Siemens Sustainability
Wie man mit Nachhaltigkeit (sogar noch) erfolgreich(er) sein kann

Markus Strangmüller, Bamberg, Mai 2013
Our world is on a non sustainable route

World Population

- Developing: 5.8 billion in 2011, 8.0 billion in 2050
- Developed: 1.2 billion in 2011, 1.3 billion in 2050

Ressource consumption

- 1.5 Planets

Development of CO₂ (BAU) in Gt CO₂e

- Today: ~50
- 2030: ~60-65
If we continue as today we would need 3 planets by 2050

We need to pursue a new categorical imperative: "Always act in such a way that future generations will have a decent world to live in."

Ecological Footprint according to Mathis Wackernagel, Global Footprint Network
Source: Ministry of Environment, New Zealand
“Efficient” use of resources?
“Efficient” use of resources?

Today we consume 1.5 planets!!

**Quality of life** (Human Development Index)

Source: The Global Footprint Network
The sustainability challenge is to maintain or increase quality of life while staying within the earth's limits.

Developing Countries

Human Development Index
(long and healthy life, knowledge, GDP per capita)

Developed Countries

Sustainable future

Ecological Footprint (global hectares per person/CO2)

1 planet

Source: UN, WBCSD Vision 2050, Sustainability Office
Megatrends are significantly shaping the future of our planet

- **Urbanization**
- **Demographic change**
- **Climate change**
- **Globalization**
Our sustainability program: Initiatives, “walk the talk” and alliances

Initiatives
We turn our approach to sustainability into concrete business opportunities

Walk the talk
We are committed to embedding sustainability throughout our organization and operations

Alliances
To achieve our sustainability targets, we work with all relevant stakeholders

Sustainability – our guiding principle
Siemens values: excellent – innovative - responsible
„Grüne“ Technologien: Bedeutender Markt mit großem Wachstumspotenzial

Marktgröße für umwelt- und ressourcenschonende Technologien (in Billionen EUR)

<table>
<thead>
<tr>
<th>Jahr</th>
<th>Deutschland</th>
<th>Global (exkl. DE)</th>
<th>Marktanteil Deutschland</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2,0</td>
<td>0,3</td>
<td>~15%</td>
</tr>
<tr>
<td>2015</td>
<td>2,6</td>
<td>2,2</td>
<td>~15%</td>
</tr>
<tr>
<td>2025</td>
<td>3,7</td>
<td>0,7</td>
<td>~15%</td>
</tr>
</tbody>
</table>

Durchschnittliche jährliche Wachstumsrate: 5,6%

Größte Wettbewerber

- China
- USA
- Südkorea
- Dänemark

Quelle: BMU/ BDI „Memorandum für eine Green Economy“, Juni 2012
Siemens' Environmental Portfolio covers
~32% of the total greenhouse gas abatement potential in 2030

Marginal greenhouse gas abatement cost curve, 2030

Source: McKinsey; Sustainability Office
Initiatives:
The Environmental Portfolio of Siemens

Environmental Portfolio revenue
(in € billions)

<table>
<thead>
<tr>
<th></th>
<th>2010(^1)</th>
<th>2011(^1)</th>
<th>2012(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>27.7</td>
<td>30.2</td>
<td>33.2</td>
</tr>
</tbody>
</table>

Environmental Portfolio CO\(_2\) abatement
(in million metric tons)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatement</td>
<td>213</td>
<td>257</td>
<td>332</td>
</tr>
</tbody>
</table>

1) Without OSRAM, on a comparable basis
Our Environmental Portfolio helps our customers to improve their efficiency and performance

Customer benefits along the energy conversion chain (examples)

- Highly-efficient combined cycle power plants with an efficiency rating of over 60%
- Offshore wind farms for the optimal wind yields on the open sea
- High-voltage Direct Current (HVDC) transmission to convey electricity over long distances at low loss
- Grid connection for offshore wind farms
- Gas-insulated transformer stations for urban centers
- Environmentally friendly steelmaking processes
- Efficient high-speed trains
- Traffic management systems
- Water and wastewater treatment in the paper industry
- Building modernization
- Energy-saving, cost-effective magnetic resonance systems
Beispiele aus dem Siemens Nachhaltigkeitsbericht 2012

Die Zukunft der Offshore-Windenergie hat begonnen


Saubere Strom für 6.000 Haushalte


75 m

Das längste Rotorblatt in Betrieb

Um eine große Offshore-Windenergieanlage vom Typ SWT-6.0-154 mit den größten Rotorblättern der Welt auszustatten, nutzen Siemens Mitarbeiter die Rotorblätter fast die Spannen eines Airbus A380.

Kompakter Design senkt Kosten


Siemens beschleunigt Prozesse über den gesamten Produktentwicklungs- und Produktionsprozess


26% Reduzierung der Produktionskosten

27% Steigerung der Produktion

Kundennutzen

Wichtiger Kundennutzen PLM-Software liegt keineslei zu, insbesondere in Branchen wie Automobil und Maschinenbau. Indessen kann jeder, der kundenspezifische Lösungen bietet, die Kosten drastisch senken und gleichzeitig die Produktion um 20% zu steigern.

Effiziente Fertigung

Technologien, die den gesamten Fertigungsprozess ab, von der Konzeption über die Qualitätssicherung bis zum Start der Produktion. Wirans-Manager meint, Positionen einnehmen, die vorhandenen Wissen zu sammeln und weiterzuentwickeln.

Verbesserte Prozesse

Mithilfe unserer PLM-Software lassen sich Herstellungsprozesse usw. für diese Produkte notwendigen Prozessen anlernen, von der Entwicklung der Einrichtungen, die unverzüglich optimiert werden können, den Innovativen, langfristigen neuen Anlagen eine erste Anlage aufbauen. Dies ist unser Beitrag zur Prozessoptimierung.
Siemens insights into "how to become sustainable", jointly developed with major world cities

<table>
<thead>
<tr>
<th>Perception studies</th>
<th>Megacity Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Comprehensive analysis based on interviews with over 500 city managers in 25 selected megacities</td>
<td></td>
</tr>
<tr>
<td>▪ Urban infrastructure trends and challenges as well as global best practices</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparative studies</th>
<th>Green City Index (GCI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Index compares cities across 8 dimensions of environmental sustainability: CO₂, energy, buildings, transportation, waste &amp; land use, water, air, governance</td>
<td></td>
</tr>
<tr>
<td>▪ Available for Europe and Latin America, planned for Australia/Pacific</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Implementation studies</th>
<th>Sustainable urban infrastructure series</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ &quot;How to become a sustainable city&quot; with focus on measures for resource efficiency and CO₂ abatement</td>
<td></td>
</tr>
<tr>
<td>▪ Examples: London, Munich, Yekaterinburg, Dublin, Trondheim</td>
<td></td>
</tr>
</tbody>
</table>
Designing innovative products that save energy and reduce costs

**MAGNETOM ESSENZA**
- Low operating costs reduce energy bill up to 50%
- Zero-helium boil-off during normal operation

**SOMATOM Definition AS**
- Energy Savings up to 30%
- Material recycling rate up to 98% (in weight)
- No lead used for counterweights

**SOMATOM Definition Flash**
- Dose reduction to less than 1 mSv for cardiac examination
- Average Energy Savings of 85% during cardiac examinations

**CO₂ Reduction and Energy Savings**
- 20,000 tons/a

**Refurbished Systems**
- 20,000 t CO₂ Savings per year
- Energy savings in the range of 5,400 three-person households or of around 32 hectares of tropical rain forest.

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100%  
-50%  ~50%  
100%  ~30%  ~70%  
Less than 1 mSv  
20,000 tons/a
The four-stage product take-back concept of Refurbished Systems

- Old devices will be taken back, dismantled and recycled in an environmentally-friendly manner by a network of recycling facilities.
- Refurbished devices bearing the "Proven Excellence" quality seal ensure comparable quality to a new system at up to 30% lower costs.
- Our refurbishing process enables the reuse of approximately 90% of materials.

Extending the life of the devices and preserving valuable resources

CO2 savings of 150,000 tons over the last 10 years

*Based on an analysis of 100 systems
Digitales Röntgensystem Multix Select DR

Einsparungen jährlich bei dem Beispielkunden im SR12

Stapel mit 36 m Röntgenbilder

40 Badewannen Entwicklerlösung (6.000l)

80 Badewannen Wasser (12.000l)
Successful implementation of sustainable infrastructure requires innovation along four dimensions:

**Technology/products**
- Reduce costs
- Increase efficiency/performance
- Develop breakthrough technologies

**Business models**
- Unlock financing
- Build new revenue models
- Reach new markets

**Regulatory framework**
- Price externalities
- Enable pioneering implementation
- Support basic R&D

**Public acceptance**
- Build consensus on goals
- Facilitate discussions on options
- Foster behavioral change
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The EEP Book shows examples of 14 projects in different Siemens factories

The EEP-Book

A showcase of building-related energy efficiency projects in manufacturing facilities – a collaboration of Siemens Real Estate and Building Technologies

<table>
<thead>
<tr>
<th>Presented projects in the EEP-Book:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Investments EEP</td>
<td>17,264,032 €</td>
</tr>
<tr>
<td>Total Savings EEP</td>
<td>3,469,330 €/a</td>
</tr>
<tr>
<td>Total CO₂ Savings</td>
<td>13,645 t/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Further energy efficiency measures:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Investments</td>
<td>2,711,947 €</td>
</tr>
<tr>
<td>Total Savings</td>
<td>949,688 €/a</td>
</tr>
<tr>
<td>Total CO₂ Savings</td>
<td>2,956 t/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total of all measures:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Investments</td>
<td>19,975,979 €</td>
</tr>
<tr>
<td>Total Savings</td>
<td>4,419,018 €/a</td>
</tr>
<tr>
<td>Total CO₂ Savings</td>
<td>16,601 t/a</td>
</tr>
</tbody>
</table>
Energy efficiency at suppliers –
Example SCHMOLZ + BICKENBACH

- Supplier: Tool producer
- Analysis of Krefeld company location by team of Siemens experts
- Goal: Identify improvement potential for energy efficiency

Results of the energy analysis:
Energy cost savings potential of 10 – 15 %

Examples of measures:
- Replace dust removal systems
- Purchase 20-ton medium-frequency furnace
- Install photovoltaic system
Employee Engagement is a Key Business Driver

Companies with highly engaged employees perform significantly better than companies with low engagement.

It's a fact:
- Global Gallup study involving 6.5 Mio. employees
- Proven cross-industry relevancy

Source: Gallup Research 2010 (global study in over 170 countries across 70 sub-industries and over 6.5 million employees)
These Sustainability Employee Engagement activities drive Sustainability Awareness and Transformation

- **Sustainability Video Award Contest**
  - Intranet video contest
  - Employees share 1-minute video clips with sustainability aspects of their work

- **Sustainability Interaction Workshop**
  - Objective is to make Sustainability relevant for participants and have them commit to actions
  - Multiplier approach to reach 1,000s of employees within the next years

- **Sustainability @ Sales** launched;
  - Next video in progress: Sustainability @ Supply Chain

- **Sustainability @ Functions Videos**

- **Sustainability @ Functions Videos**

1. **Create awareness and understanding**
   - *Intranet-based*
2. **Foster dialogue and productive conflict**
3. **Drive transformation for Sustainability**

**Sustainable success for Siemens**

- Sustainability Breakfasts
- Dialogues
- Green Teams
- Green days, weeks, months

**Employee engagement drives Sustainability**
Sustainability in the Supply Chain

SUSTAINABILITY IN THE SUPPLY CHAIN

HOW CAN I MAKE SIEMENS MORE SUSTAINABLE?

Code of Conduct for Siemens Suppliers

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Siemens participates in cooperative sustainability projects

"A world in which cities provide a sustainable environment to live, work and play."

Siemens is an active member of the "Urban Infrastructure Initiative" of the WBCSD, which provides a platform for dialog with cities and offers the opportunity

- to become a trusted partner for implementing sustainable urban development
- to design a vision and roadmap for sustainable urban development
- to satisfy the cities' interlinked sustainability challenges by integrating cross-sector solutions
- to be involved in strategic urban development
“Collective Action” is building alliances to jointly fight corruption

Characteristics of “Collective Action”

- Fight corruption in joint agreement with industry peers and other stakeholders
- Foster equal compliance standards through a preventive concept
- Involve independent facilitator / monitor
- Define consequences in case of infringements

Involve independent 3rd party / Legal counsels to prevent anti-trust issues

1) Non-governmental organizations such as Transparency International
Sustainability Report 2012 (SR12)

- 3 focus stories on **Sustainability creates business opportunities**
  - Interview with CSO Barbara Kux
  - 4 customer statements on sustainable Siemens products
  - Efficiency in the development production and use by customers of a Healthcare product in China
- Comprehensive discussion of the **sustainable strategy**
- **Facts and Figures** covering sustainable business strategy, environment, suppliers, employees, innovation, customers, corporate citizenship
- "A+" level by Global Reporting Initiative (GRI)
- **Limited assurance** statement through independent review of entire report by Ernst&Young

Source: CS
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Top position in major sustainability rankings

<table>
<thead>
<tr>
<th>2012</th>
<th>2011/2010</th>
</tr>
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<tbody>
<tr>
<td>Dow Jones Sustainability Index</td>
<td>Carbon Disclosure Project</td>
</tr>
<tr>
<td>1st place (92/100 points): Supersector Leader &quot;Industrial Goods &amp; Services&quot; Thirteenth time in a row included in the DJSI World Index</td>
<td>High score (98/100 points): Fifth time in a row in the Global 500 Carbon Disclosure Leadership Index Highest Performance Band (A/A–)</td>
</tr>
<tr>
<td>IÖW/future Ranking</td>
<td>Interbrand Best Global Brands</td>
</tr>
<tr>
<td>2nd place: Sustainability reports of the 150 largest companies in Germany</td>
<td>8th place: Best Global Green Brands 2012 Ranking</td>
</tr>
<tr>
<td></td>
<td>German Sustainability Award</td>
</tr>
<tr>
<td></td>
<td>1st place: Germany’s Most Sustainable Strategies (Corporation)</td>
</tr>
</tbody>
</table>
Summary

- Sustainability provides many business opportunities, with customers and suppliers
- Sustainability helps to optimize the owner operations
- Sustainability positively influences employee engagement and motivation
- Impact with partners can be even higher
- ACT NOW!