Overview of the book

Part I: What is sustainability and why does it matter?
1. Sustainability and the transition challenge

Part II: Sustainability’s challenges to corporates
2. Externalities - internalisation
3. Governance and behaviour
4. Coalitions for sustainable finance
5. Strategy and intangibles – changing business models
6. Integrated reporting - metrics and data

Part III: Financing sustainability
7. Investing for long-term value creation
8. Equity – investing with an ownership stake
9. Bonds – investing without voting power
10. Banks – new forms of lending
11. Insurance – managing long-term risk

Part IV: Epilogue
12. Transition management and integrated thinking
Learning objectives – chapter 1

- explain the planet’s social and environmental challenges
- list and understand the United Nations Sustainable Development Goals
- understand the transition of the economic system
- explain the main functions of the financial system and how to apply them to sustainability
- explain the various stages of sustainable finance
Why does sustainability matter?
From pre to post Industrial Revolution

Empty world

Abundance of goods and services from nature

Full world

• Technological advances dependent on fossil fuels & other raw materials
• Massive production & consumption
• Economic & population growth

Club of Rome (1973): Limits to Growth
Figure 1.1 The world model
## Tensions mounting

<table>
<thead>
<tr>
<th>Box 1.1 Deepwater Horizon oil spill</th>
<th>Box 1.2 Rana Plaza factory collapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Explosion</strong> on oil drilling rig of BP in Gulf of Mexico killed 11 workers + largest accidental marine oil spill</td>
<td>• Eight-storey factory collapse in Bangladesh due to <strong>structural failure</strong></td>
</tr>
<tr>
<td>• Caused by <strong>cost-cutting decisions</strong> and <strong>inadequate safety system</strong></td>
<td>• Owners of clothing factories <strong>ignored evacuation warnings</strong></td>
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<tr>
<td></td>
<td>• 1,129 deaths - 2,500 injured</td>
</tr>
</tbody>
</table>
Keep planet **liveable** for current and future generations

- Steffen *et al* (Science, 2015): *planetary boundaries* at risk being crossed
Climate policy gap

2100 WARMING PROJECTIONS
Emissions and expected warming based on pledges and current policies

- **Baseline**: 4.1 – 4.8°C
- **Current policies**: 3.1 – 3.5°C
- **Optimistic policies**: 3.0°C
- **Pledges & Targets**: 2.7 – 3.0°C
- **2°C consistent**: 1.6 – 1.7°C
- **1.5°C consistent**: 1.3°C

Dec 2018 update

Global greenhouse gas emissions (Gt CO₂e/year)

1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100
Climate action is urgent

1992 Earth summit Rio de Janeiro

2015 Paris COP21

Now: still too little action. Need a carbon tax!

Agreement on climate change (COP21):
- Reconfirmed target to limit global warming to $2^0$ Celsius relative to pre-industrial level
- Pursue efforts to limit global warming to $1.5^0$ Celsius
- In 2015, budget is 900 Gt of CO$_2$ and current level is 40 Gt a year

Climate change is the biggest risk
United Nations Framework Convention on Climate Change (UNFCCC) environmental treaty to ‘stabilise greenhouse gas concentrations in atmosphere’
Social boundaries or foundations (Doughnut of Kate Raworth, 2017)

- Food security (no hunger)
- Adequate income (no poverty with income < $3.10 a day)
- Access to health care
- Access to water and clean cooking facilities
- Education
- Decent work
- Modern energy services
- Gender equality and social equity
- Political voice

Many people live below these social foundations
Sustainable development combines planetary and social boundaries:

- Sustainable development means that current and future generations have the resources needed, such as food, water, healthcare and energy, without stressing processes within the Earth system.

- To guide transformation, the United Nations has developed the 2030 Agenda for Sustainable Development.
  - 17 UN Social Development Goals (SDGs) to stimulate action.
Global goals for sustainable development

1. No Poverty
2. Zero Hunger
3. Good Health & Well-being
4. Quality Education
5. Gender Equality
6. Clean Water & Sanitation
7. Affordable & Clean Energy
8. Decent Work & Economic Growth
9. Industry, Innovation & Infrastructure
10. Reduced Inequalities
11. Sustainable Cities & Communities
12. Responsible Consumption & Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice & Strong Institutions
17. Partnerships for the Goals
Systems approach

- Tempting to address challenges at each level
  - Need for a **holistic system perspective**
  - **Adaptive capacity** of system (e.g. eco-system or production process)

- But **cross-system interactions** and **uncertain thresholds**
  - Example: global warming -> extreme weather events affecting vulnerable countries -> economic downturn and poverty upturn

- We need a **guide for trade-offs** between economic, social and ecological goals

- **Finance can help** in decision-making on trade-offs
Role of the financial system
Functions of the financial system

Levine (2015):

Allocate capital to its most productive use

- can assist in making strategic decisions on the trade-offs

Price risk for trading and valuation

- risk management can help dealing with uncertainties in future (e.g., scenario analysis)

Exert influence over corporates (corporate governance)

- controlling and directing corporate boards (engagement) towards sustainable business practices (see Chapter 3)
Managing sustainable development

- financial return and risk: F
- impact on society: S
- impact on environment: E
# Framework for sustainable finance

<table>
<thead>
<tr>
<th>Sustainable Finance Typology</th>
<th>Value created</th>
<th>Ranking of factors</th>
<th>Optimisation</th>
<th>Horizon</th>
</tr>
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<tbody>
<tr>
<td>Finance-as-usual</td>
<td>Shareholder value</td>
<td>F</td>
<td>Max F</td>
<td>Short term</td>
</tr>
<tr>
<td>Sustainable Finance 1.0</td>
<td>Refined shareholder value</td>
<td>F &gt;&gt; S and E</td>
<td>Max F subject to S and E</td>
<td>Short term</td>
</tr>
<tr>
<td>Sustainable Finance 2.0</td>
<td>Stakeholder value (triple bottom line)</td>
<td>I = F + S + E</td>
<td>Optimise I</td>
<td>Medium term</td>
</tr>
<tr>
<td>Sustainable Finance 3.0</td>
<td>Common good value</td>
<td>S and E &gt; F</td>
<td>Optimise S and E subject to F</td>
<td>Long term</td>
</tr>
</tbody>
</table>

Note: F = financial value; S = social impact; E = environmental impact; I = integrated value.
Finance as usual

- Traditional finance textbooks
  - Profit maximisation -> maximise shareholder value
  - By looking for optimal financial risk and return combination
  - Only factor F

- Friedman (1970): the business of business is business
  - Only social responsibility is making profit
  - Charity is private decision of citizens

- Overly high discount rates (in particular for UK and US) -> evidence of myopia / short termism
Refined shareholder value

- **Profit maximisation**, but avoiding ‘sin’ stocks (i.e. extreme negative impact like cluster-mines or tobacco)

\[
\text{max } FV = F( \text{profits, risk} ) \quad \text{subject to } F'_{\text{profits}} > 0, \ F'_{\text{risk}} < 0, \ SEV \geq SEV^{\text{min}} \quad (1.1)
\]

- Ranking factors: F >> S + E ( = SEV )
- **Profit motive** is still leading
- Question: does **exclusion** work?
Sustainable Finance 2.0

Stakeholder approach

- All **stakeholders**: employees, clients, shareholders, society, environment
- Optimise **integrated value**: \( IV = F + S + E \)

\[
\begin{align*}
\text{max } IV &= F(\text{integrated profits, integrated risk}) \quad s.t. \quad F_{\text{integr. profits}}' > 0, \quad F_{\text{integr. risk}}' < 0, \\
SEV_{t+1}^p &\geq SEV_t^p
\end{align*}
\]

Caveats

- Not everything can be **monetised** (e.g. human life, destroying rain forest)
- **Perverse effects** - high profit but extra negative impact: \( SEV_{t+1} \geq SEV_t \)
- **Private** discount factor > **public** discount factor (Stern, 2008)
Stewardship: working for the **common good**

- Environmental and social challenges come **first**
- But need to have **financial viability (fair return)**

\[
\begin{align*}
\text{max } SEV &= F(\text{impact, risk}) \text{ s.t. } F'_{\text{impact}} > 0, \ F'_{\text{risk}} < 0, \ FV_{t+1} \geq FV_{t+1}^{min} \\
FV_{t+1}^{min} &= (1 + r^{fair}) FV_{t}^{min} \quad r^{fair} \geq 0 \text{ is a fair financial return}
\end{align*}
\]

- Research indicates that sustainable companies are **more resilient** -> better able to cope with (LT) shocks, without extra (ST) costs
Discussion

- **Pros** and **cons** of approaches (SF 1.0, 2.0, 3.0)
- **Where are we** now?
- Debate: **exclusion** versus **inclusion**
Challenges to integration of sustainability into finance
Long-term value creation (Fig 1.7)
Discussion: barriers

What is the most important barrier to sustainable finance?

1. Value: *shareholder value* (profit) versus *common good*

2. Horizon: *short term* versus *long term*
Conclusions

- **Sustainable finance**: from finance as a *goal* (profit max) to finance as a *means* to support transition to sustainable economy

- **Transition** to low carbon economy
  - Things may move fast: air pollution California -> regulation -> electric cars / solar

- Finance is about *anticipating* events and price them in for today’s investment decisions
  - Finance can thus contribute to a *swift(er) transition*
  - Need for **LT patient capital**