

Sustainable Value of European Industry

A Value-Based Analysis of the Environmental Performance of European Manufacturing Companies

SHORT VERSION

ADVANCE is conducted by researchers of the following institutions:



University of St Andrews & Sustainable Development Research Centre (SDRC),
Forres, United Kingdom (www.sustainableresearch.com)
Prof Frank Figge, Ralf Barkemeyer



IZT – Institute for Futures Studies and Technology Assessment,
Berlin, Germany (www.izt.de)
Dr Tobias Hahn, Burkart Hansberg



Avanzi SRI research, Milan, Italy (www.avanzi-sri.org)
Cristina Daverio, Roberto Savia



GES Investment Services, Stockholm, Sweden (www.ges-invest.com)
Martin Persson, Jakob König



Institute for Strategic Research (ISR), Budapest, Hungary
(www.strategiakutato.hu)
Balázs Brunczel



scoris Sustainable Investment Research International, Hanover, Germany
(www.scoris.de)
Axel Wilhelm, Claudia Mauritz



The ADVANCE Survey

The ADVANCE survey assesses the value created by 65 European companies from the manufacturing sector through their environmental performance. ADVANCE uses the Sustainable Value approach which enables sustainable performance to be measured in monetary terms. ADVANCE is funded by the EU and the participating organisations.

The assessment approaches used to date do not allow the expression of corporate environmental performance in monetary terms. In addition, it has been notoriously difficult to express corporate environmental performance in a way that is inline with financial market and business decision makers. For the first time, ADVANCE applies a methodology on a large scale that takes a fresh look at measuring environmental performance.

Sustainable Value measures the use of environmental resources in a new way. Rather than comparing how costly, painful or burdensome the use of an environmental resource is, Sustainable Value compares the value that can be created with a resource by different economic actors. From this point of view, companies create value whenever they use a resource more efficiently than other companies. This approach is new – and builds on a long tradition. What Sustainable Value now applies to environmental resources has been practised in the financial markets for many decades. As a result, Sustainable Value expresses corporate environmental performance in monetary terms and inline with managerial thinking.

This short version of the ADVANCE survey provides a brief but comprehensive overview of the methodology, results and major findings of the environmental assessment of 65 European companies. The full version of the ADVANCE survey is available at **www.advanced-project.org**.

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What is ADVANCE all about?

ADVANCE assesses the environmental performance of 65 European companies from the manufacturing sector with the Sustainable Value approach. ADVANCE represents the first large-scale application of the Sustainable Value approach, whilst at the same time, it demonstrates the real world applicability of the approach. By using the environmental data that is available in the market today, ADVANCE provides a transparent and meaningful assessment of the environmental performance of 65 European companies in monetary terms.

What is the Sustainable Value approach?

Conventionally, investors and analysts concentrate on the return on capital. However, companies do not only use economic capital but also environmental and social resources to create a return. In order to assess corporate sustainable performance we need to assess the use of the entire bundle of resources. Sustainable Value expresses the use of a bundle of resources in monetary terms. It is based on a fundamental insight of financial economics: To create value, a company must use resources more efficiently than other companies. Sustainable Value therefore compares the resource use of a company to a benchmark. A company that emits 10 tons of CO₂ to create 100 € Gross Value Added has a CO₂-efficiency of 10 € per ton of CO₂. If companies in the EU15 created only 6 € Gross Value Added per ton of CO₂ on average, then 10 tons of CO₂ create 60 € of Gross Value Added on the EU15 benchmark level. This is the return that would have been created if the 10 tons of CO₂ had been used by the benchmark instead of the company (opportunity costs). The company therefore creates 40 € more return with 10 tons of CO₂ compared to the benchmark. In other words, the company covers its opportunity costs and creates a value of 40 €. Sustainable Value applies this line of thinking to all kinds of resources that companies

use. It can express the use of economic, environmental and social resources in monetary terms. Sustainable Value shows the value that a company creates or destroys by the use of a set of resources. Sustainable Value extends the logic of financial markets to cover more than economic capital. And it translates corporate sustainable performance into a language that is inline with managers' and investors' thinking.

What does ADVANCE look at?

ADVANCE applies the Sustainable Value approach to assess the use of 7 environmental resources by 65 European companies from 16 countries and 18 different sectors. The 7 environmental resources that we take into account are:

- Carbon dioxide (CO₂)-emissions,
- Nitrogen oxide (NO_x)-emissions,
- Sulphur oxide (SO_x)-emissions,
- Emissions of volatile organic compounds (VOC),
- Methane (CH₄)-emissions,
- Waste generation and
- Water use.

As pointed out above, a company creates value when it generates more return with its resources than the benchmark. ADVANCE uses the EU15 as the benchmark.

How do we calculate Sustainable Value?

We determine for each company, where the resources of the company create more return: In the company or in the EU15 on average. For this purpose, we determine how much Gross Value Added a company creates with the different resources it uses. For instance, the Italian autoparts company Pirelli, emitted 1.37 million tons of CO₂ in 2003. At the same time, it created a Gross Value Added of 2.03 billion € and thus 1,478 € per ton of CO₂. In 2003, the EU15

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created 2,701 € GDP per ton of CO₂ emitted. Used by Pirelli, 1.37 million tons of CO₂ create 2,03 billion €. If the same amount of CO₂ emissions was to be used by the EU15 instead of Pirelli, a return of 3.7 billion € would have resulted. This represents the opportunity cost of Pirelli's CO₂-emissions. We now compare the return that the company has created with the return the benchmark would have created with the company's resources (opportunity costs). In this case, the benchmark would have created a higher return than Pirelli. In 2003, Pirelli thus did not use CO₂ in a value-creating way. The value contribution of Pirelli's CO₂-emissions in 2003 is -1.67 billion €. Figure A illustrates the analysis.

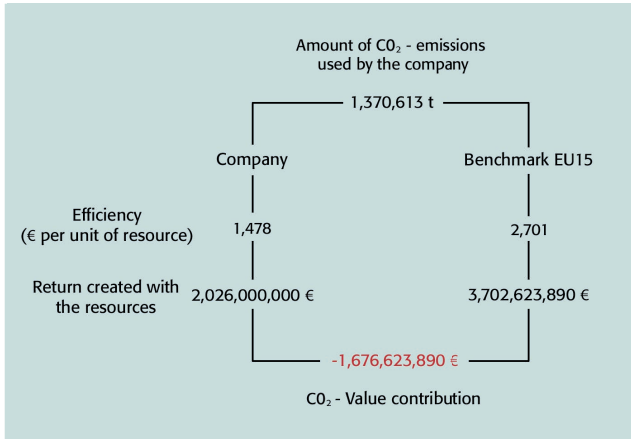


Figure A. Calculating Sustainable Value – The example of Pirelli and CO₂-emissions in 2003.

We apply this logic to all seven environmental resources listed above to obtain the value contribution of every resource. In 2003, Pirelli used five out of the seven environmental resources in a value-creating way. In the last step, we determine how much value is created

by the entire bundle of resources. Overall, with the set of seven different environmental resources considered in the ADVANCE survey, Pirelli has created a Sustainable Value of about 485 million € in 2003. Put differently, with its resources Pirelli has created 485 million € more return than the EU15 on average would have created by using the same bundle of resources. Figure B illustrates the overall results for Pirelli. Annex II of the full version of the survey offers in-depth profiles of all 65 companies analysed in the ADVANCE project (a detailed explanation of the profile set-up and its various indicators is provided in section 5.1.1 of the full version).

How do we take company size into account?

When comparing companies, a size effect gets in the way. Usually, large companies are expected to have larger profit, sales or cash flow figures. The same applies to Sustainable Value figures. We therefore take company size into account when comparing different companies. For this purpose, we use the so-called Return to Cost Ratio (RCR). The Return to Cost Ratio compares the Gross Value Added of a company to the return the benchmark would have created with the resources of the company (opportunity costs). Thus, it is a typical benefit-to-cost-ratio. A Return to Cost Ratio larger (smaller) than 1 indicates that the company yields more (less) return per unit of resource, i.e. the company uses its bundle of resources more (less) efficiently than the EU15 on average. For instance, Pirelli had a Return to Cost Ratio of 1.3 : 1 in 2003, i.e. overall it used its resources 1.3 times more efficiently than the EU15 on average. This means that Pirelli achieved a return of 1.30 € Gross Value Added where the EU15 on average created only 1 € with the same set of resources. Holmen, a Swedish forestry & paper company, with its Return to Cost Ratio of 1 : 2.1 uses its resources only about half as efficiently than the benchmark. In other words, Holmen creates only 1 € of Gross Value Added out of a set of resources that would yield 2.10 € if the benchmark used these resources.

Country	Italy	Sustainable Value ^{Env}	Performance in 2003 484,840,349 €
Industry	Autoparts	Return to Cost Ratio	1.3 : 1
		Rank	28

Performance			
	2001	2002	2003
Gross Value Added	2,335,000,000 €	1,990,000,000 €	2,026,000,000 €
Sales	7,762,000,000 €	6,718,000,000 €	6,671,000,000 €
CO ₂ -emissions [t]	1,435,632	1,330,342	1,370,613
NO _x -emissions [t]	845	737	772
SO _x -emissions [t]	0	0	0
Waste generated [t]	145,096	153,943	171,867
Water used [m ³]	29,632,531	29,898,051	29,960,663
VOC-emissions [t]	6,201	3,693	4,111
CH ₄ -emissions [t]	0	0	0

Opportunity Costs of Resource Use by the Company				
	2001	2002	2003	2003 › 2010
CO ₂ -emissions	3,751,413,903 €	3,605,120,032 €	3,702,623,890 €	5,116,989,610 €
NO _x -emissions	773,641,469 €	718,112,336 €	774,896,587 €	1,492,038,346 €
SO _x -emissions	0 €	0 €	0 €	0 €
Waste generated	889,427,539 €	963,143,899 €	1,077,583,797 €	1,684,671,208 €
Water used	1,161,020,444 €	1,217,523,725 €	1,242,562,830 €	1,573,580,193 €
VOC-emissions	5,368,909,873 €	3,465,998,048 €	3,990,450,456 €	8,436,781,514 €
CH ₄ -emissions	0 €	0 €	0 €	0 €

Value Contributions				
	2001	2002	2003	2003 › 2010
CO ₂ -emissions	-1,416,413,903 €	-1,615,120,032 €	-1,676,623,890 €	-3,090,989,610 €
NO _x -emissions	1,561,358,531 €	1,271,887,664 €	1,251,103,413 €	533,961,654 €
SO _x -emissions	2,335,000,000 €	1,990,000,000 €	2,026,000,000 €	2,026,000,000 €
Waste generated	1,445,572,461 €	1,026,856,102 €	948,416,203 €	341,328,792 €
Water used	1,173,979,556 €	772,476,276 €	783,437,170 €	452,419,807 €
VOC-emissions	-3,033,909,873 €	-1,475,998,048 €	-1,964,450,456 €	-6,410,781,514 €
CH ₄ -emissions	2,335,000,000 €	1,990,000,000 €	2,026,000,000 €	2,026,000,000 €
Sustainable Value^{Env}	628,655,253 €	565,728,852 €	484,840,349 €	-588,865,839 €
Return to Cost Ratio	1.4 : 1	1.4 : 1	1.3 : 1	1 : 1.3
Rank	26	28	28	29
SV Margin	8.1%	8.4%	7.3%	-8.8%

Figure B. Presentation of the detailed results – The case of Pirelli.

How does ADVANCE look into the future?

The ADVANCE survey assesses the environmental performance of 65 European companies under two different scenarios. The past performance scenario assesses the environmental performance of the companies over a time period of three years from 2001 to 2003. Here, we use the EU15 performance in the respective years as the benchmark. The results show which companies have created Sustainable Value in the past. In the future performance scenario, we compare the company performance to the EU15 policy targets for 2010. The EU15 strives for both, a higher GDP as well as lower environmental impacts. As a result of the quantified targets for 2010, we know how efficiently the EU15 wants to use environmental resources by 2010. With these target efficiencies we calculate how much Gross Value Added companies must create with their environmental resources to create Sustainable Value in the future.

What are the results?

In the past performance scenario, we analyse which companies created a positive Sustainable Value in the past. In the years 2001 to 2003, 29 of the 65 companies created a positive Sustainable Value. These companies used their bundle of environmental resources more efficiently than the EU15 benchmark. The spread of Sustainable Value between the leaders and the laggards is considerable: While DaimlerChrysler created a positive Sustainable Value of 29.9 billion € in 2003, Shell had a negative Sustainable Value of –180.9 billion €. To rank the 65 companies, we compared their respective Return to Cost Ratios, i.e. we took company size into account. Table A shows the ranking of the 65 companies according to their performance in 2003. Airbus holds the top position while MVM is last in the ranking. DaimlerChrysler, the company that produces the highest absolute Sustainable Value in the survey, comes in eighth. This indicates the effect of company size: If we take into account

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Table A. Company ranking for the year 2003.

Rank 2003	Company	RCR 2003	Sustainable Value 2003
1	Airbus	4.5 : 1	4,979,414,025 €
2	Novonordisk	4.4 : 1	1,803,753,359 €
3	Gorenje	4.3 : 1	173,345,874 €
4	BMW	3.9 : 1	9,510,633,231 €
5	Schering	3.8 : 1	1,856,454,221 €
6	Philips	3.6 : 1	7,598,054,795 €
7	DaimlerChrysler	3.6 : 1	29,876,257,351 €
8	Heidelberger Druckmaschinen	3.4 : 1	1,045,327,850 €
9	Agfa-Gevaert	3.1 : 1	1,414,583,745 €
10	PSA	3 : 1	6,768,651,026 €
11	NedCar	2.9 : 1	332,640,428 €
12	ABB	2.8 : 1	4,864,578,563 €
13	Robert Bosch	2.7 : 1	9,831,338,053 €
14	MAN	2.5 : 1	2,911,193,152 €
15	Volvo	2.5 : 1	3,396,583,146 €
16	Henkel	2.5 : 1	1,727,305,657 €
17	STMicroelectronics	2.2 : 1	1,864,722,805 €
18	AstraZeneca	2.1 : 1	4,751,779,963 €
19	Scania	2 : 1	918,892,898 €
20	Renault	1.9 : 1	4,033,665,898 €
21	Novozymes	1.7 : 1	188,204,358 €
22	Electrolux	1.6 : 1	1,344,258,783 €
23	Atlas Copco	1.6 : 1	764,760,925 €
24	Richter	1.5 : 1	65,527,374 €
25	Volkswagen	1.5 : 1	8,059,197,491 €
26	Unilever	1.4 : 1	3,936,173,454 €
27	Heineken	1.3 : 1	945,376,403 €
28	Pirelli	1.3 : 1	484,840,349 €
29	SKF	1.3 : 1	462,421,338 €
30	Acea	1 : 1.2	-92,371,263 €
31	Imperial Chemical Industries	1 : 1.4	-1,179,280,321 €
32	SCA	1 : 1.6	-2,053,526,721 €

Rank 2003	Company	RCR 2003	Sustainable Value 2003
33	FIAT Group	1 : 1.8	-5,167,821,763 €
34	Holmen	1 : 2.1	-686,700,910 €
35	BASF	1 : 2.2	-13,872,669,586 €
36	Royal DSM	1 : 2.2	-2,362,906,433 €
37	Centrica	1 : 2.6	-6,484,312,051 €
38	Degussa	1 : 2.7	-8,294,523,146 €
39	BG Group	1 : 2.7	-4,664,900,505 €
40	UPM-Kymmene	1 : 2.7	-5,896,828,632 €
41	AEM Torino	1 : 3.2	-454,372,273 €
42	M-Real Corporation	1 : 3.2	-3,484,338,448 €
43	Pilkington	1 : 3.9	-4,271,035,368 €
44	Stora Enso	1 : 4.6	-14,082,317,266 €
45	ENEL	1 : 5	-53,148,520,028 €
46	Crown van Gelder	1 : 5	-155,668,471 €
47	BP	1 : 5.4	-134,132,952,397 €
48	OMV	1 : 5.8	-7,462,535,912 €
49	Shell	1 : 5.9	-180,917,018,746 €
50	ASM	1 : 6	-1,627,498,489 €
51	ENI	1 : 7.1	-76,763,875,489 €
52	Celanese	1 : 7.8	-7,553,743,315 €
53	Repsol YPF	1 : 8.7	-55,854,211,710 €
54	Suez	1 : 8.9	-110,625,047,824 €
55	Scottish & Southern Energy	1 : 9	-12,309,698,069 €
56	Kemira	1 : 9.2	-6,383,372,500 €
57	AEM	1 : 14.2	-7,142,337,483 €
58	Fortum	1 : 16.3	-40,000,506,604 €
59	Edison	1 : 18.8	-22,242,425,384 €
60	Energias de Portugal	1 : 21	-47,855,870,740 €
61	Slovnaft	1 : 26.1	-5,612,746,855 €
62	ERG	1 : 27.9	-13,934,166,613 €
63	Union Fenosa	1 : 29.7	-56,413,585,743 €
64	Unipetrol	1 : 40	-9,494,288,327 €
65	MVM	1 : 188.3	-49,084,322,299 €

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company size, DaimlerChrysler does not hold the top position any more. Accordingly, at the bottom of the ranking, Shell's highly negative Sustainable Value is partly due to its size. Shell comes in on rank 49 in the Return to Cost Ratio ranking. The top ranking companies have a Return to Cost Ratio of more than 4 : 1. This means that they use their environmental resources over four times more efficiently than the EU15 on average. In contrast, the lowest ranking companies are 30 times or more inefficient compared to the EU15 benchmark (for a more detailed description of the results see section 5.1.1 of the full version).

The results of the future performance scenario show which companies use their environmental resources in a value-creating way, in the light of the 2010 performance targets already today. In this scenario, 25 of the 65 companies have a positive Sustainable Value. Looking at the Return to Cost Ratio ranking of the companies in the future performance scenario, we find that the top position has changed. It is now held by Novonordisk. Airbus, the leader in the 2003 past performance scenario, ranks fourth (for detailed results of the future performance scenario see section 5.1.2 of the full version). The changes in the ranking are due to the different exposure of the companies vis-à-vis the different reduction targets. For instance, the EU has set a particularly ambitious target for VOC emissions. Companies with a poor VOC-efficiency will be hit particularly hard by this target.

Assessing corporate environmental performance with the Sustainable Value approach offers a wide variety of in-depth analyses. The results of the in-depth analyses provide more detailed insight into the environmental performance of the 65 companies.

The Sustainable Value of companies depends on their sector affiliation.

ADVANCE takes an in-depth look at the following seven sectors: automobile, chemicals, engineering & machinery, forestry &

paper, oil & gas, pharmaceuticals, and utilities. It is not surprising that sector affiliation is an important determinant of a company's performance. There is a clear distinction between more resource intensive sectors on the one hand, and more R&D and knowledge driven sectors on the other hand. Consequently, most of the companies from the automobile, engineering & machinery and pharmaceuticals sectors have a positive Sustainable Value. By contrast, companies from the forestry & paper industry, the oil & gas sector, and utilities use their environmental resources less efficiently than the EU15 on average.

The performance of companies within sectors varies considerably.

Comparing the companies of the same sector (best in class) shows that performance within sectors sometimes varies considerably. This allows us to distinguish between leaders and laggards of the different sectors. For instance in 2003, BMW, the most eco-efficient European automobile company, uses its environmental resources about seven times more efficiently than FIAT, the laggard within this sector. Such differences between the performances of companies of the same sector indicate that there may be a considerable impact of different management practices and technologies applied (for more details see section 5.2.2 of the full version).

The sectors are characterised by specific strengths and weaknesses.

The in-depth analysis shows the specific strengths and weaknesses for each sector. For this purpose, we compare the efficiency of resource use in a sector to the EU15 benchmark. As a result, we can distinguish between those resources that are used in the most value-creating way in a sector, and those that are most detrimental for the sector's performance. For instance, it turns out that from a value-oriented perspective, SO_x-emis-

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sions represent a specific weakness in the oil & gas sector as they have been used more than 13 times less efficiently than the EU15 average in 2003. In the engineering & machinery sector, by contrast, SO_x-emissions constitute a value driver as they have been used more than 30 times more efficiently than by the benchmark. An interesting case arises in the automobile sector: In 2003, all resources have been used more efficiently compared to the EU15 benchmark. However, assessed against the 2010 reduction targets, the VOC-emissions in the automobile sector are not used in a value-creating way (for more details see 5.2.2 in the full version).

Not all companies succeeded to improve their environmental performance between 2001 and 2003.

The past performance scenario assesses the environmental performance of the 65 companies between 2001 and 2003. We show which of the companies achieved the strongest improvements of their environmental performance and which companies' environmental performance deteriorated most between 2001 and 2003. The results show quite a large performance spread. ENEL succeeded to improve its overall resource efficiency by about 80% from 2001 to 2003. By contrast, in 2003 OMV used its bundle of environmental resources only half as efficiently as in 2001. We are thus able to distinguish between companies, which follow a positive performance trend from those that are on a downward trend (for more details see section 5.2.1 of the full version).

The 2010 EU performance targets affect the companies to different degrees.

The future performance scenario assesses the resource use of companies in the light of the performance targets for 2010. These targets hit some companies harder than others. The in-depth analysis of the results of the future performance scenario

shows which companies are most vulnerable to the 2010 emission reduction targets and potential future regulation. It turns out that PSA is affected most by the performance targets, followed by Richter, a Hungarian pharmaceuticals company. The results identify the most challenging environmental areas for the different companies in the future (for more details see section 5.2.1 of the full version).

What are the main conclusions?

The ADVANCE survey represents the first large scale application of the Sustainable Value approach to European companies from the manufacturing sector. At the same time, it demonstrates that the Sustainable Value approach can be successfully applied under real world conditions. The results of ADVANCE lead to a number of interesting implications.

Corporate environmental reporting needs to improve dramatically.

The ADVANCE survey is based on information and data that companies are already publishing today. Through ADVANCE, we thus demonstrate that a monetary assessment of corporate environmental performance can be done with the information that is already available today. At the same time, the experience of the ADVANCE project shows that there is an urgent need to improve the quality of corporate environmental reporting considerably, and on a large scale. More standardised and higher quality environmental data and reports are an important prerequisite for applying the Sustainable Value approach to a larger number of companies.

The Sustainable Value approach allows the translation of corporate environmental performance into the language of investors and managers.

Methodologically, the Sustainable Value approach is based on the notion of opportunity costs. Today, opportunity cost

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thinking is only applied to the use of economic capital in companies. Sustainable Value extends opportunity cost thinking to environmental resources for the first time. The Sustainable Value approach thus combines the managers' and investors' way of thinking with corporate environmental performance assessment.

The results of the ADVANCE survey and the Sustainable Value approach are highly useful for different stakeholders.

For instance, managers can use the Sustainable Value approach to measure, monitor, and communicate their environmental performance. Moreover, they can use the results of the future performance scenario as early warning signals for particularly relevant environmental areas in the future. Socially responsible investors and analysts can use the Sustainable Value methodology to identify out- and under-performers. The future performance scenario is particularly interesting in the context of risk analyses: SRI-investors can determine which companies are most vulnerable to tightened regulation in different environmental areas. Socially responsible investors and analysts will benefit widely from the value-based logic of the analysis because it makes the results compatible with standard financial analyses.

Overall, the ADVANCE survey provides a transparent and meaningful monetary assessment of 65 European companies' environmental performance. We are confident, that the ADVANCE survey represents one of the most in-depth quantitative analyses of corporate environmental performance of European companies so far. We believe that the results of the ADVANCE survey are highly encouraging and hope that many readers share our enthusiasm to further spread the Sustainable Value methodology to advance corporate sustainability.

More information on ADVANCE and Sustainable Value

More information on the ADVANCE-project can be found here:

www.advance-project.org.

A detailed presentation of the Sustainable Value approach is available at **www.sustainablevalue.com**.

In addition, there are a number of publications on the Sustainable Value approach:

Figge, F. & Hahn, T. (2005): "The Cost of Sustainability Capital and the Creation of Sustainable Value by Companies", *Journal of Industrial Ecology*, 9(4), 47-58.

Figge, F. & Hahn, T. (2005): "Créer de la valeur durable. Un nouvel impératif pour les entreprises françaises : les cas de Danone SA.", *Ressources Humaines pour Décideurs*, (Décembre 2005), 3-4.

Figge, F. & Hahn, T. (2005): "Unternehmerische Nachhaltigkeit messen", *Umweltperspektiven*, (Oktober 2005), 19-21.

Figge, F. & Hahn, T. (2005): "Sustainable Value - Ein wertorientierter Ansatz zur Ermittlung der Nachhaltigkeitseffizienz und der nachhaltigen Wertschöpfung von Unternehmen", in: Busch, T. & Liedtke, C. (Hrsg.): *Materialeffizienz: Potenziale bewerten, Innovationen fördern, Beschäftigung sichern*. München: ökom, 203-216.

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", *Vierteljahreshefte zur Wirtschaftsforschung*, 73(1), 126-141.

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

Figge, F. (2001): "Environmental Value Added - Ein neues Maß zur Messung der Öko-Effizienz", *Zeitschrift für angewandte Umweltforschung*, 14(1-4), 184-197.

Contacts

Prof Frank Figge
University of St Andrews & Sustainable
Development Research Centre (SDRC)

The Enterprise Park
Forres, Moray, IV36 2AB, United Kingdom
Tel. +44-1309-678113
Fax. +44-1309-678114
E-Mail: figge@sustainablevalue.com

Dr Tobias Hahn
IZT – Institute for Futures Studies
and Technology Assessment

Schopenhauerstr. 26
14129 Berlin, Germany
Tel. +49-30-803088-24
Fax. +49-30-803088-88
E-Mail: t.hahn@izt.de

Full version of the ADVANCE survey

The full version of the ADVANCE survey is available as a free download on the web at:

www.advance-project.org

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Design and Layout
dasgelbetrikot, Berlin
Marcus Dittberner, Kim Klakow

Printing
Gieselmanndruck, Potsdam

www.advance-project.org
www.sustainablevalue.com