PLS 505 Applied Policy Analysis and Cost-Benefit Analysis
Lecture Notes: Problem Definition
Mark T. Imperial, Ph.D.

- **Defining Problems**
  - Focusing on problems is important
    - Problem solving is a critical task of managers, planners, and policy analysts
      - Decisionmakers are often unclear about what they want and the job of a good analyst is to clarify matters
      - Defining problems is one way that analysts can influence decision making (see argument and persuasion readings)
    - Problems are the raw material of policy
      - Understanding how they are defined, organized, compared, and ranked is vital to understanding how policy is made, implemented/administered, or evaluated
    - All too often the way people understand issues/problems overwhelms, discourages, and confuses them
    - Verifying that a problem does exist and redefining vaguely stated problems are a key step in the policy analysis process
      - The task of the analyst is to move from a general problem concept to specific measures of the problem so that alternatives can be devised and evaluated
  - *Problem definition* is a medium through which we discover what we realistically want and how we may go about obtaining it
    - We don't discover a problem "out there" - we make a choice about how we want to formulate a problem
    - Ralph Waldo Emerson noted that we see what our experience has prepared us to see
  - A *problem* requires a cognitive judgment that the situation is alterable
    - Problems are situations
    - Discrepancy between "what is" and "what ought to be"
    - Not a problem if you can't do anything about it
  - Your perspective on a problem is likely to depend on your education, background, training, experiences, etc.
    - This background is also likely to lead you to favor certain policy options. For example, water quality problems may be viewed by:
      - Economists in terms of market failures/incentives/externalities
      - Engineers may see the problem in terms of poor planning and design, technical design flaws, etc.
      - Biologist may focus on impacts to wildlife
      - Educator may view the problem in terms of poor public education
    - Political scientist/public administrator may view it as an institutional design problem
    - Planner may view as a growth management problem
  - Big difference between defining policy problems in objective versus subjective terms
    - Most, if not all, policy problems are socially constructed
    - Nature and causes of environmental problems are often defined in ways that yield political advantage for one group over another

  - Selective perception/strategically define problems to lead to predefined policy problems
  - Different goals, policies, objectives, and solutions often imply different definitions (interpretations) of a problem or even different problems
- Patton and Sawicki (1993) suggest several steps in defining potential problems
  - Think about the problem
    - We usually know more about it than we realize
  - Delineate the boundaries of the problem
    - Location, length of time it has existed, historical events that shaped it, its connection to other problem (See also section on defining problems from Rochefort and Cobb**)**
  - Develop a fact base
    - Use multiple data sources when possible
    - Facts needed should flow from the problem statement
  - List of goals and objectives
    - Difference between what is and what ought to be
    - How do you know when you reduced or eliminated the problem
    - Acceptable solutions will depend on your goals and objectives
  - Identify the policy envelope
    - Policy envelope is the range of variables considered in the problem – it will affect the alternatives examined
    - May be described by client or be a product of the analysis
  - Display the potential costs & benefits
    - Think about what each actor gains and loses by resolving the problem
    - It may help to reframe the problem in ways that lead to win-win or win-no lose solutions – see Bardwell reading on problem framing
  - Review the problem statement
    - Has it been stated in a way that allows for action
    - Have you left yourself alternatives or have you really just defined a solution
- Patton and Sawicki (1993) describe several methods policy analysts can use to help define problems
  - Back-of-the envelope calculations to estimate the size of the problem
    - Sit an think about the key dimensions of the problem and find some basic facts to help estimate parameters
    - Check the logic behind how numbers are calculated or whether there is a built in bias
  - Quick decision analysis to identify key attributes of the problem
    - Can construct a decision tree to look at options and consequences of actions
  - Creative operational definitions to reduce conceptual ambiguity
    - Expressing problem statement in measurable terms is referred to as creating an *operational definition*
    - Say it with numbers if you can – it reduces ambiguity
    - Use quantitative analysis in combination with qualitative analysis when possible

  - Watch for "fractional measurement" – sometimes a measure only conveys part of the meaning of the original concept
  - Watch for faulty indirect measures and spillover effects
  - Ecological fallacy – generalizing from one measurement unit to another (e.g., census data)
  - A valid operational definition will
    - State the concept in unambiguous terms
    - Give attention to qualitative as well as quantitative measures
    - Take into account spillovers to other entities (positive or negative)
    - Use primary data when possible
    - Use data collected for the unit of analysis under study
    - Draw conclusions only warranted by the analysis
    - Avoid speculating about individual characteristics from group data
    - Develop policy aimed at real social and political units
- Political analysis so that you don't ignore nonquantitative factors
  - Examining political issues in the process of identifying and analyzing alternatives to policy problems distinguishes policy analysis from other forms of systematic analysis
  - Whenever possible, political factors should be part of the problem definition, criteria selection, and alternatives generation, evaluation, and display
  - Analysts must look at political issues as an integral part of the policy process, learn terminology to communicate about these factors, and use consistent methods to report on them
  - A strict quantitative analysis will still have to be grounded in the client and decisionmaker values, goals, and objectives
  - Answering the following questions will help clarify political problems – it also helps with Bardwell's problem framing
    - Actors: Who is concerned about the issue
    - Motivations: What are the motives, needs, desires, goals, and objectives of the actors
    - Beliefs: What does each actor believe about the problem
    - Resources: what do the actors have that can be used to get what is wanted
    - Sites: where decisions will be made, by whom, when?
  - Patton and Sawicki (1993) offer the following advice
    - Determine whether the obvious problem is only a symptom of a larger controversy
    - Make sure you look at underlying issues and related problems as well as tradeoffs between problems
    - Check your sources of information for accuracy
    - Take advantage of internal review and check with other analysts

  - Issue-paper to help decide whether further study is justified
    - In essence, it is a feasibility study about whether or not to do "researched analysis"
    - It is done with existing data and information
    - It goes beyond back of the envelope calculations
- What can happen when you try to solve problems? It is important to remember that:
  - It can be *eliminated* entirely by the policy as it is implemented and no other problems emerge
  - It can be *reduced* to such a low level that there is no further need or demand for action
  - It can be *succeeded* by another problem that has less serious effects or can be solved more easily
  - It can be *exacerbated* by the policy and/or replaced by more difficult problems, with still other problems created in addition
  - Beware of the type III error
    - The probability of solving the wrong problem

- **Describing Problems (Rochefort and Cobb)**
  - Examine the severity of the problem
    - Crisis
      - Emergency vs. non-emergency
    - Novelty
      - Unprecedented vs. familiar
    - Incidence
      - Growing, stable, or declining
      - Social patterns: class, age, cohort, etc.
      - Characteristics of the problem population
    - Proximity
      - Personally relevant vs. general societal concern
  - Examine the causes of the problem
    - Intended vs. accidental
    - Blame can/can't be allocated
    - Simple vs. complex
  - Nature of the solution
    - Available vs. non-existent
    - Acceptable vs. objectionable
    - Affordable vs. Unaffordable

- **Problem Framing (Bardwell 1991)**
  - Her approach is one that combines theories from conflict management and cognitive psychology
    - Environmental solutions often need to find win-win or win-no lose solutions or at least make both good economic and environmental sense
    - Cognitive psychology suggests
      - At their best, people can handle only about 5 ± 2 different units of information or thoughts at a time
      - People selectively use information and rely on cognitive maps they have built through life experiences (see uses of history reading for similar arguments)
      - Bias towards the familiar – you take problems and try to fit them into preexisting maps – you tend to do what you did before
      - As a result, new problems tend to get cast like old ones and more effective options are overlooked (e.g., fitting Nonpoint problems into existing NPDES system)
  - Environmental Issues present a challenging arena for problem solving
    - They are complex, plagued with uncertainty, and extremely political
    - They often seem intractable because they are ill structured or "wicked" in that
      - They are complex
      - There are many ways of looking at the problem
      - There are many possible solutions rather than one solution
      - The problems are connected to other problems
      - The effects of solutions play out over different time frames
      - With each new resolution comes a new array of problems
      - The risks are and the consequences of our actions can be long-term and irreversible
      - There can be a path-dependent quality to policy solutions
    - Solving the problems often involves questions of "transscience"
      - Problems can be defined in the language of science but cannot be solved by science – some political or value judgments must be made
      - Making choices involves more than just finding a technical solution.
      - Environmental choices reflect politics, values, and expectations as much as scientific facts
  - Some claim that 90% of problem solving is spent
    - Solving the wrong problem
    - Stating the problem so that it cannot be solved
    - Solving a solution
    - Stating the problem too generally
    - Trying to get agreement on the solution before there is agreement on the problem

- Problem solving involves several stages
  - Building an understanding of the problem – the problem space
  - Establishing some initial criteria for the goal
  - Searching for solutions
  - Deciding among solutions
  - Evaluating progress – comparing initial goals to and monitoring the solution
  - Unfortunately most folks don't spend enough time on the first step.
- Problem definition is important because
  - It implicitly embodies preconceptions and assumptions that influence how you approach the problem
  - It guides the strategies and actions taken to address the problem
  - A full examination of a problem can lead to quality solutions
    - Experts in a certain field often devote a large proportion of their problem-solving time to conceptualizing the problem and can figure out what is central to understanding it. Thus, they have a perspective that helps them foresee consequences, new problems, and the implications of solutions
    - Novices have a difficult time sorting through information, determining what is important, and seeing how different parts fit together – they miss the big picture
  - Problems can be defined in different ways and this leads to different policy solutions.
    - Urban air quality was viewed as an environmental policy and the CAA responded with new technology controls on cars and emissions
    - If they had looked at it as an energy or transportation issue they might have responded with transportation planning, industrial siting, and incentives for energy efficiency
    - Reality is that these are all different aspects of the same problem
- Problem framing focuses on how problems are defined and consciously examines different interpretations of that problem
  - Stave off solutions
    - Avoid jumping to conclusions without adequately examining the problem
    - Avoid the tendency to push for closure quickly and be biased towards finding quick solutions
    - Solution mindedness is often manifested in positional stances that create conflict
    - Conflicts often occur when people have already decided on a definition of a problem and established solution and the definitions and/or solutions are in conflict
    - It involves asking questions that explore different aspects of a problem
  - Limiting information
    - Peoples attention not information is the scarce resource
    - Don't overwhelm people's ability to understand and absorb information
    - Information needs to be managed carefully
    - Can shift conflict from problem to debating the merits of information

- Choosing levels
  - Need to find the appropriate "universe of discourse"
    - Too large a scale and the problem seems unapproachable
    - Too small and it is easily dismissed
    - Be strategic and practical and seek the small wins – many environmental problems are the result of a series of small cumulative impacts and solving them will involve a long series of cumulative benefits
  - Need to reduce the problem to something that is manageable (5 ± 2 different units)
  - Factors to consider
    - Fit: your skills and abilities must be adequate to the task at hand
    - Linkages: how is the level you are working at part of a larger framework of scheme of things
    - Personalization: issues that relate directly to ones own circumstances and needs are difficult to ignore
- Generating imagery
  - The ability to manage or effectively organize information comes in part with increased familiarity with an issue
  - Folks like a good story
- Developing metacognition
  - Paradox is that developing familiarity with an issue improves your problem solving skills but it also increases the chances that you will use the wrong cognitive frames when addressing a new problem
  - You have to consciously monitor, watch, and guide your own problem-solving process – importance of reflective practice
  - Experience and exposure seem to be the best teachers – that is why we use cases, group projects, etc. in the MPA program