

## SCENARIO PLANNING AND THE IPCC

### CLIMATE CHANGE AND THE FLORIDA KEYS

#### FACT SHEET 1

#### FKNMS/NOAA SOCIOECONOMIC RESEARCH AND MONITORING PROGRAM

*The views and recommendations are the author's and are not necessarily endorsed by NOAA.*

#### LONG-TERM PLANNING IN AN UNPREDICTABLE WORLD

In the 1950s and 1960s there was an optimistic belief in the more advanced economies that they would continue to grow steadily, leaving the devastations of two world wars and the Great Depression firmly behind. The expectation of enduring growth persists, along with mounting resentment over domestic and international inequities, conflicts, and oil crises.

There is a growing recognition, however, that social, political and economic change is becoming impossible to predict, even before we consider the impact of a changing climate.

Scenario planning had its origin in military war games in the 1940s and moved into the civil domain through the RAND Corporation and the Hudson Institute. But it took until the late 1960s before any major business began to realize that the global outlook had become inherently uncertain, and that it was no longer sensible to rely on conventional business forecasting methods assuming that the future would be much like today, only richer.

Shell was among the first large corporations to develop scenario planning. Years before the first oil crisis in 1973 the company explored a range of possible future business conditions in the oil industry, including a “crisis scenario” where the Organization of Petroleum Exporting Countries (OPEC) used its cartel power to break the upward trend in global supply, triggering a large increase in the price of crude oil. The oil majors routinely planned for 6% annual compound growth in supply to match the escalating global demand. As a direct result of its new insights from scenario planning, Shell abandoned this policy, which gave it an advantage over its competitors who took years to even begin reducing their planned refinery capacity.

#### THE ASCENT OF SCENARIO PLANNING

Scenario planning has become a major strategic planning tool. If the future cannot be predicted even a few years ahead, it follows that all scenarios that are currently plausible are equally likely to occur. The scenarios set boundaries for credible best and worst cases. No scenario will happen exactly as described, but together they set the planning framework.

Scenarios are based on *stories* – mental models that describe a broad range of sociocultural, technological, economic, environmental and political factors that are relevant in a particular analysis of the future. The future is described comprehensively and not just in numbers. Setting the boundaries for worst and best cases, the stories encourage planners to think “beyond the square” in a way that conventional numerical forecasts cannot. This provides a

basis for policy-makers to define the most desirable world and work towards preventing the worst case from happening, which is the ultimate purpose of the Florida Keys project.

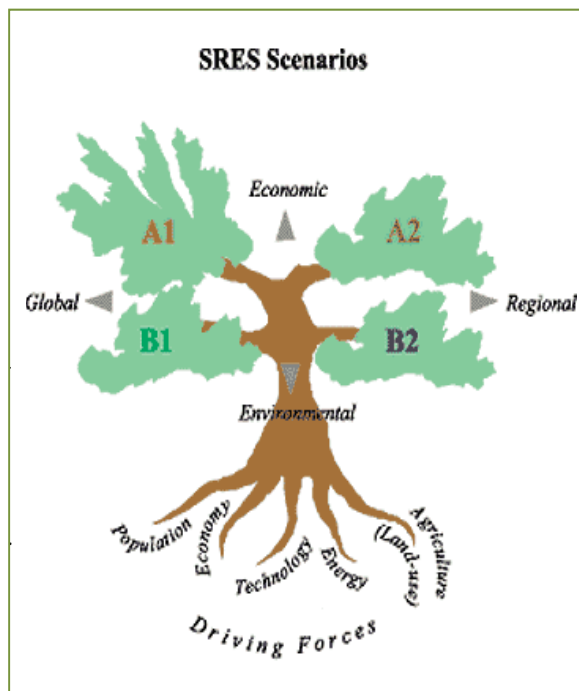
Scenarios can cover all sorts of issues, ranging from global climate change to “what-if” analysis of a location or industry or individual organization, epitomized by Shell’s planning how to deal with a global oil crisis before it actually happened in 1973, or when deriving local from global scenarios as described for the Keys in Fact Sheet 6.

Scenarios are built up as descriptions of different future worlds, most commonly three or four setting the framework. While the basic scenario story is verbal, it can be augmented by statistical estimates for each of the scenario stories, based on current data. The Florida Keys study does this.

### CLIMATE CHANGE SCENARIOS

The global scenarios in the *Special Report on Emissions Scenarios* by the Intergovernmental Panel on Climate Change (IPCC) describe what may happen under continuously changing sociocultural, technological, economic, environmental and political conditions. Global change will continue to occur in any case, but superimposing climate change on particular global change assumptions has a profound impact on the entire mental model, and on what policies are appropriate when planning for the best possible future.

The IPCC built four global scenarios using a two-dimensional matrix: “economic” versus “environmental”, and “global” versus “regional”. Each combination occupies a branch of the tree in the IPCC diagram to the left. The



The “A1” scenario, for example, describes an interconnected world driven by economic growth, whereas “B1”, while also globally integrated, has more environmentally sensitive policies. The “A2” and “B2” scenarios describe worlds where regional forces prevail over globalization.

The basic driving forces for the four scenarios are population, economy, technology and energy, and land use including agriculture and forestry.

The IPCC used the scenario stories as a basis for a wide range of numerical projections including economic growth, energy use, global warming, and greenhouse gas emissions. In summary,

the A1 “marker scenario” (based on energy use “balanced” between renewable, nuclear, and fossil fuel) shows the highest economic growth, and the second-highest level of atmospheric pollution and global warming. B1 has the second-highest economic growth and the lowest greenhouse gas emissions. The two regional scenarios, A2 and B2, have lower economic growth than their globalized counterparts. A2 shows the highest rate of atmospheric pollution, and B2 in its original form a higher rate than the globalized B1. Both

regionalized scenarios show continued population growth, whereas A1 and B1 have the global population peaking at about nine billion in 2050 and falling to seven billion in 2100.

The numerical projections depend on the scenario stories from which they were derived. The numbers and the words are both integral parts. Some authors select projections such as the fossil-intensive or “balanced-fuel” version of the A1 scenario and refer to them as “business-as-usual”, which is strictly speaking incorrect in scenario-planning terms.

Furthermore, the scenario stories were written in the 1990s, and the threat of climate change has intensified over the past decade, as discussed in Fact Sheet 2.

HHG, November 1, 2010

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**Further reading:**

*Climate Change and the Florida Keys*, in particular Sections 1.7 and 7.2.1, 7.3.1, 7.4.1 and 7.5.1, which contain the four IPCC scenarios verbatim.

Background Paper 1, *Changing Global Scenarios*, which describes how climate change has become more urgent since the original stories were written in the 1990s.

Fact sheets 2 (*The aggravated threat of global climate change*) and 6 (*Scenarios for the Keys*).

Kees van der Heijden (1996), *Scenarios: The art of strategic conversation*. Wiley, New York.

Nebojsa Nakicenovic and Rob Swart (ed.) (2000), *IPCC Special Report on Emissions Scenarios* (2000). <http://www.grida.no/climate/ipcc/emission/>.

Rajendra Pachauri and Andy Reisinger (ed.) (2007), *Climate Change 2007: Synthesis Report*. IPCC. ([http://www.ipcc.ch/publications\\_and\\_data/ar4/syr/en/contents.html](http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html)).

Pictured: John Pennekamp Coral Reef State Park (HHG 2008)