

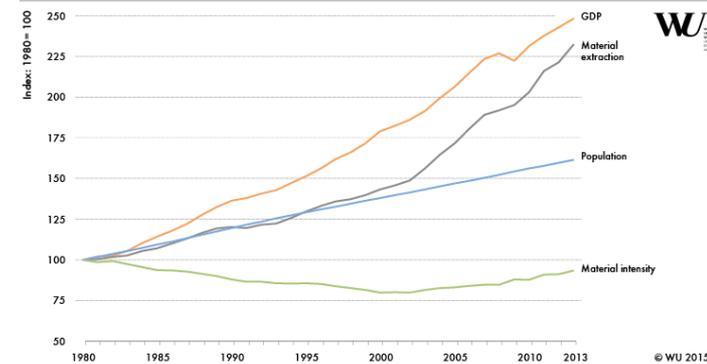
Circular Business, Sustainability and Firm Competitiveness

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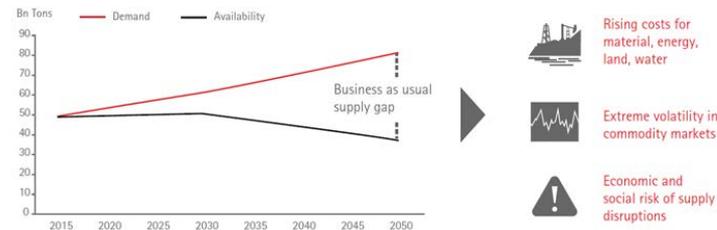
**Department for Industrial Economics
and Technology Management**

Circular Economy and the Role of Industry

- Our current economy is based on 'resource mining'
- This development is not sustainable and results in a ever growing resource gap
- The widening resource gap results in:
 - Rising costs of input factors such as materials, energy, land and water
 - Increased volatility and risk in supply
 - More aggressive regulations in terms of climate and emission targets and tax regimes
- From a macro perspective this provides a very promising basis for business models based on resource efficiency and principles of circular economy
- Circular business models can ease resource scarcity, reduce climate impact, and through innovation deliver new levels of economic efficiency and resource productivity

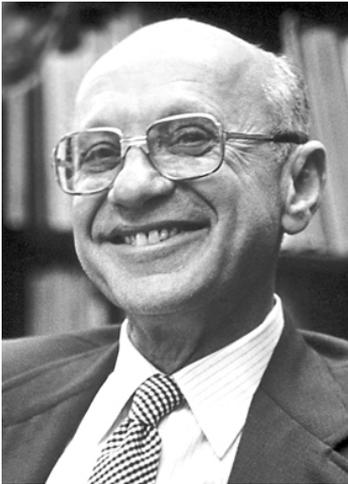


Source: Vienna University of Economics and Business (WU)



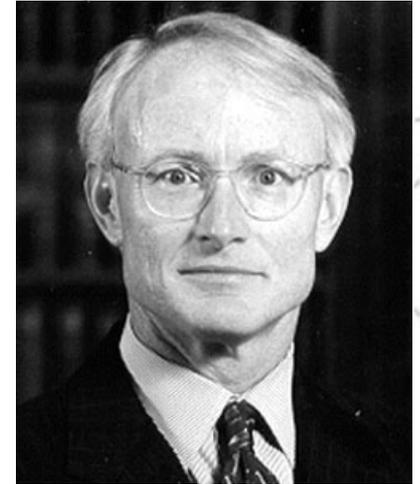
Source: «Waste to Wealth» Accenture Strategy, 2015

Thinking business



«The business of business is business» Milton Friedman, 1970

«Sustainability is the greatest business opportunity of our time»
Michael Porter, 2011



To unleash the creativity of business innovation and entrepreneurship on the sustainability challenge, we must understand the business case

Is there a business case for the circular economy?

- The sustainability - competitiveness relationship has become central in business management research
- From a macro perspective, it effectively delineates the boundaries between what can be solved in a market through competition, and what needs to be solved through market regulation
- From a micro perspective, it helps organizations identify and implement sustainability strategies that also contributes to competitiveness and growth
- The SISVI project at NTNU and SINTEF has aimed to do just that

The SISVI Project

- State-of-the-art on the sustainability – performance relationship on international organizations (Aspelund, Fjell and Rødland, 2017)
 - Including circular economy
- Broad range of case studies from Norwegian industry
 - Including key industry partners Plasto, Isiflo and Hexagon Ragasco
- Cross-sectional survey targeting the whole range of manufacturing firms in Norway (~ 2600 firms in sample, 26 % RR)
 - On sustainability and circular strategies, managerial orientations and firm performance
- Here are some of the findings...

Turning sustainability into competitiveness



Good Currency

- Increased value
 - Increased sales
 - Increased value
 - Loyalty
- Reduced cost
 - Operations
 - Agency
- Reduced risk
 - Market
 - Business
- Social license
 - Legitimacy
 - Political goodwill

Do Norwegian industry leaders believe sustainability strategies improve firm performance?

- Norwegian industry leaders is *very confident* that their sustainability strategies will pay off
- In a broad range of dimensions
 - Value creation
 - Cost reductions
 - Risk management
 - Social license

Table 1: Perceived sustainability strategy influence on firm performance

Our sustainability strategy impacts...	Mean Values			ANOVA
	High	Medium	Low	F-value
... sales growth (volumes)	4.93 ^{2,3}	4.04 ^{1,3}	3.62 ^{1,2}	49.159***
... perceived customer value (price premium)	4.92 ^{2,3}	4.14 ^{1,3}	3.86 ^{1,2}	31.409***
... customer loyalty	5.06 ^{2,3}	4.33 ^{1,3}	3.98 ^{1,2}	32.590***
... ability to avoid direct competition	4.43 ^{2,3}	3.82 ^{1,3}	3.64 ^{1,2}	18.415***
... ability to introduce new products and services	5.03 ^{2,3}	4.30 ^{1,3}	3.87 ^{1,2}	34.388***
... political goodwill for allocation of social resources	4.45 ^{2,3}	3.65 ¹	3.78 ¹	16.660***
... relation to company stakeholders	4.96 ^{2,3}	3.96 ^{1,3}	3.59 ^{1,2}	47.772***
... attractiveness as business partner	5.25 ^{2,3}	4.40 ^{1,3}	3.99 ^{1,2}	41.302***
... lower operating costs	4.17 ³	3.89	3.60 ¹	7.452***
... lower cost of hiring and keeping key personnel	4.32 ^{2,3}	3.93 ¹	3.73 ¹	10.176***
... lower risk of reputation failure	5.11 ^{2,3}	4.46 ^{1,3}	3.96 ^{1,2}	31.176***
... lower risk of decline in sales	4.76 ^{2,3}	4.19 ¹	3.87 ¹	22.154***
... lower risk of not meeting regulatory requirements	4.96 ^{2,3}	4.35 ^{1,3}	3.92 ^{1,2}	23.561***

All questions answered on 1 – 7 Likert scales

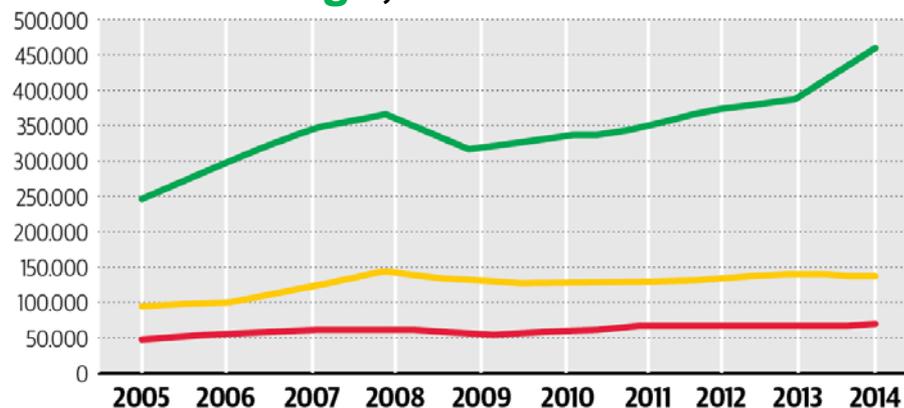
*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.001$

1, 2, 3: denote significant group differences, Bonferroni test

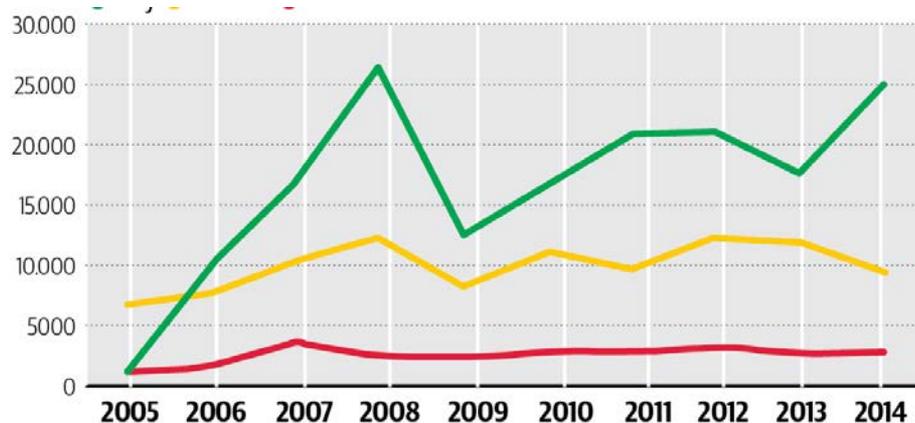
Sustainability is generally correlated with increased firm growth and profitability

Aspelund and Srai (in review)

High, medium and low sustainable manufacturers



Revenues

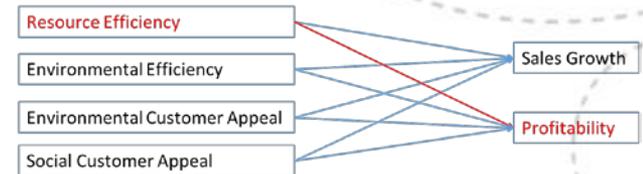


Operational profits

(Aspelund and Srai, 2016)

How is the 'extra' sustainability profitability created?

- **Resource efficiency**, the key component of circular economy, is *the key contributor to profitability* from sustainability strategies
- Suggests that **circular business concepts** that are directly related to **increased efficiency** of use of input factors such as materials, energy and water directly influence firm profitability positively



SISVI Example

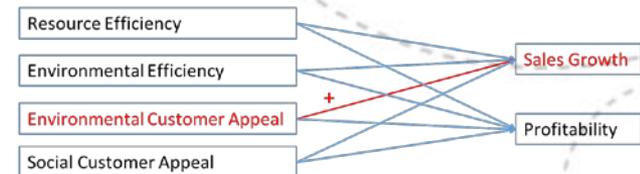
PLASTO®



Bilder:
Romsdals
Budstikke og
Åndalsnes Avis

How is the 'extra' sustainability growth created?

- **Sustainability growth** is created by the ability to **design and develop** new products that **appeals to the environmentally concerned customer**
- Among the factors that appeal to those customers are
 - Use of sustainable materials
 - Access to reuse and/or recycling solutions



SISVI Example



Bilder: Raufoss
Water and Gas
/ Isiflo



Where are the limitations?

- Even though we find a general positive relationship between circular principles and firm performance, there are limitations
- Often it is hard to build a circular business case for simple technical reasons such as material deterioration, lack of appropriate process technology, logistics costs, etc
- One of the major challenges we found in our study was related to the 'length' of the cycles you have to close
 - Building business cases by closing 'short', internal loops that directly increases resource efficiency, is relatively easy
 - As the loops become 'longer', and dependent of fragmented external collection points, it becomes increasingly difficult as costs of logistics would overcome benefits of resource efficiency

SISVI Example

Bilder:
Wonderland



unique people unique beds



Summary

- There is a general positive relationship between sustainability and firm performance among Norwegian manufacturers
- The key contributors are related to principles of circular economy
 - Especially, **resource efficiency**...
...and this effect is only expected to increase as the resource gap widens
 - But also dedicated **new product development** directed towards segments with environmentally concerned customers
- We also see, ..., the longer the loops sought to be closed, the harder to build the business case

Thank you for the attention!

Questions?

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