Actionable Science for Communities

Decision Science and Support Tools – SHC 1.61

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Problem Summary & Decision Context

How does the EPA help achieve more sustainable outcomes in all types of communities?

**Through Identifying stakeholder decision needs**

- operationalize needs to identify, create, re-use, and distribute new and existing tools to stakeholders
- advance sustainability goals and reduce the risk of regulatory non-compliance

By developing tools and decision applications

- Leverage complementary capabilities of internal and external organizations
- designed for those engaged in helping communities

Project – Agency Links

Graphic linking project organization to tools and science needed to address Program and Region concerns.
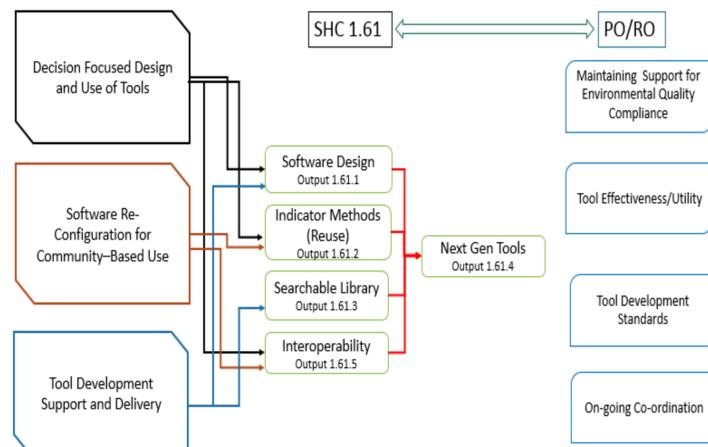
Accomplishments

- **A Community Typology Framework and Dashboard** – a framework for assessing community sustainability trajectories; supporting sustainability focused decision-making.
  - ➢ The dashboard operationalizes the framework and enables the EPA to identify and engage with communities demonstrating needs and activity consistent with EPA objectives.

- **Continued Functional Development of DASEES** – the open source, web-based decision analysis application (see adjoining posters)
  - ➢ DASEES enables communities to use structure decision-making (**SDM**) for the complex multi-objective decision problems that they face.

- **SystemSketch** – a dynamic, graphic visualization tool to help stakeholders better understand system context and access to pivotal information resources.
  - ➢ Constructed along the Driver-Pressure-State-Impact-Response (**DPSIR**) framework. This framework was used to inform the Guánica Bay structured decision-making process for watershed management.
  - ➢ Functions both as a stand-alone tool and as a component in **DASEES**, helping users better analyze decision options and tradeoffs.

- **Tools Inventory** – A database of tools useful for communities making decisions that affect sustainability. Tool records include information on what they are useful for, who they are useful for, resource needs, and costs.
  - ➢ The inventory, informed by the community **Typology Framework** will be further developed into a searchable database better enabling communities to find tools relevant to their decision context and sustainability assessment and regulatory needs.

- **Environmental Knowledge Digital Repository Framework** – recently published article on continued development of an online application for improved use of existing environmental scientific knowledge.
  - ➢ The initiative capitalizes on emerging information technology and participatory efforts like citizen science.

Future Directions

Focus area of research and representative products for application in SHC 4.6, Regions, and communities:

Decision Focused Design and Use of Tools
- Design innovation guidance for integrating decision methods, typology, and user needs into tools
- Developing strategies to capitalize on emerging information technologies for decision-making

Software Re-configuration for Community Use
- Sustainability assessments with locally-owned data
- Demonstrating Interoperability Potential
  e.g. SWMM ↔ Urban Footprint

Tool Development, Support, and Delivery
- Searchable portal for improved access to tools useful for community sustainability decisions
- Tool and User Needs Gap Analyses

DDES/Interoperability Community Building
- Interoperability/tools workshop, June 2-4 2015, RTP

Partner Engagement Opportunities

- Advising research and development direction
  - What are the community needs
  - How to develop tools for those needs
  - Connection to environmental compliance needs
- Identifying and applying decision methods and tools in communities
- Assist in tool evaluation for effectiveness and relevance
- Contribute to tool development criteria and standards