Public Responses to Large-scale, Net-zero Infrastructure: Research Perspectives

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National Academies of Sciences, Engineering and Medicine
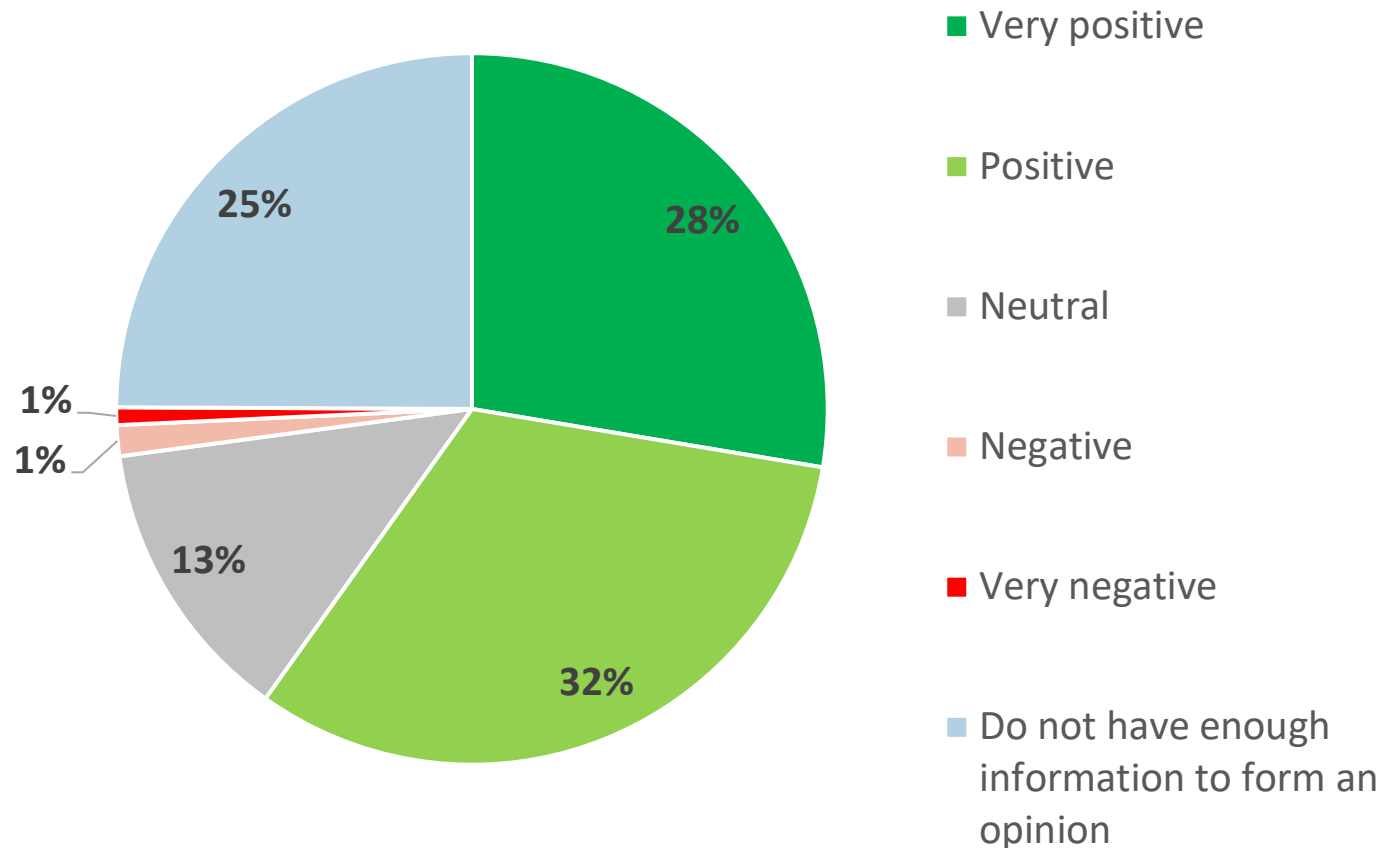
Oregon State University

Why and how?

- Restructuring energy infrastructure requires public engagement
- Understand, describe and explain what the public knows and thinks *and* how they have responded to or might respond to its deployment
- Does not guarantee acceptance but its absence likely results in failure
- Range of techniques: surveys, interviews, focus groups, participant observation, document analysis, case studies
- Simulations, virtual/augmented reality, scenario planning, deliberative workshops

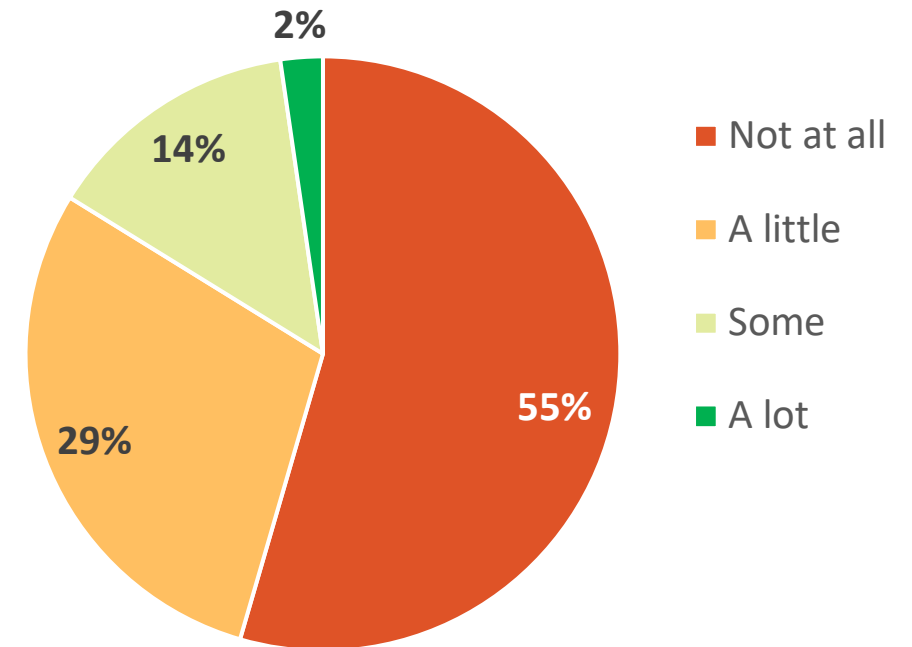Positive attitudes toward renewables in abstract

Source: Hazboun & Boudet (2020)
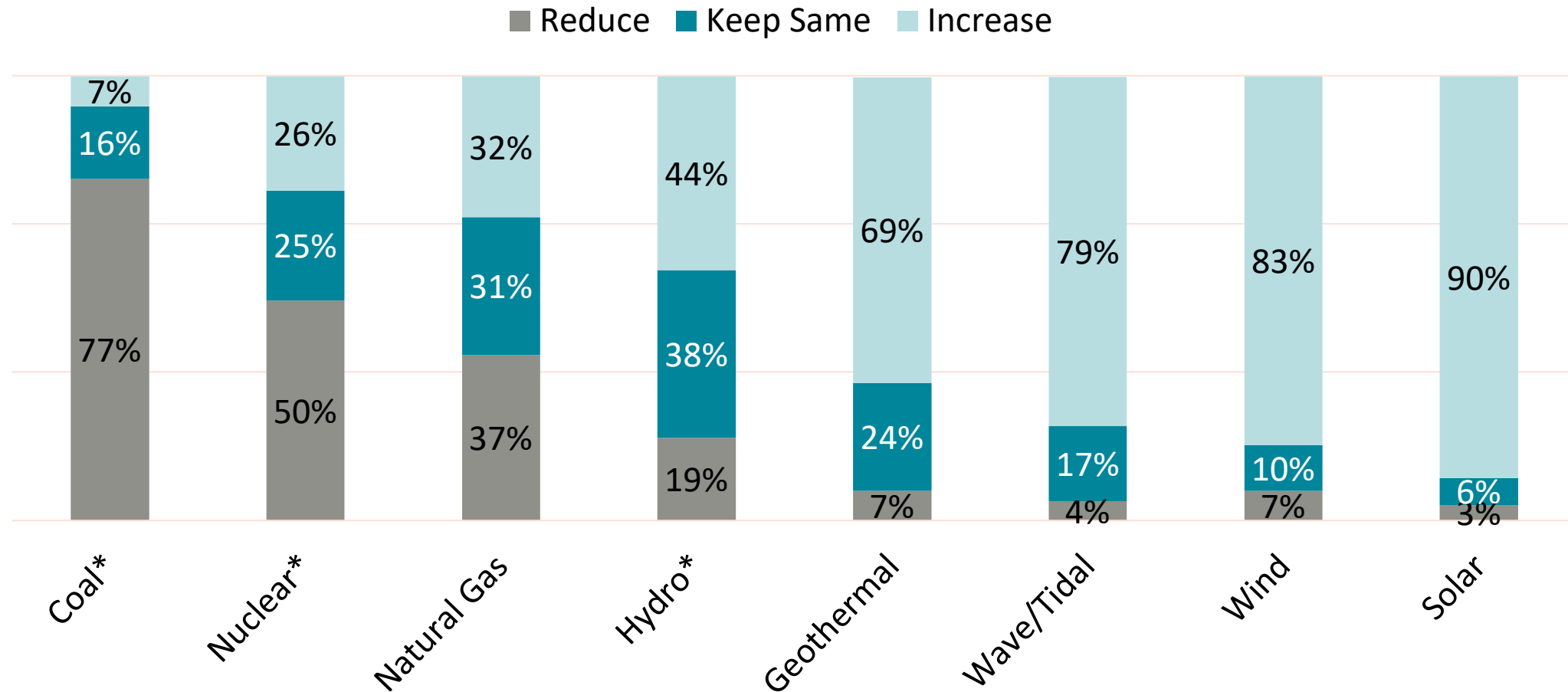
Positive attitude, low familiarity

What is your general attitude toward the development of wave energy off of the [CA/OR/WA/BC] Coast?

- ■ Very positive
- ■ Positive
- ■ Neutral
- ■ Negative
- ■ Very negative
- ■ Do not have enough information to form an opinion

How much have you heard or read about wave energy?

- ■ Not at all
- ■ A little
- ■ Some
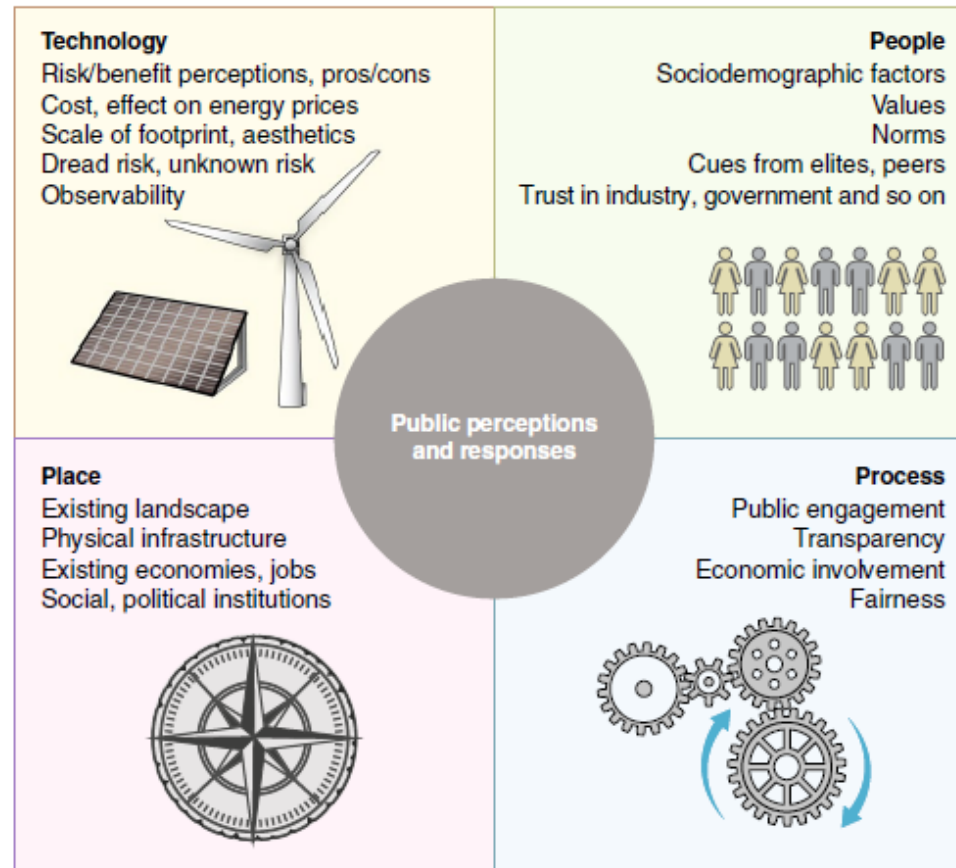- ■ A lot

Often hidden, sometimes contentious

- Lack of salience

- Scientific literacy model: more information, more acceptance

- Cognitive miser model: use mental shortcuts to filter information and develop opinions

- Once familiar, can be divisive

Controversial vs. typical
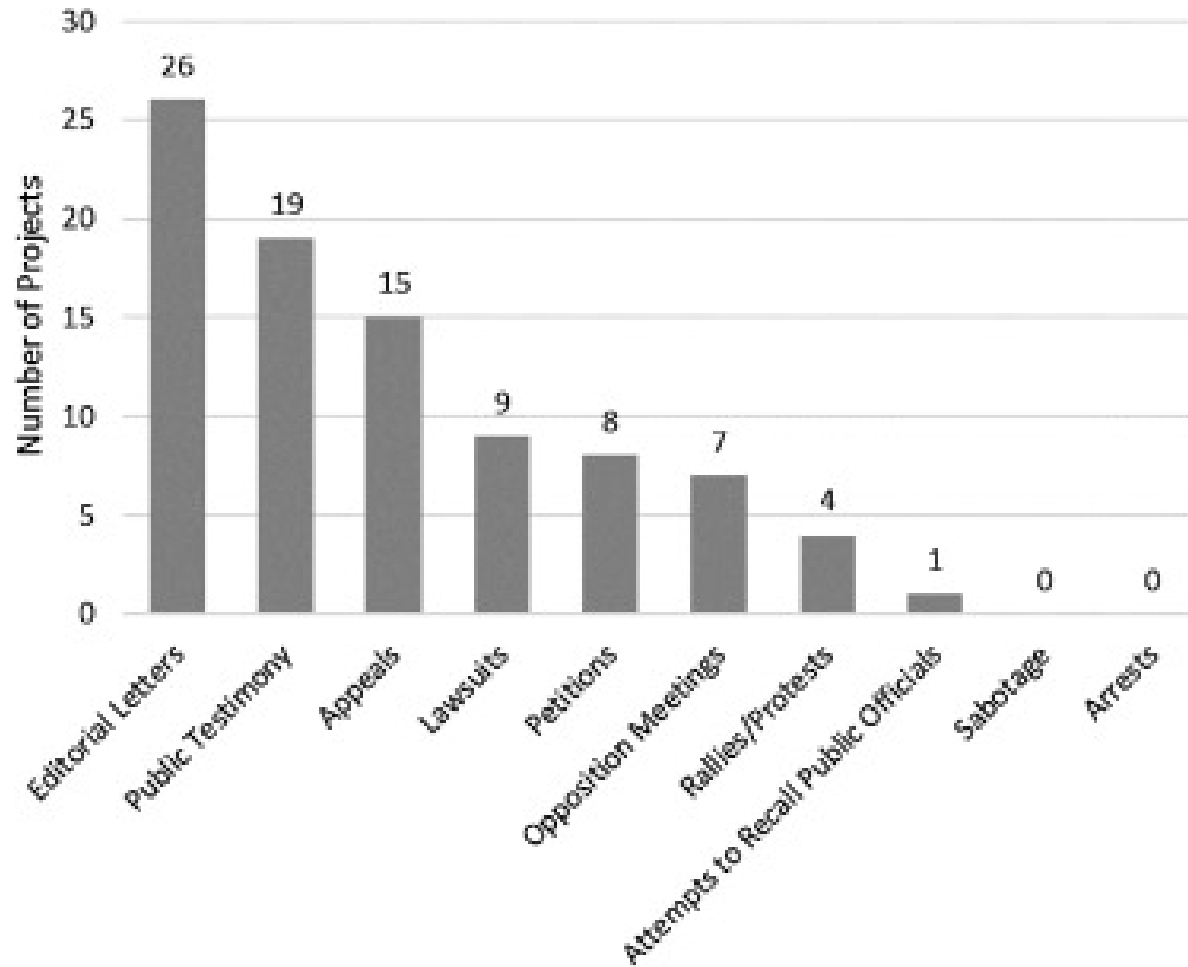
Number of Utility-Scale Wind Projects by Type of Mobilization Activity (n = 53).

Source: Giordono et al. (2018)

Factors shaping perceptions and response are multi-faceted and complex

Technology
Risk/benefit perceptions, pros/cons
Cost, effect on energy prices
Scale of footprint, aesthetics
Dread risk, unknown risk
Observability

People
Sociodemographic factors
Values
Norms
Cues from elites, peers
Trust in industry, government and so on

Public perceptions and responses

Place
Existing landscape
Physical infrastructure
Existing economies, jobs
Social, political institutions

Process
Public engagement
Transparency
Economic involvement
Fairness

Source: Boudet (2019)

Technology

- Not 'objective' risks and benefits but perceived
- Risks: safety, aesthetic, environmental, community character
- Benefits: employment, tax revenue, services
- Focus on local
- Exacerbate existing inequalities?
- Unequal distribution of cost and benefits to host communities
- Moving offshore does not facilitate acceptance

Ocean stakeholders and space users

Fishing (commercial, processors, and more onshore)	Shipping and tugs	Fiber optic cables	Recreational ocean users
Scientists (agency & academic)	Environmental groups	Economic development groups	Tribal nations
Military	Hazard response	Newest user: Marine Renewable Energy industry	
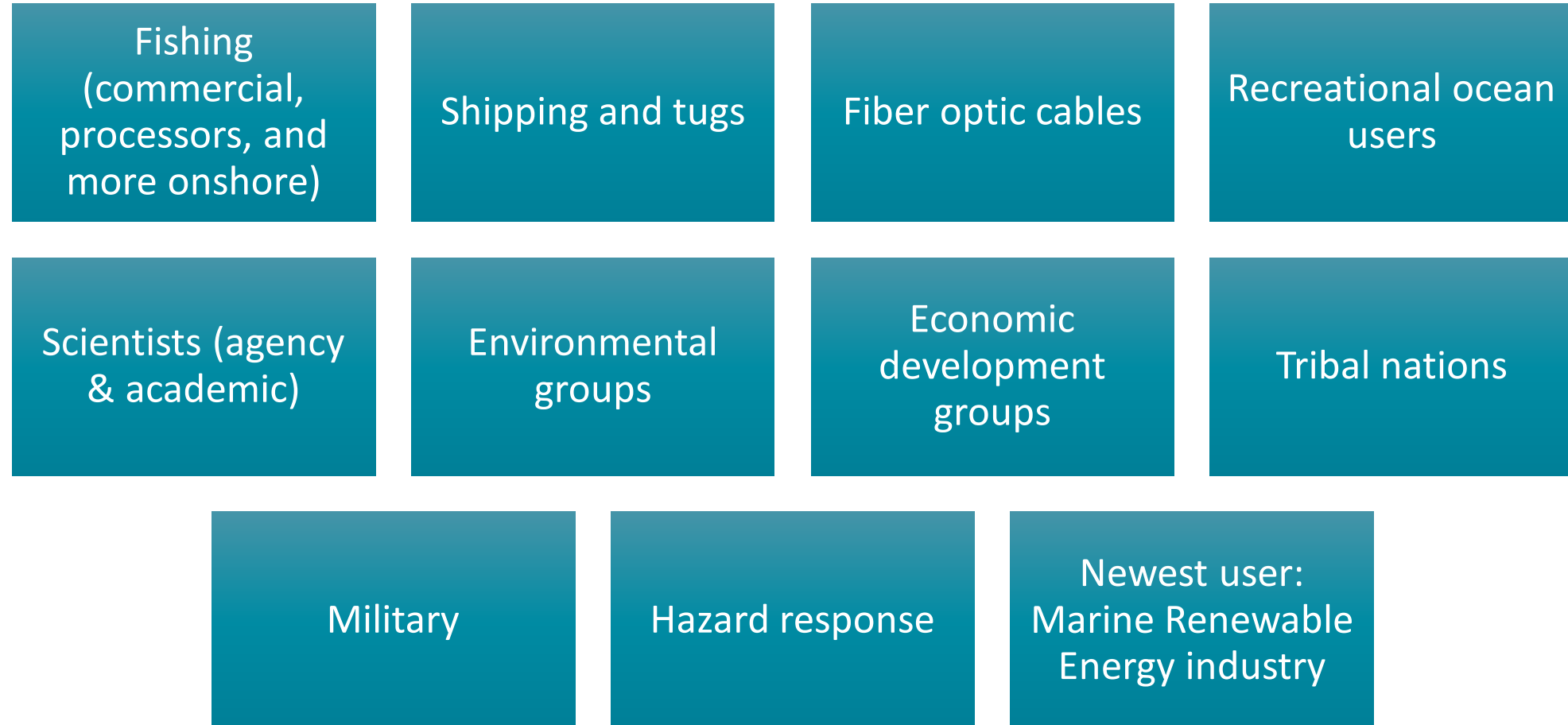
People

- Partisanship

- Environmental attitudes – conflicting conservation priorities

- Views of others: media, elites, peers, trusted messengers

- 'Social representations'

- Sociodemographic factors

- Vulnerable populations

Place

- Historical experiences with similar technologies or industries
- Proximity to population centers, protected areas
- Both physical aspects and meanings / emotions associated with a location
- Place attachment and place protective action
- Regulatory and political context
- Public acceptance to social acceptance

Process

- Political – having a say, access to decision makers
- Economic – community ownership, appropriate compensation
- Building trust
- Can be more important than distribution of costs and benefits
- More willing to accept decisions if feel arrived at fairly
- Recognition, procedural and distributional justice
- Consultation, engagement and collaboration

Importance of process

Figure 3. Occurrence of topics over time, by category
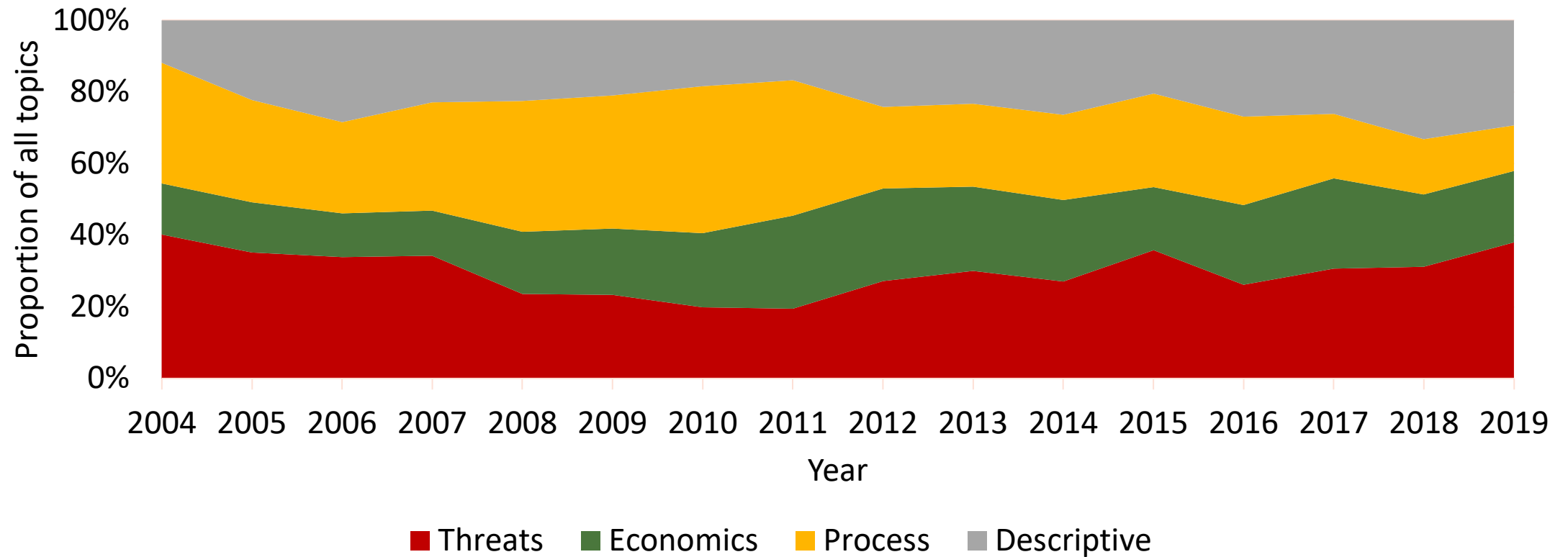
Putting it all together

- How do technology, people, place and process interact

- Perception geographies

- Technological design, decision-making processes most mutable

- People and place outsized role
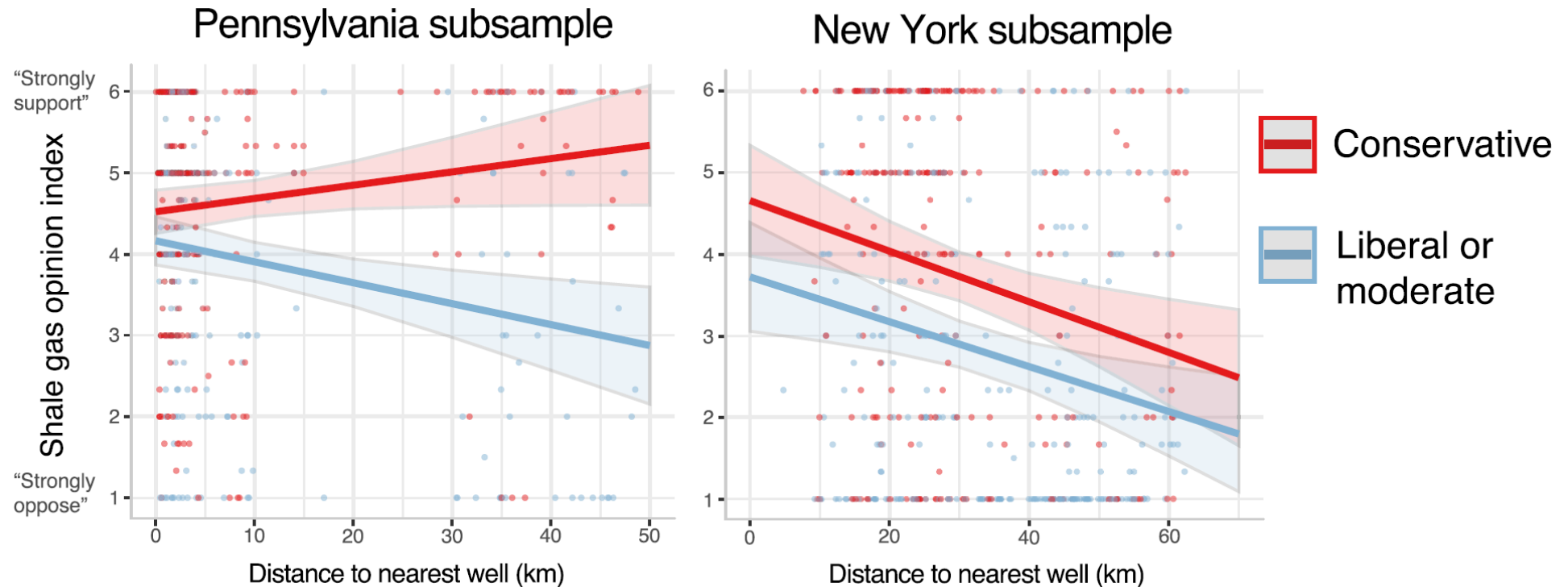
Geographies of perception

Figure 4. Effect of distance to nearest well (km) on UOGD support/opposition by political ideology group (conservative vs. liberal or moderate) and state subsample (New York or Pennsylvania) (table 3: Model 5 & 7). Each point represents a combination of the respondent's distance to a nearest well (km) and score for the shale gas opinion index. Colors of points correspond to categories 'Conservative' or 'Liberal or moderate'.
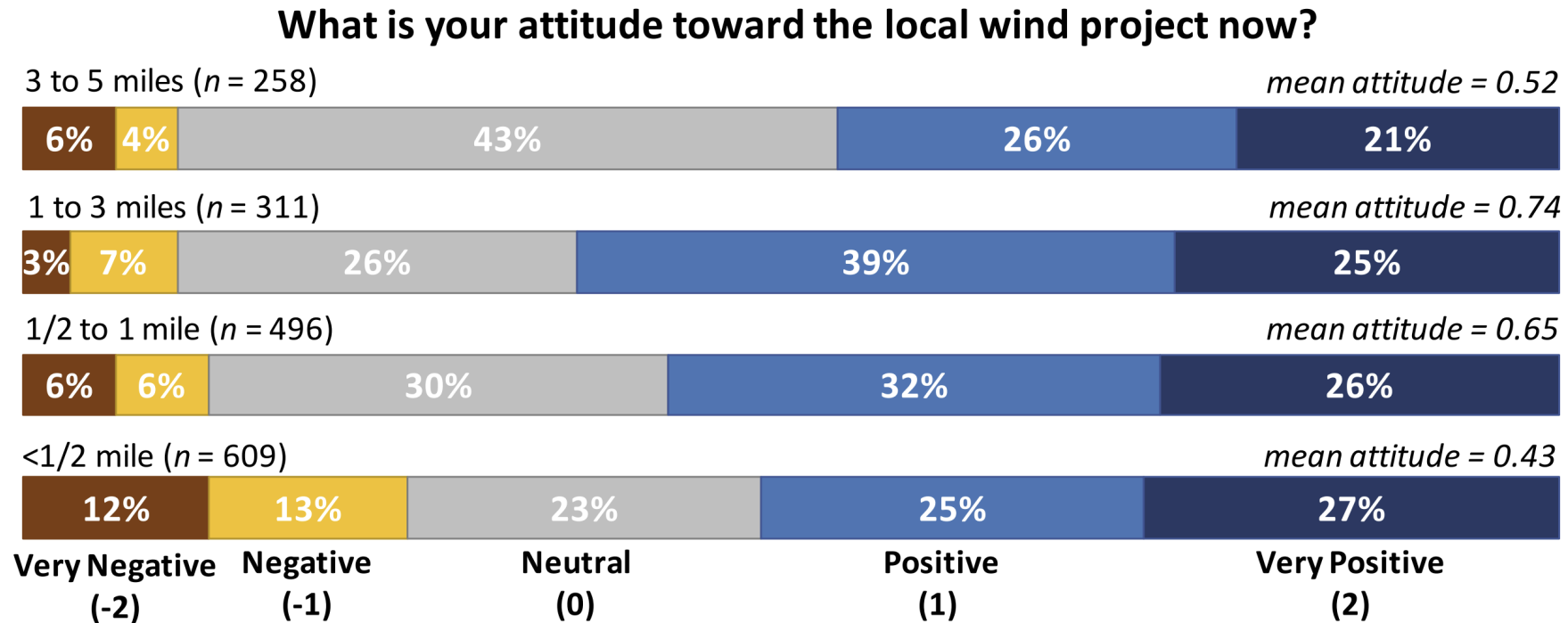
Source: Zanocco et al. (2020)

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"I think that *successful* marine renewable energy on the Oregon coast will only come with strong research and design investments that build upon relationships, trust and collaboration with coastal and ocean users. Because Oregon has such an extreme coastal environment and marine conditions, I think it's only through these types of collaboration and deep trust that large scale industry can be successful in Oregon - both physically and politically. I think this will look smaller in scale and through trusted institutions. "

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Wind power project neighbors

What is your attitude toward the local wind project now?

3 to 5 miles (*n* = 258)   *mean attitude = 0.52*

| 6% | 4% | 43% | 26% | 21% |

1 to 3 miles (*n* = 311)   *mean attitude = 0.74*

| 3% | 7% | 26% | 39% | 25% |

1/2 to 1 mile (*n* = 496)   *mean attitude = 0.65*

| 6% | 6% | 30% | 32% | 26% |

<1/2 mile (*n* = 609)   *mean attitude = 0.43*

| 12% | 13% | 23% | 25% | 27% |

| **Very Negative (-2)** | **Negative (-1)** | **Neutral (0)** | **Positive (1)** | **Very Positive (2)** |

Note: Responses are weighted by age, sex, education, and sampling cohort to represent the underlying population.

Figure 3: Distribution of responses about present attitudes toward local wind power projects, by distance from nearest turbine

Source: Hoen et al. (2019)

Strategies for moving forward on siting

- Accept limitations of science and technology
- Explicitly acknowledge the importance of politics and values, possibility of conflict
- Involve significant public engagement and experts working together with broad variety of institutions
- Build trust and constructive working relationships among all participants
- Employ collaborative decision processes
- New cultural/professional norms for scientists and technical experts
- Focus on smaller-scale governance arrangements

Blue Lake Rancheria