



**DECISION ANALYSIS: WHERE DO
WE GO FROM HERE?**

Howard Kunreuther
Wharton School
University of Pennsylvania

NORMATIVE MODEL

- Alternatives are well-specified
- Probabilities of different events are well-specified
- Consequences from alternative/event combinations can be elicited (e.g. Use of value trees)
- Choose alternative that maximizes expected utility for key decision maker(s)

DESCRIPTIVE MODEL

- Status quo bias--hard to specify alternatives
- Probabilities are often ambiguous
- Biases and heuristics in estimating probabilities
- Short-time horizons for evaluating consequences (i.e. myopia)
- Conflicts for choosing between alternatives between concerned parties

PRESCRIPTIVE MODEL

- Forcing individuals to develop new alternatives to compare with status quo
- Utilize risk assessment models to provide estimates of probabilities
- Provide appropriate decision support systems (DSS) to aid decision makers with information on evaluating different alternatives
- Compare predictions from normative with descriptive models to see key differences
- Expand set of policy tools to deal with descriptive biases

ILLUSTRATIVE EXAMPLE (MITIGATION FOR REDUCING EARTHQUAKE LOSSES)

- Decision analysis can show that certain measures are cost-effective
- Few people voluntarily adopt cost-effective measures
 - ◆ It cannot happen to me
 - ◆ Short time horizons
 - ◆ Budget constraints

PRESCRIPTIVE SOLUTIONS

- Utilize risk assessments to provide estimates of probability of quakes
- Graphically show consequences of damaging earthquakes with and without mitigation
- Provide long-term loans for mitigation linked with mortgage
 - ◆ Lower annual costs if insurance premium goes down
 - ◆ Deals with individual biases and heuristics