VI. COMMUNICATION TO MAKE A DIFFERENCE

SCIENTISTS, THE PUBLIC AND THE POLITICIANS: HOW DO WE CONNECT FOR REEF'S SAKE?

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Two Examples

1 - Coastal Land Use and Policy

2 - Integrating Science & Values to Inform Ecosystem Management

First Example - Coastal Growth and Sustainability

South Carolina's population expected to increase by 24% by the year 2030 according to U.S. Census Bureau.

Rusk and many others have shown that corresponding land development occurs at much higher percentages.

Tools are needed to help policy and decision makers understand patterns of urban growth and potential impacts - economic, social/cultural, and ecological.

Modeling Land Use Change and Urban Growth

Transportation Models - TRANUS - (Johnston and Shabazian)

Deterministic Land Use Models - SACMET, UPLAN (Sui)

Cellular Automaton Models - SLEUTH (Jantz & Goetz, Clarke)

Rule-based Models (Pijanowski)

Logistic Regression Models - CUF (Landis)

Charleston, SC Region Growth Prediction Summary
Under the current modeling scenario, there are two assumptions involved. The ratio of overall urban land use change (255%) to overall population growth (41%) from 1973 to 1994 occurred at a ratio of about 6:1. Secondly, it is assumed that population for the three county area will grow to 795,879 by the year 2030 as predicted by projections of the

BCD COG compiled with information from the U.S. Census Bureau, SC Department of Commerce and the BCD COG. The predicted urban growth mainly takes the pattern of urban sprawl and by the year 2030 consumes 868 square miles within the BCD area. If the current growth trends continue and the predictions hold true, the future urban growth will sprawl considerably outward from the current urban boundaries. This has several significant economic, environmental, and social implications in policy-making and urban planning.

Regional Policy Considerations

Local - majority of land use decisions made at this level - municipalities must work closer with developers to balance growth and fiscal responsibilities - work with other municipalities to coordinate growth impacts.

County and State - policies affect how growth spreads into rural areas - have a certain amount of regulatory authority which must be carefully used to protect environment and influence developer decisions.

Federal - many programs indirectly influence development (DOT, NFIP, EPA) - can help by providing expertise to state and local entities through research/information as well as direct funding (community grants, etc.).

Planning and management - NOAA scientists utilizing growth predictions through LU-CES program. SCDNR officials incorporating growth models into coastal habitat management. SCDHEC officials considered growth models in Coastal Futures planning. TNC, SCCCL use models for open space planning.

Second Example - Integrating Science & Values to Inform Ecosystem Management

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Ecosystem Management Challenge
Management of ecosystems involves:
Factual uncertainty
Value saliency
Social controversy
High stakes
Distrust
How should decisions be made in such contexts? How can both facts and values be accommodated?

Four points to consider:

- An "Ecoplex" conceptual framework that sustainably links natural and social systems
- An "analysis and deliberation" protocol that recursively integrates science and values in ecosystem management decision-making
- A trust-based guide to stakeholder participation in ecosystem management
- Summary

Part I - Ecoplex and Sustainability
- The Ecoplex framework is a conceptual aid to understanding sustainable ecosystem mgt
- Sustainability Definition
- *Development that is environmentally, economically, and socially sustainable*
- Sustainable development requires balanced conversion of resources to improve quality of life (welfare)

Sustainable Capital Conversion
- Conversion of natural and human capital (resources) to economic and social capital (welfare), and vice versa
  - Resources *Conversion* Welfare
- Natural Capital + Human Capital   Economic Capital + Social Capital
- Legend:
- Natural capital = ecosystem goods and services
- Human capital = labor, intelligence, technology
- Economic capital = wealth (currency, property, investments)
- Social capital = order, stability, fairness (social networks, security, trust, justice, laws)

Coupling of Social & Natural Systems
- Sustainability (a balanced conversion of resources to welfare) requires a carefully integrated coupling of social and natural systems
- We have developed a framework that provides a conceptualization of how this coupling can be accomplished

Part II - Analysis and Deliberation
- A&D protocol was proposed by National Research Council in its 1996 report, *Understanding Risk: Informing Decisions in a Democratic Society*
- A&D is an alternative to the 1983 NRC protocol that envisioned a top-down process of scientific impact assessment followed by a political process of impact management
- 1983 approach has been criticized for failing to recognize the importance of involving stakeholders in framing analyses to inform eco-mgt decisions

- Recursive relationship between analysis and deliberation

- Analysis is used to gather information about the social and natural systems to inform decision-making
- "Getting the science right"
- Deliberation is used to frame analysis and to make ecosystem management decisions
- "Getting the right science"

A&D in Ecosystem Management
- The 1983 protocol dictated that scientists alone define ecosystem management problems and decide what analyses are pertinent and whether fixes are necessary
- The A&D protocol places analysis in the service of deliberation and provides an opportunity for deliberants to help frame analysis
- However, the intensity of A&D should vary with context – specifically trust

Part III - Relationship of Trust to Participation
- Trust: the willingness to accept the risk of deferring to the judgments of others based on judgments of expertise and value similarity
- High trust: deference
- Low trust: vigilance
- The participation strategy that is most appropriate depends on stakeholders' trust of other policy actors
- Policy actors include experts, fellow stakeholders, and government decision-makers

Expert Trust
- Stakeholders' expert trust judgments based on:
- Perceived expertise
- Factual certainty and salience
- Subject matter and analytical competence
- Objective (unbiased) interpretation
- Perceived value similarity
- Responsiveness to stakeholder concerns (framing), caring attitude, openness, honesty, and forthrightness
- High expert trust: evidentiary participation
- Low expert trust: constitutive participation

Social Trust (of stakeholders)
- Stakeholders' social trust judgments based on:
- Perceived expertise
- Familiarity
- Perceived value similarity
- History of social interaction
- Conformance to dominant culture and traditions
- Civic mindedness
- High stakeholder trust: cooperative participation

- Low stakeholder trust: defensive participation

Government Trust
- Stakeholders' government trust judgments based on:
- Perceived expertise
- Technical competence
- Perceived value similarity
- Fiduciary responsibility
- High government trust: trustee (leader) role
- Low government trust: delegate (follower) role

Part IV - Summary
- Ecosystem management policy must recognize the relationship between natural & social systems
- We endorse sustainability as a guiding principle in this relationship
- Analysis and deliberation is the preferred mechanism by which to integrate facts and values
- The intensity of analysis and deliberation depends on the level of trust that stakeholders have of other policy actors ("one size does not fit all")