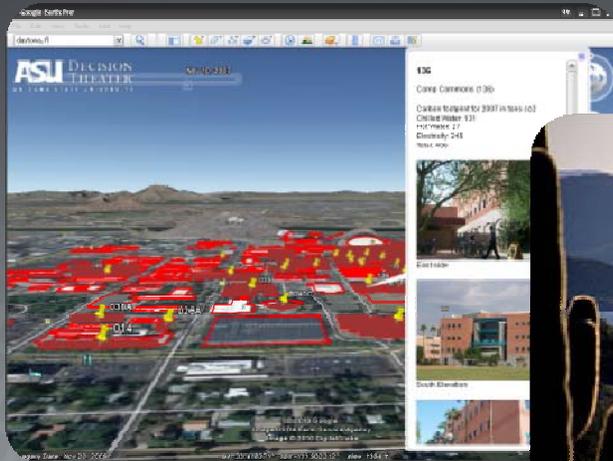


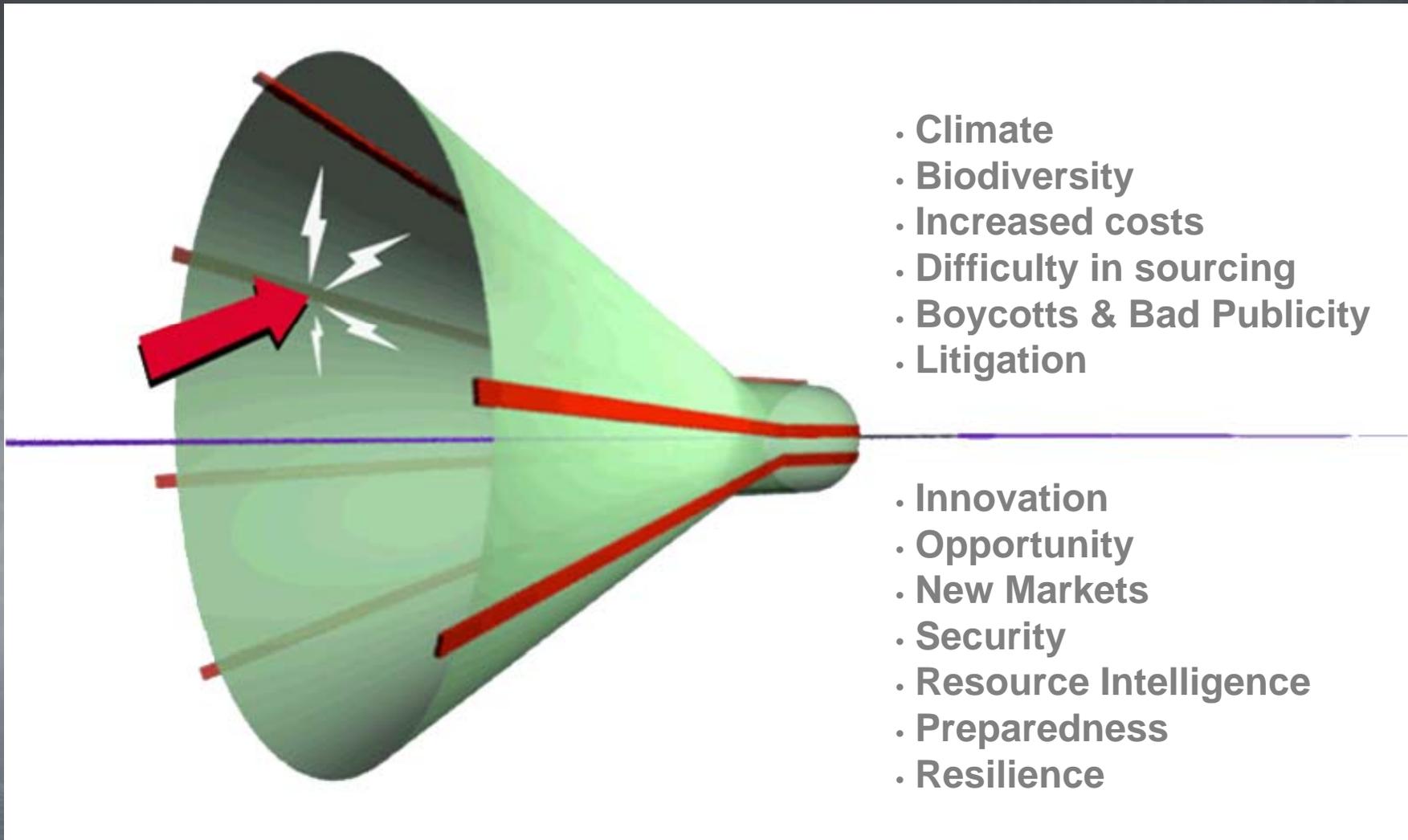
Sustainability & Community 101



George Basile, PhD
Professor, School of Sustainability
Senior Sustainability Scientist, Global Institute of Sustainability
Arizona State University
Peoria AZ | Jan. 27, 2011

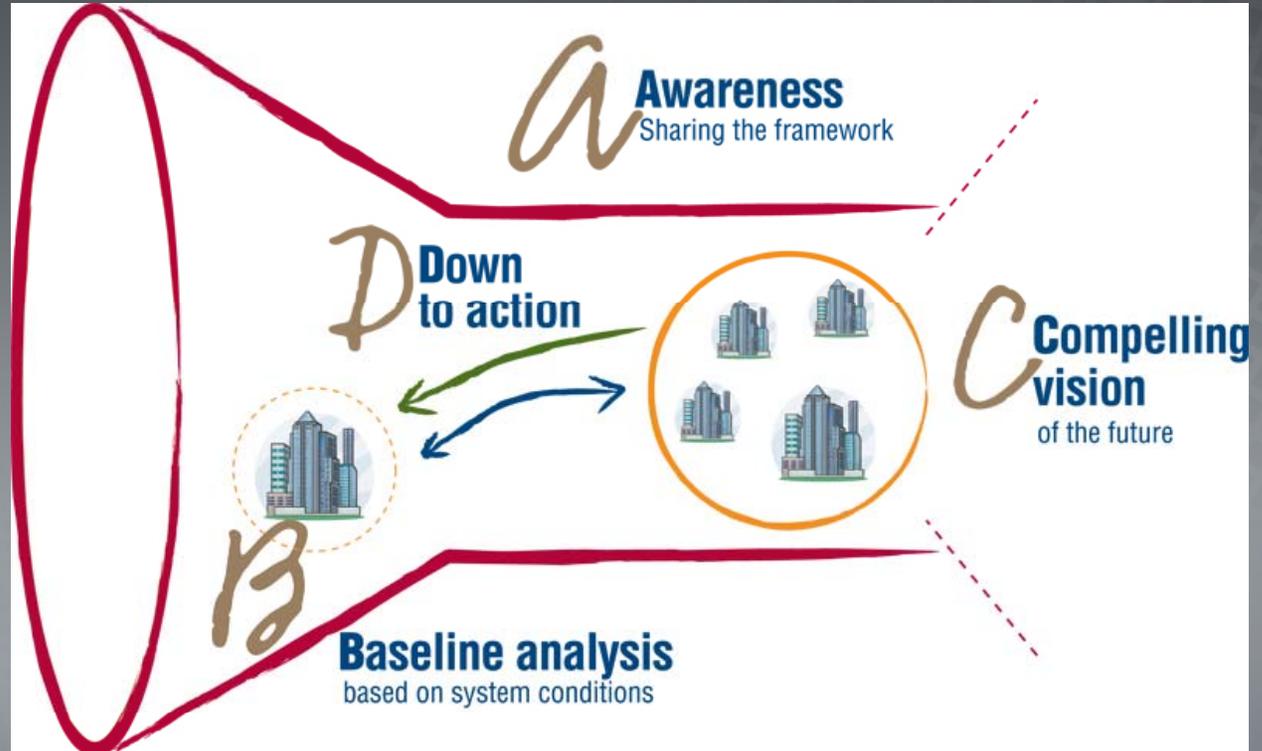


Sustainability: a Decision Challenge

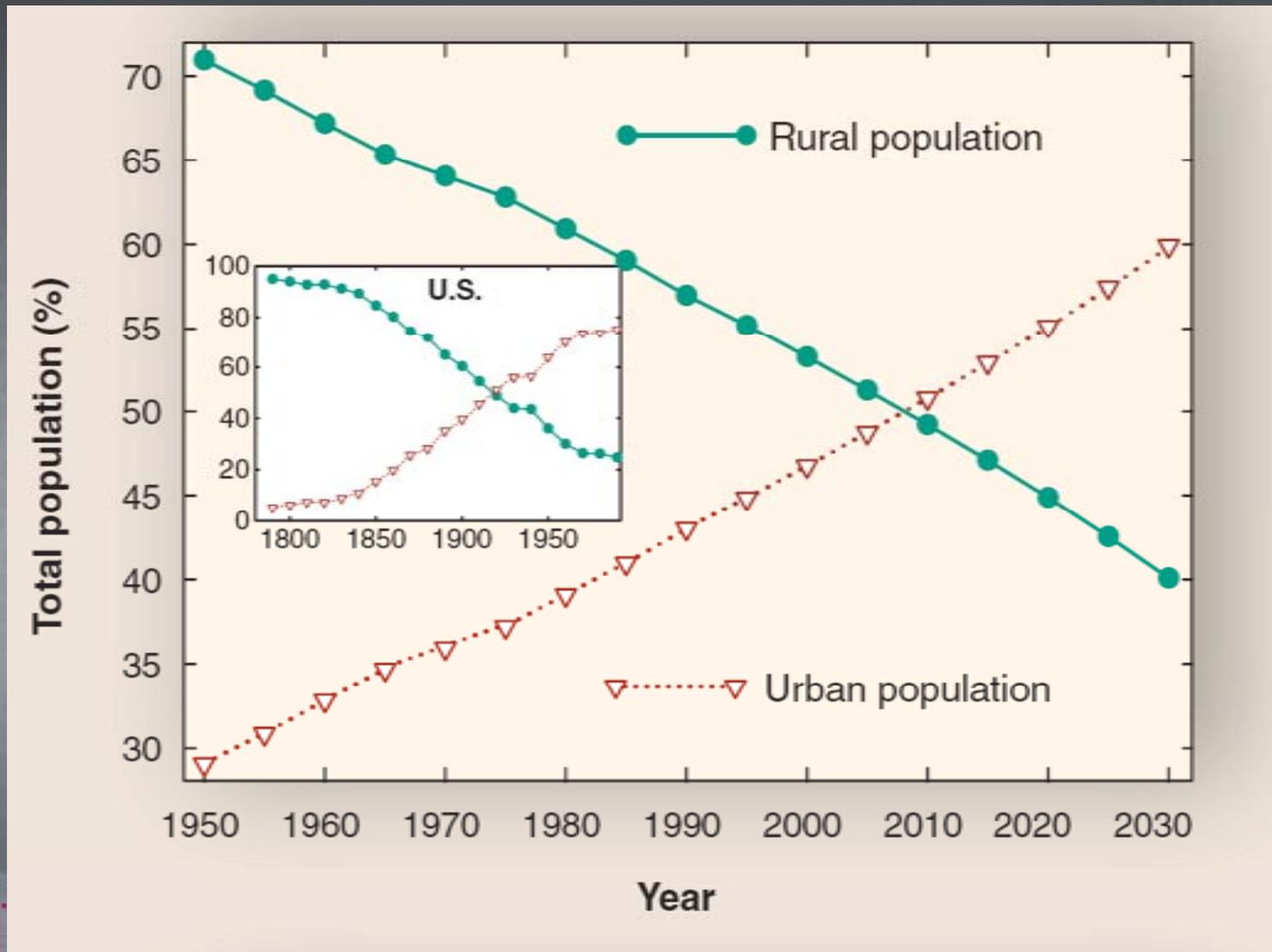


Strategic Sustainability

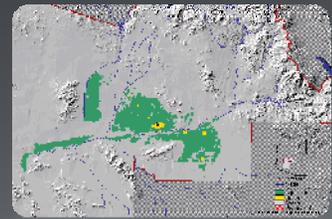
Right direction?
Flexible Platform?
Return on investment?



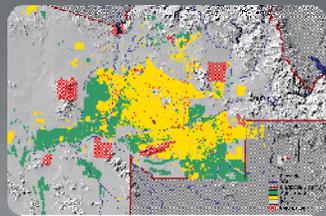
An Urban Challenge & Opportunity



Cities & Environmental Change



Land use & cover change



Altered biogeochemical cycles



People & Cities

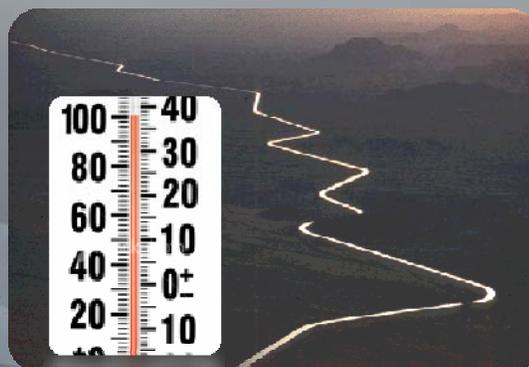
Altered hydrosystems



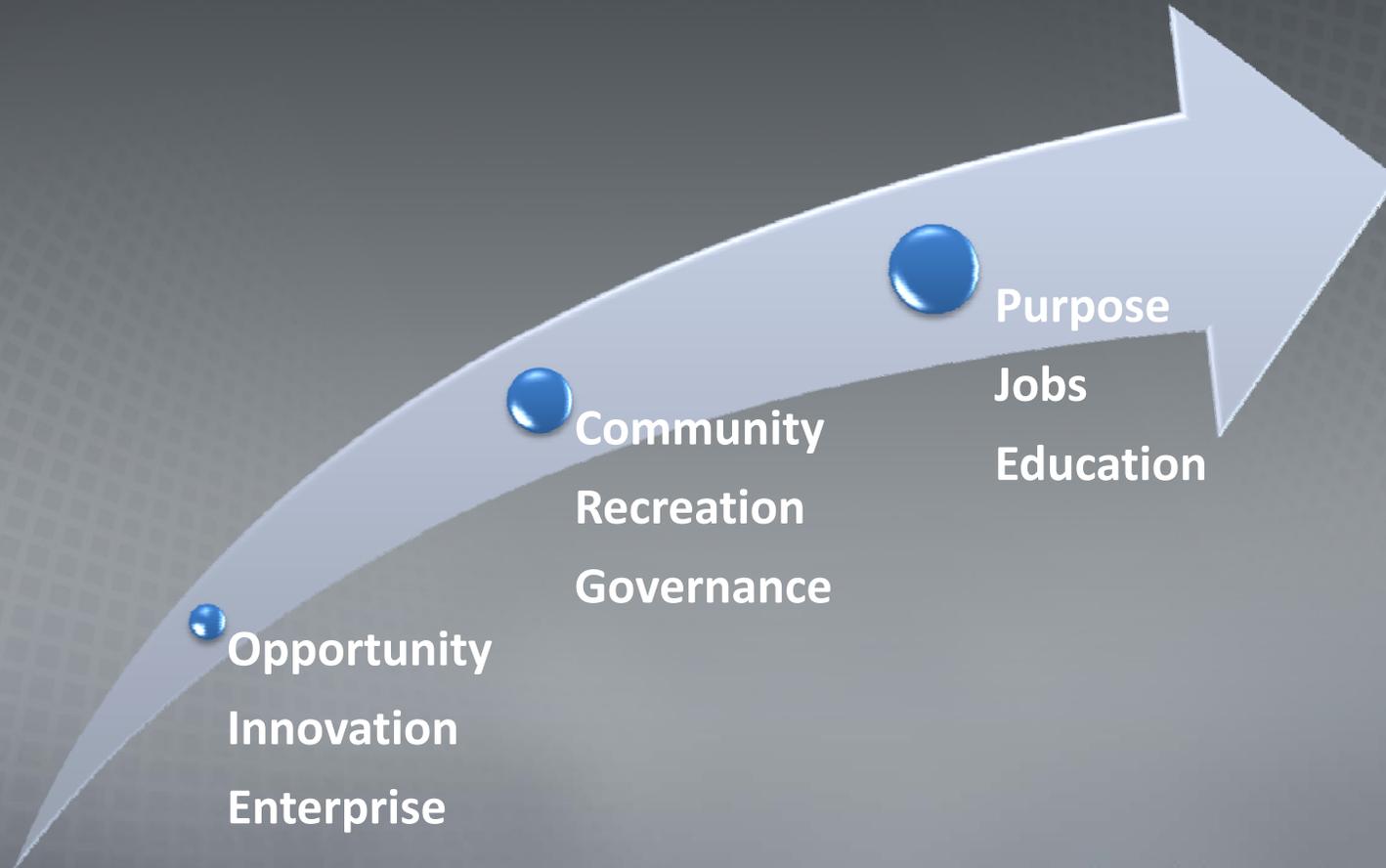
Biodiversity loss



Climate impacts



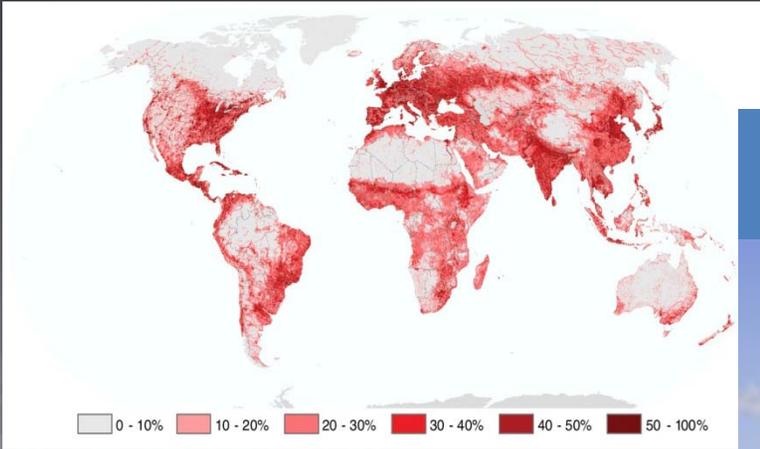
City as Provider



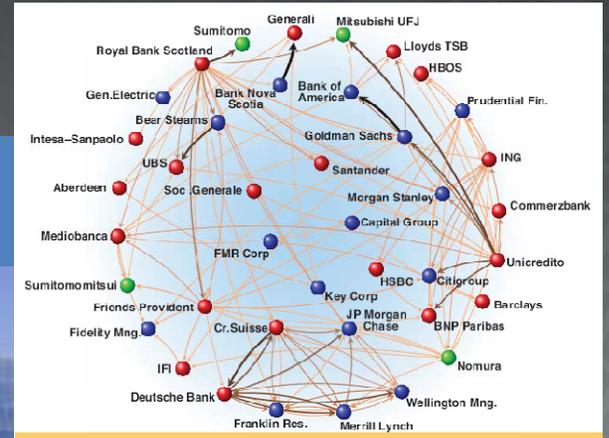
Sustainable City Challenges



Why Now?



Evolving Energy & Building Policies



Global Connections & Supply Webs

REACH, Waste, RoHS



LOHAS, Efficiency, Smart

Planetary Boundaries

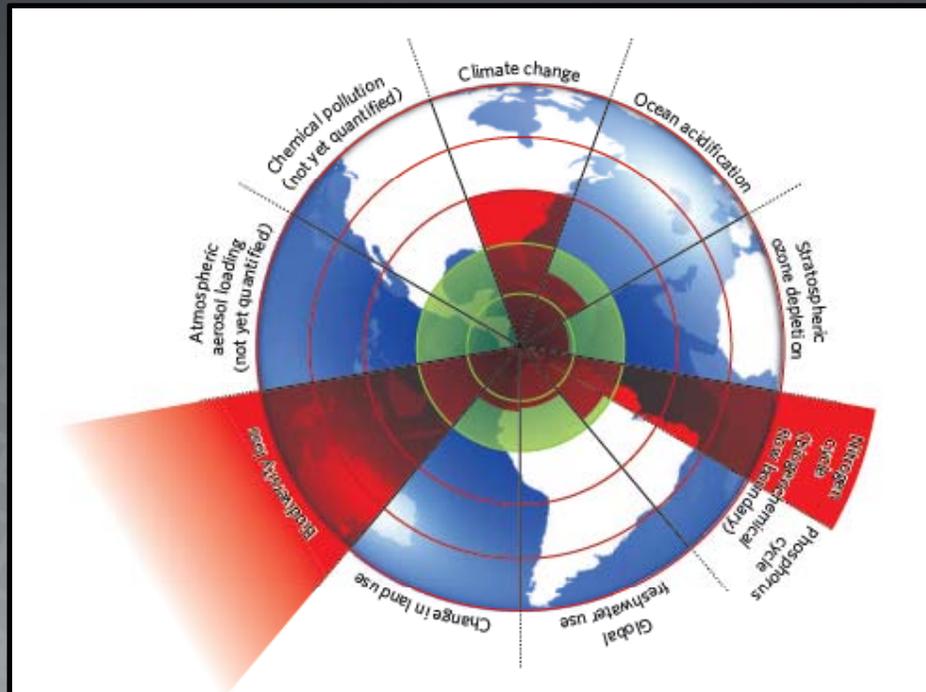


Figure 1 | Beyond the boundary. The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.

Home Boundaries



People Care: Sustainability & Emotional Drivers



Emerging Business Opportunities

Eco-efficiency
plus:
Production Process

Core business
strategy:
Product Design

Core purpose &
market need:
Market Strategy



XEROX



Electrolux



patagonia

Herman Miller

Interface



SES
Solving Energy Systems
PURE POWER = MADE SIMPLE

method



Emerging Opportunity

(Too) Many Approaches

CARBON DISCLOSURE PROJECT

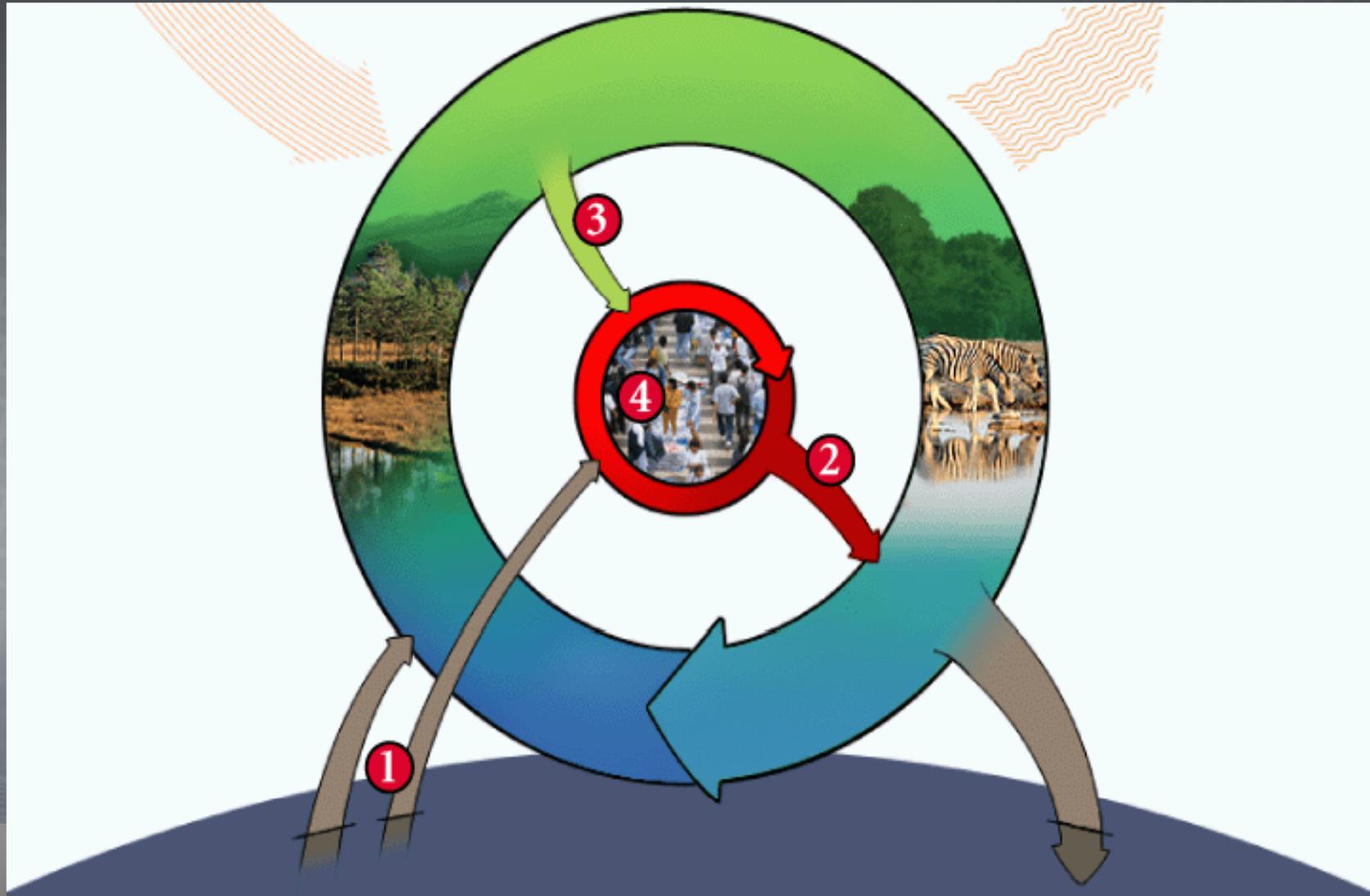
the NATURAL STEP



Debate Dilemma Remains

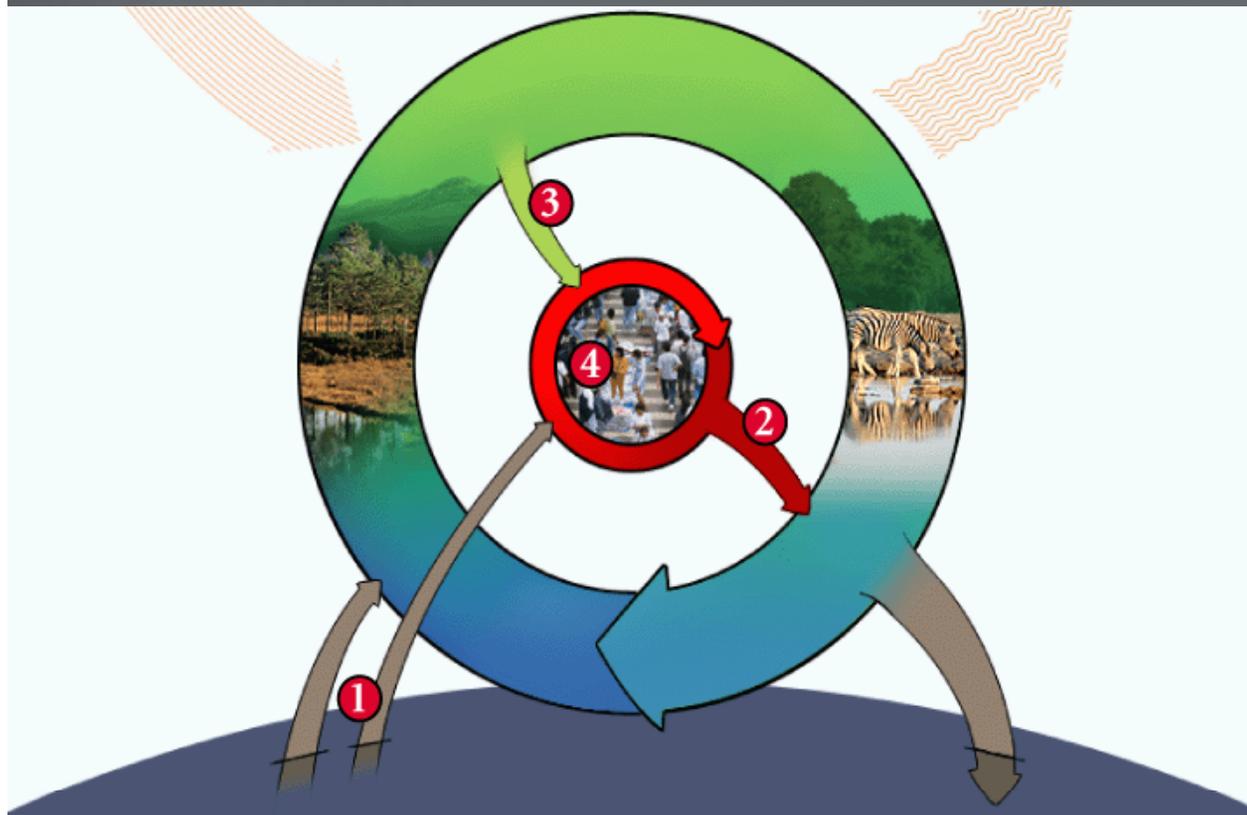


A Whole Eco Systems Perspective



Basic Principles for Sustainability

In a sustainable society, nature is not subject to systematically increasing:



- 1 Concentrations of substances extracted from the earth's crust
- 2 Concentrations of substances produced by society
- 3 Degradation by physical means and, in that society
- 4 And, the ability to meet human needs is not systematically undermined

Urban Efforts

Light rail

Walkability

Carbon offset funds

Green Packaging

Local food support

Mayor's climate agreement

Green energy program

Urban density

Waste recycling

Green jobs corp

Zero waste plans

Downtown housing

Clean tech job support

Green vision

Local green utility

Smart grid support

Free tree

Shade program

Solar energy program

Bike friendly

LED replacement

Water reduction

Composting

City park recreation

LEED buildings

Green roof program

Truck idling

Ship idling

City networks

Sustainable purchasing



Examples

A Sustainable City in the Desert

Promoters of Masdar, a city under construction near Abu Dhabi, say that it will be the world's first carbon-neutral city. It will be home to a research institute focused on renewable energy and sustainability, and eventually, if all goes as planned, to various clean-technology companies, and to a projected 45,000 residents and another 45,000 commuters.

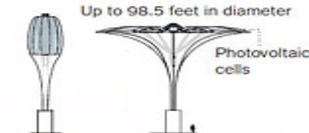
■ Complete this fall
 ■ Under construction

The surrounding trees will help mitigate windblown dust and sand.

APPROX. 1 MILE

Computer rendering of the planned city

Neighborhoods will have distinct buildings and design elements. Masdar Plaza, for example, will have 54 sunshades that open and close automatically at dawn and dusk.



Streets are laid out at angles that optimize shading. Long, narrow parks catch and cool the prevailing winds, and assist in ventilating the city.



MASDAR HEADQUARTERS

MASDAR PLAZA

MASDAR

SOLAR FARM

MASDAR INSTITUTE

Phase 1 MASDAR INSTITUTE

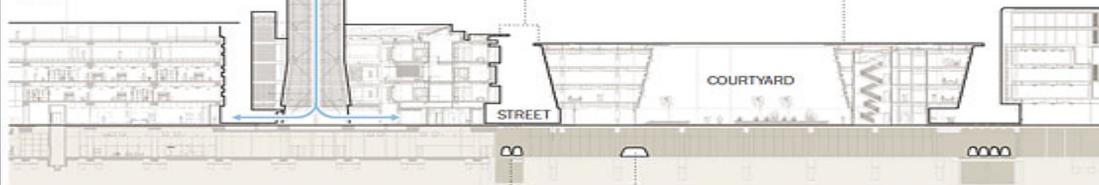
The area being completed this fall has some design features common to the entire project.

The wind tower funnels wind to ventilate a public square at its base. The air is cooled with water sprays.



Narrow streets allow for some sunlight, but overhangs create shade

Photovoltaic panels power the buildings and provide shade to keep roofs cooler.



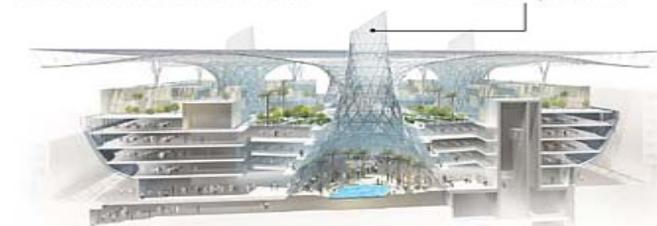
The city is surrounded by recreation areas, power generation facilities, parking garages and food production areas.

A light rail line will pass through the center of Masdar, linking it to downtown Abu Dhabi and providing transport within the new city.

Masdar Headquarters

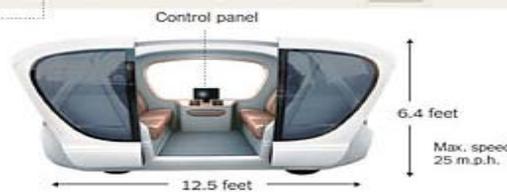
Photovoltaic panels on Masdar Headquarters, the city's biggest office building, are expected to produce more energy than the building consumes. It is scheduled to be finished in 2013.

Wind cones will provide natural ventilation and soft daylight to the building's interior.



Automated cars with room for four adults.

Automated transportation
Masdar will be using an automated system of electric vehicles, including passenger cars and freight trucks. The city's ground level was elevated 23 feet, and the vehicles will operate underneath.

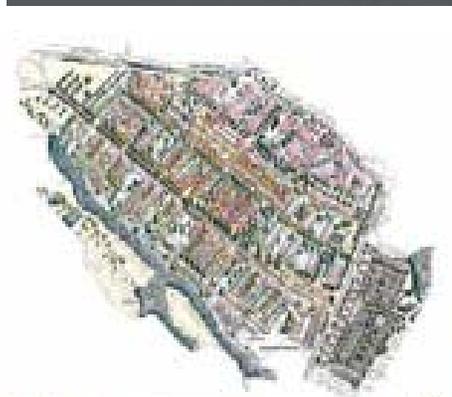
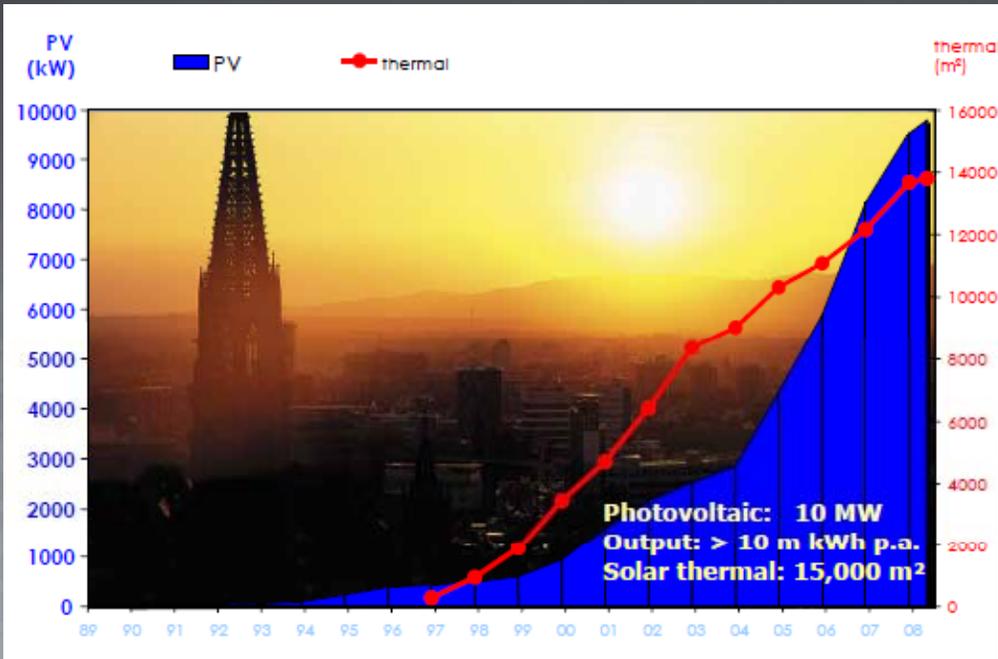


Curitiba Brazil



- Highest **recycling** rate in the World – 70%.
- Bus system: car **traffic decreased** by 30% while the population trebled in a twenty year period.
- Largest downtown **pedestrianised** shopping area in the World.
- Large numbers of **beautiful** parks to control floods rather than concrete canals (use sheep to cut the grass as it's cheaper than lawnmowers).
- A city where 99% of inhabitants **want to live there** (70% of Sao Paulo's residents want to live in Curitiba).
- Average **income** per person has gone from less than the Brazilian average in the 1970's to 66% greater than the Brazilian average.

Freiburg Germany



Malmö Sweden



Lessons from Malmö

The problem is the solution – as any good business person will tell you.

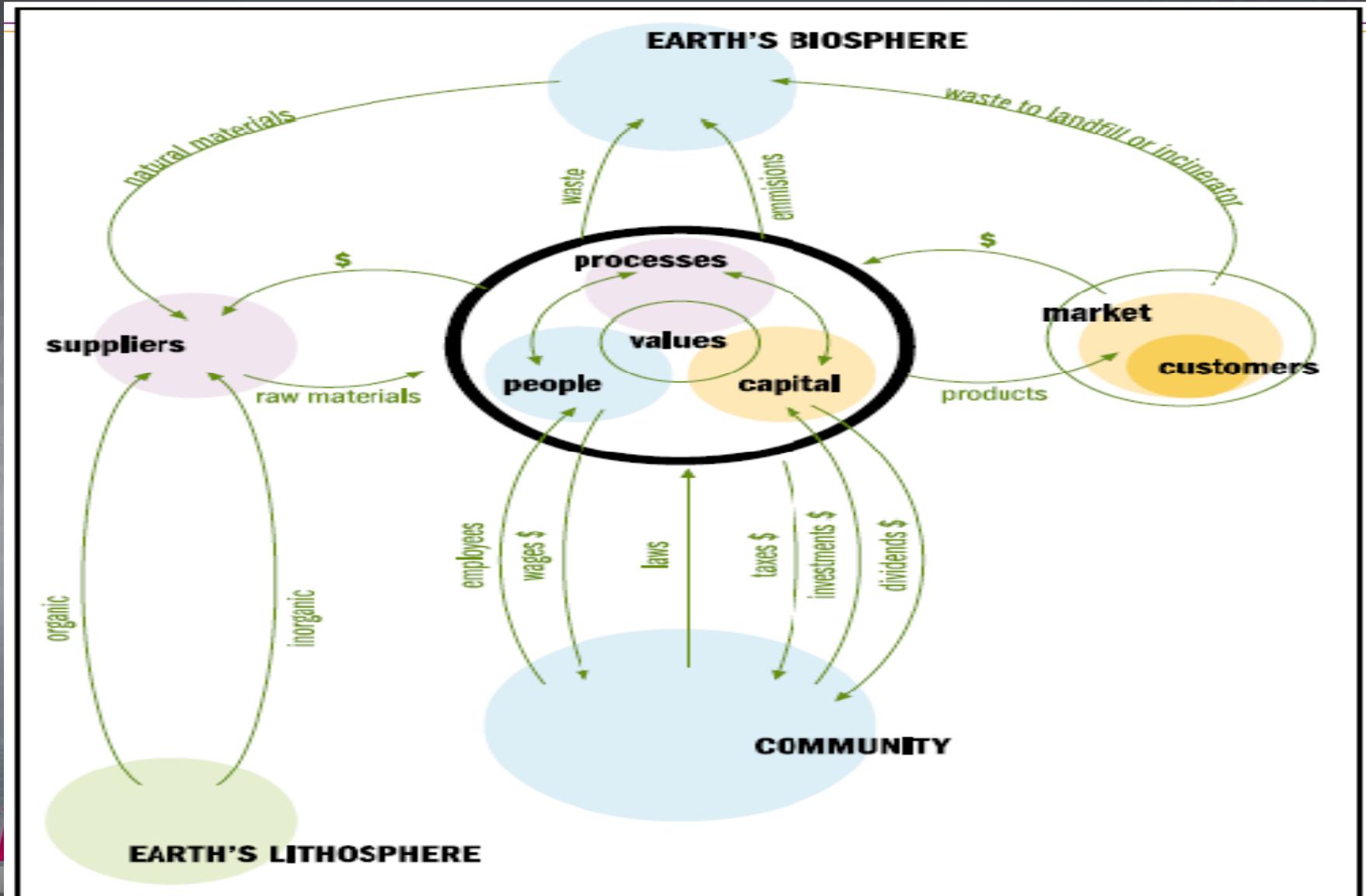
Leadership in the city – getting the public/private partnership right

It's not expensive – It costs some money, but everyone in the project has made handsome returns.

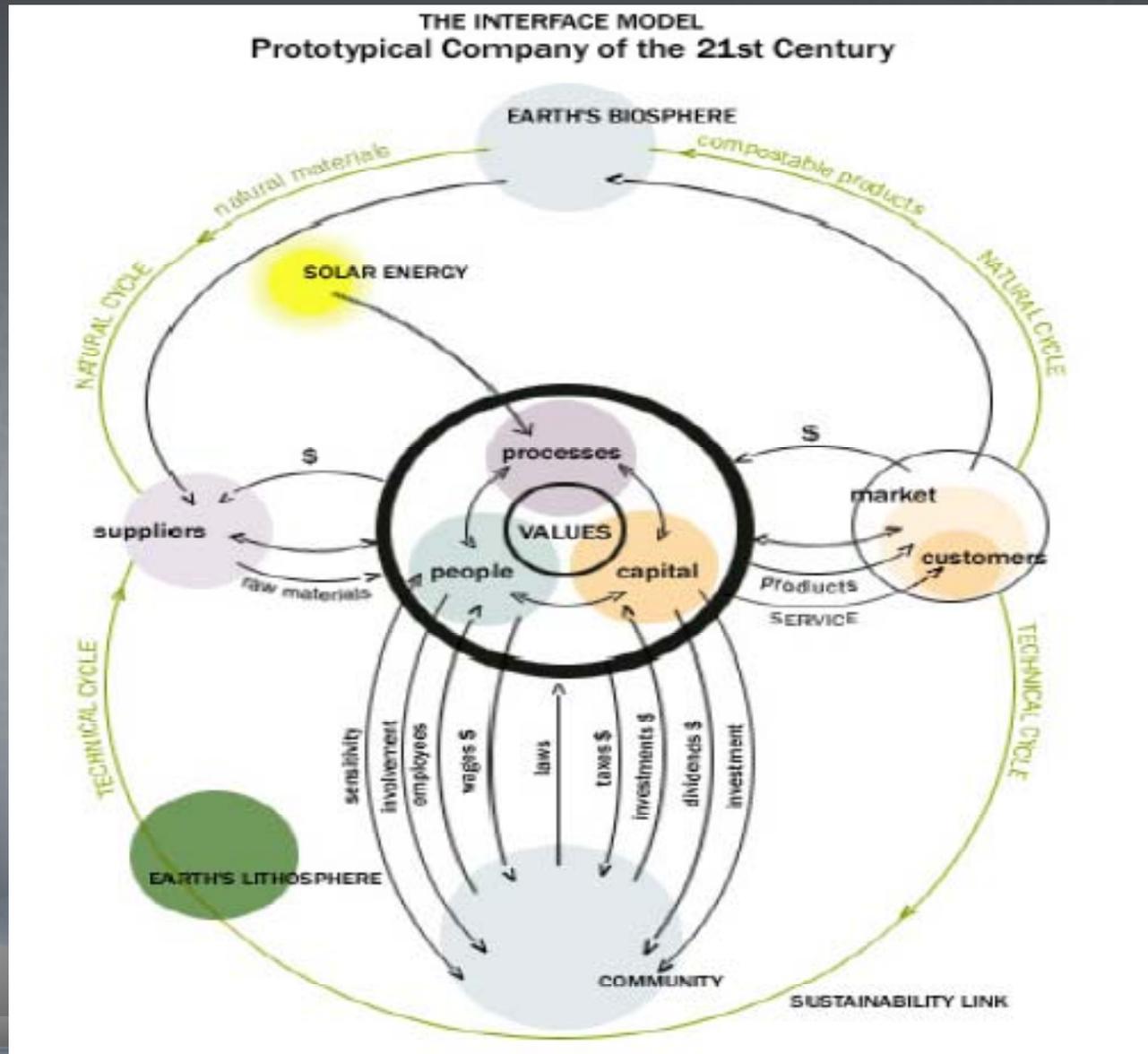
Just do it – It's not perfect, but what an attempt.

- Local busses powered by biogas from residents' waste,
- Rain is channeled into water features
- Green spaces developed
- Cars are hardly anywhere to be seen
- This was an old, polluted shipyard which closed a few decades ago leaving 6,000 people without jobs—not now...

Typical 20th Century Company



Interface's 21st Century Business



Interface's 7 Faces of "Mt. Sustainability"

- Eliminate Waste
- Benign Emissions
- Renewable Energy
- Closing the Loop
- Resource-Efficient Transportation
- Sensitizing Stakeholders
- Redesign Commerce



Ray Anderson



[Ray Anderson at TED](#)

- Thank You All!
- Questions?

Contact

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