

APPENDIX 5: SCENARIO PLANNING APPROACH

A planning horizon of fifty years

How far out in the future we look determines both the uncertainty involved and the strategies we consider. The farther we look out, the greater the range of actions and potential actors we work with [1].

Take a one year plan: what can change in a year? At the Basin scale, not very much. Population growth, development patterns, and environmental resources will change, but in a largely predictable manner. A one year plan might focus on improvements in attracting skilled workforce through labor negotiations, re-vegetation of a specific parcel, or a construction plan for a new mixed-use building.

If we scale up to a to a ten year plan, what changes? There is greater uncertainty in population and economic growth, development pressure and environmental resources, but predictive models can provide a fair estimate of the magnitude of change. Ten year plans attempt to get in front of today's problems, proactively allocating resources and restrictions to shape the future, as opposed to reacting to demands as they arise. For example, Master Plans designate zoning to efficiently support new growth given the current locations of infrastructure, employment and conservation areas.

But if we scale up the time frame to a fifty year plan, the implications for decision making may be significant. Future trends become highly uncertain, even with sophisticated predictive models. People not even yet born will be leaders in the Basin. Buildings, bridges, levees, power lines will likely be torn down and rebuilt or redesigned. Technology we cannot even conceive of today might be a household staple. Climate impacts may fundamentally alter hydrological systems, such that miles of estuaries are transformed to salt marshes, and hundreds of acres of snowfields may disappear, exposing vegetation year-round for the first time in centuries. When we think fifty years out, what we know, even what we anticipate with models, becomes dwarfed by untested hypotheses [2].

Scenarios are best suited to help experts develop hypotheses about potential interactions of uncertain driving forces [3]. Thinking fifty years out simultaneously expands opportunities for decision-making and strips decision makers of certainty and control [1]. When we think fifty years out, we are thinking with a long view. Decision-makers can be freed from the need to respond to immediate pressures and can focus on developing strategies that take into account long term trajectories [3]. The question is no longer about where to allocate a thousand new homes, but rather how development pressures can be re-directed to improve the resilience of the urbanizing region [4]. The challenge for decision makers is to suspend their judgments about what we know and embrace the long view [3].

What are Scenarios?

Scenarios are alternative descriptions or stories of how the future might unfold [5]. Scenarios bring together information about different trends and possibilities into internally consistent stories of possible futures [6]. Different managers use the word scenarios in different ways. When we refer to scenarios, we mean how might different future conditions, all of which are possible, influence long-term decision-making. For example, how might a combination of regional growth in resource industries and major decline in snowpack influence our ability to restore floodplains differently than a combination of regional growth in biotech and minimal snowpack decline? The final set of conditions described attempt to represent the most dramatically different ways in which the future may challenge our decision making, not the most likely or the most appealing. Scenarios help us characterize divergent pathways when reducing future uncertainty is not appropriate [7].

Main points:

- Scenarios are hypotheses of alternative futures designed to highlight the risks and opportunities involved in strategic issues and assess strategic decisions [8].
- Instead of focusing on a single prediction extrapolated from past trends, scenarios focus on uncertain drivers and expand the assumptions of predictive models to illuminate otherwise unforeseen interactions between individual trajectories.
- Scenarios are illustrative accounts of multiple futures that direct our attention towards a handful of alternative outlooks that contain the most relevant uncertainty dimensions [9].
- Scenarios help us ask: If the future turns out differently than originally anticipated, will our strategy still work?

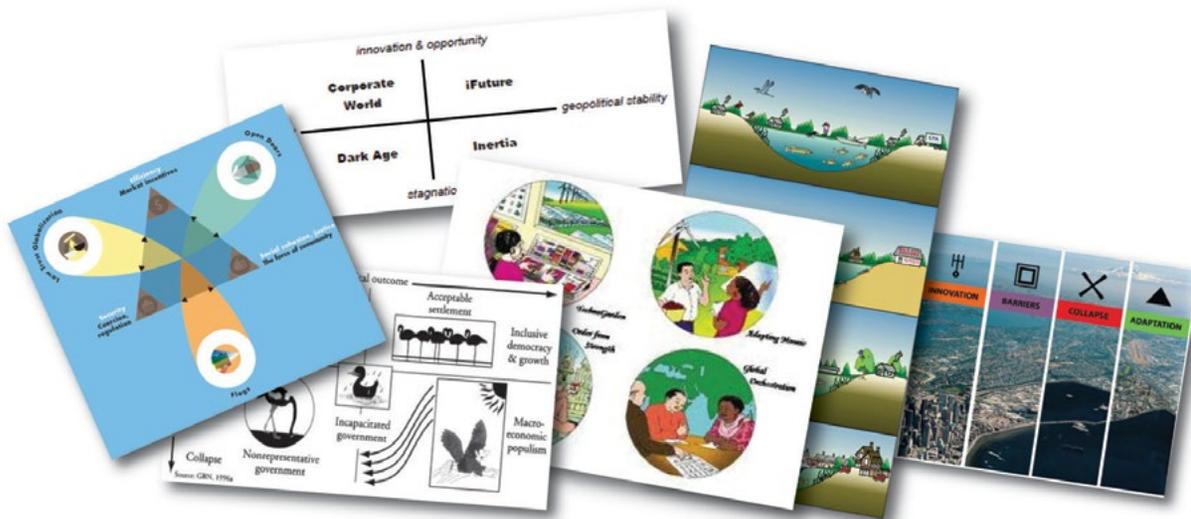
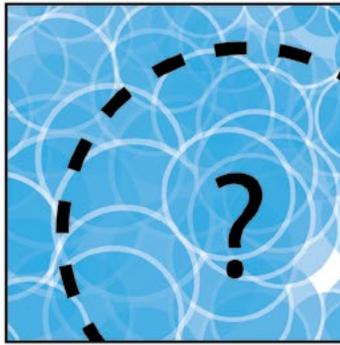


Figure A5.1 Examples of global scenarios. Pictured, left to right: Shell, Monte Fluer, WA Dept of Commerce, Millennium Ecosystem Assessment, Northern Highland Figure II.7 Lakes District, WI, and Puget Sound Scenarios.



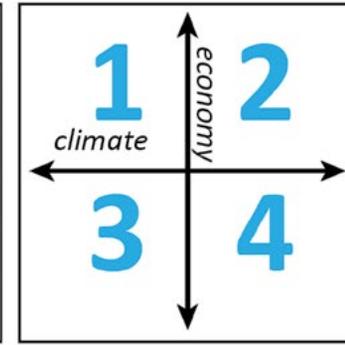
1. Defining the focal issue: The focal issue is the central question clarifying the focus of the scenarios, including the timeframe and central decision.



2. Identifying the drivers: Driving Forces (or drivers) are factors or phenomena which alter the future trajectory in significant ways. Drivers are clusters of trends or shifts. For example, population growth is a driving force with an effect on resource consumption and water quality.

driving force	I	U
climate change	***	***
economy	***	**
politics	**	***
agriculture	**	*
health	***	*

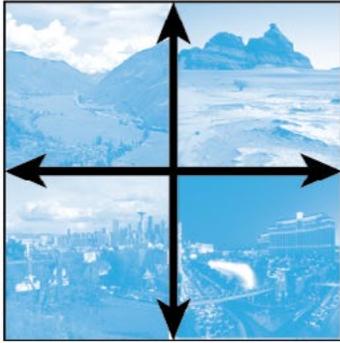
3. Ranking the importance and uncertainty: Scenarios focus on the most divergent and compelling future conditions affecting the focal issue (as opposed to all plausible futures). The focus is created by selecting two critical uncertainties drivers out of the identified list.



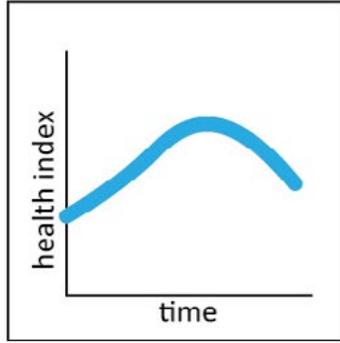
4. Creating the Scenario logics: Scenario logics represent the organizing structure, characterizing distinct alternative future conditions. Scenario logics are created by crossing the most extreme yet plausible end states of the selected drivers, resulting in a matrix of four frames that define the scenarios considered.

Figure A5. 2 The Scenario Planning Methodology: What goes into developing scenarios?

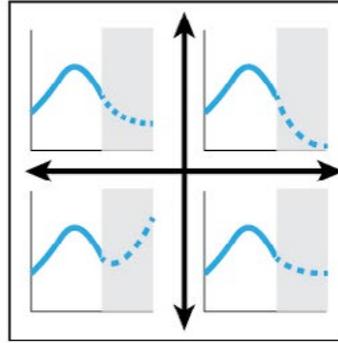
The Eight-Step Scenario Planning framework is described by Schwartz [3].



5. Developing the Scenarios: Scenario development entails researching and writing the narrative of each Scenario from the perspective of the selected driving forces and identified actors. The process essentially follows up the initial question of ‘what if’ with a plausible hypothesis based on publications and expert intuitions.



6. Identifying the indicators: An indicator is a measurement of an objective or an effect to be obtained. Once the Scenarios are developed, indicators describe the implication of the scenario of the focal issue. Identified indicators must be 1) relevant to the focal issue, 2) sensitive to differences between the scenarios 3) quantifiable and 4) communicable.



7. Assessing the implications: The implications of the scenarios are assessed by forecasting alternative future baseline conditions. This is the future value of a variable, or indicator, incorporating the implications of the scenario storylines, but not the benefits of any specific strategies.

strategy	1	2	3	4
A				
B				
C				

8. Evaluating strategies: The final step of scenario development tests the efficacy of alternative strategies with respect to improving the future conditions of the selected indicators of concern. The scenario planning process can help identify strategies and assess their ability to achieve desired goals and objectives across the different scenarios.

References Cited

1. van der Heijden, K.. (1997). *Scenarios, Strategies and the Strategy Process*. Brueklen: Nijenrode University Press.
2. Carpenter, S. R., E. M. Bennett, and G. D. Peterson. 2006. Scenarios for ecosystem services: an overview. *Ecology and Society* 11(1): 29. [online] URL: <http://www.ecologyandsociety.org/vol11/iss1/art29/>
3. Schwartz, P. (1991). *The Art of the Long View*. New York: Doubleday/Currency.
4. Carpenter, Stephen R. 2002. *Ecological Futures: Building an Ecology of the Long Now*. http://www.esa.org/history/Awards/papers/Carpenter_SR_MA.pdf
5. Hodgson, T. 2003. *Strategic Thinking with Scenarios*. Metabridge. <http://www.decisionintegrity.co.uk/>
6. Ratcliffe, J. S. (2000). "Scenario Building: A Suitable Method for Strategic Construction Industry Planning?" *Property Management* 18(2): 127 – 144.
7. Peterson, G. D., Cumming, G.S. and S.R. Carpenter (2003). Scenario planning: a tool for conservation in an uncertain world. *Conservation Biology* 17(2): 358-366.
8. Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Scenarios, Volume 2*. Island Press. <http://www.maweb.org/documents/document.771.aspx.pdf>
9. M. Lindgren and H. Bandhold (2003). *Scenario Planning: the link between future and strategy*. New York, Palgrave, Macmillan.