Schlussbericht gem. § 11 Abs. 2 BEBF 98

für das Forschungsvorhaben

„Betriebliche Umweltrechnungslegung und die Verbindungen zwischen unterschiedlichen Entscheidungsebenen, sowie diesbezügliche Bewertungsverfahren für Nachhaltigkeit in den Finanzmärkten“

Auftragnehmer: Universität Lüneburg	Kennzeichen: 01RU0039
Vorhabenbezeichnung: Betriebliche Umweltrechnungslegung und die Verbindungen zwischen unterschiedlichen Entscheidungsebenen, sowie diesbezügliche Bewertungsverfahren für Nachhaltigkeit in den Finanzmärkten	
Laufzeit des Vorhabens: 01.05.2000 bis 31.03.2002	
Berichtszeitraum: Gesamtprojekt	

1. Aufgabenstellung

Unter Experten besteht weitgehende Einigkeit, dass durch die Einführung einer modernen betrieblichen Umweltrechnungslegung (vgl. z.B. Schaltegger et al. 1996) und insbesondere auch der sogenannten Flusskostenrechnung in Unternehmen durch zusätzliche Umweltschutzmaßnahmen erhebliche Kosteneinsparungen erzielt werden können (vgl. z.B. Fichter et al. 1997, Schaltegger & Müller 1997, UBA 1997, Fischer et al. 1997). Trotz offensichtlicher ökonomischer und ökologischer Vorteile hapert es bei der Verbreitung dieser Ansätze und einer Umsetzung in der Praxis. Informations- und Anreizprobleme in den Unternehmen, insbesondere auch in mittelständischen Betrieben, zählen zu den wesentlichen Gründen für die Diskrepanz zwischen dem Stand der konzeptionellen Überlegungen einerseits und der praktischen Umsetzung andererseits (vgl. auch Schaltegger & Burritt 2000).

Analog zum Verlauf des Vorhabens lässt sich die Aufgabenstellung in zwei große Teile gliedern. Zunächst stand die Analyse grundsätzlicher Fragen möglicher Förderwege für die verstärkte Anwendung von Instrumenten des betrieblichen Umweltrechnungswesens im Mittelpunkt. In diesem Zusammenhang stellen sich zum Beispiel folgende Fragen: Wie kann die Umsetzung einer modernen betrieblichen Umweltrechnungslegung in Unternehmen auf breiter Basis gefördert werden? Welche Rolle können Regierungen und internationale Organisationen, insbesondere die UNO dabei spielen? Welche Pfade und Ansatzpunkte zur Förderung der betrieblichen Umweltrechnungslegung bestehen zwischen Regierungen einerseits und Unternehmen andererseits? Für die staatliche Förderung der Verbreitung der Umweltrechnungslegung ist die Frage der Verbindungen zwischen staatlichen Aktivitäten und der Anwendung von Umweltrechnungsmethoden in Unternehmen von zentraler Bedeutung. Dennoch stellte die grundlegende Aufgabenstellung des Vorhabens, die strukturelle Analyse verschiedener Fördermöglichkeiten, ein neues, bisher nur am Rande beachtetes Feld der Umweltrechnungslegung dar.

Durch die Erarbeitung eines Arbeitsbuches (Workbook) „EMA-Links" für die Uno Division für nachhaltige Entwicklung (UN Division for Sustainable Development) sollte eine systematische analytische Grundlage geschaffen werden, die Regierungsvertretern, insbesondere Umweltämtern, ein Analyse- und Entscheidungsinstrument an die Hand gibt, um ihre Bemühungen zur Förderung der Durchsetzung der Umweltrechnungslegung durch die Auswahl besonders geeigneter Förderpfade möglichst erfolgreich zu gestalten. Die Analyseaufgabe umfasste drei Schwerpunkte:

1. Welche Verbindungen (Links) existieren zwischen den Instrumenten der betrieblichen Umweltrechnungslegung (Environmental Management Accounting) und lokalen, nationalen und internationalen Regierungsstellen und internationalen Organisationen?
2. Welche dieser Links eignen sich besonders zur Förderung der Anwendung moderner Methoden der betrieblichen Umweltrechnungslegung?
3. Welche gemeinsamen Aspekte, Unterschiede und Lücken bestehen für die einzelnen Links und den damit verbundenen unterschiedlichen Entscheidungsebenen?

Durch die Analyse dieser Fragen sollte eine Grundlage für die Beurteilung und Auswahl der erfolgversprechendsten Förderpfade für unterschiedle Regierungsstellen in verschiedenen Entscheidungssituationen erarbeitet werden. Dabei sollte die Analyse sowohl direkte als auch indirekte Verbindungen zwischen Regierungen und Unternehmen auf ihre Eignung als Förderpfade untersuchen.

Die Planung und Durchführung des 3. internationalen Treffens der UN DSD Expert Working Group on Environmental Management Accounting vom November in Bonn war außerdem Teil des Vorhabens in der ersten Phase. An diesem Treffen wurde auch die erste Version des Workbooks der Expertenrunde vorgestellt und anschließend diskutiert.[1]

Aufbauend auf den Forschungsergebnissen der ersten Phase des Vorhabens, stellte sich im zweiten Teil des Projektes die Aufgabe, einen der erfolgversprechendsten Förderpfade zu operationalisieren und inhaltlich auszugestalten. Als eines der Kernergebnisse des ersten Arbeitsbuches wurden die Finanzmärkte als der geeignetste Pfad für eine indirekte Förderung für die Anwendung des betrieblichen Umweltrechnungswesen in Unternehmen durch Regierungen identifiziert. Auf dieser Grundlage stellte sich in der zweiten Projektphase die Aufgabe, die Erkenntnisse bezüglich Nachhaltigkeitsaspekten auf Finanzmärkten weiter zu vertiefen. Diese Phase sollte drei Teilaspekte umfassen:

1. Erarbeitung eines weiteren Workbooks für die Analyse der Rolle von Nachhaltigkeitsaspekten in Finanzmärkten.
2. Durchführung eines Trainings für Finanzmarktpraktiker zu Nachhaltigkeit in Finanzmärkten im Rahmen eines von der UNDSD organisierten Veranstaltung in Lissabon vom 19.-21. November 2001.
3. Aufbau einer europäischen Website für das Environmental Management Accounting Network (EMAN) zum Thema Environmental Management Accounting.

Die Bearbeitung dieser Fragestellung in einem Workbook sollte inhaltlich in drei Teile untergliedert werden. Damit es zu einer systematischen und umfassenden Berücksichtigung von ökologischen und sozialen Aspekten kommt, sollten Lösungsbeiträge zu drei Problemfeldern geleistet werden:

- Im ersten Teil des Workbooks ging es darum, den Markt für nachhaltige Finanzprodukte in Europa zu analysieren und somit das Marktpotenzial einer Integration von Umwelt- und Sozialaspekten in Finanzmarktentscheidungen aufzuzeigen. Ohne Marktpotenzial werden die Anbieter auf dem Finanzmarkt kein Interesse entwickeln, da sie davon ausgehen müssen, dass es ihnen nicht vom Markt honoriert wird („Market", erstellt durch das imug, Hannover).

[1] Detaillierte Informationen zum Programm, den Teilnehmern und Inhalten des Treffens können online eingesehen werden unter http://www.un.org/esa/sustdev/estemabonn.htm.

- In einem zweiten Teil stand die Darstellung von Analyseinstrumenten eines nachhaltigen Finanzmanagement, einschließlich der dabei verwendeten und benötigten Informationen im Mittelpunkt. Ohne Instrumente und Werkzeuge können die Finanzmarktakteure auf eine Nachfrage nicht reagieren („Tools", erstellt durch das CSM e.V., Universität Lüneburg)
- Im dritten Teil sollte schließlich dargestellt werden, welche empirischen Zusammenhänge zwischen der finanziellen Performance und der Umwelt- und sozialen Performance von Unternehmen gefunden werden können. Ohne einen erwarteten ökonomischen Vorteil durch die Integration von ökologischen und sozialen Aspekten in Entscheidungen des Finanzmarktes kann kein Wettbewerbsvorteil aufgebaut werden und eine Integration von ökologischen und sozialen Aspekten wird – im ökonomischen Sinne – nicht nachhaltig sein („Evidence", erstellt durch das INSTOEC, Oestrich-Winkel).

Hintergrund und Motivation des Workbooks ist die Frage, wie ausgehend von einer gesteigerten Bedeutung von Nachhaltigkeitsaspekten in Finanzmärkten ein Nachfragesog nach betrieblichen Umweltinformationen erreicht werden kann, der letztlich dazu führt, dass Unternehmen vermehrt Instrumente des betrieblichen Umweltrechnungswesen einsetzen, um die Informationsbedürfnisse des Finanzmarktes zu befriedigen. Das zu erarbeitende Workbook sollte sowohl die Verständnisgrundlagen und Erfolgspotenziale für den Zusammenhang zwischen Nachhaltigkeit und den Finanzmärkten als auch Analyseinstrumente für ein nachhaltiges Finanzmanagement aufzeigen.

Bei der inhaltlichen Ausgestaltung des Workbooks wurde eine starke Anwenderorientierung vorgegeben, da das Workbook als Arbeitsgrundlage für die Durchführung eines internationalen mehrtägigen Trainings für Banken und Finanzanalysten verwendet werden sollte. Zusätzlich zu dem Workbook bestand die Aufgabe, für das mehrtägige Seminar für Finanzmarktakteure in Lissabon Arbeits- und Trainingsunterlagen zu erstellen und dieses Training vor Ort durchzuführen. Durch eine solche Veranstaltung sollten erste Schritte in Richtung einer praktischen Umsetzung des Förderpfades für das betriebliche Umweltrechnungswesen über die Integration von Umwelt- und Sozialaspekten in Finanzmarktentscheidungen gegangen werden.

Eine Integration von Nachhaltigkeitsaspekten in Finanzmarktentscheidungen führt zu einer erhöhten Nachfrage nach Umwelt- und Sozialinformationen über Unternehmen seitens der Finanzmarktakteure. Als dritter Aspekt der zweiten Projektphase sollte daher die europäische Website des EMAN aufgebaut werden. Die Webseite fördert die Verbreitung von Informationen über bestehende Instrumente des betrieblichen Umweltrechnungswesens und neueste Entwicklungen im Bereich Environmental Accounting. Dies bietet auch Unternehmen eine Informationsplattform, die ihnen dabei helfen kann, die gesteigerten Informationsbedarfe des Finanzmarktes im Nachhaltigkeitsbereich durch die Einführung von Instrumenten des betrieblichen Umweltrechnungswesens zu erfüllen.

2. Voraussetzungen der Durchführung des FE-Vorhabens

Das Zustandekommen und der Verlauf des FE-Vorhabens „Betriebliche Umweltrechnungslegung und die Verbindungen zwischen unterschiedlichen Entscheidungsebenen, sowie diesbezügliche Bewertungsverfahren für Nachhaltigkeit in den Finanzmärkten" gliedert sich in zwei Phasen, wobei die zweite Phase inhaltlich und logisch auf der ersten aufbaut. Beide Teile des Vorhabens schlossen mit der Erstellung eines Arbeitsbuches (Workbook) ab. Die Initiative für das Vorhabens und für die beiden Arbeitsbücher lag bei der UN Division on Sustainable Development (UNDSD). Das Vorhaben wurde finanziert durch das deutsche Bundesministerium für Bildung und Forschung (BMBF) und von der Deutschen Gesellschaft für Luft- und Raumfahrt e.V. (DLR) als Projektträger verwaltet.

Die von der UNDSD in Leben gerufene internationale Expertenarbeitsgruppe zum betrieblichen Umweltrechnungswesen (United Nations Expert Working Group on Environmental Management Accounting; UN EWGEMA) hat auf ihrem zweiten internationalen Treffen am 15./16. Mai 2000 in Wien die Erarbeitung von drei Arbeitsbüchern (Workbooks) zu drei miteinander sich ergänzenden Fragestellungen diskutiert. Im Vorfeld des Treffens von Wien hat das von der UNDSD gebildete „EMA Expert Steering Comittee" die Aufträge zur Erarbeitung der Workbooks in Absprache mit den jeweiligen nationalen Ministerien vergeben. Neben der Berücksichtigung einer österreichischen Wissenschaftlerin (Dr. C. Jasch, IÖW Wien, Workbook Nr. 1) und einer amerikanischen Wissenschaftlerin (Dr. D. Savage, Tellus Institute, Workbook Nr. 3) wurde das Mandat für das Workbook Nr. 2 für den Themenkomplex „Betriebliche Umweltrechnungslegung und die Verbindungen zwischen unterschiedlichen Entscheidungsebenen" („Environmental Management Accounting (EMA) and the links between different levels of decision making") an Prof. Dr. Stefan Schaltegger, Lehrstuhl für Betriebswirtschaftslehre, insb. Umweltmanagement der Universität Lüneburg, in Zusammenarbeit mit Roger Burritt von der Australian National University vergeben.

Das zweite Workbook und somit die zweite Projektphase setzt inhaltlich und logisch an den Forschungsergebnissen des ersten Arbeitsbuches an. Beim vierten internationalen Folgetreffen der UN EWGEMA vom 5. - 7. Juni 2001 in Tokio wurde die Operationalisierung und inhaltlichen Ausarbeitung eines der erfolgversprechendsten indirekten Förderpfade für die betriebliche Umweltrechnungslegung – die Finanzmärkte – angeregt. Dafür wurde die Erstellung eines Workbooks unter Federführung des Lehrstuhls für Betriebswirtschaftslehre, insb. Umweltmanagement der Universität Lüneburg zu „Appraisal Methodologies, incl. EMA, for Sustainability in Financial Markets (Bewertungsverfahren, einschließlich betrieblicher Umweltrechnungslegung, für Nachhaltigkeit in Finanzmärkten)" in Auftrag gegeben. Das Workbook wurde in seinen oben bereits erwähnten drei Teilen durch drei Institutionen erarbeitet. Während der Teil „Tools" durch das Center for Sustainability Management e.V. (CSM) an der Universität Lüneburg erarbeitet wurde, wurden für den Teil „Market" und den Teil „Evidence" jeweils Unteraufträge an das durch das Institut für Markt-Umwelt-Gesellschaft (imug) in Hannover bzw. an das Institut für Ökologie und Unternehmensführung an der European

Business School e.V. (INSTOEC) vergeben. Dieses Workbook sollte anwendungsorientiert ausgelegt sein und als Trainings- und Schulungsunterlage für Finanzanalysten and Banken zum Themenkomplex Nachhaltigkeit in Finanzmärkten dienen. Dieses Workbook war eingebunden in ein Gesamtpaket dreier Trainingsmodule, an deren Erstellung auch das United Nations Environment Programme, Paris (UNEP) und das International Finance Department der Weltbank, Washington DC (IFC) beteiligt waren.

3. Planung und Ablauf des Vorhabens

Die Gesamtlaufzeit des Vorhabens betrug 23 Monate. Die erste Phase des Vorhabens mit der Erstellung des ersten Workbooks als Kernaufgabe erstreckte sich dabei vom 1.5.2000 bis zum 31.8.2001 (Grundvertrag und 2. Zusatzvertrag). Diese erste Phase lässt sich gemäß der Planung und des Verlaufs des Vorhabens in mehrere Abschnitte gliedern:

- Den ersten Meilenstein des Vorhaben stellte das 2. internationalen Treffen der UN Expert Working Group on Environmental Management Accounting in Wien am 15. und 16. Mai 2000 dar. Auf diesem Treffen wurde die Idee und Themenstellung des Workbooks der Expertengruppe vorgestellt und diskutiert. Die Expertengruppe verabschiedete die Erarbeitung des Workbooks und die Erstellung eines sogenannten first full draft für das folgende 3. internationale Treffen der Gruppe im November 2000 in Bonn.
- In der Zeit zwischen dem 2. und 3. internationalen Treffen der Expert Working Group fiel die Erarbeitung des Version des Workbooks. In intensiver Zusammenarbeit mit dem Unterauftragnehmer Roger Burritt von der Australian National University in Canberra (Australien) wurde zunächst ein analytischer Rahmen erarbeitet, mit Hilfe dessen die Verbindungen zwischen verschiedenen Entscheidungsebenen und der betrieblichen Umweltrechnungslegung untersucht werden können. Anschließend wurde das Analysetool auf einer generellen Ebene auf ein breites Spektrum verschiedener direkter und indirekter Pfade zur Förderung der betrieblichen Umweltrechnungslegung angewandt. Als Ergebnis dieser Analyse wurden die am besten geeigneten direkten und indirekten Einflusspfade sowie die vielversprechendsten Kooperationspartner auf den verschiedenen Entscheidungsebenen herausgearbeitet.
- Auf dem im Rahmen des Vorhabens vom BMBF organisierten und durchgeführten 3. internationalen Treffen der UN Expert Working Group on Environmental Management Accounting wurde das Workbook der Expertenrunde vorgestellt. Die entwickelte Analysemethodik und erzielten Ergebnisse wurden von der Expertenrunde grundsätzlich verabschiedet. Die aus der Diskussion des Workbooks resultierenden Anregungen und Überarbeitungsvorschläge wurden bis zum nächsten Treffen der Expertengruppe eingearbeitet, und die Publikation des Workbooks durch die UNDSD wurde seitens des CSM vorbereitet.
- Auf dem 4. internationalen Treffen der Expert Working Group vom 5. - 7. Juni 2001 in Tokio lag die Endfassung des Workbooks vor und wurde von der Expertenrunde ab-

genommen. Die offizielle Veröffentlichung des Workbooks erfolgte über die Homepage der UNDSD (http://www.un.org/esa/sustdev/policiesandlinkages.pdf). Darüber hinaus wurden mögliche Anschlussprojekte auf der Grundlage der erzielten Ergebnisse der ersten Vorhabensphase diskutiert. Um die Teilnahme von Prof. Schaltegger am Treffen der Expertengruppe zu ermöglichen, wurde das Vorhaben mit dem 2. Zusatzvertrag vom 11. 5. 2001 aufwandsneutral bis zum 31. 8. 2001 verlängert.

- Das über 110 Seiten starke Workbook zur Analyse verschiedener Förderpfade für die verstärkte Anwendung der Instrumente des betrieblichen Umweltrechnungswesens liegt diesem Bericht bei.

Die zweite Projektphase und somit die Fortsetzung des Vorhabens ergab sich durch den auf ihrem 4. Treffen diskutierten und verabschiedeten Vorschlag der UN Expert Working Group, das Potenzial der Ergebnisse des ersten Workbooks zu nutzen und einen der erfolgversprechendsten Förderpfade – die Finanzmärkte – inhaltlich auszuarbeiten. Die zweite Phase des Vorhabens erstreckte sich zeitlich vom 1.9.2001 bis zum 31.3.2002 und wurde durch den 3. und 4. Zusatzvertrag durch das BMBF und die DLR gefördert. Auch für die zweite Projektphase lässt sich der Ablauf anhand verschiedener Meilensteine festmachen:

- Im Anschluss an das 4. Treffen erstellten die drei beteiligten Institute (CSM, imug und INSTOEC) die Unterlagen für das geplante Training zu Bewertungsmethoden für Nachhaltigkeitsaspekte in Investitionsentscheidungen für Finanzmarktakteure am 19.-21. November 2001 in Lissabon. Parallel dazu wurden als Grundlage für das Training die drei inhaltlichen Teile des zweiten Workbooks vorbereitet.
- Vom 19. - 21. November 2001 wurden dann das Trainingsmodul zu „Appraisal Methodologies for Sustainability in Financial Markets" in Lissabon durchgeführt. Die Erfahrungen dieser Veranstaltung flossen in die weitere Ausarbeitung und Finalisierung des Workbooks ein.
- Anfang des Jahres 2002 wurde die Homepage des Environmental Management Accounting Networks Europe (EMAN Europe) online geschaltet (www.eman-eu.net).
- Auf ihrem 5. internationalen Treffen vom 13. - 15. Februar in Bristol (UK) wurde der UN Expert Working Group on Environmental Management Accounting das Workbook in seinen drei Teilen vorgestellt und diskutiert. Die Expertengruppe verabschiedete das Workbook und machte somit den Weg für sine Veröffentlichung durch die UNDSD frei.
- Die Erfahrungen der Trainingsveranstaltung sowie die Anregungen der Expert Working Group sowie der UNDSD wurden in der verbleibenden Vorhabenslaufzeit eingearbeitet, so dass dem Bericht die abschließende Fassung des über 100 Seiten starken Workbooks beiliegt.

4. Wissenschaftlicher Stand

Der Erstellung beider Workbooks ging eine intensive Literaturrecherche voraus, um eine Fundierung auf dem Stand der bisherigen wissenschaftlichen Erkenntnisse in den relevanten Gebieten zu gewährleisten.[2] Für das Workbook „Environmental Management Accounting (EMA) and the links between different levels of decision making" erstreckte sich diese schwerpunktmäßig auf die Bereiche der Umwelt- und konventionellen Rechnungslegung, der (strategischen) Politikformulierung, des Umweltmanagements sowie der Stakeholderliteratur. In den drei Teilen des zweiten Workbooks „Appraisal Methodologies, incl. EMA, for Sustainability in Financial Markets" lagen die inhaltlichen Schwerpunkte der Literaturbasis in den folgenden Bereichen:

- „Markets"
  Eigene Erhebung der Marktsituation durch das imug, verschiedene Befragungen sowohl von Experten als auch von Kunden im Bereich nachhaltiger Finanzprodukte, Literatur zu nachhaltigen Finanzprodukten.
- „Tools"
  Literatur aus den Bereichen Unternehmensbewertung, Finanzierung, Finanzmarktanalyse, Umweltrechnungswesen und Stakeholderansatz.
- „Evidence"
  Empirische Studien über den Zusammenhang zwischen finanzieller und Umweltperformance von Unternehmen, Überblicksstudien zu diesem Thema, methodische Literatur zur Untersuchung des Zusammenhangs zwischen finanzieller und Umweltperformance von Unternehmen.

Bei der Literaturrecherche für die Erstellung des ersten Workbooks zeigte sich, dass sowohl in der Literatur zum Umweltrechnungslegung als auch zum Regierungshandeln die Fragestellung der strukturellen Analyse verschiedener Förderpfade bisher nicht behandelt wurde: Es liegen zwar umfangreiche Veröffentlichungen zu den Instrumenten des betrieblichen Umweltrechnungswesens, zu möglichen Regulierungsformen (policy making) und vereinzelt auch zur strategischen Ausrichtung des Regierungshandelns vor. Die Frage nach der Beurteilung und Auswahl der besten Einflusspfade aus einer strukturellen Sicht bleibt sowohl in der deutschsprachigen als auch in der englischsprachigen Fachliteratur jedoch weitestgehend unbeachtet. Daher stellte sich die besondere Situation, dass zunächst eine geeignete Methodik zur strukturellen Analyse verschiedener direkter und indirekter Verbindungen zwischen Regierungen und Unternehmen als mögliche Förderpfade für die Anwendung der betrieblichen Umweltrechnungslegung erarbeitet werden musste. Das entwickelte Analysetool hat somit Erstmaligkeitscharakter. Für die spezifische Fragestellung des ersten Workbooks liegen keine spezifischen fundierten wissenschaftlichen Vorarbeiten und Erkenntnisse in der Literatur vor.

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[2] In den Workbooks kann die jeweils verwendete Literatur und somit auch die herangezogenen wissenschaftlichen Fundierung in den Literaturverzeichnissen ersehen werden.

Beim zweiten Workbook lag der Schwerpunkt auf der Aufbereitung des Standes der Forschung und Wissenschaft für die Vermittlung der Kernerkenntnisse und wichtigsten Instrumente des nachhaltigen Finanzmanagement an Finanzmarktakteure im Zuge eines mehrtägigen Trainings. Insofern knüpft das zweite Workbook sehr stark an den Stand der Wissenschaft und Forschung in den Bereichen nachhaltige Finanzprodukte, ökologische und ökonomische Unternehmensbewertung, nachhaltiges Finanzmanagement und nachhaltige Unternehmensperformance an. Die Fundierung der jeweiligen Teile des Workbooks im aktuellen wissenschaftlichen Erkenntnisstand wurde auch durch die inhaltliche Aufteilung an Institute entsprechend ihrer Erfahrungen und bisherigen Tätigkeitsschwerpunkte sichergestellt.

5. Zusammenarbeit mit anderen Stellen

Das gesamte Projekt war durch verschiedene intensive Kooperationen mit nationalen und internationalen Partnern gekennzeichnet. Beide Teile des Vorhabens wurden durch die United Nations Division of Sustainable Development (UNDSD) initiiert und begleitet. Das gesamte Vorhaben wurde zudem in einem laufenden Prozess mit der United Nations Expert Working Group on Environmental Management Accounting (UN EWGEMA) auf mehreren internationalen Treffen abgestimmt. Die UN EWGEMA setzt sich dabei aus weltweiten Vertretern aus Regierungen, Umweltbehörden, Forschungsinstitutionen, Verbänden und NGOs zusammen. Die Abstimmung mit der UNDSD und der UN EWGEMA umfasste sowohl die inhaltliche Schwerpunktsetzung und Ausrichtung als auch die Koordination und Planung des Ablaufes des Vorhabens. Beide Workbooks wurden der UN EWGEMA zur Kommentierung vorgelegt und entsprechende überarbeitet und von der Expertengruppe anschließend verabschiedet. Dieses Vorgehen führte zu einer vertieften Zusammenarbeit und einem fundierten inhaltlichen Austausch mit Experten aus Wissenschaft, Praxis und Politik aus verschiedenen Ländern. Auch wurden die Ergebnisse der Forschung im Rahmen zweier Konferenzen des European Environmental Management Accounting Networks (EMAN) in Rotterdam und in Cheltenham der internationalen Fachwelt vorgestellt.

Zur Erstellung des ersten Workbooks wurde ein Unterauftrag an Roger Burritt von der Australian National University vergeben. Sowohl die Entwicklung der Analysemethodik als auch die Analyse geeigneter Förderpfade selbst erfolgte somit in enger Zusammenarbeit mit einem internationalen Partner. Des weiteren wurde die inhaltliche Arbeit am Workbook abgestimmt mit den Autorinnen der beiden anderen von der UNDSD und der UN EWGEMA initiierten Workbooks der ersten Vorhabensphase. Durch diese Koordination mit dem IÖW in Wien (Österreich) und dem Tellus Institute in Boston (USA) wurden die drei Workbooks inhaltlich auf einander abgestimmt und koordiniert.

Das zweite Workbook wurde unter der Federführung des Center for Sustainability Management e.V. (CSM) der Universität Lüneburg (Lehrstuhl für Umweltmanagement, Prof. Dr. Stefan Schaltegger) erstellt. Die drei inhaltlichen Teile des Workbooks entstanden in Zusammenarbeit mit dem Institut für Markt Umwelt Gesellschaft (imug) in Hannover und dem Institut

für Ökologie und Unternehmensführung an der European Business School e.V. (INSTOEC) in Oestrich-Winkel. In Absprache und Kooperation mit diesen nationalen Partnern wurde auch das Training für Finanzmarktakteure über nachhaltige Bewertungsmethoden in Finanzmärkten in Lissabon im November 2001 durchgeführt. Dieser internationale Trainingsworkshop in Lissabon wurde organisiert von der UNDSD und dem portugiesischen National Institute of Industrial Engineering and Technology (INETI). Der von deutscher Seite erbrachte inhaltliche Beitrag war Teil eines Gesamttrainingsprogramms, an dem außerdem das UN Environment Programme (UNEP) und das International Finance Department (IFC) der Weltbank mit inhaltlichen Beiträgen beteiligt waren. Die Teilnehmer des Trainings in Lissabon setzten sich im aus Vertretern von Finanzinstitutionen aus mehr als 20 Ländern zusammen.

6. Erzielte Ergebnisse

Die inhaltlichen Ergebnisse des Vorhabens liegen in den beiden Workbooks vor (siehe Anlage zu diesem Bericht). Für das Workbook „EMA-Links" liegen die Kernergebnisse einerseits in der Entwicklung einer neuen Analysemethodik zur Beurteilung geeigneter struktureller Förderpfade für das Handeln von Regierungsstellen. Dies umfasste die Entwicklung einer geeigneten Vorgehensweise sowie die Formulierung von Analysekriterien. Als Analysekriterien wurden die Interessen und Ziele sowie der Informationsbedarf der involvierten Akteure, die Breite der Verankerung und – bei indirekten Links über andere Management- und Informationssysteme – die methodische Nähe herangezogen. Anderseits wurden verschiedene mögliche direkte und indirekte Pfade zur Förderung der Anwendung des betrieblichen Umweltrechnungswesens analysiert. Zur Analyse direkter Förderpfade wurden verschiedene Regierungsstellen und verschiedene Managementfunktionen in Unternehmen hinsichtlich verschiedener Instrumente des betrieblichen Umweltrechnungswesen untersucht. Die Analyse indirekter Förderpfade betrachtete verschiedene Informations- und Managementsysteme als mögliche Einflusspfade auf die Verbreitung des betrieblichen Umweltrechnungswesens. Auch bei dieser Analyse wurden die Interessen, Ziele und Informationsbedarfe der jeweils involvierten Akteure sowie die Verankerung der Pfade bei verschiedenen Gruppen untersucht. Zusätzlich wurde untersucht, für welche der analysierten Pfade aus der Literatur bereits Erfahrungen vorliegen.

Es ergaben sich auf einer generischen Ebene deutliche Unterschiede in der Eignung verschiedener direkter und indirekter Pfade zur Förderung des betrieblichen Umweltrechnungswesens durch Regierungen. Einige der Pfade, wie zum Beispiel der indirekte Pfad über die Informationssysteme und -bedarfe der Finanzmarktakteure zeigten ein sehr großes Erfolgspotenzial. Über diese generischen inhaltlichen Ergebnisse hinaus zeigte sich aber auch die Notwendigkeit einer systematischen Analyse der angepeilten Förderpfade im Vorfeld der Politikformulierung durch Regierungsstellen. Die Auswahl geeigneter struktureller und akteursbezogener Förderpfade hat einen großen Einfluss auf den Erfolg staatlicher Förderaktivitäten. Vor dem Hintergrund der bisher mangelhaften Beachtung und Bearbeitung dieser Fragestellung ergibt

sich aus dem in diesem Vorhaben entwickelten Analyseinstrument ein hohes Erfolgs- und Nutzenpotenzial.

Die Entwicklung und theoretische Fundierung der Analysemethodik sowie ihre Anwendung auf verschiedene direkte und indirekte Pfade zur Förderung des betrieblichen Umweltrechnungswesens sind in dem beiliegenden Workbook „EMA-Links" ausführlich dargestellt. Zudem liegt mit der ebenfalls beiliegenden neunseitigen Executive Summary eine übersichtliche und konzise Zusammenfassung der Ergebnisse der ersten Vorhabensphase vor.

Das Workbook „Appraisal Methodologies for Sustainability in Financial Markets" stellt die fundierte wissenschaftliche und methodische Grundlage für eine Trainingsveranstaltung für Finanzmarktakteure über Nachhaltigkeitsaspekte in Investitionsentscheidungen. Der Schwerpunkt dieses Workbooks lag somit auf der Aufbereitung des wissenschaftlichen Erkenntnisstandes im Themenfeld Nachhaltigkeit und Finanzmärkte. Die ausführliche Aufarbeitung und Darstellung der Thematik können im beiliegenden Workbook „Appraisal Methodologies for Sustainability in Financial Markets" ersehen werden. Bei der Durchführung des mehrtägigen Trainings in Lissabon zeigte sich ein großes Interesse von Finanzmarktakteuren an der Thematik. Dabei standen vor allem die vorgestellten und an Praxisbeispielen angewandten Analyseinstrumente des nachhaltigen Finanzmanagements im Mittelpunkt des Interesses der anwesenden Finanzmarktakteure, da diese Instrumente handlungsrelevant für Allokationsentscheidungen auf Finanzmärkten sind. Insofern wurde die auch die Relevanz und Notwendigkeit geeigneter Instrumente bestätigt, um die zukunftsorientierten Allokationsentscheidungen der Finanzmärkte auch im Hinblick auf ökologische und soziale Aspekte rational zu gestalten.

Von besonderem Interesse sind die Ergebnisse im Hinblick auf Eignung der Finanzmarktakteure als indirekter Förderpfad für die vermehrte Anwendung der Instrumente des betrieblichen Umweltrechnungswesens. Dies legten die Ergebnisse der ersten Vorhabensphase nahe. Grundsätzlich haben Finanzmarktakteure aufgrund der steigenden Bedeutung der internationalen Finanzmärkte einen großen Einfluss auf die Informationen, die Unternehmen nach außen zur Verfügung stellen. Alle Informationen, die von Unternehmen nach außen kommuniziert werden, müssen jedoch zunächst intern gewonnen werden. Fragen Finanzanalysten nun vermehrt umweltrelevante Information nach, sollte dies zu einer vermehrten Anwendung der unternehmensinternen Instrumente des betrieblichen Umweltrechnungswesens führen. Die Erarbeitung des Workbooks und vor allem die Durchführung des Training für Finanzmarktakteure in Lissabon zeigten die grundlegende Bedeutung der Versorgung der Finanzmarktakteure mit aussagekräftigen umwelt- und sozialrelevanten Informationen: Ohne eine verlässliche und entscheidungsrelevante Informationsbasis kommt es zu keiner sinnvollen Berücksichtigung von Nachhaltigkeitsaspekten in den Investitionsentscheidungen der Finanzmärkte. Um entscheidungsrelevant zu sein und somit auch die gewünschte steuernde Wirkung in Hinblick auf eine nachhaltigere Allokation auf Finanzmärkten zu erreichen, muss diese Informationsgrundlage jedoch an den Bedürfnissen der Finanzmarktakteure ausgerichtet sein. Dazu sind die Instrumente des nachhaltigen Finanzmanagements, die im zweiten Teil des Workbooks („Tools") beschrieben sind, von besonderer Bedeutung. Grundlage einer solchen Nachhaltig-

keitsanalyse durch Finanzmarktakteure ist jedoch eine ausreichende Informationsgrundalge über Nachhaltigkeitsaspekte seitens der Unternehmen. Aufgrund der hohen Informationskosten, die auf die Finanzmarktakteure zukämen, wenn sie sich die Informationsgrundlage selber erarbeiten müssten, ist eine Informationsbereitstellung durch die Unternehmen Voraussetzung für eine Integration von Nachhaltigkeitsaspekten in Finanzmarktentscheidungen. Eine fundierte Informationsgrundlage seitens der Unternehmen ist auch deshalb wünschenswert, da aus einer externen Warte nur begrenzt zutreffende Aussagen über die spezifischen unternehmensinternen umwelt- und sozialrelevanten Aktivitäten und deren Auswirkungen auf die ökonomische Situation der Unternehmen möglich sind.

Auf der Grundlage der Erarbeitung des zweiten Workbooks und durch die positiven Erfahrungen bei der Durchführung des Trainings für Finanzmarktakteure zu Nachhaltigkeitsaspekten in Investitionsentscheidungen bestätigte und verstärkte sich die schon aus der ersten Phase des Vorhabens gewonnene Erkenntnis, dass die Finanzmarktakteure und ihr Bedarf an umweltbezogenen Informationen einen äußerst vielversprechenden indirekten Förderpfad für die verstärkte Anwendung der Instrumente des betrieblichen Umweltrechnungswesens darstellen. Diese Eignung gründet sich vor allem auf der Bedeutung umweltrelevanter unternehmensbezogener Informationen für die Integration von Nachhaltigkeitsaspekten die Allokationsentscheidungen der Finanzmärkte. Je größer das Marktpotenzial für nachhaltige Finanzprodukte eingeschätzt wird (Workbook-Kapitel „Market") und je deutlicher der Zusammenhang zwischen ökonomischer und ökologischer Performance gezeigt werden kann (Workbook-Kapitel „Evidence"), desto stärker werden auch umweltbezogene Informationen über Unternehmen als mögliche Investitionsobjekte nachgefragt. Eine Schlüsselfunktion nehmen dabei jedoch die im Kapitel „Tools" des zweiten Workbooks vorgestellten Instrumente des nachhaltigen Finanzmanagement ein, da diese sicherstellen, dass unternehmensbezogene umweltrelevante Informationen so aufbereitet werden, dass sie für Investitions- und Allokationsentscheidungen der Finanzmarktakteure entscheidungsrelevant sind. Entscheidend für den Zusammenhang zwischen der Bedeutung von Nachhaltigkeitsaspekten in Investitionsentscheidungen und der Förderung des betrieblichen Umweltrechnungswesens ist somit der Informationsbedarf der Finanzmarktakteure. Für Regierungsstellen, die eine Förderung der Instrumente des betrieblichen Umweltrechnungswesens anstreben, ergibt sich somit die erfolgversprechende Möglichkeit, durch die Förderung der Bedeutung von Nachhaltigkeitsaspekten in Finanzmärkten eine erhöhte Nachfrage und Relevanz umwelt- (und sozial-)bezogener Informationen und somit einen Informationssog der Finanzmärkte nach unternehmensbezogenen umweltrelevanten Informationen zu erzeugen. Eine solche Nachfrage seitens der Finanzmärkte kann durch Unternehmen auf Dauer nur dann substantiell erfüllt werden, wenn sie durch die Anwendung der Instrumente des betrieblichen Umweltrechnungswesens eine entsprechende interne Informationsbasis schaffen. Entscheidend für eine erfolgreiche Förderung des betrieblichen Umweltrechnungswesens über den Informationsbedarf der Finanzmarktakteure ist jedoch, dass die umweltrelevanten unternehmensbezogenen Informationen in Finanzmärkten aus einer Investitionssicht aufbereitet und bereitgestellt werden (vgl. Workbook-Kapitel „Tools"). Andernfalls ist nicht mit einer erfolgreichen Förderung des betrieblichen Umweltrechnungswesens zu rechnen.

7. Nutzen und Verwertbarkeit der Ergebnisse

Bezüglich des Nutzens des Forschungsvorhabens lassen sich im wesentlichen drei Bereiche unterscheiden:

- Durch die Entwicklung der Methodik zur Analyse verschiedener direkter und indirekter Förderpfade im ersten Workbook entstand ein *sehr praktischer Nutzen für staatliche Entscheidungsträger, insbesondere auch in Umweltministerien und -ämtern.* Durch die Anwendung der Analysemethodik können die Förderaktivitäten der Regierungsstellen im Hinblick auf eine vermehrte Anwendung der Instrumente des betrieblichen Umweltrechnungswesens erfolgreicher geplant und durchgeführt werden. Dabei werden mit Hilfe der Analysemethodik sowohl die geeigneten Akteure als auch die inhaltlichen Schwerpunkte von Förderinitiativen untersucht und bewertet. Somit unterstützt das entwickelte Analyseinstrument eine erfolgreiche Umsetzung staatlicher Förderziele. Eine solche Analyse führt somit zu einem ziel- und erfolgorientierterem Einsatz der knappen Ressourcen staatlicher Stellen. Die Anwendung der Methodik auf verschiedene mögliche Förderpfade im Workbook auf einer generischen Ebene liefert potenziellen Anwendern darüber hinaus erste Anhaltspunkte für den Einsatz der Methodik. Durch die inhaltliche Ausarbeitung des indirekten Förderpfades über die Finanzmärkte mit dem zweiten Workbook liegt zudem ein Beispiel für eine Förderinitiative auf der Grundlage der Analysemethodik vor. Die entwickelte Analysemethodik stellt daher einen Beitrag zur Steigerung der Effektivität und zur Effizienz von staatlichen Förderprogrammen dar. Die Methodik wurde im Hinblick auf eine Anwendung zur Förderung der Anwendung der Instrumente des betrieblichen Umweltrechnungswesens entwickelt. Grundsätzlich ist sie aber so ausgelegt, dass sie auch auf andere staatliche Förderinitiativen angewandt werden kann. Dadurch entsteht auch ein Nutzen über den inhaltlichen Bereich der Förderung des betrieblichen Umweltrechnungswesens hinaus.
- Von einem *wissenschaftlichen* Standpunkt aus liegt der *Nutzen* der entwickelten Analysemethodik in der Bearbeitung eines bisher weitestgehend unbeachteten Gebiets der systematischen Förderung des betrieblichen Umweltrechnungswesens. Die Entwicklung des Analyseinstrumentes verbindet die Instrumente des Umweltrechnungswesens mit einem Akteurs- und Stakeholderansatz, einer Informationsbedarfs- und Interessenanalyse und der strategischen Politikformulierung. Das Workbook „EMA-Links" erschließt und analysiert somit einen neuen, an die Methodenentwicklung des betrieblichen Umweltrechnungswesens anschließenden Forschungsbereich. Dieser Bereich zeichnet sich, wie oben dargestellt, durch seine hohe Relevanz für erfolgreiche Förderungsinitiativen staatlicher Stellen aus.
- Der Nutzen des zweiten Workbooks liegt darin, Entscheidungsträgern in Finanzinstituten einen anwender- und *entscheidungsorientierten Überblick* über den Zusammenhang zwischen Nachhaltigkeitsaspekten und den Investitionsentscheidungen der Finanzmärkte zu geben. Dieses Workbook bildet die Grundlage für das Training von Finanzmarktakteuren zur Integration von Nachhaltigkeitsaspekten in die Allokationsentscheidungen der Finanzmärkte. Es zeichnet sich dadurch aus, dass es alle relevanten

Fragestellung in diesem Zusammenhang aufgreift und als Lehrtext aufbereitet. Dies umfasst die Darstellung der Marktentwicklung und -potenziale, der Instrumente eines nachhaltigen Finanzmanagements sowie der Ergebnisse empirischer Studien zum Zusammenhang zwischen ökologischer und ökonomischer Performance von Unternehmen. Somit liefert das Workbook seinen Nutzern ein grundlegendes Verständnis zur Rolle von Nachhaltigkeitsaspekten auf Finanzmärkten. Die drei Teile Workbooks heben jeweils grundlegend wichtige Teilaspekte der Themenstellung hervor. Um Nachhaltigkeitsaspekte dauerhaft in Finanzmarktentscheidungen zu integrieren, muss das Interesse der Marktakteure an Nachhaltigkeitsaspekten geweckt werden. Der erste Teil des Workbooks „Markets" stellt die Marktsituation und -aussichten nachhaltiger Anlageprodukte dar und zeigt das Marktpotenzial solcher Produkte auf. Der Teil „Tools" stellt die Instrumente dar, anhand derer Finanzmarktakteure Umwelt- und Sozialaspekte in ihren Entscheidungen berücksichtigen können. Somit wird die Akteurs- und Entscheidungsrelevanz des Workbooks gewährleistet. Im Teil „Evidence" erfahren die Nutzer des Workbooks über die Methoden und Ansätze sowie der Ergebnisse verschiedener empirischer Studien zum Zusammenhang zwischen ökologischer und ökonomischer Unternehmensperformance. Dadurch wird die ökonomische Relevanz von Nachhaltigkeitsaspekten für Finanzmarktentscheidungen verdeutlicht. Das Workbook liefert so eine fundierte Wissensgrundlage für die Berücksichtigung von Nachhaltigkeitsaspekten in die Allokationsentscheidungen der Finanzmärkte. Diese Wissensbasis ermöglicht es Finanzmarktakteuren, entscheidungsrelevante umweltbezogene Informationen nachzufragen und somit einen entsprechenden Informationssog auf Unternehmen aufzubauen.

8. Bekannt gewordene relevante Ergebnisse anderer Stellen während der Vorhabensdurchführung

Für den Themenkomplex des ersten Workbooks sind im Zeitraum der Vorhabensdurchführung keine einschlägigen Ergebnisse anderer Stellen bekannt geworden. Dies ist in erster Linie auf den Erstmaligkeitscharakter des Vorhabens und der spezifischen Themenstellung zurück zu führen. Der Stand der Wissenschaft und Forschung sowie die vorliegenden praktischen Erfahrungen zu verschiedenen Förderpfaden wurden bei der Erstellung des Workbooks berücksichtigt und verarbeitet.

Das zweite Workbook war darauf angelegt, den Stand von Wissenschaft und Forschung im Themenbereich Nachhaltigkeit und Finanzmärkte widerzugeben und für das Training von Finanzmarktakteuren aufzubereiten. Daher bildet das Workbook den aktuellen Stand der Erkenntnisse zum Themenkomplex. Ähnliche Trainingsunterlagen, die von einer anderer Stelle zum Thema erarbeitet wurden, liegen nicht vor.

9. Veröffentlichungen

Burritt, R., Hahn, T. & Schaltegger, S. (2001a): Current developments in environmental management accounting - towards a comprehensive framework for environmental management accounting. Paper presented at the World Bank Environmental Forum "Challenges and Strategies for Environmental Management in Asia" Feb 8-10, 2001 on Cheju Island, Korea (http://my.dreamwiz.com/kwecc/papers/accounting/Burritt-Hahn.pdf).

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Schaltegger, S.; Hahn, T. & Burritt, R.L. (2001b): EMA-Links. Government, Management and Stakeholders (UN-Workbook 2). Lüneburg: Center for Sustainability Management.

Schaltegger, S.; Hahn, T. & Burritt, R.L. (2000): Environmental Management Accounting – Overview and Main Approaches. Lüneburg: Center for Sustainability Management.

Die Trainingsunterlagen der Veranstaltung in Lissabon im November 2001 können unter folgenden Adressen im Internet abgerufen werden:

- http://www.un.org/esa/sustdev/estlisbon.htm
- http://www.un.org/esa/sustdev/stakeholdervalue.pdf
- http://www.un.org/esa/sustdev/environmentalshareholder.pdf
- http://www.un.org/esa/sustdev/empiricalevidence.pdf

Darüber hinaus ist folgende Veröffentlichung in einer Fachzeitschrift geplant:

Stefan Schaltegger, Tobias Hahn & Roger Burritt (in Arbeit): Stakeholder-Links zum betrieblichen Umweltrechnungswesen, Zeitschriftenpublikation.

Appraisal methodologies, incl. EMA, for Sustainability in Financial Markets

Workbook

Foreword

Sustainability and Finance – what would have considered to be an unusual combination a few years back has turned out to be one of the most intensely debated subjects in both – Finance and Sustainability. This common interest is due to the future-oriented character of both areas. The benefit of the investments that are traded in financial markets arises in the future. One of the most important functions of financial markets is to assess the value of these expected benefits and to assure the optimal allocation of capital. Sustainability is, obviously, also concerned with the future. The question of how we can assure that future generations have the same opportunities to prosper is the predominant concern in this context. Both interests are to a large degree compatible. On the one hand only future generations that prosper will be able to create value. The way financial resources are allocated today, determines, on the other hand, if future generations will have the necessary environmental and social resources.

This Workbook has been compiled by three organizations and it is divided into three sections. In the first section ("Markets") Kathrin Klaffke of the Institute for Market, Environment and Society IMUG e.V. looks at today's market for Sustainable Investments in Europe and provides an outlook on future market potential. Banks and other actors in the financial markets will of course be the more interested in sustainability the higher the market potential. The question how environmental and social questions can be dealt with to deliver superior financial returns is addressed in the following section ("Tools"). This section has been compiled by Frank Figge, Tobias Hahn and Stefan Schaltegger of the Center for Sustainability Management (CSM) e.V. The analysis of the link between economic and environmental questions is based on the Environmental Shareholder Value and the link between economic and social questions on the Stakeholder Value-concept both developed by CSM-researchers. In the third section ("Evidence") Paschen von Flotow, Rolf-D. Häßler and Johannes Schmidt of the Institute for Environmental Management and Business Administration (INSTOEC e.V.) investigate, if existing research supports the hypothesis that Sustainable Investments deliver as a matter of fact superior financial returns. In addition they report on how the link is perceived by some important actors in the financial markets.

The authors would like to thank the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung - BMBF) for funding this workbook. The support of Mr. Alexander Grablowitz (BMBF) and Dr Gerd-Henning Klein (DLR e.V.) has been vital in this context. We would also like to thank Dr Alexandra Lang and Mr. Tarcisio Alvarez-Rivero (UNDSD) as well as the participants of a training session on Improved Investment Analysis Tools: Links to Sustainable Development held in Lisbon in November 2001. Finally, we would like to acknowledge the UNDSD Expert Working Group on EMA for initiating this project.

Lüneburg/Hannover/Oestrich-Winkel February 2002

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Bundesministerium
für Bildung
und Forschung

This project has been financed by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung - BMBF) under grant number 01RU0039.

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Appraisal methodologies, incl. EMA,
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The Market for Sustainable and Socially Responsible Investments in Germany and Europe

Kathrin Klaffke, Institute for Market, Environment and Society [imug] e.V.

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The Market for Sustainable and Socially Responsible Investments in Germany and Europe

Kathrin Klaffke, Institute for Market, Environment, Society [imug] e.V.

The consideration of social and environmental criteria regarding financial investments has gained more and more momentum in recent years. The present article describes how these additional criteria have come to contribute to the decision-making process for capital investments and investigates the current market potential of sustainable and socially responsible types of investment (SRI). The results are based on a market survey carried out by the Hanover-based Institute for Market, Environment, Society ['Institut für Markt Umwelt Gesellschaft' – 'imug'] and the Chair Marketing I at Hanover University ['Lehrstuhl Marketing I an der Universitaet Hannover']. This study, part of a project that was funded by the German Federal Ministry of Education and Research ['Bundesministerium fuer Bildung und Forschung' – 'BMBF'], produced a detailed representative household survey on the behaviour of private investors. Besides, it aimed to identify the motives and rationale of institutional investors to opt for sustainable and socially responsible capital investments.

The Ethical Aspect of Capital Investments

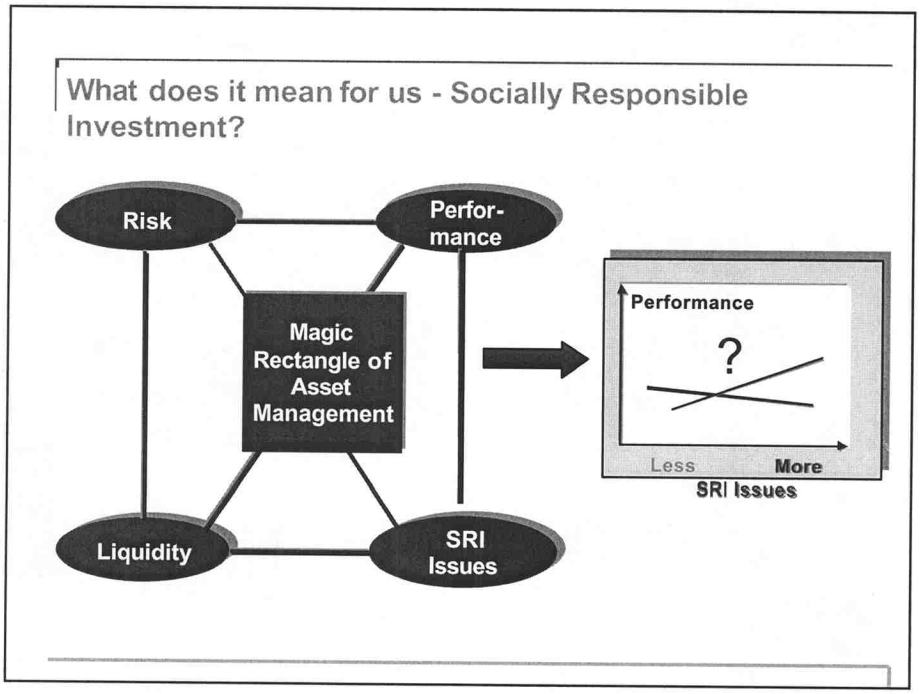
Investment decisions of capital investors are informed by three classic aspects: risk, returns and liquidity. Depending on the (private or institutional investor's) primary goal one of the three dimensions reigns supreme. The rate of return – measured as the development of the fund's value in proportion to its benchmark – tends to be the crucial factor for many investors, which may lead to excessive risk-taking. Miscalculations of the Long-Term Capital Management (LTCM) hedge fund in September 1998, which according to the Bank for International Settlements (BIS) almost triggered the collapse of the global financial system, are a case in point. Major banks worldwide had to take supportive action to prevent a crisis of the capital markets.

Other investors such as the churches are particularly concerned about the risk aspect of their capital investments. Often times, internal regulations focus on the security of the assets entrusted to them (Schneeweiss 1998: pp 151). Then again some

investors, e.g. trade unions, may prefer short-term availability of their funds, as they have to dish out rather large amounts of money to their members in case of labour disputes and industrial action.

A fourth dimension, up until recently of minor import and little interest to most private investors, has now joined the three classics: the ethical or socially responsible component. More and more investors (private and institutional alike) care to know if and how companies deal with the environmental and social consequences of their actions. Decision-makers in churches and church-related institutions face critical questions of employees and members who have developed an interest in the activities of 'their' church and ethical positions on financial investments. The same applies to a similar degree to institutional investors like foundations, non-profit organisations and other capital investors that try to communicate their strategies to a wider public. This process increasingly affects private and corporate retirement funds as well. It goes without saying that the significance of the three classic criteria of capital investments – returns, risk and liquidity – is maintained despite the growing role of the fourth dimension.

Figure 1: The Magic Rectangle of Capital Investments[1]



Socially responsible financial investments can be classified as either being based on exclusionary criteria (negative criteria), exclusively environmental criteria or a combination of environmental and social criteria. Classic *exclusionary criteria* are, e.g. the production of arms, nuclear energy, tobacco or alcohol. Examples of *positive criteria* would be environmental management systems, codes of ethical behaviour, stakeholder dialogue or employee participation schemes (political and financial).

The market of SRI products

The United States was the first country to establish a great number of investment funds where the issuing agents concentrate on (usually only few) negative or exclusionary criteria. Some funds, for instance, explicitly exclude all companies and suppliers of the tobacco industry but allow for all other trades. Similar funds exist for all imaginable industries or types of labour relations (genetic engineering, violations of human rights, child labour etc). That point of departure goes back to the very beginnings of principled investment in the USA, for as early as at the dawn of the 20th century religiously motivated investors set out to invest their assets according to their own value systems (Ulrich/Jaeger/Waxenberger 1998: 10). Back then so-called 'sin-

[1] unless indicated otherwise, all figures by: imug investment research, the Chair Marketing I at Hanover University respectively

stocks", i.e. stocks belonging to alcohol, tobacco or gambling enterprises, were banned from the portfolios thus highlighting the responsibility of companies vis-à-vis society. While that particular view of socially responsible investing may be a subject of debate, the success of these funds is indisputable. In 1999, 2,159 billion US-$ were invested according to socially responsible criteria, which constitutes 13% of all the assets managed in the United States (SIF 1999: pp 2).

Great Britain is the stronghold of socially responsible investments in Europe. At the time of writing more than 60 retail SRI funds have entered the market. With an ever increasing volume, their value amounted to more than 4 billion £ in August 2001.

The Situation in Some Neighboring Countries in Europe...

France

The term 'boom' properly describes the development of the volume and the number of socially responsible investment funds in France. In 1999 and 2000 the volume of socially responsible investment funds grew at an annual average of 56% from 324 m euros at the end of 1998 to 794 m euros at the end of 2000. The number of these funds soared æs well, from 7 to 31. In spite of this dramatic increase the proportion of socially responsible funds as a share of the total market of retail funds continues to remain below 1%.

Italy

Out of a total of 13 ethically oriented investment funds in Italy, 7 select companies based on ethical criteria while 5 funds donate part of their commissions or profits to charitable organisations, which earns them the 'donation funds' label. The total volume of all funds is 2.86 billion euros (as of January 31st, 2001), which constitutes less than 1% of the entire retail funds market in the country. About 2 billion euros are accounted for by funds with strict positive or negative ethical criteria for the selection of companies (socially responsible investment) whereas donation funds amount to a volume of 830 m euros. The establishment of the first closed socially responsible real estate fund ('Investietico' of BPM Real Estate SGR) and the first socially responsible retirement fund ('Unipol Insieme' of Unipol Assicurazioni) is particularly innovative. Both funds are currently undergoing the listing process.

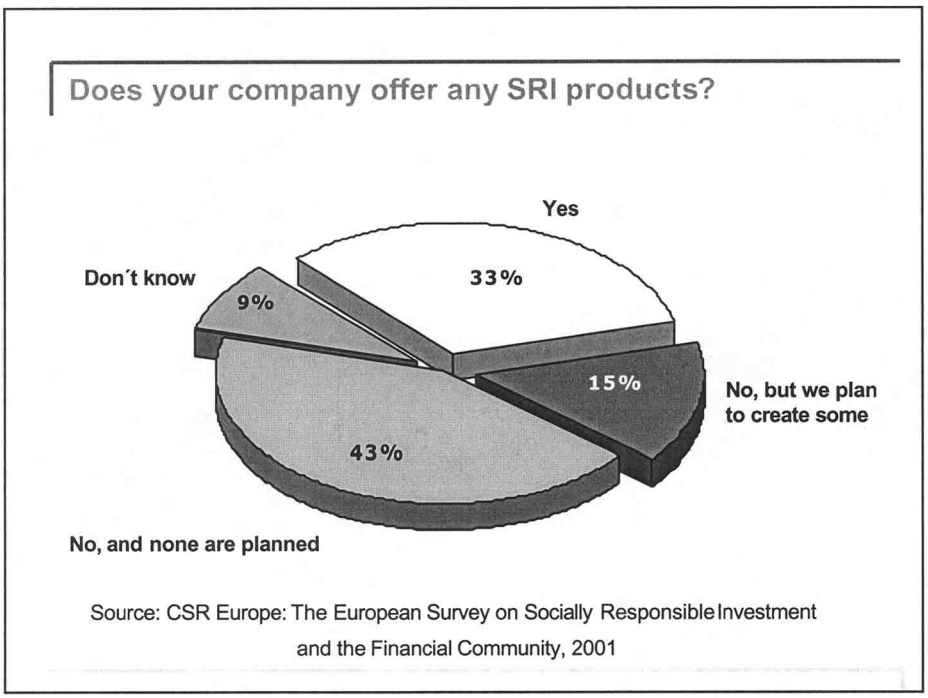
Belgium

At the beginning of 2001 Belgium boasted 30 sustainable investment funds after 10 in 1998 and 2 in 1992. 15 of these funds are certified by Ethibel, a Belgian research institution. Since the end of 1995 the number of Belgian savers and capital investors opting for socially responsible and sustainable capital investments has quintupled to arrive at approximately 100,000 in 2001. Their socially responsible and sustainable investments amounted to about 1 billion euros (1992: 44 m euros).

The German market currently offers some 70 retail SRI funds (total volume at least 2,5 billion Euro). In the last ten years funds that account for additional social and environmental investment criteria have gained a considerable degree of popularity in Germany and other European continental countries.

A recent Europe wide survey among 302 financial analysts and fund managers shows the growing offer and demand of SRI products in Europe. 33 percent of the interviewees stated that their company currently offers SRI products and 15 percent said their companies were planning to develop such products in the future. On the other hand, the survey shows that SRI opportunities are still far from beeing mainstreamed. Of those surveyed that offer SRI products, 59 percent said that they offer only to a select group of specially targeted customers, 20 percent only on customers' demand and only 15 percent stated that they offer SRI products systematically to all customers.

Figure 2: The Market of SRI Products in Europe



Source: CSR Europe: The European Survey on Socially Responsible Investment and the Financial Community, 2001

Concepts of Socially Responsible Financial Investments

In other countries the most popular type of funds are ethical funds which work only with negative criteria (eg no weapons, no nuclear power). In Germany environmental and sustainable funds are the most common type of SRI funds. These focus on positive aspects of corporate behaviour like environmentally friendly products and processes or good corporate social policies.

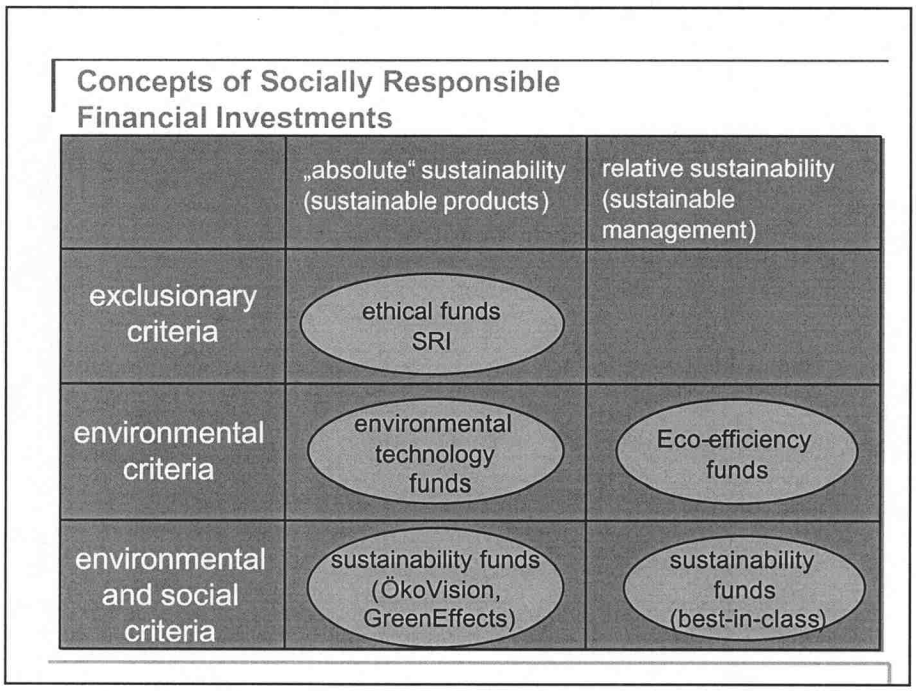
Back in the early 1990s environmental technology funds provided the first opportunity in Germany to invest in innovative companies engaged in future-oriented environmental technologies. Eco-efficiency funds soon followed. Their investment policies embrace a variety of positive or negative criteria (for example, no nuclear energy, exemplary environmental management systems etc.) that help them to select the companies to be included in their portfolios. The third group of funds are sustainability funds. There are two different types. The 'best-in-class' approach includes all those companies in the fund's portfolio that score best in their industry on a scale of social, environmental and economic criteria developed by the fund managers. In other words, the company in question must score higher than its direct competitors.

The second type of sustainability funds works pretty much like the environmental technology funds with their positive and negative criteria, accounting however not only for environmental but also for social criteria referring to external benchmarks like ISO 14000 or international labour standards of ILO.

The selection of companies to be integrated into a fund by means of positive criteria has become the most common variety in Europe, especially in Germany. Thus, an enterprise has to excel in terms of its conservation efforts, for instance, in order to be listed. As a consequence, funds such as 'Ökovision' or 'GreenEffects' mainly invest in small and medium-scale companies pioneering in the environmental and social realms. Besides, companies to be chosen should preferably be innovative and excel beyond national and international standards in the long-term perspective. Depending on the individual set-up of the fund additional negative criteria may be included.

The following table gives and overview of the described type of funds.

Figure 3: Concepts of Socially Responsible Financial Investments



Example GreenEffects

The GreenEffects, for instance, exclusively invests in titles listed in the Nature-Stocks-Index ('Natur-Aktien-Index' – 'NAI'). The NAI consists of 20 stocks in a variety of countries and industries. These stocks are expected to yield long-term profits. At least 75% of the enterprises gross more than 100 m US-$ in annual turnover while up to 25% of the NAI titles are small and medium-scale companies of great innovative power developing innovative products in environmental technology. A given company has to meet at least two of the following four criteria in order to be listed in the index:

1. The company offers products or services that make a major environmentally and socially sustainable contribution to solving central problems of humankind.
2. The company is leader in its industry concerning product design.
3. The company is leader in its industry concerning the technical management of the production and sales process.
4. The company is leader in its industry concerning the social management of the production and sales process.

Besides, a number of negative criteria are defined to possibly exclude companies.

The selection of criteria for all these funds is made by fund managers and providers of labels and indices. Individual private or institutional investors have no direct influence on the sets of criteria and their selection.

Besides these predetermined sets of criteria there are other concepts which work with individual custom-made solutions for different portfolios to suit the specific demands of each investor. The database Ethical Portfolio Manager (EPM), developed by EIRIS (Ethical Investment Research Service, London), may serve as an example. EPM is a comprehensive research tool designed to assess the social and environmental performance of a company. It contains data concerning more than 40 different areas of interest on 2600 transnational companies from the regions of Europe, US, Canada, Australia, Japan, Hongkong and Singapore.

The Market Potential(s) for Retail SRI Funds in Germany

'Investors' Decisions as Determinants of Sustainable Business Management' ['Investorenentscheidungen als Determinanten für nachhaltige Unternehmensfuehrung'], a research project commissioned by the German Federal Ministry of Education and Research [BMBF], which is carried out by the Institute for Market, Environment, Society ['Institut fuer Markt Umwelt Gesellschaft' – 'imug'] and the Chair Marketing I at Hanover University ['Lehrstuhl Marketing I an der Universitaet Hannover'], investigates the underlying reasons behind the development of specific socially responsible and sustainable financial products, the various different product philosphies today and the market volumes and potentials in question. First, the main groups involved are identified and asked to describe their motives, interests and knowldge of the market. Both private and institutional investors are subject of this study.

The Chair Marketing I at Hanover University and imug conducted a representative household survey to cover private investors. The telephone survey addressed the persons responsible for investment decisions in the respective households. The study aimed to:

- identify the knowledge, interests and motives of private investors concerning socially responsible financial investments
- quantify the willingness to invest in SRI

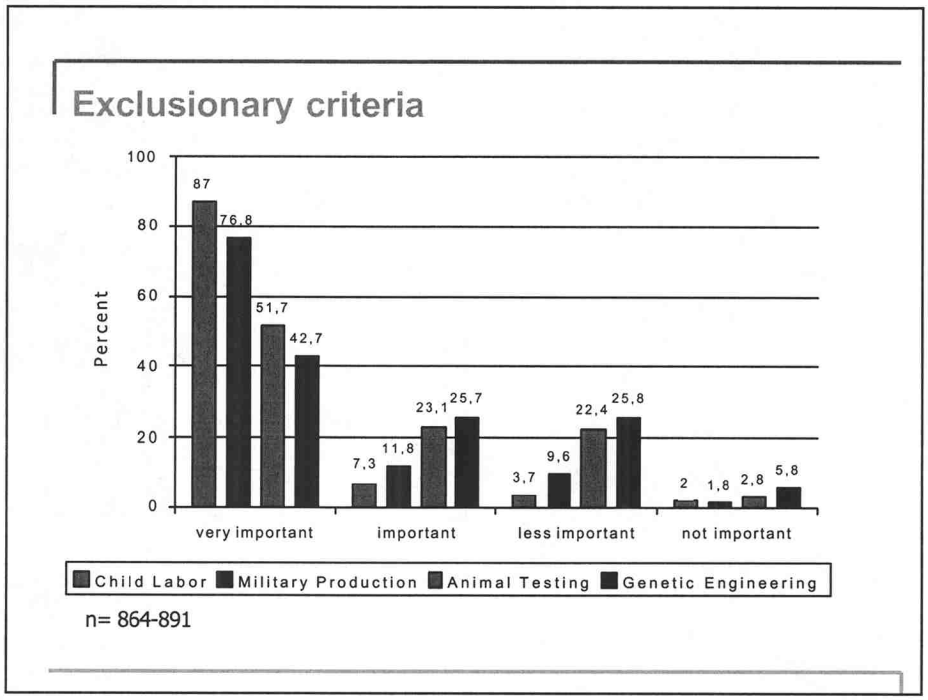
- identify possible points of departure to enlarge the market for socially responsible financial investments

The survey yielded the following information on the significance of various positive and negative criteria. Among the latter child labour was of supreme importance. 87% of those surveyed wanted to exclude companies involved in child labour from their portfolios. Arms production (76.6%), animal testing (51.7%) and genetic engineering (42.7%) were next on the list. The number one positive criterion (77.2%) for companies to be integrated into a socially responsible investment fund is an outstanding conservation effort. Interestingly enough 'company transparency', i.e. the readiness of companies to disclose relevant information, scored second (59.6%). Social services and benefits for employees (59%), and the commitment to consumer interests (55.1%) and minority rights (54.8%) are of similar import. 45.8% of the interviewees would like to see companies that particularly promote women in their funds.

A similar survey in Britain shows related results (Woodward 2000): Arms production, tobacco, nuclear power and gambling, animal testing, third world people are the most important negative criteria for the interviewees. Positive criteria mentioned to be important are environmental protection, fair employment, efficient material usage, community relations unad sustainable materials.
A closer look shows that women are more likely than men to aviod investment that involves gambling, pornography, animals used as clothing, the nuclear industry and dealing with repressive regimes but would seek investment opportunities where is a positive record on community relations, charitable donations, etc.

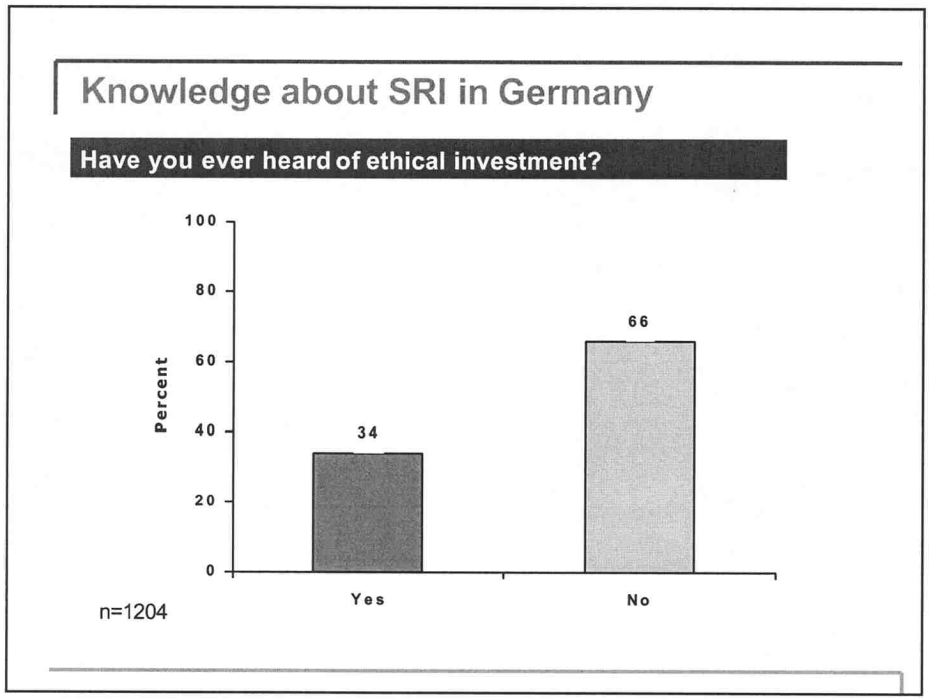
In future fund managers will therefore have to keep a number of positive and negative criteria in mind when designing their products. The study reveals that the 'classic' exclusionary criteria such as arms production, nuclear energy and child labour will certainly continue to be minimum requirements to be met by a socially responsible fund. Yet, depending on target groups and the overall character of a fund new criteria will increasingly find consideration as well. Two prominent candidates could be genetic engineering and animal testing, for instance.

Figure 4: Negative Criteria/Exclusionary Criteria



The investigation further revealed the dormant potential of socially responsible f-nancial investments.

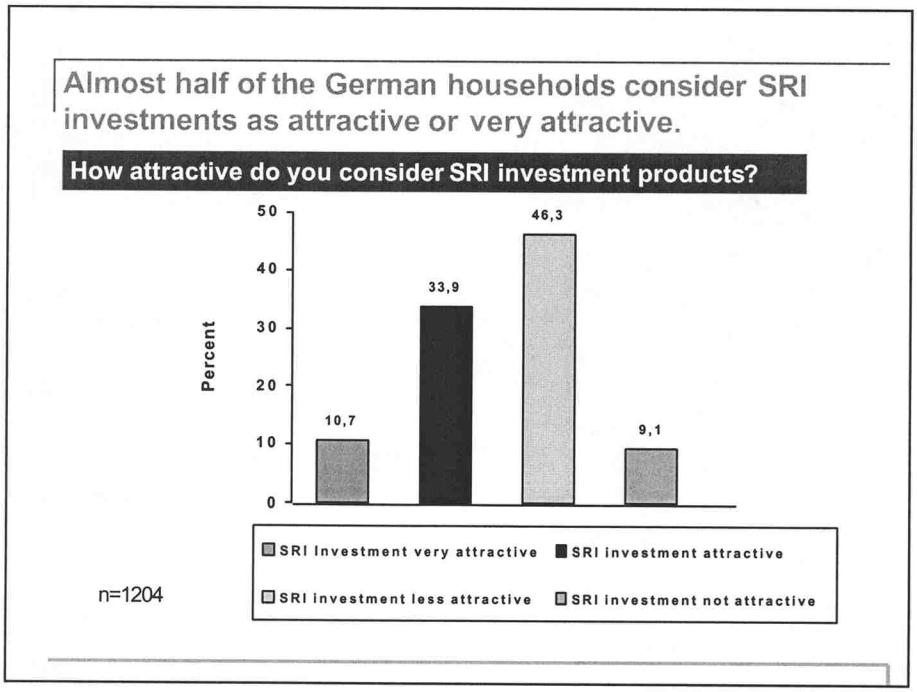
Figure 5: Knowledge about SRI in Germany



A fundamental and very obvious prerequisite for the success of financial products, for purchasing decisions and demand, is their perception or non-perception by the public. As of now, one third of the interviewees has at least heard of socially responsible or ethical investments (cf figure 4). Knowledge of these investments seems to have increased from a low 23.7% (imug-emnid 1999[2]).

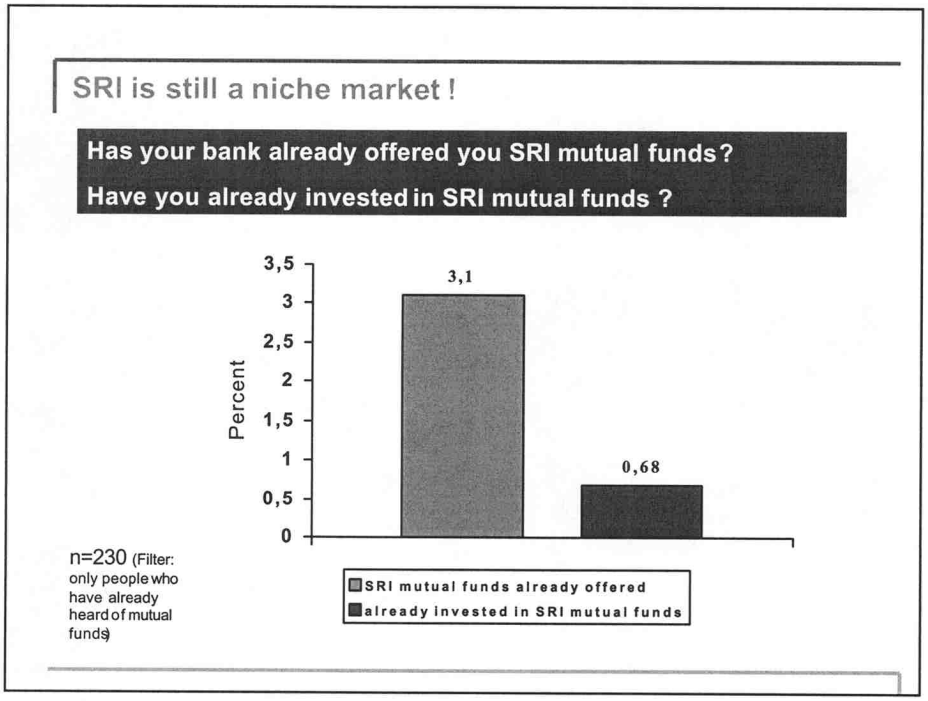
[2] This study analysed environmental awareness in consumption patterns and the choice of stores and shops. Questions explicitly dealing with socially responsible financial investments were also covered.

Figure 6: Attractiveness of SRI products



More than 44% of those surveyed consider this type of financial investment attractive or even very attractive. Only 3% of those who have heard of socially responsible investments have however received an offer to buy corresponding shares by their bank or a fund agency. Only 0.68% have actually purchased such funds.

Figure 7: SRI – a niche market

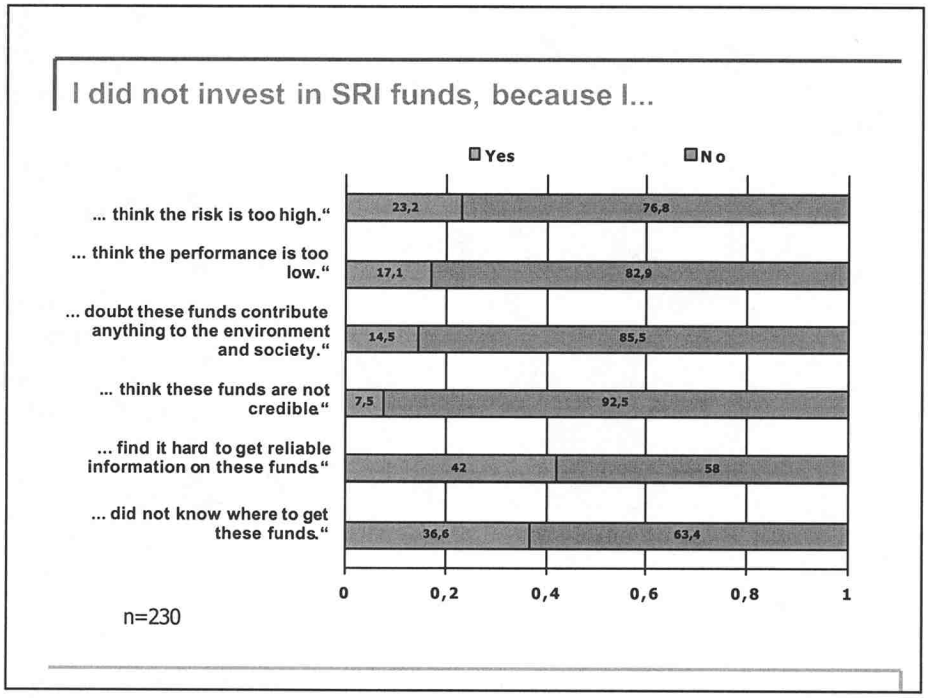


Closer scrutiny reveals that this very low figure is mainly due to a lack of information. Asked why they have so far refrained from investing in SRI, two reasons predominate:

- because reliable information on such funds is hard to come by
- because I/we did not know where to purchase such funds.

Other reasons are of far lesser importance. Few people have been hesitant to opt for SRI because they associate higher risks or lower returns with ethical investments. Another question aimed to ascertain whether a lack of trust in the funds' credibility or doubts as to their actual contributions to conservation and sustainability might be an obstacle for the investment decision. Yet, in most cases this was completely irrelevant.

Figure 8: Reasons for Not Investing in SRI



..These results suggest a considerable lack of and demand for communication and information. Closing the gap between this demand and the necessary supply requires the improved presentation of SRI on the part of the providers of financial services. Their staff needs to become more familiar with the new aspects of financial investments in order to better serve and advise potential customers on all issues related to socially responsible investment products in future.

Segmentation of Potential Demand

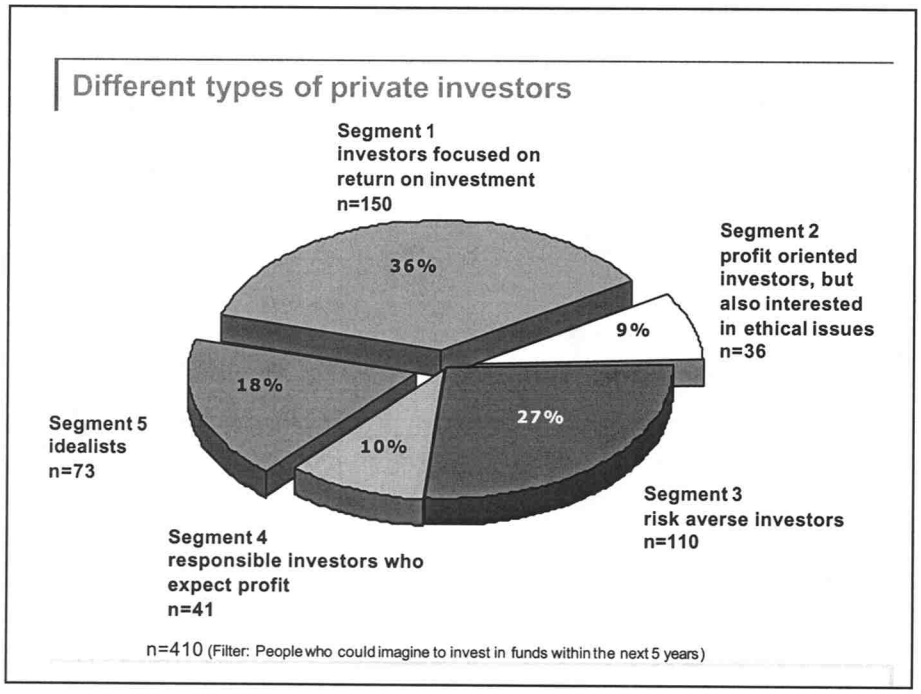
In order to gain a more detailed picture of the market potential we carried out a conjoint analysis of those interviewees considering an investment in funds within the next five years. Our point of departure was the question how people actually make their decisions between different financial investment products. A variety of investment products were suggested (for instance, a low-risk fund with a medium degree of social and environmental performance offering returns of 3% as opposed to a high-risk fund with a high degree of social and environmental performance yielding 15%). On a probability scale of 0% to 100% the interviewees had to then opt for the respective funds. Three features – **returns** (3%, 9%, 15%), **risk** (low, medium, high) and **de-**

gree of social and environmental performance (low, medium, high) could be flexibly combined.

A cluster analysis allowed us to identify five segments of investors. As we had expected those investors who focus on high returns accounted for the largest group (36%). For them, risk and social and environmental commitment are irrelevant for investment decisions. The second-largest group turned out to be the 'risk-averse' segment (27%), a classic group of investors who care little about returns and social and environmental performance as long as their investment is secure.

Profit-oriented investors with a certain ethical orientation (9%) focus on both high returns and social and environmental company performance. Then there are the 'reponsible investors' (10%) whose main concern is social and environmental responsibility although they do expect decent returns as well. Finally, we identified a group of 'investor idealists' (18%) whose top priority by far is a company's social and environmental performance. For them, the importance of returns and risk is negligible.

Figure 8: Potential Market Segments for SRI - Investors



The three last-named types of investors pay attention to the social and environmental 'quality' of the funds they would like to invest in. The three segments com-

bined make up almost 40% of the overall market (defined here as the interviewees who could imagine investing in funds within the next five years). These figures suggest a considerable growth potential for SRI in Germany.

Profile of Ethical Investors in Britain (Woodward 2000)

Middle aged (78% of the interviewees are between 36 und 65), highly qualified (83% hold a first degree or higher academic qualification, 86% are either professionals or in managerial occupations, but for over 60% of these investors their annual income is less than £ 25000.

Institutional Investors and SRI

Even though the developments described above do mark a positive step in the right direction the dynamic of SRI is mainly determined by the behaviour of institutional investors. Recent surveys show a raising interest of institutional investors on SRI in Europe (Schäfer 2001; UKSIF 2001). Further reforms of pension regulations in Europe could stimulate the demand on SRI products.

In Germany for instance, the Federal Government has introduced a disclosure obligation as part of the reform of pensions and the retirement system in 2001 ('Rentenreform'). This obligation requires all pension funds (private and corporate) to inform the members on whether and in what form ethical, social or environmental aspects were taken into consideration concerning the selection of companies to invest in. The success of this disclosure obligation remains to be seen. Currently only 9 of 3544 private pension schemes declare taking ethical, social or environmental aspects into consideration.

According to Article 6 a, § 1 Section 9 of the Pension Investment Law (' Zertifizierungsgesetz'):
"pension funds must also inform the members in writing on whether and in what form ethical, social or environmental aspects are taken into consideration when investing the paid-in constributions;"

In Great Britain fund agencies reacted promptly when the government introduced a similar bill in summer 2001. Their efforts to meet the new requirements cover direct portfolio screening according to positive and negative criteria, the more pronounced and explicit use of voting rights in the companies where they own shares to further ethical and environmental objectives in corporate policies and the instrument of 'constructive interference'. The fund agencies' dialogue strategy aims to encourage businesses to integrate ethical, environmental and social aspects into company practice. 14 out of 21 funds that have vowed to engage in SRI in the future intend to apply these instruments. Their combined assets total 180 billion £ (Klumb/Kahlenborn 2000: pp 79).

In Switzerland no SRI disclosure rule for pension funds or other investment vehicles exist - despite the legal requirement for corporate pension funds. The success of Ethos (Swiss Investment Foundation for Sustainable Development, now comprises a membership of 92 pension funds from all over Switzerland) or larger investments by the federal pension fund or the first pillar buffer fund in SRI funds shows the increasing interest by institutional investors.

Trade Unions

The German government has decided to intensify its promotion of company-based old-age provision and to devise new regulations for corporate pension funds, which has prompted trade unionists to place new hope in the dialogue with managements on this issue. Employee pension funds give labour representatives co-determination and voting rights as to their investment (Brost/Niejahr 2001: 25). As securing old-age payments for the employees is the number one priority return will be the decisive factor. Yet, trade union philosophy and self-perception make a certain consideration of social criteria imperative as well. Recent developments show that German trade unions are still reserved concerning SRI. Only the Metall Workers Union (IG Metall) and the association of employers in the metall industrie (Gesamtmetall) arranged a collective labour agreement to include ILO criteria in corporate pension funds.

Developments in the Netherlands show positive signs of new forms of cooperation between trade unions and company managements. The country's second largest pension fund (PGGM, for all employees in health-related professions) followed a trade union initiative to manage part of its investments according to sustainability criteria.

Churches

As we mentioned before, security is the governing principle for capital investments of Protestant and Catholic parishes, established Protestant churches of the Laender (German federal states), dioceses respectively. In Germany, the principle of gilt-edged investments has, however, become somewhat more flexible with more and more investments being channeled into stocks and funds. And religious orders never even had to observe any general restrictions for financial investments. All church investors are dependent on reliable annual revenue from interest payments on their capital investments in order to finance their institutions in times of decreasing income from church taxes (Schneeweiss 1998: pp 151).

The attitude of German churches towards social and environmental criteria for capital investments varies very much. While churches in North America look back on many years of experience with the development and application of their systems of criteria German churches are still probing what for them is entirely new ground. It is particularly the Protestant and Catholic church-owned banks that perceive the opportunities of developing a distinct profile by combining ethical and economic issues in reasonable ways.

Switzerland provides an interesting example of churches on a tight-rope walk trying to both increase their assets and pay attention to ethical criteria at the same time. The Protestant Reformed Church has tried to make a virtue out of necessity. Dwindling funds forced the church to establish an independent agency to manage its assets of about 25 billion Swiss francs. The institution is run by a financial expert who managed to produce approximately 30% of returns in 2000. Capital investments are restricted by a few negative criteria: shares of companies producing nuclear energy, weapons, alcohol or tobacco are excluded (Streeck 2001: 64).

Non-Profit-Organisations (NPO´s)

Responsible investment has also been an issue for NPO´s for quite a while. According to a study (Schäfer 2001) in the social services, international cooperation, health, art and culture sectors these organisations do consider environmental, ethical and social criteria before making investment decisions. 43.6% of all NPO's claim to pay attention to the environmental aspects of their capital investments, 49.1% to the ethical and social dimensions. The latter applies to 78.1% of the NPO's with a religious orientation.

Summary

Ethical investments (SRI) are continuously gaining importance in Germany and Europe. More and more private and institutional investors integrate additional social and environmental criteria into the decision-making process. It is fair to predict an ongoing steady increase of the number of private and institutional investors putting their assets into socially responsible funds. Nontheless, SRI in Germany and all of Europe continues to be a niche market despite these positive developments. In Germany the market for this type of investment is still far less developed than in neighbouring European countries such as Great Britain or the Netherlands. Our representative survey has revealed that there is a considerable gap between stated intentions and concrete actual investment behaviour in Germany. One important reason certainly is the inherent character of these 'credence goods', which by definition can hardly be double-checked and independently assessed by individual investors. They have to place a lot of trust in the offer and can only rely on expert opinions to put their insecurities into perspective. Agencies offering financial products have to try hard to convince potential clients of the trustworthiness of their products and the credibility of the features they advertise. Market transparency is a key to further market development and needs to be improved. As risk and return aspects still remain at the core of investment decisions in stocks, shares and bonds on the capital market and only few private investors have so far acquired some experience with SRI, possibly existing negative biases and prejudices against these products have to be addressed. Handling, managing and investing in SRI needs to become normal everyday practice.

The attitude and behaviour of institutional investors will have a considerable impact on the development of the market as well. Studies have revealed the readiness of trade unions, churches, foundations and non-profit organisations to increasingly invest their assets according to social and/or environmental criteria given a decent performance of the retail and specialized funds on offer. As due to investment regulations institutional investors, even more so than private ones, have to care about risks and returns they want to see proof that this type of financial investment does not necessarily translate into weaker performance. Once convinced, institutional investors will more and more often opt for the SRI market as well.

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Appraisal methodologies, incl. EMA,
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"Tools"

Tools for Sustainable Finance

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Contents

A Introduction

The concept of sustainable development has gained considerable attention and significance over the last fifteen years. The concept postulates a need for a development that ensures the well-being of future generations without comprising the needs of the present generation. By doing so, it is based on three pillars: economic, environmental and social goals are to be met in order to achieve such a development. Latest since the publication of the so called Brundtland Report in 1987 (WCED 1987) sustainable development has been adopted and applied in many fields in academia, politics and also in corporate practice. This is also the case for financial markets. With the growing influence of financial markets through the globalization and deregulation of financial transactions during the last decade it has become crucial to integrate sustainability issues in financial investment decision making.

In this module the decision situation of financial analysts represents the focal point. If financial markets and analysts are to integrate sustainability issues in their decision making their decision context has to be considered. It is commonly assumed, that investors seek for high risk-adjusted returns for their investments. It is the role of financial analysts to assess different potential investments for their risk-return characteristics in order to come up with recommendations for investors. Therefore, when it comes to the integration of environmental and social aspects into financial analysis it is crucial to find out which environmental and social management enhances the financial performance of companies. From the decision making perspective of financial analysts this translates into the core question:

How can financial analysts assess whether the environmental and social management practice of companies improves their financial performance?

To answer this question it is appropriate to adopt a value-based approach of sustainability management. Such a value-based approach aims at a simultaneous achievement of ecological, social and economic goals (cf. Figge et al. 2001; Schaltegger/Burritt 2000). Following the logic of a value-based approach one would prefer those environmental and social management initiatives which help to achieve a companies economic/financial objectives. In the context of the integration of environmental and social aspects into financial analysis a value-based approach is necessary for two main reasons:

- *Firstly*, tools for sustainable finance must cover *all three pillars of sustainable development:* economic, environmental, and social development. A value-based approach ensures that environmental and social aspects are not maximized separately but are *integrated* with economic goals.
- *Secondly*, the integration of environmental and social aspects into financial market decision making requires that the *causal link* between environmental and social management and the economic success of a company are addressed. A value-based approach looks at environmental and social aspects from an economic perspective. Therefore, it helps to identify those environmental and social management measures which contribute to the attainment of economic goals.

The relation between economic goals on the one hand, and environmental and social goals on the other can be expressed through the notions of social-efficiency and eco-efficiency (see Figure A-1). Those efficiency figures mirror the ratio between economic benefits and the social or environmental impacts caused by the economic activity (cf. Schaltegger/Sturm 1990). With a value-based approach one takes the perspective of the upper economic corner of the triangle in Figure A-1 in order to assess the relation of environmental and social goals with the economic goals.

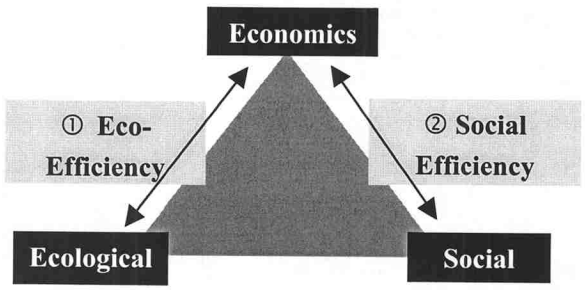

Figure A-1: Value-based approach to sustainable finance.

Tools of sustainable finance serve to analyze the relationship between economic, environmental, and social performance of companies. Thus, they serve to identify those companies which arrive best at turning their environmental and social commitment into economic success and higher financial performance. There are two main purposes for such tools. They must

- help to identify the causal relationships between environmental and social management and financial performance, and
- assess the contribution of these links to value creation.

Tools of sustainable finance can be distinguished into two large groups depending on whether they analyze the relation between environmental and economic (eco-efficiency, ① in Figure A-1) or social and economic goals (social-efficiency, ② in Figure A-1). As a consequence of the value-based perspective and the given decision making context of financial analysts those tools are mainly based on a shareholder value thinking. Shareholder value is considered to be the present value of expected cash-flows to the shareholders. This represents an appropriate approach to reflect analysts' and investors' interests. Thus, for both eco-efficiency and social-efficiency there are some basic tools which are based on an extended shareholder value approach. Environmental shareholder value investigates the relation between environmental management and the creation of company value using the shareholder value approach (cf. Rappaport 1986; ibid. 1995) as a starting point. The concept of Environmental Shareholder Value first published by Schaltegger/Figge (1997) has been developed further by Figge (2001) to also include the option value created by environmental management. On the social side the concept of Stakeholder Value Added (Figge/Schaltegger 2000) analyzes the contribution of different stakeholder groups to the creation of company value.

In the following two main chapters of this module the basic concepts Environmental Shareholder Value (part B) and Stakeholder Value Added (part C) are introduced and explained in detail. These two parts are organized in a modular way, i.e. the two parts can be read independently from each other according to the information needs of the reader. This will provide the reader with a sound basis of the most important analytical tools in sustainable finance and lay the ground for further reading if required.

B Environmental Shareholder Value

Part I: The view from within the company: Can shareholder value be enhanced through environmental management?

1 Introduction

The concept of shareholder value has become increasingly popular in recent years for the valuation of companies and financial assets. With the growing importance of environmental costs, and many companies earning money from environmental products and services, we have to ask ourselves whether environmental management geared towards eco-efficiency is in conflict or in harmony with the philosophy of shareholder value. In the following, we see what conclusions may be drawn regarding the shareholder value approach to environmental management. To do this, we have to analyze the impact of corporate environmental protection measures on what are seen as the *value drivers* of shareholder value and weigh up conflicting effects against one another. It should be stressed that on the one hand an analysis of corporate environmental protection based on shareholder value only covers one part of environmental management, and that on the other hand the investigation of the effects of environmental management on shareholder value is just one element of a shareholder value analysis of a company.

The next chapter briefly explains the basic idea of shareholder value. Chapter 3 forms the core of Part One. Starting with a discussion of value drivers, we go on to show which type of corporate environmental protection measures can increase shareholder value, or at least limit the erosion of shareholder value. In Chapter 4, we arrive at certain conclusions regarding the features of a system of environmental protection that is compatible with the concept of shareholder value, and consider how the different economic effects of environmental management can be weighed up against one another.

2 Company valuation based on the concept of shareholder value

The value of a company has traditionally been determined mainly by examining accounting data - mostly sales figures, earnings and book values - even though cash flow-based methods for assessing the value of companies have existed for a long time. However, accounting information presents serious problems (cf. Johnson/Kaplan 1987): it relates to the past and very much depends on the accounting standards applied, and so may be of little help in assessing a company's *future* business success.

This backward-looking approach is particularly questionable from the environmental point of view, yet companies establish forward-looking valuations and strategies on the basis of past data, instead of comparing future costs with future income. Future environmental changes affecting the company do

not find their way into the logic of such valuation methods until they are part of the company's past history. The fact that companies' reported results also depend very much on particular accounting standards also presents problems from the environmental point of view (cf. Schaltegger in collaboration with Müller and Hindrichsen 1996).

This is where the concept of shareholder value comes into play. Basically, it is a conventional dynamic investment calculation used to assess financial assets (particularly shares). Technically speaking, shareholder value is the discounted net current value of a company's future free cash flow (cf. Copeland et al. 1993, p. 72 ff., Rappaport 1995).

$$\text{Shareholder value} = \sum_{n=1}^{n=\infty} FCF_n \cdot \frac{1}{(1+i)^n} - BC$$

where FCF = free cash flow, n = number of periods, i = discount rate, BC= borrowed capital

The concept of shareholder value depends on the expected free cash flow (FCF), since only this can be used to pay investors.[1] The corporate value is determined by discounting the expected free cash flow ($\sum_{n=1}^{n=\infty} FCF_n \cdot \frac{1}{(1+i)^n}$). To arrive at the shareholder value, i.e. the value that benefits the shareholders, the borrowed capital has to be subtracted from the corporate value. Unlike free cash flow, a simple profit figure, for example, does not take into account the fact that part of the profit may have to be used for the internal financing of investments, thereby reducing the amount that is available to pay shareholders.

2.1 Advantages

Compared with the figures used in financial accounting (e.g. profit), shareholder value has a major *advantage* when it comes to environmental management: it is future-oriented and based on a sustainable (long-term) increase in the value of the company.

Neither financial accounting systems nor the shareholder value approach explicitly embrace environmental objectives, but with their focus on economic variables, both concepts have a strong, direct influence on the business activities of management, and thus an indirect influence on the environmental impact. On the other hand, one should note that the anticipatory nature of the shareholder value philosophy - particularly the future-orientation and the emphasis on sustainable value increase - has more

1 Free Cash Flow is defined here as the cash flow that can be used to pay both, the provider of equity and borrowed capital.

in common with the idea of eco-efficiency[2] than the financial accounting approach, which is based on past events and artificial standards.

2.2 Problems

However, the philosophy behind the shareholder value concept also presents major *problems*. For example, the expectations of investors and management play a significant role in determining the applicable discount rate and the estimated future cash flow. If these expectations are insufficiently predictive of the future (e.g. due to neglect of the future financial impact of existing environmental contamination), the calculations will not correspond to the true shareholder value. Furthermore, the values created in the distant future will not usually be considered either, as in practice analysis of future trends is restricted to a period of five to ten years ahead, because of the effects of discounting. In such cases, there is a danger of inappropriate management and investment decisions. One therefore needs to be careful not to use the shareholder value concept without thinking it through properly.

In modern business practice, the concept of shareholder value has gained a great deal of support (cf. Volkart 1996). This is due to implicit acceptance of the idea that inaccurate expectations pose a lesser problem than reliance on past events and the (potential) distortion of accounting information. This acceptance may be attributable to the differing transparency of the two approaches. With the accounting approach, the effects of a large number of standards and practices have to be taken 'en masse'. The shareholder value approach is much more manageable, since only a few variables need to be considered (forecast of free cash flow, discounting, interest and risk factor). The effects of accounting standards on the company result are impossible for almost anyone other than qualified accountants to analyze (cf. Tabakoff 1995, 30). For investors and company management, on the other hand, the assumptions on which the shareholder value calculation is based are far more transparent.

3 What form of environmental management increases shareholder value?

In the following, we consider what forms of corporate environmental management help to improve shareholder value. Similar arguments may indeed apply to those environmental protection measures which have the effect of reducing shareholder value. In these cases, it is a question of keeping the 'destruction' of shareholder value to a minimum.[3]

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2 For the concept of eco-efficiency, see Schaltegger/Sturm 1990, 1994; Schmidheiny 1992.

3 The consulting company Ellipson AG applies Rappaport's Shareholder Value model to corporate environmental management with it's „Value Based Environmental Management" (Ellipson 1995).

To answer the question of how far a corporate environmental management system oriented towards eco-efficiency is in conflict or harmony with the shareholder value philosophy, we need to do more than take a brief look at the underlying philosophy.

A better way is to discuss the conclusions that can be drawn regarding corporate environmental management from the shareholder value approach.

With its strict emphasis on efficiency, the shareholder value concept is basically more conducive to economically efficient environmental protection, which is characterized by the fact that the desired protection of the environment is achieved at minimal cost, or even with cost savings or additional profits. This is what we call environmental efficiency[4].

According to Rappaport's thesis, (cf. 1995) managerial measures can be assessed on the basis of 'value drivers' and the related management decisions on operational management, investment and financing (Figure B-1).

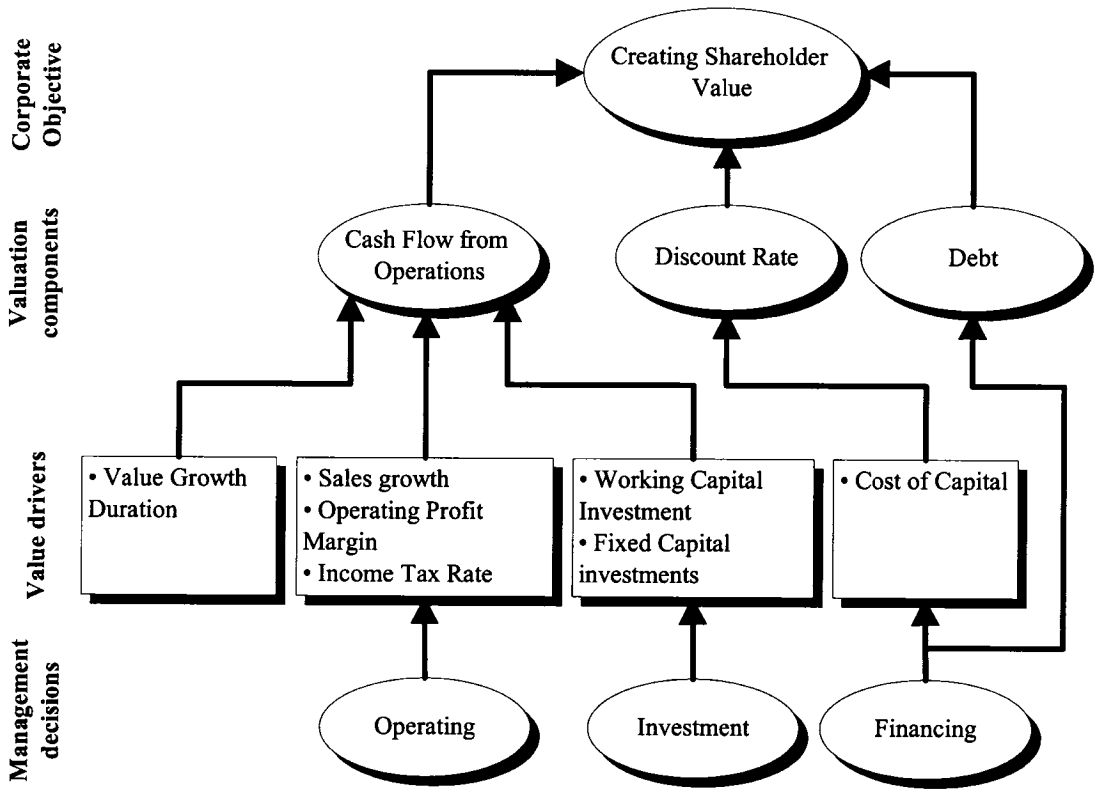

Figure B-1: Value drivers of shareholder value (cf. Rappaport 1995).

4 An environmental protection measure is described as 'environmentally efficient' where maximum environmental relief is achieved per unit of money devoted to environmental protection.

The value drivers of shareholder value include:

- Fixed Capital Investments
- Working Capital Investments
- Sales growth
- Operating Profit Margin and Income Tax Rate
- Cost of Capital
- Value Growth Duration

Value drivers are affected by environmental aspects to differing degrees, depending on the nature and size of the company (cf. Ellipson 1995, 1996). Environment-related investments include, for example, effluent treatment plants (fixed assets), but also the necessary working supplies such as chemicals to neutralize acids (current assets).

The sales growth and operating profit margin may be affected, for example, by 'green' product lines. The duration of the value increase is determined by asking how long a return better than the market average can be achieved (Rappaport 1995). In contrast to these value drivers, the capital costs do not affect the valuation component of cash flow, but rather the discount rate. The weighted average costs of capital (WACC) are calculated from the interest rates on borrowed capital and the cost of equity. When determining the capital costs, the risk incurred - including the environmental risk - is implicitly taken into account through the level of the discount rate (see 3.3).

3.1 Environmental investment

Investment decisions are extremely important in the context of corporate environmental management, not only because they tie up a great deal of capital, but also because they have a long-term structural influence on methods of production, and thus on working procedures, decision-making paths, specialist skills etc. Also, investment decisions always reflect the company's assessment of the general environmental conditions expected to prevail in future.

3.1.1 Investment in fixed assets

Investments can increase shareholder value when they generate a return that is higher than the costs of capital.

Therefore it is clear that capital-intensive investments in what are known as 'end-of-pipe' technologies - such as downstream air filters and effluent treatment plants - reduce shareholder value (cf. Ellipson 1996, 1997). This is firstly because they require a large amount of capital (e.g. installation of an elec-

trostatic filter), and secondly because they usually incur high operating costs (e.g. electricity consumption and special disposal charges for disposing of filter dust) and do not usually generate any revenue.

As far as this value driver is concerned, the shareholder value concept prefers *environmental protection that is not capital intensive* (cf. Ellipson 1997). When it comes to environmental investment, the focus should therefore be on measures involving a minimum of fixed assets.

3.1.2 Investment in current assets

Another value driver of shareholder value is investment in current assets. Measures which reduce material costs (purchasing), storage costs, wear and tear of production installations, etc. have an effect on shareholder value. This is particularly important in the context of integrated environmental protection technologies such as process optimisation (cf. Ellipson 1997). If a *productivity increase* can be achieved through lower consumption of raw materials and semi-finished products, and consequently a lower *throughput* through the production installations, one can harness the potential to increase economic and environmental efficiency (cf. Epstein 1996, Schaltegger in collaboration with Müller and Hindrichsen 1996, Schaltegger/Müller 1997).

The most attractive investments according to the shareholder value concept are therefore investments that are not capital-intensive but which increase the efficiency and/or productivity of production processes.

3.2 Operational management

The effect of operational management on shareholder value is primarily determined by *sales growth*, the *operating profit margin* and the *rate of income tax*. What is crucially important is the combined effect of these factors. For example, even with rising sales and constant taxation, shareholder value can decrease if the sales growth is accompanied by a deterioration in the profit margin. At the same time, declining sales will not automatically result in a drop in the shareholder value of a company.

For the sales and profit margin to rise, the benefit to the customer must increase. Environmental factors may play a significant role here, particularly in the consumer goods market. Sales growth and operating profit margin are determined by the *general development of the sector* and by the *competitive position of the company* within the sector (cf. Porter 1989). Both factors may be affected in the long term by environmental considerations.

Booming sectors usually mean rising sales and high profit margins for the companies operating in those sectors. Companies in stagnating sectors, on the other hand, usually have to contend with falling sales and usually with shrinking profit margins due to tougher competition.

Individual companies can further increase their shareholder value by improving their competitive position. According to Porter (1989), a distinction can be made between the strategies of *price leadership* and *product differentiation* for improving the competitive position relative to market rivals. Environmental factors may have a material impact on both strategies.

One way of achieving *price leadership* is to cut costs, creating room for competitive pricing. With growing internalization of external environmental costs, and the trend towards a matching of the overall costs to society with the costs to the company, the business goal of cost reduction is gradually coming into line with the ecological goal of reducing the burden on the environment. Therefore it is safe to assume that, if external costs continue to be internalized in future, the strategy of price leadership through appropriate environmental management will become increasingly important. This has already happened in recent years in the chemical industry, where substantial efficiency improvements have reduced current and future costs and environmental pollution. Costs have been cut through waste minimization and energy and water savings, to name just a few general examples.[5] Particularly in very competitive markets, it is possible to counter a deterioration in profit margin with a strategy of *product differentiation,* especially at a time of increased environmental awareness, when people are prepared to pay more for environmentally friendly products. A strategy of 'green' differentiation is viable in certain markets.

Furthermore, sophisticated environment-friendly or 'clean' technologies often benefit from *tax concessions* (through shorter write-off periods, subsidies etc.). The additional income or reduced costs also help enhance the profit margin (cf. Ellipson 1997).

Environmental factors may also have a substantial impact on companies' *tax burdens*. In this context, income taxes usually play only a secondary role, since the tax authorities do not (yet) discriminate between the earnings of environment-friendly and environment-polluting companies.

Other taxes and levies such as trading capital taxes, energy taxes or nitrogen emission duties may be financially as well as ecologically relevant. For example, the installation of an end-of-pipe filter may lead not only to an increase in the fixed assets, but also to higher repair, maintenance and disposal costs. The tax burden of the employed capital may entail a further environment-related reduction in shareholder value.

To calculate the effect on shareholder value of implementing or not implementing various environmental protection measures, a *modern cost-accounting system* and a related system of environmental controlling is absolutely essential (cf. Günther 1996, Hallay/Pfriem 1995, Schaltegger/Kempke 1996, Schaltegger/Sturm 1995). In recent years, the development and application of environmental cost-accounting methods has shown that integrated environmental protection measures can have substantial

5 For an example of how to calculate these savings, see Schaltegger/Müller 1997.

and often unexpected cost-saving potential (cf. Epstein 1996, Schaltegger/Burritt 2000, Tuppen 1997). The indirect production costs caused by waste are particularly important in this regard.

3.3 Financing

Financing costs and the possible financing methods can have a major impact on shareholder value. In the past, banks and insurance companies have seriously underestimated the importance of corporate environmental protection. In recent years, however, new environmental protection regulations and more stringent rules on liability, particularly in the United States, have led to an environment-related increase in the costs and risks associated with lending. Banks increasingly discriminate between environment-friendly and environment-polluting companies. The financing conditions attached to government-subsidized loans and development programs have further widened the gap. Some investors have also begun to take ecological aspects into account when deciding where to invest.

The discounting rate for calculating shareholder value corresponds to the weighted average cost of capital and is made up of the weighted costs of borrowed capital (BC) and equity capital (EC):

$$\text{Weighted average} = \frac{BC}{BC+EC} \cdot BC - \text{costs} + \frac{EC}{BC+EC} \cdot EC - \text{costs}$$

The most obvious way of reducing borrowed and equity capital costs through environment-friendly behavior is to take advantage of the lower interest rates on environmental loans, inclusion in environmental funds, ethical investments etc. The cost advantage attainable through good environmental management can be described as a 'green bonus'. This effect, which has been pointed out in the past, implies that investors accept lower profitability. However, this does not correlate to the concept of eco-efficiency.

Of far greater importance however is the impact of environmental risks on capital costs (e.g. Vaughan 1994, pp. 39 - 58 and pp. 83 - 94). Potential environmental risks can result in a rise in the interest rate on borrowed capital and thus in a higher discount rate. However, a company's environmental risk is also reflected in the costs of equity capital. When assessing the environmental risks of a company or sector, we need to distinguish between *systematic and unsystematic* risks.

Unsystematic risks can be diversified and are thus, according to the Capital Asset Pricing Model (CAPM), not rewarded by the financial markets.[6] This is because the combination of a large number of risks produces a broad risk spread, so that what starts life as a collection of high-risk securities eventually becomes a risk-free portfolio. However, price differentiation between individual securities is unnecessary if the whole portfolio is without risk. The required profitability for the entire portfolio is equivalent to the profitability of a risk-free security.

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6 For the Capital Asset Pricing Model (CAPM), see Sharpe 1964/Lintner 1965.

The fact is that the costs of equity are mostly higher than the interest rate for risk-free investments, as in practice some risks, such as the risk of recession, cannot be diversified even with a large portfolio. This is due to systematic risks.[7] Systematic risks occur when different companies are exposed to the same or similar risks. The probability increases that other companies will be affected if such a risk materializes for one company.[8]

For example, volatile energy prices are a risk from an economic viewpoint. This risk has a strongly systematic character, since an increase in the price of a fuel (e.g. due to a CO_2 or energy tax) is usually accompanied by price increases of other fuels. This even applies to renewable energy sources, in view of increased demand. Practically all companies need energy to produce their goods and services. Thus, increasing energy prices affect (practically) all companies in a market simultaneously. Such a risk cannot be diversified completely and will therefore lead to higher costs of equity, depending on the extent to which the company is affected by the systematic risk.

The fact that *environment-related risks* are *highly systematic* in nature is often overlooked (cf. Figge 1996, 1997, Müller 1996). The only way of reducing the financial consequences of systematic risks is to *reduce the risk itself.* In the operational context this can be achieved in turn through efficiency improvements.

The introduction of an energy tax (like other environmental taxes and levies) represents such a systematic financial risk. Diversification of the fuels used will thus have only a very limited effect. Effective, cost-efficient hedging of this risk through diversification is therefore not possible in operational practice. Companies which operate in a particularly energy-intensive way are thus particularly exposed to the risk of higher energy prices. The only way of dealing with this risk so as to increase shareholder value is to use less energy, i.e. become more energy efficient.

3.4 Value Growth Duration

As a forward-looking concept, the shareholder value approach also takes into account future changes in prices, sales and costs. Here it is assumed that the attainable returns of a strategy or investment will, in the long term, approximate to the capital costs. After a certain time no further increase in shareholder value will thus be possible. Besides the level of the attainable returns, it is also necessary to specify the period over which it is possible to achieve a return higher than the market average.

Consequently, another way of increasing shareholder value is to lengthen the value growth duration. This factor is extremely important, particularly in the environmental context. New environmentally

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7 For a detailed discussion of the risk in the environmental context, see Figge 1997.

8 The degree of systematic pattern, i.e. the extent to which a company is affected by such systematic risks, is measured by the so-called beta factor.

problematic products which today enable the company to achieve above-average returns, and thus enhance shareholder value, may tomorrow become a burden on shareholder value if prices and sales fall earlier than expected for environmental reasons. On the other hand, if the period during which the higher-than-average return is attainable can be prolonged (e.g. through environmental innovations which allow a price premium), shareholder value will be increased.

4 Consequences for the company management

If the concept of shareholder value is understood as an approach to achieving a lasting increase in a company's value, it is certainly *compatible with economically efficient environmental management.* Therefore it is entirely in line with the idea of eco-efficiency.

Firstly, we can draw certain conclusions regarding corporate environmental management. Secondly, we assess and compare the different economic effects of environmental protection measures on a quantitative basis.[9]

4.1 Consequences for operational environmental management

Progressive operational environmental management will increase shareholder value all the more,

- the greater the 'authenticity' of costs, i.e. the more external costs are internalized (e.g. through levies etc.) and
- the better the future internalization of environmental risks can be anticipated (e.g. the future costs of clearing up previous environmental contamination).

Obviously the shareholder value approach does not take a positive view of every *act of environmental management*, but only of *enterprise-value-enhancing measures* exhibiting the following characteristics:

- *Capital-extensive:* Software rather than hardware ('smarter', smaller, cheaper installations)
- *Low-material-consuming:* Reduced throughput (lower purchase, storage and depreciation costs)
- *Sales-boosting:* Increasing the benefit and attraction to customers (more desirable products and services for more customers)

9 For an example see Müller/Wittke 1997.

- *Margin-widening:* Increasing the benefit to customers and reducing the costs of producing the products and services (higher prices due to greater benefit and lower operating costs through improved operating efficiency)

- *Safeguarding the flow of finance:* Confidence of the capital market (lower and less systematic risks, and (if applicable) 'green bonus')

- *Long-term value-enhancing:* Anticipation of future costs and earnings potential.

4.2 General assessment of different economic effects of environmental management

By incorporating the shareholder value concept into the formulation of corporate environmental management, it is possible to integrate the relevant parameters on which an economic decision is based into a *single* concept.

When assessing the cash inflow and cash outflow generated by alternative measures, it is necessary to take account of the impact on different value drivers, or on the following three parameters (Figure B-2):

- Expected capital investment

- Discount rate

- Expected free cash flow

If, for example, the management bases its decisions solely on the expected income, it risks making an investment which may promise the highest return in absolute terms, but only a low return relative to the required capital investment, and thus delivers only a poor return. Secondly, it is possible that an investment may involve not only a high return, but also a high risk which may not be adequately compensated by the return.

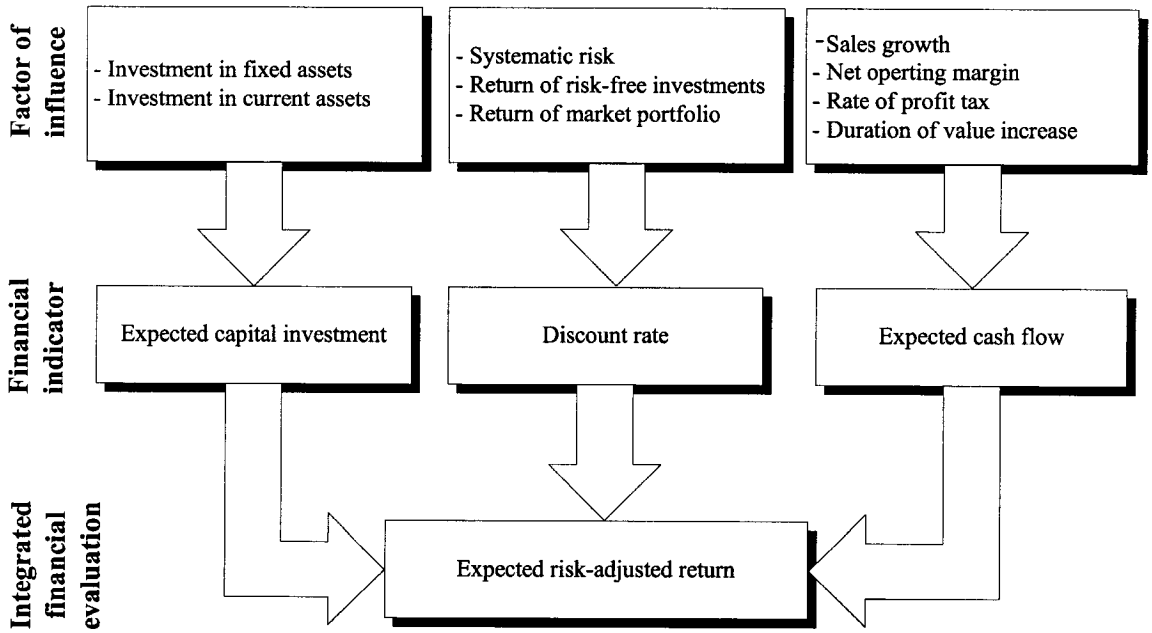

Figure B-2: Integrated financial evaluation of environmental management.

The additional enterprise value is determined not so much by the absolute additional income or profit, but rather by the relative additional return after adjustment to take into account the anticipated risk. Shareholder Value will only be created if the return exceeds the cost of capital. In this way, the shareholder value concept offers an *ex ante* valuation method for the implicit integration of the relevant parameters on which economic decisions are based.

To sum up, it may be said that a system of environmental management geared to increasing shareholder value provides a way in which the financial impact of environmental management can be assessed on the basis of the value drivers (Ellipson 1996, 1997). At the same time, it provides a way of quantitatively assessing conflicting financial effects on an *ex ante* basis and weighing them against each other.

4.3 Limits to shareholder-value-oriented environmental management

A system of environmental management that enhances shareholder value is essentially in harmony with a market-oriented environmental policy and the concept of eco-efficiency. However, it will not have a more environmentally protecting effect than the legal, political and market circumstances will allow.

In the context of corporate environmental management, the shareholder value concept faces certain economic and social hurdles. Besides the fact that financial liquidity is not explicitly included in the calculation of shareholder value, problems may also arise where a company is unable to avoid certain risks through diversification - because of its size, perhaps. As investors can diversify their invest-

ments, environmentally related risks are not considered in the calculation of the discount factor if unsystematic in character. These risks can nevertheless be relevant for the management if they cannot be balanced internally and if they influence the company's economic success in the same way as systematic risks.

Furthermore, the shareholder value concept only takes the market risks into consideration. However, companies are also exposed to the risks of possible loss of social acceptance, of their legitimacy, of the work environment in the company, etc. In this regard, the fact that the concept does not support any explicit analysis of the social aspects of corporate environmental protection and of corporate learning processes can be regarded as a shortcoming. In particular, the shareholder value approach stands in the way of the concept of sustainable development if it is misused as an argument for a redistribution of resources between social and ecological interests on the one hand and the interests of capital providers on the other.

Moreover the shareholder value concepts underestimates the value of flexibility. Flexibility provides a value, whenever the future can only be predicted with great uncertainty and the flexibility allows the company to react to different possible future outcomes. The value of flexibility is covered by another concept, the Environmental Option Value (Figge 2001).

4.4 Summary

Provided one bears in mind the described shortcomings, a shareholder value oriented approach to environmental management can help the company management in its decision making and in improving eco-efficiency. If the shareholder value concept is understood in its true sense as a method of assessing enterprise value, and compared with the key ratios used in conventional financial accounting, it will bring corporate environmental management significantly closer to the basic principles of eco-efficiency and sustainable development. An environmental management system compatible with shareholder value, if correctly understood, can reduce the potential for conflicts between a company's environmental objectives and its financial objectives. The concept also gives a clear idea as to which types of environmental protection measures will lastingly increase the enterprise value and should therefore be implemented as a matter of priority, and are likely to present few problems.

Part II: The view from outside the company - Environment-oriented business analysis based on the concept of shareholder value

1 Introduction

Nowadays, few people would deny that environmental factors have an impact on the commercial success of companies. However, an analysis which seeks to determine how 'green' a company is in order to surmise its future commercial success is doomed to failure. This is because there is *no clear* correlation between corporate environmental protection and commercial success. As explained in Part One, only a well thought-out policy of environmental protection will have a beneficial effect on shareholder value. Although this may seem obvious at first sight, there are important lessons to be learnt here. If corporate environmental protection *can* have an effect on the commercial success of companies but will *not necessarily* do so, the vital question in arriving at a financial valuation of a company is not *how much*, but rather *what type* of environmental protection is practiced. It is not so much the amount of money devoted to environmental protection or the quantity of emitted pollutants, but rather the specific formulation and implementation of the environmental management policy that is relevant. The challenge for the financial analyst is therefore to look at the type of company and its environmental management practices, and draw conclusions regarding the impact on environmental efficiency, i.e. the (environment-related) financial consequences. Here it is important to remember that the commercial success of a company naturally depends on other factors. Therefore the aim of an environment-oriented business analysis cannot be to explain the overall commercial success of a company. It can only analyze whether the environmental activities have the overall effect of increasing or reducing the enterprise value.

In the past, the banks' main priority was the avoidance of environment-related financial risks. This has a historical explanation, in that the first area of banking which took account of environmental factors was that of checking creditworthiness. In the lending business, income is largely determined by the market situation and the actuarially calculated risks. In this area, therefore, it is reasonable to make a one-sided assessment focusing on the environmental risks.

The situation is entirely different in the area of asset management, where return and risk are variable. The aim is therefore to assess companies comparatively on the basis of expected return and risk. Higher or lower income has to be weighed up against higher or lower risks.

As modern portfolio theory tells us, expected return and risk are the basic determinants of every investment decision. Therefore it is all the more surprising that most previous attempts to incorporate environmental aspects into asset management have concentrated entirely on environmental risks rather than distinguishing between environment-related return and risk. No rational investor would base his investment decisions solely on an analysis of the investment risk.

This is precisely where the shareholder value concept comes in. By focusing on future free cash flows and applying a discount commensurate with the risk, the shareholder value concept provides an appropriate conceptual basis for evaluating the economic effects of corporate environmental protection. It means that the expected return and risk can be taken into account simultaneously.

2 Levels of valuation

The value drivers of the shareholder value model enable analysis of the relevant factors. However, our experience shows that simultaneous analysis of individual value drivers from the point of view of an external analyst is not always feasible. For the external analysis of companies, it is therefore worthwhile combining the value drivers of the shareholder value model into three groups:[10]

- Environment-related inflow/outflow of funds from operational activity (2.1)
- Environment-related inflow/outflow of funds from investment activity (2.2)
- Environment-related increase/reduction of risk (2.3)

This grouping has the advantage that it is based on the usual structure of flow-of-funds accounts (direct method). This makes the link between corporate environmental protection measures and enterprise value still clearer.

In the evaluation of environmental management of companies over several years, it has been found that corporate environmental protection measures can have both positive and negative effects on all three factors, i.e. they can both increase and reduce the enterprise value. In the following, we discuss these three factors and show, with the help of a practical examples, how these factors can be taken into account in the financial analysis.

2.1 Environment-related inflow/outflow of funds from operational activity. — Example: Retail trade

An environment-related increase in enterprise value occurs when additional funds flow in to the company due to the operational activity, all else being equal. This can be achieved in various ways. As the value drivers of the shareholder value model show, the inflow of funds increases when sales expand, when the prices and consequently the operating profit margin rises, or where the period can be extended during which it is possible to achieve above-average returns thanks to prices that are higher than the typical market level (value driver: value growth duration). A reduction in the outflow of funds

10 Our model therefore differs in form but not in content from Rappaport's shareholder value model (Rappaport 1995).

can be achieved by reducing costs, thus increasing the operating profit margin, or (less commonly) where the rate of income tax can be reduced.

The British company Body Shop frequently crops up in any discussion of environmental aspects. Body Shop produces and distributes natural cosmetics. Although Body Shop is from time to time the focus of ethical controversies, it is clearly a better-than-average company within its sector from an environmental point of view.

The example of Body Shop also shows how environmental aspects have contributed to an increase in enterprise value. There are three particular aspects worth mentioning here: operating profit margin, value growth duration and high sales growth.

As figure B-3 shows Body Shop's profit margin has been on average clearly above the profit margins of other British retail companies during the last 15 years. This margin is made possible essentially by being able to charge comparatively high prices. Body Shop has achieved this mainly through successful product differentiation based on the attributes of ecology and health.

As already explained, companies must expect initially high margins to come under pressure as a result of increased competition. Therefore, companies wishing to increase their value must constantly combat margin erosion. During a long period Body Shop has succeeded in fending off margin erosion over a long period of time (see also Figure B-3). Nevertheless, the margin differential has gradually fallen, eventually even below the level of the other firms considered. This is in line with the shareholder value concept, which assumes that better-than-average returns cannot be maintained indefinitely in competitive markets. However, EBIT margin does not provide the full picture, have to look at sales too in order to come up with an absolute estimate of the profit

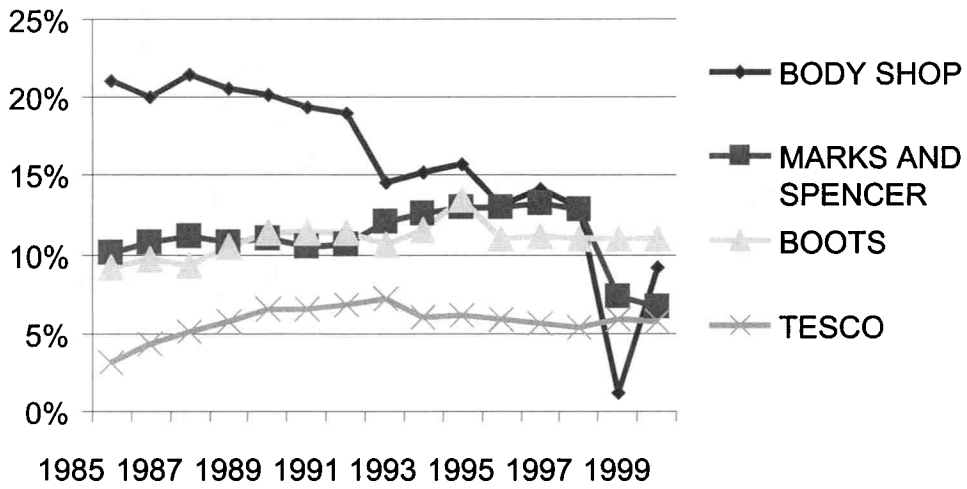

Figure B-3: Operating profit margins of British retailers (Sources: Datastream)

The successful concept behind Body Shop has also been reflected in booming sales. Sales have increased more than ten-fold over the last 15 years. A comparison with other companies in the retail sector shows that Body Shop has increased its sales far more substantially in this period (see Figure B-4, which is represented on a logarithmic scale).

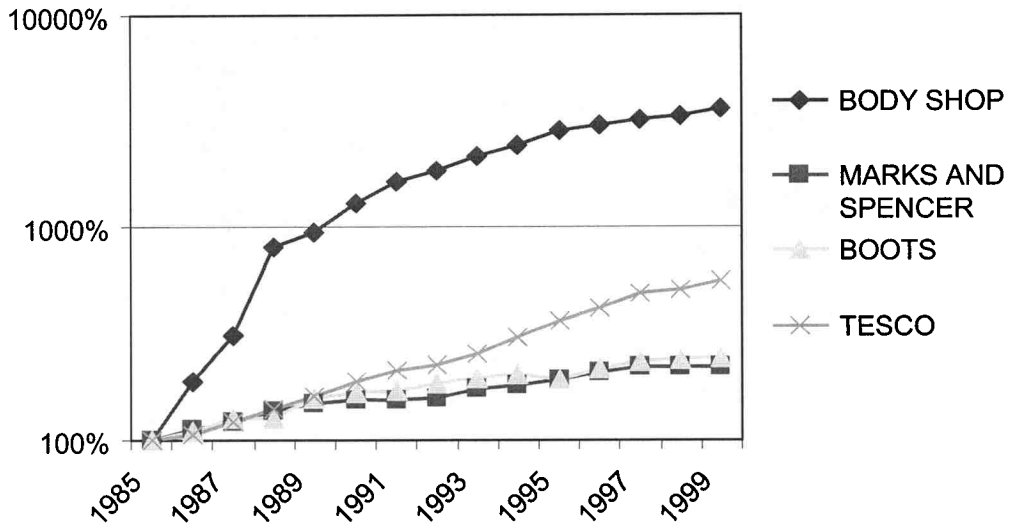

Figure B-4: Sales growth of Body Shop compared with other British retail companies. (Sources: Datastream, own estimates)

An interesting question now is whether the gradual decline in margins can be offset by additional sales. To look at this in a comparative way, the indexed sales are multiplied by the indexed margin growth (see Figure B-5). In this way, we arrive at the indexed growth of operating profit. As the graph shows, Body Shop has succeeded not only in more than making up for the margin erosion through rising sales, but has also outperformed other retail companies even if 1998 is included in the analysis – a year that turned out to be a major setback for the company.

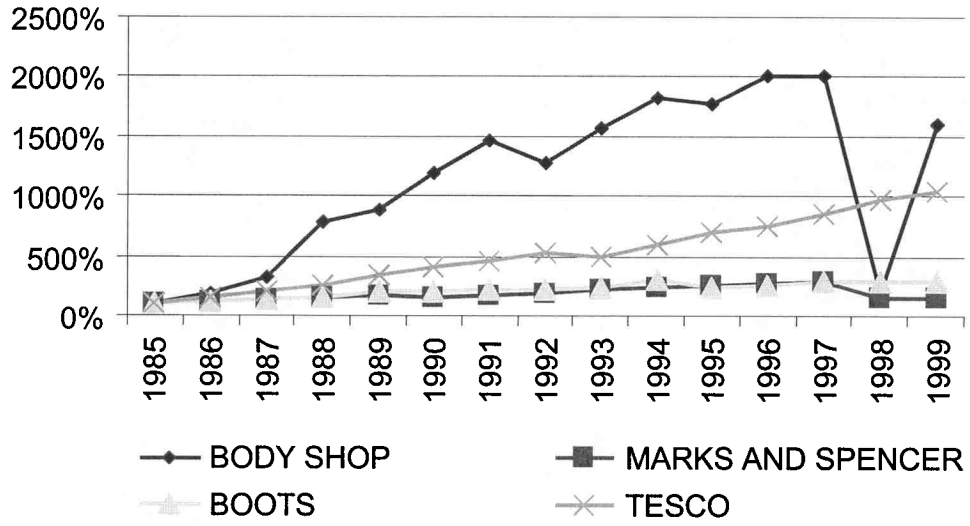

Figure B-5: Indexed growth of operating profit (Sources: Datastream, own estimates)

2.2 Environment-related inflow/outflow of funds from investment activity — Example: Electricity production

A second major item affecting shareholder value is the tie-up of capital through investment activity. The more capital that is needed for operational activities, the higher the income needed to pay a reasonable return on the capital.

The environmental and financial advantages and disadvantages of different methods of electricity generation (fossil fuels, renewable resources, nuclear energy) have for some time been the subject of intense controversy. Arguments have focused particularly on the economic efficiency of the different production methods. The prices and generating costs of electricity are usually compared. From a macroeconomic point of view, not only the internal but also the external costs of electricity production are included in the analysis. This approach is certainly logical from the point of view of consumers. Calculation of the „correct" external costs does however run into certain methodological difficulties. Therefore the results are open to manipulation depending on one's political outlook.

However, in the context of business valuation, analysts often fail to take into account that the internal and external costs of electricity generation are only one aspect as far as the investor is concerned. They are relevant in so far as they help to determine the profit margin. The lower the costs compared with the competition, the higher the margin usually is and the higher the return on capital employed. But from the investor's point of view, the income should be compared with the capital employed.

We can make such a comparison of the economy of nuclear power stations with that of fossil fuel power stations on the basis of the shareholder value concept, using the example of the British electricity generating companies. Unlike other countries, such as Germany, which have no „pure" nuclear

power station operators listed in the stock market, Britain has a supplier - namely British Energy - which was privatized in 1996 and which relies almost exclusively on nuclear energy to generate electricity. At the time British Energy was privatized there were two other key listed suppliers. PowerGen and National Power relied exclusively on fossil fuels, and to some extent renewable energy sources.

A reasonable indicator for comparing the capital intensity of power station operators is the ratio of sales to fixed assets. The higher this figure, the less capital is needed to achieve sales of 1 pound sterling (GBP). Figure B-6 shows how this ratio has developed between 1992 and 1999. The chart shows that National Power and PowerGen have comparable capital intensity. Over the mentioned period the sales per 1 pound sterling of fixed assets were however approximately on average two and a half times greater than those of British Energy. The upward trend of British Energy in the 1995/1996 financial year is due to the writing off of fixed assets in the run up to privatization worth just under GBP 2 billion.

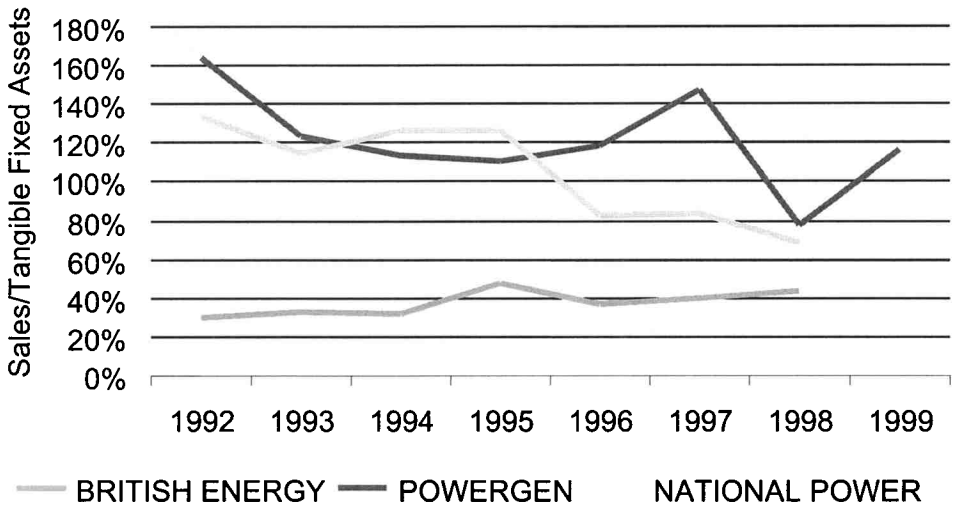

Figure B-6: Capital-intensity of British electricity generating companies (Sources: Datastream, own estimates)

In terms of the shareholder value approach, it will now be interesting to see whether British Energy succeeds in achieving a operating profit margin that gives a competitive return on capital. As Figure B-7 shows, since 1995 the operating profit margin of British Energy is however lower than that of its competitors or comparable (1998) to its competitors.

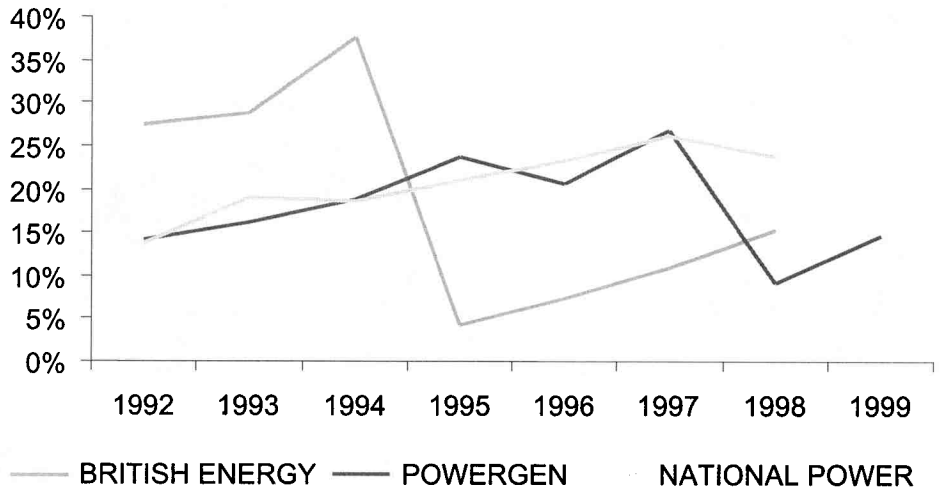

Figure B-7: Operating profit margins of UK electricity generating companies (Sources: Datastream, own estimates)

From 1995 on British Energy cannot thus achieve a return on capital employed comparable with that of its direct rivals.

Although it is theoretically possible to improve profitability through higher gearing, it is necessary to bear in mind that the financial *risk* for equity capital providers rises through increased use of borrowed capital. Competitors may also adopt a similar financing policy. The potential for achieving a higher profit margin than competitors is also limited by the homogeneity of the product, namely electrical power. So product differentiation is obviously impossible, or possible only to a very limited degree.

The financial *risk* presented by nuclear power stations is not primarily the risk of an accident. Accidents are exceedingly unlikely compared with conventional business risks. From the financial viewpoint the risk is more in terms of the long-term commitments arising from present activities, in the light of the uncertain future of nuclear power. Current activities give rise to commitments which will extend into the second half of the next century, but must be included in the business appraisal here and now. One such risk is posed by the development of costs of permanent storage of spent fuel rods. If the costs of permanent storage escalates, we can expect the profitability of nuclear power to fall sharply.[15] The future costs of storage will depend very much on public acceptance of nuclear energy. Whether rightly or wrongly, the public is far less accepting of nuclear energy than of fossil fuels and renewable energy sources.

[15] However, every risk also presents an opportunity: The cost of permanent storage could unexpectedly fall, thus improving profitability.

The privatization of British Energy yielded only GBP 1.41bn.[16] This was well below the figure originally expected, and equivalent to less than half the government's investment in the latest nuclear power station (Sizewell B).[17] British Energy owns a total of eight nuclear power stations.

An even starker picture emerges if we deduct from the fixed assets the sum of nearly GBP 2bn written off in 1995/96 ahead of the privatization.

2.3 Increase or reduction in environmental risk: Effects of possible environmental levies

Environmental risks are the third important factor affecting shareholder value. The higher the financial risks of an investment, the more investors will want to be compensated for the risks accepted. Since the weighted average cost of capital (WACC) is used when calculating shareholder value as the discounting factor for future free cash flows, higher risks mean lower shareholder value, all else being equal.

Environmental aspects can increase or reduce the risks, thus impacting on the capital costs in different ways. For example, diversification of the product range to include environmentally efficient products, or effective risk management, may reduce the risk. The problem is that most activities of this kind are of a 'qualitative' nature and cannot be adequately quantified.

A major financial risk is the possibility of changes in the prices of production factors. As has often been argued, the possible introduction of an energy tax, or CO_2 levy, is one such risk. Companies with big energy bills would be particularly hard hit by the implementation of such levies. Comparisons of different companies and sectors are nowadays often (misguidedly) reduced to a comparison of sales and CO_2 emissions. As we can see from the following chart, which is based on a random selection of chemical companies, one can indeed draw several useful conclusions concerning companies' CO_2 intensity.

16 See e.g. 'Britain: A cool reception for new issues in London' in: Neue Zürcher Zeitung 30.07.97.

17 See 'UK: Privatisation with a terrible half-life' in: Guardian 10.05.1995.

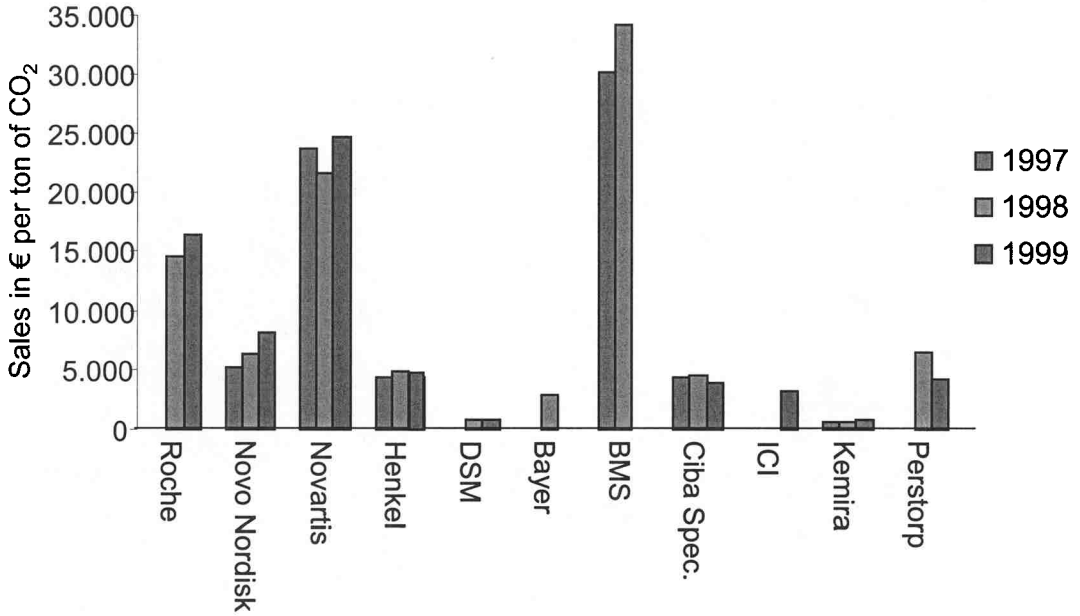

Figure B-8:[18] Sales in € per tonne of CO_2 (Sources: Datastream, environmental reports, own estimates)

The most 'CO_2-intensive' of these companies, namely DSM, emitted 37 times more CO_2 per € than BMS, the company with the lowest relative CO_2 emissions. CO_2 intensity also appears to be remarkably constant over the observation period.

From the point of view of the capital provider, the energy or CO_2 intensity of a company is only one aspect of risk analysis. To estimate the risk, he also needs to know how easily the company can absorb another financial burden. The cardinal error committed by many environmental analysts when assessing the financial and environmental consequences of a CO_2 levy and similar green taxes is that they look only at sales. From the point of view of shareholder value, the *operating profit (rather than sales)* should be set against the CO_2 emissions. Only a comparison with operating profit will show how easily a company could cope with an additional financial burden in the form of a CO_2 levy. Such an analysis appears in Figure B-9.

An index figure (operating profit per tonne of CO_2) of 1 means that a CO_2 levy of € 1 per tonne would „eat up" the whole of the operating profit. The larger the figure, the less the company will be financially affected by a levy. To fit this figure to different levy scenarios, divide it by the estimated rate of

18 Sources: CO_2 emissions based on environmental reports, sales figures based on annual reports and Datastream. Exchange rates are those prevailing as at 31 December of the year in question.

Sandoz and Ciba have merged, and operate under the joint name of Novartis since the 1996 financial year. For certain companies, carbon dioxide emission data is not (yet) available for 1993 and 1996.

It is important to note that companies demarcate their systems in different ways, and this may distort the picture when it comes to detecting CO_2 emissions.

levy per tonne of carbon dioxide. For example, if we assume that one tonne of CO_2 is taxed at a rate of (the equivalent of) € 15, in 1995 BMS would have earned the applicable levy more than 500 times over, and DSM only about 11 times.

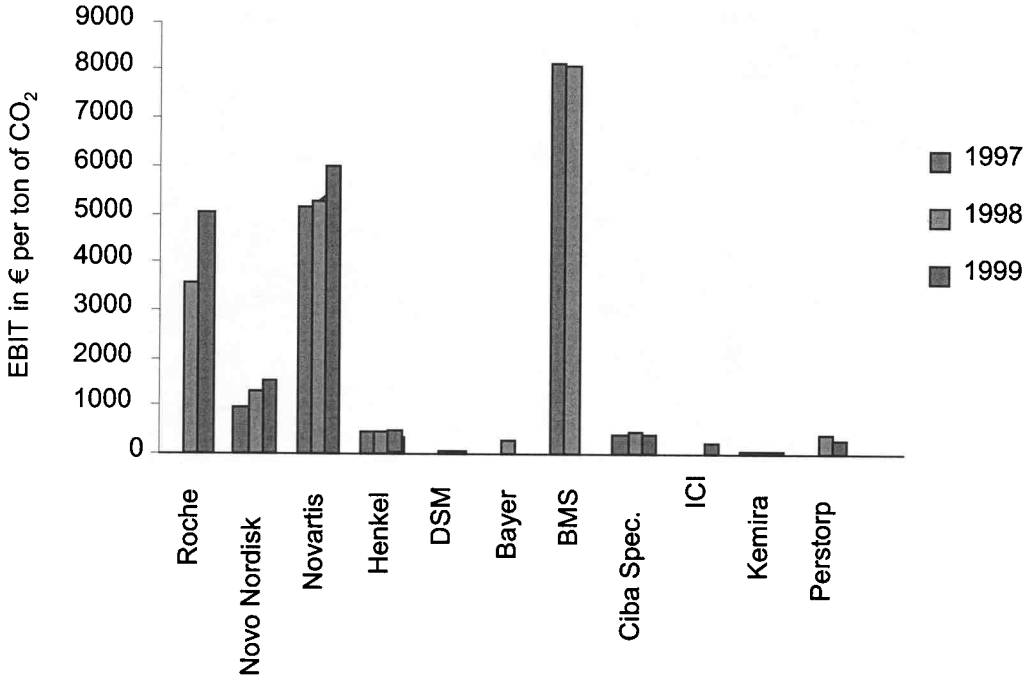

Figure B-9: Operating profit in € per tonne of CO_2 (Sources: Datastream, environmental reports, own estimates)

From the point of view of a capital provider, a company is more at risk, the less operating profit is available per unit of sales out of which the additional levy can be paid. The resulting higher risk should be reflected in the discounting factor, leading to a reduction in shareholder value.

3 The Environmental Shareholder Value Matrix

Financial analysts examine firms as potential investments from the "outside" perspective as taken up here in Part II. In this section we introduce a practical tool for analysts to operationalize the Environmental Shareholder Value approach for their everyday decision making. This is done by the Environmental Shareholder Value Matrix. This matrix consists of two main components. On the one hand (vertical axis in figure B-10), the environmental aspects (e.g. emissions, green products, cleaner production projects, clean up sites, environmental management systems, etc.) of an investment or company have to be identified. On the other hand (top row in figure B-10), the value drivers of the shareholder value as identified in the last chapter are used to establish the link towards long term value creation. In order to examine the relation between the environmental aspects and features of a company or investment and value creation all the environmental aspects identified have to be cross-checked systematically against the value drivers. This is done by using the Environmental Shareholder Value Matrix as shown in Figure B-10.

Value driver / Environ-mental aspect	Value Growth Duration	Revenue Growth	Operating Profit Margin		Income Tax Rate	Investments	Cost of Capital
			Price	Costs			
Introduction of a new product	+	++	++	-	0	-	-
...							
...							
...							

With: ++ strong value creating impact, + value creating impact, 0 neutral, - value destructing impact, -- strong value destructing impact.

Figure B-10: Environmental Shareholder Value Matrix (Figge 2000)

In this matrix the impact of every single environmental aspect on value creation is analyzed systematically. Every environmental aspect is examined for each value driver whether it has a (strong) value creating impact, whether it is neutral with regard to the respective value driver, or whether there is a (strong) value destructing impact. By doing so, for each environmental aspect one line of the matrix is filled with "++" for strong value creating impact, "+" for value creating impact, "0" for neutral impact, "-" for value destructing impact, and "--" for strong value destructing impact. This procedure serves to examine systematically the *causal links* between environmental aspects and value creation.

All the environmental aspects of a company or investment are analyzed in this manner. Thus, the matrix is gradually filled line by line. The results for every environmental aspect and its effect on value creation make up the overall result of the analysis. It reveals to which degree and by which means a company or investment creates environmental shareholder value. In case of conflicting impacts, i.e. value creating as well as value destruction due to environmental aspects, these have to be balanced by a further examination of their significance and links. The existence of value destructing impacts of

course diminishes environmental shareholder value. Finally, by following this scheme the analysis delivers a full picture of whether a company or investment results in more economic and financial success through environmental management activities.

Often environmental aspects may have conflicting effects on different value drivers. A company that introduces a new line of environment-friendly products might e.g. experience increased revenues and above-average product margins. Both of which have a positive impact on Shareholder Value. However, if the company also has to make some additional investments the overall impact on Shareholder Value might be unclear. To judge the overall effect of conflicting effects of environmental aspects an assessment is necessary whether the value-reducing effect of additional investments is overcompensated by the positive impact on revenue growth and operating profit margins.

Usually, the overall effect can be assessed satisfactorily in a four step process. Because they determine the cash flow from operations, the three value drivers value growth duration, revenue growth and operating profit margin are usually a good starting point. Step 1 looks at the (sometimes conflicting) impact on these value drivers. They determine how much cash flow from operations is added. A typical question in this context is: Can revenue growth compensate for declining operating profit margins in the long run? The cash flow generated from operations added must then allow to cover changes in the tax position (step 2), additional investments (step 3) and any additional cost of capital (step 4). Figure B-11 reflects the assessment process. It is important to understand that environmental aspects can have a positive and a negative impact on all value drivers.

Assume for example a company rearranges its production processes and thus becomes more eco-efficient, i.e. it consumes less resources for creating the same output as before. This improved eco-efficiency eventually may lead to lower production cost and thus to a bigger operating profit margin. Assuming that value growth duration and revenue growth are left unaffected of the optimized production processes, there will be a positive impact on the added cash flows from operations (step 1). With tax rates being unchanged, assume furthermore that optimizing production processes requires some additional investment resulting in an value-reducing effect in step 3. Consequently, additional investment also leads to higher cost of capital which represents another negative effect in step 4. To evaluate the overall effect of improved eco-efficiency in this short example one has to balance the importance of the positive effect identified in step 1 has to be compared with the negative effect in steps 3 and 4. This assessment process adds structure to the Environmental Shareholder Value Matrix introduced above and thus facilitates the qualitative assessment when balancing different effects.

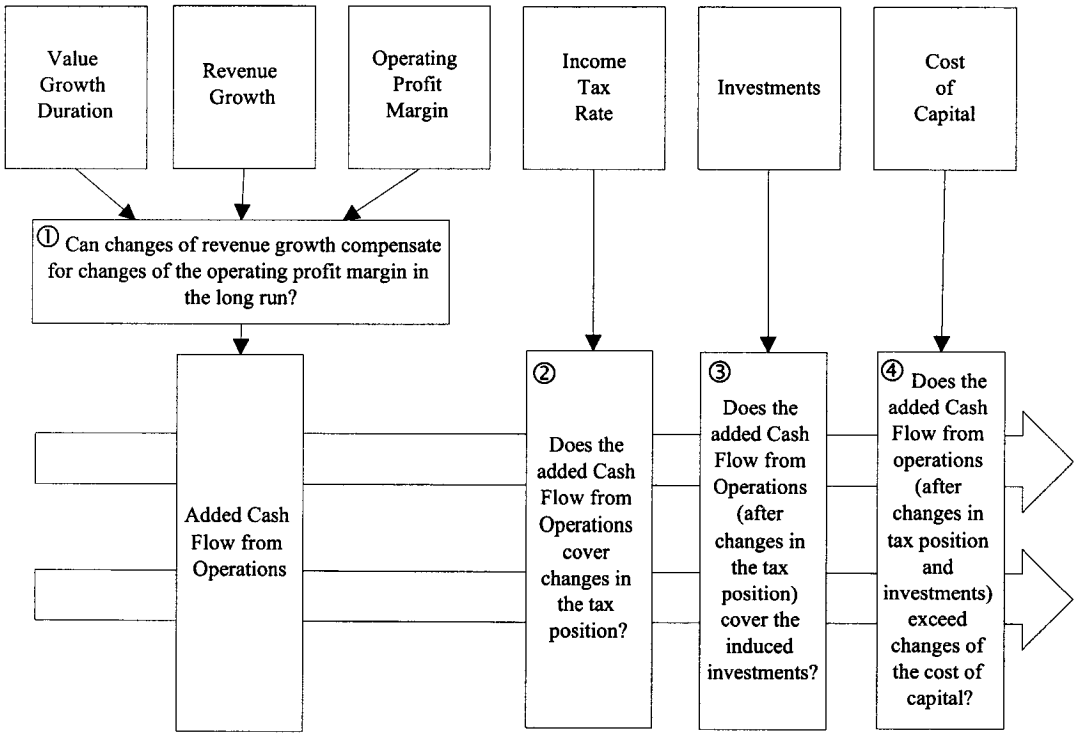

Figure B-11: Assessing conflicting impacts

Thus, sometimes a qualitative assessment of the value drivers will allow to decide on the overall impact on the value drivers. A quantitative assessment, however, is often asked for in practice. Using a simple example we will now show how the impact of environmental aspects on Shareholder Value can be calculated.

ABC Ltd. is a producer of white goods. The table below reflects the main business data for the year 2002. ABC's management sees little potential for improvement of the company's financial position.

ABC Ltd.	
Sales	2,000 €
Capital employed	1,000 €
Operating Profit Margin	8%
Weighted Average Cost of Capital (WACC)[11]	10%
Income Tax Rate	35%

Table B-1: ABC's financial position

The company generates a cash flow from operations of 160 € (Sales * Operating Profit Margin) before tax and of 104 € (Operating Profit * Operating Profit Margin * (1- Income Tax Rate)) after tax. Capi-

11 The tax shield effect of borrowed capital has been taken into account.

tal cost amounts to 100 € (1,000 € * 10%). The company – typical for a company in a mature industry – is thus barely earning its cost of capital. We will now look at two initiatives (an energy-efficiency program and the introduction of a new product) and show how the impact on Shareholder Value can be assessed.

Initiative 1: Energy-efficiency program

By investing in energy saving equipment in production the company could save energy and reduce its energy bill. This program would therefore help to lower costs and have a positive impact on the operating profit margin. The company assumes that this cost advantage would be imitated by other companies only in the medium term (5 years), which results in a positive impact on value growth duration. The overall impact on the cash flow from operations is therefore positive. The company, however, would have to invest to achieve the energy savings. This has an adverse impact on Shareholder Value in two ways. First of all there is a cash-out flow since the company has to pay for the investments. The investments will secondly enlarge the amount of capital which is tied up in the company and thus increase the cost of capital. We assume that the remaining value drivers (revenue growth, price, income tax rate) are not affected by the program. Table B-2 summarizes the expected impact on the value drivers.

Value Growth Duration	Revenue Growth	Operating Profit Margin		Income Tax Rate	Investments	Cost of Capital
		Price	Cost			
+	0	0	+	0	-	-

Table B-2: Energy-efficiency program – impact on value drivers

To find out, if the overall effect of the energy-efficiency program on Shareholder Value is positive the following questions have to be answered: Will the program create enough additional cash flow from operations during the next five years to pay for the additional investment and the increase in cost of capital?

For this purpose we assess the overall financial impact the energy-efficiency program might have. In a first step a static view is taken up. We assume that about one fourth of the energy used could be saved by the program and that the company spends 16% of sales on energy. There is thus a potential increase of the operating profit margin from 8% to 12%. An operating profit margin of 12% would result in a cash flow from operations of 240 € p.a. (2,000 €*12%) which corresponds to an increase of 80 €.

In a second step we now have to complement this static view with a dynamic one: In the medium term competitors will imitate the energy-saving program. Since the company is active in a very competitive

market we expect prices to decline in the medium term. The enhanced operating profit margin following the energy-efficiency program will allow for an above-average return on capital for a maximum of 5 years. The company expects operating profit margins to develop as reflected in Table B-3.

Year	Operating Profit Margin
2003	12%
2004	11.8%
2005	11.5%
2006	10.5%
2007	8.8%

Table B-3: Declining operating profit margins

At first sight one could be led to believe that an operating profit margin of 8.8% in 2007 still constitutes an excess margin in comparison to the previous operating profit margin of 8%. We must, however, take into account that the company has to invest to achieve the energy savings. We assume that this investment sums up to an additional 100 €. This will also lead, as mentioned, to an increase of the cost of capital. The tax rate is left unaffected by the energy-efficiency program. Table B-4 represents the data we need to assess if the investment in energy savings is worthwhile.

Line		2002	2003	2004	2005	2006	2007
	Sales		2,000 €	2,000 €	2,000 €	2,000 €	2,000 €
1	Excess Operating Profit Margin (Base margin=8%)		4.00%	3.80%	3.50%	2.50%	0.80%
2	Addional Cash Flow from Operations		80.00 €	76.00 €	70.00 €	50.00 €	16.00 €
3	Tax (Income Tax Rate: 35%)		28.00 €	26.60 €	24.50 €	17.50 €	5.60 €
4	Additional Cash Flow from Operations (after Taxes)		52.00 €	49.40 €	45.50 €	32.50 €	10.40 €
5	Cost of additional Capital		10.00 €	10.00 €	10.00 €	10.00 €	10.00 €
6	Additional Cash Flow from Operations after Taxes and Cost of Capital		42.00 €	39.40 €	35.50 €	22.50 €	0.40 €
7	Present Value	113.03 €	38.18 €	32.56 €	26.67 €	15.37 €	0.25 €
8	Investment	100.00 €					

Table B-4: Projected data – energy saving program

The excess operating profit margin (line 1) is calculated by subtracting the present operating profit margin of 8% (Table B-1) from the expected operating profit margins (Table B-3). The additional cash flow from operations (line 2) shows how much additional cash flow is generated with the higher operating profit margin. The company will have to pay income tax (line 3) on this additional cash flow

from operations which is considered in the next step. Only the additional cash flow from operations after taxes (line 4) can be used to pay for the cost of capital.[12]

The cost of capital (line 5) is determined by the additional capital that is needed for the energy saving equipment on the one hand and WACC on the other hand. We assume that the investment in the energy saving equipment is as risky as normal business operations and that we can therefore use the company's WACC of 10%. Since we have to invest 100 € the additional cost of capital will be 10 € p.a. We subtract the cost of additional capital from the additional cash flow from operations after taxes to find out, if the investment can pay for the cost of the additional capital employed (line 6). As shown in table B-4 the additional cash flow from operations covers the cost of additional capital in all five years. In 2007, however, the additional cash flow from operations and the cost of additional capital are about break even. We can therefore conclude that the company will need an additional operating profit margin of about 0.8% in the long run to pay for the energy-efficiency program.

For the energy-efficiency investment to be worthwhile the 100 € we would have to invest today must be covered by the expected additional cash flow from operations after taxes and cost of capital created by the energy-efficiency program in the future. For this purpose the additional cash flow from operations after taxes and cost of capital is discounted using a discount rate of 10% (discount rate applied by the company for its normal business operations). As we can see in Table B-4, the Present Value of the future additional cash flow from operations after taxes and cost of capital (line 7) amounts to about 113 €. The energy-efficiency program would therefore create Shareholder Value and could be carried out.

Initiative 2: Introduction of a new product

A second initiative would be to introduce a new "green" product (e.g. an energy-efficient refrigerator). The company expects to boost its sales with this new product which thus might result in a positive effect on the value driver revenue growth. The new product should furthermore allow for premium prices which should overcompensate higher costs. The company expects to be able to maintain a premium operating profit margin for at least 5 years before it will be devoured by the competitors' efforts to imitate the new product which would result in declining prices on competitive markets. The overall effect on cash flow from operations should therefore be positive. It is, however, not clear how much the company would have to invest to be able to introduce the new product. The Environmental Shareholder Value Matrix can also be used to address this question (see Table B-5).

12 It is important to keep in mind that the tax shield effect of a use of borrowed capital has already been considered in the calculation of the Weighted Average Cost of Capital (WACC).

Value Growth Duration	Revenue Growth	Operating Profit Margin		Income Tax Rate	Investments	Cost of Capital
		Price	Cost			
+	++	++	-	0	?	?

Table B-5: Introduction of a new Product – impact on value drivers

The monetarized quantitative assessment of this question is represented in Table B-6. In a first step we will try to assess how much cash flow from operations after taxes can be created to pay for the additional investments and the additional cost of capital which arise from the development and introduction of a new "green" product line. We assume that revenue will grow by 10% every year from 2,000 € in 2002 for 5 years after the product has been introduced (line 1) and that excess operating profit margin will range from 4% in the first year to 1.5% in the last year (line 2). We can now calculate the additional cash flow from operations before (line 3) and after taxes (line 5) similar to the last example. We assume that the introduction of the new product is as risky as normal business operations and therefore use the same discount rate (10%) to calculate the present value of the expected additional cash flow from operations after taxes (line 6). Following the logic already applied in the example before, we now know that we may expect to create an additional cash flow from operations after taxes worth 188.5 € (present value) for the next 5 years to pay for any investments and to cover the cost of capital. We can now calculate several scenarios with different investments and cost of capital (line 7a-7d). 10% is again used for the cost of capital and the discount rate.

For the first scenario let today's value of the investment be 100 €. This results in a negative present value of the investment and the induced cost of capital during the next 5 years of 137.91 €. The expected cash flow from operations after taxes (188.5 €, see line 6) would therefore cover more than this investment and the induced cost of capital in this first scenario. An investment of 135 € as assumed in the scenario shown in line 7c will about match the present value of the additional cash flow from operations after taxes. We can therefore conclude that the introduction of the new product should be worthwhile, if its induced investment is below 135 €.

Line		2002	2003	2004	2005	2006	2007
1	Sales		2,200 €	2,420 €	2,662 €	2,928 €	3,221 €
2	Excess Operating Profit Margin (Base margin=8%)		4%	3.5%	3%	2.5%	1.5%
3	Additional Cash Flow from Operations		88.00 €	84.70 €	79.86 €	73.21 €	48.32 €
4	Tax (Income Tax Rate: 35%)		30.80 €	29.65 €	27.95 €	25.62 €	16.91 €
5	Additional Cash Flow from Operations (after Taxes)		57.20 €	55.06 €	51.91 €	47.58 €	31.40 €
6	Present Value	188.50 €	52.00 €	45.50 €	39.00 €	32.50 €	19.50 €
7a	Investment and Cost of Capital	100.00 €	10.00 €	10.00 €	10.00 €	10.00 €	10.00 €
	Present Value	100.00 €	9.09 €	8.26 €	7.51 €	6.83 €	6.21 €
	Total	137.91 €					
7b	Investment and Cost of Capital	120.00 €	12.00 €	12.00 €	12.00 €	12.00 €	12.00 €
	Present Value	120.00 €	10.91 €	9.92 €	9.02 €	8.20 €	7.45 €
	Total	165.49 €					
7c	Investment and Cost of Capital	135.00 €	13.50 €	13.50 €	13.50 €	13.50 €	13.50 €
	Present Value	135.00 €	12.27 €	11.16 €	10.14 €	9.22 €	8.38 €
	Total	186.18 €					
7d	Investment and Cost of Capital	150.00 €	15.00 €	15.00 €	15.00 €	15.00 €	15.00 €
	Present Value	150.00 €	13.64 €	12.40 €	11.27 €	10.25 €	9.31 €
	Total	206.86 €					

Table B-6: Projected data – new product.

Similar calculations can e.g. be made when the necessary investment and the expected operating profit margins are known to determine the minimum revenues required to break even.

The examples given above show that the Environmental Shareholder Value Matrix can be used to assess the overall effect of environmental aspects on Shareholder Value creation both qualitatively and quantitatively. In some cases it might be sufficient and more reliable to focus on qualitative assessments following the four-step process shown in Figure B-11. This will especially be the case in early stages of project decision making or when reliable data or reasonable assumptions on the value drivers are not available. In such a case the assessment of Environmental Shareholder Value will look more like a communicative and participative process among experts from both financial, sales, production and environmental departments. However, when the expected effects on the different value drivers can be monetarized reasonably with calculations and/or assumptions, the Environmental Shareholder Value Matrix and the four-step process can be used as a basis to calculate the net effect of environmental activities on the Shareholder Value of a company. As shown in the two quantitative examples this procedure can on the one hand be used the determine the value-creating or value-destroying effect of environmental activities (as shown for the energy-efficiency program of ABC Ltd.). On the other hand, if full data is not available it can also be used to ascertain the marginal conditions or thresholds

which must be reached by a projected environmental activity in order to create Shareholder Value (as shown for the introduction of the new "greener" product line).

Summary

Environmental aspects increasingly impact on companies' commercial success, and thus on their enterprise value. Environmental issues are therefore of growing relevance for groups whose interest is primarily a financial one. So it is essential for the financial analyst to examine the impact a company's environmental management is having on its enterprise value.

Part One describes the effect of different approaches to environmental management on a company's enterprise value. We use the shareholder value approach as the methodological basis, since this has proved a particularly effective method of business valuation. The study demonstrates that environmental protection measures which enhance enterprise value are not capital intensive and consume fewer materials. These measures increase sales, raise margins, protect the flow of finance and increase the company's value over the long term. The shareholder value concept also enables an integral appraisal of the different economic effects of environmental management. However, one must also bear in mind the limitations of this approach.

Part Two shows, from the point of view of the external analyst, how environmental aspects can be financially assessed. Various examples are used to demonstrate how companies create shareholder value through an increase in the operating cash flow (Body Shop) or destroy it by having a capital tie-up above the sector average (British Energy). A third example (the chemical industry) shows how environment-related financial risks can be estimated. Since these are inevitably reflected in higher discounting factors, shareholder value may likewise be eroded.

Part Three introduces the Environmental Shareholder Value Matrix. With the help of this matrix financial analysts can identify those activities that contribute to Shareholder Value.

C Stakeholder Value Added

1 Introduction

The purpose of a company is to create value. Few people would contest this statement, as long it is formulated so loosely. As soon as we try to be more precise, however, conflicts arise. These mainly involve questions such as: *What sort of value* is supposed to be created *for whom,* and *how*?

This backdrop has led to the increasing popularity of the concept of *shareholder value* in recent years. The shareholder value approach attempts to determine the value of a company from the shareholders' perspective. Shareholder value can be expressed as the present value of all the surplus funds available in future for distribution to shareholders. The shareholder value approach therefore attempts to determine how much a company is worth as far as the shareholders are concerned.

As this concept has become more popular, the discussion of the chosen perspective of this approach has also become more heated. Critics say it encourages a bias towards the company's shareholders and neglects other groups which on the one hand participate in the company's success, and on the other depend on it. These critics instead advocate not so much an *alternative valuation method*, but rather an *alternative way of looking at things*, which concentrates on those who actually create value added for the business. Their starting point for doing so is usually the *stakeholder concept*. This concept, which was actually developed before shareholder value came into vogue, is more in the domain of strategic management. It highlights the mutual dependency between companies and certain social groups. For a company to successfully achieve its business goals, its management must take these interest groups, or stakeholders, into consideration when making decisions.

In what is often a very emotional debate, shareholder value and the stakeholder concept are usually discussed as alternative approaches, but this shows a basic misunderstanding of the key characteristics of each approach. Shareholder value is a valuation method, while the stakeholder concept clearly is not. The former looks at how value is created and how value creation can be assessed, but says nothing about who creates the value added, how it is distributed, and to whom. The stakeholder concept, on the other hand, is more interested in showing that there are groups other than shareholders who are important to the company's success: it does not, however, attempt to assess the value added created by stakeholders for a company, or the benefit the company offers to stakeholders.

This is an unfortunate situation. If we assume that companies can choose between different stakeholders, and stakeholders can choose between different companies, both sides face the problem of making a decision, and therefore a valuation predicament as well. Without proper valuation, the choice of the right stakeholder or the right company is purely a matter of chance.

Part C of this module aims to explain what is understood by „stakeholder value" and how it can be measured. Chapter 2 starts by providing a summary of the most important aspects of the stakeholder concept and shareholder value approach. Chapter 3 examines the question of what can be understood by stakeholder value. Chapter 4 explains how to determine the „stakeholder value added", followed in Chapter 5 by a concrete example of how to calculate this. Here we look at the case study of car manufacturer in the Euro-zone to illustrate the methods used to determine the stakeholder value added.

2 The stakeholder concept versus the shareholder value approach

In this chapter we provide a brief overview of the stakeholder concept (2.1) and shareholder value approach (2.2), which are often seen as conflicting notions, and then go on to compare the two (2.3). Chapter 3 leads on from this and examines what can actually be understood by stakeholder value.

2.1 The stakeholder concept

The stakeholder concept is an analysis tool for the strategic management of companies. It is based on the knowledge that most companies today – unlike their predecessors in the first half of this century – are no longer the private property of one or a small group of owners, but are „quasi-public" institutions (Ulrich 1977). They are a focus for the conflicting and complementary interests of different stakeholders both inside and outside the company.

As Freeman states (1984, 25), individuals or groups can be described as stakeholders if they have a material or immaterial „stake" in the business. As „stakeholders" they have a share in, or influence on, the success or failure of the company. The stake of an individual or group in a company is based mainly on the fact that they make resources available to that company. In this case there are three types of material or immaterial resources that may be involved:

- Capital resources, such as financial assets (shareholders' equity and debt capital), tangible assets (land, buildings, etc.), human resources (labor) or natural resources (mineral ore, water, landfill space, etc.)
- Goodwill resources, such as social acceptance and a good working environment within the company
- Information and know-how

Stakeholders make resources available to the company as long as there is a profitable relationship between what they put into the company and what they get out. This interdependency is a key feature of stakeholder relationships: the fact that stakeholder groups depend on the company to achieve their goals, and the company in turn depends on them. Only some of the relationships between stakeholders and a company are market-driven transactions. In addition to – and often in place of – transactions

shaped by the market, there are many diverse political processes not just within the company itself, but also between stakeholders inside and outside the organization.

In attempting to protect their stake, stakeholders act as interest groups both in relation to the company management and towards other stakeholders (cf. Mintzberg 1983; Pfeffer 1992). In this process, stakeholders simultaneously have both compatible interests, such as enhancing the distributable value added of the company, and conflicting interests, such as receiving a bigger portion of the distributed value added. In the latter case, the company's management and all the other stakeholders face the task of weighing up the conflicting interests and making sure as far as possible that there is sufficient room to maneuver.

Conflicts may arise not just between shareholders and (top) management, as analyzed in the „principal agent" approach (cf. Jensen/Meckling 1976; Eisenhardt 1989), but also between management and other stakeholders. Like management, all the other stakeholders face the challenge of having to weigh up conflicting interests against each other. In this situation the stakeholders are caught up in relationships based on interdependency – ones that are different and continuously changing over time. The task of management,[13] is to build up a suitable network of players needed to achieve the stated business goals, and to adapt this as necessary. In particular, management must identify the *„critical" stakeholders* and secure their contribution to the success of the company (Schaltegger/Sturm 1992). One of the main qualities of critical stakeholders is that they make resources available to the company that either cannot be substituted or would be too costly to replace. The other key aspect is that it is either impossible or too expensive to replace the critical stakeholders who currently supply these resources.

In the more recent literature on management theory, a number of more detailed analysis models and suggested methodologies have been developed for the efficient management of stakeholder relationships (cf. Dyllick 1986; ibid 1989; Göbel 1995; Hill/Jones 1992; Janisch 1992, Jones 1995, Schaltegger 1999, for example).

It is impossible to take the interests of stakeholders fully into account, since the theoretically unlimited number of stakes in the company weigh up against the scarcity of exchangeable goods. Since companies are societal institutions, management must as a rule address the (legitimate) claims of the stakeholders, but are inevitably obliged to reject the claims of certain groups. Since stakeholders do not tend to allow their claims to be rejected without putting up a fight, what happens in reality is the emergence of political processes, and in particular disputes about the distribution of created value added. *The strategic task of management is therefore to handle the distribution of value added in such a way*

[13] To be precise, this is a double principal agent problem between the shareholders and management on the one hand and the stakeholders (employees, suppliers, etc.) on the other.

that the continuing supply of resources by stakeholders – and especially the critical stakeholders – is secured as economically as possible over the long term.

2.2 The shareholder value approach

The shareholder value approach is a method for valuing companies from the perspective of shareholders (cf. Rappaport 1995, Copeland et al. 1993). Its methodology has its origins in capital budgeting techniques, and it attempts to determine the market value of the shareholders' equity in the business. In this process, the company's future free cash flows that shareholders may expect are discounted at a given point in time. Unlike free cash flows, profit, for example, does not take into account the fact that some of the earnings may have to be used for internal financing of investments in some cases, thereby reducing the amount left over for distribution to shareholders.

The discount rate applied is the market rate of interest on the capital, assuming a comparable risk. This discount rate can be interpreted as the capital opportunity cost. Shareholder value is therefore simply the current value of the company's future free cash flows taking into account the risk premium paid by the market for a comparable risk.

A company's shareholder value can be calculated as follows:[14]

$$\text{Shareholder value} = \sum_{n=1}^{n=\infty} FCF_n \cdot \frac{1}{(1+i)^n} - DC$$

where, FCF=Free Cash Flow, n=period
i=discount rate (WACC), DC=debt capital

One strength of the shareholder value approach is that the increase in the enterprise value can be explained by a limited number of value drivers (see also Figure C-1). These include:

- Fixed capital investments
- Working capital investments
- Sales growth
- Operating profit margin
- Income tax rate
- Value growth duration
- Cost of capital

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[14] Alternatively the stakes of the creditors can be deducted before discounting the cash flows. This methodology is known as the equity approach, while the discounting of cash flows taking into account the stakes of creditors is known as the entity approach. With the equity approach, the shareholder value is calculated as follows:

$$\text{Shareholder Value} = \sum_{n=1}^{n=\infty} NFCF_n \cdot \frac{1}{(1+i)^n}$$

where NFCF= Net Free Cash Flow, n = period, i = discount rate (cost of equity)

The first six value drivers influence the operating cash flow (Figure C-1). They determine the size of the net cash inflows after all the costs (apart from capital costs) have been taken into consideration. The last value driver – the cost of equity – determines the discount rate. The discount rate depends on the risk, and therefore reflects the riskiness of the cash flows produced through the six other value drivers.

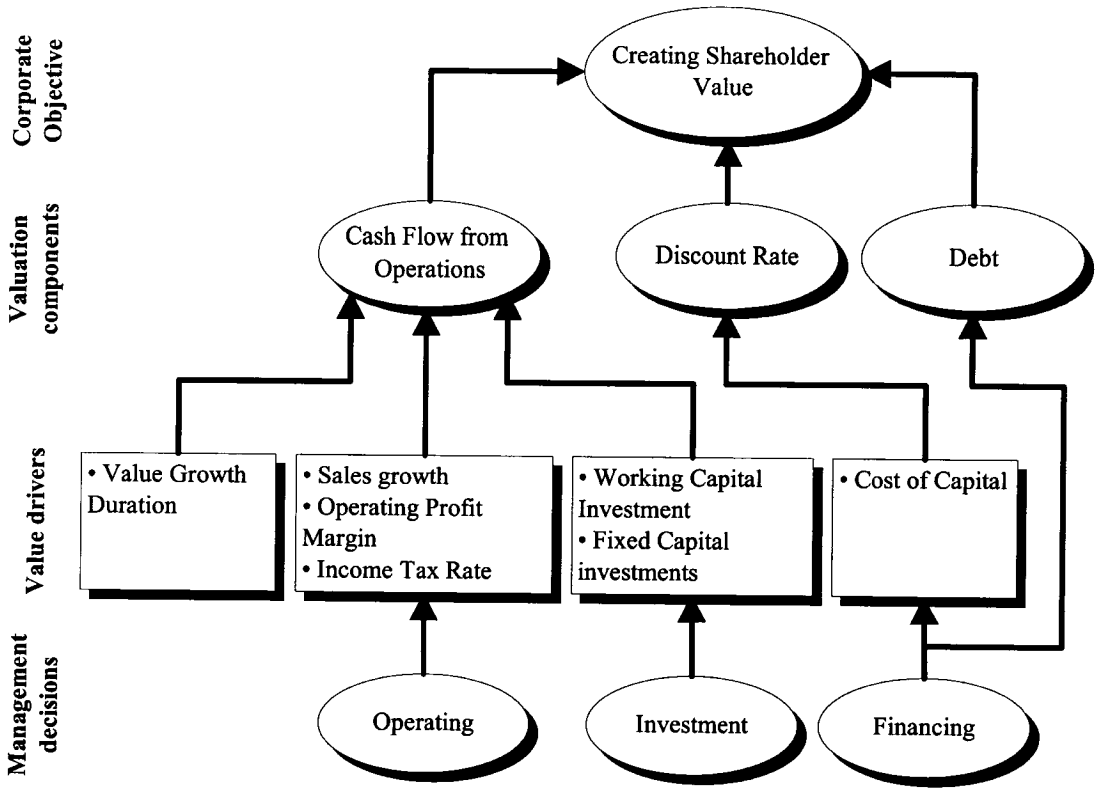


Figure C-1: The shareholder value network (according to Rappaport 1995)

If one analyses the impact of planned measures on these value drivers, it is possible to determine their influence on shareholder value.

2.3 A contradiction?

The comparison of the shareholder value approach and the stakeholder concept in the last chapter shows that there are differences between them (see also Speckbacher 1997). Another point that comes to light, however, is that the concepts by no means fundamentally contradict each other. Table C-1 compares the different criteria that apply for the stakeholder concept and the shareholder value approach.

	Stakeholder concept	Shareholder value concept
Area of discipline	Strategic Management	Company financing
Rationale	Strategic company management	Company valuation
Character of the concept	Qualitative / political	Quantitative / financial
Focus primarily from the perspective of ...	Top management	Investors (shareholders)
Purpose of applying the concept	Increasing management's room to maneuver (satisfaction)	Enhancing the enterprise value (maximization)
Company's objective	Continuation of business and creation of value added	Enhancing value
Orientation of resources	All resource providers	Primarily equity providers
The use of resources is intended to ...	Provide services, ensure the continuation of the company and achieve the objectives of the critical stakeholders	Maximize the risk-adjusted return on the capital employed
Whose „stakes" does the management have to take into account?	Stakeholders with scarce resources that are needed to provide a service	Shareholders (owners)
Remuneration of resource providers	All stakeholders (incl. equity providers) according to the marginal product in terms of value of their service	The remuneration of the equity provider is the residual amount, all other stakeholders are remunerated according to the marginal product in terms of value of their service
Distribution of surplus (free cash flow)	Not meaningful	Anything left over after all the resource providers have been paid belongs to the shareholders
Operationalization	Minimal, strategic	High, operational
Complexity, interdependence of variables	High	Low

Table C-1: Comparison of the stakeholder concept and shareholder value approach

While the stakeholder concept has its *origin* and *rationale* in strategic management, the shareholder value approach belongs to the realm of corporate financing and has mainly to do with the financial valuation of an enterprise. As a result, the conceptual nature of the two analytical approaches is more complementary than contradictory. The stakeholder concept, for example, has a qualitative/political

orientation, while the shareholder value approach has a quantitative/financial bias. A comparison shows that the approaches do not conflict with each other either in terms of methodology, nor do they take a conflicting ideological position towards the same thing. What does become clear is that on the one hand an analysis is performed from the *perspective* of (top) management (stakeholder approach) while on the other is it made from the perspective of the owners or investors (shareholders). The purpose of applying the concept is therefore in the first case to increase management's room for maneuver in order to improve the company's performance, and in the second case to enhance enterprise value. Although these two goals may occasionally conflict with one another, they can also be compatible. The management can only enhance enterprise value, for example, if it has enough room to maneuver against the competition, authorities, pressure groups, etc. which it requires for product innovation, penetration of new markets, etc.

The comparison of the two concepts also shows that different yet symbiotic *business objectives* (continuation of the company versus enhancement of enterprise value) can be illuminated from the viewpoint of different business management disciplines.

There is also a different *viewing spectrum* underlying the analysis in each case. Whereas with the stakeholder approach all resource providers are viewed almost „through the same lens" in any comparison, the shareholder value concept chiefly takes the viewpoint of equity providers as recipients of the residual amount of the value added after all the other stakeholders have been remunerated for their services. The key thing here is that neither concept excludes certain stakeholders out of hand. It is merely the viewing angle that is different. The difference in the answer to the question as to what *stakes* the management has to take into consideration can be found in the assumption made in the shareholder value approach that all resource providers are remunerated for their services at the going market rate and the residual part of the value added belongs to the shareholders. The stakeholder concept starts one stage earlier in the process of distributing value added: it assumes that priority consideration must be given to the interests of those stakeholders who only have scarce resources which the company urgently needs to perform its service. This too implies that resource providers are remunerated on the basis of the value they create for the company by procuring a business resource (known as the „marginal product in terms of value"). At the same time the equity providers are by definition only treated differently from other stakeholders if their resource is particularly scarce.

The stakeholder concept does not, by virtue of its qualitative *character*, have such a strong operational focus as the shareholder value approach, which primarily has a financial orientation. The quantitative calculation of shareholder value inevitably requires a less complicated analysis. This has the advantage that a clear target function can be formulated to enhance or maximize enterprise value. Since the stakeholder approach takes many different stakeholder groups into consideration, emphasizes the enhancement of the company's value added and does not make any assumptions about the distribution of profits, the objective of strategic management is to *satisfy* the claims of the resource providers. The safeguarding of resource supply through strategic management of stakeholder relations is also de-

signed to ensure the continuation of the business, while the shareholder value approach goes one step further in trying to solve the question of how the risk-adjusted return on capital employed can be maximized, assuming that resource providers are remunerated at the going market rate.

To summarize, the comparison shows that the shareholder value approach and the stakeholder concept adopts two different viewpoints for analyzing central aspects of business management. Although these perspectives are different, they are not in principle contradictory, but rather complement each other in a number of ways:

Operationalization of the stakeholder approach and stakeholder value: In its traditional format, the stakeholder concept highlights the importance of different stakeholders, but fails to show how to value their contribution to the success of the business. In this context it should be noted that a shareholder approach with an operational bearing complements the strategically oriented stakeholder concept. This is particularly so because the benefit of the practical application of the stakeholder concept for company management could be enhanced by greater operationalization or through a measurement of stakeholder value. Here the operational approach might be helpful in determining the shareholder value.

Shareholder value through the management of stakeholder relations: The shareholder value approach is a concept for valuing a business from the perspective of equity providers. It does not say anything about the actual relationship between the company and its stakeholders. Company management may seek greater operationalization of the stakeholder concept in order to manage stakeholder relations and thereby enhance shareholder value. The stakeholder approach emphasizes the fact that companies depend on various groups that supply resources to the company. Companies need to include these resource providers in their decisions if they are to successfully enhance enterprise value. Only when the enterprise value that each stakeholder creates for the company can be measured, is it possible to have efficient and financially viable management of stakeholder relations in order to enhance shareholder value.

The starting points of each approach highlight the importance of measuring stakeholder value and managing stakeholder relations. In the next chapter we discuss what can be understood by stakeholder value and how it can be measured.

3 What can be understood by stakeholder value?

The term „stakeholder value" is already in common usage. The term is, however, almost exclusively used as an unexplained catchphrase. Nor is there any clear definition in the academic literature (for a current example see, for example, Earl/Clift 1999). The importance of stakeholder value as a measurement tool has apparently not yet been explained. This chapter shows what can be understood exactly by the term „stakeholder value" (3.1), how these terms can be interpreted (3.2) and why we need to measure stakeholder value (3.3).

3.1 Enterprise-oriented stakeholder value or stakeholder-oriented enterprise value?

The term „stakeholder value" is often used in practice as the opposite of shareholder value. Contrary to what one might initially expect, however, a direct comparison does not produce a clear definition of stakeholder value.

The prerequisite of every valuation is that the *valuation object* and the *valuation perspective* must be known. The valuation object defines *what* is being valued, while the valuation perspective defines *for whom, or for what use* the valuation is being made.

The shareholder value approach values companies (valuation object) from the perspective of (potential) equity providers assuming the continuation of the business (valuation perspective). An investor who would like to wind up the business being valued, for example, would not choose a cash-oriented valuation method such as shareholder value, but one based on net asset value, in order to determine the company's break-up value. The worth of a valuation object and the method used to value it therefore depends on the perspective chosen. However, the term „stakeholder value" does not immediately help to clarify the valuation object or the valuation perspective.

In this context a distinction can be drawn between two possible perspectives (see also Figure C-2):

- **Stakeholder-oriented enterprise valuation**

  Stakeholder value can be interpreted as the value of the company from the stakeholder's viewpoint. Here the company is the valuation object and the selected perspective is that of the stakeholder in question. The fundamental question is, for example: How much is the business worth from the perspective of the employees, assuming that the relationship is continued? The shareholder value approach is therefore a special case in stakeholder-oriented enterprise valuation. It determines the *value on continuation* of the business, from the perspective of the stakeholder „equity provider".

- **Enterprise-oriented stakeholder valuation**

  But stakeholder value can also be understood as an enterprise-oriented stakeholder valuation. With this perspective, stakeholders become the valuation object, while the company or the management

dictate the valuation perspective. The task is therefore to determine the value contributed by a specific stakeholder from the company's viewpoint. The value created by a stakeholder for the company is measured by his contribution towards helping the company meet its business goals or enhancing its enterprise value.

If „stakeholder value" is to be understood as being the same as „shareholder value", stakeholder value would need to be interpreted as stakeholder-oriented enterprise valuation.[15] The literature cited shows, however, that authors who argue for an „enhancement of stakeholder value" usually stress the value of the stakeholders for the company. If such a valuation is to be performed, it is an enterprise-oriented stakeholder valuation.

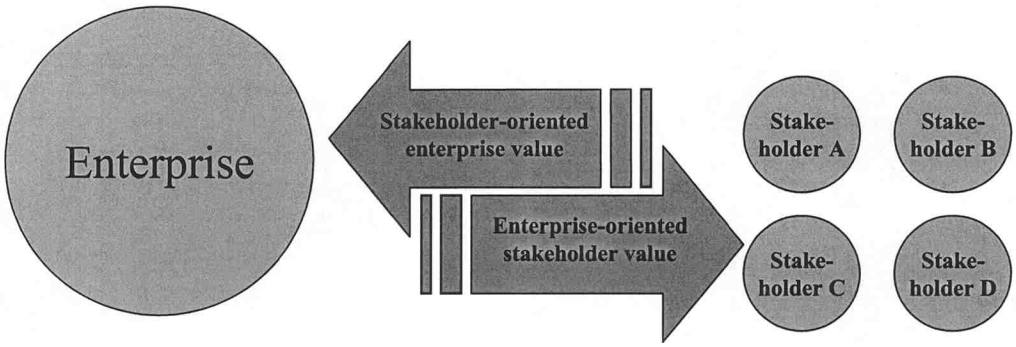


Figure C-2: Perspectives of stakeholder value

The logical continuation of this argument, plus the fact that companies per se are unable to act or value, which means we are in each case dealing with the actions and valuations of stakeholders (management, employees, etc.), makes it clear that *only „stakeholder-oriented stakeholder valuations" exist*. This is why a transparent analysis of the valuation object and the valuation perspective are essential. As with all valuations, a change of valuation perspective usually produces different valuation results. Part of the conflict between the supporters of the shareholder value approach and the defenders of the stakeholder concept may well lie, therefore, in the different underlying valuation perspectives and their lack of transparency.

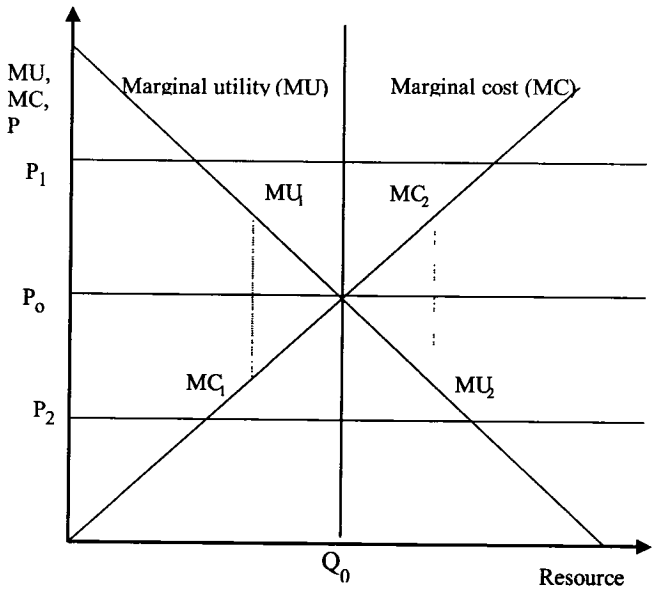
3.2 Interpretation of the perspectives

A voluntary exchange of resources between stakeholders and the company will only occur if the benefit looks greater than the cost for both sides. Benefit and cost cover both material and immaterial assets in this case. From the company's viewpoint, the benefit of the resources provided by the stakeholder

[15] It is also apparent in this context, however, that the choice of the term shareholder value is rather unfortunate from an etymological viewpoint. At first sight one could be misled into thinking that the main purpose of shareholder value is to determine the value of the shareholder. The term "enterprise value", for example, is taken to mean the value of the company from the viewpoint of all equity providers, rather than a value from the perspective of the enterprise.

must be greater than the costs incurred to use them. From the stakeholder's viewpoint, the benefit the company produces for the stakeholder must be greater than the cost of supplying the resources. *In other words, both sides must, from their own perspective, see value added being created.*

If we assume decreasing marginal utility and increasing marginal cost for the use or provision of resources, we can expect both parties to agree to an exchange, as long as the marginal utility exceeds the marginal cost (Figure C-3). The maximum price (P) that a company will agree to pay for the service provided by the stakeholder is therefore one that is equal to the marginal utility (MU) of the resources ($P \leq MU$).[16]



MU= marginal utility of the company

MC = marginal cost of the stakeholder

P = Price or equivalent compensation

Figure C-3: Exchange of services between stakeholders and company

On the other hand, a stakeholder will demand a compensation that is at least equivalent to his marginal cost ($P \geq MC$). A balance is reached if the marginal utility is equal to the payment made by the company, and this payment equals the marginal cost of the stakeholder (at P_0 and Q_0). The price can then be interpreted as the market price if it corresponds to the usual consideration paid for a specific type of stakeholder service or any other typical compensation.

[16] In what follows, we assume that the company makes a payment to the stakeholder in return for the supply of a resource to the company. In the case of the stakeholder "Customer", however, there is a payment from the stakeholder to the company. The deliberations that follow are equally applicable to this case.

We can assume, however, that imbalances will repeatedly occur between the requested (accepted) price and the marginal utility (marginal cost). In such cases there is pressure to reach a compromise. In this context we can distinguish between four situations:

- MU1 > P0 > MC1: If the marginal utility exceeds the market price, and the market price is higher than the stakeholder's marginal cost, an exchange of resources not only makes economic sense: it is also in the interest of both parties that the relationship is continued and expanded.

- MU2 < P0 < MC2: In a situation where the market price of a resource exceeds the marginal utility for the company on the one hand, but on the other is less than the stakeholder's marginal cost, the relationship between the company and the stakeholder is not attractive from either side's viewpoint. Nor is there any „room for negotiation" on either side.

- P1 > MU1 > MC1: If, for example, the going local price exceeds the company's marginal utility on the one hand, but also the stakeholder's marginal cost on the other, the company's management will only be prepared to enter into or continue a stakeholder relationship if the compensation it makes to the stakeholder is reduced (P0 instead of P1). It is not in the stakeholder's interest to agree to such a reduction as long as the price exceeds the marginal cost in future as well.

- P2 < MU2< MC2: If the marginal utility of the resource is higher for the company than the going market rate (P2), but this is less than the marginal costs incurred by the stakeholder (MC2), the stakeholder will only be prepared to deliver the resource if the payment is increased (from P2 to P0). Since the company would only be willing to consider a price increase if the cost remains under the marginal utility, no transaction will be completed.

An analysis of the marginal utility and marginal cost helps clarify up to which point, and to what degree, an exchange is probable between the company and the stakeholder. Here we can see that both parties are interested in an exchange of resources up to the point where, from their respective viewpoints, the marginal utility is equivalent to the marginal cost. If we assume that the marginal utility exceeds the marginal cost up to this point, *both parties stand to earn a return* (Figure C-4). These returns reflect the value created by the exchange between the company and the stakeholder. The sum of both these returns can be defined as *stakeholder value*. The stakeholder value comprises the *stakeholder-oriented enterprise value* (the area AP_0C) on the one hand and the *enterprise-oriented stakeholder value* (the area BP_0C) on the other.

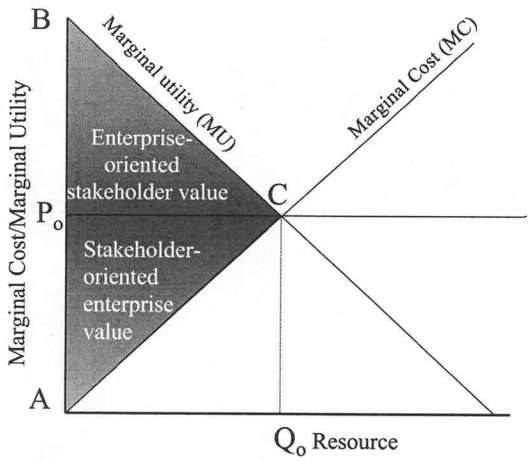


Figure C-4: Stakeholder and company returns

The entire stakeholder value created from the relationship between the company management and its stakeholders therefore equals the total stakeholder-oriented enterprise value for all stakeholders and the enterprise-oriented stakeholder value for all stakeholders.

3.3 Why measure stakeholder value?

Following on from this discussion, we have to ask the question whether the measurement of stakeholder value is useful, or whether the use of this value as a qualitative benchmark is not sufficient. Basically there are four arguments in favor of measuring stakeholder value:

- In practice it is often argued that a maximization of shareholder value is always in the interest of stakeholders (see, for example, BZ Trust 1998). In this context it should be pointed out that shareholder value measures the enterprise value solely from the perspective of equity providers. We know from valuation practice, however, that even financial investments may well have a different value depending on the perspective of different potential investors and the different reasons for performing the valuation. For example, the break-up value of a company tends to be different from its value if business is continued. The same applies for the valuation of companies from the perspective of different stakeholders. Stakeholder value – irrespective of whether it is interpreted as stakeholder-oriented enterprise value or as enterprise-oriented stakeholder value – cannot therefore be equated to shareholder value either by force or by definition. It must also be remembered that - in theory at least – under the shareholder value concept an increase in shareholder value does not a priori exclude or presuppose a high stakeholder value, nor does it postulate a direct correlation between stakeholder value and shareholder value.

- An objective assessment as to whether a management style that is oriented towards the shareholder value approach „automatically" increases stakeholder value as well, is only possible if this value can be measured. Only the measurement of stakeholder value enables the empirical

assessment of whether there is a causal quantitative relationship, and in what form. First of all this allows a practical investigation into whether a significant correlation exists between shareholder value and stakeholder value fundamentally on the one hand, and secondly whether different correlations, or differing degrees of dependency, exist between the orientation of the management, between different sectors or nations, etc. Thirdly, it enables us to examine the question whether a management style oriented towards shareholder value puts certain stakeholders at an advantage or disadvantage.

- The question of which stakeholders should (or must) be taken into consideration, and to what extent, is a key challenge for strategic business management, and one that is currently tackled primarily in an intuitive or broadly schematic way. Whenever a choice has to be made between alternatives and the decision-making scenario is unclear on the basis of qualitative aspects, a measurement provides a particularly welcome form of support. Ambivalent situations arise particularly if the facts are very complex, although a measurement often proves to be particularly tricky precisely in such cases. Since in practice we know that management is primarily geared towards those aspects that can be measured, a measurement can still be helpful even if the measurement scale does not fully reflect the facts. Solely the fact that something is being measured and a measurement scale is being communicated inside and/or outside the company means that more weight is attached to the aspect being examined. When reaching a decision, however, the limitations on the meaningfulness of a measurement scale must always be taken into consideration.

- The measurement of stakeholder value provides an objective basis for reaching decisions in strategic management and for shaping stakeholder relations. Which stakeholders make a particularly big contribution to the success of the company? Which stakeholders are not given adequate consideration by management and which receive too much attention compared with others? The measurement of stakeholder value also helps judge whether management decisions and measures were successful, and to what degree. In particular it also allows us to determine to what extent stakeholder-oriented management – i.e. one whose aim is supposed to increase stakeholder value – has an impact on shareholder value.

Neither an empirical assessment of the correlation between the shareholder value approach and stakeholder value – or, *vice versa,* an assessment of the correlation between a stakeholder value approach and shareholder value – nor a quantitatively justified management of stakeholder relations are possible without a measurement of stakeholder value. Since the appropriate analyses support the systematic and efficient management of a company, the question is which valuation methods are basically available to measure stakeholder value.

4 Stakeholder value added

4.1 From the valuation of shareholder value to the valuation of stakeholder value

Value is created when the benefit of a transaction exceeds its cost, thereby producing *surplus benefit.* To determine the enterprise value, forward-looking valuation methods such as the shareholder value approach or the economic value added method therefore compare the expected benefits and costs. These methods take potential risks into account by adjusting the discount rate. In calculating the enterprise value, these methods therefore base themselves on the following three components:

- Expected benefit
- Expected cost
- Expected risk

As we already said, the creation of value through relations with other stakeholders is also expressed in the form of surplus benefit for both sides. The variables to be assessed during the calculation of stakeholder value are therefore once again the benefits, costs and risks expected in future.

4.2 Basis for determining the risk-adjusted surplus benefit

When determining the benefit surplus derived from a stakeholder relationship we need to identify the risk-adjusted costs and benefits and compare them with each other. In this context two problems arise when measuring the stakeholder value:

- First, only part of the benefits and costs is (and can be) converted into monetary value. This means a comprehensive measurement of the entire stakeholder value is impossible. An analysis of the literature that deals with the concept of stakeholder value clearly shows, however, that in almost all cases an assumption is made that the value of stakeholder relations can be measured in economic terms and can therefore implicitly be converted into monetary value.
- Second, if we now examine the question of how stakeholder relations can be valued, we come up against the problem that only the relationship with equity providers is characterized by the flow of money on both sides (see Table C-2).[17] In all other stakeholder relationships there is only a one-sided flow of money, which is matched by a real asset (service or material product).[18]

[17] A reciprocal flow of money also occurs in the case of banks and insurance companies and their customers. We do not go into this special case here.

[18] In exceptional cases the cash flow may also flow in the opposite direction. For example, if the government pays out more in subsidies than it receives in taxes.

	Cash flow from the company to the stakeholder	Cash flow from the stakeholder to the company
Employees	Yes	No
Government	Yes	No
Suppliers	Yes	No
Customers	No	Yes
Equity providers	Yes	Yes

Table C-2: Cash flow relevance of stakeholder relations with a company

To determine the stakeholder value, the question is therefore how to proceed in cases where costs or benefits are not immediately apparent in monetary terms. Once again a distinction needs to be made here between stakeholder-oriented enterprise valuation and enterprise-oriented stakeholder valuation. Table C-3 provides an overview of valuation problems that need to be solved in this context. We need to clarify, for example, how we can determine the costs incurred by the stakeholder „Government", and the benefits to the company derived from its relationship with the stakeholder „Government".

	Stakeholder-oriented enterprise valuation **„from the company to the stakeholder"**	Enterprise-oriented stakeholder valuation **„from the stakeholder to the company"**
Benefit	Customers	Employees, Government, Suppliers
Cost	Employees, Government, Suppliers	Customers

Table C-3: Unresolved valuation issues concerning benefit and cost

These valuation questions have to be answered before it is possible to weigh up the benefit and cost and thereby determine the surplus benefit. In doing so *we describe the present value of the discounted surplus benefits a stakeholder value added.* The calculation of the stakeholder value added is the ultimate goal of every stakeholder value calculation, and can basically be produced by the following formula:

$$\text{Stakeholder Value Added} = \sum_{n=1}^{n=\infty} (N_n^{ST} - K_n^{ST}) \cdot \frac{1}{(1+i)^n}$$

N^{ST} = stakeholder benefits

K^{ST} = stakeholder costs

n = period

i = discount rate

In this context it must be emphasized that this only represents one possible calculation method. Others distinguish themselves, for example, as regards the point at which the discount is performed during the calculation.

The calculation of the stakeholder value added involves the quantification and conversion into monetary value of not just the benefits and costs, but the risks of a stakeholder relationship. The fact that only part of these benefits and costs are monetary in nature certainly imposes a restriction on the meaningfulness of the quality of relationship between the company and the stakeholder. But a conversion into monetary value does however allow an operationalization of stakeholder benefit, stakeholder costs and stakeholder value added, and therefore allows a statement to be made on the monetary aspects of the relationship.

	Benefit valued	Benefit not valued
Costs valued	Stakeholder value added	Stakeholder costs
Costs not valued	Stakeholder benefit	

Table C-4: Stakeholder benefit, stakeholder costs und stakeholder value added

As Table C-4 shows, in cases where only the benefits, but not the costs, can be calculated it is still possible to determine the *stakeholder benefit*. The *stakeholder costs* can be calculated if the costs, but not the benefits can be determined.

The calculation of the *stakeholder value added as a forward-looking long-term ratio* requires stakeholder benefit and stakeholder costs to be valued over several periods.

4.3 Calculating the surplus benefit of a stakeholder relationship

Nowadays enterprise value is usually determined with forward-looking valuation methods such as the shareholder value approach. The total enterprise value is worked out by balancing out and discounting

all expected cash flows in future periods. Not until the next stage is the calculated value compared with the (opportunity) costs of the equity capital.

Figure C-5 shows how, as in the traditional calculation of shareholder value, the stakes of all stakeholders who are not equity providers are deducted to start with.[19] Figure C-5 therefore depicts the expected development of a company's sales and its apportionment to the various stakeholders.

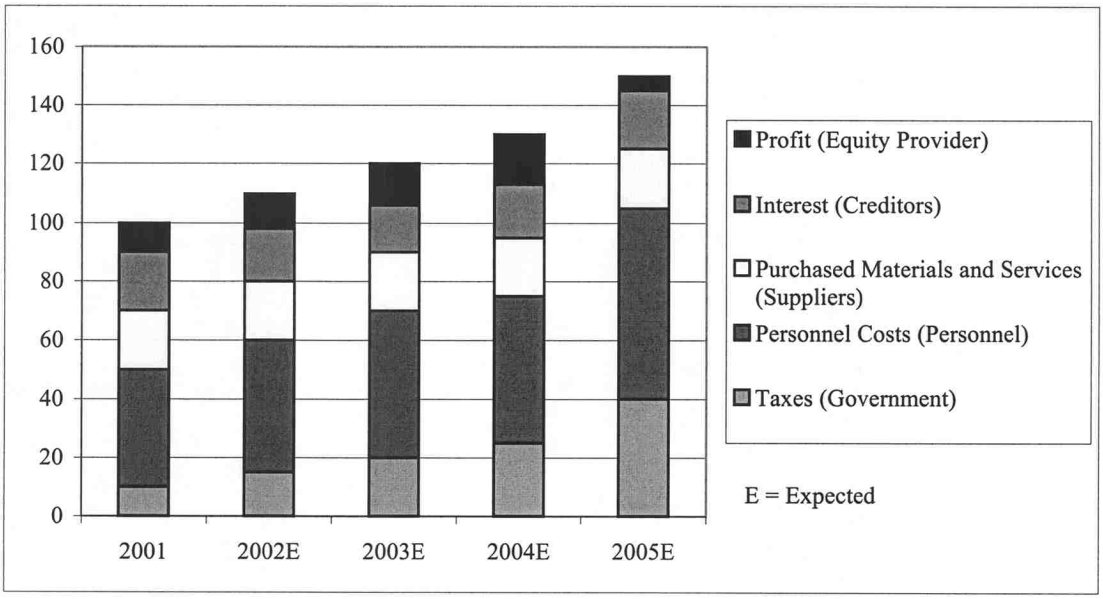


Figure C-5: Sales growth in a company

The next step is to deduct taxes, personnel costs and prepaid materials and services, plus any interest on debt capital, from sales (see Figure C-6).

[19] In what follows we do not differentiate between the figures of the capital flow account, which are at the heart of the shareholder value approach, the profit and loss account figures, which provide the starting point of the economic value added approach, and figures of company-internal cost-accounting.

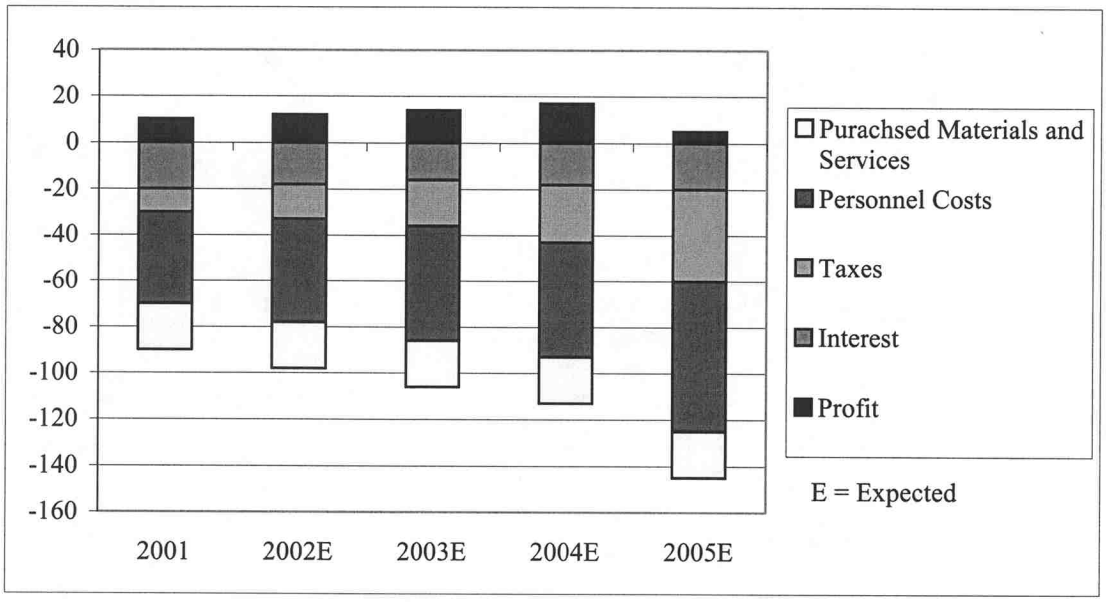


Figure C-6: Enterprise value calculation

The surplus benefit illustrated corresponds to the value that can be apportioned to the stakeholder „Shareholder" from the company's perspective.

A valuation of the surplus benefit from a stakeholder relationship can be performed in a similar way. Here a distinction has to be made between a stakeholder-specific perspective and one that encompasses all stakeholders:

- The stakeholder-specific viewpoint concentrates on a particular stakeholder, such as employees. This allows a focused and direct analysis from the perspective of a certain group.
- The other perspective encompasses the viewpoints of several stakeholders. Depending on the question posed, it may make sense to group together certain stakeholders. With the entity approach[20], for example, equity providers are considered as a single entity comprising the two categories „creditors" and „equity providers", thereby enabling a separate analysis of the consequences of operational management and of financing decisions.

To calculate the flow of benefits, we first need to determine what payment in kind is made to a particular group of stakeholders, such as employees. To do so we need to also deduct from sales the (expected) debt capital interest and the (expected) profit, but not the personnel costs. This produces, from the employees' perspective, the value growth shown in Figure C-7.

20 For the difference between the "equity" and "entity" approach, see also footnote 14.

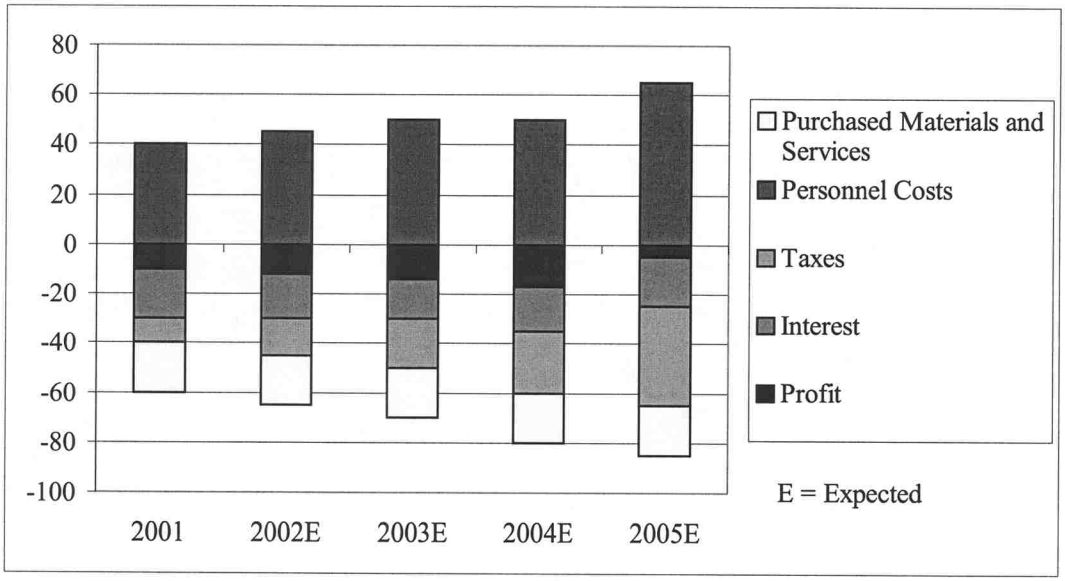


Figure C-7: Enterprise value growth from the employees' perspective

The growth illustrated gives the gross values for each period. From the described valuation perspectives of stakeholder-oriented enterprise valuation and enterprise-oriented stakeholder valuation, these payments either represent a benefit (stakeholder-oriented enterprise valuation from the employees' perspective) or costs (enterprise-oriented stakeholder valuation). The calculation of the stakeholder value added now requires that we work out the present value of the surplus benefits.

4.4 Calculation of the stakeholder value added as enterprise-oriented stakeholder value

The valuation issues discussed in the previous section can basically be solved in all cases where the benefits and costs have a monetary impact on the company. This is not the case with *stakeholder-oriented enterprise valuation*, however, since the benefits or costs are either unknown or cannot be ascertained by a straightforward monetary valuation.[21] The monetary benefit the employees get from their work is very easy to determine through their wages, for example. The costs now have to be weighed up against this benefit. This is not immediately possible, since there is no monetary valuation of the costs from the employees' perspective, for example, and the costs depend on the employer in question – in other words they are subjective. Unless we fall back on approximated average values, it therefore seems impossible to convert into a monetary value the benefit to customers and the costs of personnel, government and suppliers from the perspective of stakeholder-oriented enterprise valuation. If a stakeholder is able to choose between alternative activities and different companies, we can basically assume that the benefit for the stakeholder exceeds the costs incurred through the relationship.

21 The stakeholders who provide equity are of course excluded from this.

Otherwise he would not have opted to provide this type of resource to this particular company. In the case of customers we can normally say, for example, that the (expected) benefit exceeds costs, otherwise they would not have chosen to buy the products of that particular company. In other words, the customers earn a return on their consumption.

To summarize, the stakeholder benefit can be worked out for the stakeholders „employees", „government" and „suppliers", and the stakeholder costs determined for the stakeholder „customers".

In the context of *enterprise-oriented stakeholder valuation*, on the other hand, the benefit is to the company and can be determined. The enterprise-oriented stakeholder value corresponds to the amount of benefit contributed by the stakeholder (or stakeholder group) in question over and above the costs incurred. The benefit created by all stakeholders together can be worked out by deducting the costs of all stakeholder relationships from sales. In this way it is possible to establish how much value the stakeholders create as a whole. Here it is important that the cost of equity is taken into account as well. In other words, the goal is not simply to determine the value added, but the economic profit as the present value of the discounted surplus benefits.

It is impossible to determine which stakeholder makes which contribution or has which stake, however, since any causal division and apportionment of the remaining profit to shareholders is not feasible. If we assume that a complementary relationship exists between stakeholders, i.e. that in order to perform their service stakeholders have to rely on other company stakeholders and synergy effects apply, an apportionment to individual stakeholders is questionable in any case.

What therefore has to be done is to *put the profit remaining after deduction of all costs in relation to the specific stakeholder costs*. This may seem surprising initially. It should be noted, however, that this procedure in relation to the stakeholder „Shareholder" is not the exception, but the rule. When calculating the financial enterprise value or in the case of producing key figures for working out return on investment, it is frequently assumed that the entire profit can be apportioned to this one stakeholder. The loss of a stakeholder who provides a scarce resource that is essential for the company's performance of a service can lead to a sharp collapse in earnings or even jeopardize the continuation of the business. That is why it makes sense to come up with a *ratio that represents the relationship between economic profit and stakeholder costs*. Because of the analogy with traditional return on investment ratios, we refer to this ratio as the *Return on Stakeholder (RoSt)*.

The RoSt is a benchmark of the absolute profitability of a stakeholder relationship. The comparison of RoSt with opportunity costs is particularly useful. As with the traditional enterprise valuation, the opportunity costs can be calculated as the average RoSt that can be earned on the market. This *RoSt differential* (value spread) corresponds to the difference between a company-specific RoSt and the RoSt of the market as a whole.

The RoSt differential is a relative size and is expressed in %. The calculation of the absolute company-specific *stakeholder value added* is therefore obtained by multiplying the RoSt with the stakeholder costs.

It is also worth mentioning here that the calculation of the present value of the surplus benefits requires the quantification of the risk in order to determine the discount rate. This can be done by evaluating specific risks of the stakeholders in question. If this is not possible due to lack of information or due to cost reasons, another option – and a much simpler one – is to take the usual discount rate for assessing the shareholder value.

4.5 Conclusion

The stakeholder value added concept presented here can be applied to the different stakeholders of a company. A distinction can therefore be made between the different individual components of stakeholder value (Table C-5).

Stakeholder	Stakeholder Value Added	Availability of cash flow figures
Equity providers (shareholders)	Shareholder Value Added (Economic Value Added/ shareholder value)	Figures readily available
Employees	Employee Value Added	Figures externally available, readily available within the company
Creditors	Creditor Value Added	Figures readily available
Government	State or Governmental Value Added	Figures externally available, readily available within the company
Customers	Customer Value Added	Figures available within the company
Suppliers	Supplier Value Added	Figures externally available, readily available within the company
Neighbors	Neighbors Value Added	Usually no figures available externally, but available internally
...	...	...

Table C-5: Individual components of stakeholder value added

All the individual components of stakeholder value added listed in Table C-5 can be discussed from the perspective of enterprise-oriented stakeholder valuation and stakeholder-oriented enterprise valuation. The availability of data on cash flows differs, depending on whether the analysis is performed by someone inside or outside the company. As already shown in Table C-2, however, only benefits *or* costs of different stakeholders find expression in the cash flow between stakeholders and companies. The only exception is the stakeholders who provide equity.

An analysis of the relationship between the company and shareholders that is focused an individual component of stakeholder value is already performed in practice for some shareholder relationships. This includes the relationship between the company and its equity providers. More recently, however, the relationship to the stakeholder „Customers" is also being increasingly assessed on the basis of the earning capacity value, the so-called „Customer Lifetime Value".[22]

In the next chapter we provide concrete examples of how to calculate stakeholder value added. By way of illustration we calculate

- Creditor Value Added,
- Employee Value Added and
- Governmental Value Added

for leading car manufacturers in the Eurozone.

[22] See, for example, Link/Hildebrand (1997).

5 Practical calculations and case study

5.1 How stakeholder value added is calculated in practice

In this chapter we use a case study to explain how to actually go about valuing the stakeholder value added. In doing so, the simple flow chart in Figure C-8 provides a good overview of the various procedures.

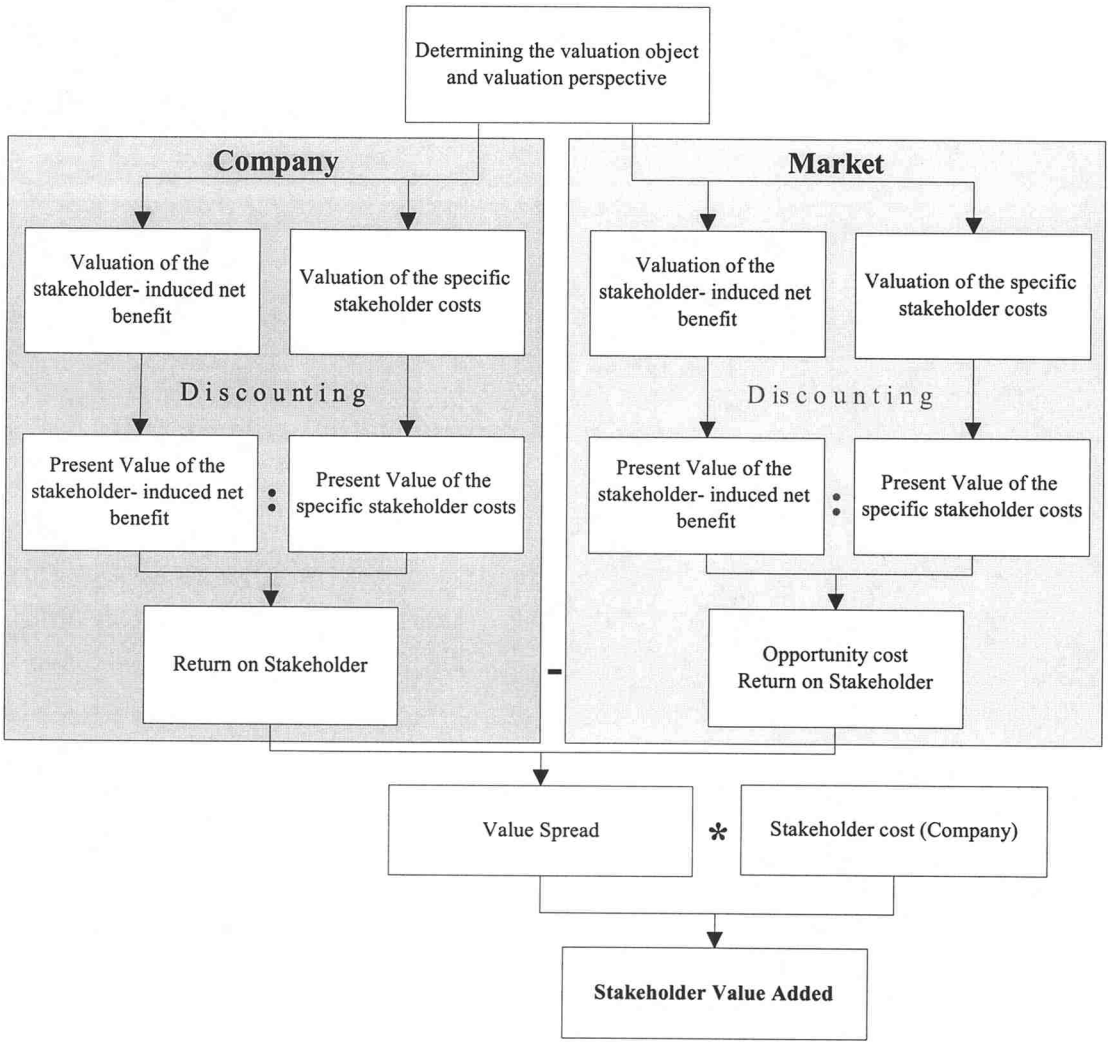


Figure C-8: Calculation of stakeholder value added

In what follows we use the structure of this flow chart to explain what needs to be taken into consideration when calculating stakeholder value. Section 5.2 provides a practical example in the form of a case study of the European car industry, and can be read in parallel with 5.1.

As we already explained, every valuation depends on the chosen perspective and the valuation object. The first step is therefore to determine which stakeholder relationships are to be valued, and from which perspective. A basic distinction can be made here between an enterprise-oriented stakeholder

valuation and a stakeholder-oriented enterprise valuation. In the explanations that follow, we take the perspective of an enterprise-oriented stakeholder valuation.[23]

Value added is created if the benefit exceeds the cost. From the company's viewpoint, value added is created if a surplus benefit is left after deduction of all the stakeholder costs. One problem in this respect is that a causal allocation of surplus benefits to individual stakeholders is not possible. We already discussed this problem earlier. In what follows, therefore, we assume that the company's entire surplus benefit can be apportioned to each stakeholder. This may appear surprising at first. But that is exactly the assumption regularly made, for example, in the context of the traditional, shareholder-oriented enterprise valuation when the entire surplus benefit is apportioned to shareholders. Adopting a similar procedure can be justified on the grounds that the loss of a stakeholder could mean that the entire surplus benefit is forfeited as well.

To work out the surplus benefit, the figures from the traditional profit and loss account, which do not explicitly take into account the stakes of equity providers, need to be adjusted. To this end the stakes of the equity providers, the cost of equity, are calculated and deducted from the residual amount (profit) to date.

It is in the nature of shareholders' equity that no fixed stakes are usually defined. In return for assuming the investment risk, equity providers are entitled to receive the residual amounts once commitments to all other stakeholders have been met. In the context of traditional earnings-oriented enterprise valuation it has therefore become standard practice for the cost of equity to be fixed at the opportunity cost of the equity. To this end a rate of interest is applied that is equivalent to the average earned on the market for a comparable risk.

In this context it should be noted that from the equity provider's perspective the entitlement to interest payment not only relates to the capital actually put at the disposal of the company, but to the market value of the capital. If an investor buys a share on the stock exchange, he does so with the expectation of receiving an appropriate rate of interest on the entire purchase price and not only on the pro-rata book value of the share.

To value the benefit, the following components therefore need to be determined:

- Company profit before commitments to equity providers are met
- Market value of the equity
- Riskiness of shareholders' equity

[23] If the necessary data are available, it is also possible to determine the stakeholder-oriented enterprise value.

- Risk-free interest rate and market risk premium

The *profit before meeting commitments to equity providers* can usually be taken from the profit and loss account. The *market value of the equity capital* corresponds to the market capitalisation, and is of course easiest to determine for companies quoted on a stock exchange. Assuming that only the systematic risk has to be taken into account, the *degree of risk associated with the equity capital* is obtained from the beta coefficient β. The *risk-free interest rate* and *market risk premium* can once again be determined from the stock markets.

The required rate of return on equity comprises two elements. First of all a rate of interest has to be paid that corresponds to the risk-free interest rate. This compensates for the current value of the money, among other things. Then a risk loading needs to be added, which has a linear dependency on the systematic risk assumed. The rate of return on equity therefore corresponds to:

Rate of return on equity = risk-free interest rate + risk premium • beta

If we multiply this interest rate with the market capitalisation, we get the required return on equity and therefore the cost of equity. When combined with the calculation of the rate of return on equity we therefore get:

Cost of equity = market capitalisation • (risk-free interest rate + risk premium • beta)

To work out the profit after the cost of equity and subsequently the surplus benefit, we need to deduct the cost of equity from the profit before equity costs. This gives the following sum:

Profit before cost of equity

- Cost of equity

Surplus benefit (profit after cost of equity)

The calculation of the surplus benefit must be performed on the one hand for the specific company being valued, and on the other for all comparable companies in the market for all periods on which the valuation is supposed to be based.

Stakeholders usually incur costs for the company. These costs need to be calculated so that they can be offset against the benefit at a later point. It is easy to find out most stakeholder costs, as they can be taken from the company's profit and loss account. We will therefore take a look at the three stakeholders „employees", „government" and „creditors" in what follows. In Table C-6 the stakeholders are compared against the relevant items in the profit and loss account.

Stakeholder	Stakeholder costs in the P&L account
Employees	Personnel costs
Government	Taxes
Creditors	Debt interest

Table C-6: Stakeholder and stakeholder costs per period

These stakeholder costs need to be determined – as the benefit already was – for the specific company being valued and for all comparable companies in the market, for all periods on which the valuation is based.

In the previous two steps we worked out the benefit and costs of the individual periods for all the companies. In this step we determine the present value. We therefore have to identify how high the benefit and cost of the different periods are at a given point in time. To do so we have to discount the benefit and the cost at this time. The interest rate applied in this context must reflect the riskiness of the benefit and cost flows. The discount rate we use here is the rate or return on equity capital already used to calculate the cost of equity.

In the previous step we determined the present values of the benefits and costs over the observation period for each company being taken into consideration. Now we compare the benefit and costs for each stakeholder. In other words, we attempt to find out how much benefit in present value terms is generated per entity „stakeholder costs present value". Because of the analogy with return on investment, we refer to this ratio as the Return on Stakeholder (RoSt). This allows different-sized companies to be compared with each other, amongst other things. The return on stakeholder is therefore calculated as follows:

$$\text{Return on Stakeholder (RoSt)} = \frac{\text{Benefit present value}}{\text{Stakeholder costs present value}}$$

The RoSt has to be calculated both for the particular company being analysed and for all companies used for comparison purposes as well.

Even if the RoSt differential does give some indication of the profitability of the relationship between the company and the stakeholder, it still lacks the extremely important aspect of opportunity costs. Opportunity costs correspond to the benefit of the alternatives that have not actually been pursued. In the context of the traditional, earnings-oriented enterprise valuation, it is assumed that the opportunity costs of the equity capital comprises the average market yield given the same risk. A very similar ap-

proach can be taken for the purposes of valuing the stakeholder value added. The average RoSt is determined. The companies used for comparison purposes and the type of average used depends on the desired message. In our concrete example we compare European car manufacturers with their peers in the Eurozone, i.e. companies in the same industry. To this end we determine the simple arithmetic mean. The opportunity costs can thus be calculated as follows:

$$\text{Opportunity costs} = \sum_{i=1}^{i=n} \text{RoSt}_i / n$$

where: i = company i, n = no. of companies in the relevant market, RoSt = Return on Stakeholder

To work out the RoSt differential, the RoSt of the specific company is balanced against the RoSt of the market:

RoSt differential = RoSt_{Unt} - opportunity cost,

Whereby opportunity cost = average RoSt of the market

This shows to what extent the relationship with the stakeholder has allowed an RoSt to be achieved that is higher than the market average. Because of the analogy with the traditional enterprise valuation method „economic value added", we can describe this as the „value spread".

The value spread is a relative result: it represents a surplus return. To determine the absolute stakeholder value, we therefore need to multiply the value spread with the stakeholder costs:

Stakeholder value added = stakeholder costs • value spread

The stakeholder value added therefore corresponds to the present value of the excess profits earned with the company-specific stakeholder compared with the stakeholders of other companies.

5.2 The stakeholder value added of car manufacturers in the Eurozone

In this section we attempt an enterprise-oriented stakeholder valuation of the European car industry. We determine the value of the stakeholders of car producers from the manufacturers' perspective. The valuation is based on the following stakeholders by way of example:

- Employees,
- Creditors and
- Government.

The following table shows the surplus benefit for listed car producers in the Eurozone for the period 1994-1998.

	VW	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
1994	-656.41	-1,684.91	-251.72	-14.10	-	-686.86	-119.29
1995	-363.42	-3,731.34	-188.56	-147.82	-129.48	-66.29	-25.13
1996	74.63	-718.71	-295.67	-270.56	-1,194.32	81.12	-18.14
1997	-260.77	-1,370.32	-411.85	-804.36	390.37	207.79	-31.76
1998	-350.30	-1,505.15	-1,011.22	-155.49	590.68	-598.00	-66.85

Table C-7: Surplus benefit in € million (Source: World Equities)[24]

The calculation is explained using the example of Volkswagen AG for 1994. Table C-8 provides the data needed to perform the calculation.

1994	Volkswagen
Average market capitalization (€)	9,873,615,855
Beta	1.1
Risk-free interest rate (assumption)	5%
Market risk premium (assumption)	3%
Group profit (net) (DM)	163,102,110

Table C-8: Key figures for VW, 1994 (Source: World Equities)

The cost of equity therefore comes to:

[24] In the case of Daimler-Benz all numbers in this and the following tables for the year 1998 refer to the newly merged Daimler-Chrysler Corporation.

9,873,615,855 • (5% + 3% • 1.1) = 819,510,116

The next step is to balance the group profit and the cost of equity, in order to determine the surplus benefit, or in this case cost surplus:

163,102,110-819,510,116 = -656,408,006

The same procedure is used for all other years and for all the other car manufacturers.

Determining the stakeholder costs is easy: they can be taken from the annual accounts. The stakeholder costs used here are the expenditure items:

- Personnel costs
- Interest paid (gross)
- Tax expenditure

In this step the period-specific costs and benefits must be discounted over the entire observation period at the same point in time. The discount rate used, as already mentioned, is the cost of equity rate. In our example all the values are compounded up to the year 1998. This means, for example, that the tax expenditure of the VW Group in 1994 to the amount of € 159.01 million had a present value in 1998 of

$€ 159.01 \bullet 1.083^4 = 218.75$ million.

Table C-9 provides an overview of the tax expenditure of the companies analyzed during the individual periods, the discount rates applied and the present values.

	Volkswagen	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
1994	159.01	604.34	286.83	193.46	-	317.10	2.25
1995	397.27	518.96	274.56	86.44	-46.50	428.65	2.45
1996	661.61	-364.04	365.06	16.01	-57.78	544.86	0.87
1997	1,270.55	-2,035.95	589.52	-153.51	204.74	609.41	9.31
1998	2,067.65	3,075.00	537.36	344.00	362.06	526.26	21.99
Discount rate	8.30%	8.21%	8.69%	7.82%	8.36%	7.01%	8.15%
Present value	**4,943**	**1,932**	**2,362**	**567**	**457**	**2,743**	**39**

Table C-9: Present value of tax expenditure in € million (Source: World Equities, own calculations)

Table C-10 provides a summary of the present values of personnel, interest and tax expenditures.

	Volkswagen	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
Personnel costs	60,614	98,983	29,677	28,764	24,693	43,055	2,419
Interest paid	7,681	4,844	4,545	2,215	1,896	7,121	36
Tax expenditure	4,943	1,932	2,362	567	457	2,743	39

Table C-10: Present value of personnel, interest and tax expenditures in € million

In addition to the present values of the expenditures we also need to determine the present values of the surplus benefits. These present values are shown in Table C-11. They are calculated in the same way as the method used to arrive at the present value of tax expenditures.

	Volkswagen	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
Surplus benefit	-1,909.81	-10,867.61	-2,401.56	-1,541.62	-553.41	-1,264.65	-317.39

Table C-11: Present value of surplus benefits in € million

The negative present values of surplus benefits reflect the bad general economic situation of the car industry between 1994-98.

The Return on Stakeholder is determined by comparing the present value of the surplus benefit with the present values of the individual expenditures.

For Volkswagen and the stakeholder „Employees", we can calculate the Return on Employees as follows: -1,909.81 / 60,614=-3.15%.

	Volks-wagen	Daimler Benz	BMW	Peugeot	Renault	Fiat	Porsche
Return on Employees	-3.15%	-10.98%	-8.09%	-5.36%	-2.24%	-2.94%	-13.12%
Return on Creditors	-24.86%	-224.34%	-52.84%	-69.58%	-29.19%	-17.76%	-892.62%

Return on Government	-38.64%	-562.56%	-101.67%	-271.95%	-121.12%	-46.10%	-808.67%

Table C-12: Return on Stakeholder (RoSt)

To calculate the opportunity cost, we have to work out the simple arithmetic mean of the market's RoSt for each stakeholder group. Table C-13 shows the corresponding opportunity cost.

	Opportunity costs
Return on Employees	-6.55%
Return on Creditors	-187.31%
Return on Government	-278.67%

Table C-13: Opportunity cost

The RoSt differential is worked out by balancing the company-specific RoSt with the opportunity cost. The RoSt differential for the stakeholder „Employee" for the Volkswagen Group is therefore calculated as follows:

RoSt differential = -3.15% - (-6.55%) = 3.40%

Table C-14 shows the RoSt differentials calculated for all companies and for all stakeholder relations analyzed.

	Volks-wagen	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
RoSt differential Employees	3.40%	-4.42%	-1.54%	1.19%	4.31%	3.62%	-6.57%
RoSt differential Creditors	162.45%	-37.03%	134.48%	117.73%	158.12%	169.55%	-705.30%
RoSt differential Government	240.04%	-283.89%	177.01%	6.72%	157.55%	232.57%	-530.00%

Table C-14: Value spreads (RoSt differentials)

Since the stakeholder value added is an absolute measure, the way to calculate it is to multiply the RoSt differentials with the present values of the specific stakeholder costs.

Table C-10 gives the present values of the specific stakeholder costs. For Volkswagen, for example, the stakeholder value added for the stakeholder „Employee" is as follows:

€ 60,614 million • 3.40% = € 2,063 million

The next table provides an overview of the calculated stakeholder value added.

	Volkswagen	Daimler-Benz	BMW	Peugeot	Renault	Fiat	Porsche
Employee VA	2,063.02	-4,379.96	-456.46	343.65	1,065.04	1,557.29	-158.83
Creditor VA	12,479.26	-1,793.85	6,112.53	2,608.28	2,997.53	12,074.82	-250.79
Governmental VA	11,865.07	-5,484.24	4,181.30	38.11	719.89	6,380.49	-208.01

Table C-15: Stakeholder value added in € million

5.3 Discussion

The success of a company is dictated by how successfully it manages its resource providers (stakeholders). The analysis performed here examines how efficiently companies manage their three stakeholder relations both in absolute terms and relative to the sector average. Here the efficiency of stakeholder relations can be assessed on the basis of the three benchmarks:

- Return on Stakeholder (RoSt),
- RoSt differential and
- Stakeholder value added.

The simplest benchmark for the efficiency of stakeholder relations is the *Return on Stakeholder (RoSt)*. No car manufacturer was able to create a positive RoSt. As the RoSt value of –101.67% for the relationship between BMW and the government shows, the company has € 102 surplus of cost for each € 100 of tax paid (see Table C-12).

However, this seemingly very negative RoSt value underestimates the true importance of this stakeholder relationship. The market average reveals a cost surplus of € 279 generated for each € 100 of tax paid. The real value created by the stakeholder relationship between BMW and the government is however determined by the differential between the opportunity cost (Return on Government of -279%) and the company-specific RoSt. The *value spread* for BMW is 177% for the stakeholder „Government" (see Table C-14).

Depending on whether we are interested in the value created per € stakeholder costs (e.g. personnel costs) or in the entire value produced by a stakeholder relationship, the benchmark we need to use is either the RoSt differential (relative figure) or the stakeholder value added (absolute figure).

A *positive (or negative) stakeholder value added* shows that the stakeholder relationship produces a higher (or lower) surplus benefit per € stakeholder costs than the market average. Daimler-Benz and Volkswagen occupy the extreme positions in our study. In the case of Daimler-Benz, all the stakeholder relationships are „in the red", i.e. they create a surplus benefit that is lower than the market average. By contrast, all the stakeholder relationships of Volkswagen are „profitable", because they create a surplus benefit that is higher than the market average.

The big *differences between the stakeholder value added of the various companies* can also be explained by the different sizes of the organizations. The present value of personnel costs at Daimler-Benz, for example, is roughly 41 times bigger than that of Porsche. As a result, Porsche shows a „better" stakeholder value added than Daimler-Benz, even though the latter has a slightly better (or rather, less negative) value spread.

As the example of BMW shows, there may well be considerable *differences between the stakeholder value added created by different stakeholders* in the same company. This clearly shows that a high profit does not „automatically" imply that all stakeholder relations are efficiently managed. By the same token, a company loss is not necessarily a sign of inefficient stakeholder relations. BMW, for example, shows a negative employee value added and a positive governmental value added.

The fact that a negative Return on Stakeholder (RoSt) does not necessarily add up to a negative stakeholder value added is illustrated by all analyzed companies in this case study. For instance Peugeot und Renault show a negative Return on Government (Peugeot: -271.95%, Renault: -121.12%). Since the market average for the Return on Government is -278.67%, however, which is lower than for these two companies, they have still managed to create stakeholder value added. As this example illustrates, the value of a stakeholder relationship depends not only on the absolute value created, but in particular on the relative value created (or the less eroded value) in comparison with other companies.

6 Concluding comments

The public discussion generally presents shareholder value and the stakeholder concept as contrasting approaches. But this not only shows a basic misunderstanding of the specific character of each approach, but also obscures the potential that can be exploited through their effective integration.

The *shareholder value* approach is an earnings-oriented valuation method. This method is suited to an enterprise valuation that is geared towards equity capital. It is used to determine the value of an enter-

prise on the continuation of business, by working out the present value of the expected surplus benefits. This method has steadily gained popularity in recent years, particularly since it is forward looking and because accounting standards have had a relatively minor influence. The *stakeholder concept*, on the other hand, is an analysis concept of strategic management. It shows which groups have an influence on the company achieving its goals or which are influenced by the company in meeting their own objectives. Stakeholders provide the company with the resources it needs in order to perform a service. The task of company management is to deploy the resources in such a way that value is created, in other words so that the price earned on the market for the output is higher than the cost of the inputs. This makes it even more surprising that the stakeholder approach does not provide for a valuation of the stakeholder relationship from the company's perspective. Without a proper valuation, efficient management of stakeholder relations is purely a matter of chance.

The term "stakeholder value" is already in common usage. One conspicuous point worth mentioning here is that none of the literature seems to provide either a definition, or a method for calculating it. This study attempts to fill this gap, by showing what is understood by stakeholder value and how the relevant valuation of stakeholder relations can be performed.

Stakeholder relations are reciprocal relationships. They always comprise a service and a payment in kind. A distinction can therefore be made between an enterprise-oriented and a stakeholder-oriented stakeholder value approach. A stakeholder relationship will only exist if both companies reckon that they stand to benefit from this relationship. The stakeholder value is therefore equivalent to the present value of the expected surplus benefits from the company's or the stakeholder's perspective.

The concept outlined for determining the stakeholder value added is the logical continuation of the tried and tested approaches of the earnings-oriented valuation method. It works out the value created by the stakeholder relationship over several periods. To this end the benefits and the costs of the stakeholder relationship are compared with each other. The stakeholder relationship is attractive over a period, if the benefit exceeds the cost during this time. Stakeholder relations are usually long-term relationships (see Liebl 1999, for example). What we are therefore interested in is not so much the surplus benefits during a period, but rather the current value of all expected surplus benefits. To this end we have to discount the expected surplus benefits with an interest rate that is commensurate with the risk involved, and determine the present value.

We already know from the earnings-oriented valuation method that the opportunity cost has to be taken into account when calculating surplus benefit. Value added is only created if the benefit produced by an alternative is greater than the benefit that would have been achieved with the alternative that was not opted for.

The case study shows how stakeholder value added can even be calculated by external analysts, based on the financial data published in the annual accounts. Using the example of the car industry in the

Eurozone, we determine three different dimensions of stakeholder value added (employee value added, creditor value added und governmental value added) from the company's perspective.

If we assume that the goal of these companies is to enhance their enterprise value, the benefit of a stakeholder relationship corresponds to the contribution the stakeholder makes towards an increase in the enterprise value. By analogy to the traditional earnings-oriented valuation method, it is assumed that the stakeholder always contributes value added if he makes a bigger contribution to improving enterprise value per € specific costs than the stakeholders of competitors. This surplus represents the value of the stakeholder relationship after taking into consideration the opportunity costs.

The concept of stakeholder value added therefore allows a quantitative assessment of the value of stakeholder relationships taking into consideration the opportunity costs. This allows a meaningful comparison between companies in the same or different sectors, companies from different countries, or even comparisons of entire sectors. In this way it gives a more objective dimension to the discussion of stakeholder value.

The limitations of this concept currently arise mainly from the availability of data. Current accounting practices, for example, are oriented towards equity capital. It is true that the figures can be adjusted by explicitly taking into account the stakes of the equity providers. Even so, a clear apportionment of benefit and cost flows to individual specific stakeholders (e.g. with suppliers, the public) is often still not possible for external parties making valuations. The allocation of benefit to individual stakeholders is another weak point. Future research efforts should be directed at clarifying the specific benefit contributed by individual stakeholders. As part of a traditional earnings-oriented enterprise valuation, it is quite simply to identify the opportunity cost – by referring to indices, for example. By contrast, when calculating stakeholder value added the opportunity costs need to be determined individually. Although this is more time-consuming, on the other hand it can help to ensure that the alternatives used for comparison purposes are selected in a way that is more appropriate to the situation.

In practice companies must satisfy stakeholders that compete with each other – irrespective of whether they are committed to enhancing enterprise value. If companies want to be more successful at satisfying competing stakes, efficiency strategies are often the only possible solution. A company that wants to improve its enterprise value must manage its resources efficiently. This is an essential prerequisite for increasing both the shareholder value and the enterprise-oriented stakeholder value.

D Conclusion

With the growing importance and attention sustainability issues are receiving in the financial markets a fundamental need is emerging for sound analytical tools to examine the relations between environmental and social performance on the one hand and financial performance on the other. It is crucial that this need is met by specific tools in order to ensure that sustainable finance is more than a passing fad. The two main parts of this module present such tools. Environmental Shareholder Value and Stakeholder Value provide financial analysts with the basic tools to derive the fundamental data on the mechanisms and logic behind sustainable finance. While being innovative the concepts of Environmental Shareholder Value and Stakeholder Value are founded on sound thinking and established methods of finance and financial analysis. Additionally they provide the link between environmental and social concerns and financial performance goals.

The tools of Environmental Shareholder Value and Stakeholder Value represent consequent value-based thinking. This means that the integration of environmental and social aspects in financial analysis focuses on the long term value creation of financial and real investments. As a consequence, these tools direct themselves primarily towards environmental and social aspects which enhance the economic and financial success of companies and investments (cf. Schaltegger/Figge 1997; Figge/Schaltegger 2000; Figge 2001; Figge et al. 2001). From the viewpoint of sustainability such a value-based approach represents three major advantages:

Firstly, non-value-oriented sustainability management is by definition not sustainable. According to the three-pillar-concept sustainability involves economic, ecological and social aspects. Usually, it is implicitly assumed that these aspects bear a complementary relation to each other. Sustainability is only achieved if ecological, social and economic goals are reached simultaneously. A business or investment which is perceived well in the ecological and social areas, but results in bad economic performance, is not sustainable. In contrary, only improvements with regard to all the three dimensions of sustainability, demonstrate clearly a sustainable performance.

Secondly, environmental and social management that reduces value is dangerous. Such idealistic management is carried out by firms, only as long as the company is successful and can afford this as a "luxury good". If firms get into financial distress, those costs and activities are cut down first which do not contribute to the financial bottom line. Environmental and social management which does not create business value would be a prime candidate for such costs. Therefore, it will be practiced, only as long as firms are successful.

Thirdly, a non-value-oriented approach to sustainability management is an inappropriate model for other actors on the financial market. Investors who want to promote or reinforce investments with sound environmental and social management often orientate themselves towards competitors and colleagues. It is improbable that they emulate sustainability management which creates costs, but no

benefits since acting this way would only endanger their competitiveness. If, in turn, investments create value with sustainability management, the firm can improve its competitive position in the market.

Environmental Shareholder Value and Stakeholder Value represent the basic tools for the integration of environmental and social issues into financial analysis. While analyzing the fundamental relationships, they do not cover the whole range of relevant aspects. Namely, an option value perspective is not taken up by these tools. From an option value perspective the core question is whether a company widens or narrows the future freedom of latitude with its environmental and social management activities. This question is addressed in detail by Figge (2001). While the authors would like to encourage further reading we believe that this module provides financial analysts the fundamental knowledge for a sound, sensible and successful approach to sustainable finance.

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Appraisal methodologies, incl. EMA,
for Sustainability in Financial Markets:

"Evidence"

Evidence concerning the connection between sustainable development and shareholder value

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Contents

Evidence concerning the connection between sustainable development and shareholder value

Paschen von Flotow, Rolf-D. Häßler, Johannes Schmidt
Institute for Environmental Management and Business Administration at the EUROPEAN BUSINESS SCHOOL e.V.

1. Introduction

There are many theoretical reasons why a good environmental and social performance should enhance the financial performance of companies. This part of the workbook will go beyond the theory and look at the evidence, if a good environmental and social bottom line has helped companies to be financially successful.

The question which evidence exists for a positive connection between shareholder value und the social and environmental performance of companies is important not only for managers of environmental/sustainability funds or for investors with an intrinsic motivation for investing in socially and environmentally responsible companies regardless of their financial performance. This question bears also significance for conventional funds and analysts because it may show them an important category of information that is crucial when assessing the prospects of companies regarding profitability.

In principal, there are two possibilities to examine the connection between sustainability and shareholder value: the first possibility is to conduct econometric research; the second is to bring in experts' assessments of the connection.

Royal Dutch / Shell:

Our success as an organisation is intimately linked to that of society. We wish to play our part responsibly - by maintaining and enhancing natural and social capital, as well as contributing to the global economy's capacity to generate and distribute wealth. Sustainable development provides the best model to see these elements together in an integrated way while creating business value.

In the following sections the results of these examinations are presented. Section 2 surveys the statistical/econometric tests that have been done to evaluate the connection between environmental/sustainability performance and shareholder value. Section 3 presents the assessments of managers of environmental/sustainability funds and of companies and stakeholders. These assessments are based on interviews and questionnaires.

This part of the workbook is based on the intermediate results of the research project "Environmental and sustainability transparency for the financial markets" conducted by the Institute for Environmental Management and Business Administration at the European Business School in collaboration with the Institute for Applied Ecology and the Centre for European Economic Research. The project is funded by the German ministry of research. The main scientific objective of the Project is to research the link between environmental performance and shareholder value. To do this, company and sector level case studies are executed, analysing how

environmental information are raised and which factors of environmental performance are relevant for the shareholder value. Supported by these case studies hypotheses of the link between environmental and financial performance are stated. These hypotheses will finally get tested with the help of an econometric study.

2. Statistical/econometric tests

During the past years, quite a few econometric studies have been conducted to examine the connection between environmental/sustainability performance of companies and their shareholder value which will be presented in the following sections. The multitude of studies that have been carried out and that use quite different methodologies (see e.g. Wagner 2001 and Institut für Ökologie und Unternehmensführung 2001 for a comprehensive review) show that it is by no means simple to give a straightforward answer to the (seemingly) simple question about the connection between sustainability and shareholder value.

Therefore, in the following sections the results of some important studies will be presented in order to gain a clearer picture about the answers found so far and about the questions to be addressed in further research.

Although there are a lot of different studies with different methodologies, they can be divided roughly into three groups: event studies; cross-sectional regressions and panel analyses; and analyses of environmental and sustainability funds.

2.1 Event studies

2.1.1. Concept

Event studies measure the connection between the publication of a certain piece of information and the change of the share price following immediately after the publication. They examine the effect of new pieces of information (e.g., the publication of emission data) on the share price. The principal aim of event studies is to analyse how information is used and processed in the capital market. Concerning the connection between environmental performance and shareholder value, event studies investigate whether (and how much) new environmental information about a company changes its share price. The underlying idea of the event study methodology is the basic postulate of efficient market theory which says that the share price incorporates all available information about the current and expected performance of a company. If a stock price changes after an event, the market values a company differently, presumably because of the event.

The events investigated in these studies can be positive or negative. A positive event can be the publication of a good environmental ranking of a company or the awarding of a prize for good environmental management. Negative events can be an environmental accident or the publication of data about the emission of harmful substances.

2.1.2. Examples

Let us, exemplarily, look at some studies in detail: **Hamilton (1995)** examined the impact of pollution on the economic performance of companies (that is, their share price). Specifically, the study investigated the reaction of the market to the publication of data from the Toxic Release Inventory (TRI). The study used data from the Environmental Protection Agency (EPA), from the TRI and from the Center for Research in Security Prices (CRSP). The basic result was: When the data of firms required to report emissions under the TRI were published for the first time in June 1989, the stock market reacted and showed negative abnormal returns which were statistically significant. Specifically, the greater the difference between emissions reported prior to the first TRI data release and the TRI results the higher were the stock price changes for a firm. On the other hand, firms for which the release showed little or no difference between TRI data and prior available data outperformed chemical industry indexes. This was regarded as indicating that stock market reactions are not only based on the level of emissions but also on the levels of disclosure and magnitude.

There are several reasons for the fact that the publication of information can lead to stock market reactions. One possibility is that the stock market takes information about TRI emissions as an indicator of the productive efficiency of firms. Firms that have higher emissions per dollar revenue than their competitors, waste resources. Therefore, the information might show that the management is incapable (in this respect) and that the probability of future accidents is greater than in other firms. Another reason might lie in the danger that a firm with higher toxic emissions could become the preferred target of environmental and other stakeholder groups boycotting the firm's products and therefore diminishing its revenues. Finally, the high emissions of a firm could lead to an increased control by public agencies and a more detailed investigation of the firm. That might mean higher expenditure for the firm due to new regulations or damages and fines.

The results in the study of Hamilton could be confirmed and differentiated in two other event studies (Konar/Cohen 1997 and Khanna/Quimio/Bojilova 1998):

Konar/Cohen (1997) investigated the impact of stock market reactions on the environmental management of the firms. They examined all companies that had, according to the study by Hamilton (1995), significant negative abnormal returns after the publication of their TRI data. They showed that companies with the largest losses in their share price carried out more considerable reductions of emissions than other firms in the same sector. So stock market reactions can lead to firms taking action to improve environmental performance. As a consequence, this can also lead once again to an improvement in financial performance as it is measured by the stock price.

By analysing the data of 91 firms in the chemical industry between 1989 and 1994, **Khanna/Quimio/Bojilova (1998)** have shown that stock market reactions are considerable when the data on the firm's emissions are unexpectedly high. On the other hand, the stock market price of firms whose emissions were expected to be high sank only moderately. Additionally, the continuous publication of the TRI had a kind of a benchmarking effect. When data about the same firm at different points in time became available, the investors and analysts were able to form benchmarks concerning the environmental performance of that firm. A firm with continuously high toxic emissions also suffered from a reduction in the stock market price. The stock market reactions have indeed led to environmental measures by the firms' management. In the case of solid toxic waste investigated in the above-mentioned

studies, firms reacted by reducing on-site releases of toxic waste and substituted them by an increase in off-site transfers. Although the total of toxic waste was not reduced, the increase in recycling and environmentally-sound waste management already means an environmental improvement.

Bosch/Eckard/Lee (1996) carried out an event study on a sample of 171 cases of EPA related announcements between 1970 and 1990. These cases involved 77 U.S. firms listed in the Wall Street Index of (among others) the automobile, electric utilities, steel and chemical industries. Events were sub-divided in four sub-samples:

- firms that were targeted by EPA for violations
- firms that lost a legal challenge to (and received an unfavourable decision from) EPA
- firms that received a favourable decision from EPA
- firms that challenged an EPA decision in court.

The study estimates abnormal and cumulative abnormal returns. Estimates are based on the 10 business days preceding the announcement, the event day and the ten business days following the announcement. The study finds a negative stock market response to the announcement of an EPA event for a company, combined with a significant cumulative abnormal return. Furthermore, cumulative abnormal returns are strongest and highly significant for firms that lose a contest with EPA.. On the other hand, they are lower for firms that are willing to cooperate with EPA. Challenging of an EPA decision in court does not lead to strong market reaction. Furthermore, the study found no stock market reaction to a positive EPA announcement, that is, a positive event was not followed by an increase in the share price.

Klassen/McLaughlin (1996) assessed market reactions to positive and negative environmental events. Negative environmental events used in the study were, e.g., product recalls, poor external ratings of pollution performance or announcement of oil spills. Positive environmental events were, e.g., the announcement of an environmental award by an independent party or environmental certifications. The study found significant abnormal positive and negative returns for awards and for crises, respectively. These returns remained stable and significant when control variables were included, such as firm size effects or financial and management announcements that were published at the same time.

Ford:

In the longer run, however, all Ford stakeholders have a stake in the future, and the future depends on a healthy, living planet. This may be the common ground where meeting consumer needs sustainably strengthens the bond between Ford and its customers and other stakeholders while ensuring continued financial success.

2.1.3. Conclusion

All in all, the results of the existing event studies can be summarised as follows: after a negative event there is nearly always a statistically significant negative reaction of the share price. There are only a few studies that measure the effect of a positive environmental event on the share price of a company. In these studies, the share price has only a weakly positive reaction on the event; in one study, the result is significant, other studies found no significant results.

Event studies do have – especially when dealing with negative events like failures or accidents – clear-cut and robust results and their methodology is quite elaborated. The basic problem with this kind of study is whether they really give an answer to the question about the connection between environmental and economic performance of a company. The results could also arise because an environmental damage leads to high cost for its removal. The fact that positive environmental events are barely significant for the share price supports this interpretation. If it is correct, many event studies examine the question whether a publicly-known increase of cost is adequately incorporated in the share price.

This leads to the second kind of studies, panel and regression analyses.

2.2 Cross-section Regressions and panel analyses

2.2.1. Concept

In this group of studies, connections between sustainability performance and shareholder value are examined with the help of cross-section data and panel data. Data about profit or equity returns of companies are regressed on data about environmental and sustainability performance of companies. When using longitudinal or panel data, the change during a certain amount of time is considered additionally. When equity returns are used for measuring shareholder value, the non-diversifiable risk is filtered out with the help of the Capital Asset Pricing Model (CAPM), as a higher return could just be the result of investors demanding a higher compensation for a higher risk.

In the different studies, the environmental performance is approximated by different sets of data: in some studies, the firms are differentiated according to different kinds of harmful substances; other studies use the results of environmental and social ratings of companies and regress the economic data of companies on the ratings; a third group of studies develop their own indices of emissions.

2.2.2. Examples

Hart/Ahuja (1996) analyse the relationship between emissions reduction and financial and operational performance of 127 firms listed in the Standard and Poor's 500 (S&P 500). For measuring the environmental performance they use environmental performance data from the Investor Responsibility Research Center (IRRC) 1993 Corporate Environmental Profile directory. This profile supplies data on reported emissions of selected pollutants from U.S. manufacturing sites which are based on TRI data. Emissions reductions in the study were measured for each firm in the sample as the percentage change of the ratio of TRI-reported emissions to the company's revenues from 1988 to 1989. Operational and financial performance were measured by the accounting profitability measures return on sales (ROS), return on assets (ROA) and return on equity (ROE) for the years from 1989 to 1992. Furthermore, the study included a number of firm-level and industry-level control variables (e.g. advertising intensity, R&D intensity, capital intensity, leverage, industry average environmental performance), The authors developed three econometric models with ROS, ROA and ROE, respectively, as dependent variables, and emissions reduction and control variables as independent variables. The study found that two years after the emissions reduction (per unit of production) occurred, the above measures for financial performance showed improvements which

were highest for firms with higher emission levels prior to reduction. Of the three measures of financial performance, ROE took longer to be affected than ROS and ROA.

Thomas/Tonks (1999) examined the correlation between the excess stock market returns and environmental activities and features of firms. Their data set is based on 131 companies that replied to a questionnaire survey that inquired whether firms had adopted an environmental policy, if they had been prosecuted by an environmental agency in the UK and if they had adopted routine staff training schemes to ensure staff compliance with their environmental protocols. The authors used a multiple regression framework to analyse the predictive value of dummy variables representing the adoption of an environmental policy, prosecution and staff training, alongside other possible explanatory variables for total stock market returns. The data referred to the period 1985-97 and was sub-divided in three test periods: pre-1992, 1992-1995 and post 1995. Overall, the analysis found that the adoption of an environmental policy by firms in an industry with strong pollution record improves their stock market returns by reducing negative excess returns. The interpretation of this is that firms in high-polluting industries (who were found to have below-average returns over all three periods) were reducing their negative excess returns over the period 1995-97 when adopting an environmental policy.

Butz/Plattner (1999) analysed the correlation between the environmental rating and stock market returns of 65 European firms from various industries and countries. The environmental rating was provided by the Swiss private bank Sarasin and is based on a number of quantitative and qualitative performance criteria. The sample covers the period between May 1996-May 1997. The authors used the systematic, market risk-adjusted excess returns (Jensen's Alpha) as a measure of economic performance. Butz/Plattner regressed the Alpha value on the environmental ratings as dependent variables (the environmental rating was included in the regression by means of three dummy variables). As a result, Butz/Plattner find a positive significant regression coefficient for environmental rating, indicating a positive relationship between environmental and economic performance. However, this only holds for a subset of firms in environmentally intensive industries. Coefficients became insignificant when the whole sample of 65 firms was considered. Moreover, this study is the only one so far to test for a positive connection between social performance (as measured by Sarasin's social rating) and economic performance. By using the same technique, Butz/Plattner found no significant connection between social and economic performance. One key weakness of the study by Butz/Plattner is that they do not include any control variables. This leaves the possibility that factors other than the environmental rating could have influenced the results.

Concerning environmental performance, a result similar to that in the studies of Thomas/Tonks (1996) and Hart/Ahuja (1996) was obtained in a panel analysis with 4484 firms by **King/Lenox (2000):** On the basis of emission indices developed with data from the Toxic Release Inventory (TRI), King/Lenox found a significant and positive correlation between environmental performance and economic success. This connection is especially pronounced in firms which have – relative to the competitors in their sector – an environmental performance above average. Firms in sectors which are generally "clean" do not have an economic performance that is significantly higher.

2.2.3. Conclusion

The studies carried out so far seem to show that there is a positive connection between the environmental performance of companies and their shareholder value. But the results of all these studies can be interpreted as correlations only – the question of causality between environmental performance and economic success remains open so far. Furthermore, the studies use very different measures of environmental performance that are not always comparable. Additionally, the data on environmental performance are not always available in a standardised form.

Finally, the studies carried out so far concentrated on environmental performance; the social dimension of sustainability has been barely investigated.

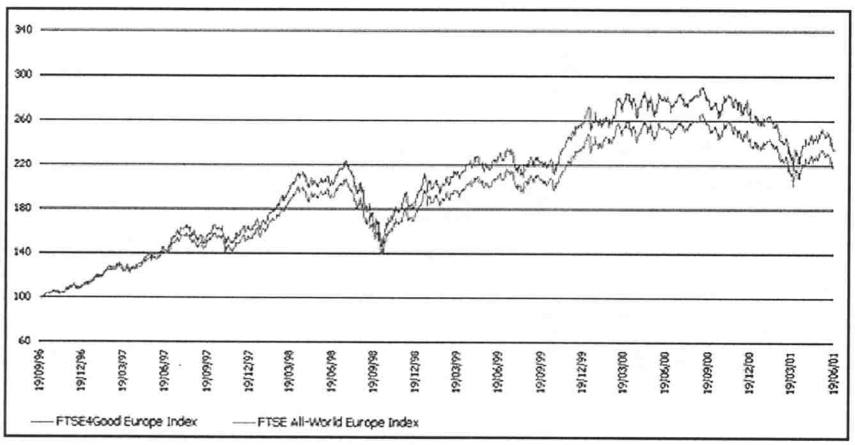
2.3 Analyses of environmental and sustainability funds

In the third group of studies, the connection between sustainability performance and shareholder value is examined indirectly. The economic performance of funds which select the companies they invest in according to environmental and social criteria is analyzed and compared to the performance of conventional funds. By using a time series analysis it is investigated if there are significant differences in the values of different portfolios.

On the first sight, it seems to be very simple to compare the performance of conventional and environmental/sustainability funds by looking at the different returns of the funds as it is done in the following examples.

Example 1: FTSE4GOOD Europe Index

FTSE4Good is an index for socially responsible investment designed by FTSE, an global index providers. FTSE4Good is a series of benchmark and tradable indices facilitating investment in companies with good records of corporate social responsibility. FTSE are launching four tradable indices, the FTSE4Good UK 50, FTSE4Good Europe 50, FTSE4Good US 100 and the FTSE4Good Global 100, along with two benchmark indices, the FTSE4Good UK Index and the FTSE4Good Europe Index. They all went live on 31 July 2001.

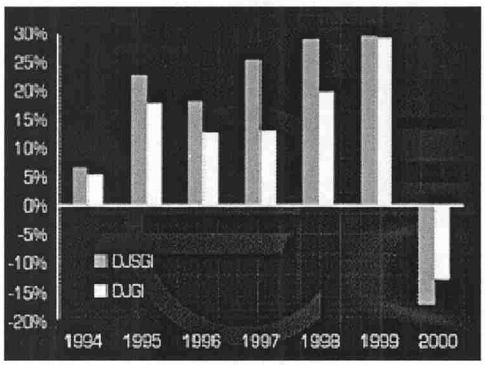


The graph shows the performance of the FTSE4GOOD Europe Index in comparison to the FTSE All-World Europe Index.

- More information: www.FTSE4GOOD.com and www.FTSE.com

Example 2: Dow Jones Sustainability Indexes (DJSI)

The DJSI family consists of one global, three regional and one country indexes. Each of these five broad indexes has four narrower, specialized sustainability indexes, for a total of 25 indexes. The Dow Jones Sustainability Indexes (DJSI – formerly Dow Jones Sustainability Group Index [DJSGI]) track the performance of sustainability leaders worldwide. They encompass the top 10% of the companies that lead their industry in terms of economic, environmental and social criteria.

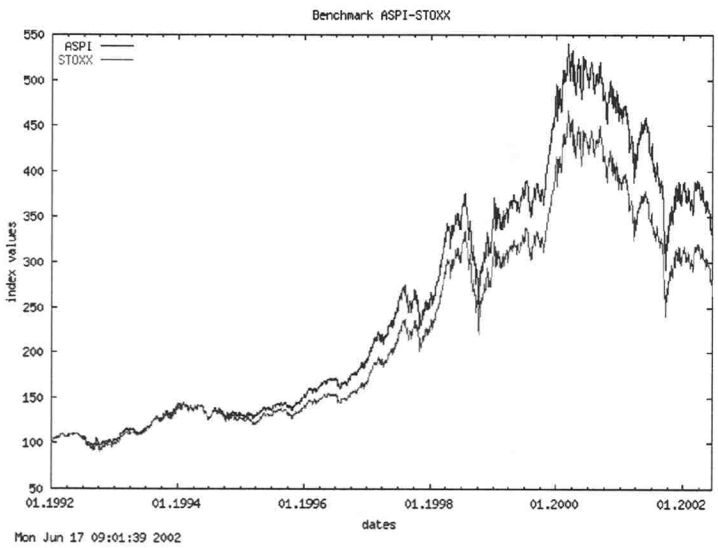


The graph shows the performance of the DJSI in comparison with DJGI. DJSI would have performed better than the DJGI since 1994 (with the exception of 2000).

- More information: www. sam-group.com and www.sustainability-index.com

EXAMPLE 3: ASPI Eurozone®

The ASPI Eurozone® is an European equity index tracking the financial performance of the Eurozone's leading companies in terms of corporate sustainability (i.e. their social and environmental performance). It was launched in June 2001 as the first in a family of ARESE Sustainable Performance Indices (ARESE SPI® or ASPI®). The ASPI®family of indices will be customised by STOXX Limited.



The graph shows the performance of the ASPI Price EUR in comparison to the Stoxx Price Eurozone.

- More information: www.arese-sa.com

Example 4: DOMINI 400 SOCIAL INDEX

The Domini 400 Social Index (DSI) is a benchmark for measuring the impact of social screening on financial performance. Kinder, Lydenberg, Domini and Co., Inc. (KLD) created the Index and launched it in May 1990.

The DSI has outperformed the S&P 500 on a total return basis and on a risk-adjusted basis since its inception in May 1990. The graph below shows the comparative total return performance of the DSI and the S&P 500.

Appraisal methodologies, incl. EMA, for Sustainability in Financial Markets

Domini 400 Social Index Performance Statistics

	DSI 400	S&P 500
May 2002	-0.10%	-0.74%
YTD	-4.52%	-6.50%
Last Qtr	0.20%	0.27%
One Year	-10.92%	-13.85%
Three Year*	-5.34%	5.19%
Five Year*	7.25%	6.16%
Ten Year*	13.25%	12.10%

*Annualized Returns

Source: www.kld.com/benchmarks/dsi.html

The graph shows the performance of the DSI 400 in comparison to the S&P 500.

- More information: www.kld.com/benchmarks

But there are two **problems**: often the environmental funds back-track their performance, that is, they do not only compare their returns with the returns of other funds after the date they were issued but also make comparisons as if the fund had been issued in previous years. Often in such **back-tracking**, environmental funds outperform conventional funds, but one can argue, that the portfolio of the environmental fund has been selected with the benefit of hindsight. So that is not a reliable measure. Secondly, different returns can simply come from different risks. So one also has to take into account this factor when comparing the portfolios.

In the studies considered the return of portfolios containing shares of companies with a positive environmental performance (measured, e.g., by a rating) is compared with the return of portfolios containing shares of companies with a negative environmental performance. Important influences (market, interest rates etc.) are filtered out. Remaining differences between these returns should be caused solely by the environmental performance (rating) of the companies. Again, let us look at some studies in detail:

White (1995) has investigated the performance of different Environmental Mutual funds. He used the performance data of 6 US- and 5 German environmental funds between 1991 and 1993 and compared them with the performance data of benchmark indices. He tested four hypotheses:

- Hypothesis 1: US environmental funds outperform the US stock market index. The hypothesis had to be rejected.
- Hypothesis 2: US environmental funds outperform the socially responsible part (DSI) of the US stock market. The hypothesis had to be rejected.
- Hypothesis 3: German environmental funds outperform the German stock market index. The was a positive, but insignificant outperformance due to the HCM EcoTech fund.
- Hypothesis 4: German environmental funds performed better than US environmental funds. The hypothesis had to be rejected.

In another study, **White (1996)** did not investigate existing portfolios, but constructed model portfolios out of firm data. He used three-element scale ratings published by the Council on Economic Priorities (CEP) for the environmental performance of firms. These ratings classified firms as environmentally proactive, middle, or high-polluting. Environmentally proactive firms are defined having substantial activities in recycling, alternative energy sources, waste reduction and environmentally more benign products and packaging as well as few environmental non-compliance events. Companies with a middle rating are characterised as being in compliance with legal standards, but not pursuing proactive environmental programs. High-polluting firms on this rating scale are characterised by several major accidents, significant non-compliance and constant lobbying against strict environmental policy. These ratings were available for 97 firms that were publicly listed on the New York or the American Stock Exchange for the years 1989 to 1992. Monthly stock returns for all firms obtained from the Center for Research in Security Prices (CRSP) were combined with these ratings to analyse the relationship between shareholder value and firm's reputation for environmentally conscious behaviour. Based on the CEP ratings, three portfolios of high-, medium- and low-rated firms, respectively, were created and monthly returns on these portfolios were then value-weighted, using monthly equity capitalisation data also obtained from CRSP. Jensen's alpha measure was used to measure the (risk-adjusted) performance of each portfolio and compare this to the others. The study found superior risk-adjusted performance (i.e. investment returns) relative to the market over the study period for the portfolio of high-rated firms with substantial environmental management activities. The other two portfolios expressed as well positive values for the Jensen alpha measure; but these were not statistically significant and considerably smaller than in the case of the portfolio of high-rated firms.

VOLKSWAGEN:

Against this background, we are pleased that Volkswagen has been included as one of the leading companies in the Dow Jones Sustainability Group Index (DJSGI). Corporate sustainability is a concept which generates longterm stockholder value by exploiting the opportunities arising from economic, ecological and social developments, while minimizing the risk.

Comparing his two studies that covered approximately the same time period, White concluded that the performance of the existing funds he investigated depended more strongly on the ability of the fund managers than on the environmental performance of the companies. So the poor performance of the funds could rather show a poor performance of the fund managers than a poor performance of firms with a positive environmental performance.

Cohen/Fenn/Naimon (1995) made also an analysis of a constructed portfolio. The basic approach to the analysis was the construction of two portfolios – one containing firms with low

values of environmental measures and another with high values. The portfolios were designed to contain a matched group of firms, where the matching was done based on industry category. First, companies were sorted into 85 different groups based on the industry categories used by S&P. Within each industry the firms where ranked equally on the environmental measure of interest. The firms with an environmental measure below the median got a dummy variable equal to 0, the other got a variable equal to 1. (best in class). The primary source of data for this study is the database published by Investor Responsibility Research Center (IRRC) in its *1992 Corporate Environmental Profiles Directory*, which have not previously been available to researchers in an accessible format for all the S&P 500 companies. As environmental indicators the following were used:

- Superfund sites
- Number of compliance penalties
- Dollar value of compliance penalties
- Volume of toxic chemical releases
- Number of oil spills
- Volume of oil spills
- Number of chemical spills
- Volume of chemical spills
- Number of environmental litigation proceedings

In all cases these indicators get divided by the firm's revenues to adjust for firm size. As financial indicators were used:

- ROA
- total return to shareholders risk adjusted
- ROE
- total return to shareholders unadjusted

The main hypothesis being tested in this study is whether or not firms perform well in the environmental arena also perform well financially. The test asks whether the "low pollution" portfolio performs the same or differently from the "high pollution" portfolio, where high and low refer to each of the environmental indicators. The results were as follows:

- Ad Environmental Litigation: Firms with a relatively larger number of environmental lawsuits were found to earn a lower level of ROA and ROE – this finding was statistically significant, whereas risk adjusted market returns were actually higher (not significant) for the "high litigation" portfolio.
- Ad Superfund Sites: The "low site" portfolio outperformed the "high site" portfolio just in the years 1987-1989 and only for the total return to shareholder and not for the ROE and ROA and in the following years even not for the total return to shareholder. One reason for this might be that the market (return to shareholder) has anticipated high future costs, despite the fact that there are little immediate impacts for the firms based on being listed on the Superfund list.
- Ad Fines: No significant differences in the portfolios could be found.
- Ad Oil Spills: ROA and ROE of the high spill portfolio are significant lower, also the risk adjusted returns, but not statistically significant.

- Ad Chemical Spills: Similar results as for oil spills. Total returns however are slightly higher for the high spill portfolio, but not significant.
- Ad Toxic Chemical Releases: No significant differences.

This study shows that "green investors" do not need to pay a premium for their conviction. Investments in environmental leaders were found to perform as well – sometimes even better – than those in environmental laggards. It is, however, to state that any relationship that is found does not necessarily imply the direction of causation. It might also be that firms are good environmental citizens because they are environmentally strong.

Kreander et al. (2000) investigated the performance of 40 ethical funds from seven European countries (UK, Sweden, Germany, Netherlands, Norway, Switzerland, Belgium) and compared it to the performance of conventional funds. There was no significant difference between the investment returns of the two different kinds of funds.

One of the problems of this kind of study is the limited availability of data: analyses with too few observations lead to fuzzy results. Some studies do not consider differences in the risks of different portfolios. Furthermore, a potential "survivorship-bias" is not mentioned: that is, the bad economic performance of funds which went out of the market is not considered so that the average performance of the remaining funds is accounted for as too high. Generally, the studies are not state of the art regarding performance measurement.

2.4 Problems of the statistical/econometric tests

There are two major problems with these statistical/econometric tests: the availability of data and the problem of causality.

1. Data on the environmental and sustainability performance of companies are normally not available in a standardized form. That makes econometric analyses quite difficult. If there are data, these data stretch over a few years only, so that time series analyses become a good deal more difficult.
2. The second problem is the interpretation of the results of the studies in terms of causality. Normally, the results can be interpreted as correlations only. Another related problem is the measurement of false correlations: it may be that sustainability performance and economic performance of a company are driven by a third variable which is not measured; in this case, there would be no causal connection between sustainability performance and economic performance.

In principle, there are three hypotheses to explain a positive correlation between environmental/sustainability performance and shareholder value:

- Profitable companies have a higher propensity to invest in environmentally friendly technologies than companies with low profits (or even losses).
- Seeking a better environmental/sustainability performance could lead to a better economic performance.
- Companies with a better environmental performance have a better management in general (so it is general management that equally drives environmental/sustainability performance and economic performance).

So far, none of these theories has been confirmed or falsified in the existing studies. Generally, finding causalities in economic models is difficult; the interpretation of a correlation as a causality depends on the underlying model. So the most important thing is to find stable and statistically significant relationships which can be interpreted as causalities within the framework of an economic model. Furthermore, the problem of false correlations can be neutralized by including additional explaining variables in the regressions. Additionally, one can apply different methods and compare the results.

3. Indirect evidence: Environmental/sustainability funds and the assessments of companies and stakeholders

The evidence presented in this chapter might be called indirect evidence for the connection between sustainability and shareholder value. It is based upon interviews carried out within the framework of the above-mentioned research project. In this project the existing environmental and sustainability funds in Germany were asked about the criteria they use for evaluating companies. Furthermore, they were asked about their assessment on the connection between these criteria and the shareholder value of companies.

Why can the results of these examinations be considered as evidence for the connection between sustainability and shareholder value? The reason is as follows: Most of the existing funds which evaluate companies according to environmental and social criteria do this because they regard a corporate orientation towards sustainability as an important competitive advantage that leads to an increase of corporate profits and therefore to a higher shareholder value. This, in turn, improves the performance of funds that choose companies with a positive environmental/sustainability performance for their portfolios. So the assessments of fund managers can give an important clue for the factors of environmental/sustainability performance which are considered as important.

But first, we have to distinguish different approaches towards ethical investment. Basically, one can follow an active approach and a passive approach. An active approach means to (try to) influence the business of companies one owns shares of. Such efforts include dialoging with companies on issues of concern, and submitting and voting proxy resolutions. Socially responsible proxy resolutions are generally aimed at influencing corporate behaviour toward a more responsible level of corporate citizenship, steering management toward action that enhances the well-being of all the company's stakeholders, and improving financial performance over time. The passive approach consists of including or excluding publicly traded securities from investment portfolios or mutual funds based on social and/or environmental criteria. Generally, social investors seek to own profitable companies that make positive contributions to society. In a supporting approach, "buy lists" include enterprises with outstanding employer-employee relations, excellent environmental practices, products that are safe and useful, and respect for the human rights around the world. Conversely, in an avoiding approach, they avoid investing in companies whose products and business practices are harmful.

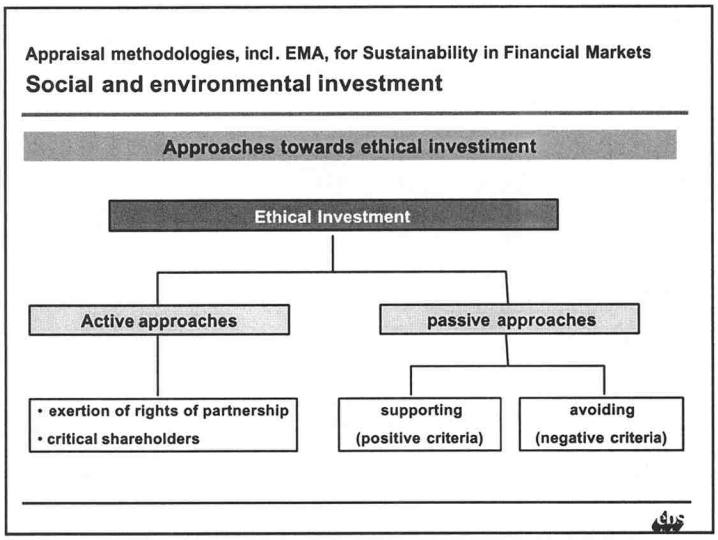


Fig. 1: Approaches towards ethical investment

Environmental/sustainability funds are using primarily a passive approach: they select companies for their portfolios which they regard as sustainable. To do this they evaluate potential candidates for investment and analyse their financial, environmental and social performance. From the companies which "pass" this test, the portfolio is selected.

3.1 Criteria for evaluating environmental and sustainability performance used by sustainability funds

Regarding the criteria these funds use for evaluating the environmental and sustainability performance of companies the process of portfolio selection of these funds has to be taken into account.

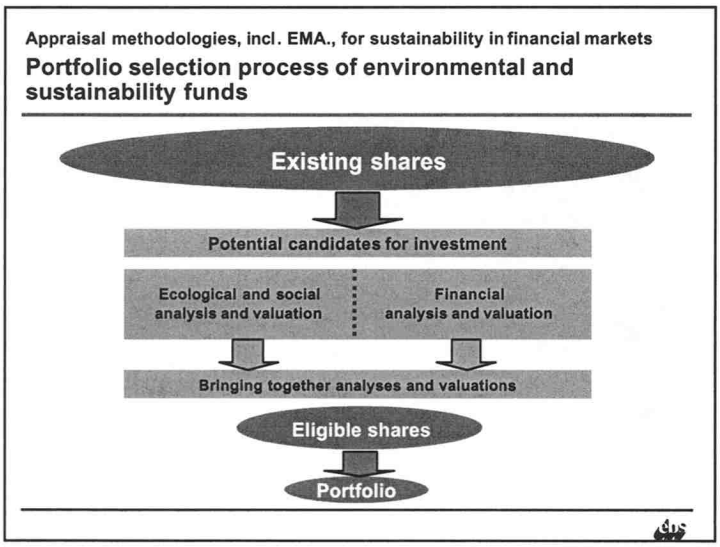


Fig. 2: Portfolio selection process

This process involves several steps: in the first step some sectors and companies are selected which are evaluated more closely. Many funds exclude certain firms or sectors in principle because of activities or practices are considered as unsustainable. The exclusion criterias used most often are the following:

- genetic technology in agriculture;
- gambling;
- production of persistent organic pollutants;
- production of "normal" automobiles;
- nuclear energy;
- child labour;
- patents on genetically modified animals and plants;
- pornography;
- weapons;
- tabacco.

Not every environmental and sustainability funds excludes certain sectors. Some funds invest according to the "best-in-class"-principle. That means they choose firms in every sector which they regard as having a better social and environmental performance in comparison to their competitors in the sector.

The companies which are considered as potential candidates for an investment are then examined more closely. Usually, this examination is carried out by using a questionnaire which must be filled in by the company. This questionnaire is to collect information about the social and environmental performance of companies.

In the above mentioned research project the questionnaires used by the funds and the research agencies were analysed to find out which criteria are used. The criteria used for evaluating the **environmental performance** of companies can be classified under six categories:

- corporate environmental policy
- environmental management
- Site, production, processes
- Products and services
- Ecological requirements for suppliers, processing, and distribution
- environment related social activities

The criteria used for evaluating the **social performance** of companies can also be classified under six categories:

- corporate social policy
- social management

- relations with employees
- customer relations
- suppliers, processing and distribution
- social responsibility of companies

Some of these criteria are evaluated by nearly all existing funds, for example the existence of environmental management systems or the execution of regular audits. Concerning production, reduction targets (regarding greenhouse gas emission, water use, waste and resources) and the use of renewable energy sources are evaluated most commonly. Concerning products, ecological criteria in product development and the environmental impact during the phase of use are evaluated most frequently. Concerning environment related social activities, funds most often ask about cooperation with stakeholders.

Concerning the criteria for social performance the following points are important: Funds regularly ask about the existence of a corporate social policy and social reporting, about social requirements for suppliers or about customer service. Concerning employees, nearly all funds ask companies about education and training, salaries and fringe benefits, equality, prevention of discrimination and about reduction of health and safety risks at the working place.

3.2 The connection between sustainability performance and shareholder value: the assessments of managers of environmental and sustainability funds

How do the managers of environmental/sustainability funds think about the connection between different indictors of the environmental and social performance of companies and the shareholder value of these companies? According to the survey in the above mentioned research project the managers' opinion is as follows (some figures are given in section 3.3 in comparison with the related assessments of companies):

- In general, funds managers regard the relation between indicators of environmental and social performance and the shareholder value as positive. That means they believe that firms with a good environmental and social performance also earn a higher profit (because of this performance).
- Concerning the criteria for environmental performance, funds managers see the strongest positive relationship between shareholder value and the following criteria: environmental information systems, risk management systems; reduction of emissions (products and processes); corporate environmental standards. Other criteria that are regarded as important regarding shareholder value are the execution of regular audits and the environmental training of employees.

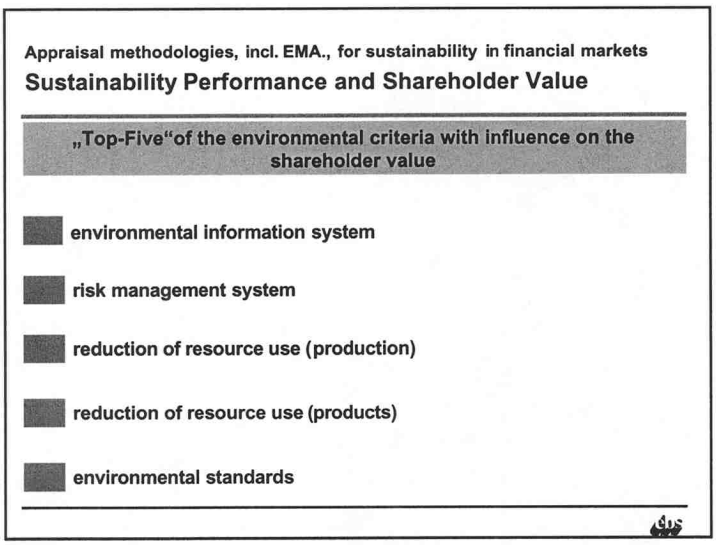


Fig. 3: Environmental criteria and shareholder value

- Concerning the criteria for social performance, funds managers see the strongest positive relationship between shareholder value and the following criteria: commitment of management; socially acceptable working conditions; salaries and fringe benefits; relations with stakeholders; training and education. Furthermore, customer service, regular survey of customer satisfaction, and product safety/consumer protection are also regarded as important.

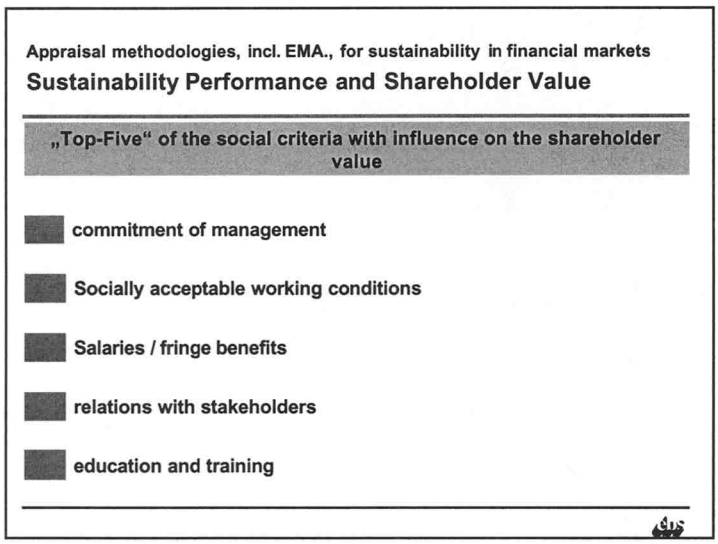


Fig. 4: Social criteria and shareholder value

- Both within the criteria for environmental performance and the criteria for social performance funds managers believe that qualitative and management related criteria have a stronger impact on the shareholder value than quantitative criteria. In this respect, especially the corporate policy and the management system are regarded as very important. A reason for this assessment might be that a comprehensive management system and an integrated corporate social and environmental policy build the foundation for socially and

environmentally acceptable business, whereas single quantitative indicators are only a (perhaps small) part of the whole system.

- In general, funds managers see a stronger (positive) relationship between environmental performance and shareholder value than between social performance and shareholder value. This can have several reasons:
  - The managers think that environmental performance has indeed stronger impact on shareholder value than social performance.
  - The funds have more experience with the connection between environmental performance and shareholder value.
  - Criteria for social performance are relatively new, while criteria for environmental performance are established. During the past years, quite a few new indicators for social performance have been developed so that funds might be uncertain about their relation to shareholder value and are therefore more careful in doing respective assessments.

3.3 The connection between sustainability performance and shareholder value: the assessments of companies

Besides the environmental and sustainability funds which select their portfolios according to criteria for social and environmental performance companies and stakeholders were also asked about their assessment of sustainability funds and about the connection between the environmental/sustainability performance of companies and their shareholder value.

Companies, especially when listed on the stock market, have several roles on the market for sustainable investment: on the one hand they are analysed by the funds which (possibly) choose the companies' stocks for their portfolios; on the other hand the companies are the most important source of information for the funds. Furthermore, the companies themselves might become investors if corporate pension funds are obliged to take into account social and environmental criteria when making their own portfolio decisions. In the research project, interviews were carried out with 17 managers coming from companies in six different sectors: automotive industry, financial services, chemical industry, retail, pharmaceuticals, telecommunication.

All in all, the companies interviewed invest a considerable amount of time and man-power in answering the questionnaires of funds and rating agencies. There are five reasons given for this effort:

- companies hope to gain a better reputation and a better public image if their rating is positive and if they are included in a environmental/sustainability fund. Several companies use their rating and their inclusion in such a fund for their public relation efforts.

General Motors:

GM's relationship with its stakeholders - recognizing their needs and working together to reach mutual goals - as well as leveraging current and future technologies, are crucial to GM's business success. GM recognizes that only if economic, environmental, and social goals and values are considered and balanced within its organization will it be able to reach its vision.

- Companies often think that inclusion in an environmental/sustainability fund has a positive influence on the share price and the value of the company.
- Thirdly, companies see advantages in recruiting staff: Qualified employees, so the argument goes, care for the environmental and social performance of the companies they work for. If companies have got a positive rating, they become more attractive and can recruit their staff more easily.
- The enquiries by the research agencies and the funds, so the companies say, increases the acceptance and the sensitivity for environmental and sustainability aspects within corporations.
- Finally, companies assume that taking part in the enquiries gives them access to a new circle of investors.

All in all, the companies are convinced that there is a connection between environmental/sustainability performance of companies and their shareholder value.

They assume that this is a long-term connection. But the companies differ in their assessment whether the rating agencies and funds include the factors which have, according to the companies, an influence on the shareholder value. Some companies agree to this, others think that the funds do not ask for the factors which are relevant for shareholder value. But the companies agree that the financial market can be an effective lever for promoting sustainable development.

The fourteen companies participating in the case studies of the research project also answered a questionnaire containing the criteria used by environmental and sustainability funds for evaluating the sustainability performance of companies. Regarding these criteria, the companies were asked the following questions:

- Which level have the companies reached in the various categories and criteria? The companies could state that level on a scale ranging between 0% and 100%. A value of (near) 0% means that the company is just beginning to take measures, a value of (near) 100% means the company has nearly exhausted its possibilities.
- How do the companies assess the importance of the various criteria for sustainable development? The companies could state whether they regard the criteria as of low importance (=1), of middle importance (=2) or of high importance (=3).
- Which potential influence on the shareholder value does a further intensification of the measures have? The companies should assume a further improvement of their performance or an increase in effort towards 100%. They could state the impact on the shareholder value with a five-stage scale, ranging from "very negative" (–2) via "neutral" (0) to "very positive" (+2).

As only 14 companies have answered this questionnaire, this survey can in no way regarded as anything near statistically representative. But it can give some hints for formulating hypotheses concerning the connection between sustainability and shareholder value that have to be further analysed and tested. The 14 companies are taken from the following sectors:

- 5 companies from the financial services industry (banking and insurance);
- 3 automotive companies;
- 3 pharmaceutical companies;

- 2 chemical companies;
- 1 company from the telecommunication industry.

The questionnaires of the financial companies and the industrial companies were evaluated separately, as these questionnaires were slightly different, especially concerning the criteria within the category of "products and services".

Regarding the state of environmental performance in the industry and in the financial sector, respectively, it stands out that industry ascribes to itself a higher level in every category than the financial sector (fig. 5). The reason might be that this topic has already been discussed in industry for a longer time than in the financial sector.

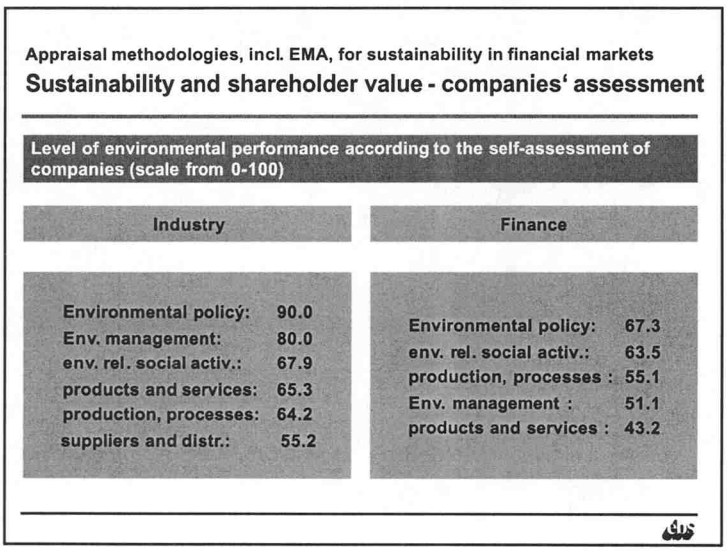


Fig. 5: Level of environmental performance

Regarding the level of the social dimension of sustainability the picture is similar: companies from industry ascribe to themselves a higher level than financial companies. This is different only within the category of social activities (contact with stakeholders, sponsorship etc.).

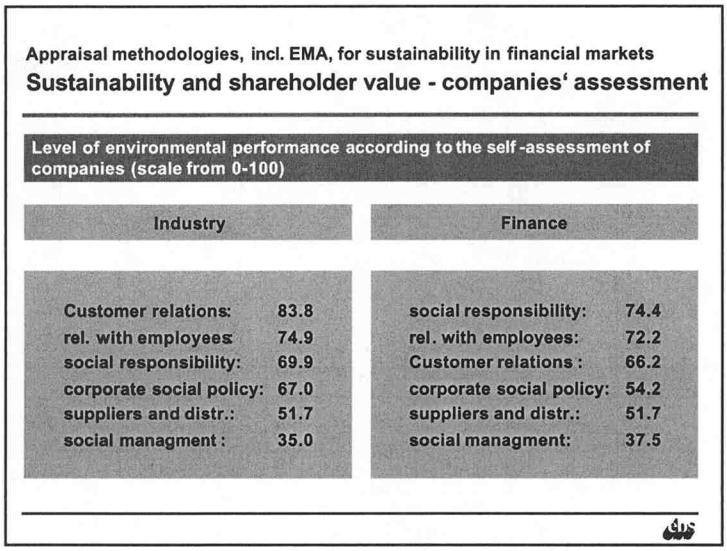
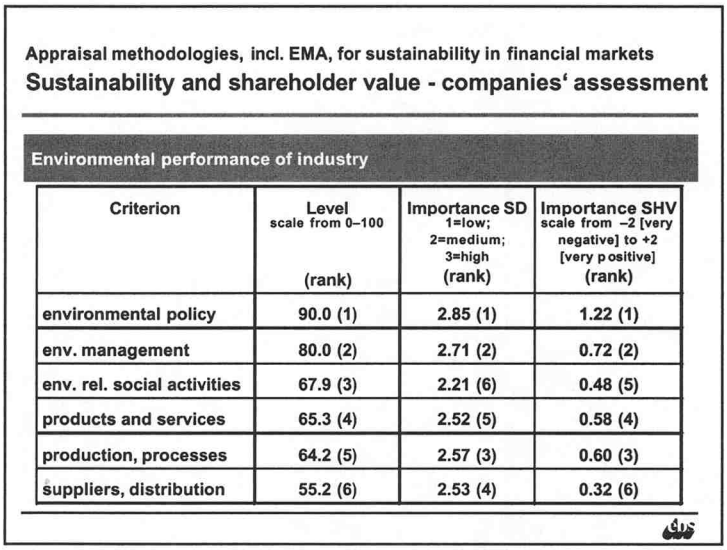


Fig. 6: Level of social performance

In the following paragraphs, the companies' assessments concerning the level of measures as well as their importance for sustainable development and shareholder value are contrasted.

In the figures to come, the first column lists the several categories. The second column contains the level companies have reached together with the rank in brackets. The third column contains the assessment of the importance of these measures for sustainable development: a value of 1 means a low importance, a value of 2 medium importance, a value of 3 high importance; additionally, the rank is given in brackets again. The fourth column contains the assessment of the impact of these measures/categories for shareholder value: a value of –2 means a very negative impact, a value of 0 means no impact, a value of +2 means a very positive impact.

Regarding the environmental performance of industry, there is a big gap between the assessment of "environmental policy" on the one hand and "production and products" on the other hand. Companies ascribe to themselves quite high a level in environmental policy; they regard it also as relatively important for sustainable development and as having a relatively big impact on the shareholder value. The level of measures concerning products and processes is lower, and these measures are also regarded as less important for sustainable development (but only narrowly so). The relative gap in the assessment of the importance of these measures for shareholder value is especially interesting. This is only more drastic in the category "suppliers and distribution": this category has the lowest – but still positive – impact on shareholder value. But within this category, there is a field of potential conflict between sustainability and shareholder value: for the criterion "use of environmentally sound means of transport", companies report a level of 55.6%, the importance of this criterion for sustainable development amounts to 2.67 which is quite high, but the impact on shareholder value is –0.1 which is slightly negative. The reason for this may be that the greater use of environmentally sound means of transport might lead to sacrifices in terms of delivery reliability.



Appraisal methodologies, incl. EMA, for sustainability in financial markets

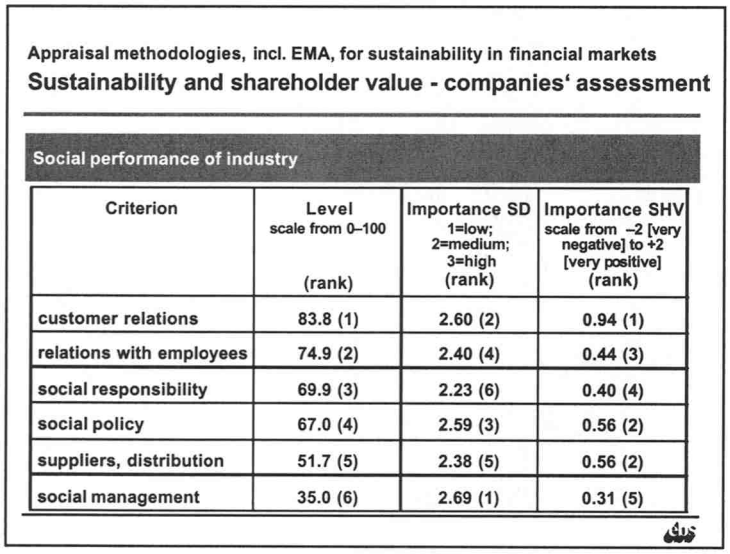
Sustainability and shareholder value - companies' assessment

Environmental performance of industry

Criterion	Level scale from 0–100 (rank)	Importance SD 1=low; 2=medium; 3=high (rank)	Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)
environmental policy	90.0 (1)	2.85 (1)	1.22 (1)
env. management	80.0 (2)	2.71 (2)	0.72 (2)
env. rel. social activities	67.9 (3)	2.21 (6)	0.48 (5)
products and services	65.3 (4)	2.52 (5)	0.58 (4)
production, processes	64.2 (5)	2.57 (3)	0.60 (3)
suppliers, distribution	55.2 (6)	2.53 (4)	0.32 (6)

Fig. 7: Environmental performance of industry

Regarding the social performance of industry, the categories "customer relations" and "relations with employees" are especially interesting. Good customer relations are seen as the most important impact factor for the shareholder value. Compared with this category, "relations with employees" rank rather low: companies ascribe to them only a modestly positive impact on shareholder value (fig. 8). Within this category there is also a field of potential conflict, namely the "strengthening of employees' participation rights": the level is reported to be 78.9%, the importance for sustainable development is 2 (medium), the impact on shareholder value is –0.3.



Appraisal methodologies, incl. EMA, for sustainability in financial markets

Sustainability and shareholder value - companies' assessment

Social performance of industry

Criterion	Level scale from 0–100 (rank)	Importance SD 1=low; 2=medium; 3=high (rank)	Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)
customer relations	83.8 (1)	2.60 (2)	0.94 (1)
relations with employees	74.9 (2)	2.40 (4)	0.44 (3)
social responsibility	69.9 (3)	2.23 (6)	0.40 (4)
social policy	67.0 (4)	2.59 (3)	0.56 (2)
suppliers, distribution	51.7 (5)	2.38 (5)	0.56 (2)
social management	35.0 (6)	2.69 (1)	0.31 (5)

Fig. 8: Social performance of industry

It is interesting that in the category "social policy" companies report a much lower level than in the category "environmental policy"; one of the reasons might be that in Germany a lot of social measures are prescribed by law so that companies have less possibilities to differentiate themselves from their competitors.

Regarding the environmental performance of the financial sector, it stands out that the financial companies – contrary to industry – give the highest weight in terms of impact on the shareholder value to the category "products and services" (environmental risks in granting loans; financing environmentally progressive companies; integration of environmental and sustainability aspects in equity analysis etc.); at the same time this is the category the reported level is the lowest (fig. 9). One can conclude from that that the financial sector will increase its efforts in this category in the future.

Appraisal methodologies, incl. EMA, for sustainability in financial markets

Sustainability and shareholder value - companies' assessment

Environmental performance of the financial sector

Criterion	Level scale from 0–100 (rank)	Importance SD 1=low; 2=medium; 3=high (rank)	Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)
environmental policy	67.3 (1)	2.27 (3)	1.00 (2)
env. rel. social activities	63.5 (2)	2.05 (5)	0.50 (5)
production, processes	55.1 (3)	2.13 (4)	0.63 (4)
env. management	51.1 (4)	2.36 (2)	0.93 (3)
products and services	43.2 (5)	2.50 (1)	1.38 (1)

Fig. 9: Environmental performance of the financial sector

Regarding the social performance of the financial sector, the companies ascribe – like the industrial companies – to customer relations the greatest impact on shareholder value (fig. 10). But the financial companies do not think – contrary to the industrial companies – that good relations with employees are at odds with shareholder value: The impact of this factor on the shareholder value are regarded as more positive than by the industrial companies; furthermore, financial companies do not think that the criteria "employees' participation rights", "workplace conditions" and "security of employment" have a negative impact on shareholder value, as the industrial companies do. The interesting question arises whether there hold different connections in the industry and the financial sector, respectively, and if so, for what reason.

Appraisal methodologies, incl. EMA, for sustainability in financial markets

Sustainability and shareholder value - companies' assessment

Social performance of the financial sector

Criterion	Level scale from 0–100 (rank)	Importance SD 1=low; 2=medium; 3=high (rank)	Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)
social responsibility	74.4 (1)	2.29 (4)	0.90 (3)
relations with employees	72.2 (2)	2.56 (3)	1.16 (2)
customer relations	66.2 (3)	2.57 (2)	1.38 (1)
social policy	54.2 (4)	2.23 (5)	0.85 (4)
suppliers, distribution	51.7 (5)	1.88 (6)	0.38 (5)
social management	37.5 (6)	2.80 (1)	0.90 (3)

Fig. 10: Social performance of the financial sector

If one compares the companies' assessments of the impact of different categories on the shareholder value with related assessments done by environmental and sustainability funds (section 3.2) one can see that the funds assess, in general, this impact more positive than the companies. The question is whether there are reasons – apart from considerations concerning marketing – for this different assessment.

Comparing the impact assessments of the category "products and services", it stands out that the financial sector places a heavy weight on this category – similar to the assessment of the funds (fig. 11). But one has to take into account that the possibility of comparing these assessments is limited: the criteria within the category "products and services" in the questionnaire used for asking the funds were not the same as in the questionnaire for asking the financial companies, but were more similar to the categories in the questionnaire used for asking the industrial companies.

Appraisal methodologies, incl. EMA, for sustainability in financial markets

Sustainability and shareholder value - companies' assessment

Impact assessment of environmental performance on shareholder value

Criterion	importance SHV (industry)	importance SHV (finance)	importance SHV (environmental and sustainability funds)
environmental policy	1.22	1.00	1.6
env. management	0.72	0.93	1.0
production, processes	0.60	0.63	1.0
products and services	0.58	1.38	1.4
env. rel. social activ.	0.48	0.50	0.9
suppliers, distribution	0.32	---	0.7

Fig. 11: Impact assessment of environmental performance on shareholder value

A similar picture can be seen if one compares the impact assessments by companies and funds of the social performance. Again, the financial sector ascribes to some categories, e.g. customer relations, a comparably high or higher impact as the funds (fig. 12).

Appraisal methodologies, incl. EMA, for sustainability in financial markets
Sustainability and shareholder value - companies' assessment

Impact assessment of social performance on shareholder value

Criterion	importance SHV (industry)	importance SHV (finance)	importance SHV (environmental and sustain-ability funds)
customer relations	0.94	1.38	0.82
social policy	0.56	0.85	0.9
suppliers and distr.	0.56	0.38	0.6
rel. with employees	0.44	1.16	0.9
social responsibility	0.40	0.90	0.5
social management	0.31	0.90	0.7

Fig. 12: Impact assessment of social performance

3.4 The connection between sustainability performance and shareholder value: the assessments of stakeholders

Stakeholders, too, are an important source of information concerning the environmental and social performance of companies. Furthermore, members of NGOs are often representatives in investment boards of sustainability funds. In the research project, interviews were carried out with 6 representatives coming from environmental organisations, customer organisations and unions.

The stakeholders that were interviewed during the research project also think that the market for environmental/sustainability oriented investment can be an effective lever for promoting a sustainable development of companies and of the economy as a whole. But the stakeholders are skeptical regarding the supply of respective investment possibilities. Especially, they register a certain arbitrariness in the use of the term "sustainability" by the funds. Therefore, they see their main role in informing investors about the idea of sustainability and about chances and risks of the market, and in protecting investors against dishonest and misleading offers. Regarding the connection between environmental/sustainability performance and shareholder value there is no unified picture among the stakeholders.

4. Conclusions

The above-mentioned results show that there are a lot of indications that a good social and environmental performance of companies does have a positive impact on their shareholder value. But so far, the results of statistical/econometric studies are far from conclusive and

depend highly on the methodology used in the study. The results of event studies are relatively clear-cut: negative events lead to a significant negative reaction of the stock market; positive events might lead to (weakly) positive reaction of the stock market but often not statistically significant. In cross-section regressions and panel studies there is often a positive correlation between environmental performance and shareholder value; the connection between social performance and shareholder value has been rarely tested so far, in the one study that has done so, no connection could be found. In the analyses of environmental and sustainability funds, there could be found cases of better and of worse performance compared to conventional funds or indices.

The managers of environmental and sustainability funds investigate the social and environmental performance of companies with a wide range of criteria. All in all, they are convinced that there is a positive connection between a good sustainability performance of companies and their shareholder value. Here two points are of special interest: Firstly, the managers of sustainability funds think that the connection between environmental performance and shareholder value is stronger than the connection between social performance and shareholder value – perhaps because of the relative novelty of criteria for evaluation social performance. (The companies' managers agree in so far, as they are very uncertain about the reliability and meaningfulness of social criteria and social performance.) Secondly, fund managers place more weight on qualitative criteria than on quantitative criteria, as they assume a stronger impact of qualitative criteria on shareholder value. The reason for this might be that qualitative criteria often concern the whole company or the management, respectively, whereas quantitative criteria refer to single "nuts and bolts" within the company. Changing, for example, management systems might therefore have a stronger impact on the environmental and social performance (and on the shareholder value) than changing single quantitative impacts.

Unilever:

We believe that to succeed requires the highest standards of corporate behaviour towards our employees, consumers and the societies and world in which we live. This is Unilever's road to sustainable, profitable growth for our business and long-term value creation for our shareholders and employees.

The companies that were interviewed agreed that there is a positive connection between sustainability performance and shareholder value. But they were more reserved in assessing the strength of this connection than the funds.

Why is it important for investment bankers and analysts to be aware of possible connections between sustainability performance and shareholder value? Information about social and environmental performance could give analysts important hints for evaluating companies and forecasting their profits. Furthermore, by being informed about the sustainability performance of companies managers of conventional funds could gain access to a new circle of (ethically oriented) investors.

But the studies so far have shown only a general connection between environmental/sustainability performance and shareholder value. But knowing about the specific factors within social and environmental management which have a positive impact on the shareholder value would be far more important for the practical decisions of investors, fund managers and corporate managers. Therefore, it would be important in future studies to test the connection between specific environmental and social factors and their connection to the shareholder value of companies. Furthermore, existing environmental and sustainability

funds should be further investigated to find out the essential elements of such funds (economic characteristics of such funds, fund managers' investment style) and whether such funds deliver a risk-adjusted additional return compared with conventional funds.

Finally, it should be added that it is not essential that further investigations show a positive connection between sustainability performance and shareholder value. For sustainable investment to gain increasing support, it can be sufficient if environmental and sustainability factors do not worsen the economic performance of a company.

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▪ www.sirigroup.com ▪ www.scoris.de ▪ www.imug.de
Company Information
▪ www.global-responsibility.org
Studies in the Field of Socially Responsible Investing
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Berichtsblatt

1. ISBN oder ISSN geplante UN-Publikation	2. Berichtsart Teil des Schlussberichts
3a. Titel des Berichts	
3b. Titel der Publikation Appraisal methodologies, incl. EMA, for Sustainability in Financial Markets	
4a. Autoren des Berichts (Name, Vorname(n))	5. Abschlussdatum des Vorhabens 31.3.2002
	6. Veröffentlichungsdatum Ende 2002
4b. Autoren der Publikation (Name, Vorname(n)) Figge, Frank; Schaltegger, Stefan und Hahn, Tobias (CSM) Klaffke, Kathrin (imug) von Flotow, Paschen; Häßler, Rolf-D. and Schmidt, Johannes (INSTOEC)	7. Form der Publikation UN-Workbook
8. Durchführende Institution(en) (Name, Adresse) Center for Sustainability Management (CSM) e.V. Lehrstuhl für Umweltmanagement Universität Lüneburg 21335 Lüneburg Institut für Ökologie und Unternehmensführung an der ebs (INSTOEC) e.V.* Schloß Reichartshausen 65375 Oestrich-Winkel imug Institut für Markt-Umwelt-Gesellschaft e.V.* an der Universität Hannover Escherstraße 23 30159 Hannover * = Unterauftragnehmer	9. Ber. Nr. Durchführende Institution 10. Förderkennzeichen *) 01RU0039 11a. Seitenzahl Bericht 11b. Seitenzahl Publikation 143 12. Literaturangaben 144 14. Tabellen 21 15. Abbildungen 40
13. Fördernde Institution (Name, Adresse) Bundesministerium für Bildung und Forschung (BMBF) 53170 Bonn	
16. Zusätzliche Angaben	
17. Vorgelegt bei (Titel, Ort, Datum)	

18. Kurzfassung

In der Literatur findet die Frage nach dem Zusammenhang zwischen den Finanzmärkten einerseits und Umwelt- und Nachhaltigkeitsaspekten andererseits zunehmende Beachtung. Aufgabe des vorliegenden Workbooks war es, den Stand der Wissenschaft und Forschung in den Bereichen „Marktpotenzial für nachhaltige Investitionsprodukte", „Analyseinstrumente des nachhaltigen Finanzmanagement" und „Empirischer Zusammenhang zwischen Umwelt- und finanzieller Performance" darzustellen und als Grundlage für eine Trainingseinheit für Finanzmarktakteure zur Berücksichtigung von Nachhaltigkeitsaspekten in Finanzmarktentscheidungen aufzubereiten. Dies Ziel des Workbooks bestand darin, einen der erfolgversprechendsten Pfade zur Förderung des betrieblichen Umweltrechnungswesens – die Finanzmärkte und ihre Akteure – inhaltlich auszuarbeiten und in der Praxis zu testen. Durch eine bessere Integration von Nachhaltigkeitsaspekten in den Finanzmarktentscheidungen soll eine gesteigerte Informationsnachfrage erzeugt werden, die Unternehmen einen Anreiz dafür bieten soll, vermehrt Instrumente des betriebliche Umweltrechnungswesens einzusetzen, um diese Informationsnachfrage adäquat zu bedienen.

Im Ergebnis stellt das Workbook zunächst das Marktpotenzial für nachhaltige Investitionsprodukte dar. Dazu wurden Marktanalysen ausgewertet. Grund dafür ist, dass nur dann mit einem Interesse der Finanzmarktakteure an Nachhaltigkeitsaspekten zu erwarten ist, wenn damit auch Marktchancen verbunden sind. Des weiteren widmet sich das Workbook ausführlich den Analyseinstrumenten des nachhaltigen Finanzmanagement. Diese Instrumente erlauben es den Finanzmarktakteuren, Nachhaltigkeitsaspekte im Hinblick auf den wirtschaftlichen Erfolg ihrer Investments zu analysieren. Diese Instrumente sichern somit auch eine inhaltlich richtige Akzentuierung des Bedarfs an umweltbezogenen Informationen der Finanzmarktakteure. Schließlich stellt das Workbook den Stand der empirischen Forschungen und die verschiedenen Methoden zur Untersuchung des empirischen Zusammenhangs zwischen der Umwelt- und der finanziellen Performance von Unternehmen dar.

Die Anwendungsmöglichkeiten für die erzielten Ergebnisse liegen vor allem in der Durchführung weiterer Trainingsveranstaltungen für Finanzmarktakteure auf der Grundlage des vorliegenden Workbooks.

19. Schlagwörter

Nachhaltigkeit, Finanzmärkte, Sustainable Finance, SRI, ethisch-ökologisches Investment, Marktpotenzial, Umweltperformance

20. Verlag United Nations Division of Economic and Social Affairs (geplant)	21. Preis

*) Auf das Förderkennzeichen des BMBF soll auch in der Veröffentlichung hingewiesen werden.

Document Control Sheet

1. ISBN or ISSN scheduled UN-Publication	2. Type of Report Part of final report
3a. Report Title	
3b. Title of Publication Appraisal methodologies, incl. EMA, for Sustainability in Financial Markets	
4a. Author(s) of the Report (Family Name, First Name(s))	5.End of Project 31.3.2002
	6. Publication Date End of 2002
4b. Author(s) of the Publication (Family Name, First Name(s)) Figge, Frank; Schaltegger, Stefan und Hahn, Tobias (CSM) Klaffke, Kathrin (imug) von Flotow, Paschen; Häßler, Rolf-D. and Schmidt, Johannes (INSTOEC)	7. Form of Publication UN-Workbook
8. Performing Organization(s) (Name, Address) Center for Sustainability Management (CSM) e.V. Lehrstuhl für Umweltmanagement Universität Lüneburg D-21335 Lüneburg Institut für Ökologie und Unternehmensführung an der ebs (INSTOEC) e.V.* Schloß Reichartshausen D-65375 Oestrich-Winkel imug Institut für Markt-Umwelt-Gesellschaft e.V.* an der Universität Hannover Escherstraße 23 D-30159 Hannover * = Subcontractor	9. Originator's Report No.
	10. Reference No. 01RU0039
	11a. No. of Pages Report
	11b. No. of Pages Publication 143
	12. No. of References 144
13. Sponsoring Agency (Name, Address) Bundesministerium für Bildung und Forschung (BMBF) 53170 Bonn	14. No. of Tables 21
	15. No. of Figures 40
16. Supplementary Notes	
17. Presented at (Title, Place, Date)	

18. Abstract

In literature, the link between financial markets and corporate environmental and sustainable performance has been gaining attention throughout the last years. The purpose of this workbook is to reflect the state of the art in the areas of "Market for Sustainable and Socially Responsible Investments", "Tools for Sustainable Finance", and "Empirical evidence concerning the connection between sustainable development and shareholder value" and to prepare a training module for financial analysts on the integration of sustainability issues in financial decision making.

The ultimate goal of this workbook has been to elaborate as well as to evaluate in practice the link via financial markets, as one the most promising and suitable links to promote Environmental Management Accounting in private corporations. It is expected that an enhanced integration of sustainability issues in financial markets will lead to an increased information demand which companies will only be able to meet adequately if they increasingly apply EMA-tools.

As a first result, the workbook shows the market potential for sustainable and socially responsible investments. This is based on a review of market surveys. The reason for showing this potential is that financial markets are only expected to show greater interest in sustainable investment products if there is a market potential attached to these products. In the following, this workbook discusses in detail analytical tools for sustainable finance. These tools allows financial analysts to analyse environmental and social issues with regard to the financial success their investments. Thus, these tools provide the basis for that the appropriate environmental information will be demanded by financial analysts. Finally, the workbook provides an overview of the state of the art concerning the empirical link between corporate environmental and financial performance. There is a high potential for further spreading knowledge and consciousness on sustainability issues in financial markets by conducting more trainings based on the workbook developed in this project.

19.Keywords

Sustainable Development; Financial markets; Sustainable finance; SRI; Ethical investment; Market potential; Environmental performance

20. Publisher United Nations Division of Economic and Social Affairs (scheduled)	21. Price