Social Assets and Stakeholder Assessments: Strategic Applications for Sustainable Alternative Jet Fuel Systems

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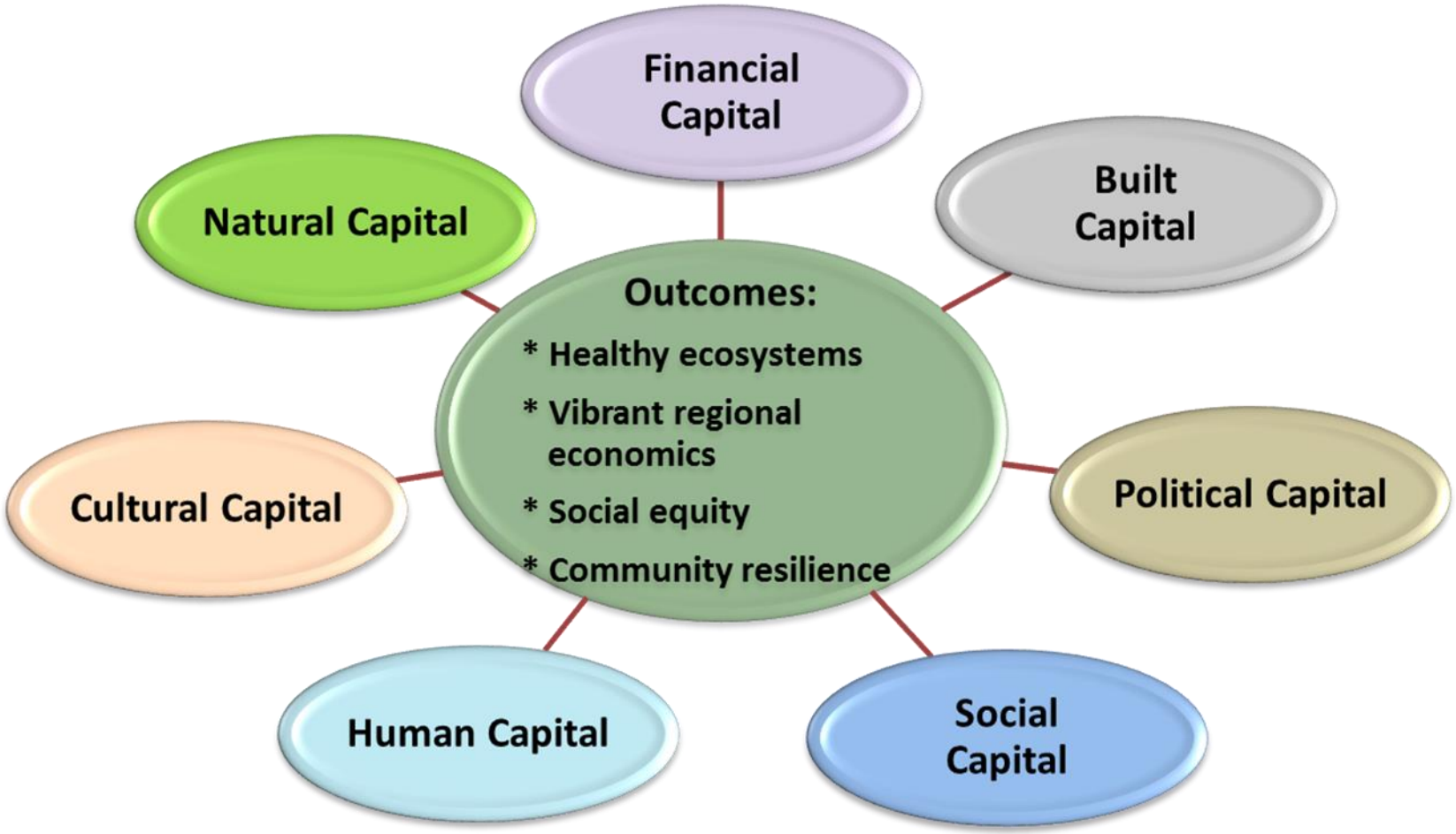
Social Assets Rationale

- Large-scale projects involving significant investment rely on a variety of assets to achieve success, yet…
- Most projects focus on biogeophysical assets that are easier to measure and quantitatively assess
- Important community social features are often ignored or inadequately examined, despite the fact that these features have great impact on whether economic and environmental projects will succeed, particularly in the long-term.
- "Community connectedness is not just about warm fuzzy tales of civic triumph. In measurable and well-documented ways, social capital makes an enormous difference in our lives...Social capital makes us smarter, healthier, safer, richer, and better able to govern…" (Putnam, 2002).

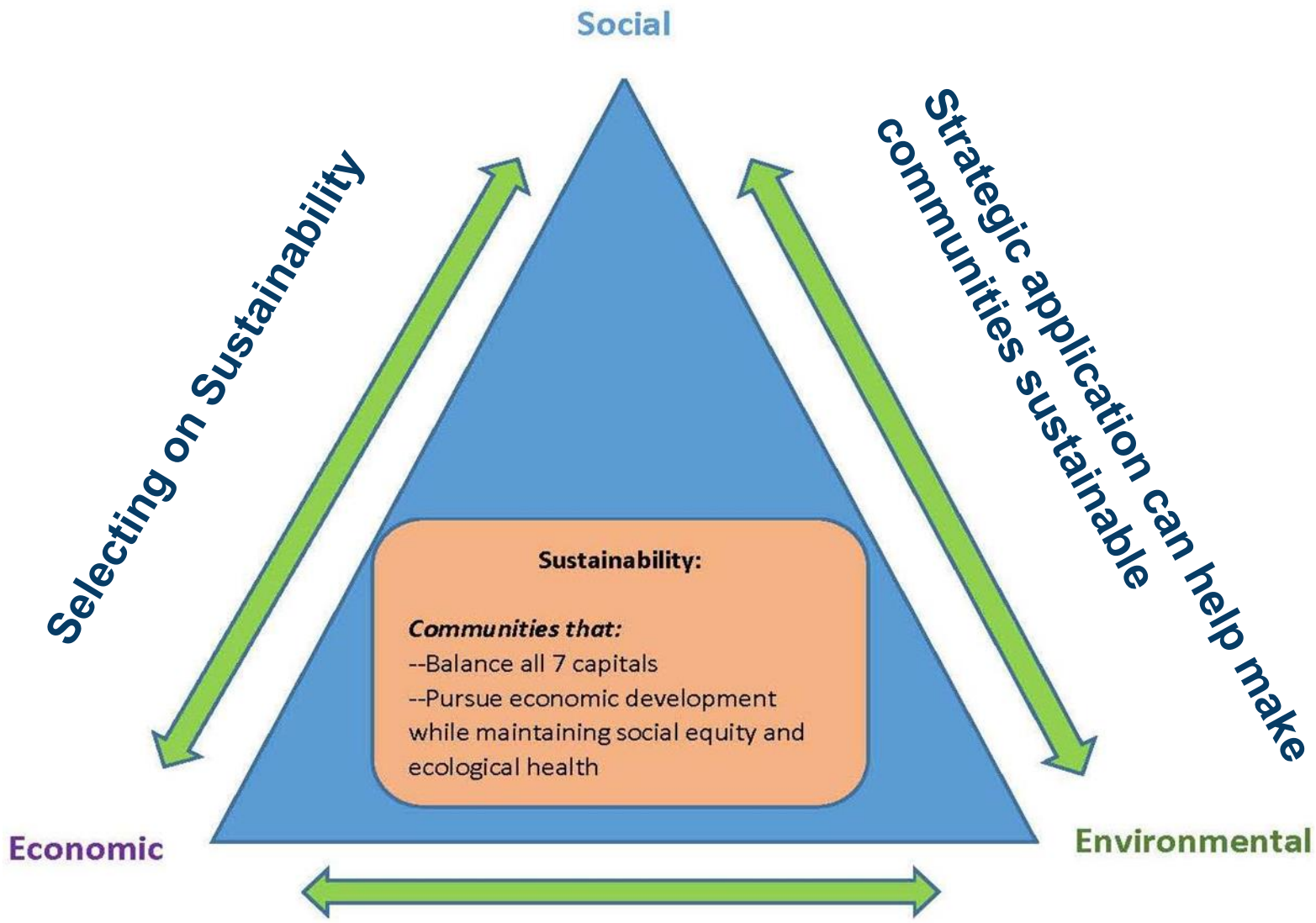
The Community and Attribute Model: CAAM



Social Assets Rationale

- **Social assets more difficult to quantify**
  - Measures of social cohesion, networks, creativity, and trust are inherently qualitative in nature
  - Paucity of reliable, comparable data
- **Research shows these elements are critical for the sustainability of complex economic and environmental projects.**
- **Project planning often ignores, or cursorily addresses these assets:**
  - poor quantitative proxies, or
  - Examine only one facet of these assets: *support*.
- **Including more robust measures of these assets enhances likelihood of success through:**
  - Identifying communities more likely to support project success initially (have all necessary assets)
  - Identifying and developing targeted intervention strategies to increase likelihood of project success

Sustainability and CAAM



Through "spiraling up" effects that continue to build capitals

CAAM Development

Pilot Study

- Initial measures developed
- Aggregation of 3 national datasets
- Deployed in NARA WMC with initial BGP modeling

Refinement

- Updated measures with more complete indicators
- Updated datasets
- Deployed with existing BGP modeling in WMC

Validation

- Case studies in WMC/MC2P Regions
- Combined with updated BGP analysis in NARA Region
- Goal: application in other U.S. regions

Refinement

- Categorical measures based on SD
- Aggregation of more national datasets for political capital
- In-depth case-studies of success/failure outside NARA region

Current CAAM Asset Metrics

	Community Assets	
Social Assets	**Human Capital**	Health: % Low birth-weight % Premature Deaths % Obese (BMI > 30) % Self-reports of poor health condition (physically and mentally)
	Social Capital	# Rent-Seeking Groups: political, labor, professional and business organizations # Non-Rent Seeking Groups: civic organizations, bowling centers, golf clubs, fitness centers, sports organizations and religious organizations # Non-Profit Organizations % Voter Turnout
	Cultural Capital	# Arts related organizations # Arts related business # Occupational employment in the arts $ Revenues of arts related goods and services
All counts (#) and amounts ($) are calculated as a rate of the population per 10,000		

A scale score for each asset is created to signify county performance on that capital. Regional means are calculated and used to compare county performance.

Strategic applications:

- Identifying communities that outperform on the asset (above regional mean)
- Developing strategic interventions for communities that may slightly underperform on an asset

Strategic Applications

- CAAM: Model Applications
  - Site Selection
  - Implementation
  - Evaluation/long-term success
  - Comparative applications outside U.S.

- (FAA) Refinery-to-Wing Stakeholder Assessment
  - Barriers & Opportunities for Implementation

Stepwise Model to identify communities

Combining Social Asset Analysis with BGP

•Applying quantitative county-level capital measures of social capital, cultural capital, and human capital to BGP ranked facilities.

•Utilizing regionally developed “benchmarks” to identify counties that perform better than the regional average on these three key assets

Asset	National	West	Pacific Northwest (PNW)
	N = 3,108	*N = 413*	*N = 128*
Social Capital			
Avg. Score (2009)	**-0.0043**	**0.0413**	**0.0820**
Minimum score	-4.29	-3.06	-2.51
Maximum score	23.08	7.88	3.52
Missing counties	40	35	0
Creative Capital			
CVI score (2010)	**0.491**	**0.686**	**0.5734**
Human Capital			
Avg. Health (2013)	**0.0838**	**-1.4247**	**-1.5927**
Minimum score	-7.66	-7.66	-6.11
Maximum score	12.50	6.21	2.71
Missing counties	632	82	15
Note: missing values are mostly all counties in Alaska and Hawaii, plus seven counties in Georgia			

Combining Social Assets and BGP Analysis

Rank	Site name	Facility Score	County and State	Social Capital	Creative Capital	Human Capital Health
1	Cosmo Specialty Fibers	80.9	Grays Harbor County, WA	-0.30 (-0.03)	0.308 (-0.602)	1.49 (1.72)
2	KapStone Kraft Paper Mill	61.8	Cowlitz County, WA	-0.66 (-0.59)	0.331 (-0.550)	1.67 (1.82)
2	Weyerhaeuser - Longview Mill	61.8	Cowlitz County, WA	-0.66 (-0.59)	0.331 (-0.550)	1.67 (1.82)
4	Georgia-Pacific – Wauna Mill	60.7	Clatsop County, OR	0.64 (0.45)	0.985 (0.934)	-2.61 (-0.57)
5	Georgia-Pacific – Camas Mill	58.5	Clark County, WA	-1.29 (-1.09)	0.600 (0.060)	-2.40 (-0.45)
6	International Paper - Springfield Mill	55.2	Lane County, OR	-0.15 (-0.19)	0.961 (0.879)	-1.62 (-0.01)
7	RockTenn	55.1	Pierce County, WA	-1.10 (-0.94)	0.655 (0.185)	-0.91 (0.38)
8	Boise Wallula Mill	53.9	Walla Walla, WA	-0.56 (-0.51)	0.690 (0.265)	-2.25 (-0.37)
9	Cascade Pacific Pulp Halsey Mill	53.0	Linn County, OR	-0.46 (-0.43)	0.300 (-0.620)	-0.71 (0.49)
10	Clearwater Paper Lewiston Mill	41.8	Nez Perce County, ID	-0.08 (-0.13)	0.526 (-0.107)	-0.79 (0.45)
11	Port Townsend Paper Mill	40.2	Jefferson County, WA	1.47 (1.11)	1.505 (2.113)	-2.45 (-0.48)
12	Ponderay Newsprint Usk Mill	31.7	Pend Oreille County, WA	0.11 (0.03)	0.262 (-0.706)	-0.10 (0.84)

CAAM Summary

More robust model is being applied to complex projects in the West to aid determination of implementation potential.

Next steps: apply to Midwest and other regions in the United States
Implementation internationally: Canada

Apply updated and robust measures of social assets (capital) to strategically inform implementation approaches to maximize project success; that is,

tailor engagement strategies for community collaboration projects to aid in not only identifying, but helping create receptive communities for AJF supply chain site selection and activities.

Refinery-to-Wing Assessment

- Phased design
- Key stakeholders
- Regional Sequencing
- Interview and Survey Inquiries
- Opportunities & Barriers related to SAJF adoption

R-t-W Assessment

PNW Pilot

- Case Studies in NARA Region
- Interviews with FBO's, airport management
- Regional survey

Midwest

- Interviews with FBO's, airport management, terminal operators
- Update questions to fuel logistics, readiness for biofuels

U.S.

- National Survey of Airport Management
- Interviews with select FBO's, terminal operators in other U.S. regions (South/NE)

Research Objectives

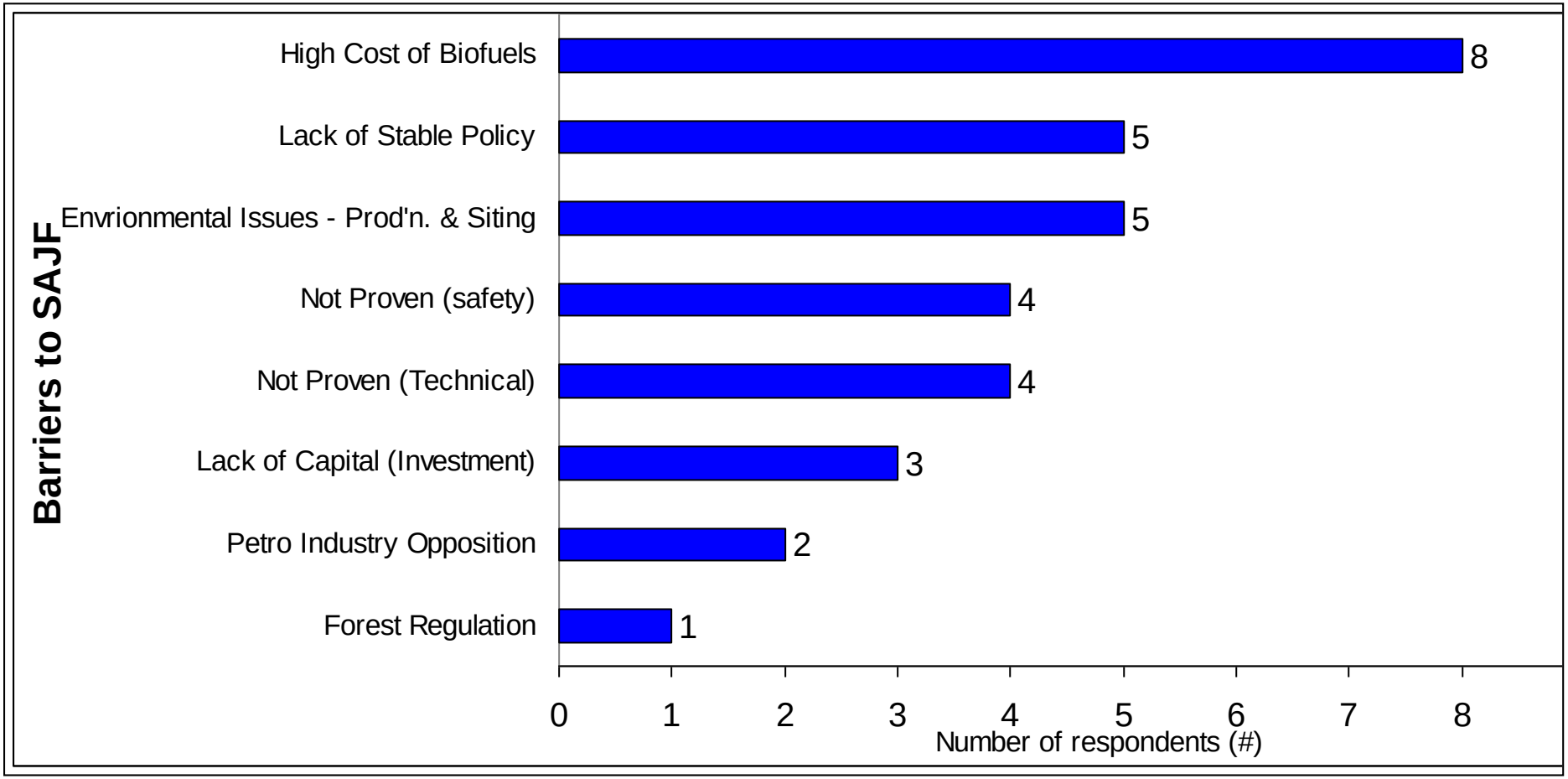
1. ID key aviation fuel supply chain SHs – U.S. PNW region;
2. Assess SH perceptions regarding the barriers/drivers to economically viable SAJF production in the NARA region;
3. Examine key issues to adding blended SAJF (ASTM D7566) into the ASTM D1655 Jet A fuel supply chain, including molecule tracking and crediting.

Primary Data Collection Methods

- **e-Surveys – Airport Mgrs. (n=70):**
  - 46% Response Rate (n=32)
  - Obtained key endorsements to increase RRs
  - Analysis in progress
- **In-Depth Interviews**
  - On-Site by Appt., June-Oct., recorded & transcribed
  - Airport Mgrs., FBOs, Fuel Resellers, Pipelines, & Airlines
  - In progress (n=24 to date)

Preliminary Interview Findings: Barriers to Regional SAJF

*Q. What are the **key barriers** to developing an economically viable SAJF production industry in the Pacific Northwest region?*



Barriers to Regional SAJF

*"**Cost** is the #1 barrier**."** "The cost of production and logistics are limiting market entry and scale up."*

*"There is not **policy stability** or harmony for SAJF. In contrast, on-road fuels have better incentives for renewable fuel than jet fuel."*

*"**Siting refineries** is a contentious issue with environmentalists, particularly new greenfield sites. Brownfield siting or co-siting with existing mfg. may be the answer."*

*"**Safety** is a paramount concern in this industry."*

*"Lack of **long-term (fuel) purchasing agreements** to provide a secure return on capital."*

*"The **forest is over-regulated**. We can't sit and watch thousands of acres burn. (SAJF) is a great use of the biomass."*

Additional Questions Include:

1. What is driving the development of an economically viable SAJF production industry in the PNW region?

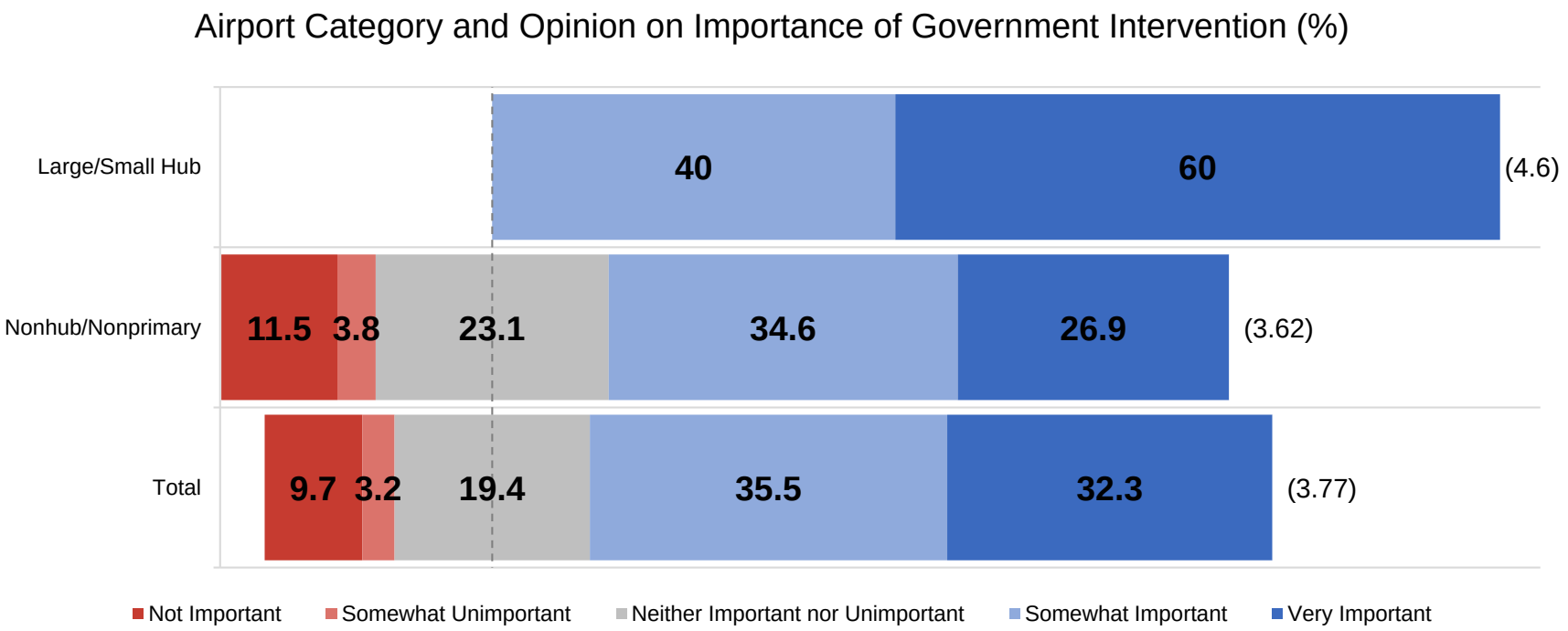
2. Where is the logical SAJF blending location for your airport?

3. Do you think the SAJF molecules should be tracked?

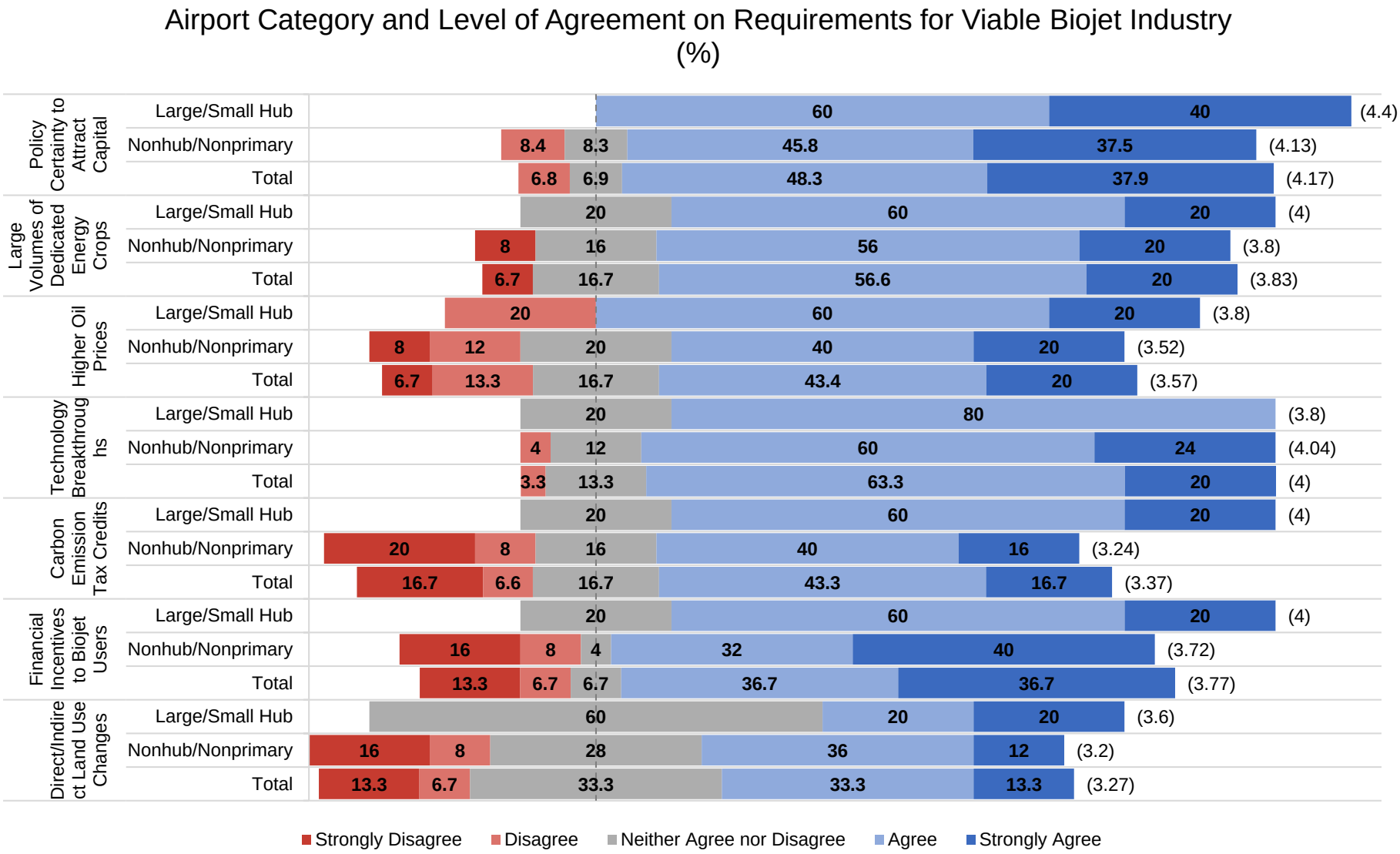
4. Should SAJF purchases have a mechanism for crediting?

5. How do you think SHs will react to a SAJF crediting system?

Preliminary Survey Findings: Importance of Government Intervention



Preliminary Survey Findings: Requirements for SJF Scale-up



Preliminary Survey Findings:

- Most airport managers believe government intervention is important for SJF scale-up
- Most airport managers support policy initiatives to scale up SJF production
  - Biofuel tax credits
  - Sustainability certification criteria
  - Emissions credits
  - Land use changes
- On policy preferences, little to no difference between airport size or location
- Managers recognize importance of/need for higher oil prices, policy certainty, technological innovation, energy crops, financial incentives

Midwest Interviews

- Updated Interview Questions:
  - Readiness of facility for biofuels
    - What facilities need to be ready
  - Fuel logistics
    - Fuel suppliers
    - Fuel storage facilities

- More FBO's, Fuel Distributors, Terminal Operators

- Complications:
  - Identifying Stakeholders in region
  - Larger corporations dominance in fuel distribution

Future Work

- **Midwest Region**
  - Complete data collection of key stakeholders
    - FBO's, Terminal Operators, Pipeline Operators, Fuel Resellers, Airlines
  - Analysis & reports

- **Expand to other U.S. region(s)**
- Select interviews with airport mgrs. & fuel handling in South/NE
- Coordination with Farm to Fly and CAAFI

- **National Survey of Airport Management**
  - Expansion of survey to other key stakeholders

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Questions?

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