

DEDICATED TO MAKING A DIFFERENCE

Eco-efficiency



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Learning objectives

- Understand characteristics of eco-efficiency and how it has emerged
- Recognise the business case for eco-efficiency





Structure

- Definition and drivers
- The business case
- Implementing
- Measuring and reporting
- Beyond eco-efficiency





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The challenge

“The growth of world population and production combined with unsustainable consumption patterns places increasingly severe stress on the life-supporting capacities of our planet.”

Agenda 21



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The challenge

- To provide more **value** with less environmental **impact**
- To **de-link** growth of welfare from the use of nature
- To improve both **economic** and **ecological efficiency**

= ECO-EFFICIENCY



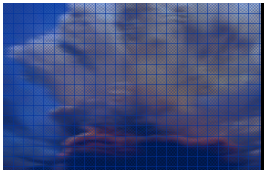
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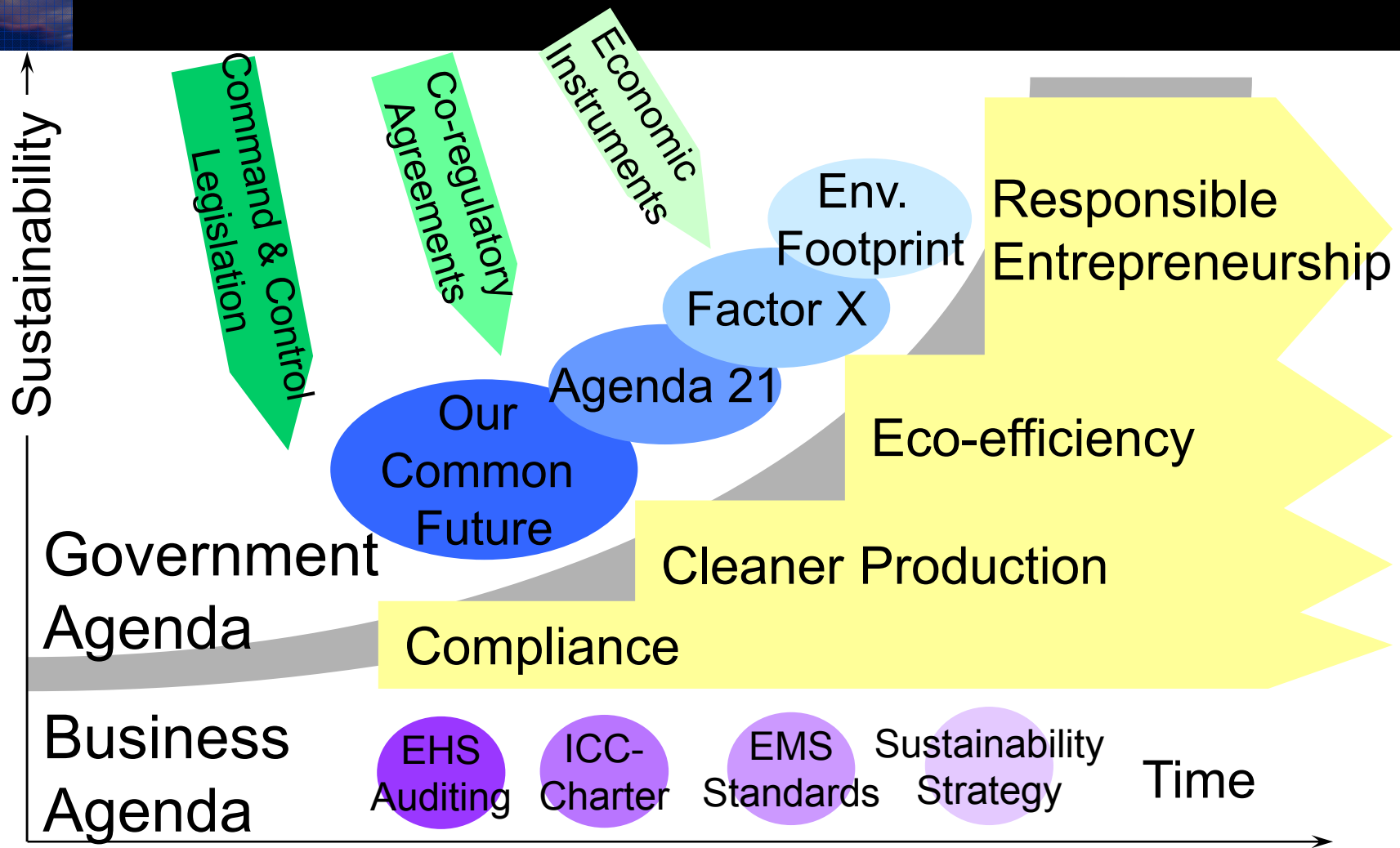
Definition

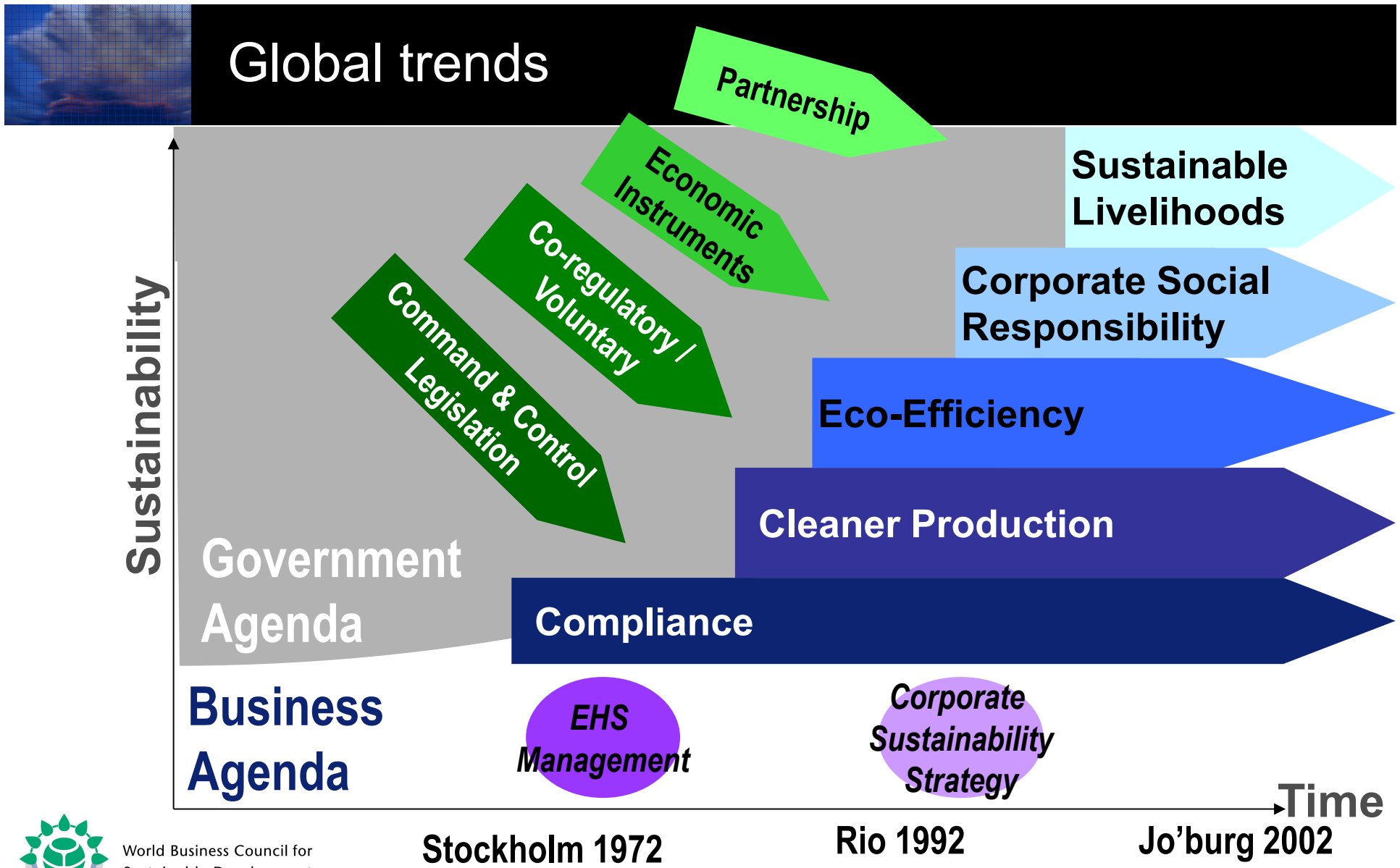
“The delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impact and resource intensity throughout the life cycle, to a level at least in line with the Earth’s estimated carrying capacity.”





Evolution







Why businesses are embracing eco-efficiency

Because it is a management tool which:

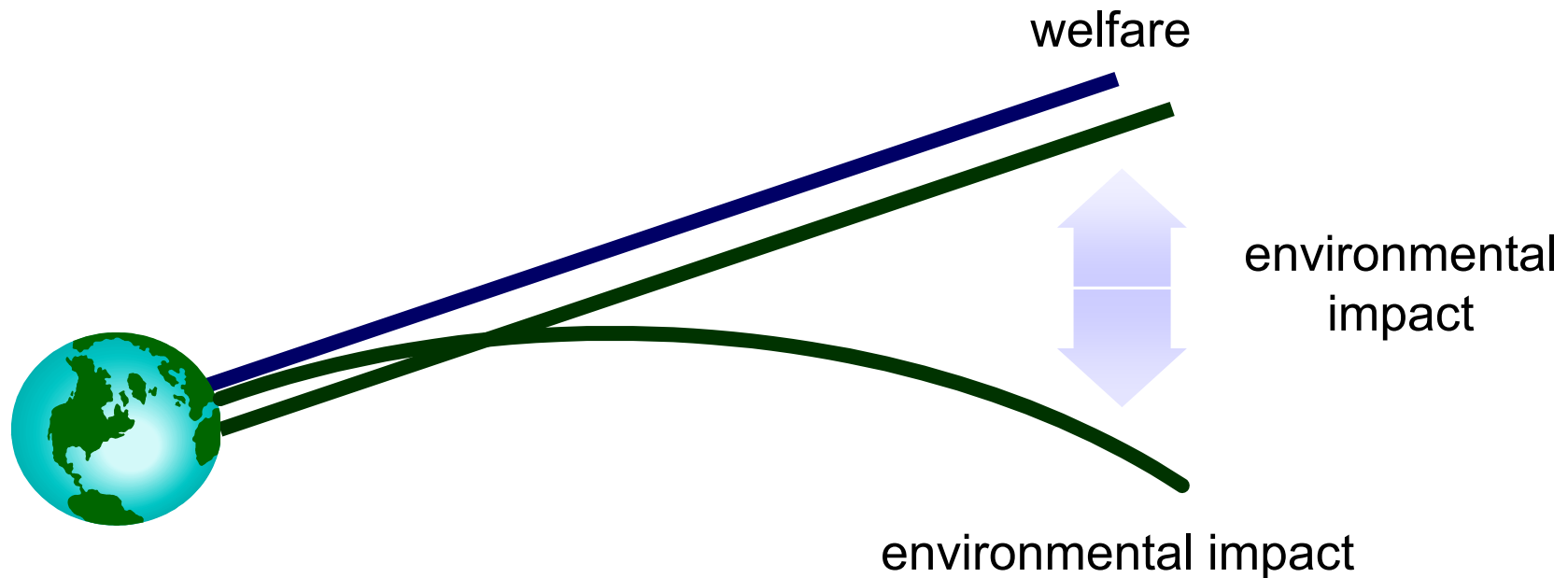
- focuses on opportunities
- improves performance
- makes businesses more competitive

It speaks the language of business leaders.



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Why governments are embracing eco-efficiency

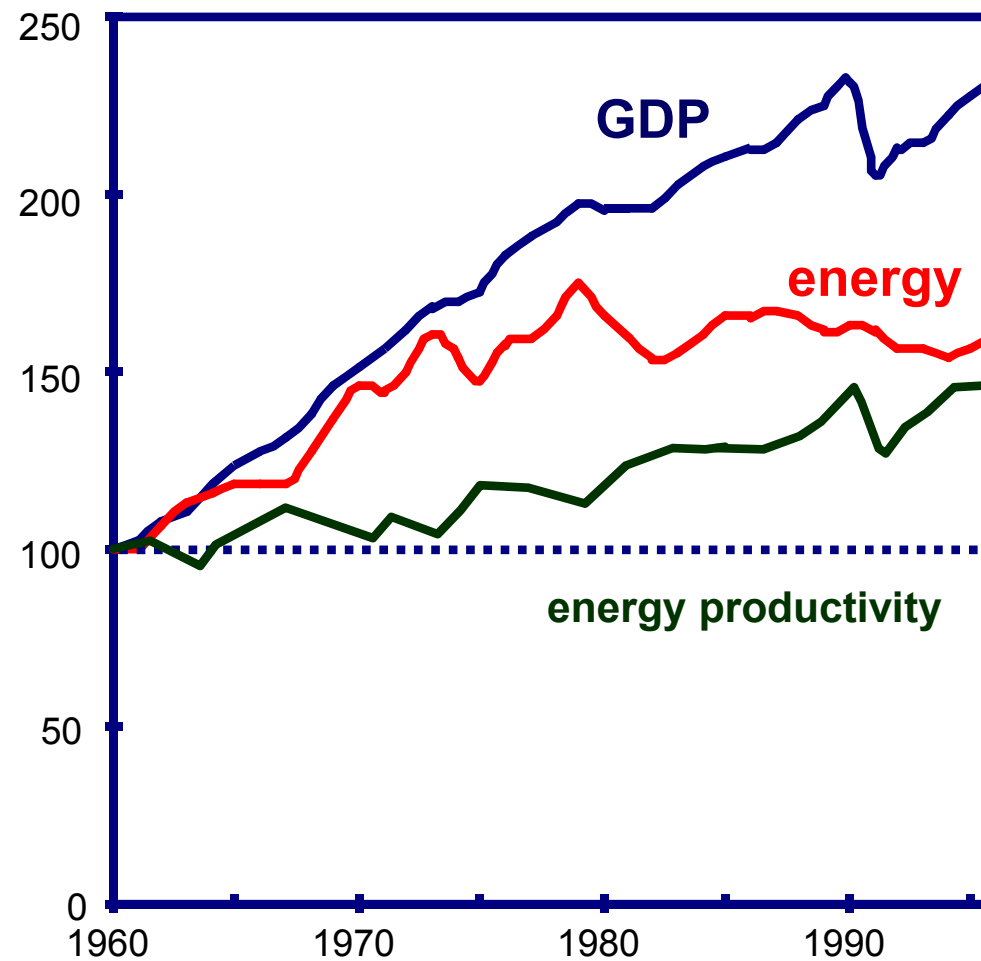


*It de-links **welfare** from use of **nature**.*



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Energy production: Germany



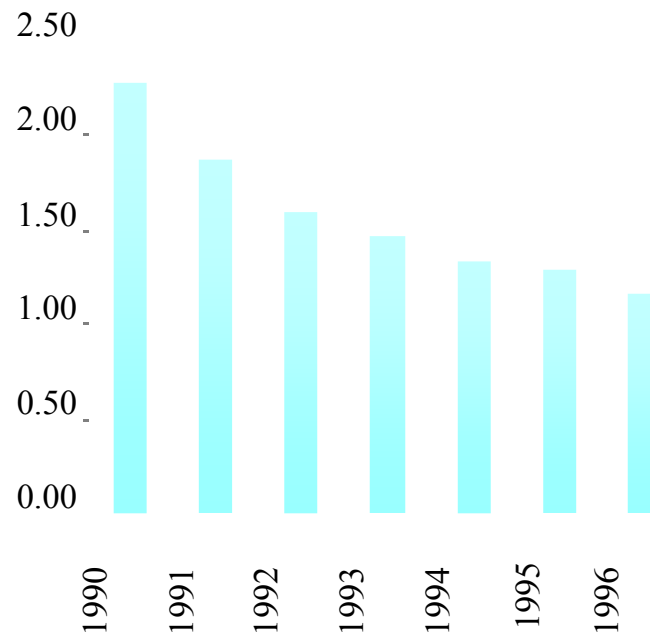
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index base 1960

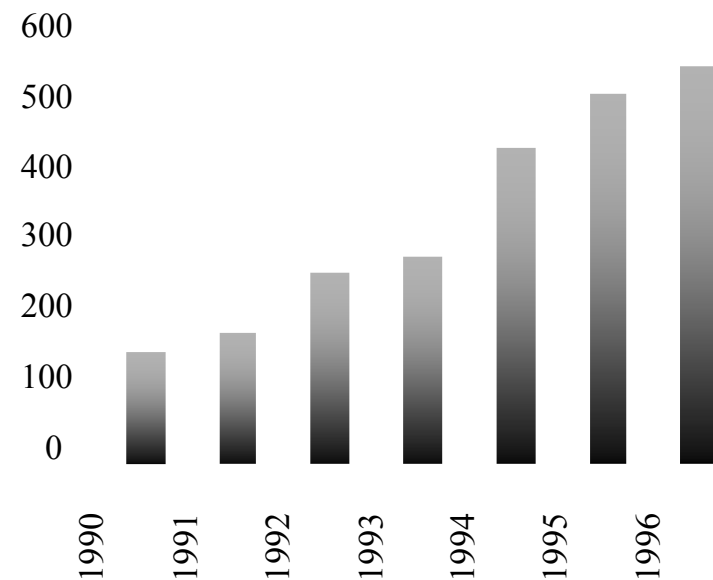
Source - European Environment Agency

In developing countries too...

WATER m³ consumed
per unit of product



\$ of value added per m³
of **water** consumed



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Business case



Example: Optimised processes



CEMEX Eco-efficiency Program (CEP)

- Program formally launched in 1994 to leverage experience and innovation in eco-efficiency
- Economic impact of 2000 performance \$USM
 - Optimised materials & natural resource use 9.2
 - Use of alternative fuels & wastes 4.1
 - Reduction of emissions & wastes 2.2
 - Optimised energy use 19.3
 - Office paper recycling 0.3
 - **Total** **\$35.1M**
- Since 1994 benefits more than \$60M
- CO₂ emissions reduced by about 2.5M tonnes



An abstract graphic element consisting of a blue and white grid pattern, resembling a stylized globe or a digital interface.

Example: Waste recycling

- Cevolution: new carbon fibers business for ConocoPhillips
 - Working to extend life cycle of crude oil production:
 - Using ‘bottom-of-the-barrel’ sludge in production of new fibers
 - Sludge previously considered a waste with handling and disposal costs
 - New fibers stronger, lighter and more durable



Example: New services



- Dow Chemical 'leases' chlorinated solvents in a closed-loop system instead of selling them:
 - Offers safe delivery and take-back of solvents
 - Provides customer assistance in product use



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Example: Networks and partnerships



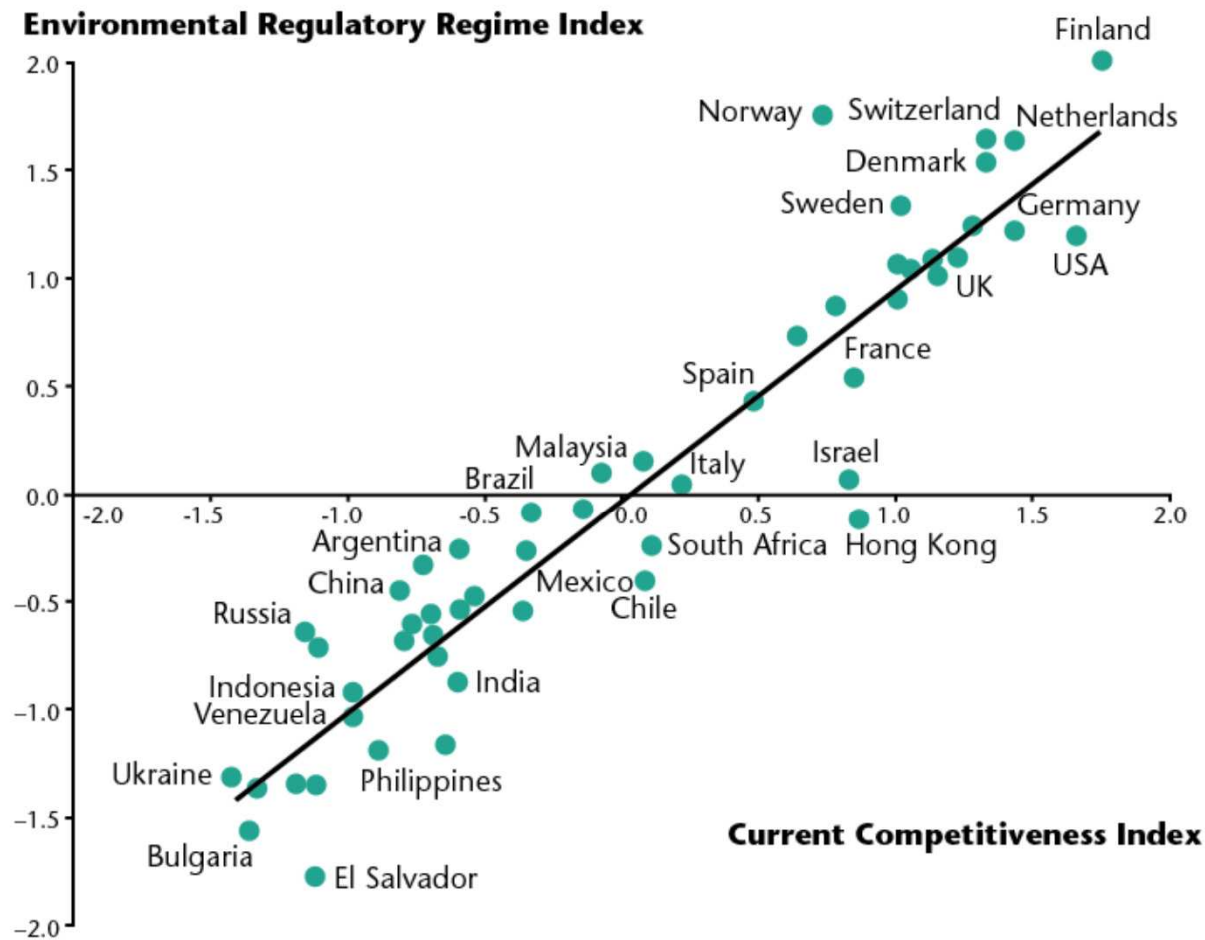
DAIMLERCHRYSLER

- Testing world's first hydrogen economy:
 - The 3 multinationals are teaming with the Icelandic consortium, Vistorka, to form Icelandic New Energy Ltd (INE). The INE group, comprising business, government and academic institutions, is looking to turn Arnason's dream into a reality and facilitate Iceland's transition from a fossil-based economy to a non-fossil-based economy
 - Idea to make the nation a testing ground for hydrogen vehicles and hydrogen refuelling infrastructure and producing hydrogen using electricity from renewable sources
 - Ultimately aims to make nation energy self-sufficient
 - While achieving Kyoto Protocol goals



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Competitive advantage for nations



Source: D.C. Esty and M.E. Porter, "Measuring National Environmental Performance and its Determinants," *The Global Competitiveness Report 2000*, Geneva: World Economic Forum



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Structure

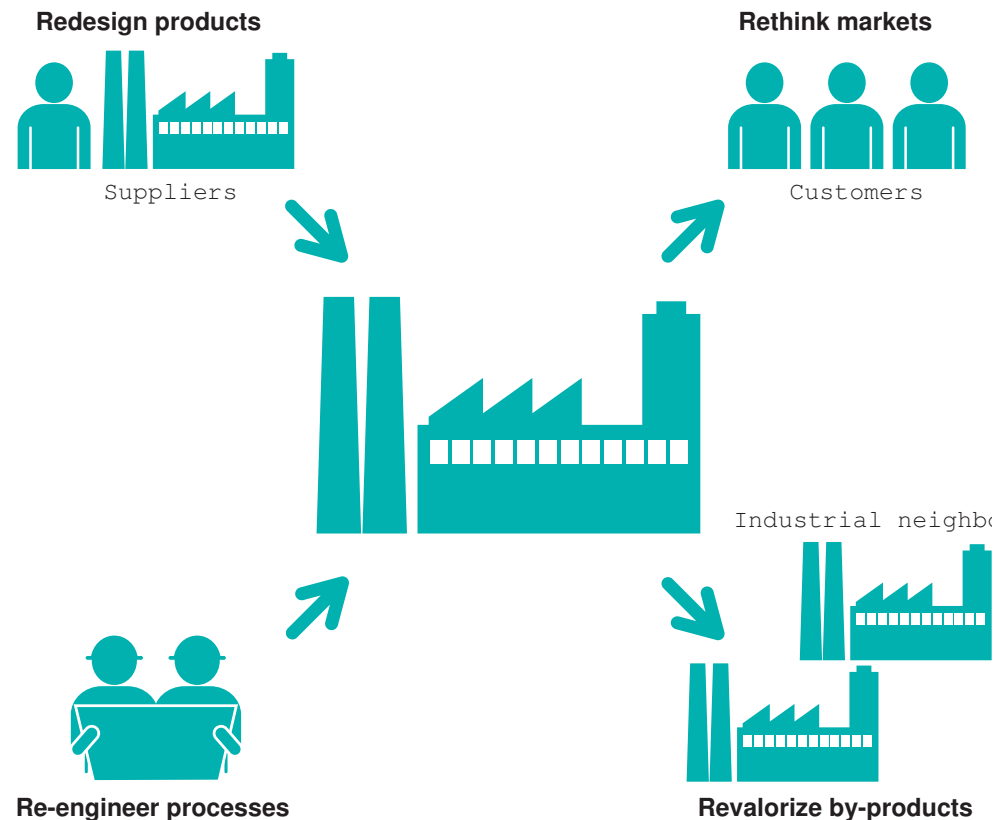
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Explore entire areas within value chain for opportunities

Market Opportunities

- Know the customer
- Sell functional (rather than material) offerings
- Provide users with comprehensive solutions
- Create new businesses with add-on services
- Improve customers' eco-efficiency



Companies can identify business opportunities in eco-efficiency in four different areas.



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Principle approach

Reduces material intensity

Energy intensity is minimized

Dispersion of toxic substances is reduced

Undertakes recycling

Capitalizes on use of renewables

Extends product durability

Service intensity is increased





Getting started in your company

- Understand the full life cycle of your products.
- Establish eco-efficiency as a prominent target and evaluation screen in your innovation process.
- Test your key technologies and markets against changing trends in societal acceptance.
- Set eco-efficiency measurements and targets for your current operations and products.
- Develop a communication concept including dialogues, partnerships with stakeholders, and others.
- Evaluate which business lines would benefit from planned resource-based economic instruments.
- Explore how you could mitigate negative impacts through product innovation.





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Steps to measuring and reporting

**select relevant
supplemental
indicators**

**calculate eco-
efficiency ratio**

**communicate
performance,
set new targets**

collect data

**understand eco-efficiency concept
and core indicators**



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Selecting indicators

- be **relevant and meaningful** with respect to environment, health and welfare
- inform **decision making** to improve the performance of the organization
- recognize the inherent **diversity** of business
- support **benchmarking and monitoring** over time
- be clearly **defined, measurable, transparent and verifiable**
- be understandable and meaningful to identified **stakeholders**
- focus on areas under **direct management control**
- recognize **upstream** and **downstream** aspects of a company's activities



Eco-efficiency indicators framework



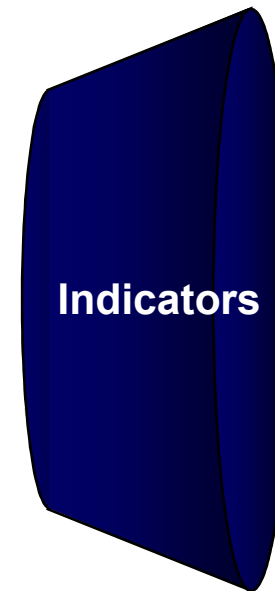
Category

Multiply broad area of environmental influence or business value
e.g. environmental influence in creation of product



Aspects

General information related to category (the "what")
e.g. material consumption, waste output



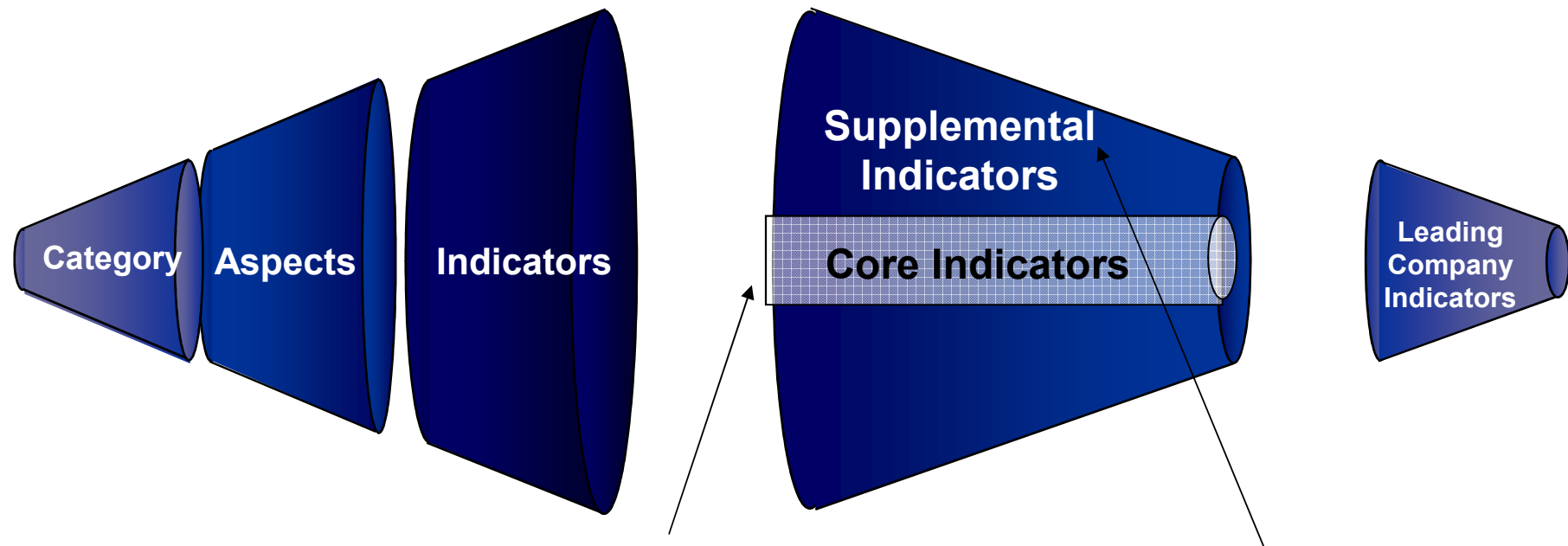
Indicators

Specific measurement of aspect (the "how")
e.g. tonnes material consumed, tonnes CO₂ emitted



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Eco-efficiency indicators - framework



Highly relevant and meaningful on global scale to virtually all businesses
e.g. energy consumption, GHG emissions

Will look different depending on sector, region, etc.
e.g. VOC to air, PHM to surface water



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www.sdportal.org

Calculating the eco-efficiency ratio

- On the micro-level (company):

$$\text{Eco-efficiency} = \frac{\text{product/service value}}{\text{environmental influence}}$$

- On a macro-level (government):

$$\text{Resource productivity} = \frac{\text{more welfare}}{\text{less resource use}}$$



Reporting eco-efficiency

Includes five elements:

- Organization Profile
- Value Profile
- Environmental Profile
- Eco-efficiency Ratios
- Methodological Information

$$EE = \frac{\text{product/service value}}{\text{environmental influence}}$$





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Action points (1)

Government leaders & civil servants	Civil society leaders & consumers	Educators
<ul style="list-style-type: none">• Set macro-economic EE targets• Integrate policy measures to strengthen EE (e.g. eliminating subsidies, internalising externalities, effecting shifts in tax policy)• Work toward international policy and systems for trade, financial transactions, etc. for higher productivity, emissions reductions and improvements for underprivileged	<ul style="list-style-type: none">• Encourage consumer preference for more eco-efficient products and services• Support political measures to create framework conditions which reward EE	<ul style="list-style-type: none">• Include eco-efficiency and sustainability in educational curricula and build into research and development programs



Action points (2)

Financial markets & investors

- Recognize and reward eco-efficiency and sustainability as investment criteria
- Help eco-efficient companies to communicate their progress
- Promote and use assessment tools and sustainability ratings to support markets and widen understanding of eco-efficiency's benefits

Business leaders

- Integrate eco-efficiency into business strategy, including operational, product innovation and marketing strategies
- Report company eco-efficiency and sustainability performance openly to stakeholders
- Support policy measures which reward eco-efficiency
- Foster eco-efficiency in supply chain, including SMEs





Limitations of eco-efficiency

- Lacks social side
 - Meant as a complementary tool within an SD corporate strategy
- Not a rigid framework or single strategy
- Not a certifiable standard
- Not an off-the-shelf solution
 - A flexible method to improve practices compatible with a variety of corporate strategies
 - Needs company-specific interpretation and implementation



Beyond eco-efficiency

1. Innovate



2. Practice eco-efficiency



3. Move from stakeholder dialogues to partnerships for progress



4. Inform consumer choice



5. Improve market framework conditions



6. Establish the worth of Earth



7. Make the market work for everyone



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WBCSD work on eco-efficiency

1992-1997 Eco-efficiency



1995-1997 Environmental Performance & Shareholder Value



1997 Eco-efficiency: the business link to SD



1997 Signals of Change



1996-2002 Sustainability through the Market



1997-2000 Eco-efficiency Metrics & Reporting



1998-2000 European Eco-efficiency Initiative



2000-2002 Sustainable Development Reporting



2001 The Business Case for Sustainable Development



2002 Walking the Talk





Take-away messages

- Eco-efficiency emerged as a logical approach for environmental and economical improvement
- Through examples and experiences presented here, companies continue to recognize the business case for eco-efficiency and capitalize on the opportunities

