Bridge Over Troubled Water: Partnerships and the Prospect for Adaptive Capacity among the Oregon Coast's Small Water Systems

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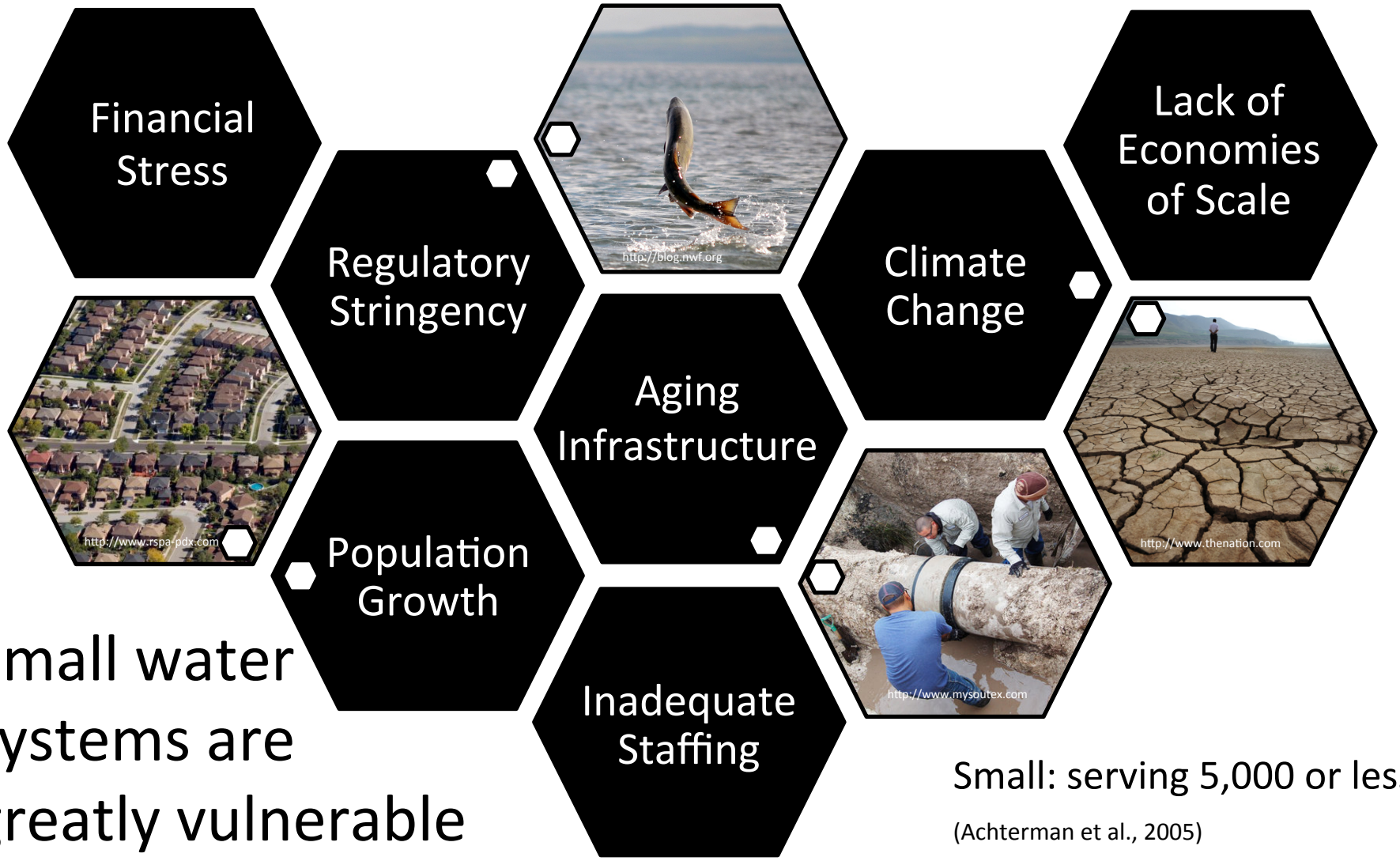
Oregon State University

National Problem



Small water systems are greatly vulnerable

Small: serving 5,000 or less

(Achterman et al., 2005)

The Solution: Water system partnerships

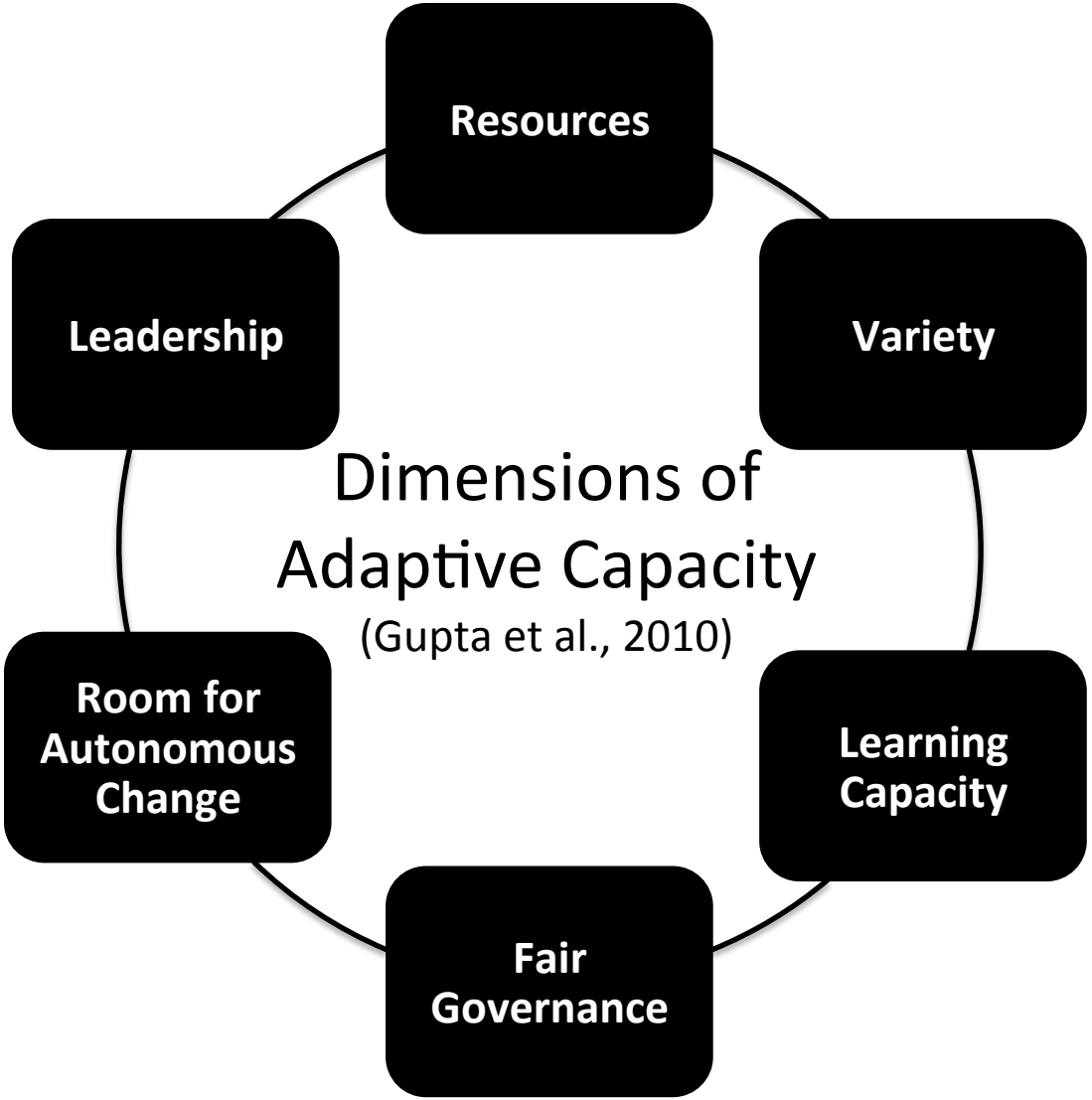
Increasing Transfer of Responsibility → (EPA, 2009)

Informal Cooperation	Contractual Assistance	Joint Powers Agency	Ownership Transfer
e.g. Intergovernmental Agreement (IGA), Intertie	e.g. Wholesale water purchases	e.g. Joint source development	(aka CONSOLIDATION) System takeover

Increases technical, managerial, and financial capacity...

...what about ***adaptive capacity?***

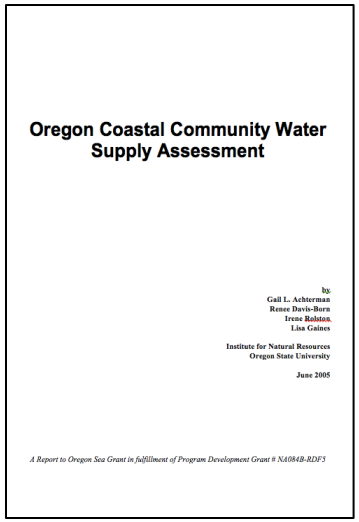
Analytic Framework & Literature Gaps



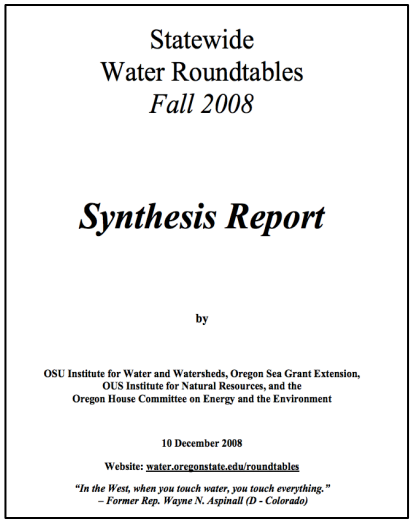
- One of few frameworks
- Score and **compare** like units
- Applied by few studies
- Never applied to water system partnerships
- Little research on rural contexts

Oregon Coast: study site

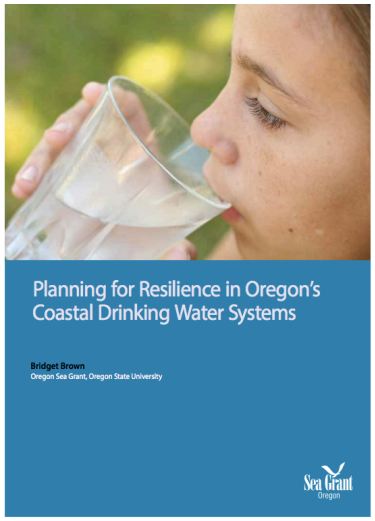
- 171 small water systems
- Highly vulnerable (esp. to natural hazards)
- Fiercely independent
- Growing concern, suggestion of partnership



2005



2008



2013

Question & Objectives

How can regional partnerships increase the adaptive capacity of the Oregon Coast's small water systems?

- Assess partnership types with the adaptive capacity framework
- Identify drivers and barriers to partnership
- Assemble recommendations and lessons learned

Research participants

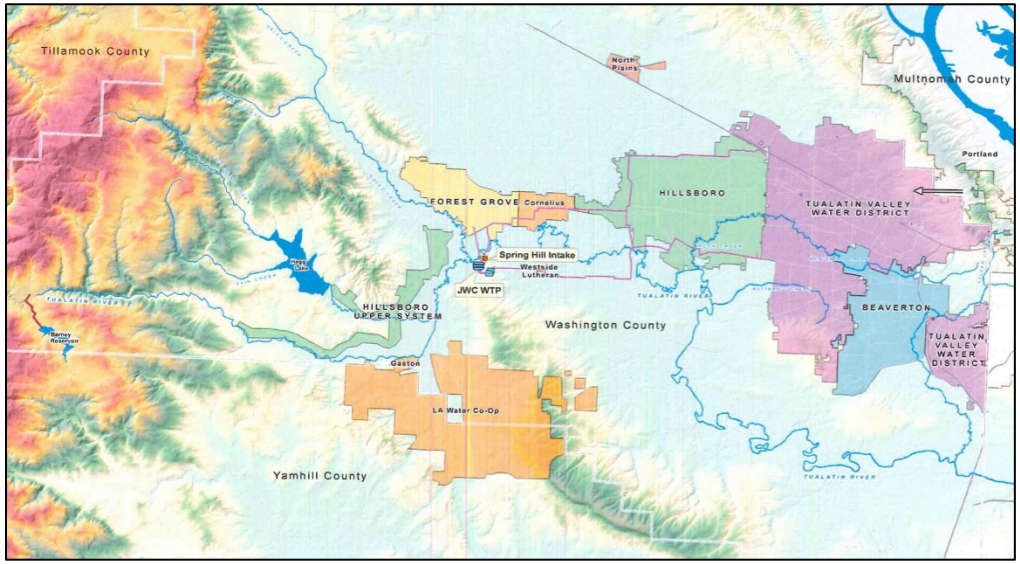
WHAT	WHO
OR Coast Water Systems (n=15)	*City Managers, Public Works Dir.s*

State Agencies (n=5)	*Agency Employees*

Model Partnerships (n=2)	*Managing Staff*

Model: Joint Water Commission (JWC)

- Joint Powers Agency
- Four systems in PDX suburbs
- Est. 1976 for joint water treatment
- Local example of success

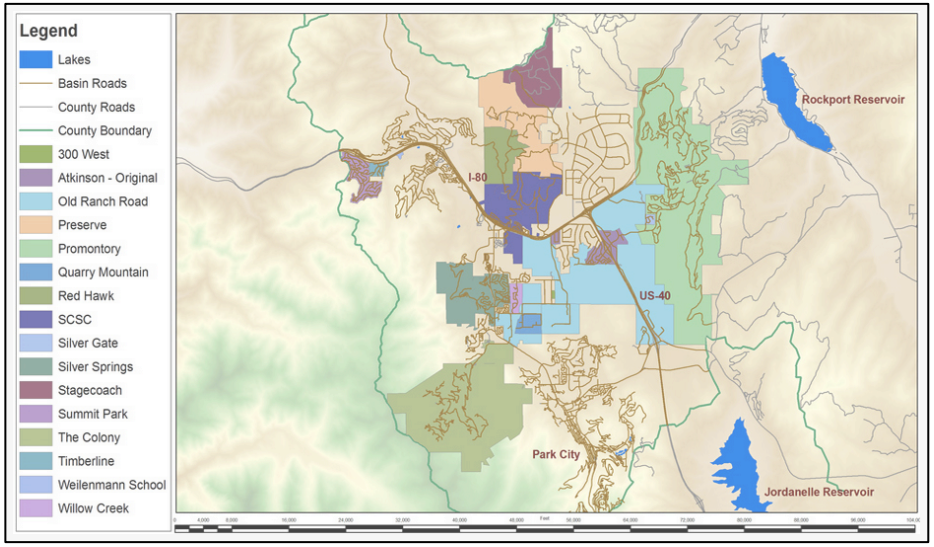


Source: Joint Water Commission

http://commons.wikimedia.org/wiki/File:Downtown_Hillsboro_Oregon_looking_south.JPG

Model: Mountain Regional

- Consolidation of 12 systems
- Summit County, Utah
- Est. 2000 due to failing infrastructure and service

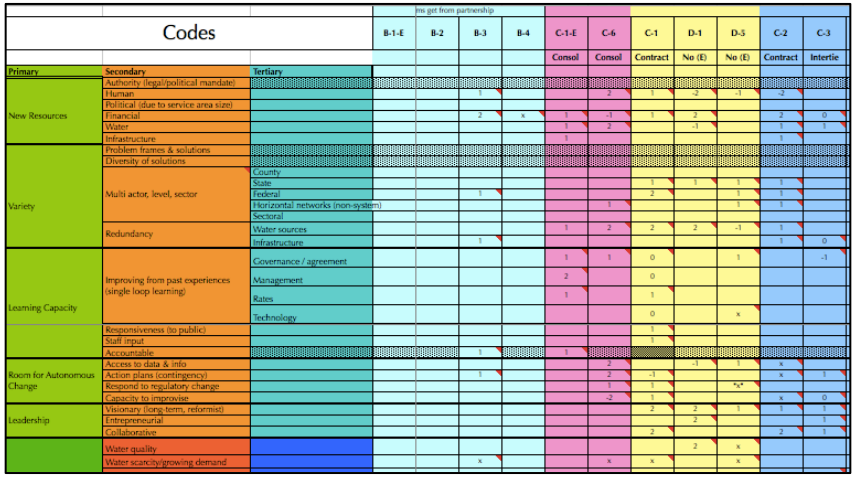


www.mountainregional.com

Photo by Bill Loughlin

Data collection & analysis

- Semi-structured interviews (n = 22)
- Coding of transcripts
- Score calculation (-2 to 2)
- Characterization based on perceptions



Primary Criteria	Secondary/Tertiary Criteria	Observations (averag	
		No (or emerging) Partnership (n = 4)	IGA & Intertie (n = 5)
Resources	Human	-1.25	-0.8
	Financial	-1	0.2
	Political	n/a	n/a
	Water	0.2	0.6
	Infrastructure	0	0
Agg. avg. 'Resources' score (Range of individual 'Resources' scores)		**-0.51** (-1.75 to 1)	**0.0** (-0.75 to 0.5)
Variety	Multi-level involvement – County	n/a	n/a
	Multi-level involvement – State	1	0.6
	Multi-level Involvement – Federal	0.5	n/a
	Redundancy – Water resources	0.5	1.8
	Redundancy – Infrastructure	-0.25	1.2
Agg. avg. 'Variety' score (Range of individual 'Variety' scores)		**0.44** (-0.5 to1)	**1.2** (1 to 1.7)
Learning Capacity	Improving – Governance	.25	0
	Improving – Mgmt & Finances	-0.5	0.8
	Improving – Technology	0.5	0
	Changing assumptions	1.2	0.6
	Discuss uncertainties	1	0.8
Agg. avg. 'L.C.' score (Range of individual 'L.C.' scores)		**0.49** (-0.25 to 1.4)	**0.44** (0.2 to 0.8)
Fair Governance	Legitimacy & public support	0	-0.4
	Equity – Representation	n/a	n/a
	Equity – Ownership	n/a	n/a
	Equity – Need/benefit	n/a	1
	Equity – Rates/pay-for	n/a	0.2
	Responsiveness to public	.25	0.6
Agg. avg. 'Fair Governance score (Range of individual 'F.G.' scores)		**.13** (-1 to 1)	**0.35** (0 to .75)
Room for Autonomous Change	Access to info & data	.25	n/a
	Contingency plans	n/a	1.6
	Capacity to improvise	-0.5	2
	Response to regulatory change	-1.2	-0.6
Agg. avg. 'R.A.C.' score (Range of individual 'R.A.C.' scores)		**-0.48** (-1 to 0.33)	**1.0** (0.67 to 1.3)
Leadership	Visionary	1.2	0.2
	Entrepreneurial	1.2	0.4
	Collaborative	1.2	1
Agg. avg. 'Leadership' score (Range of individual 'Leadership' scores)		**1.2** (1 to 2)	**0.53** (-1.3 to 2)
Aggregated Adaptive Capacity score[2]		**0.22**	**0.54**

Coastal Partnerships Breakdown

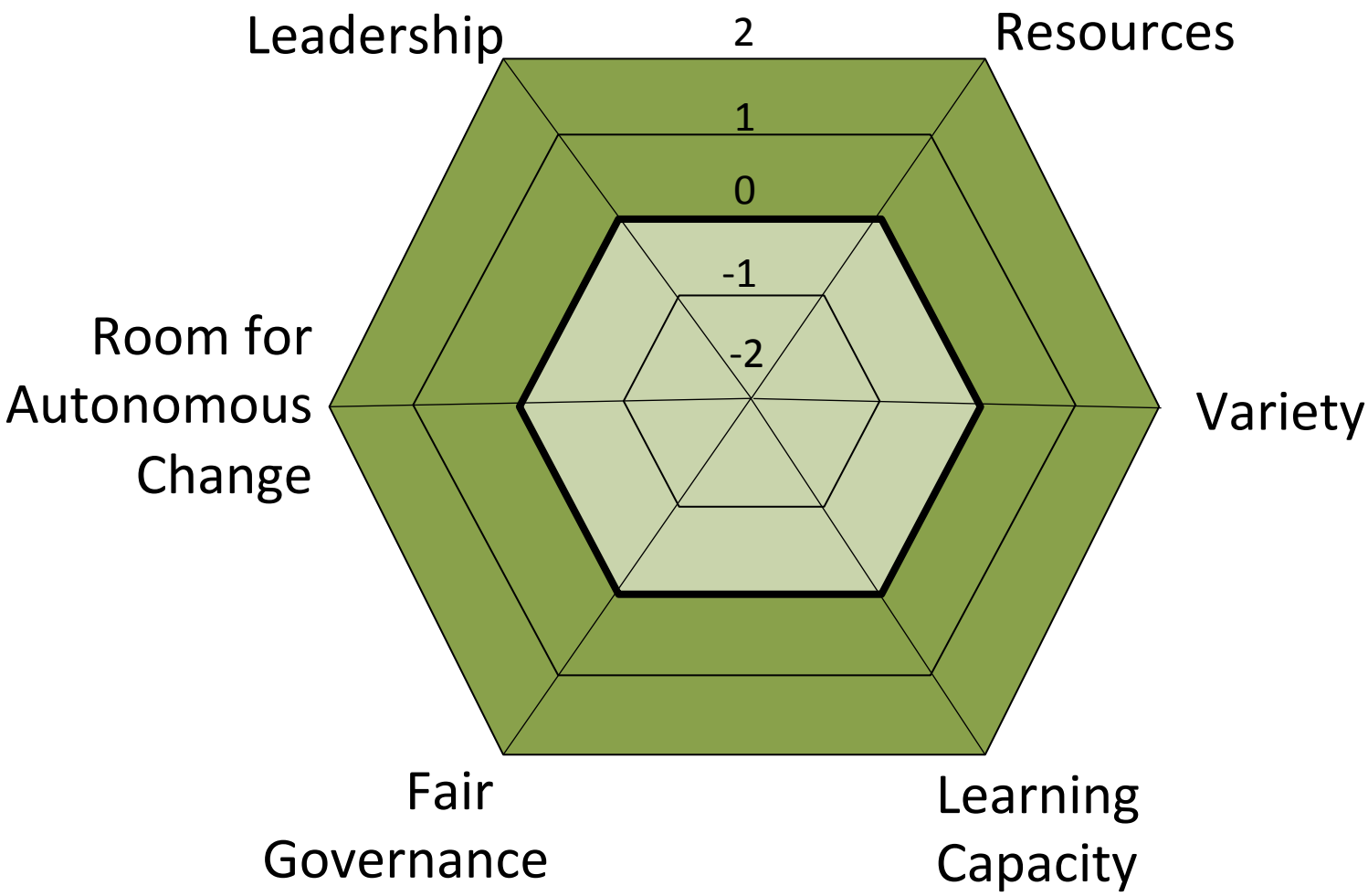
Partnership type	n (systems interviewed)
1. None (or emerging)	4
2. Informal (IGAs & interties)	5
3. Contractual Assistance	4
4. Consolidation	1

(No joint powers agencies found.)

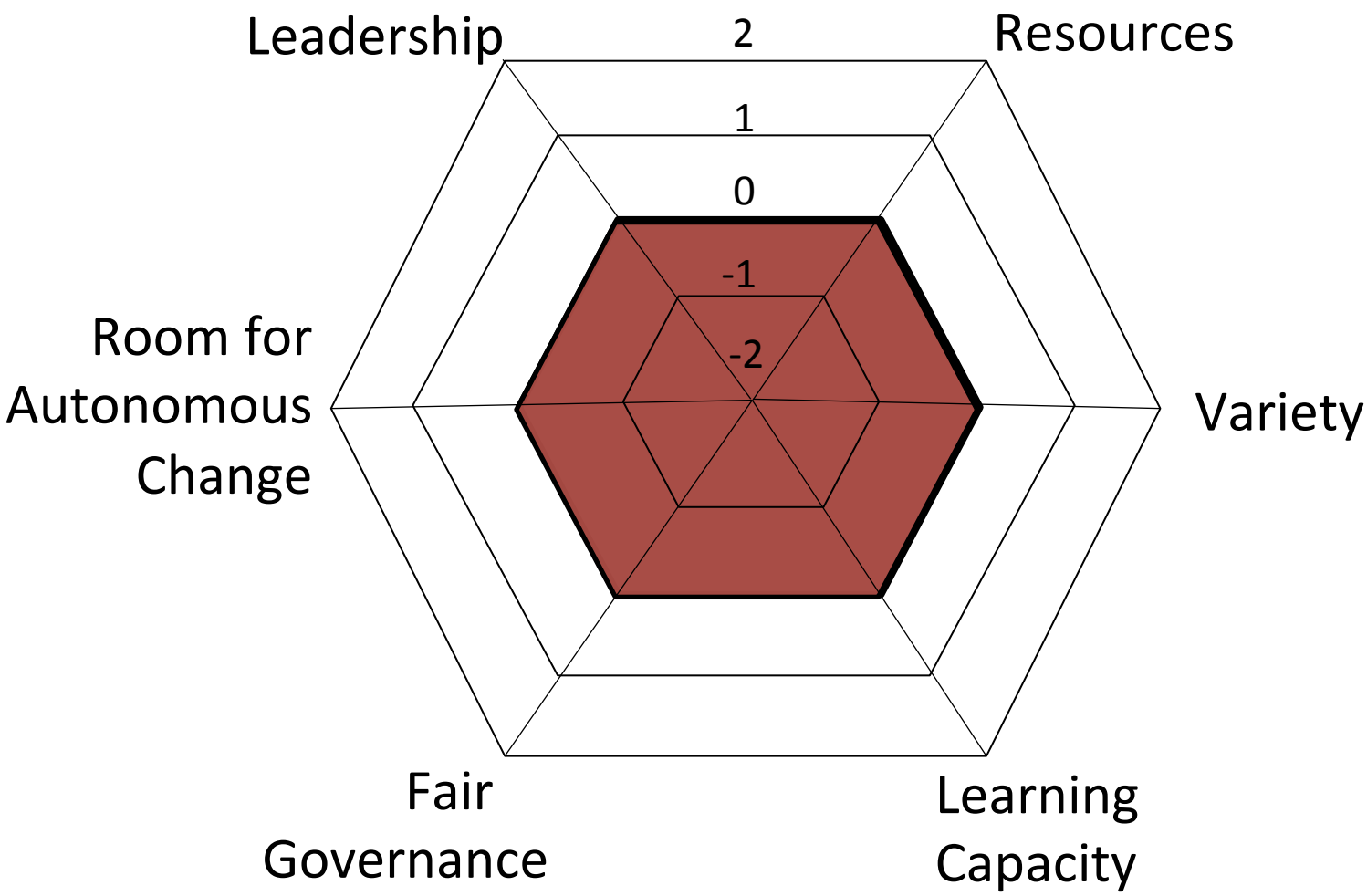
Presence & Perceptions of Coastal Partnerships

- Increase over the last decade
  - 33% currently exploring further collaboration
- Vision for more formal partnership (e.g. consolidation)?
  - 20% predicted that it is necessary and imminent
  - 27% did not see a need for it (older generation)

Adaptive capacity scores



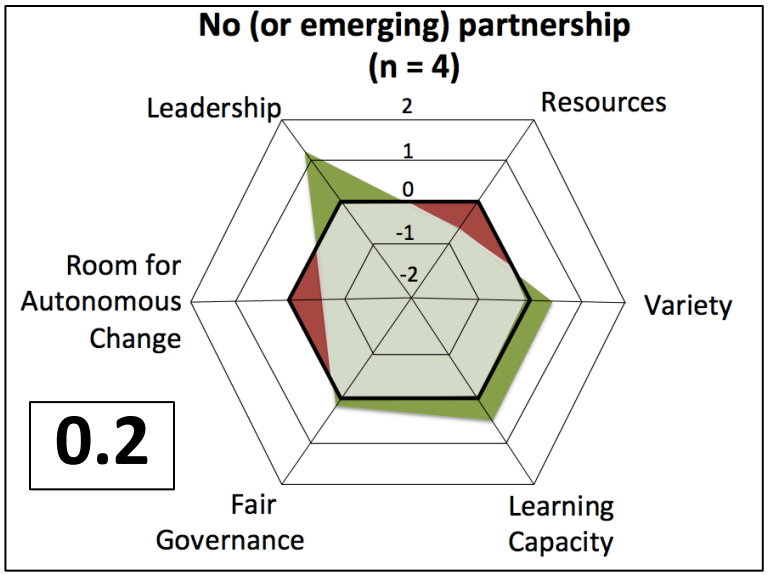
Adaptive capacity scores

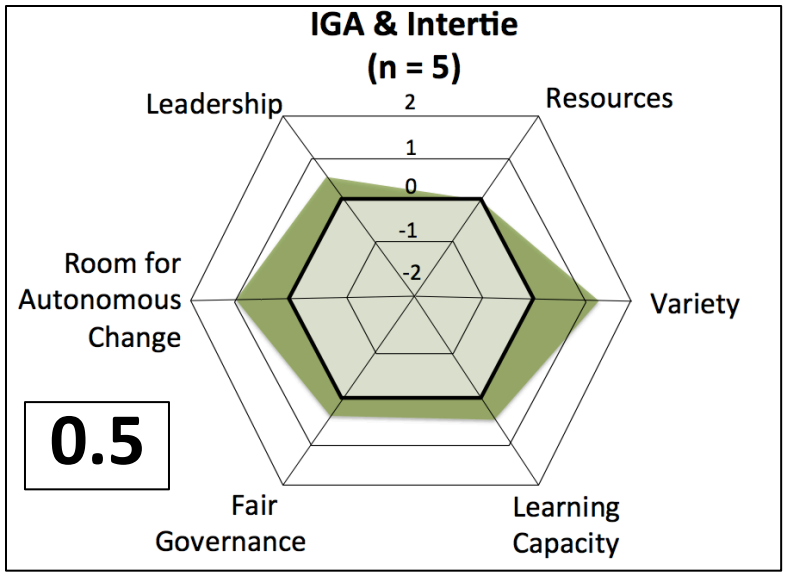


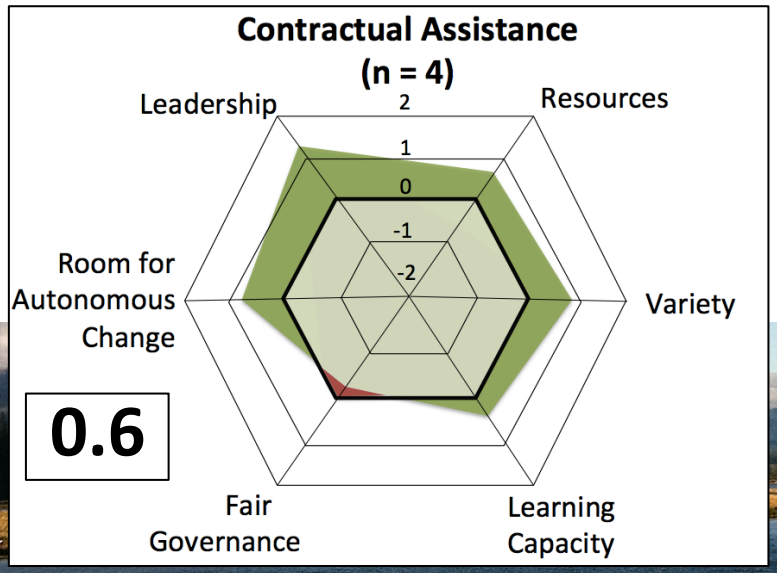
Adaptive capacity scores of coastal systems

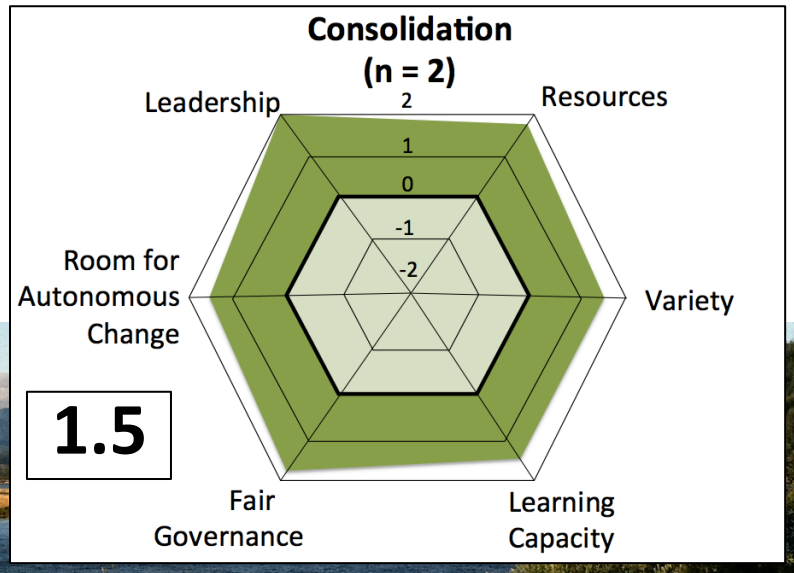
Positive score

Negative score

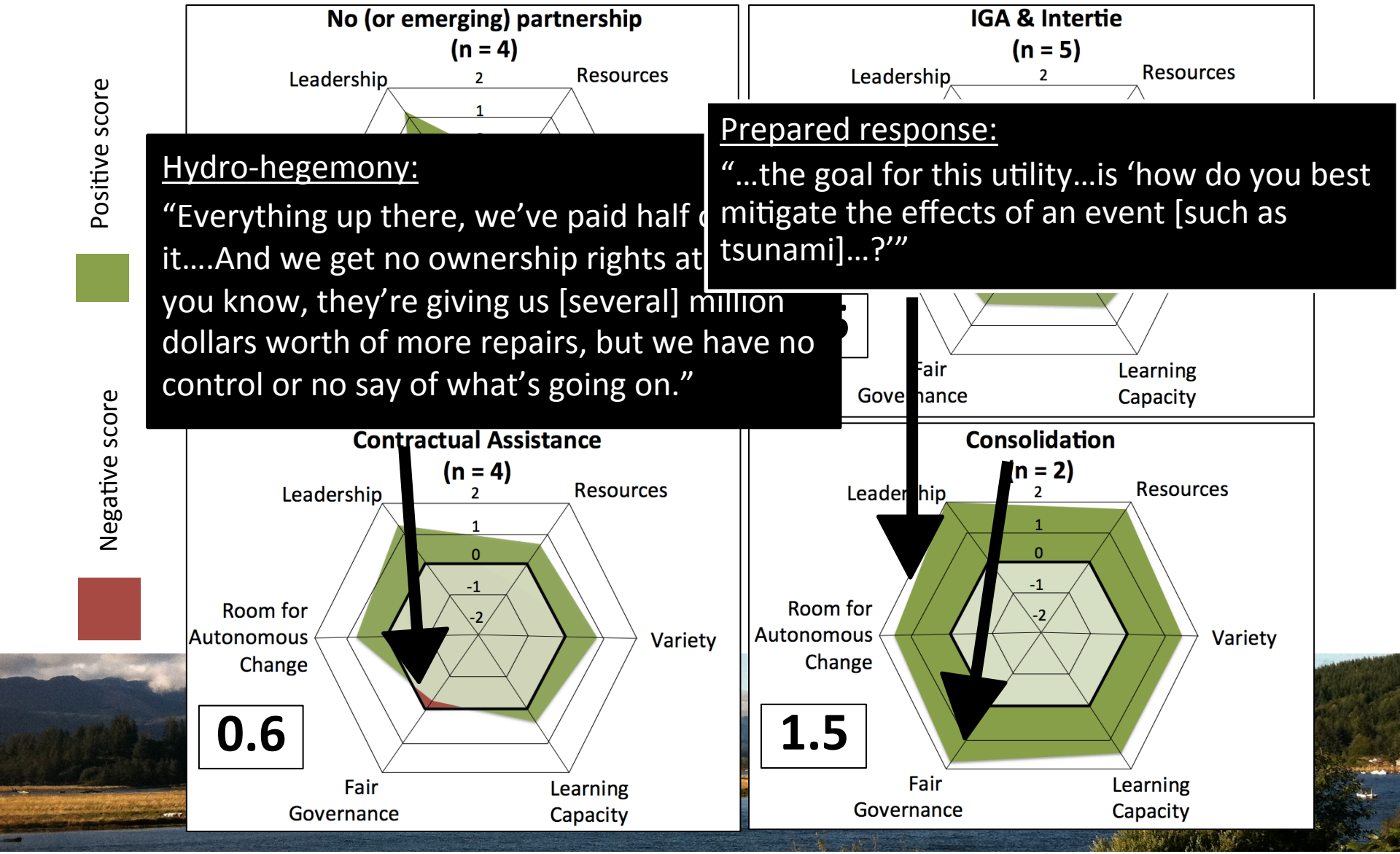




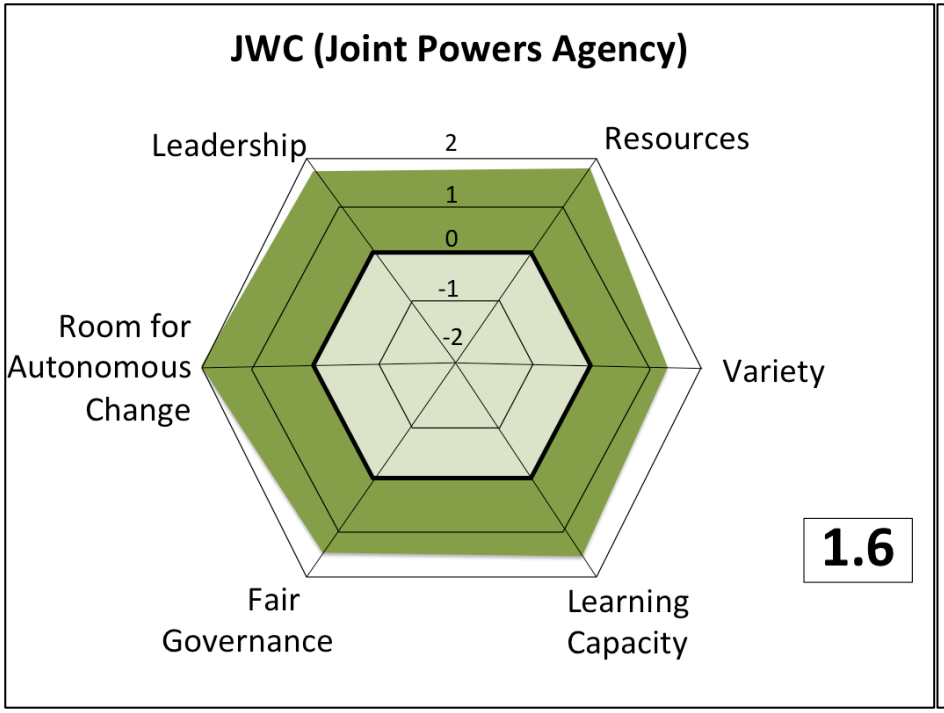


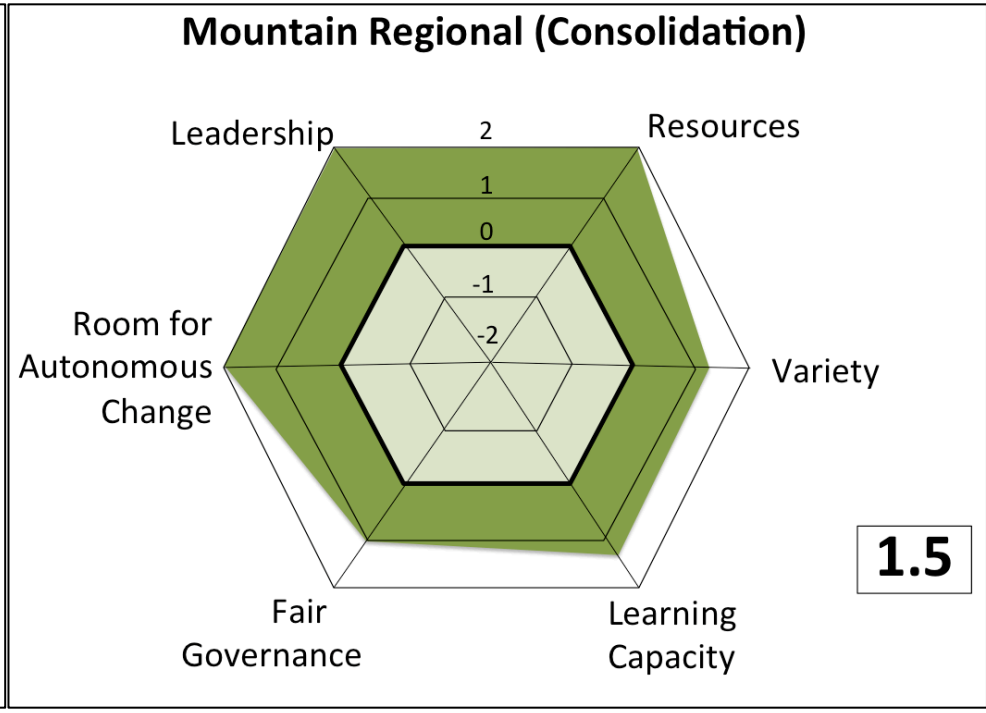


Adaptive capacity scores of coastal systems

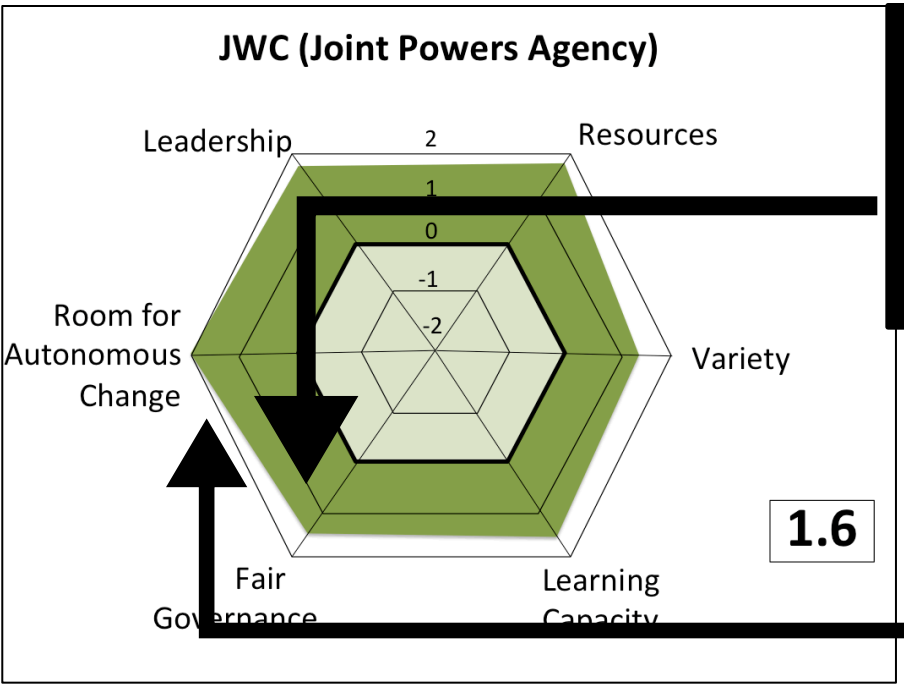


Adaptive capacity scores of Model Partnerships





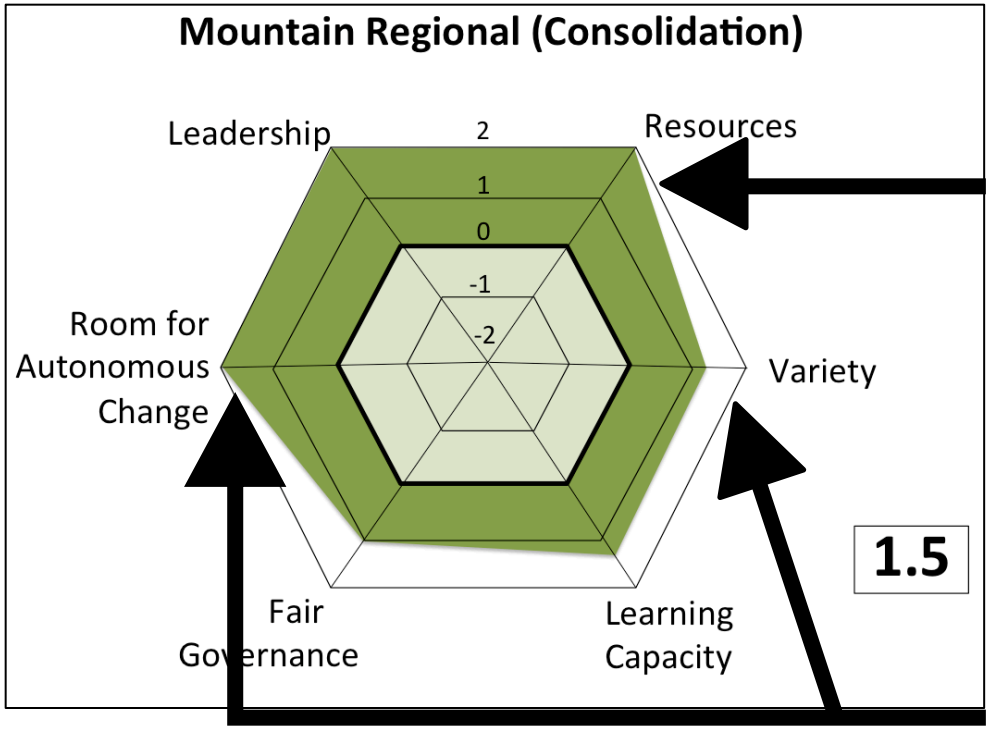
JWC and the critical veto



"[The veto power] is particularly important to the smaller communities because they're going to immediately think that the larger [ones] can overwhelm them and force them to do these things they don't want to do…"

Prepared to respond to multiple disasters

Mountain Regional, resources, and redundancy



"[W]e can literally now walk into the state and get funding in minutes. Because they've seen what we can do, we've solved a lot of state compliance problems."

"[W]e wouldn't have been able to do [contingency planning] without regionalizing. We just didn't have redundant sources, we didn't have pipelines, ways to move things around."

Partnership Drivers

Common Drivers	Coastal Systems	State Agencies	Model Partnerships
Water resource issues (scarcity, water quality, and SDWA compliance)	66%	20%	Both
Abundance in water rights (altruistic & seeking control)	33%	0%	No
Financial hardship	20%	…And right incentives… 40%	Mountain Regional
Infrastructure issues	20%	20%	Both
ESA and competition with instream rights	13%	20%	No

* Disconnect between state employees and coastal water professionals
* Hazard largely not considered a driver (discussed by n=1)

Partnership Barriers

Common Barriers	Coastal Systems	State Agencies	Model Partnerships
Lack of perceived urgency/ status quo OK	100%	60%	No
Cost and cost distribution	87%	40%	Mountain Regional
Mistrust, rivalry, politics	53%	60%	Both
Fear of lost autonomy/ identity	47%	80%	Both
Geography (distance, terrain)	Distance: 40% Terrain: 33%	Distance: 20% Terrain: 20%	Both

OVERCOME!

- Further disconnect
- Model partnerships indicate that barriers are irrelevant

Partnership Recommendations

Dimensions of Adaptive Capacity	Recommendations discussed across participant groups
Resources	• Find exceptional staff for partnership management • Keep previous debts separate
Variety	• Intertie if at all possible • Incorporate storage • Seek technical assistance and neutral facilitators
Learning Capacity	• Better educate decision-makers • Wait for old guard to retire
Fair Governance	• Institute shared ownership and equal voting • Communicate – no hidden agendas • Secure buy-in from public, staff, & all relevant stakeholders • Build in mechanisms to make future cost distribution equitable
Room for Autonomous Change	• Institute regular meetings
Leadership	• Clearly define goals • Secure strong, apolitical leaders at staff and board/council level

* Recommendations converge around fair governance

Lessons Learned

- Partnerships are difficult to establish and take time to refine
- Cost, rivalry, geography can be overcome
- Partnerships *do not* require a sacrifice of identity or influence
- Sudden urgency may be the best driver

  ….*without concerted action from state agencies*

  – Communication & outreach, third party facilitators, technical assistance, financial incentives & augmented funding, etc.

Suggested Partnership Approach

- Partnership type *does* matter
- More formal arrangements score better
- A joint powers agency approach like the JWC is best model for the coast
- Interties and emergency IGAs are next step for non-partners

Critical considerations

To watch out for:

- Potential for “hydro-hegemony”
- Potential for natural gas sector subsidization
- Anti-growth argument
- Freedom of choice argument

Proposed state actions

1. **Create an open forum of communication** that can help neighboring water systems identify areas of common ground and establish good relationships.

2. **Integrate expert facilitators and mediators** who can address mistrust and identify shared visions

3. **Increase technical assistance** to educate and guide water systems through financial and legal processes specific to regionalization

4. **Incentivize informal and joint powers agency** water system partnerships

5. **Coordinate with county governments** on partnership promotion

6. **Leverage existing networks** and task forces for education and outreach on partnership benefits

Financing options

1. Use county bonds

   Summit County: $5 million in seed funds

2. Augment state funds

   Tax industries e.g. bottled water, renewable (wave) energy, data centers

3. Watch for unconventional federal sources

   Protection of NOAA research center?

Evaluation of the framework

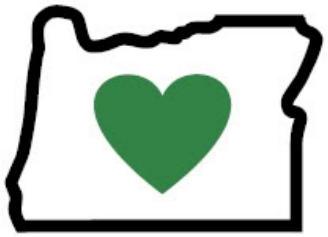
Problematic…

- Quantification of qualitative data
- Weighting?
- Tension between efficiency and redundancy

…but valuable for comparative analysis

abc = 123…?

Future research



OREGON CONTEXT

- More comprehensive coastal and statewide survey

NATIONAL CONTEXT

- Geographic trends in partnership and why?

THEORETICAL ADVANCEMENTS

- Trend analysis to inform criteria weighting
- Influence of institutional size
- Relation of adaptive capacity scores with system response to crisis and chronic pressures

Broader implications

- Contributes to growing understanding of adaptive capacity
- Informs how to address vulnerability of small water systems, on the Oregon Coast and beyond

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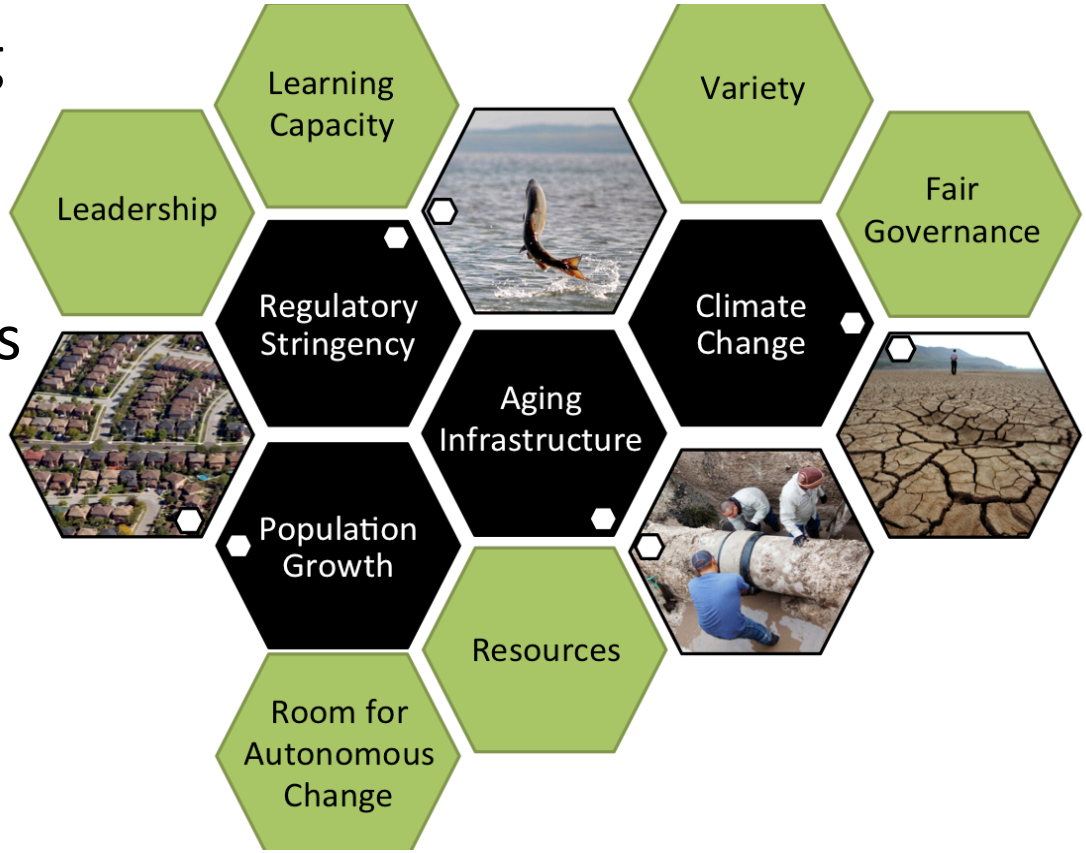

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