

*Next Century Trends,
New Century Enterprises*

WRI's Third Annual Sustainable Enterprise Summit,
October 20-21, 1999



Next Century Trend

Climate disasters

unleashing more severe and frequent human disasters, massive economic losses & ecological destruction;

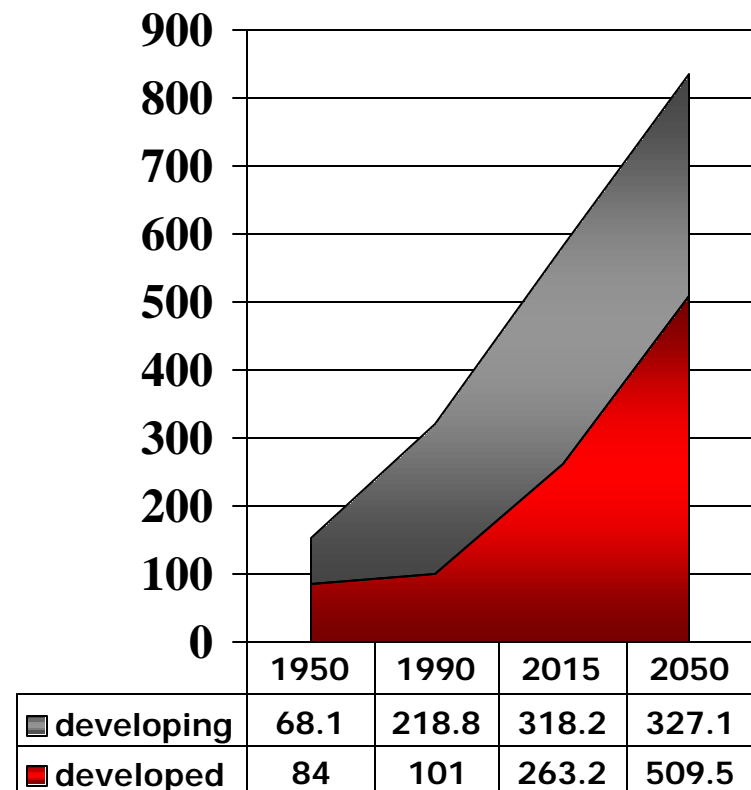




Fueling Growth & emissions

- Primary energy consumption pattern
- new 1000 MW powerplant needed every day;
- new Alaskan pipeline needed every other month.

Exajoules



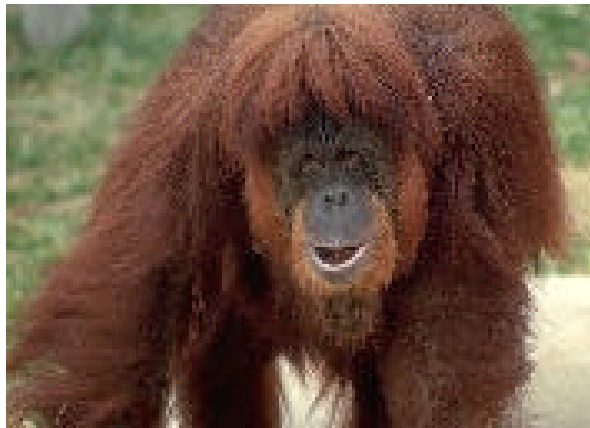
Source: UNEP, The Future of the Global Environment, 1997



Next Century Trend

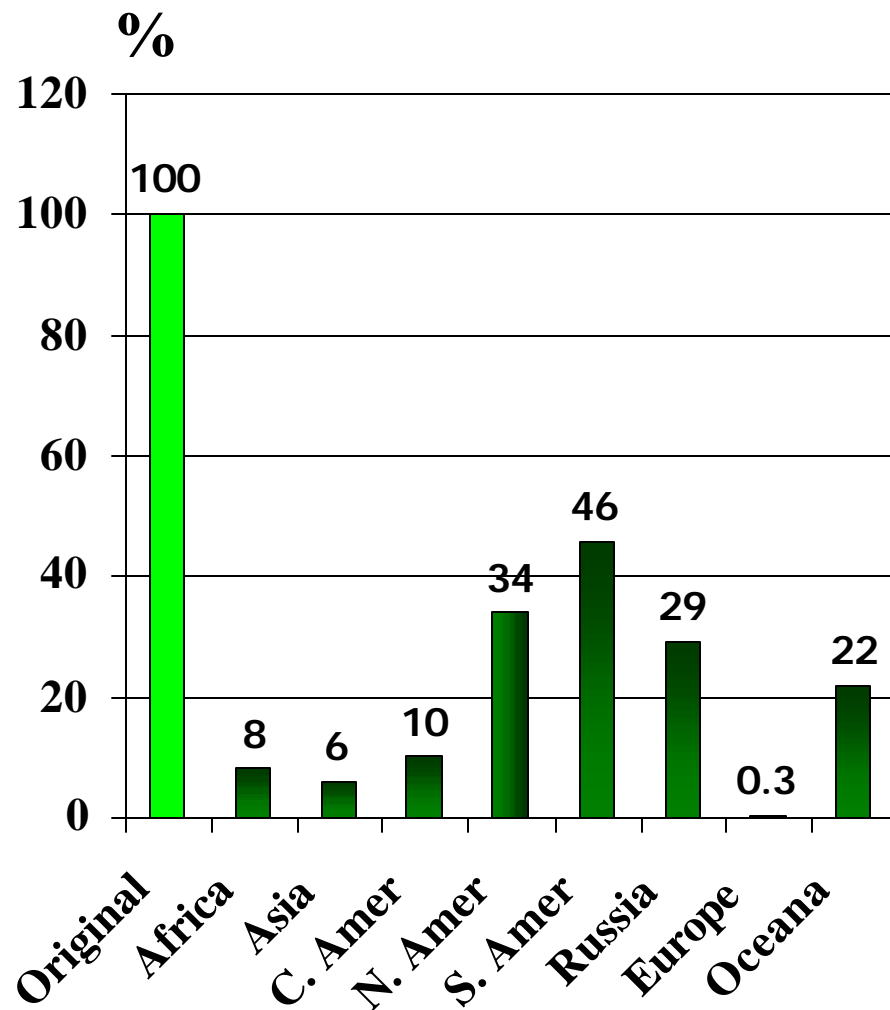
Extinction spasm

1/3 to 2/3 of all species disappear by 2050



Frontier Forest Loss

Remaining
Frontier
Forest as
% of Total
Original
Forest -
80% lost;
half of
remaining
threatened



Source: The Last Frontier Forests, 1997.

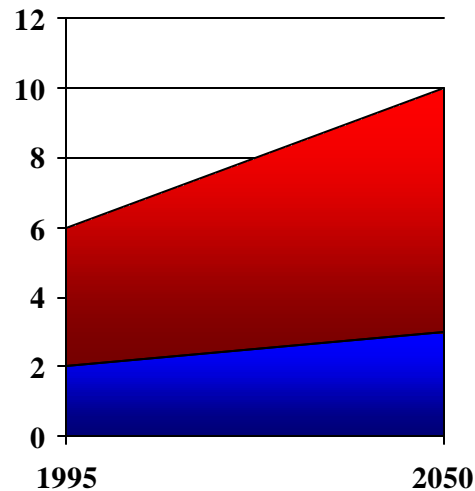


Current and Future Reality

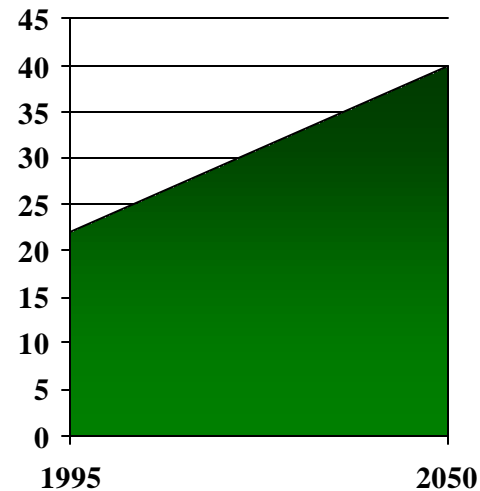
Population Rise 6 to 10 billion

And with this rise in humans are expectations of increases in goods and services.

billions people



trillions \$ GWP

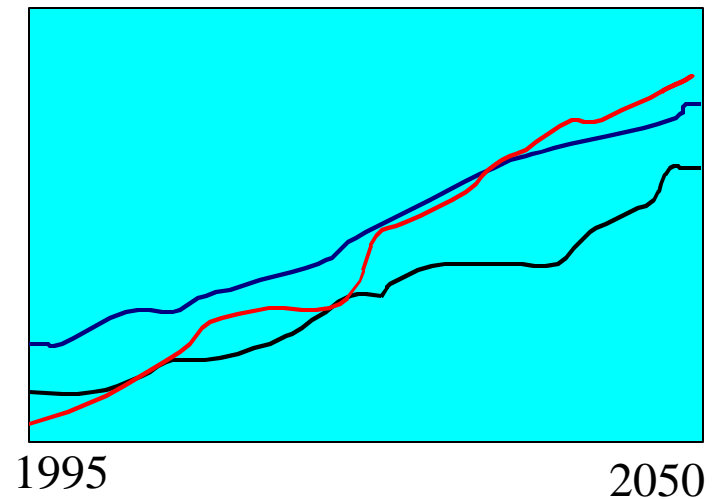




Natural Resource Demands & Impacts

- ▶ Food and feed crops (plus land, water, and petrochemical inputs)
- ▶ livestock
- ▶ fiber crops
- ▶ ocean/aquatic stocks
- ▶ forest products

Annual growth rates



Timberland per capita demand

CHINA



0.1 hectares

U.S.



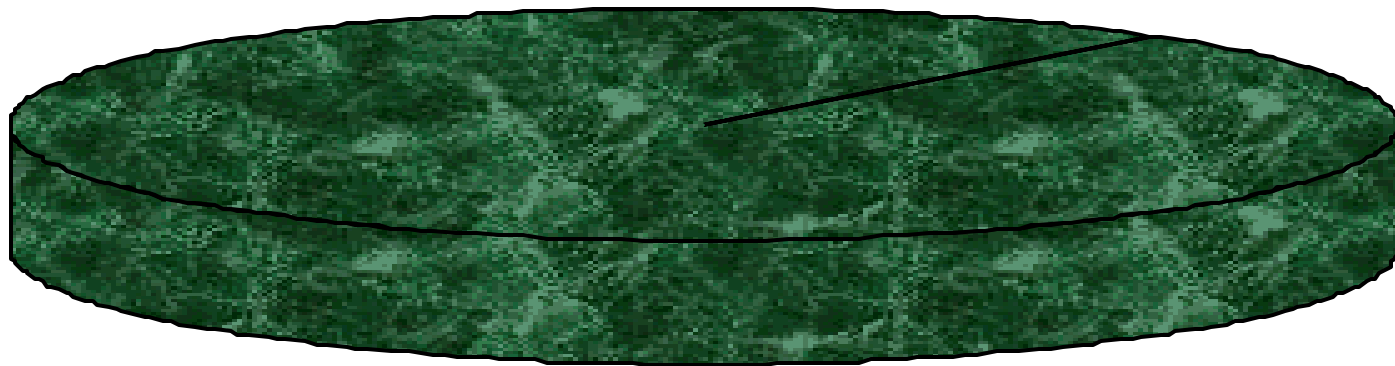
0.7 hectares





World timber land demand following U.S. pattern

Timberland world demand of .7 ha/cap
for 10 billion population



7 billion hectares
Twice the current world's forests
or half the planet's land area



Next Century Trend

Income Gap

more impoverished people than ever

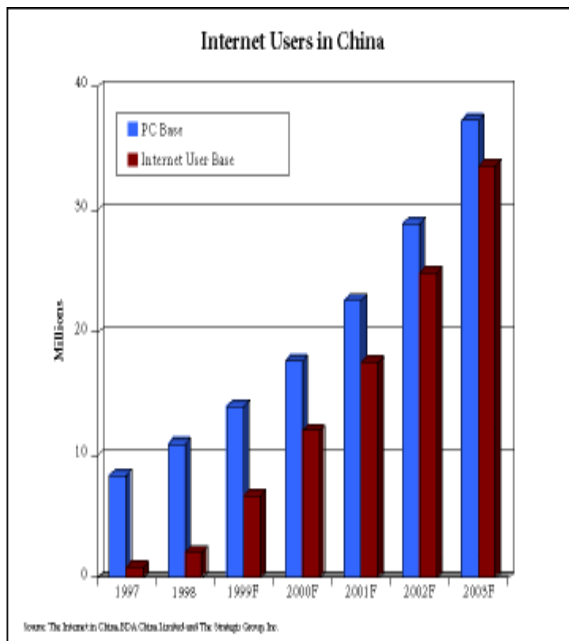




Next Century Trend

Digitized economy

connecting anyone, anywhere, anytime,
accelerating consumption - sustainably or
beyond carrying capacity?





WRI Goals

- ① Stabilize atmospheric GHG concentrations;
- ② Reverse the rapid degradation of ecosystems;
- ③ Promote prosperity while reducing natural resource consumption and waste generation;



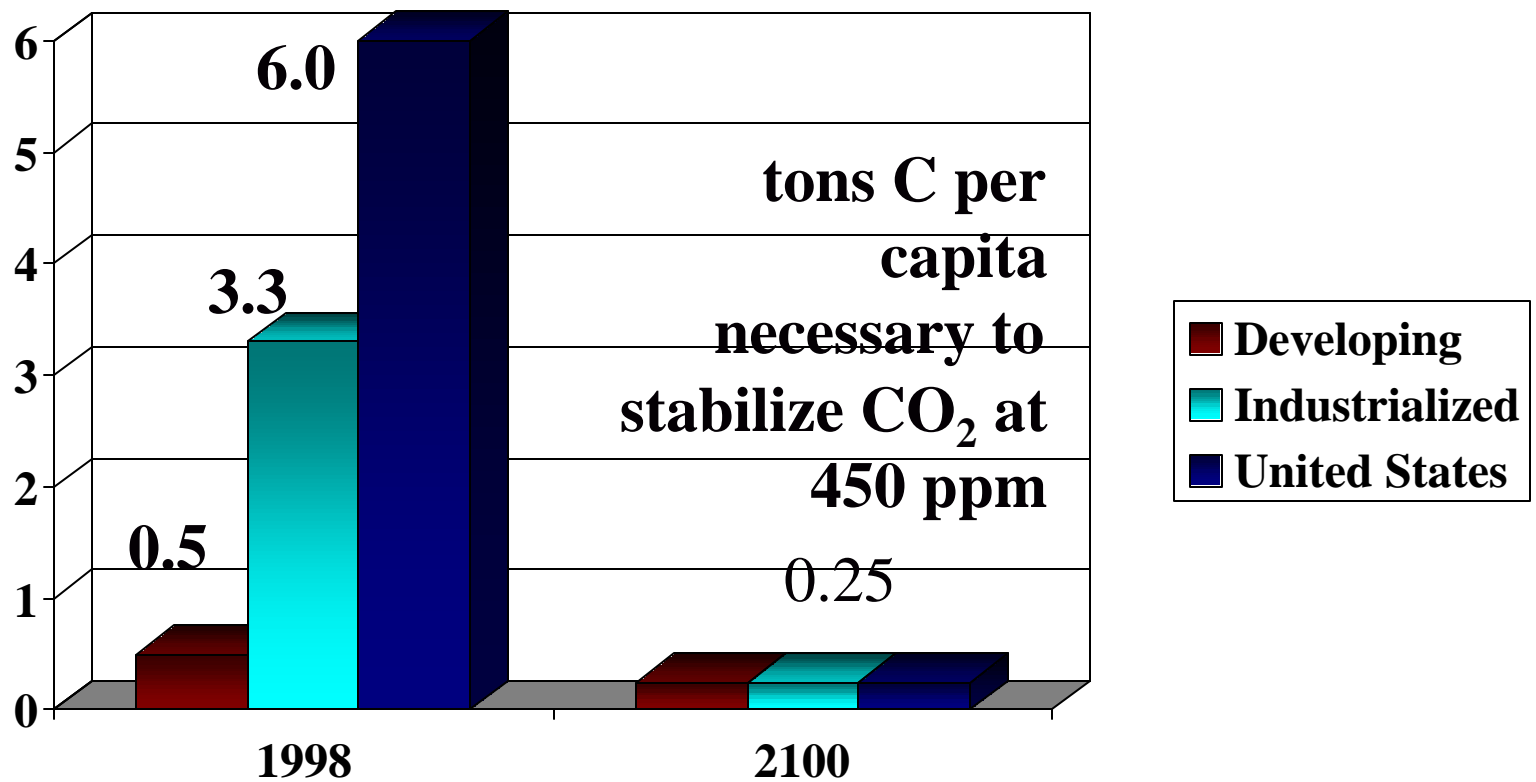
New Century Enterprises

- ① Share concern about problem trends;**
- ② Promote solutions to these problems;**
- ③ Succeed and profit while providing these solutions.**

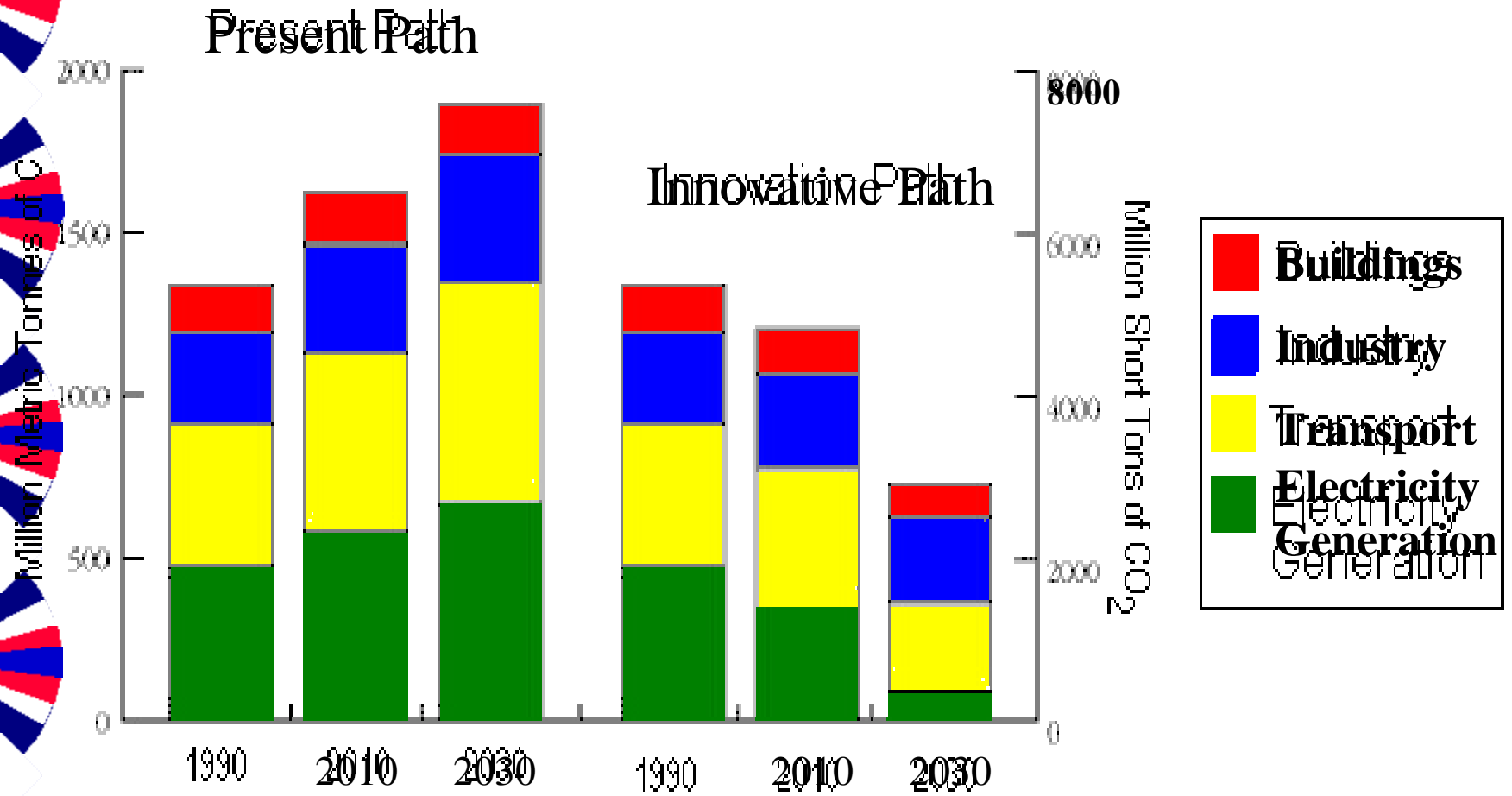
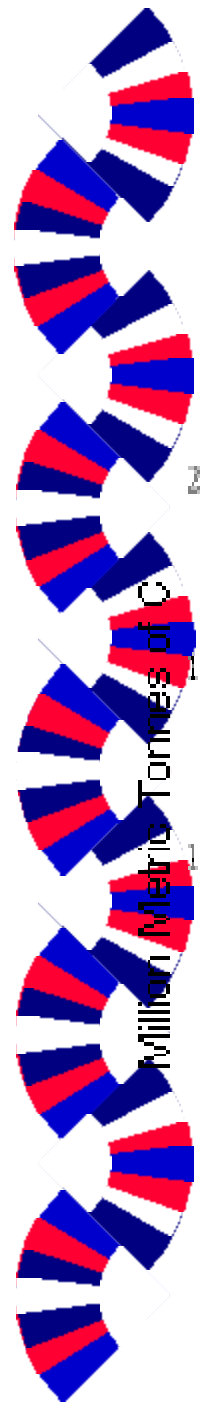


New Century Enterprises

Capitalizing on solar income, and carbon-free and carbon-neutral energy sources

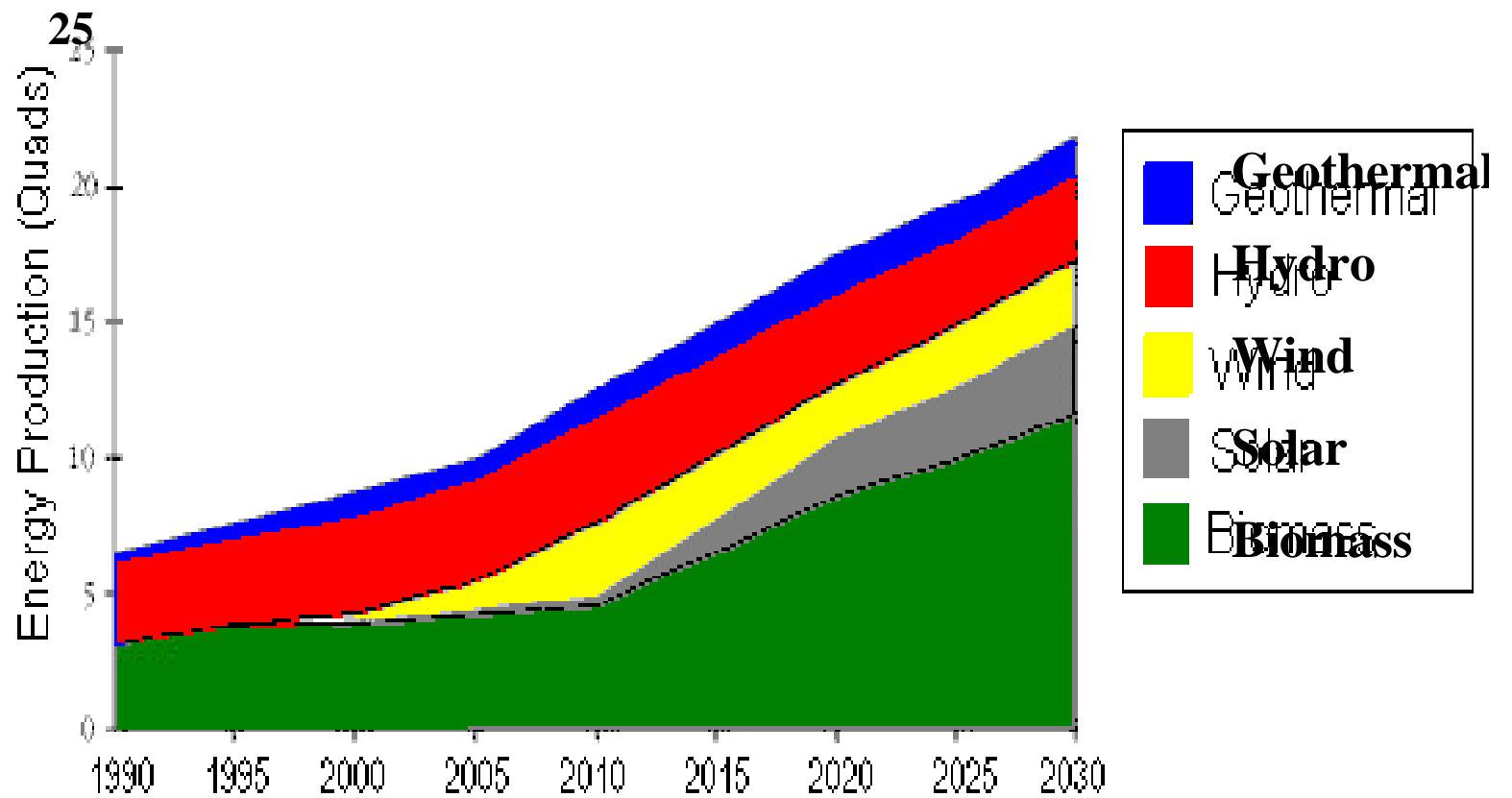


U.S. Energy Future Choices





U.S. Renewable Energy Future

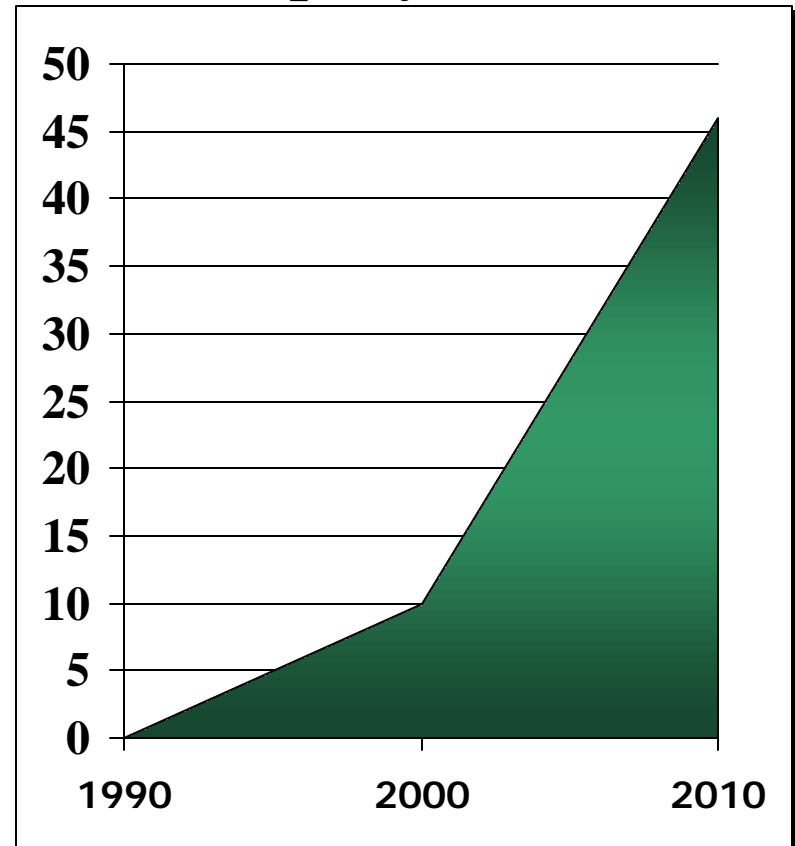




U.S. Energy Transition Option

- 870,000 net new jobs
- \$400 savings per household per year
- \$46 billion per year national savings
- CO₂ emissions 14% below 1990 levels
- SO_x, NO_x, CO, PM reduced 20-50%

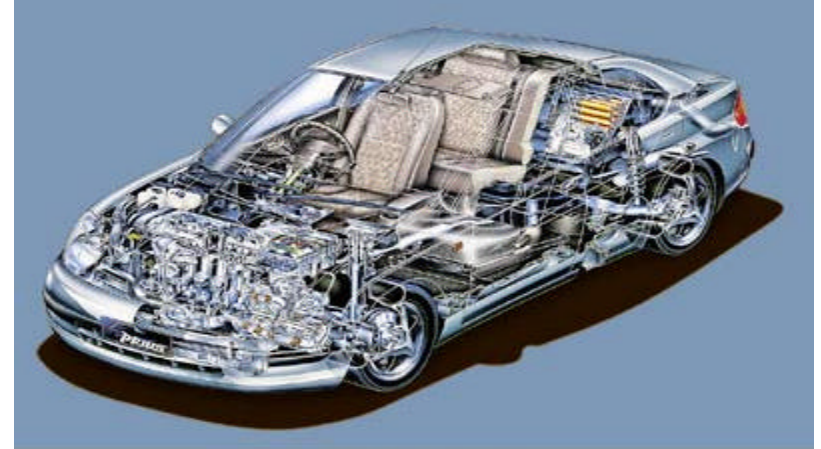
billions \$ per year





Super-clean, hi-mileage cars

- Toyota hybrid Prius w/ Camry-size interior, Corolla-size exterior;
- Over 50 mpg **CITY** driving!
- 90% reduction in criteria pollutants, 50% GHG reduction;
- Fuel cell-powered models by 2004.



It's all very technical.



Prius: ready to demo.



Wind Power bonanza

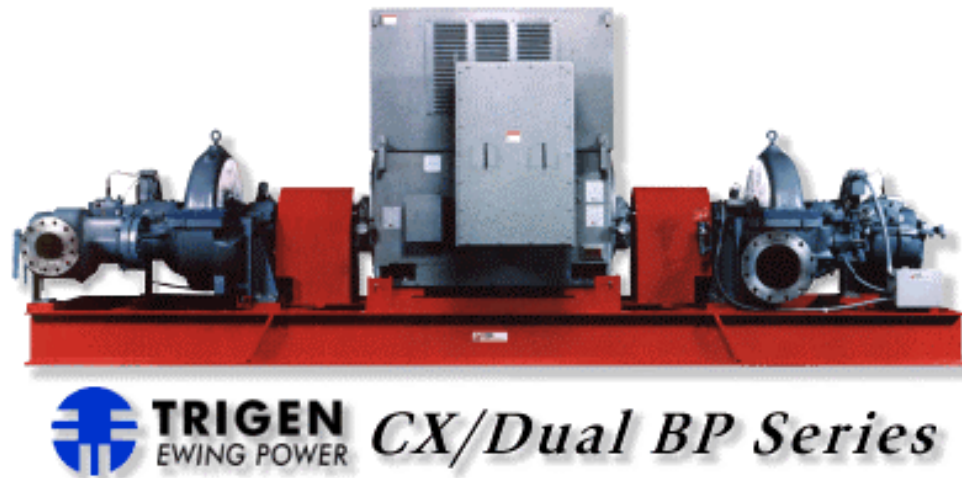
- Wind power could provide 10% of global electricity by 2020;
- Generate 1.7 million new jobs;
- Economically attractive - below 5 cents/kWh today, below 3 cents/kWh then





Distributed Energy Systems

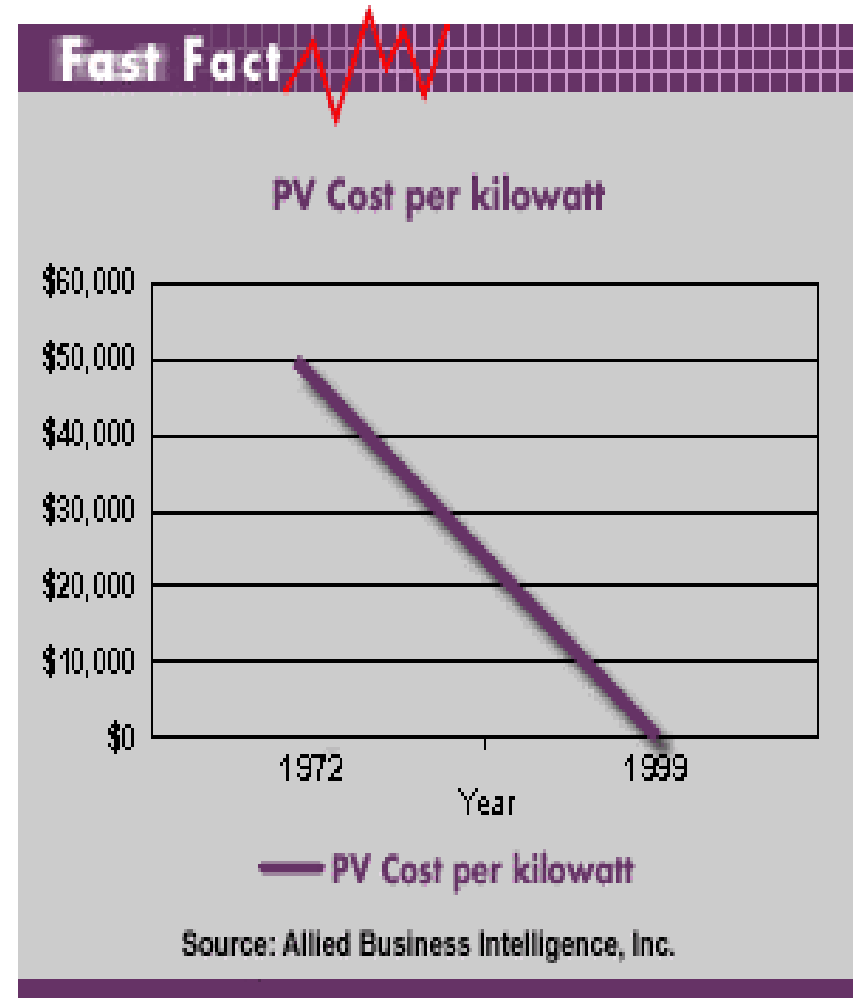
- Building and Industrial CHP potential of 57,000 MW and 386 TWh net generation by 2010;
- More than all power used in U.S. in 1950.





Solar-powered Micro-grids

- DTE Energy and Intergy developing PowerPark in 250,000 ft² CA industrial park.
- 340 kW PV power system, w/ 8 micro-turbines & a fuel cell in a distributed network.





More Corporations Take Action

- DuPont 65% reduction, 10% renewables. Shell 47 million tons C/year by 2010 - 10% below 1990 levels.
- BP 22 million tons C by 2010

A Leap Forward on Climate Change

For companies like DuPont, climate change is a business challenge.

That is why DuPont voluntarily launched an initiative to reduce greenhouse gas emissions.

The results have been dramatic. By the year 2009, DuPont will have reduced emissions from global operations by 45 percent and improved energy efficiency by 15 percent below 1990 levels. DuPont also has succeeded in holding energy use constant for the last ten years.

And DuPont is not resting on its accomplishments. DuPont just announced that it is going to take the next leap forward, setting new goals for 2010.

- Reducing global carbon-equivalent greenhouse gas emissions by 65 percent, using 1990 as a base year.
- Holding total energy use flat, using 1990 as a base year, and,
- Using renewable resources for ten percent of global energy use.

DuPont's leadership shows that it is possible to address climate change and maintain economic growth.

DUPONT

PEW CENTER
Global CLIMATE CHANGE

DuPont is a member of the Pew Center on Global Climate Change's Business Environmental Leadership Council. The Pew Center does not receive corporate contributions.

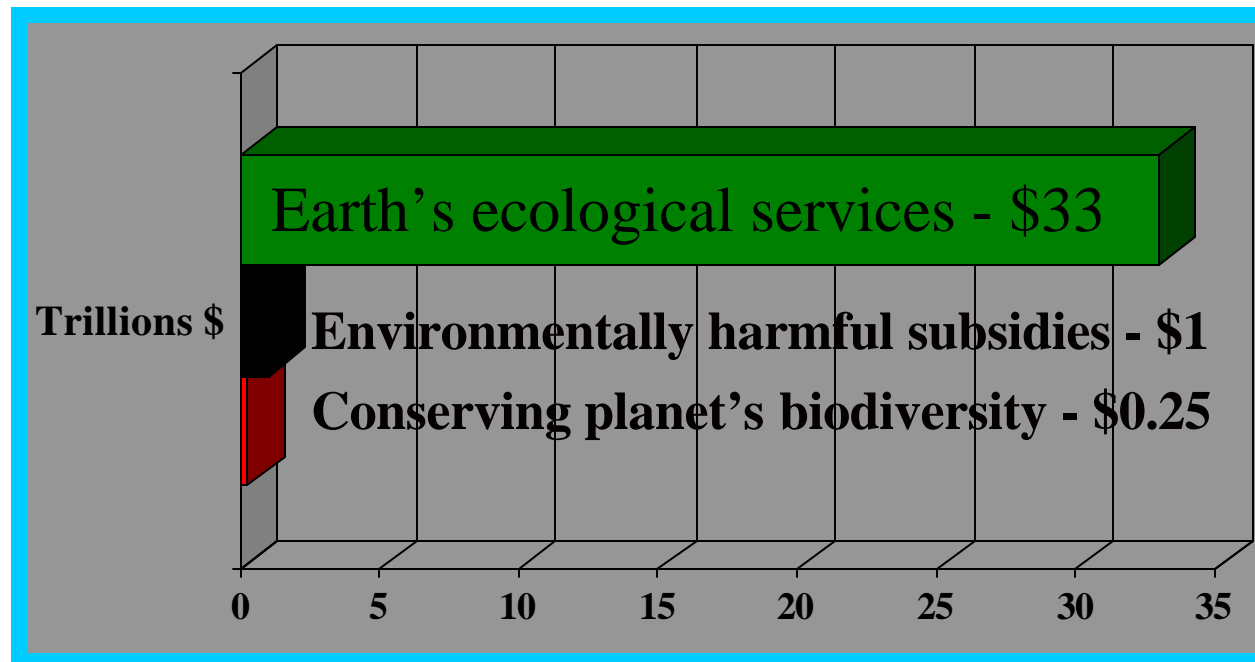
Paid for by the Pew Center on Global Climate Change



New Century Enterprises

Valuing biological assets and ecological

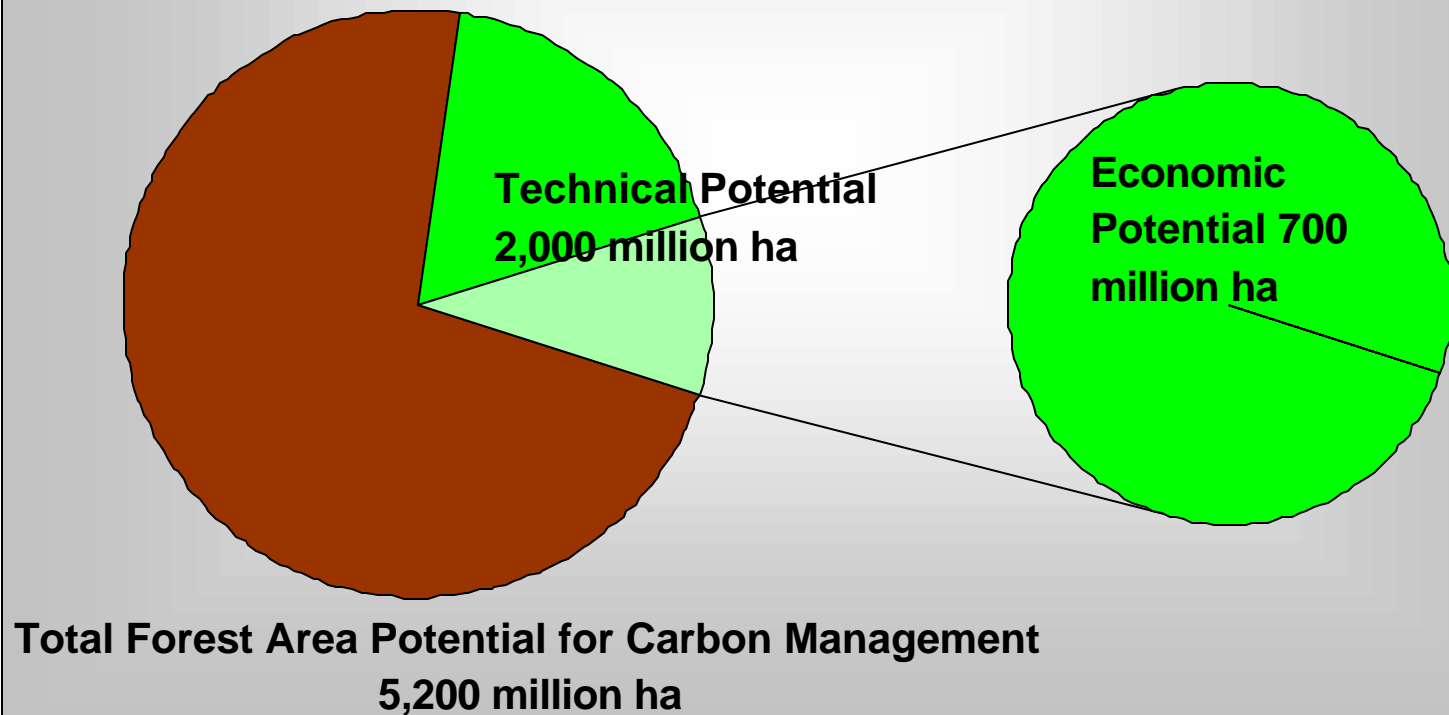
income, including judicious and wise use of bioengineering to help preserve, conserve and restore threatened assets and services;



Source: A. N. James et al., Nature, V. 401, Sept 23, 1999, pp. 323-24



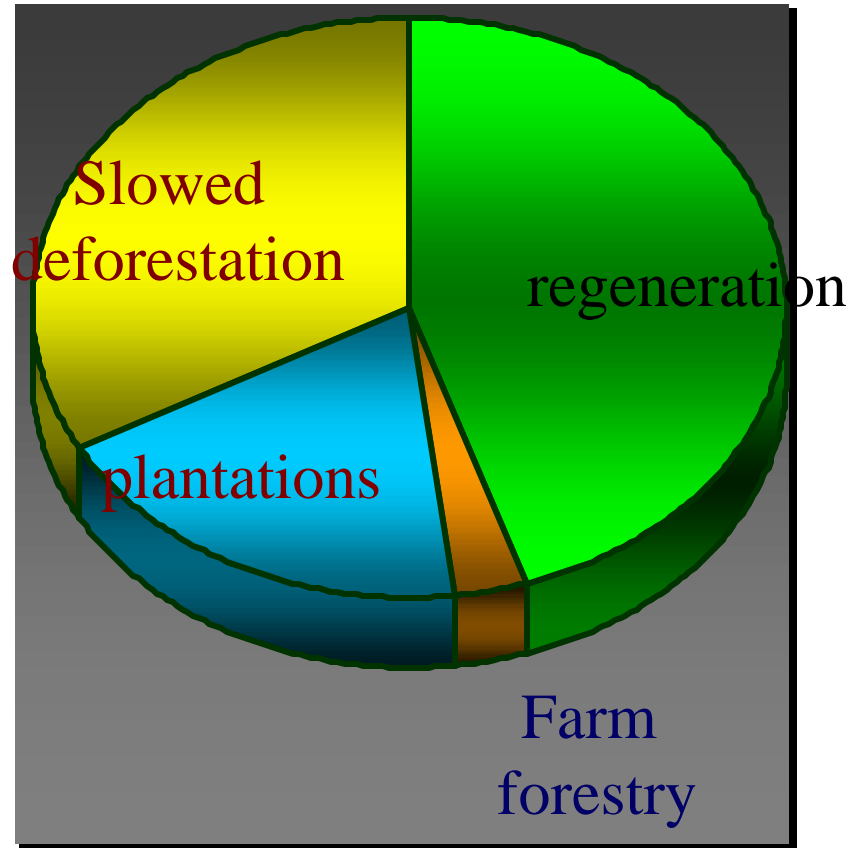
Global Total, Technical & Economic Potential Forest Area for carbon management (million hectares)



Source: Trexler, Mark and Christine Haugen, Keeping it green: Tropical forestry opportunities for mitigating climate change, 1994, WRI, <http://www.wri.org/>

Restoration Value - Climate

- Climate-friendly
- Opportunity to store 55 billion tons of carbon in tropical forests by 2050

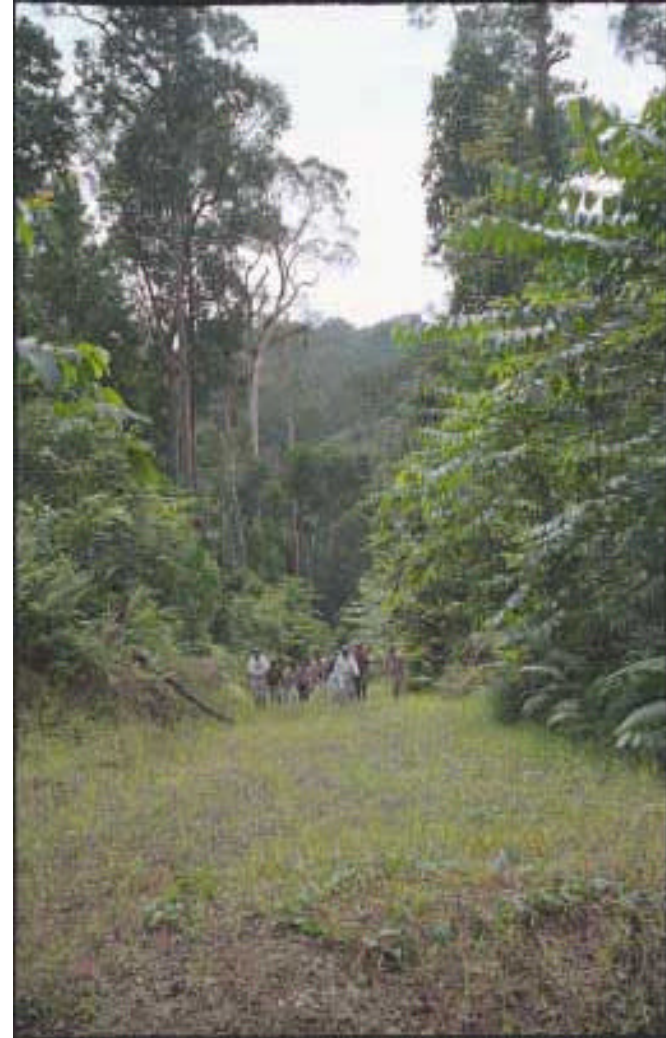


Source: M Trexler & C Haugen, Keeping It Green, 1994, WRI, <http://www.wri.org/>



Costa Rica's Carbon Commodity

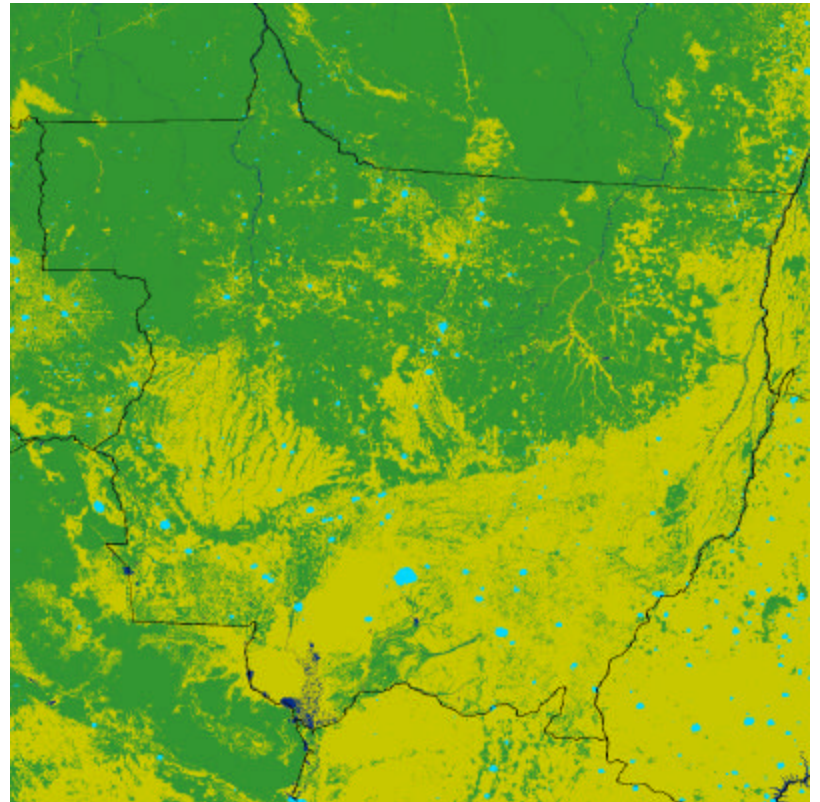
Govt funds for reforestation and forest protection on private lands through sale of carbon certificates, CTOs (Norway bought at \$10/t C).





Peugeot \$50 million Restoration in Amazon

- Local communities in Mato Grosso paid to gather old-growth seeds for restoration
- old-growth functionality being restored
- climate restoration as well





Alternative Fiber Services

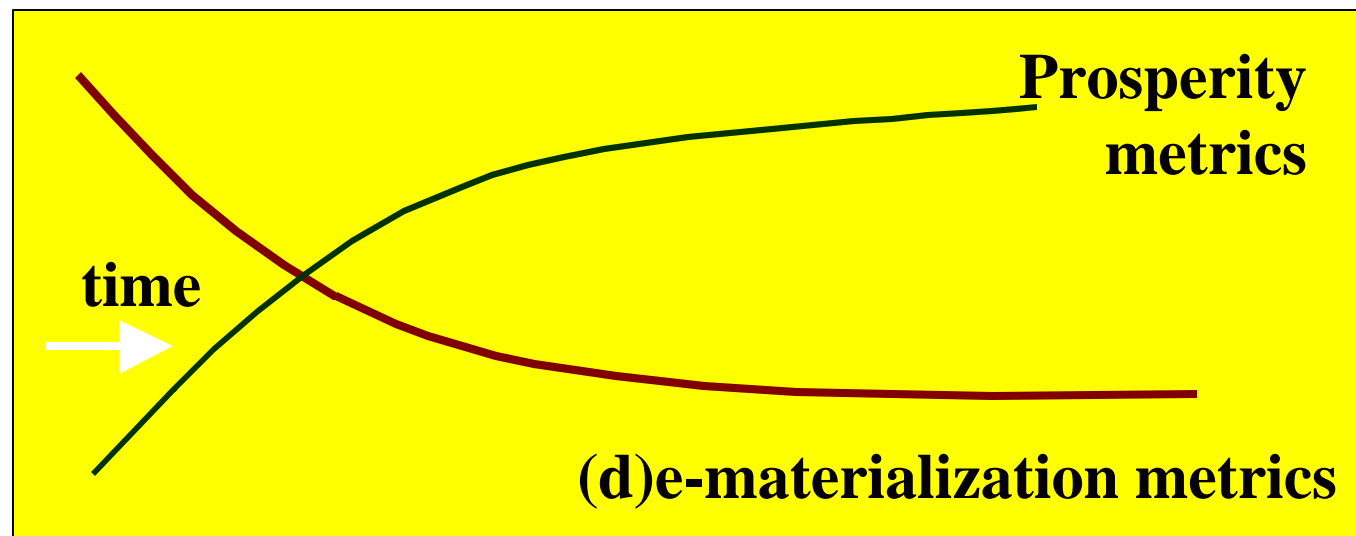
- ▶ Electronic paper and books displacing wood-based products





New Century Enterprises

Pursuing the *Digital Dividend* to grow prosperity while *e-materializing* the economy.



Hewlett-Packard's Product Stewardship

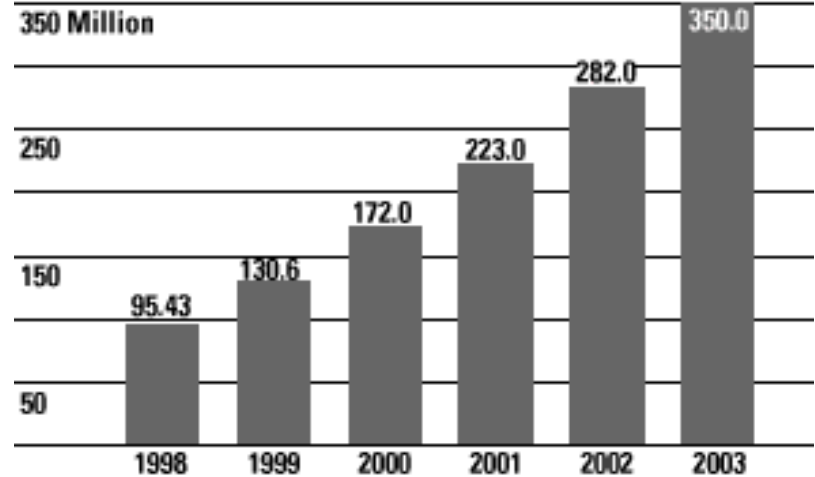
- Design products to minimize the energy they consume, use fewer raw materials, and increase our use of recyclable materials.
- Reduce manufacturing waste and emissions.
- Use less material and more recyclable material in packaging.
- Develop products that are easier to reuse or recycle.



Internet as Replicator Accelerator

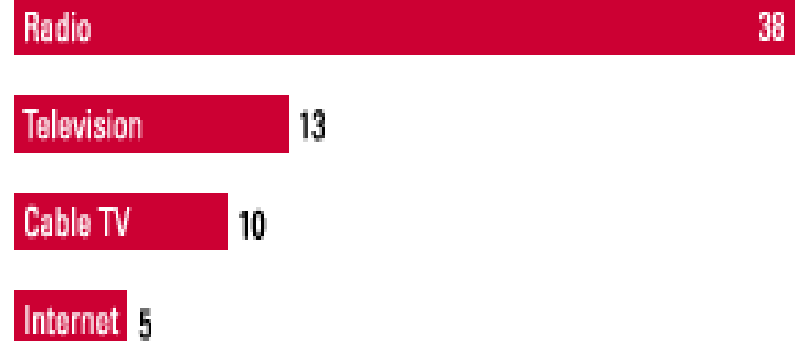
New, rapidly expanding means of accelerating the replication of successes, best practices, lost opportunities, superior performance, and avoiding low yielding actions.

Worldwide Internet Users, 1998 - 2003



Source: eStats, 1999

Years to Reach 50 Million Americans

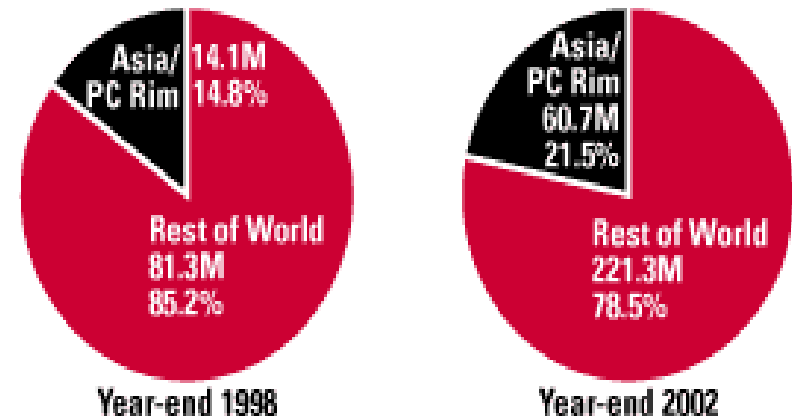


Source: Morgan Stanley; eStats



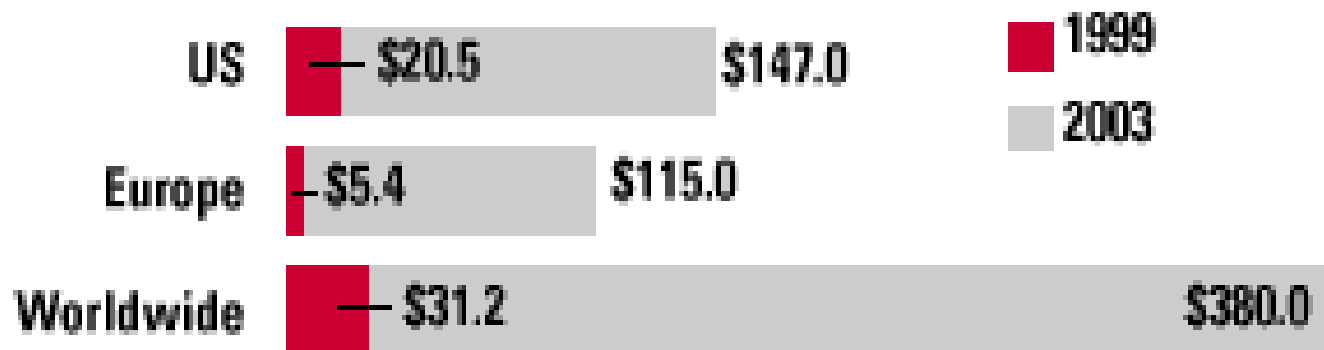
World expansion of electronic communication & commerce

Asia PC Rim: Growth in Internet Users vs. The Rest of the World



Source: eStats, 1999

US vs. Europe: eRetail Growth, 1999 & 2003 (In Billions)



Source: Gartner Group, 1999

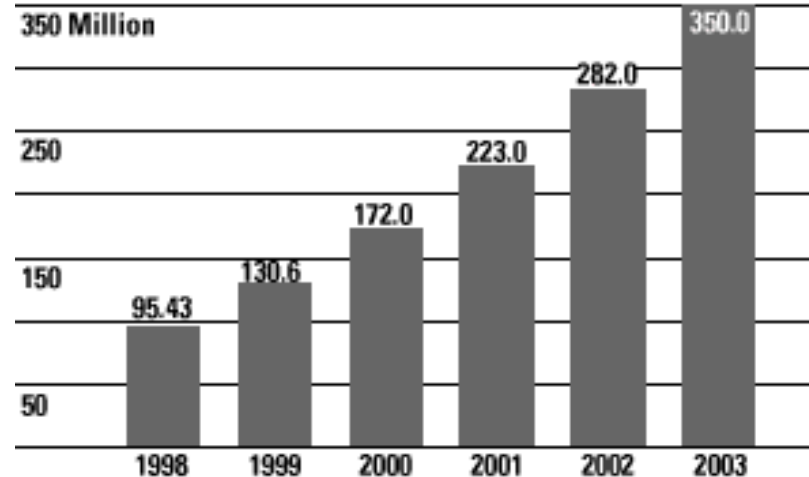


Internet marketing

Opportunity and Threat

- ▶ Ultra-low-cost advertising mechanism (for self, and for competitors);
- ▶ challenge to brand management vs. generic goods;
- ▶ market intelligence;
- ▶ customer relationship creation & retention

Worldwide Internet Users, 1998 - 2003



Source: eStats, 1999



Intelligence nets at work

- SuperSymmetry using visualized databases in real-time, gathered by lab-quality sensors in bldgs. To instantly pinpoint sub-optimal performance for immediate correction.
- 400 ton chiller was replaced by a 220 ton hi-e VSD chiller, the two 75 hp AHU fan motors replaced by two 40 hp motors with VSD control, the 40 hp cooling tower was replaced by an 18 hp, hi-e tower, and the 20 hp chilled and 25 hp condenser water pumps were replaced by 5 hp and 7.5 hp pumps and motors, respectively.
- 1.66 kW/ton to 0.65 kW/ton. This project will save Netscape about \$65,000 per year on the 130,000 sq. ft. building, with a 3.8 year payback.
- Shown: redesigned economizer outside air intake and exhaust fans with low pressure drop concentric silencers.



Market Creation/Transformation

New means for growing markets more rapidly for innovations by creating value for a virtual community of previously unorganized buyers widely dispersed geographically.





WRI's Web Enterprise SafeClimate.net

achieving & promoting ZERO net carbon emissions
Leading by Learning and Doing

Site index Home Library Action Tools Store Support

Carbon footprint

Results

Based on your inputs, your company's carbon footprint is estimated to be 2,200 tons per year. This can be broken down as indicated by this chart.

Show numerical details

Visualization options: Forest equivalent

The approximate area of North American forest that would sequester the rate of carbon emission described above is 2,400 acres. By comparison, San Francisco's Golden Gate Park, one of the largest botanical parks in the world, is 1,000 acres.

More info

- Review inputs
- Details of above calculations
- Mitigation and offset strategies

MySafeClimate Carbon News Specials Indicators

What's new today
Bookmarks
MyZeroEmissions
Order status
Chat groups
Login page

Support is plant 10,000,000 trees to announce to offset carbon emissions
Study facts that recent changes to U.S. land use haven't offset increases in emissions
Over 20% of global carbon

The exclusive Carbon Cycle™ is only available here!
Quiz
What U.S. state boasts the highest per capita carbon emissions?

U.S. carbon footprint

1978	1981	1990	2000
0	10	20	30

Site index Home Library Action Tools Store Support

Welcome to SafeClimate.net!

If you've never visited this site before, please check out our guided tour.

How many Light Bulbs does it Take to Change the World?

Generation Next: What kind of world will our children inherit? Check out stories with a dozen parents, authors, movie stars, and noted environmentalists about how they're leaving the Earth a better place for their kids.

The Five Billion Year History of climate change (abbreviated version)

Drumming up community support for climate change solutions

The Endangered species consequences of Slothful living

Why This Forest is More Than Just Trees

MySafeClimate Climate News Specials Indicators

What's new today
Bookmarks
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New NOAA project aims at quantifying magnitude of ocean carbon sink
Record high and low temps recorded for every country in 1998
U.S. economy energy intensity declines; Transportation emits less

WRI's Living Planet Indicators Report now on-line (free!)
Quiz
How many of the world's 220 countries have ratified the Kyoto Protocol? 16, 28, 100?

180
490
490
430
460
400

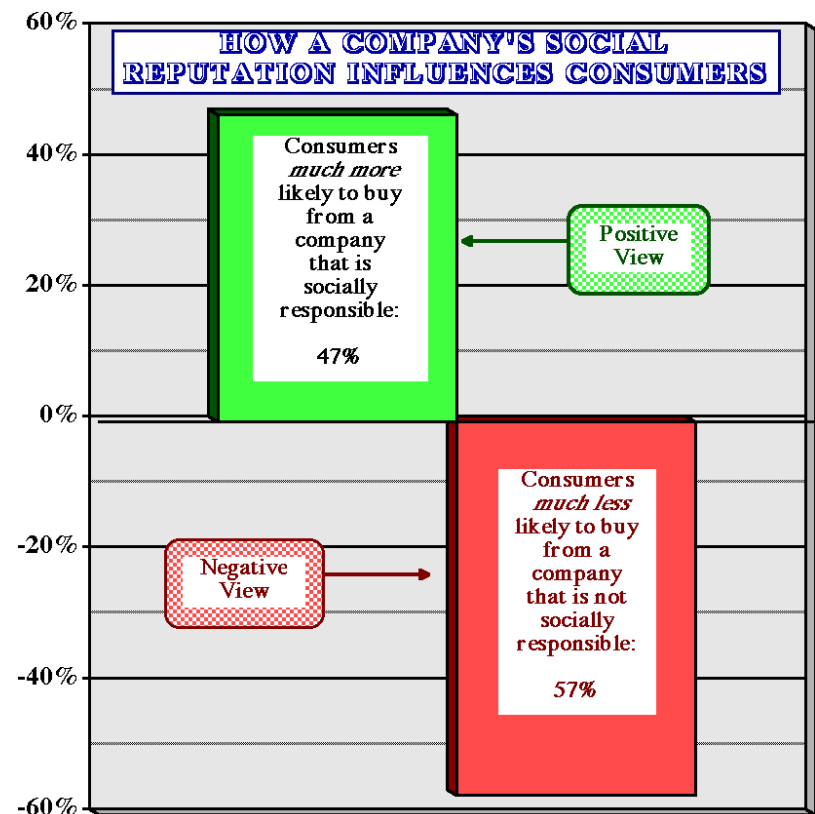
1960 1978 1984 1990 2001

Atmos CO2 conc.



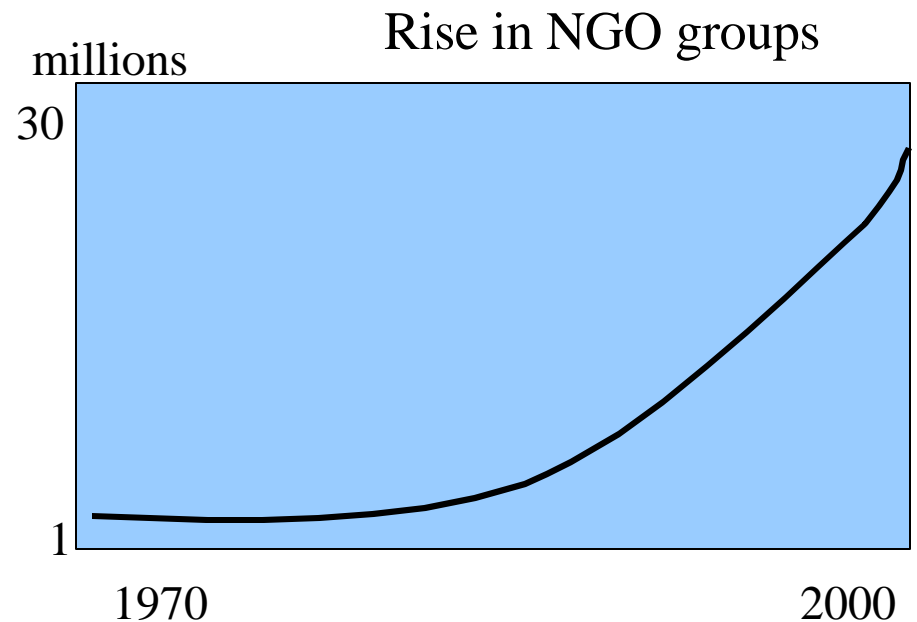
Reputational Capital - Opportunity for Growth, Risk of Decline

- Half Americans polled are more likely to buy from a company w/ good social reputation, while 60% will not buy from a company with bad reputation.



Instant Global Info

- about company performance (good or bad for brand management)
- about policy interventions and/or innovations (good and bad for business)

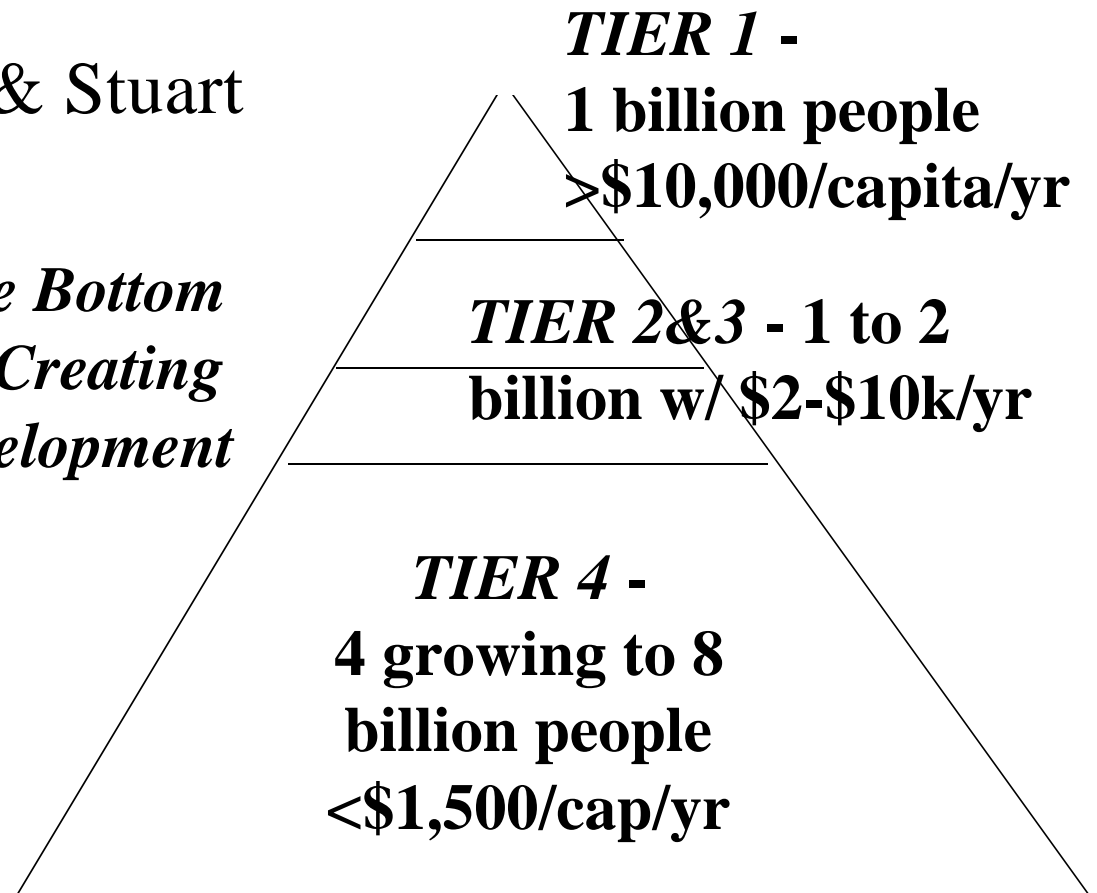




New global market opportunities

C.K. Prahalad & Stuart
Hart, HBR

*Strategies for the Bottom
of the Pyramid: Creating
Sustainable Development*





Wireless Micro-Entrepreneurs

- empowerment of women and minorities, potential for increased purchasing power (e.g., Village Cell Phone Women making triple the average income - 30% lower fertility rates)



micro-e.net



Micro-
credit



Micro-
enterprise



Micro-
energy



Micro-
electronics





UNWIRED

Unwiring the World

For less than the typical IMF bailout we can now unwind the world, making available first-class educational material, medical advice, business communications, and the arts to every family on earth by use of wireless communications technology.

