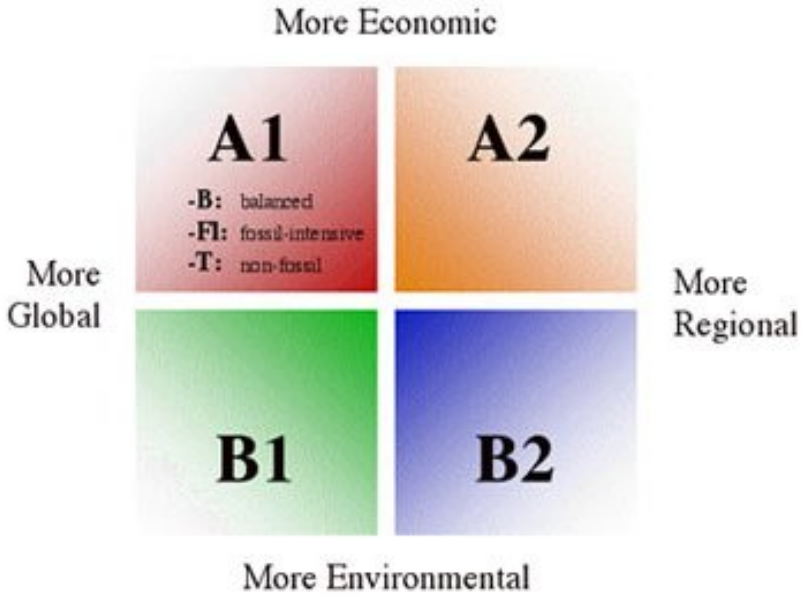
Scenarios

- Plausible what-if stories
- Fictional but based on data



- First used by
  - Military planners
  - Royal Dutch Shell
- Now used by
  - Government agencies
  - Corporations
  - Cities
  - Sustainability planners

Predicting the future is not easy.

"Who wants to hear actors talk?"
--H.M. Warner, Warner Brothers, 1927

"Stocks have reached what looks like a permanently high plateau."
--Irving Fisher, Professor of Economics, Yale University, 1929

"I think there is a world market for maybe five computers."
--Thomas Watson, chair of IBM, 1943

"Computers in the future may weigh no more than 1.5 tons."
--Popular Mechanics, 1949

"With over 50 foreign cars already on sale here, the Japanese auto industry isn't likely to carve out a big slice of the U.S. market."
--*BusinessWeek*, 1958.

"We don't like their sound, and guitar music is on the way out."
--Decca Recording Company rejecting the Beatles, 1962.

"There is no reason anyone would want a computer in their home."
--Ken Olson, president and founder of Digital Equip. Corp., 1977

Scenario Planning

1. Brainstorm and identify driving forces

Categories often used (STEPE):

- Society
- Technology
- Environment
- Politics
- Economics

(i.e., Triple Bottom Line of Environment, Economics, and Equity, plus political and technology factors)

International Energy Agency (IEA)

- Annual *World Energy Outlook*
- Uses scenarios, not predictions.

Current Policies Scenario:

No changes (aka Reference Scenario)

New Policies Scenario:

International commitments to reduce emissions

450 Scenario:

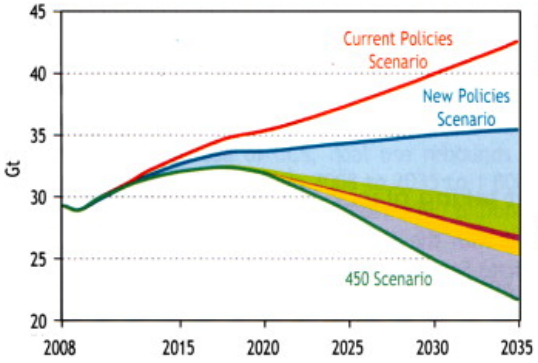
Greenhouse gases limited to 450 ppm CO_2

Deferred Investment Scenario:

Investments fall short of those required in New Policies Scenario

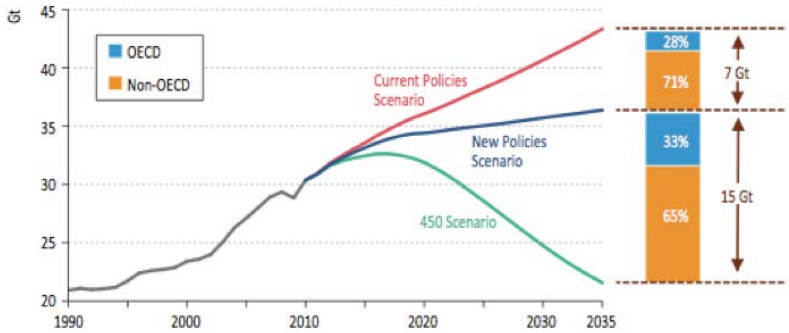
Low Nuclear Scenario:

Much smaller role for nuclear power



	Abatement 2020	2035
Efficiency	76%	43%
Renewables	14%	18%
Biofuels	2%	4%
Nuclear	4%	8%
CCS	3%	26%
Total (Gt CO_2)	1.8	13.7

Figure 6.2 • World energy-related CO_2 emissions by scenario[2]



Scenario Planning

2. Rank the driving forces

   - Factors with greatest impact
   - Factors with greatest uncertainty

(Predetermined factors will be the same in all scenarios.)

Intergovernmental Panel on Climate Change (IPCC)

A1 Scenario – integrated world:

Rapid economic growth
Population peaks, declines
New, efficient technologies
Extensive global cultural interactions

A2 Scenario – divided world:

Regional economic development
Population increases
Nations independent, self-reliant

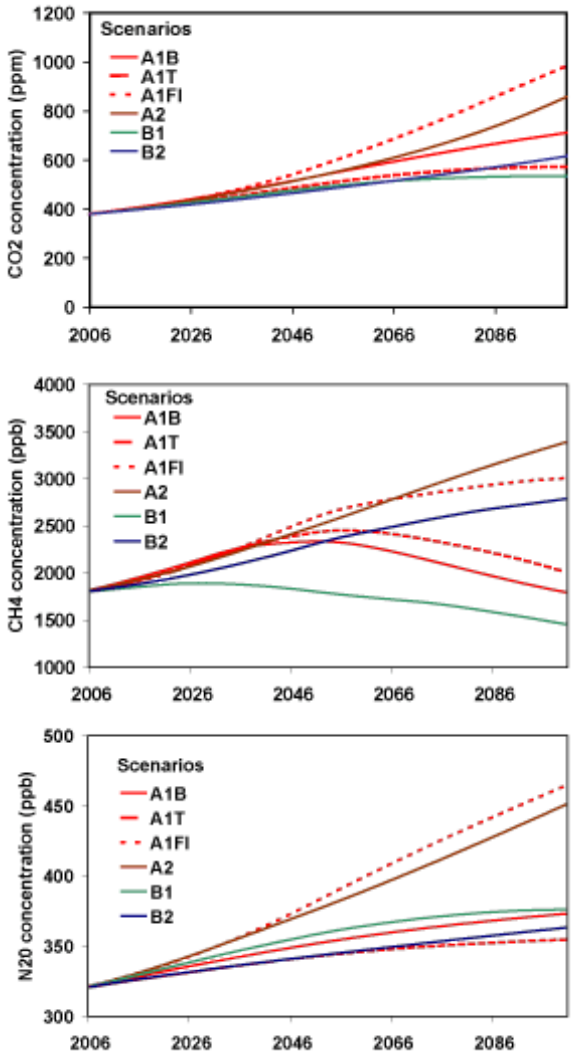
B1 Scenario – integrated, ecol. friendly world:

Economic growth: service, information economy
Population peaks, declines
Reduced resource consumption
Clean, efficient energy technologies
Global solutions, social stability

B2 Scenario – divided, ecol. friendly world:

Local economic, social, environmental solutions
Population rises slowly
Slower, less fragmented technological change

Emissions under various scenarios:



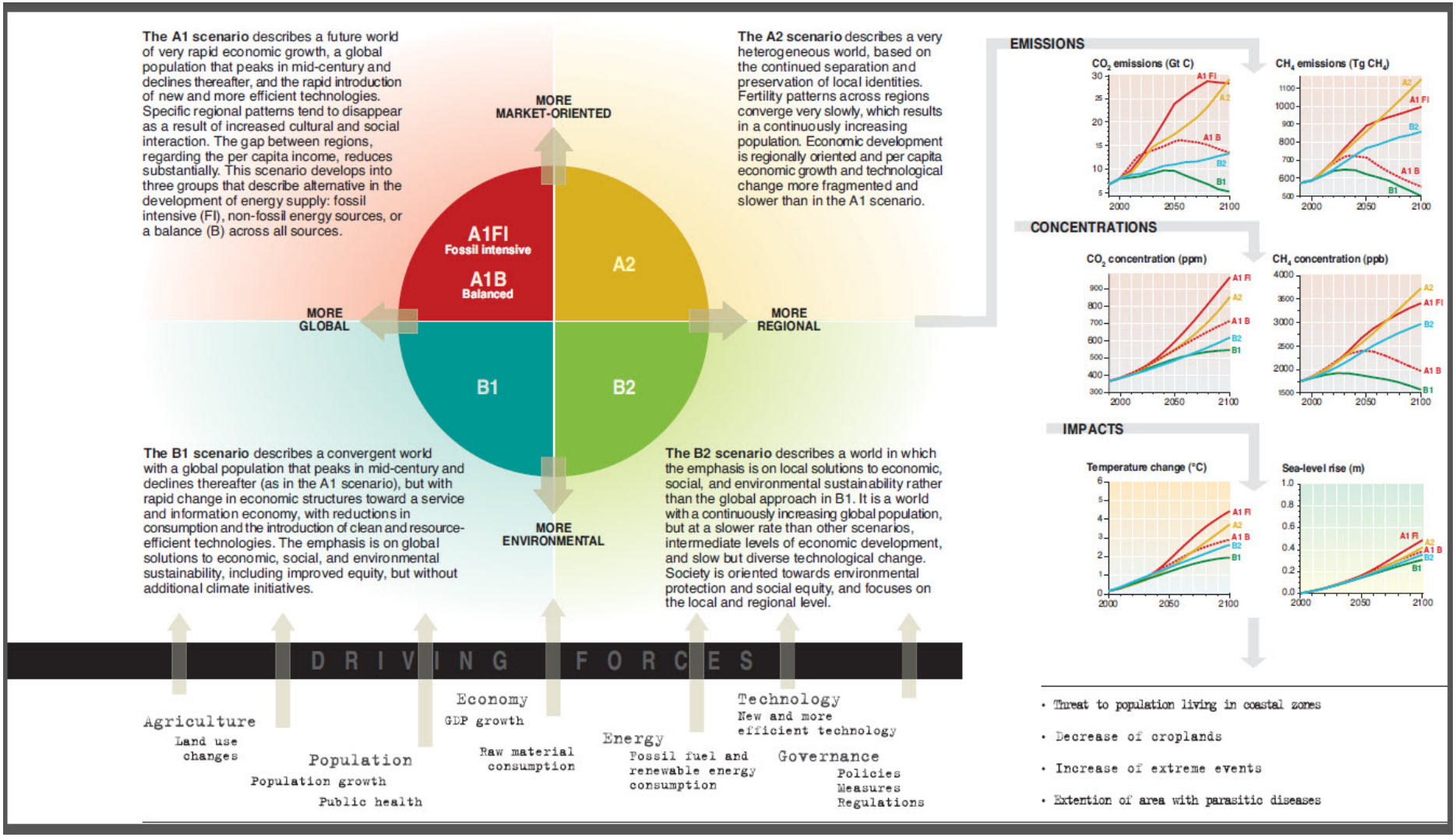
EPA, 2011

Scenario Planning

3. Group and cluster the driving forces

   - Maybe along a spectrum
   - Maybe opposite ends of axes

IPCC Climate Change Scenarios



Drivers:

- Economic growth; income level; social equity
- Global or local
- Population
- Technology; energy sources
- Climate awareness, environmental protection

Scenario Planning

4. Create plausible stories about the future

   - 4-6 scenarios is a good number
   - Describe in as much detail as possible
   - Give them vivid, memorable names

Millennium Ecosystem Assessment

- Four plausible scenarios
- Purpose: explore future of ecosystems and human wellbeing

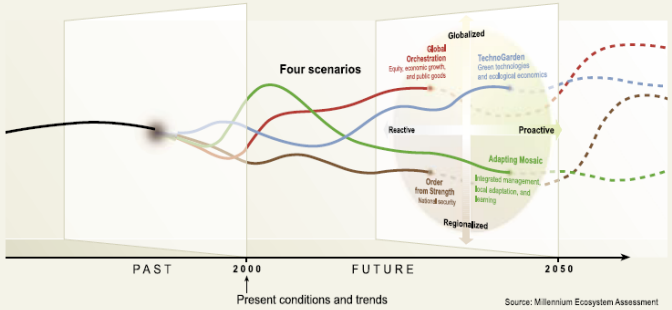
Figure 14. Scenarios Framework

Names: descriptive, vivid, memorable

Box 4.1. Millennium Ecosystem Assessment Scenarios

The MA developed four scenarios to explore plausible futures for ecosystems and human well-being. The scenarios explored two global development paths (globalized versus regionalized societies and economies) and two different approaches for ecosystem management (reactive and proactive). In reactive management, problems are addressed only after they become obvious, whereas proactive management attempts to maintain ecosystem services for the long term. These scenarios were selected to explore contrasting transitions of global society up to the year 2050.

- **Globalized world with reactive ecosystem management;** with an emphasis on equity, economic growth, and public goods such as infrastructure and education (also called *Global Orchestration*);
- **Regionalized world with reactive ecosystem management;** with an emphasis on security and economic growth (also called *Order from Strength*);
- **Regionalized world with proactive ecosystem management,** with an emphasis on local adaptations and learning (also called *Adapting Mosaic*); and
- **Globalized world with proactive ecosystem management,** and an emphasis on green technologies (also called *TechnoGarden*).



Development paths:

- Global
- Regional

Ecosystem management:

- Reactive, only after problems are obvious
- Proactive; long-term thinking

Drivers:

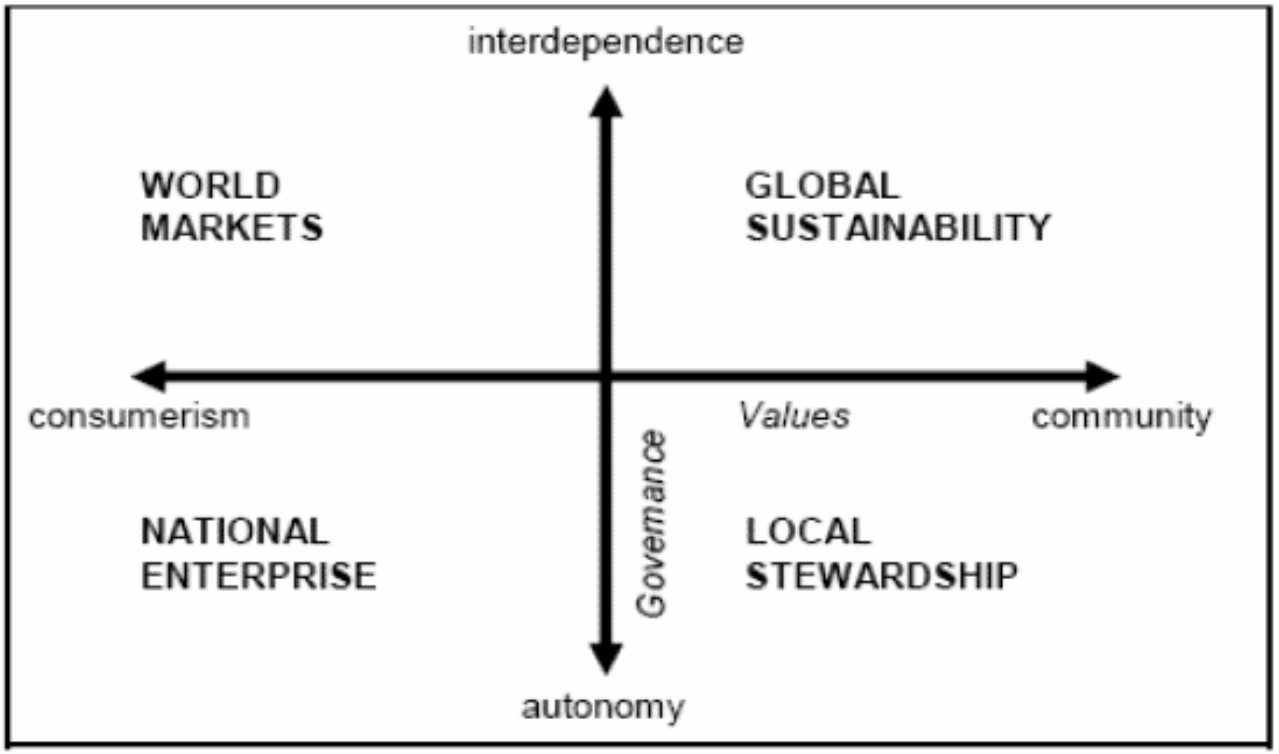
- Economic
- Social
- Environmental
- Population
- Technology

Scenario Planning

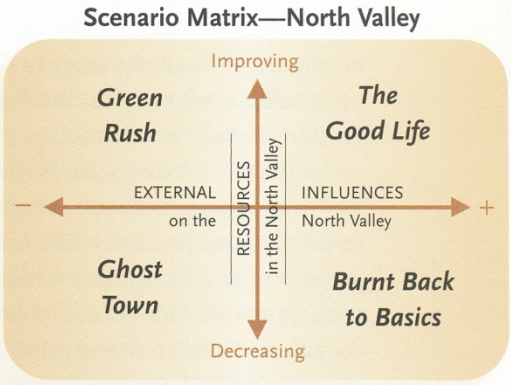
5. Flesh out the scenarios

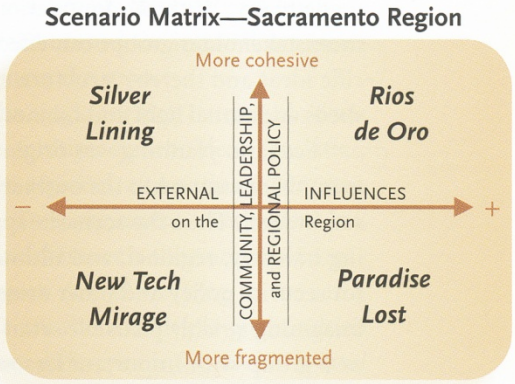
   - Details: How would the world get from here to there?
   - What would have to happen to make the end point of a scenario plausible?

Scotland and UK Climate Impacts Programme – framework for socio-economic scenarios:



California Central Valley scenarios





- Valley Futures Project, 2005
- Developed by citizens

San Joaquin Valley

San Joaquin Valley scenarios

Drivers:

- Economic
- Social
- Environmental
- Educational

Toxic Gold

- Economic prosperity
- Damage to environmental quality

Rosa's World

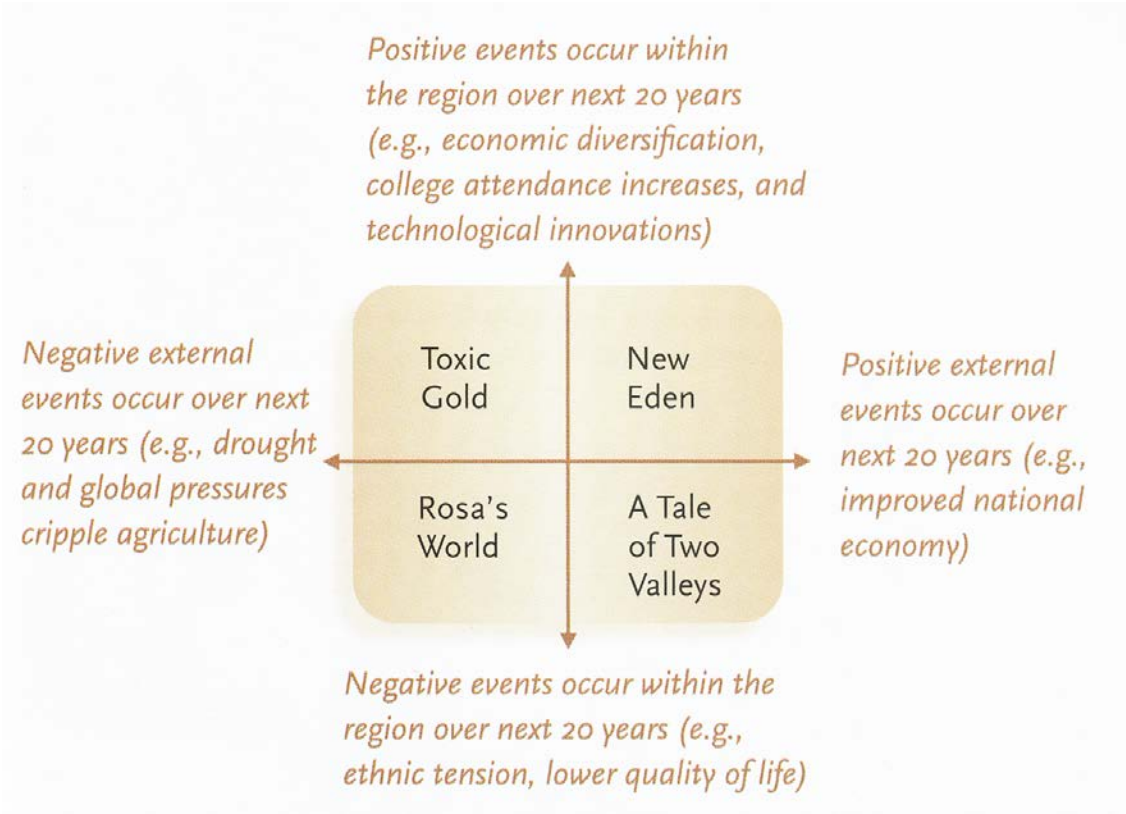
- Water issues, global pressures
- Economic and social collapse

New Eden

- Positive indicators in all sectors

Tale of Two Valleys

- Education shapes the future
- Gap between rich and poor

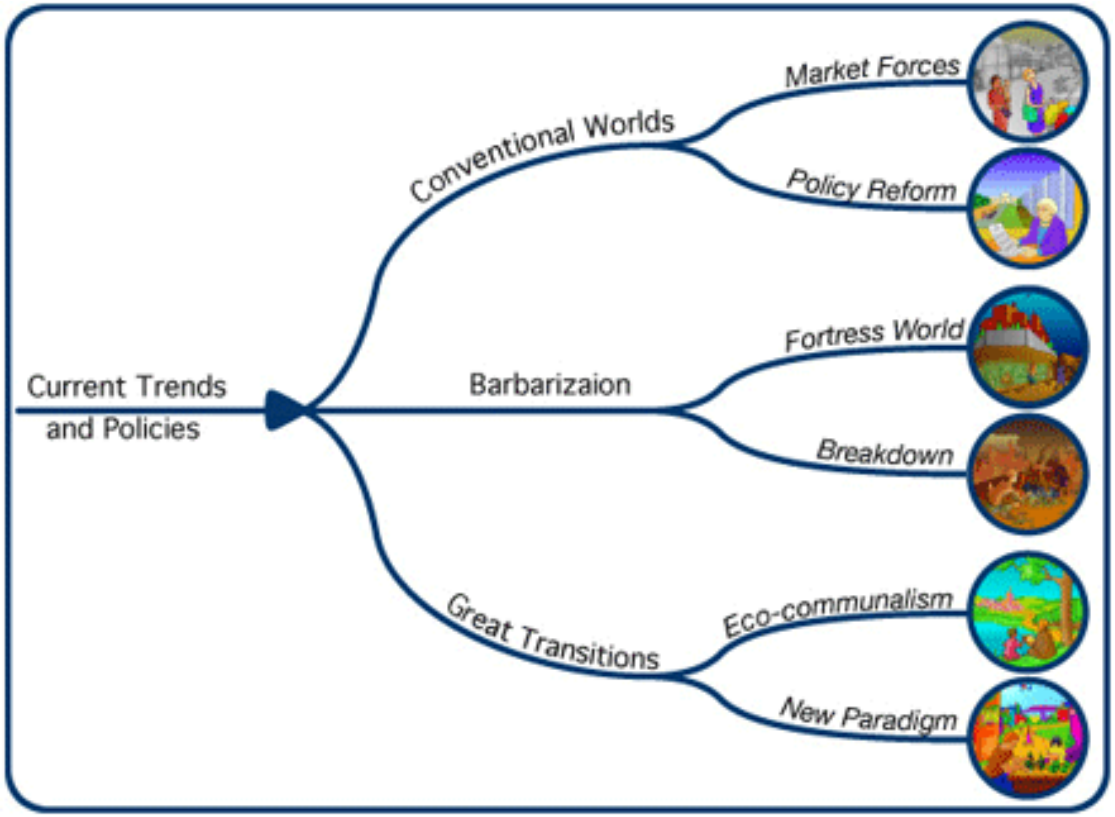


Scenario Planning

6. Rehearse the future

   - What would our situation look like under each scenario?
   - What are the implications?
   - Work backwards: If one scenario is preferable, are there ways to make it more likely?

Tellus Institute – Great Transitions program



TELLUS INSTITUTE
for a Great Transition

TAXONOMY OF THE FUTURE

View graphic.

CONVENTIONAL WORLDS

Conventional Worlds envision the global system of the twenty-first century evolving without major surprises, sharp discontinuities or fundamental transformations in the basis for human civilization. Dominant values and institutions shape the future, the world economy grows rapidly and developing countries gradually converge toward the norms set by highly industrial countries.

Market Forces

This variant incorporates mid-range population and development projections, and typical technological change assumptions. The problem of resolving the social and environmental stress arising from global population and economic growth is left to the self-correcting logic of competitive markets.

Policy Reform

Policy Reform adds strong, comprehensive and coordinated government action, as called for in many policy-oriented discussions of sustainability, to achieve greater social equity and environmental protection. The political will evolves for strengthening management systems and rapidly diffusing environmentally-friendly technology, in the context of proactive pursuit of sustainability as a strategic priority.

BARBARIZATION

These scenarios envision the grim possibility that the social, economic and moral underpinnings of civilization deteriorate, as emerging problems overwhelm the coping capacity of both markets and policy reforms.

Fortress World

Fortress World features an authoritarian response to the threat of breakdown. Ensconced in protected enclaves, elites safeguard their privilege by controlling an impoverished majority and managing critical natural resources, while outside the fortress there is repression, environmental destruction and misery.

Breakdown

In this variant, crises combine and spin out of control, leading to unbridled conflict, institutional disintegration and economic collapse.

GREAT TRANSITIONS

Great Transitions explore visionary solutions to the sustainability challenge, including new socioeconomic arrangements and fundamental changes in values. They depict a transition to a society that preserves natural systems, provides high levels of welfare through material sufficiency and equitable distribution, and enjoys a strong sense of social solidarity. Population levels are stabilized at moderate levels and material flows through the economy are radically reduced through lower consumerism and massive use of green technologies.

Eco-Communalism

The Eco-Communalism variant incorporates the green vision of bio-regionalism, localism, face-to-face democracy, small technology and economic autarky.

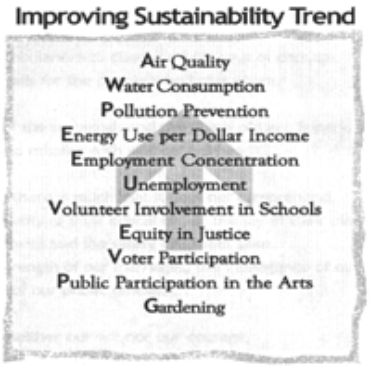
The New Sustainability Paradigm

This variant shares some of the goals of the Eco-Communalism scenarios, but would seek to change the character of the urban, industrial situation rather than to replace it, to build a more humane and equitable global civilization rather than retreat into localism.

See *Great Transition: The Promise and Lure of the Times Ahead* for more details.

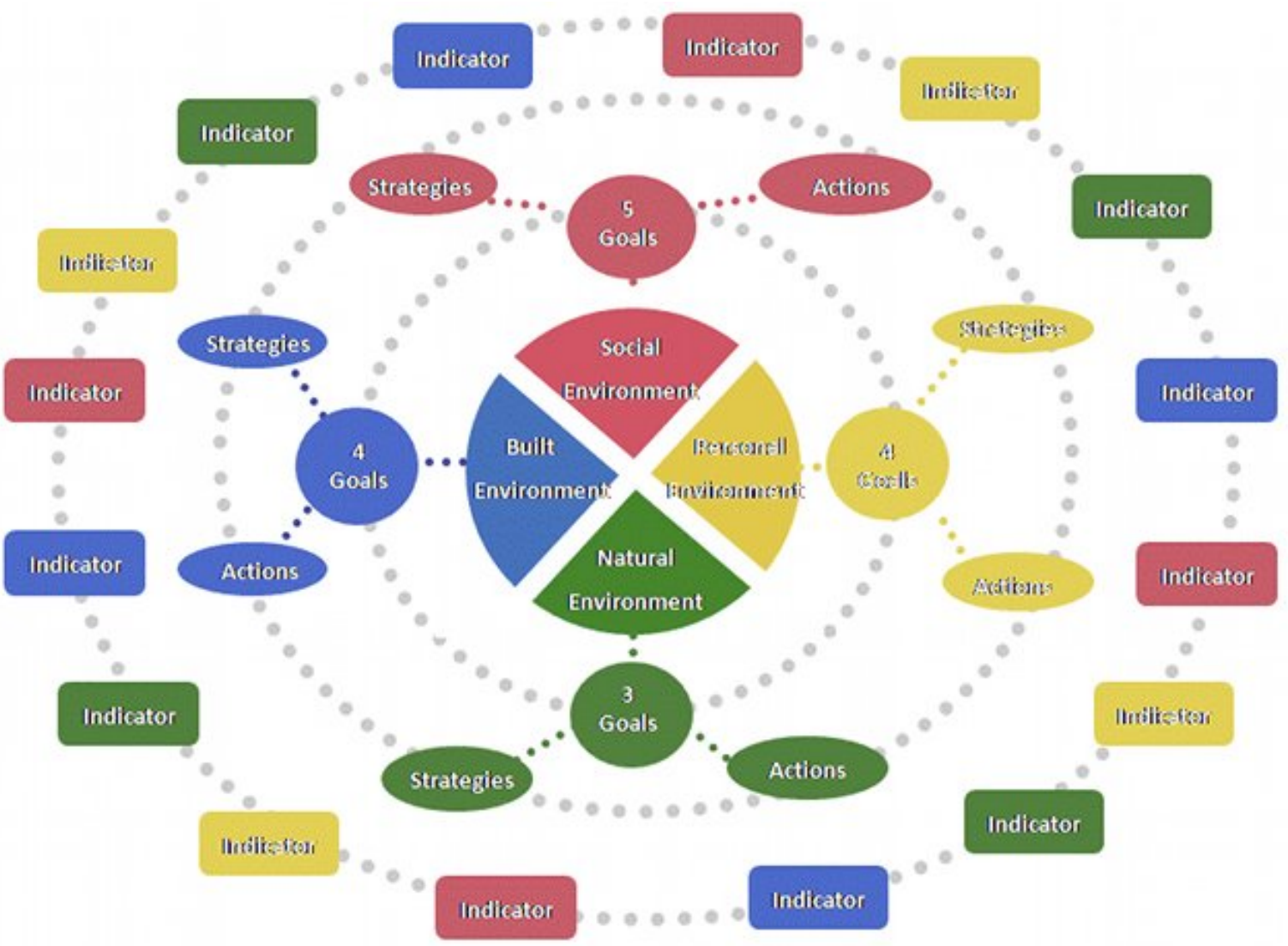
Scenario Planning

7. Select indicators
   - Small details
   - Early indicators of each scenario
   - Prepare for each possible future



“Sustainable Seattle”

“Sustainable Seattle” indicators



THE SCENARIO DEVELOPMENT PROCESS

Define Focal Issue, Question, or Decision and Relevant Timeframe
Review Past Events & Alternative Interpretations

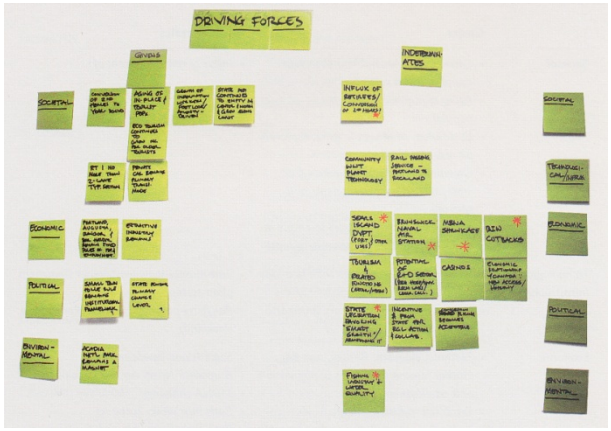
Identify Driving Forces

Identify Critical Uncertainties

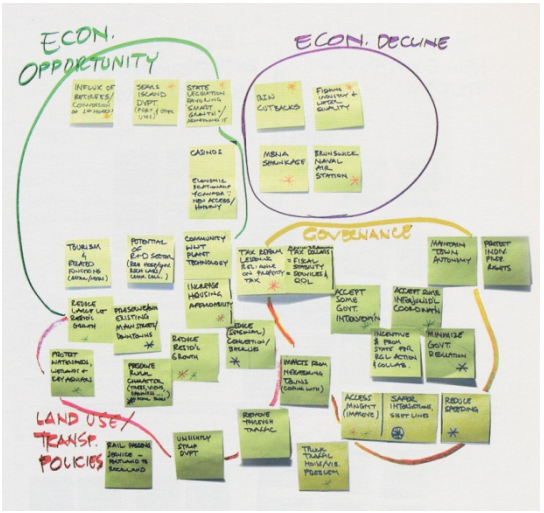
Develop Plausible Scenarios

Discuss Implications & Paths

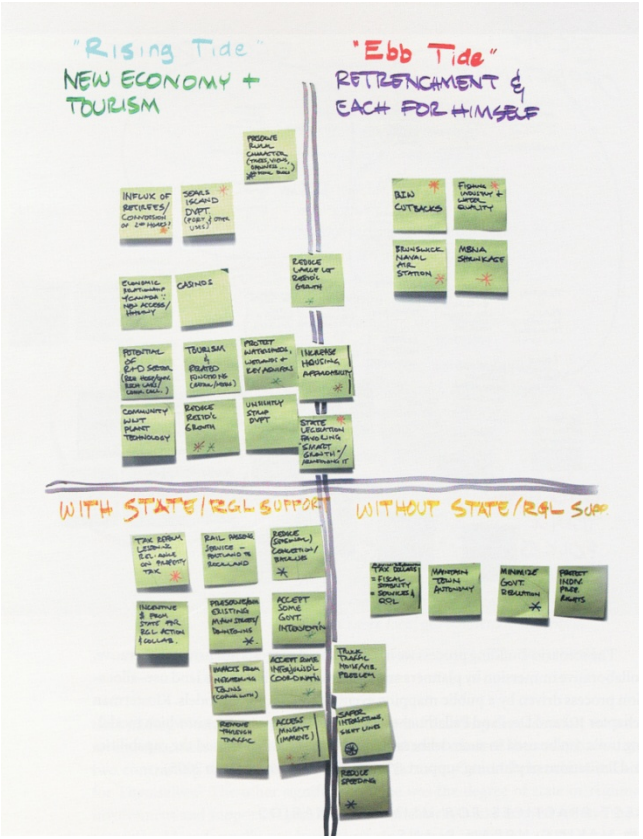
Maine Dept. of Transportation – Route 1 scenario planning process



Drivers



Clustering –
Drivers and values



Scenarios