SUSTAINABLE SILICON VALLEY

Water Initiative

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

NASA

CITY OF MOUNTAIN VIEW

SOUTH BAY WATER RECYCLING

CITY of PALO ALTO

Goals

- Understand regional water resources challenges and some current solutions
- Introduce the EcoCloud
- Explore the policy and economic issues in regional water sustainability

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Agenda

- Practical initiatives on the ground
- Vision of EcoCloud
- Policy and economic issues

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Agenda

- Practical initiatives on the ground

Eric Rosenblum, South Bay Recycled Water, City of San José

Ann Clarke, NASA Ames

Chris Brown, Webcor Builders

Dave Serge, City of Mountain View

Vision of EcoCloud, Marianna Grossman, Sustainable Silicon Valley

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Agenda

- Policy and economic issues

  Michel Gelobter, Hara Software

  Drew Clark, IBM

  Jim Davis, SAP

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EcoCloud: A Virtual Industrial Eco-System

Marianna Grossman
Executive Director, Sustainable Silicon Valley

Researched by
Chirag Amin
Presidio School of Management

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Key Concepts

- Industrial Metabolism (material & energy flow)
- Industrial Ecology (linking energy and material flows across adjacent facilities/businesses)
- Industrial Symbiosis (integrated design)

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Industrial Symbiosis

- Material exchanges and integrated waste treatment to reduce environmental impact
- Design facilities and processes to
  - maximize energy efficiency
  - conserve material use

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"Waste equals food, whether it's food for the earth, or for a closed industrial cycle" ***William McDonough***

"Only 6% of the vast flows of materials actually end up in products" ***Amory Lovins***

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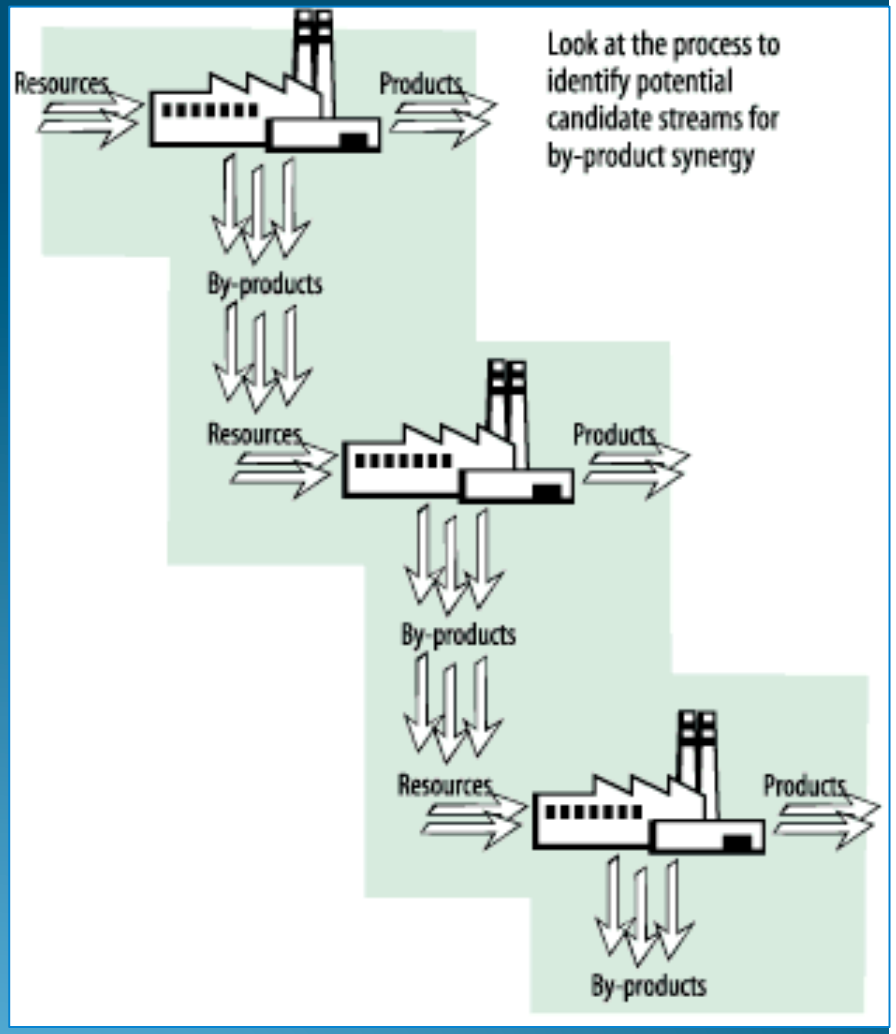
Eco-Industrial Parks

Collective of businesses and other organizations collaborating to achieve sustainable development through sharing of resources and reduction of waste/ pollution



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Some Examples….

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Kalundberg, Denmark

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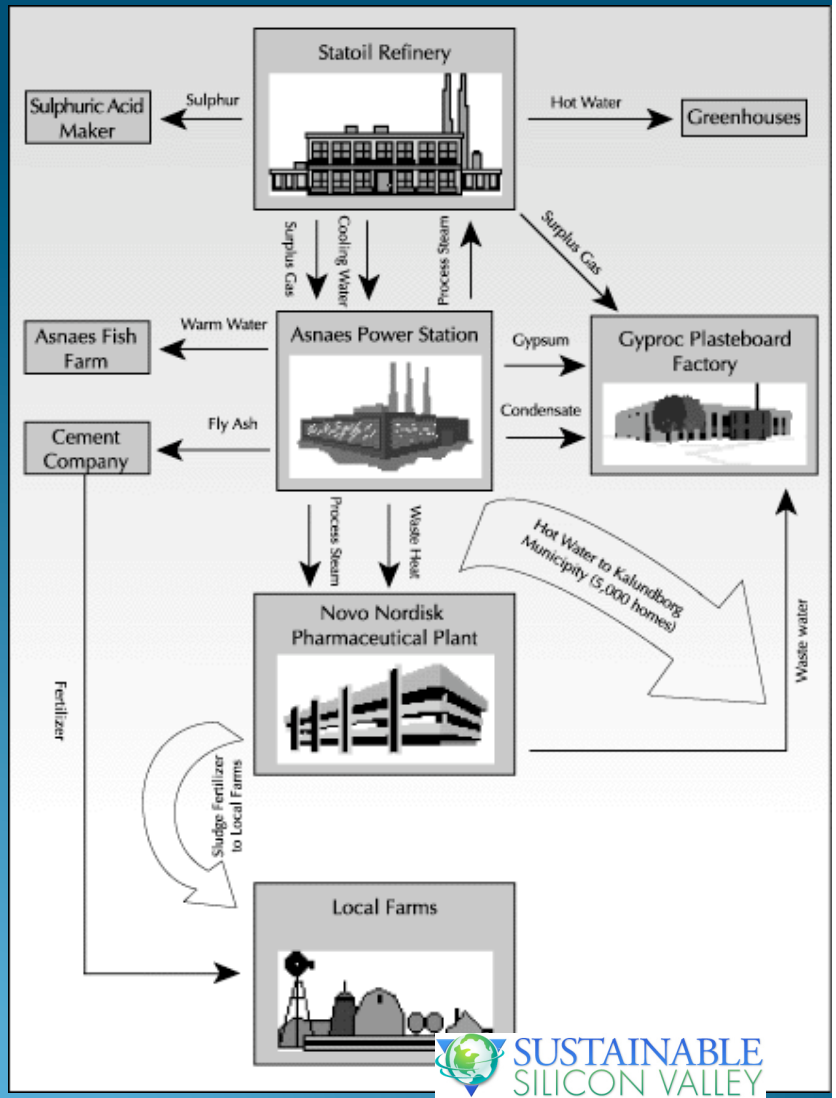
Kalundberg, Denmark

Environmental Savings Per Year

Reduced Resource Consumption
Oil 19,000 tons
Coal 30,000 tons
Water 600,000 cubic meters

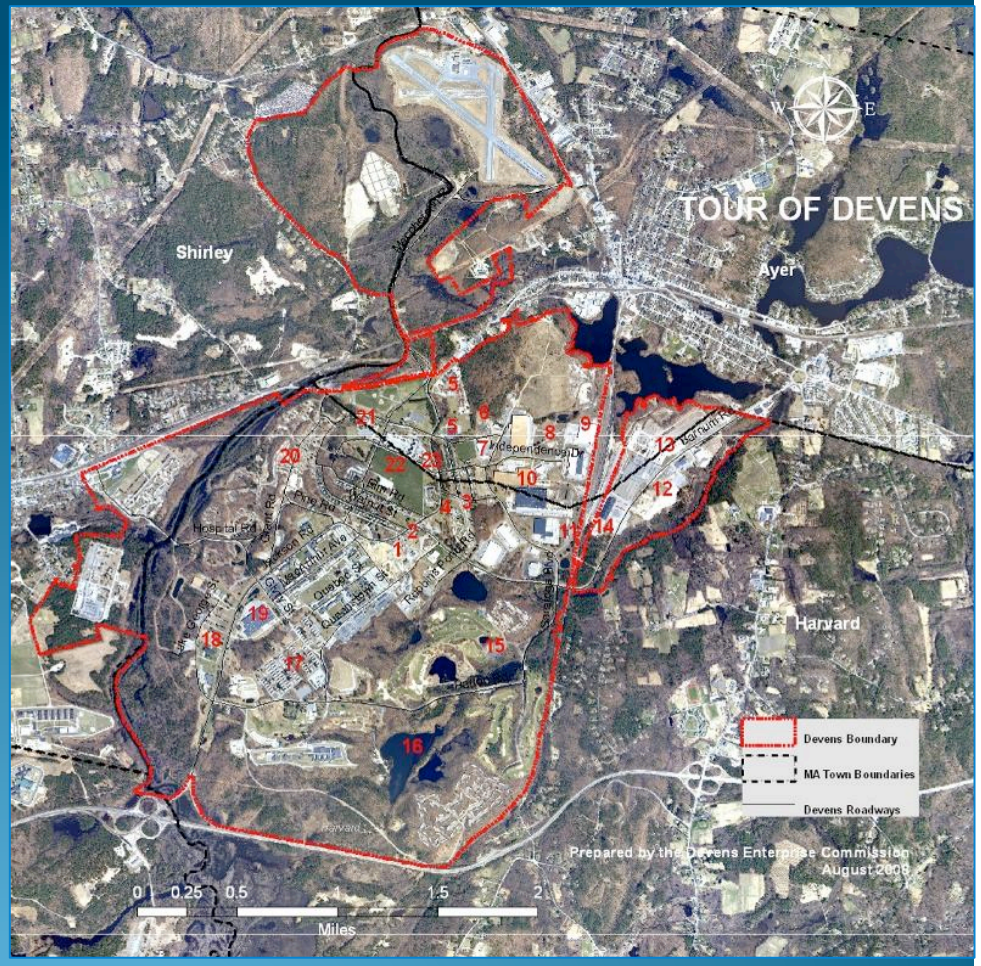
Reduced Emissions
CO_2 130,000 tons
SO_2 3,700 tons

Reuse of Waste Products
Fly Ash 135 tons
Sulphur 2,800 tons
Gypsum 80,000 tons
Nitrogen in sludge 800,000 tons



Devens Park, MA

- Former Air Force Base
- Primary Focus:
  Material Exchange
- EcoStar Program



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An opportunity to explore……

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EcoCloud: A Virtual Eco-Industrial Park

Information & Communications Technology to assess and enable:

- Resource Optimization
- Material and Energy Flow
- Synergies and Linkages Between Companies in the EcoCloud

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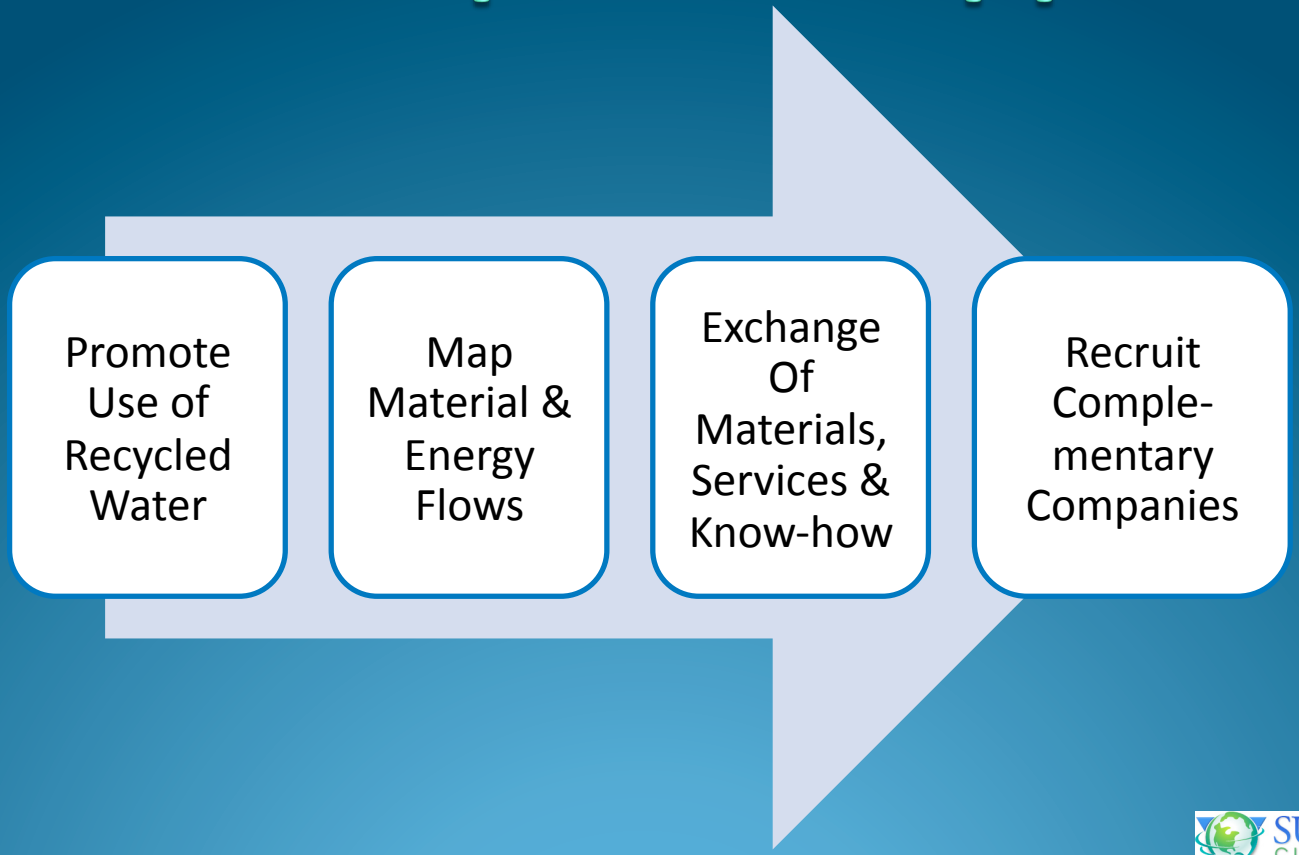
EcoCloud–a phased approach



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EcoCloud: Potential Opportunities

- Material Exchange
- Energy Cascading
- Water Cascading
- Shared Transportation
- Information/Best Practices
- Shared Services
- Other Possibilities????

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Hara

Michel Gelobter

Policy Context for Water in California

IBM

Andrew Clark

- Smarter Planet - Smarter Water as a key element
- Value of Smart Infrastructure - Realtime water monitoring and coupling with electric smart grids
- Advanced Water Management - Role of analytics in measuring and managing water for the enterprise

SAP

Jim Davis

- Sustainable Water Supply Chain – quantifying embedded energy, carbon, resources in water supply options
- Monetization – pricing and valuation to include water externalities
- Portfolio Valuation – evaluating reduction/efficiency options to create marginal cost abatement curve
- Business Integration – embedding water optionality in core asset and operating decisions

SUSTAIN THE BUSINESS MODEL

Environmental Social

COMPETITIVE ADVANTAGE

RESOURCE PRODUCTIVITY

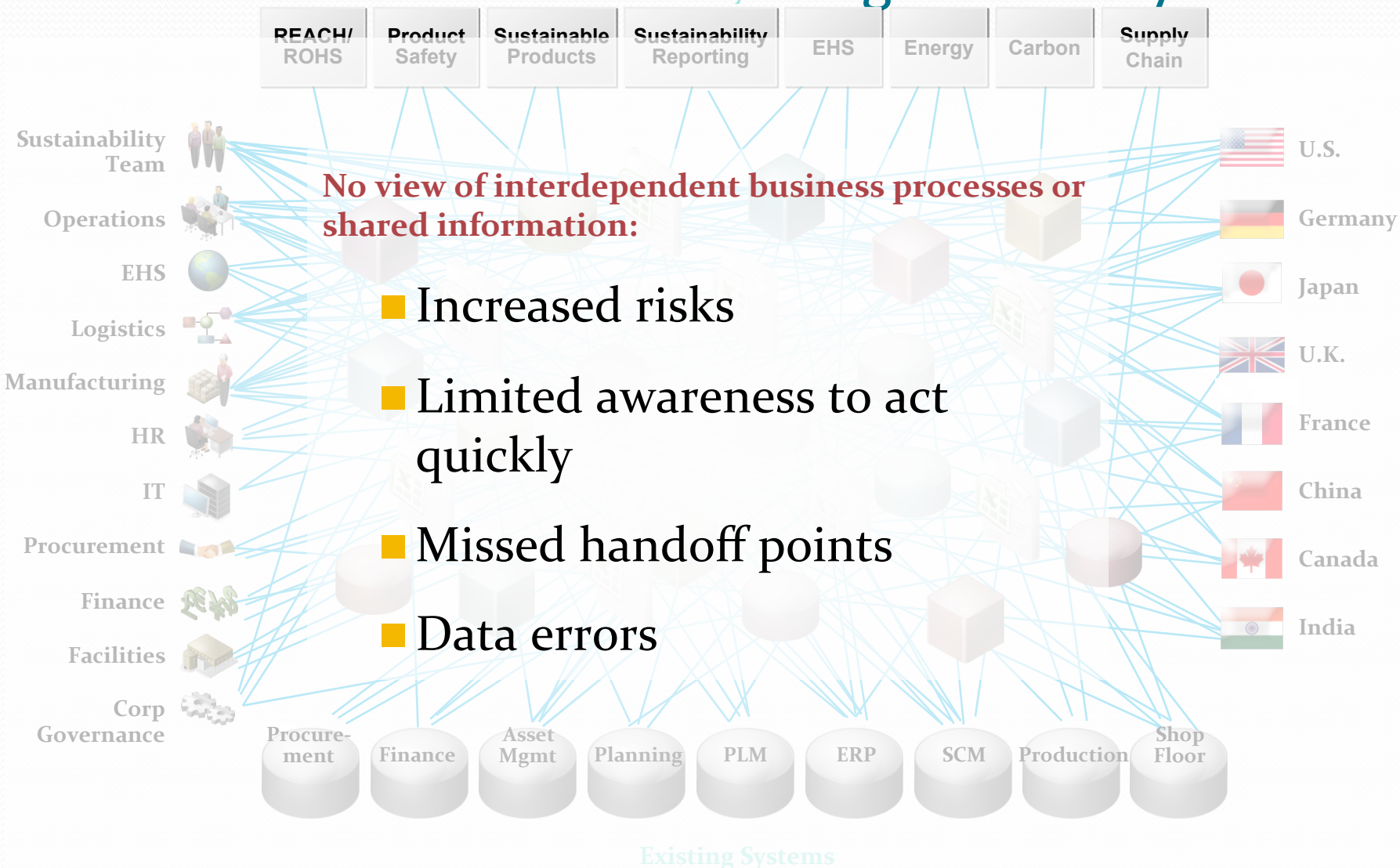
Economic

COST AND RISK OF REGULATION

Business Challenges in Water Sustainability

- Operations Footprint – transparent disclosure of water consumption and discharge (quantity and quality)
- Sustainable Water Supply Chain – quantify embedded energy, carbon, other resources and waste in water supply options
- Product Footprinting – credible LCA and disclosure for water in products
- Monetization – pricing and valuation to include water externalities
- Portfolio Optimization – evaluate reduction/efficiency options to create marginal cost abatement curve for supply/use options
- Business Integration – embed water in core asset, investment and operating decisions

Obstacles on the Road to Sustainability
Manual Processes and Fragmented Systems



No view of interdependent business processes or shared information:

- Increased risks
- Limited awareness to act quickly
- Missed handoff points
- Data errors

Next steps…
Contact Information

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