

Society

- Immigration, Health, Sustainability
- Aging population, declining birth rates
- Breakdown of transitions (school to work to retirement)
- Intergenerational & gender concerns
- Labour force participation rates
- Reorganization of work
- Learning society - education & training
- Social programs
- Balance between choices and bonds

Culture

- Global culture, national governments
- Openness to technological change
- Concern with health/environmental impacts
- Failure to communicate with public
- Too many facts, too little trust
- Need for a dialogue between public & policy-makers

Economy

- Subsidizing transition to bio-based economy*
- Balance free trade with fair trade
- Skills training to complement equipment
- New supply chains for closed-loop processes
- Locating growth (markets or resources?)
- International trade vs national regulations
- Framework of industrial ecology promotes sustainability and integrated solutions

Politics

- Create a "comfort-zone" in the public mind for the bio-based economy
- Dialogue with stakeholders
- Coordination with policy-makers
- Harmonization between regulatory regimes
- Multilateral negotiations within WTO framework
- Respect for jurisdictional domains
- Firmness on objectives, flexibility on methods

Environment

- Actions to reduce
 - Greenhouse gas emissions
 - Other air emissions (SO_x, NO_x, ozone)
 - Water pollution
 - Solid wastes
- Preservation of wilderness
- Ecology movement
- Depletion of natural resources
- Alternative energy sources
- Limits to growth

Technology

- Productivity growth
- Information technologies
- Globalization of information
- Increased access to learning
- Intellectual property regimes
- Basic Research
- Biotechnology

Biotechnology

- Continuous process replaces batch
- Process chemicals re-cycled
- Savings on energy and other supplies
- No caustic ingredients or effluents
- Basic Research leads to newer products
- Value-added processes turn commodity chemicals into specialty chemicals

The Scenario Steps - I

- What are the major issues?
 - Importance and time frame
- Who are the stakeholders?
 - Policy-makers, industries, public
- What matters?
 - Identify the Key Factors
- What are the "drivers"?
 - What goes together?
 - What clashes?

The Scenario Steps - II

- New Key Factors
- New Driving Forces
 - Uncertainties
 - Trends
- Most important
 - Key Factors
 - Driving Forces
- Estimates and ranges for major Uncertainties
- Most important and most uncertain Driving Forces
 - What assumptions define the scenarios?

Scenario Processes

- Codifying Current Thinking
- Learning Scenarios
- From Learning to Decision Scenarios
 - Name changes
 - New elements
 - More than two?
 - Not three!

The Scenario Steps - III

- **Fleshing out the scenarios**
 - Specific activities or decisions that affect the story
 - Key government decisions
 - Actions by other stakeholders
 - Other events and actions
- **Early Trends?**
- **Remaining research questions?**
- **Plan to refresh scenarios**

Model Uncertainties

- Snippets
- Agreed-on linkages
- Contested linkages
- A model is a collection of many snippets
- When does it matter what we do and don't know?

Other Events and Actions

- Other Driving Forces
- Context of Trends
- Organizational and Institutional changes
- Others

Examples of Scenario Exercises

- Naming scenarios
- The Issues Differ
- The Significant Driving Forces May Vary
- Time Frames are appropriate to the Issue

Sustainable Development

	Consumption	
	High	Low
Production	Utilizing	Saving
Adaptation	Managing	Preserving
New Methods		

Changing Maps

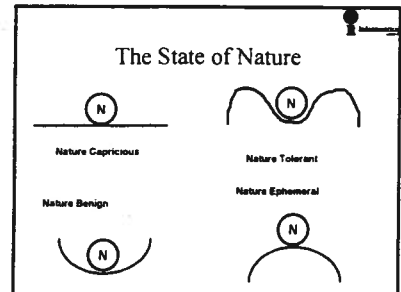
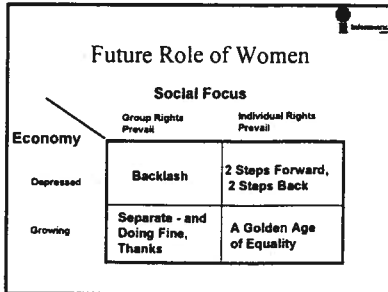
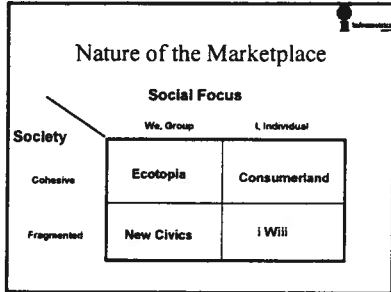
	Economy	
	Low/No Growth	New Secular Boom
Society	Windjammer	Starship
New Social Consensus		
Social Fragmentation	Titanic	HMS Bounty

OECD Futures

	Globalization	
	Status Quo	High
Domestic Policies	National Prosperity	New Age of Global Prosperity
Liberalization		
Modest	Business-as-Usual	Global Market in Services & Goods

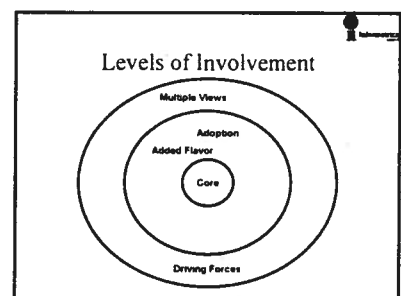
Nuclear Future

	Environmental Risk	
	Low	High
World Oil Price	Strong Nuclear Expansion (II)	Modest Expansion (I)
High Prices		
Low Prices	Muddle (III)	Swedish Process (IV)



- ### Overview of Activities
- The Scenario Agenda
 - Context
 - Relevant issues
 - Scenario Development Process
 - Applications
 - Support future decisions
 - Spread the conversation
 - Build a consensus
 - Improve planning process

- ### Keys to Success of Process
- Participants
 - Balance
 - Multi-disciplinary
 - Open-minded
 - Perseverance
 - Adequate resources - \$ and time
 - Plan for use



- ### Process Pitfalls
- 1 Failing to gain top management support
 - 2 Lack of diverse inputs
 - 3 Poor balance of line and staff people
 - 4 Unrealistic goals and expectations
 - 5 Confusion about roles
 - 6 Failure to develop a clear road map
 - 7 Developing too many scenarios
 - 8 Insufficient time for learning scenarios
 - 9 Failing to link into the planning process
 - 10 Not tracking the scenarios through signposts

- ### Content Pitfalls
- 1 Inappropriate time frame and scope
 - 2 Too limited a range of outcomes
 - 3 Too much focus on trends
 - 4 Lack of diversity of viewpoints
 - 5 Internal inconsistencies in scenarios
 - 6 Insufficient focus on drivers
 - 7 Not breaking out of paradigm
 - 8 Failing to tell a dynamic story
 - 9 Failure to connect with management concerns
 - 10 Failure to stimulate new strategic options

- ### Summary
- Process Matters
 - Content Matters
 - Communication Matters