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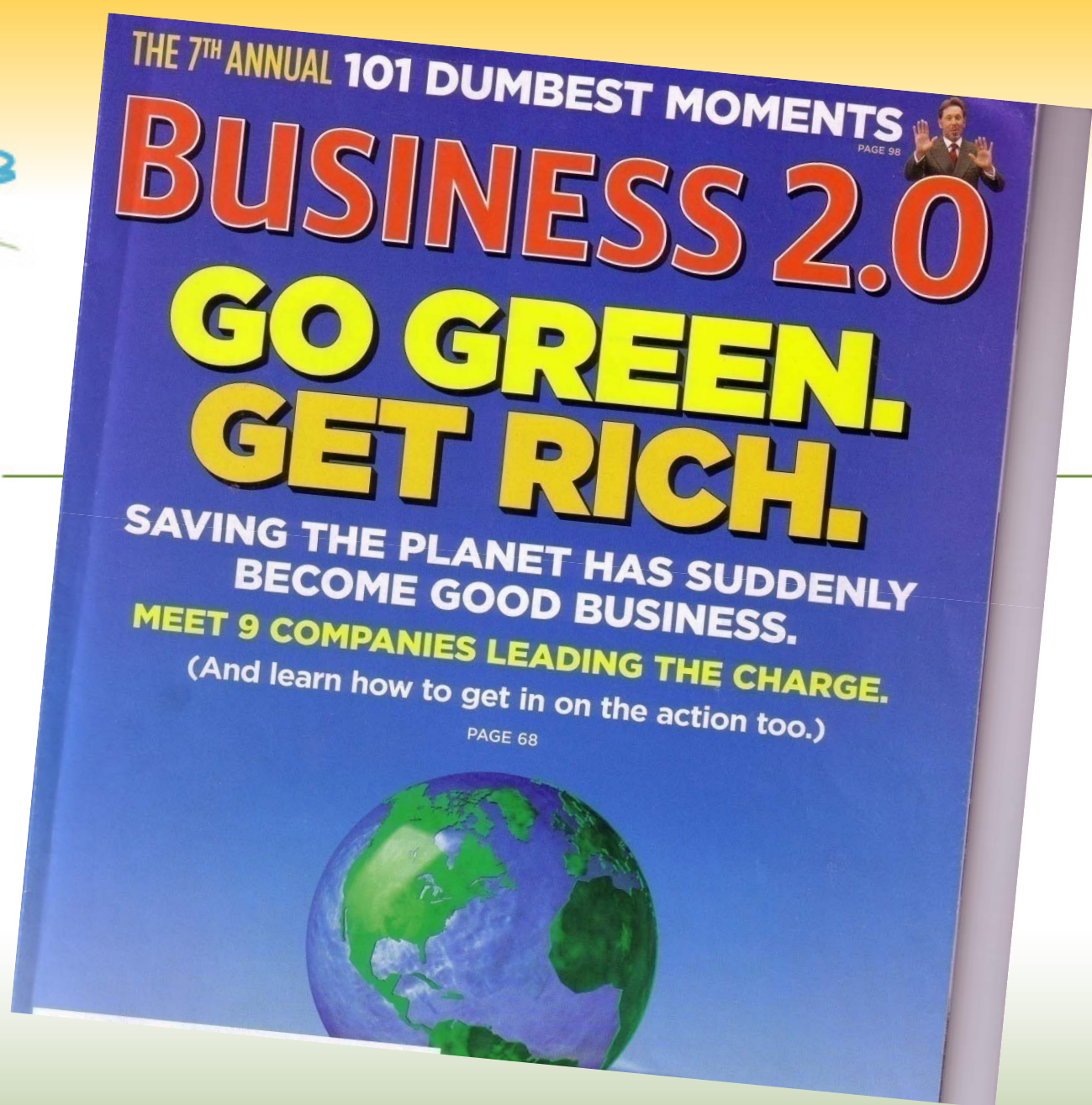
# The Business of Sustainability: *Opportunities for Consultants*

Trudy Heller, Ph.D.  
Executive Education for the Environment

Chemical Consultants Network  
September 9, 2009



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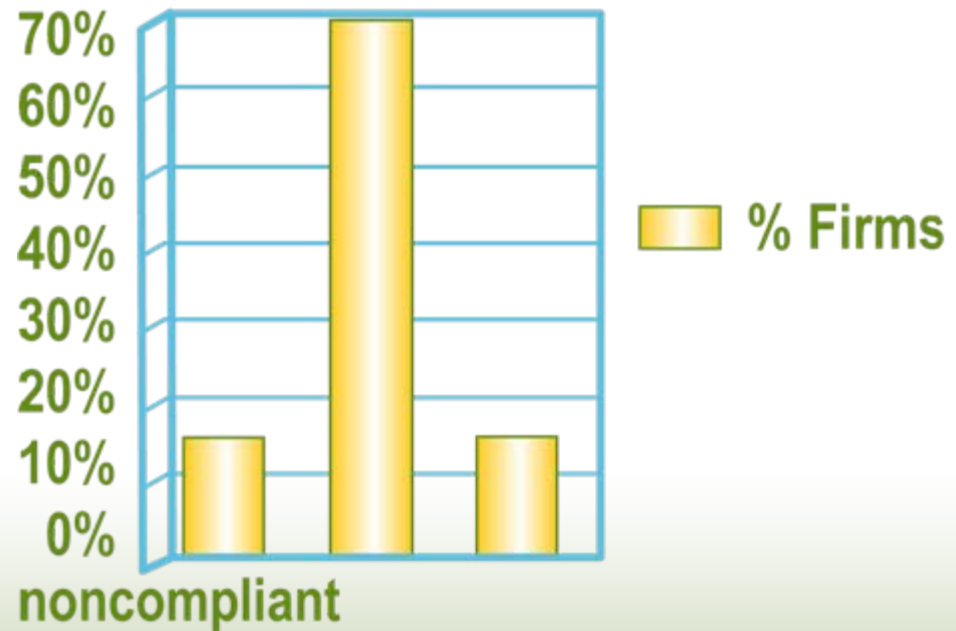




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# 15% Focus Beyond Compliance

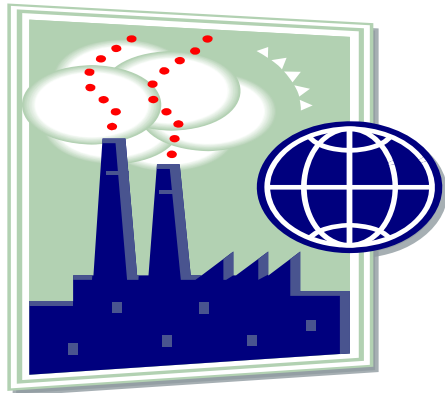
⑩ Jeff Muffat, Manager,  
⑩ Regulatory Affairs, 3M





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# Three Shifts (ABCs) in the Business World Create Opportunity



**A**

Second industrial  
revolution



**B**

Eliminate,  
not reduce,  
waste



**C**

Greener development of  
the bottom of the  
economic pyramid

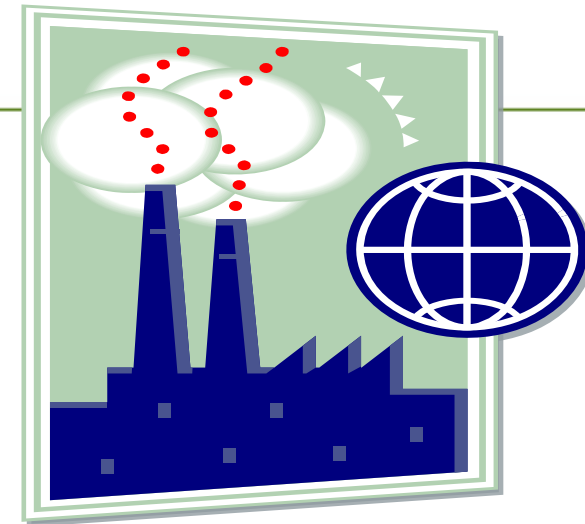


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# A. Second Industrial Revolution

- *Natural Capitalism, Hawken, Lovins & Lovins*

- I. Scarce labor, plentiful natural resources.
- II. Now: plentiful labor, scarce resources.



Fish, or boats and nets?



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# Which solution is more advanced?



Or





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## A. Second Industrial Revolution

▫ *Natural Capitalism, Hawken, Lovins & Lovins*

⑩ Fat, Straight  
⑩ Pipes



Horsepower Requirements  
Cut **90%**



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# Local Businesses



Welcome to EnVerde Solutions







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## A. Dematerialization through Servicizing

-Sandra Rothenberg

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- ...in order to be a truly sustainable society, developed nations must consume less.
- ...companies are often in the best position to help customers reduce consumption – *even of their own products.*



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# Companies help customers use **LESS** product

## B2B Examples

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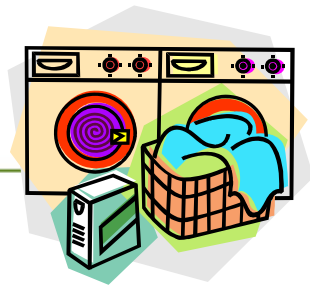
- PPG Industries helps Chrysler *reduce* paint use
- Xerox *reduces* the number of devices through Office Document Assessment
- Gage Products manages & *reduces* cleaning solvents



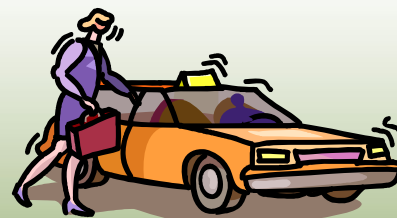
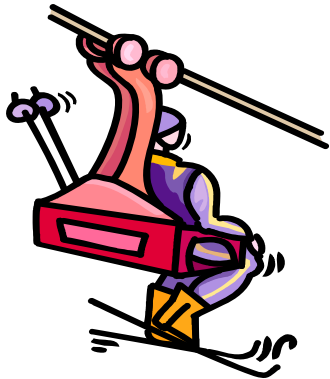
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# Eco Services Consumption without Ownership

B2C



- Fewer, more durable products
- Intense use of products
- Less energy & materials
- New business models





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# A. Second Industrial Revolution

*- Natural Capitalism, Hawken, Lovins & Lovins*

## Opportunities

- Energy efficiency
- Renewable energy
- Product dematerialization
- Functional Business Models/  
Consumption without ownership





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## **B. Eliminate the *Concept* of Waste**





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## **B. Green Chemistry**





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## **B. Eliminate the Concept of Waste**

**Example:  
Rohner Textile  
uses green  
chemistry**





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# Biomimicry: Learning from Lotus Plants How to Clean without Cleaners



One of the most water repellent leaves in the world, that of the Lotus isn't smooth at all...

Now, microscopically rough surface additives have been introduced into a new generation of paint, glass, and fabric finishes,





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# Plant-inspired solar cells

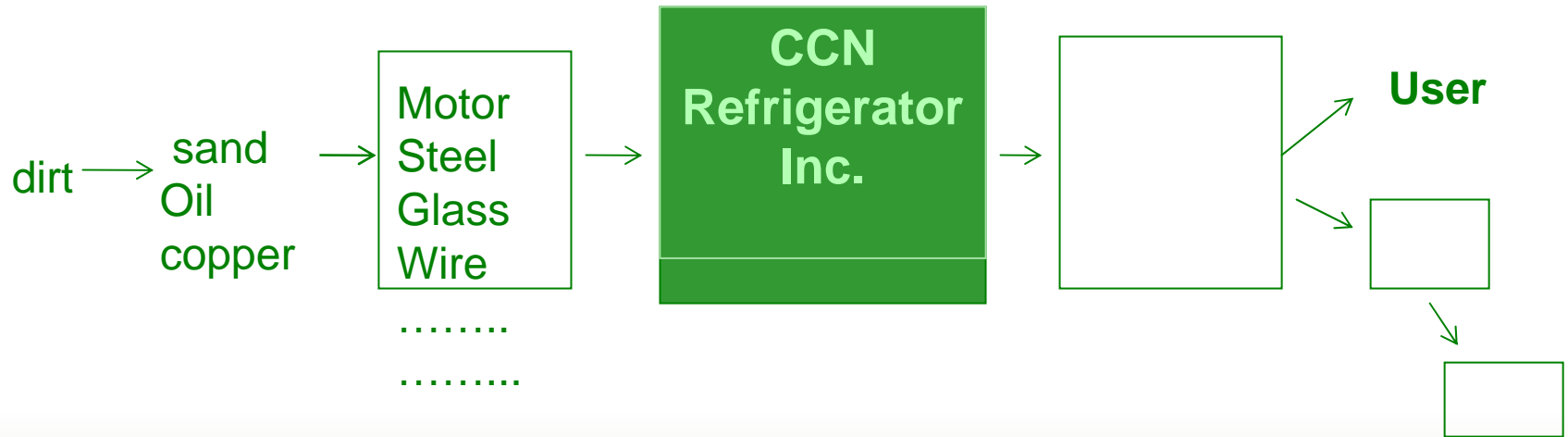


mimic photosynthetic dyes and processes to generate solar energy many times more cheaply than silicon-based photovoltaics, while having the flexibility to be integrated with a building skin.



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## B. Old Production System





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## B. New Production System

Namibia  
Brewery





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## **B. Eliminate the Concept of Waste**

### Opportunities

- Green chemistry
- Biomimicry
- Recycling
- Industrial ecology





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## **C. Greener Development**

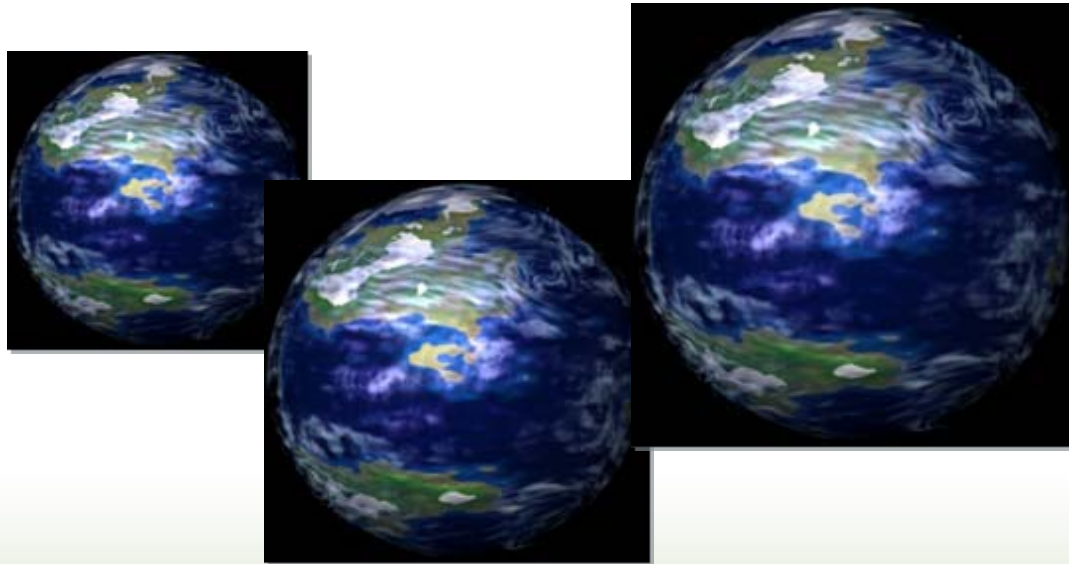




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## **C. Greener Development How Many Planets?**

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## C. Greener Development

### Example: Leapfrogging at Volvo

“History cannot be allowed to repeat itself...”

**“We refuse to sell the old technology of the West to the developing world. ..We are beginning to see demand for skill jumping in the developing world. There is no demand for old system.**

- Lief Johansson, CEO the Volvo Group



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## **C. Indian Companies Build Hydro Power**







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## **C. Greener Development Disruptive Technology Back to the Future**

**Revolutionary new laundry product  
cleans great with only water, saves money,  
halts pollution**



*We bought laundry disks 4 months ago and use them for all our washing. We are an organic farm. Our clothes get really dirty and we are acutely aware that all water from the washing machine goes directly to our land. The disks have consistently worked as well as detergent, sometimes better—but we don't wear white clothes. We would buy the disks again. No worse for our clothes than detergent, and better for the environment. Enjoyed your information online (we used Netscape)  
—Jo Sutton & Scarlet Pollock*



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## **C. Greener Development for Emerging Economies**



### **Opportunities**

- Leapfrog technologies
- Disruptive technologies
- Eco-product innovation
- Back to the future



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## Resources

- ❑ **Biomimicry: Innovation Inspired by Nature**, Janine Benyus, William Morrow & Company, 1997.
- ❑ *Companies Giving Green an Office*, Claudia Deutsch, **New York Times**, July 3, 2007.
- ❑ *Lead Out: Management's Greatest Environmental Resource Might be Right Under its Nose*, Trudy Heller, **Environmental Protection**, May 2006.
- ❑ *Sustainability through Servicing*, Sandra Rothenberg, **MIT Sloan Management Review**, Winter 2007.



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# Thank you

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