Sustainable Value in the Mineral Industries

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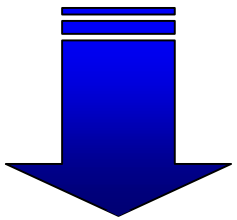
ADVANCE

What‘s this presentation all about?

- In this presentation we will introduce you to a new method to assess sustainability performance called Sustainable Value.
- Sustainable Value allows to express sustainability performance in monetary terms, i.e. in €, £ or US-$.
- Sustainable Value is inspired by the way investments are assessed in the financial markets.
- Sustainable Value is fundamentally different to existing assessment approaches.
- All existing quantitative approaches are burden-oriented. Sustainable Value is burden-oriented.
- But let’s start at the beginning...

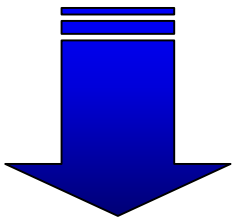
Value and impacts/burden/resources.

- Companies create value



More preferred to less.

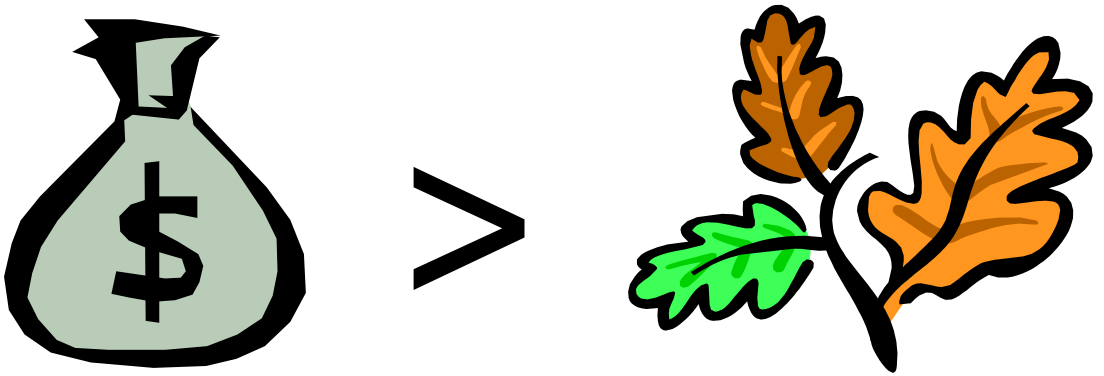
- Companies need resources



Less preferred to more.

Dealing with the trade-off

- So, how do we know, if it is worthwhile to use a resource?

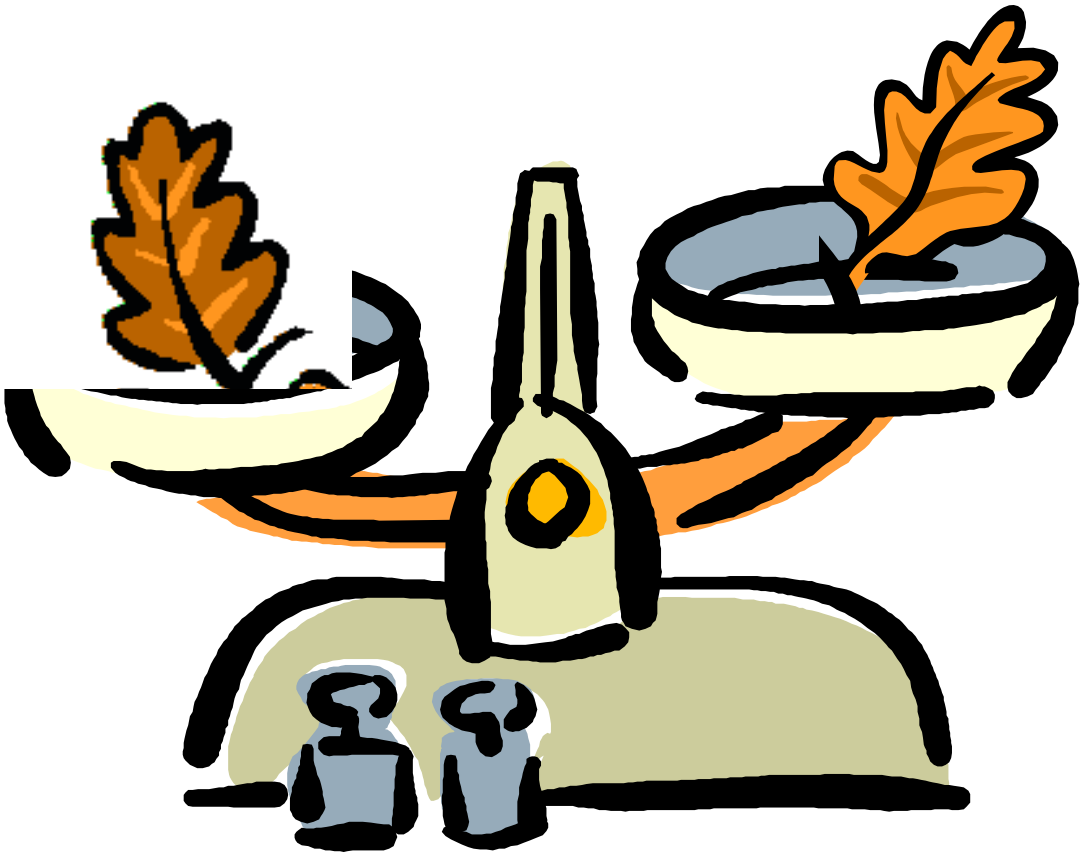


Let‘s look at an example
Looking at BP‘s environmental burden

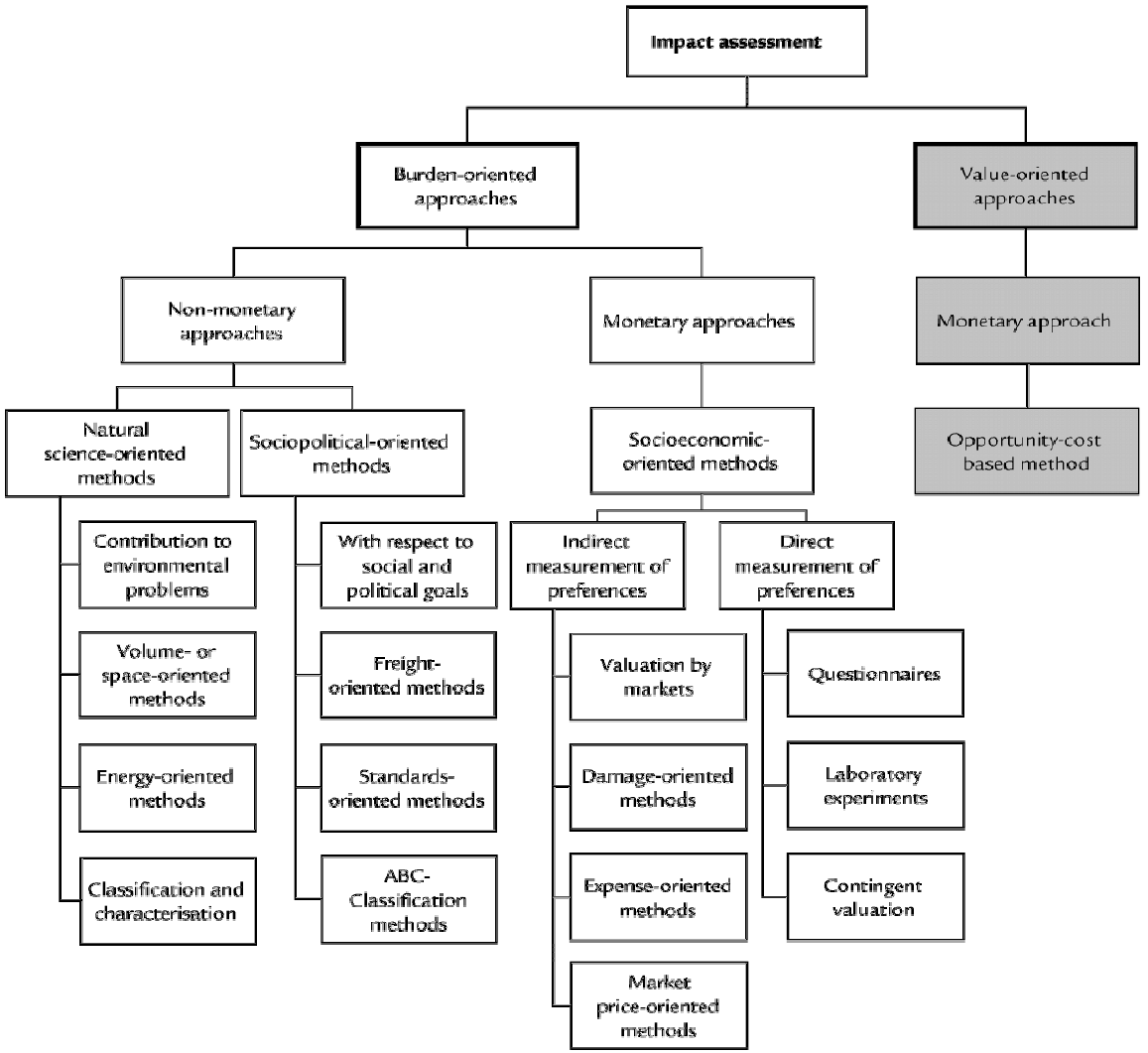
	2002		2003
Environment[2]			
Direct carbon dioxide (CO_2) (million tonnes)[4]	76.7[5]	<	**78.5**
Indirect carbon dioxide (CO_2) (million tonnes)[4]	11.4[5]	>	**10.4**
Direct methane (CH_4) (million tonnes)[4]	0.27[5]	>	**0.24**
Direct greenhouse gas (million tonnes CO_2 equivalent)[4]	82.4[5]	<	**83.4**
Flaring (exploration and production) (thousand tonnes of hydrocarbons)	1,735	>	**1,342**
Sulphur dioxide (SO_2) (thousand tonnes)	169.2	>	**150.9**
Nitrogen oxides (NO_x) (thousand tonnes)	242.1	>	**220.3**
Non-methane hydrocarbons (NMHC) (thousand tonnes)	322.1	>	**268.8**
Number of spills (loss of primary containment)	761[5]	>	**635**
Volume of product spilled (thousand litres)	3,524	<	**3,837**
Volume of product unrecovered (thousand litres)	1,084	<	**1,407**
Discharges to water (thousand tonnes)	125.9	>	**57.1**
Hazardous waste (thousand tonnes)	302.0	>	**238.6**
Environmental and safety fines and penalties ($ million)	27.5	>	**7.0**

Source: BP Sustainability Report 2003

Let‘s picture the first challenge



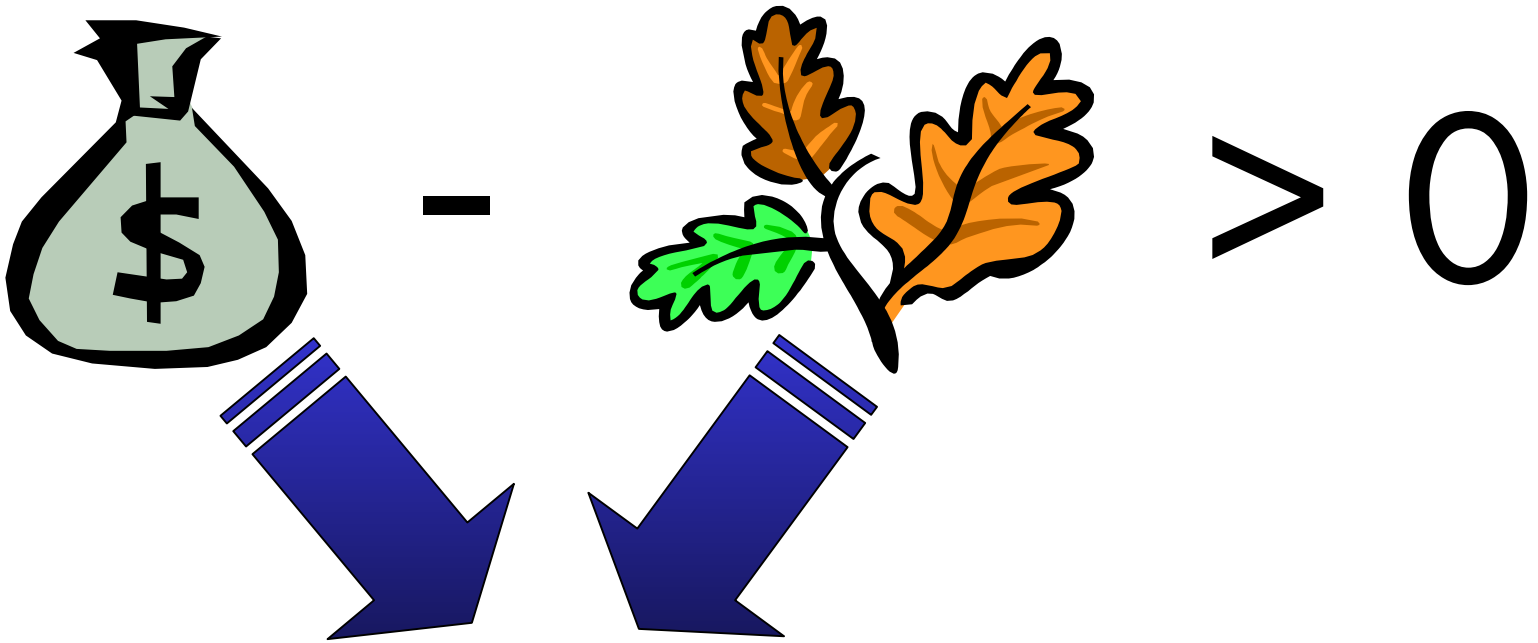
Finding the right weights.



Source: Figge & Hahn 2004

Let‘s picture the second challenge

Easy in theory – difficult in practice



Challenge: We need to express this in the same unit!

Let's sum up
The Burden-Oriented Approach

- Research and practice use a burden-oriented approach to assess and manage environmental and social bads.
- 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?
- To be able to subtract «burden» from «value» we need to (in addition to the weighing up) monetarize the burden.

Let's sum up
The Burden-Oriented Approach II

- The burden-oriented approach is
  - Focused on how bad emissions and other burdens are.
  - Ethically doubtful.
  - Impossible in practice for many impacts.

- Put differently:
  - The burden-oriented approach works in theory.
  - It doesn't work in practice.

Here's what David Green had to say...
...in 1894

But, when we once recognize the sacrifice of opportunity as an element in the cost of production, we find that the principle has a very wide application. Not only time and strength, but commodities, capital, and many of the free gifts of nature, such as mineral deposits and the use of fruitful land, must be economized if we are to act reasonably. Before devoting any one of these resources to a particular use, we must consider the other uses from which it will be withheld by our action; and the most advantageous opportunity which we deliberately forego constitutes a sacrifice for which we must expect at least an equivalent return.

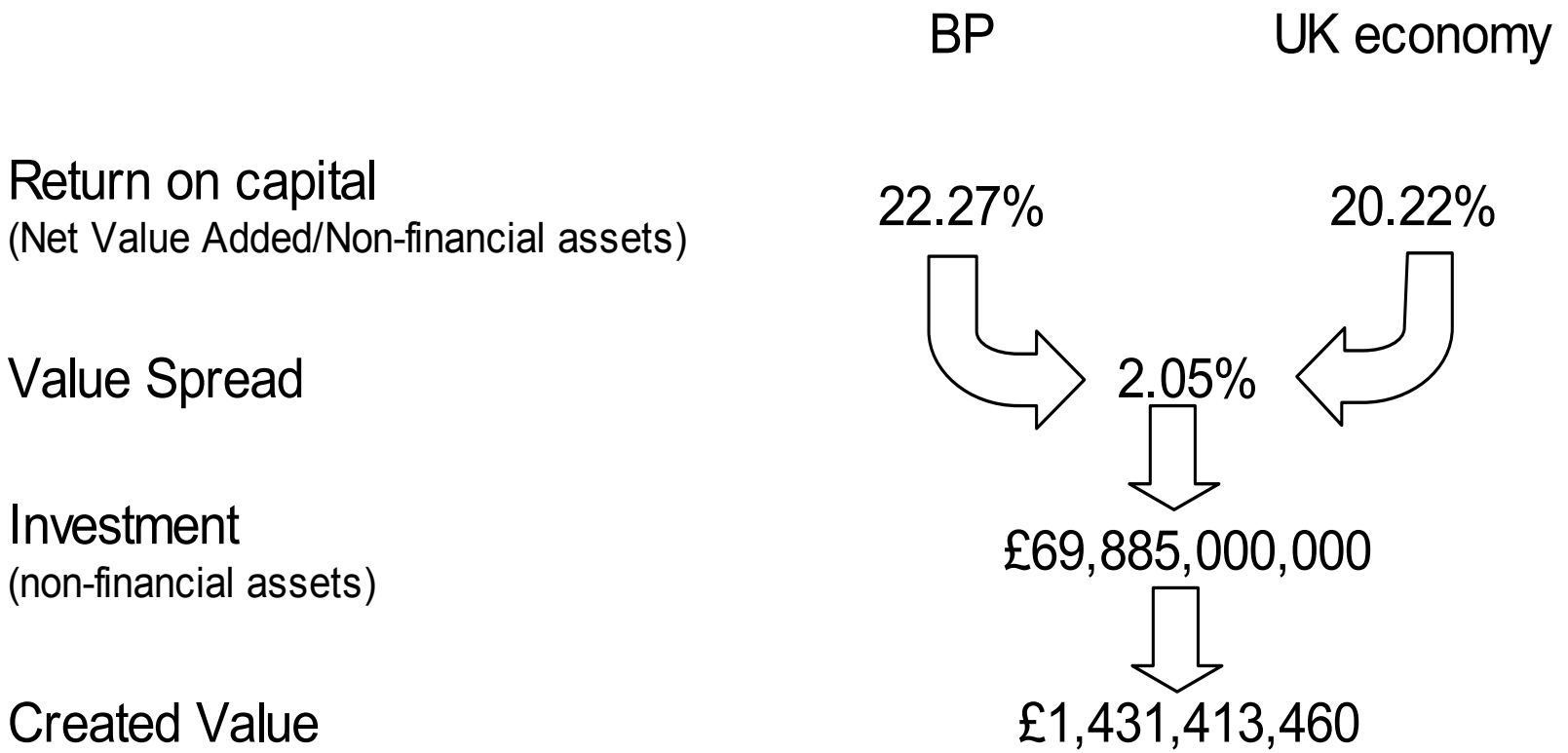
(Green 1894)

The Value-Oriented Approach

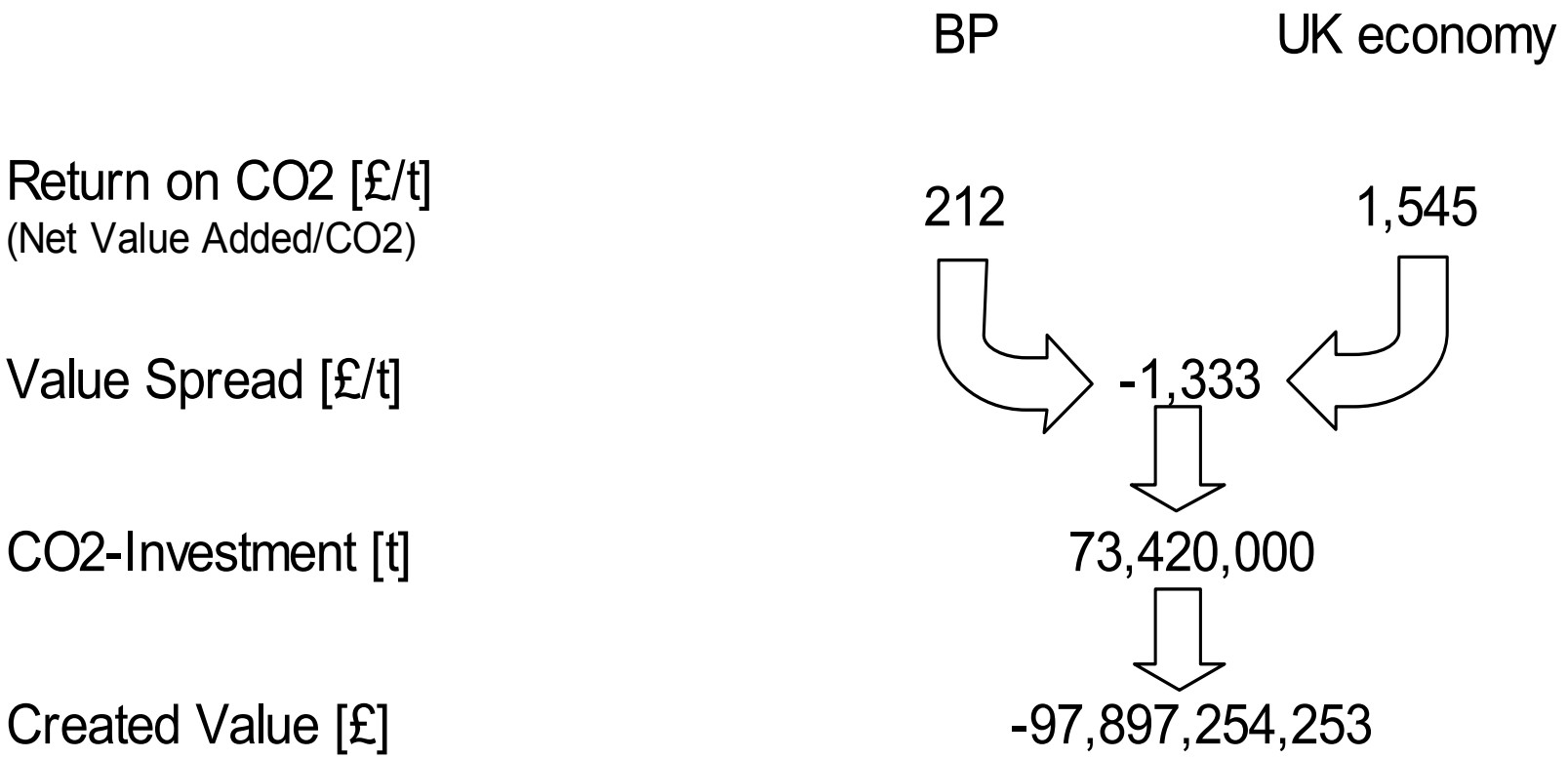
- How much value is created?
  - How much € value is created per ton of CO_2?
  - How much € value is created per ton of VOC?
- Compare the value of alternative uses (opportunity costs)
  - When used in another place – how much more value is created?
- It‘s
  - Focused on how much value is created.
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

How can we deal with environmental & social burdens?

Let's look at it in economic terms: Creating economic value



... an analogous environmental perspective: Creating environmental value



BP's Sustainable Value in 2001
The big picture

	Return on capital [£/unit]		Opportunity cost of capital [£/unit]		Value spread [£/unit]		Amount of capital used	Value created [Mio £]
Economic capital	(0.2227	-	0.2022	) ⇨	0.0205	*	69,885 Mio £=	1,431
CO_2	(0.0002	-	0.0015	) ⇨	-0.0013	*	73,420,000 t=	-97,897
CH_4	(0.0424	-	0.4030	) ⇨	-0.3606	*	367,201 t=	-132,425
SO_2	(0.0693	-	0.7864	) ⇨	-0.7171	*	224,541 t=	-161,020
NO_X	(0.0585	-	0.5266	) ⇨	-0.4681	*	266,133 t=	-124,587
CO	(0.1249	-	0.2230	) ⇨	-0.0981	*	124,584 t=	-12,225
Work accidents	(187.5060	-	6.6673	) ⇨	180.8388	*	83 =	15,010
PM10	(0.9338	-	4.9703	) ⇨	-4.0365	*	16,666 t=	-67,272
					Sustainable Value			-72,373 Mio £

Source: Figge & Hahn 2004

Let's wrap up for today

- Sustainable Value
  - allows to assess the sustainable performance of companies or other economic entities similar to financial performance.
  - is based on opportunity costs.
  - expresses corporate sustainable performance in monetary terms.
  - is based on data which is publicly available.
  - does not require external cost figures or similar.
  - based on publicly available information we can calculate that BP creates a negative sustainable value of about 72,000 Mio £ (about 8% of British GDP).

How do we **ADVANCE**?

- **ADVANCE** is an EU-funded project to assess the sustainable performance of European industry using the Sustainable Value-approach.
- We will assess about 50 companies until the end of this year.
- Assessment results will be published in a survey and the methodology will be published in a handbook.
- We will present the findings of our project in conferences all over Europe.
- Visit our project website for more information:

  www.advance-project.org

Publications

- Figge, F. & Hahn, T. (forthcoming): ”The Cost of Sustainability Capital and the Creation of Sustainable Value of Companies”, Journal of Industrial Ecology.
- Figge, F. & Hahn, T, (forthcoming): "Sustainable Value - Ein wertorientierter Ansatz zur Ermittlung der Nachhaltigkeitseffizienz und der nachhaltigen Wertschöpfung von Unternehmen", in: Busch, T. & Liedke, C. (Hrsg.): Materialeffizienz: Potenziale bewerten, Innovationen fördern, Beschäftigung sichern. München: ökom.
- Figge, F. & Hahn, T. (2004): "Sustainable Value Added. Measuring Corporate Contributions to Sustainability Beyond Eco-Efficiency", Ecological Economics, 48(2), 173-187.
- Figge, F. & Hahn, T. (2004): "Value-oriented impact assessment: the economics of a new approach to impact assessment", Journal of Environmental Planning and Management, 47(6), 921-941.
- Figge, F. & Hahn, T. (2004): "Sustainable Value Added - ein neues Maß des Nachhaltigkeitsbeitrags von Unternehmen am Beispiel der Henkel KGaA", Quarterly Journal of Economic Research, 73(1), 126-141.
- Figge, F. (2001): "Environmental Value Added - Ein neues Maß zur Messung der Öko-Effizienz", Zeitschrift für Angewandte Umweltforschung, 14(1-4), 184-197.

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