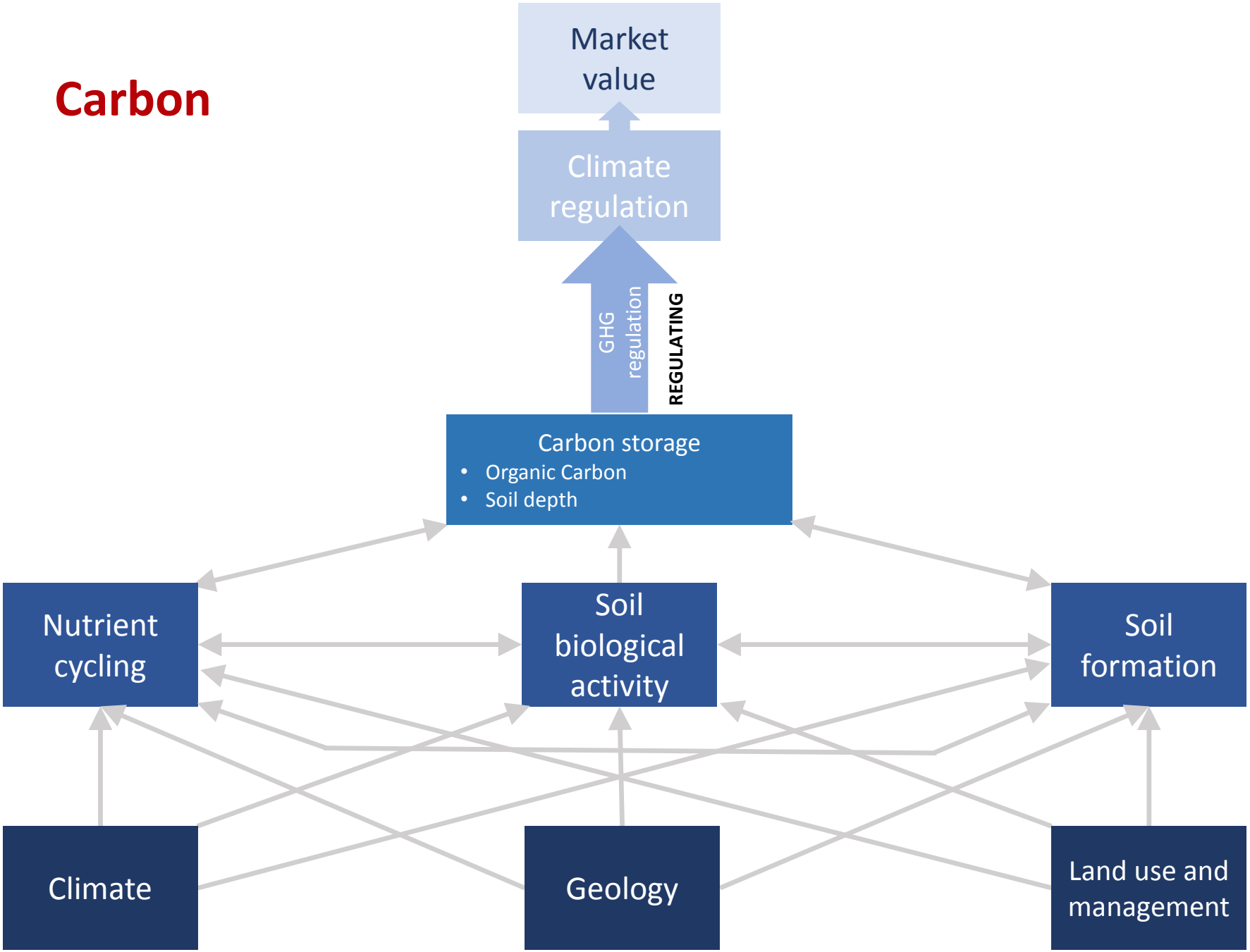
Dominati, E., Patterson, M. and Mackay, A., 2010. A framework for classifying and quantifying the natural capital and ecosystem services of soils. *Ecological Economics*, *69*(9), pp.1858-1868.

Hewitt, A., Dominati, E., Webb, T. and Cuthill, T., 2015. Soil natural capital quantification by the stock adequacy method. *Geoderma*, *241*, pp.107-114.

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


Market value
Climate regulation
GHG regulation
REGULATING
Carbon storage
• Organic Carbon
• Soil depth
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

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Valuing Nature | Natural Capital Synthesis Report

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