

Role of Science and Scientists in Stakeholder Driven Instream Flow Assessments

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Five Critical Components

- Legal/Institutional/Policy – The ultimate boundaries
- Process – The ultimate currency in decision making
- Science – Theoretically informs decision making
- Scientists – Theoretically conduct science
- Stakeholders – Influences the Science, Scientists, and the Process

Legal/Institutional/Policy – The ultimate boundaries

- Stakeholder Empowerment through:
 - Legislation
 - Institutional Venues
 - Institutional Policy
- Stakeholder Constraints through:
 - Legislation
 - Institutional Venues
 - Institutional Policy

The Good

- Enabling 'grass roots' efforts at watershed planning and setting instream flows empowers those who live and rely on the resources to take 'ownership' for planning and implementation
- It allows the uniqueness and variety of settings to be accommodated in the decision process
- Builds on a 'bottom up' sense of control over the decision process

The Bad

- Legislation is often enacted without the critical or strategic input of the agencies tasked with implementing the law
 - Setting time targets to accomplish objectives that are unrealistic – Stakeholders are involved!
 - Unfunded mandates syndrome – The cost of doing business is often not addressed in the legislative process
 - Applies to Agency personnel
 - Applies to Stakeholder groups
 - Lets do more with less - Agency personnel already have a day job so what is not going to get done?
 - Undefined or Ill-defined terms: “Stream in an ecologically sound state”....Yeah right, get 8 biologists in the room and you will get 8 opinions!

The Ugly

- Solutions derived at the local level are often not implementable or at odds with other laws and/or policies – You told me I could pick the restaurant and now you say I can't have that type of food?
- With great freedom comes anarchy – Differences in local approaches across the spectrum of watersheds can result in an institutional and policy nightmare
 - Why did 'they' get to do it that way and here we have to do it 'this way'?

Process – The ultimate currency in decision making

- In this day and age it is all about Process, Process, Process
- Well defined guidelines to process at the state level are essential
- Whatever time is estimated multiply it by a 'safety factor of five'
- Whatever cost is estimated multiply it by a 'safety factor of five'
- Professional facilitation is a must if you plan on surviving

The Good

- The 'Process' should be flexible enough to accommodate the variety of unique local conditions while maintaining sufficient consistency at the state scale
 - One size does not fit all!
- A well defined process helps put a consistent roadmap and directions for everyone to see at the beginning
 - Reminds stakeholders often of their ultimate destination!

The Bad

- Processes take time, more time, and more the full time!
- Over extended time there is always a revolving door of stakeholders
 - Be prepared to fight against starting over when the new stakeholder replaces the old stakeholder from the same stakeholder group!
 - Why are you doing it this way?
 - Be prepared to spend $2/3^{\text{rd}}$ of your time educating stakeholders on technical issues

The Ugly

- The Process by its very nature means ‘technically unqualified’ stakeholders will be involved
- Being interested is not the same as being qualified technically!
- More time will be spent on ‘teaching’ technical things than evaluating technical things
- The internet is your enemy!
- Be prepared for the have’s (entities with money or infrastructure that can send/hire technical experts versus have not’s who can send Bob the Bus Driver!

Science – Theoretically informs decision making

- The mantra ‘Best available Science’ is the ultimate goal
- The Science should be unbiased and focused on the critical questions/decision points required by the Process
- Science in this context is multidisciplinary and highly complex

The Good

- Available tools and approaches in instream flow assessments are generally well advanced
- The spectrum of disciplines (hydrology, hydraulics, water quality, sediment transport, riparian ecology, aquatic biota ecology) are generally well represented at the state and regional (within state) areas by agency, private, and academic venues
- In many instances, much is already known about the resources, issues, and needs

The Bad

- Scientists are generally bred to disagree unless they agree to agree
- Stakeholders are generally overwhelmed by the complexity of technical details of the respective science/engineering disciplines
- Many scientists are reluctant to put 'a number down' especially in a forum of non-peer stakeholder groups – science to them is a process and never an endpoint!
- Stakeholders are willing to put 'a number down' because it is the number they want – not necessarily a number that has anything to do with the science
- Many stakeholders have a true desire to be involved but lack the technical background to be effective
- Be prepared for very large differences between scientific disciplines:
 - Engineers will give you an answer today if you tell them you need one
 - Biologists will generally not give you an answer today if you tell them you need one, they will 'need' more funding and ten years to tell you how much they still don't know and how much more time and money they will still need before they really know that they don't know!

The Ugly

- Stakeholders generally agree to agree until they don't get what they want then it's all 'junk science'.
- The process by its very nature is 'a moving target'
- For some stakeholders the decision process does not even require any science...
- For some stakeholders the decision process never has enough science
- Climate change will be 'An inconvenient truth'
 - Everyone wants to have it considered, few have a clue on how to do it.
 - Whoever invented the concept of 'uncertainty' in science should be found and deported to Pluto. It is becoming the tool of choice to derail the science when someone does not get what they want
 - Many stakeholders know the vocabulary but few really know its true implications in science

Scientists – Theoretically conduct science

- Generally competent scientists are readily available at the state, private, and academic institutions with knowledge specific to instream flow related disciplines
- Application of various science disciplines need to be focused on the relevant issues to inform the decision making process
- Striving to achieve ‘Best Available Science’ in an unbiased process is the ultimate goal.

The Good

- Access to qualified ‘experts’ in the various disciplines related to instream flows (hydrology, hydraulics, water quality, aquatic ecology, etc) is not typically a limiting factor
- At this day and age, much is known about many aquatic resources that need to be addressed in instream flow assessments
- Available analytical tools and frameworks are generally well defined with a history of applications

The Bad

- For some systems, little or nothing is known about some target aquatic resources
- Scientists generally want ‘everything considered’
- There is a difference and disconnect between conducting best available science and communicating it to stakeholders
- Scientists with an applied perspective rather than a ‘theoretical perspective’ and in fact hard to come by!
 - There is a theoretical world that is very different than the real world!
- Consistency between applications is very difficult to manage when ‘one size does not fit all’ is the basis for best available science – More a problem of communication/education to stakeholders

The Ugly

- Stakeholders with resources (money/infrastructure) will place 'technical experts' at the table while stakeholders without resources send Bob the Bus Driver
- There is an art to shade the science and positional interpretation of science that is inherent in the process so don't be surprised
- No matter how good you think the Best Available Science is, there will be a technical expert willing to make big bucks to show you it is the Worst Available Science when a stakeholder group(s) with money don't get what they want

Stakeholders – Influences the Science, Scientists, and the Process

- In reality, stakeholders are our constituency and will influence the process and science at every step
- While we should be responsive to their input, it is no surprise that the input will be contradictory and weighted by the politics of society
- Empowering the process at the local level ultimately is the best approach (it is ugly, it is hard, it takes time, it takes money)

The Good

- Stakeholders today are generally well informed and knowledgeable about local issues, concerns, and needs
- Implementing a process that engages them is critical to success
- Letting the local stakeholders set the course of action gives ownership at the local level which can more effectively allow real work to get accomplished

The Bad


- Stakeholders today can access a variety of 'facts' from the internet and come to the process with preconceived notions that are not based in actual facts
- Stakeholders as a general group will have a wide array of technical understanding and tend to focus on specific elements of interest to them
- Few stakeholders are actually well versed across the wide array of disciplines inherent in instream flow assessments
- Stakeholders by definition will come to the process with their best interest in mind, not necessarily the collective good

The Ugly

- Stakeholders are inherently biased (we all are at some level) so don't be surprised
- There is a real problem between representation (technically) by stakeholder groups with money/infrastructure versus those who do not have the money or infrastructure
- The time commitment will often preclude poorly funded stakeholders from consistent participation
- Be prepared for the fight once the 'decision is made' because 'Hell knows not the fury of a stakeholder who does not get what they want'!

Conclusions

- Friends don't let friends get involved with a stakeholder 'driven' process
- Stakeholder informed processes provides a more realistic avenue to empower local solutions while maintaining 'institutional control' at the state level
- Establish a state-level instream flow team to manage the technical aspects of the instream flow process
- Fit the Science to the Question and then spend most of your time explaining to the next group why they have to spend more time and money than the group over the hill had to do!
- It is critical to adequately fund and staff agencies tasked with implementing a program
 - Ask the ground troops what they need and how much time they will need to do it
- Count the cost in terms of time and money when setting up the process for stakeholder involvement – It takes time and it takes money
- Professional facilitation is critical – it costs but it gets it done
- Document everything; then document the documentation
- Have fun even if you have to be miserable to do it.



Researchers have already
cast much doubt on the
subject and if they continue
their studies we shall soon
know nothing at all.

Mark Twain