

Crowdsourcing Solutions to Climate Change in Lake Champlain Basin: Interventions & Scenarios

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Overview

- Crowdsourcing & the Delphi Method
- Development of *Crowdsourcing Solutions to Climate Change in Lake Champlain Basin*, CSS2CC.org
- Results from CSS2CC.org
- Phase 1, Analysis
- Discussion: Next Steps and Big Picture for Solutions promote adaptive capacity in Lake Champlain Basin

Why “Crowdsourcing”?

- Phosphorus in Lake Champlain Basin is a persistent ‘*wicked problem*’
- Assumptions about participation, complexity & the need for adaptive management
 - Water is a common resource and involves the public
 - Social-Ecological Systems crossing temporal and spatial scales
 - Solutions are not static, ongoing feedback and learning needed
- How can we discover *solutions* to promote ecological health over time?

What is the Delphi Method?



















Background:

- Forecasting Tool
- Uncertainty in Science
- Need to take action despite incomplete information or capacity, e.g., limited funding, education, coordination
- *What can promote adaptive capacity?*
- *How can we turn knowledge into action?*

Crowdsourcing Solutions to Climate Change: CSS2CC.org

- Sought contributions from **stakeholders, experts, and interested parties** to a discussion forum
- Designed and developed **interactive website** CSS2CC.org
- Forum would span different **domains** (e.g., Agriculture, Stormwater, Transportation, etc.)
- Goal was to generate a wide set of **interventions** targeting land use and climate change to restore and protect water quality in Lake Champlain Basin
- Online identity was **anonymous** to provide creative and open space; **demographic** information collected for analysis purposes

Crowdsourcing Solutions from Participants

Domain	Scope (time horizon)	Intervention Title	Intervention Rationale	View/Add Comments
Primary Domain  <input type="text"/>	Scope  <input type="text"/>	Title  <input type="text"/>	Rationale  <input type="text"/>	Comments  
Primary Domain  <input type="text"/>	Scope  <input type="text"/>	Title  <input type="text"/>	Rationale  <input type="text"/>	Comments  
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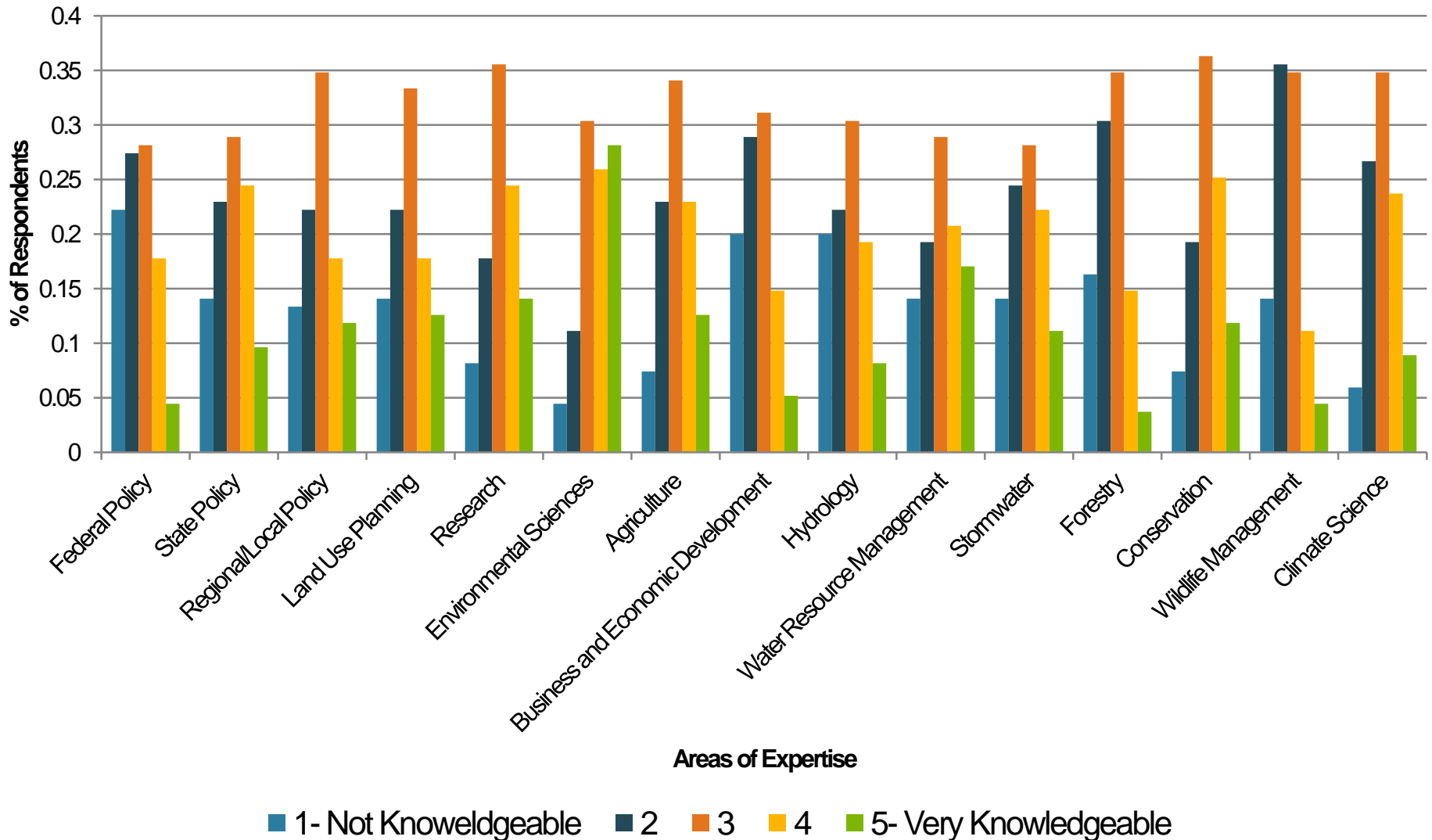
CSS2CC.org Results

March 3 – April 11, 2014

Participation in css2cc.org	
Registered Participants:	204
Participants who entered Interventions or Comments:	53

Domain	# Interventions
Agriculture	31
Development & Land Use	16
Energy	4
Forestry	4
Other	12
River Management	8
Stormwater	13
Transportation	8
Wastewater	8
<u>Total</u>	104

Participant Levels of Expertise





Crowdsourcing Solutions to Climate Change for the Lake Champlain Basin

Created by member: #184 2014-03-13 11:01:32

Primary Domain

Avoid and minimize flooding impacts by identifying flood generation zones and attenuating flows across the landscape

Comments (1)



River Mgt.

Created by member: #184 2014-03-13 10:28:17

Primary Domain

Strengthen local zoning regulations and bylaws by incorporating low impact development principles

Comments (0)



Development and Land Use

Created by member: #189 2014-03-11 13:28:43

Primary Domain

Develop cropping strategies to mine soil phosphorus

Comments (0)



Agriculture

Created by member: #189 2014-03-11 13:04:51

Primary Domain

Manage barriers to water flow (causeways) in Lake Champlain to mitigate sediment and nutrient accumulation

Comments (2)



Other

Created by member: #161 2014-03-11 10:24:17

Primary Domain

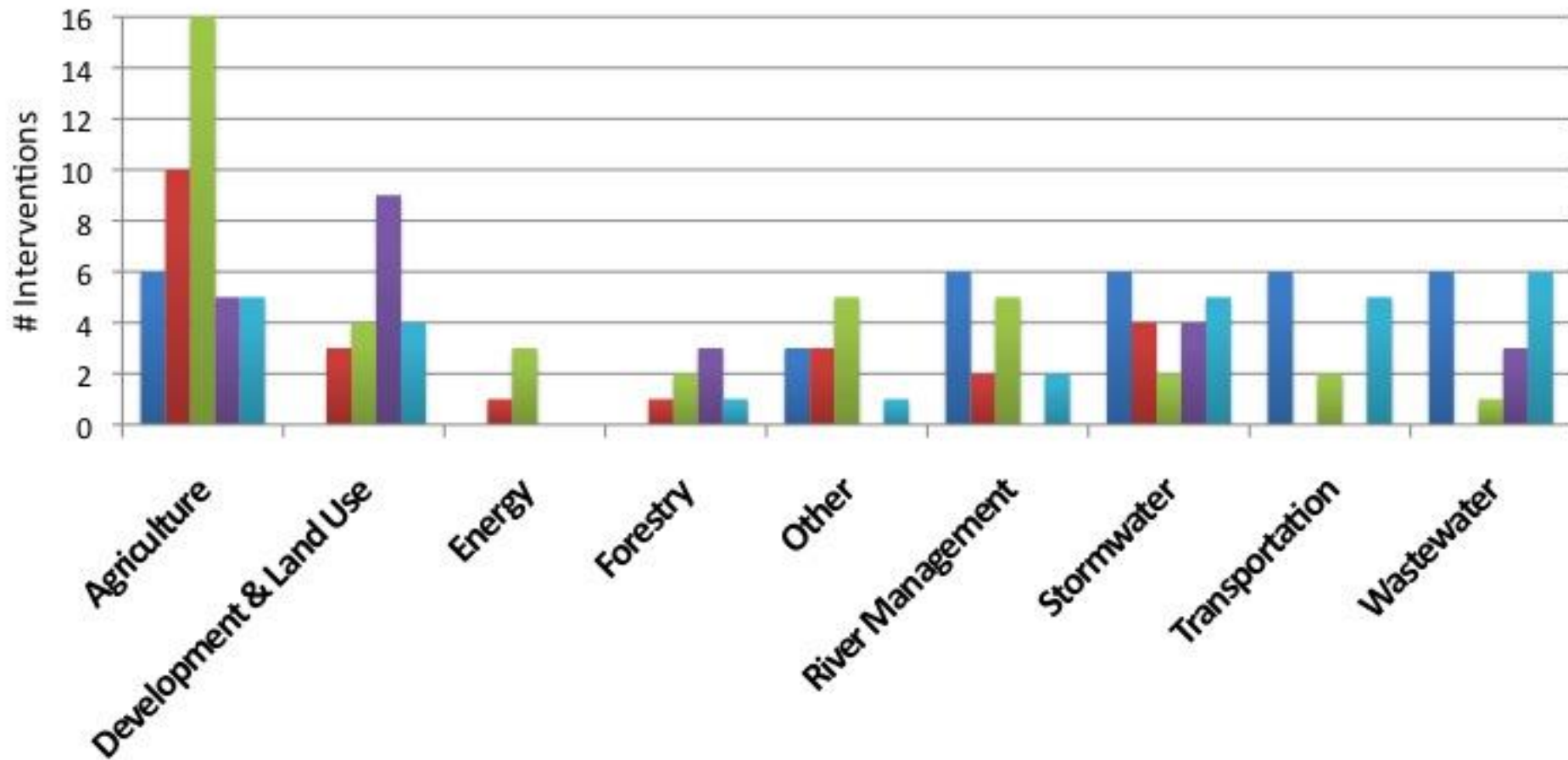
Local and downstream impacts

Comments (1)



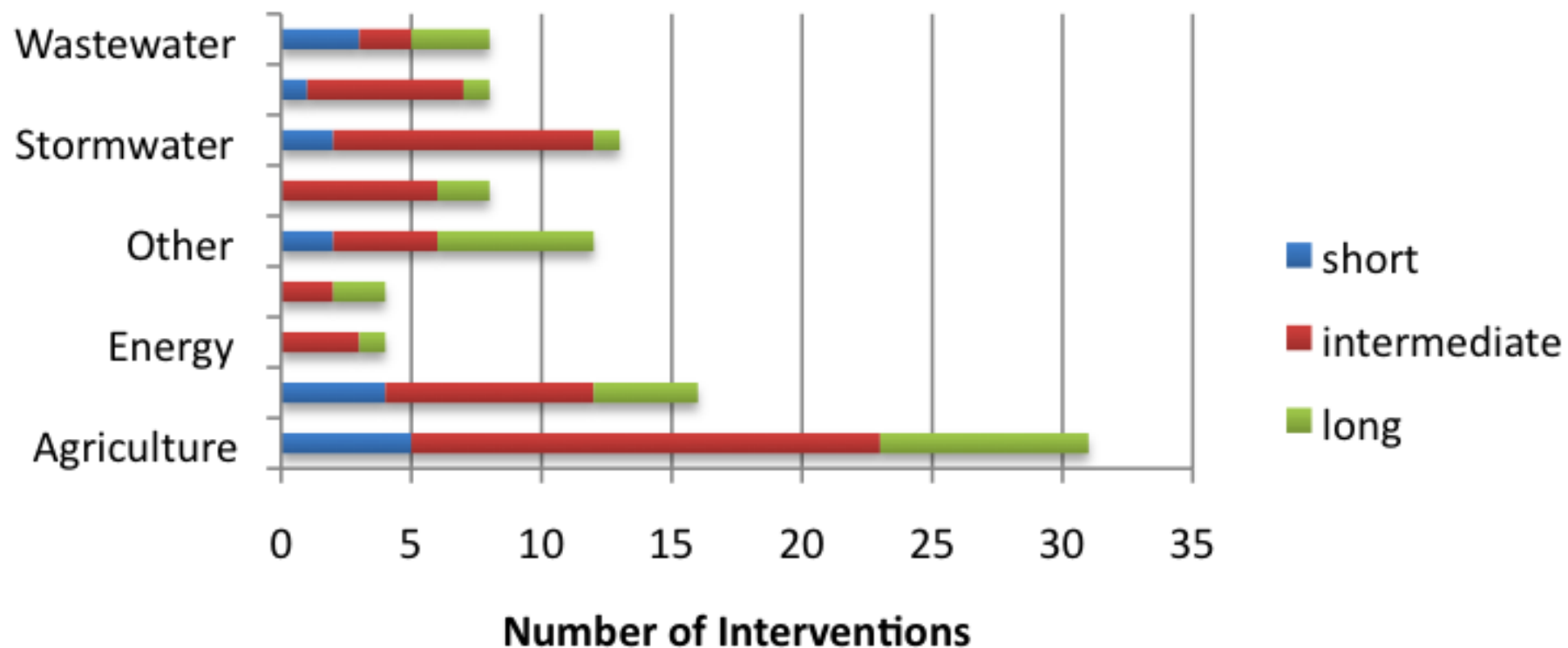
Development and Land Use

Policy Tools by Domain of Interventions



- Research & Development, Monitoring & Evaluation
- Market & Economic Policy Tools
- Technical Assistance, Education, Messaging & Outreach
- Environmental & Land Use Policy & Regulation
- Technological Solutions, Green Stormwater Infrastructure, Low Impact Development

Time Horizons of Interventions by Domain



CSS2CC.org Interventions

March-April 2014 Results

A total of **104** original interventions submitted on CSS2CC.org

- similar interventions were grouped
- vague and unclear interventions were omitted

Today, **68** remaining Interventions are presented in “themes” for organizational purposes

- Water Management
- Nutrient Management
- Land and Infrastructure Management
- Other Interventions

Water Management Interventions

- Develop a **water quality mitigation bank** allowing for trading among municipalities within a watershed to site best management practices at most beneficial locations
- Develop a hotline **complaint system for construction runoff** via state agency
- Manage **floodplains** to give rivers room to move

Nutrient Management Interventions

- Upgrade **waste water treatment facilities to be flood proof**
- Incentivize use of **emerging eco-technologies for phosphorus capture and reuse** from wastewater and stormwater
- **Tax imports of high-phosphorus fertilizers and animal feed**

Land and Infrastructure Management Interventions

- Require **vegetated buffers** in riparian zones and along lakeshores
- Require **smart growth principles and low-impact development practices** in planning and design of development and transportation
- **Amend exemptions for agriculture and forestry in law and tax policies** including Current Use

Other Interventions

- Expand **monitoring and evaluation** of effectiveness of water quality BMPs
- Use **Genuine Progress Indicator (GPI)** instead of traditional economic metrics to assess progress of water quality and climate change solutions
- Provide more **financial and technical assistance and outreach** to promote soil health and associated best practices on farms

Questions for Discussion

- How should researchers evaluate these interventions?
- What is missing from the list of interventions?
- How can specific interventions be improved upon?
- Which interventions are the most robust?
- When should the interventions occur? Now? In the near or distant future?

Questions for Discussion

- What do we still need to know?
- How do we match the 'action'/practice with the right driver or policy tool to ensure effective implementation and adoption?
- In the future, how can the CSS2CC.org website play a role in engaging stakeholders and the Lake Champlain research community?



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