Beyond Environmental Cost Accounting

Principles and Empirical Demonstration of Accounting for Sustainable Value

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What is he concerned about?

http://www.mitsubishi-motors.co.jp/docs1/0327photo/jpg/Schrempp.jpg

Jürgen E. Schrempp,
CEO of DaimlerChrysler AG

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Accounting for Environmental and Social Costs

- What‘s an economic activity’s overall damage to society?
- Weigh up different „environmental bads“
  - How bad is more CO_2 in comparison to all the other impacts?
  - What‘s e.g. the trade-off between work accidents and CO_2?
- It‘s
  - Focused on how bad emissions are.
  - Ethically doubtful.
  - Impossible in practice for many impacts.
  - Unimportant to managers.

Accounting for Sustainable Value

- How much value is created by an economic activity?
  - How much € value is created per ton of CO_2?
  - How much € value is created per ton of VOC?
- Compare the value of alternative uses (opportunity costs)
  - When used in another place – how much more value is created?
- It‘s
  - Focused on how much value is created.
  - Easy to do.
  - Using the logic of the financial markets.
  - Compatible with managerial thinking.

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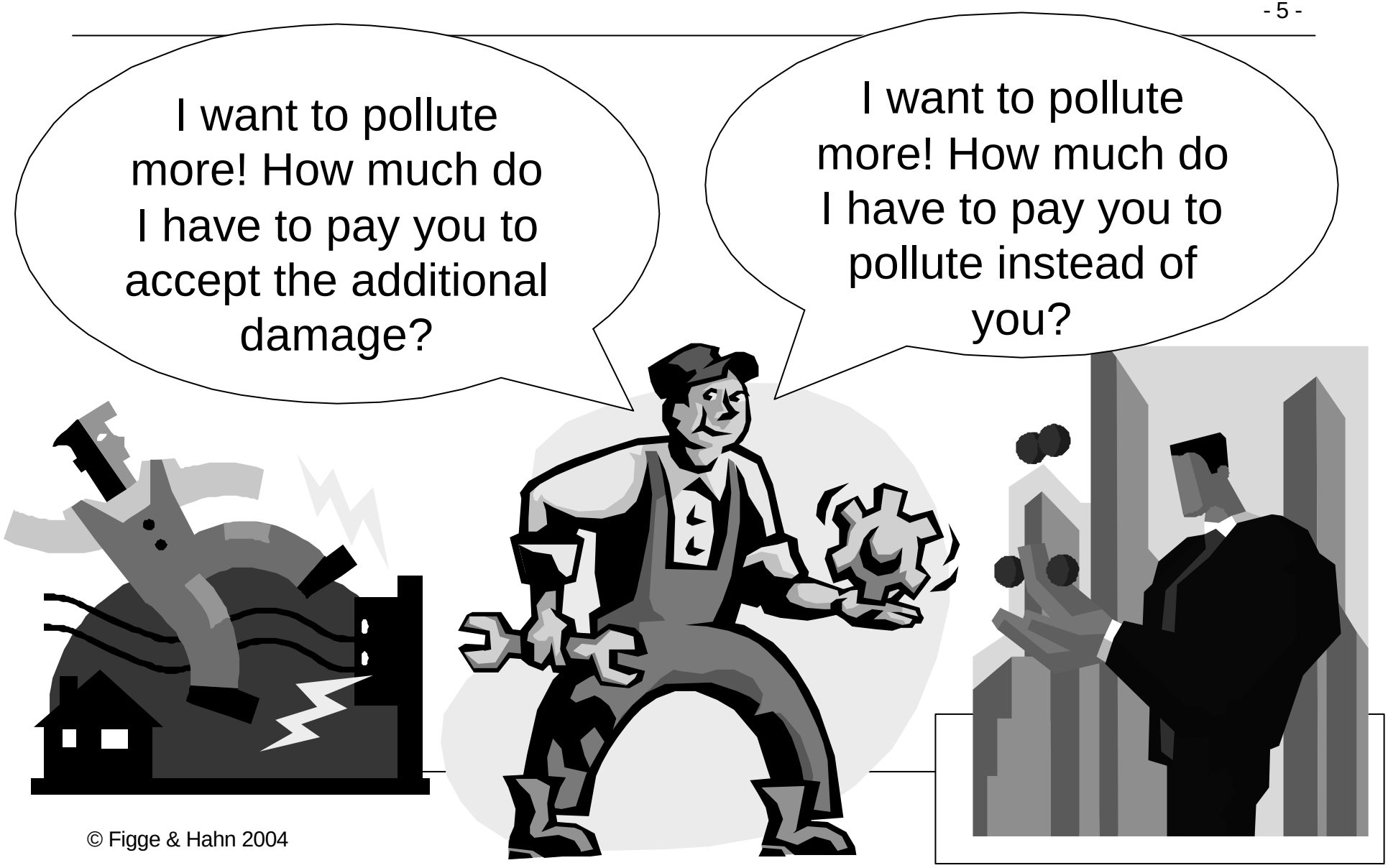
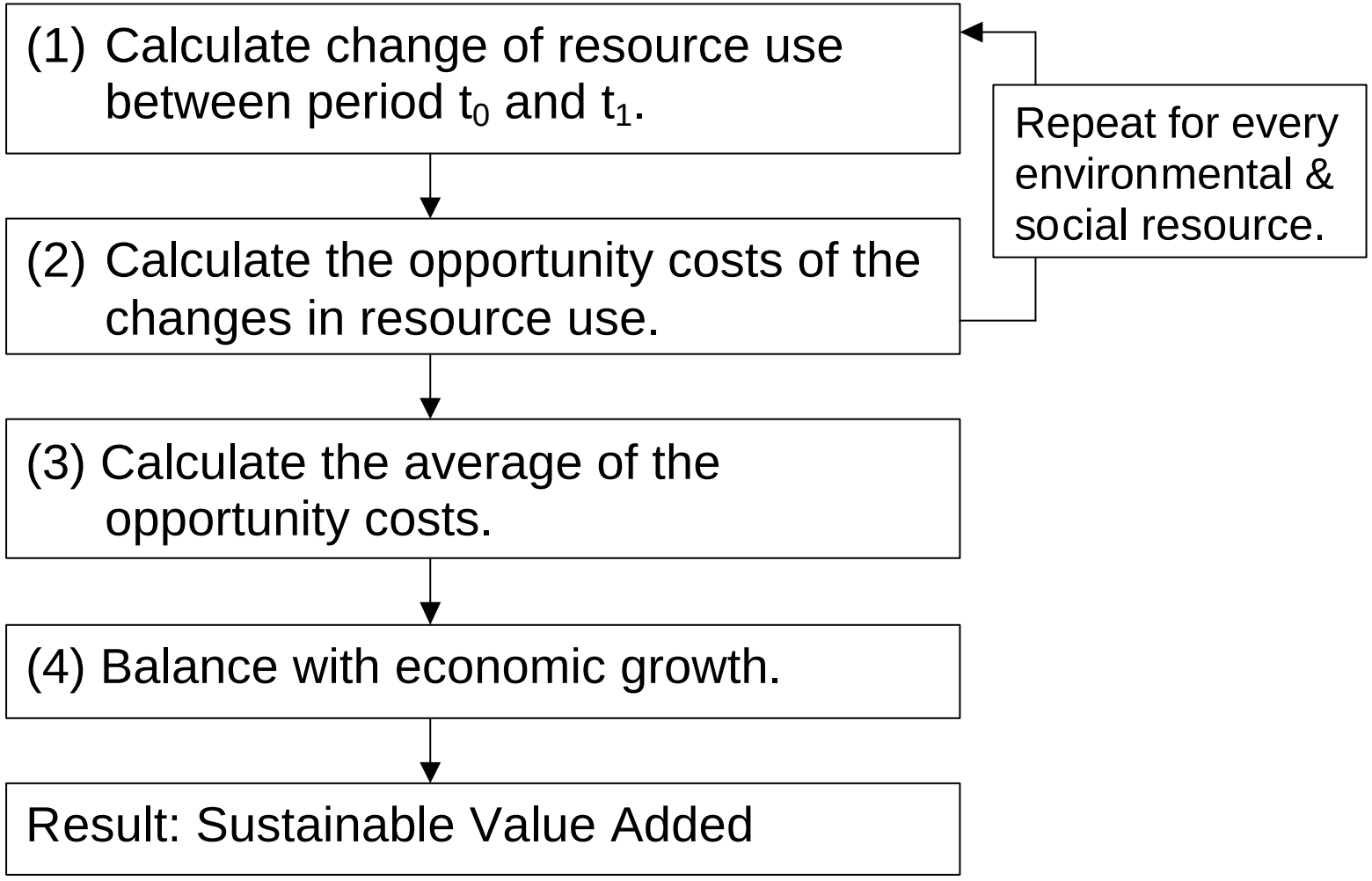
How to deal with environmental damage?



The Four Steps of Calculating Sustainable Value Added



Principles of Sustainable Value Added

- Additional use of environmental and social resources of a company is only justified if this creates more value than an alternative use.
- The overall consumption of environmental and social resources within the national economy must not increase.
- If companies want to use more resources they have to compensate other users for giving up these resources.
- Environmental and social resources are valued and weighted at their opportunity cost.

Sustainable Value Added of three German companies in 2001.

- Henkel KGaA
  Detergents, cosmetics and adhesives industry
- Wacker Chemie GmbH
  Chemical industry
- BMW AG
  Automobile industry

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Here‘s what we know about Henkel‘s TBL-performance in 2001.

- Lots of good news...
  - ☺ + 370 million € Value Added compared to 2000.
  - ☺ – 700 tons of SO_2 emissions compared to 2000.
  - ☺ – 20 tons of VOC emissions compared to 2000.
  - ☺ – 70 tons of NO_x emissions compared to 2000.
  - ☺ – 40 work accidents compared to 2000.
  - ☺ – 42 tons of dust compared to 2000.
  - ☺ – 1 Mio. m^3 water consumption compared to 2000.
- ...and some bad news.
  - ☹ + 58,000 tons of CO_2 emissions compared to 2000.
  - ☹ + 9,000 tons of waste compared to 2000.

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What about eco- and social efficiency of Henkel?

	Henkel in 2001 [€ per impact]	Germany in 2001 [€ per impact]	
CO_2 equivalents - efficiency	1,720	2,380	
SO_2 -efficiency	856,091	3,190,307	
VOC - efficiency	6,025,899	1,291,220	
NO_x - efficiency	1,976,403	1,302,575	
Dust emissions - efficiency	7,334,500	8,395,546	
Water consumption - efficiency	180,626,240	47,245,511	
Waste - efficiency	13,960	55,369	
Work accidents - efficiency	8,725,000	1,485,892	

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Sustainable Value Added of Henkel in 2001

Contribution of environmental and social performance	
CO_2 equivalents - performance	- 138 Mio. €
SO_2 - performance	2.233 Mio. €
VOC - performance	26 Mio. €
NO_x - performance	91 Mio. €
Dust emissions - performance	353 Mio. €
Water consumption - performance	39 Mio. €
Waste - performance	- 498 Mio. €
Work accidents - performance	59 Mio. €
Overall environmental and social performance	271 Mio. €
Contribution of economic performance	
Economic growth	370 Mio. €
Sustainable Value Added of Henkel in 2001	**641 Mio. €**

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Here‘s what we know about Wacker‘s TBL-performance in 2001.

- Some good news...
  - ☺ – 60 tons of VOC emissions compared to 2000.
  - ☺ – 22 work accidents compared to 2000.
  - ☺ – 48 tons of dust compared to 2000.
  - ☺ – 21 Mio. m^3 water consumption compared to 2000.
  - ☺ – 7,599 tons of waste compared to 2000.
- ... but also some bad news.
  - ☹ + 262,846 tons of CO_2 emissions compared to 2000.
  - ☹ + 16 tons of SO_2 emissions compared to 2000.
  - ☹ + 269 tons of NO_x emissions compared to 2000.
  - ☹ – 379.4 Mio. € Value Added compared to 2000

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Wacker‘s eco- and social-efficiencies...

	Wacker in 2001 [€ per impact]	Germany in 2001 [€ per impact]	
CO_2 - efficiency	1,597	2,380	
SO_2 -efficiency	2,786,105	3,190,307	
VOC - efficiency	2,899,592	1,291,220	
NO_x - efficiency	1,725,696	1,302,575	
Dust emissions - efficiency	5,834,836	8,395,546	
Water consumption - efficiency	6,110,300	47,245,511	
Waste - efficiency	12,859	55,369	
Work accidents - efficiency	15,145,744	1,485,892	

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Sustainable Value Added of Wacker in 2001.

Contribution of environmental and social performance	
CO_2 - performance	- 626 Mio. €
SO_2 - performance	- 51 Mio. €
VOC - performance	77 Mio. €
NO_x - performance	- 250 Mio. €
Dust emissions - performance	403 Mio. €
Water consumption - performance	929 Mio. €
Waste - performance	421 Mio. €
Work accidents - performance	32 Mio. €
Overall environmental and social performance	112 Mio. €
Contribution of economic performance	
Economic growth	- 379 Mio. €
Sustainable Value Added of Wacker in 2001	**– 267 Mio. €**

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Here‘s what we know about BMW‘s TBL-performance in 2001.

- Some good news...
  - ☺ – 72 tons of NO_x emissions compared to 2000.
  - ☺ – 3 tons of dust compared to 2000.
  - ☺ + 999 Mio. € Value Added compared to 2000
- ... but also bad news.
  - ☹ + 26,645 tons of CO_2 emissions compared to 2000.
  - ☹ + 101 tons of VOC emissions compared to 2000.
  - ☹ + 100 work accidents compared to 2000.
  - ☹ + 0.05 Mio. m^3 water consumption compared to 2000.
  - ☹ + 14,552 tons of waste compared to 2000.
- No change of SO_2 emissions compared to 2000.

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BMW‘s eco- and social efficiencies...

	BMW in 2001 [€ per impact]	Germany in 2001 [€ per impact]
CO_2 - efficiency	12,918	2,380
SO_2 - efficiency	1,932,333,333	3,190,307
VOC - efficiency	4,170,503	1,291,220
NO_x - efficiency	28,698,019	1,302,575
Dust emissions - efficiency	341,000,000	8,395,546
Water consumption - efficiency	3,418,417,350	47,245,511
Waste - efficiency	37,934	55,369
Work accidents - efficiency	9,661,666	1,485,892

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Sustainable Value Added of BMW in 2001.

Contribution of environmental and social performance	
CO_2 - performance	- 63 Mio. €
SO_2 - performance	0 Mio. €
VOC - performance	- 130 Mio. €
NO_x - performance	94 Mio. €
Dust emissions - performance	25 Mio. €
Water consumption - performance	- 2 Mio. €
Waste - performance	- 806 Mio. €
Work accidents - performance	- 149 Mio. €
Overall environmental and social performance	- 129 Mio. €
Contribution of economic performance	
Economic growth	999 Mio. €
Sustainable Value Added of BMW in 2001	**870 Mio. €**

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But there is Kyoto!

- Constant resource consumption may not be sufficient to move towards more sustainability.
- Germany: CO_2-reduction by 21% compared to 1990 until 2008 (Burden sharing within the EU)
- Target from 2001 on: Yearly reduction of CO_2-emissions by 1.2%
- Sustainable Value Added in 2001 of the three companies including this reduction target:
  - Henkel: 632 Mio. €
  - Wacker: – 269 Mio. €
  - BMW: 867 Mio. €

Conclusions

- Sustainable Value Added
  - expresses a company's Triple Bottom Line performance in € terms.
  - shows a company's contribution to making Germany more sustainable.
  - leaves overall environmental and social burden constant.
  - is based on data which is publicly available.
  - does not require external cost figures.
  - is able to include reduction targets.
  - represents a paradigmatic shift toward an accounting for sustainable value.

More information

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Suggested Reading:

Figge, F. & Hahn, T. (2004): "Sustainable Value Added. Measuring Corporate Contributions to Sustainability Beyond Eco-Efficiency", Ecological Economics, 48(2), 173-187.

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