

II Podkarpackie Territorial Forum

Regional Cluster-based Policy: Some Theoretical and Practical Aspects

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Introduction

1. Regions – the Critical Factor of a Country Development

2. The Role of Clusters in Regional Development

3. Upgrading Clusters – the Core of Regional Policy

4. The Case of the Washington State Cluster-based Policies

Regions – the Critical Factor of a Country Development

- 1. Uneven economic development of regions**
- 2. Factors determining regional specialization - from natural resources, through infrastructure to human capital**
- 3. The growing role of social capital => emergence of clusters**

What is Competitiveness?

- Competitiveness depends on the **productivity** with which a nation uses its human, capital, and physical resources.
 - Productivity **sets the sustainable standard of living** (wages, returns on capital, returns on natural resources)
 - It is not **what** industries a nation competes in that matters for prosperity, but **how productively** it competes in those industries
 - Productivity in a national economy arises from a **combination of domestic and foreign firms**
 - The productivity of **“local” or domestic industries** is fundamental to competitiveness, not just that of export industries



- Only **competitive** businesses can create jobs, rising income, and wealth
- Nations compete to offer the **most productive environment for business**
- The public and private sectors play **different but interrelated roles** in creating a productive economy

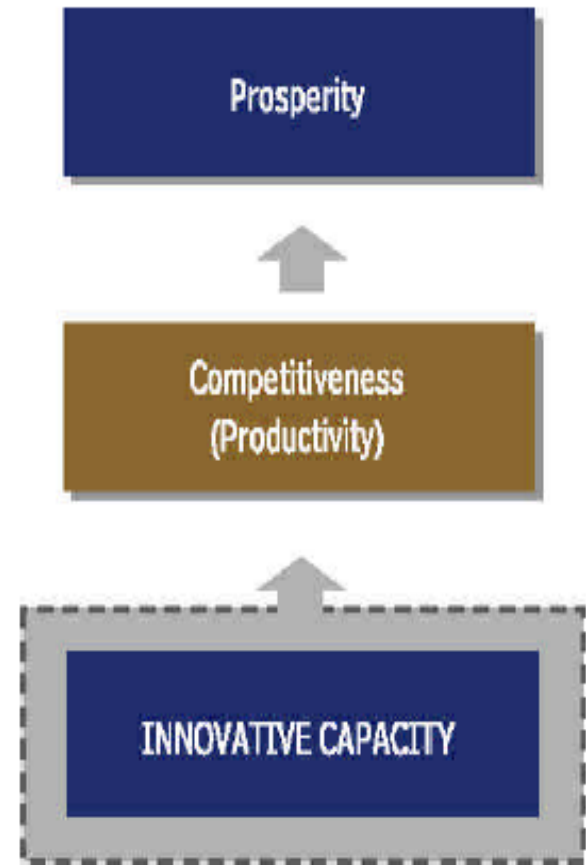
Two Types of Competitive Advantage (M. Porter)

Determinants of Relative Performance
Types of Competitive Advantage



Regional Competitiveness and Innovative Capacity

- The economic goal for regions should be a high and rising standard of living.
- This depends upon creating a high-quality business environment that fosters **innovation** and rising **productivity**.
- **Strong and competitive clusters** are a critical component of a good business environment and are the driving force behind regional innovation and rising productivity.
- The prosperity of a region depends on the productivity of all its industries.
- Productivity does not depend on what industries a region competes in, but on how it competes.

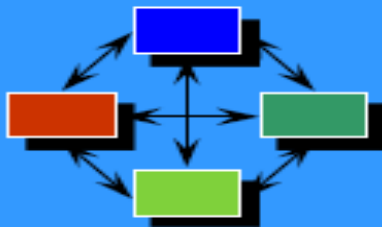


Prosperity Outcomes

Standard of living

- GDP/capita PPP
- Growth of GDP/capita PPP
- Apparent labour productivity

Competitiveness Drivers



Business environment

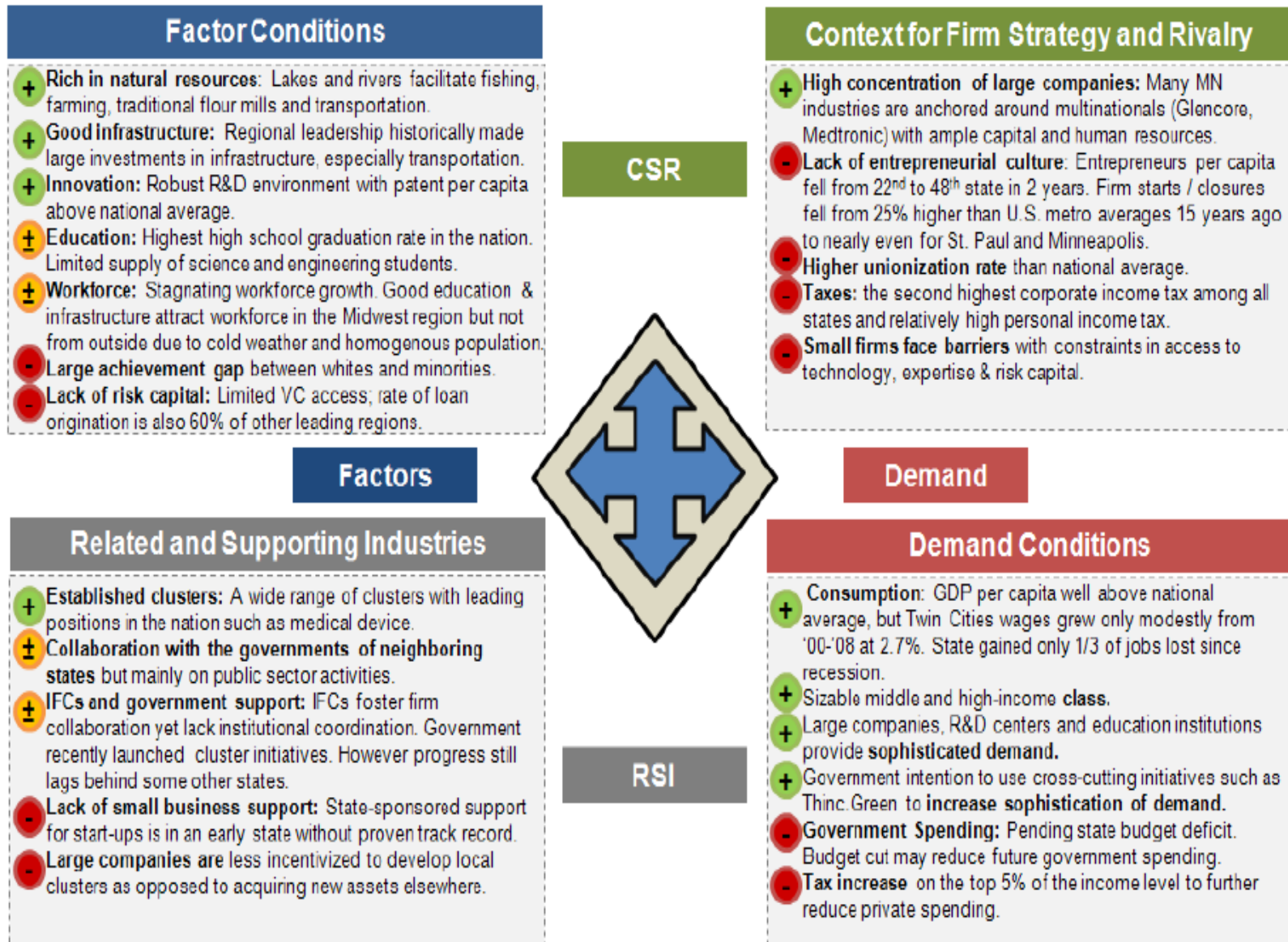
- Clusters: Observatory star rating
- Services: KIBS employment
- Firms: business R&D share of GDP
- Global linkages: new foreign firms
- Infrastructure: household broadband access
- Science base: public R&D expenditure
- Human capital: skilled migrants
- Social capital: trust in legal system

Regional Fundamentals

Location and Urbanisation

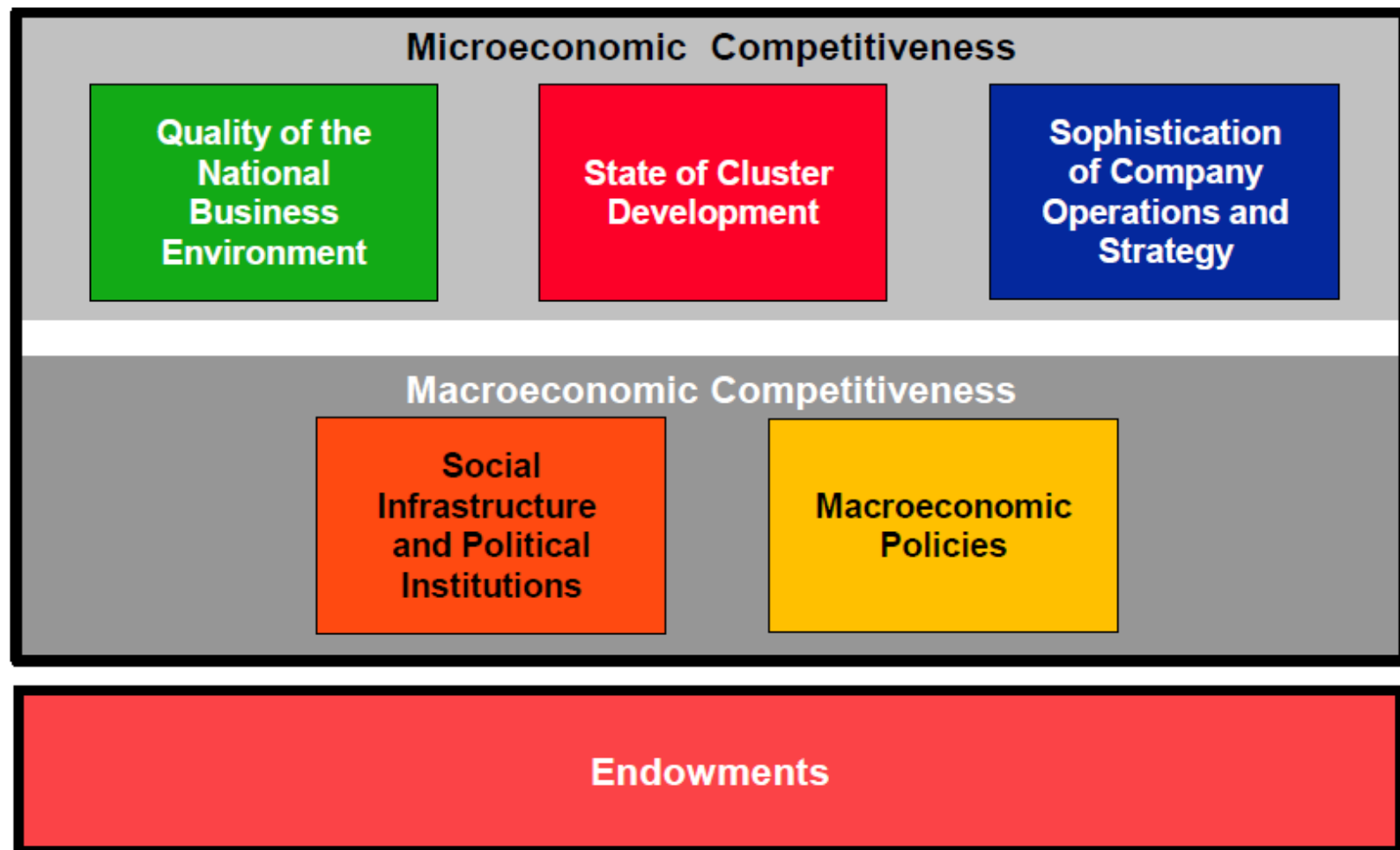
- Population
- Population density

Figure 6: The Diamond Analysis of Minnesota



Sources: Interviews, St Paul government website, Minnesota Financial Report, Institute for Strategy and Competitiveness, US Census Bureau, Minnesota Department of Education

Determinants of Competitiveness



- Endowments create a **foundation** for prosperity, but true prosperity is created by **productivity** in the use of endowments
- Macroeconomic competitiveness sets the **potential** for high productivity, but is **not sufficient**
- Productivity ultimately depends on improving the **microeconomic capability** of the economy and the **sophistication of local competition**

The Role of Clusters in Regional Development

1. Defining clusters:

Clusters - geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions that can cooperate and compete in particular fields [Porter 2008, 213].

Functional Clusters, Clumps, and Working Clusters (D. Andreoli)

- **Functional Clusters** - spatial networks of like and functionally linked industries
- **Clumps** - groups of functionally linked firms in which the physical distance separating member firms does not prohibit the range of benefits that are made possible through frequent interactions
- **Working clusters** - made up of firms and institutions which benefit from the types of integration and cooperation made possible through co-location

The Role of Clusters in Regional Development

1. Classifying clusters:

- Natural resource-based clusters**
- Local clusters**
- Trading clusters**

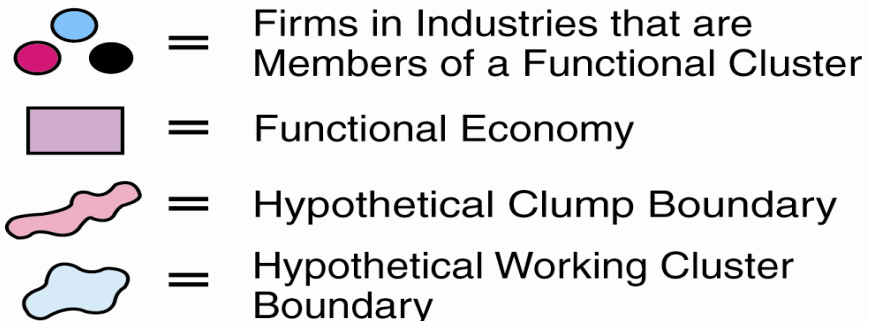
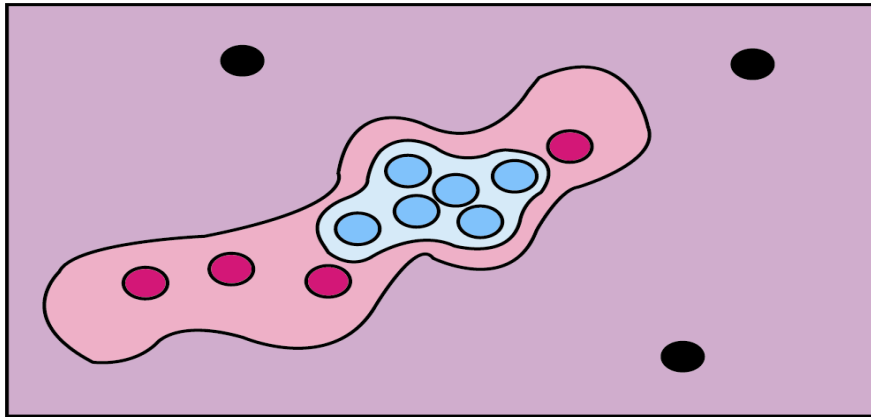
2. Dynamics of cluster development:

- Functional cluster**
- Working cluster**
- Cross-fertilizing clusters**

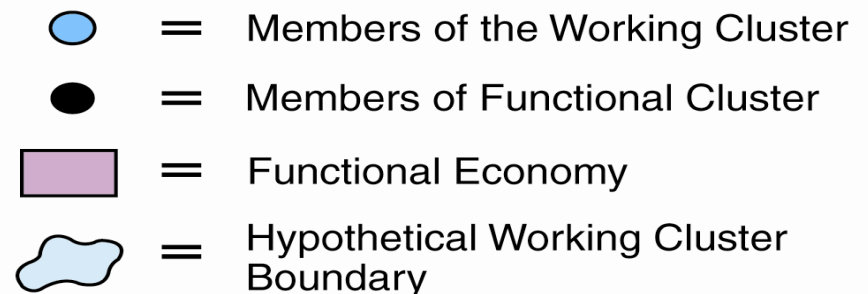
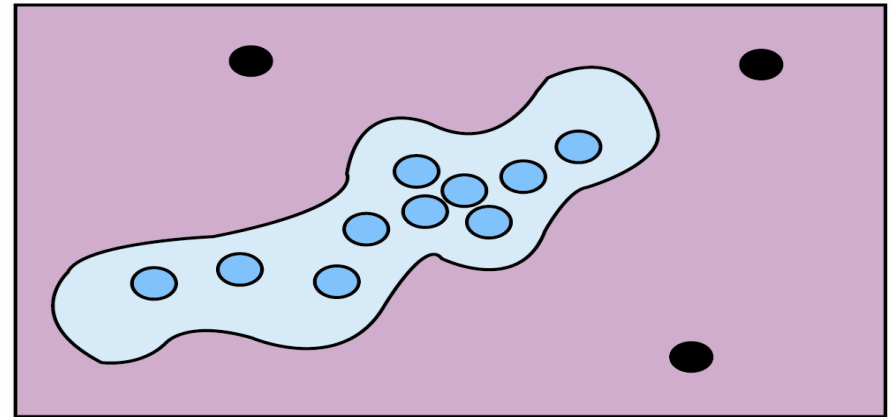
Functional Clusters, Clumps, and Working Clusters (D. Andreoli)

● From a geographic perspective:

Geographic Representation of Clumps and Working Clusters

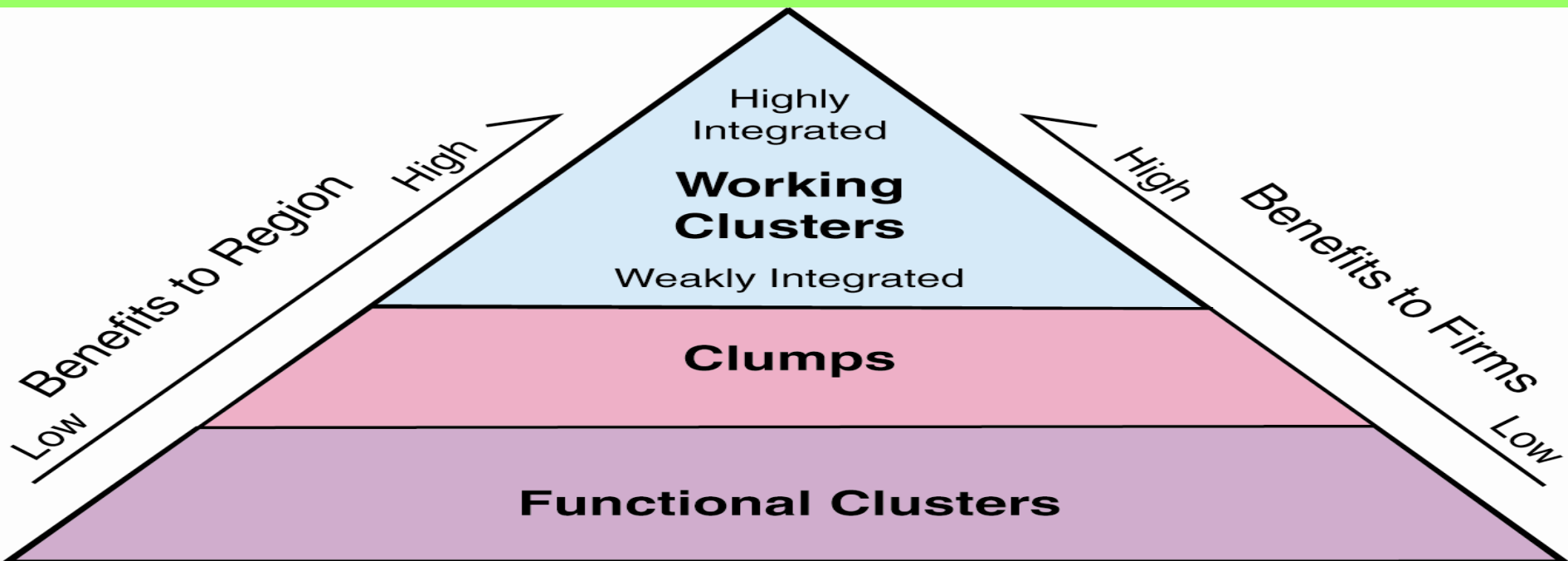


End Goal: Transforming Clumps into Working Clusters



Functional Clusters, Clumps, and Working Clusters (D. Andreoli)

- The goal of any cluster initiative is to promote economic development by encouraging the positive externalities that come from integration (i.e. promote integration)



External Economies Increase with
Level of Firm Integration

What Makes the Working Cluster?

- **Functional Cluster**

**Social Capital => Cooperation=>
Synergy=>Positive Externalities=>
Knowledge Spillovers=>Innovations**

- **Working or Effective Cluster**

Working definition of an “effective cluster:”

Effective cluster is defined as a cluster, which is characterized by rich SC that enables all participants efficient cooperation among them leading to generating maximum of positive externalities coming not only from co-location (Marshallian externalities) but also from building collaborative synergy (Porterian externalities) and openness for cooperation with other clusters (Jacobsian externalities) leading to knowledge spillovers and innovations.

Classifying Social Capital

There is positive and negative SC [Rosenfeld 2007]:

- Positive SC create economic advantages that are major forces for clustering
- Negative SC could start developing when there are efforts to limit membership in clusters and cultivate insularity or lock-in (2007, 20).

Defining Social Capital (SC)

SC is a special type of capital resulting from investments in building relations, institutions and networks that produce collaborative attitudes, shared norms and values, mutual understanding and trust – critical factors for cooperation with other types of capital and thus contributing to sustainable development.

Measuring SC

- The economic value of SC depends on time invested in developing institutions, networks, relations, attitudes and trust within the a certain group of people (from family, through firms, cluster, region, nation to global community)
Bochniarz (2010)
- Similar approach proposed C. Roman (2011) with a set of complex indicators assessing its value mainly through surveys
- The project should adapt the concrete set of measures and apply in the Podkarpackie Region to verify its usefulness.

Four groups of indicators measuring SC:

1. Indicators measuring associations.
2. Indicators measuring trust.
3. Indicators measuring existing institutions.
4. Indicators measuring results.

Regional Cluster-based Policy => Cluster Upgrading Policy

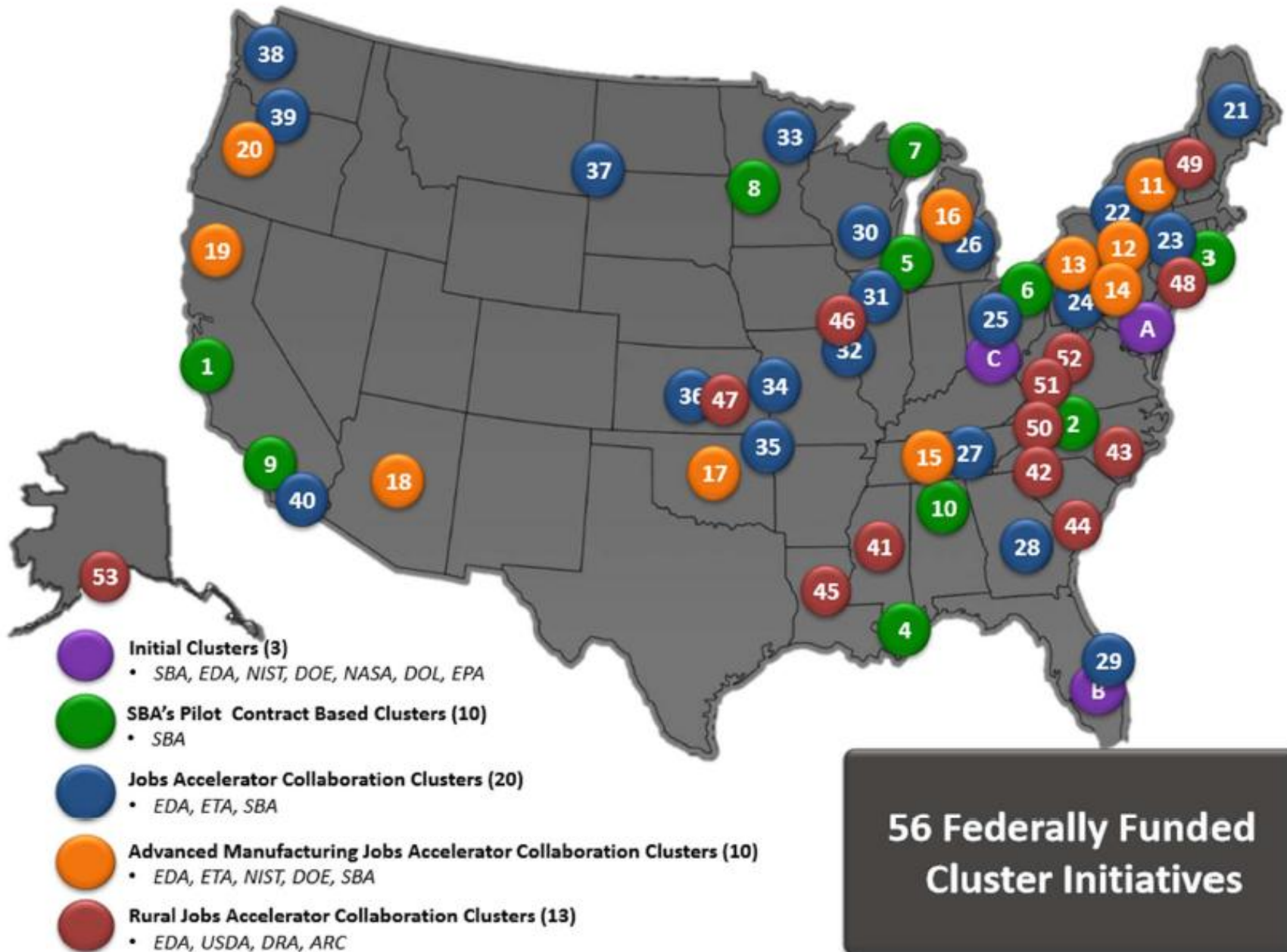
Cluster upgrading policy means the policy focused on elimination of weak links within the cluster and enhancing further its strength and thus contributing to building up new or strengthening existing competitive advantages of the cluster and this way improving competitiveness of its region and securing prosperity for the community.

Regional Cluster-based Policy => Cluster Upgrading Policy (cont.)

It includes eliminating the existing bottlenecks and red types and investing in necessary types of capital including human and social.

Investing in SC helps participating actors to move from functional cluster to grow up to effective cluster reaching higher level of cluster development, much better economic performance, more effective contributions to regional community and more efficient cluster and policy management.

Federal Cluster Chart



Federal Cluster Chart

SBA's Pilot Contract-Based Clusters

- 1 CA - Agriculture Innovation Cluster / Project 17 Ag Tech Agriculture Innovation
- 2 SC - Carolinas' Nuclear Cluster Nuclear energy technology and components
- 3 CT - Northeast Electrochemical Energy Storage Fuel cell and hydrogen fueling systems
- 4 MS - Enterprise for Innovative Geospatial Solutions Geospatial technology
- 5 IL - Illinois Smart Grid Regional Innovation Cluster Smart grid / efficient energy
- 6 OH - NorTech Flexmatters Flexible electronics
- 7 MI - Upper Michigan Green Aviation Coalition Green aviation
- 8 MN - Defense Alliance of Minnesota Advanced power and energy (DoD Focused)
- 9 CA - San Diego Advanced Defense Cluster Autonomous systems and cyber security (DoD Focused)
- 10 AL - Huntsville Advanced Defense Technology Initiative Aero-space technology (DoD Focused)

Jobs Accelerator Advanced Manufacturing

Economic Development Agency, Employment and Training Agency, Small Business Administration, National Institute of Standards and Technology, Department of Energy

- 11 NY - Rochester Regional Optics, Photonics & Imaging Accelerator
- 12 NY - Advanced Manufacturing of Thermal and Environmental Control Systems
- 13 PA - Agile Electro-Mechanical Product Accelerator
- 14 PA - Greater Philadelphia Advanced Manufacturing Innovation and Skills Accelerator
- 15 TN - Advanced Manufacturing and Prototyping Center of East Tennessee
- 16 MI - Advanced Contract Manufacturing of Southeast Michigan Cluster
- 17 OK - Manufacturing Improvement Program for the Oil and Gas Industry Supply Chain
- 18 AZ - Southern Arizona Aerospace and Defense Cluster
- 19 CA - Advanced Manufacturing Medical/Biosciences Pipeline for Economic Development (AM2PED)
- 20 OR - Innovations in Advanced Materials and Metals Cluster (IAM2)

Jobs Accelerator Collaboration Clusters

*Economic Development Agency
Employment and Training Agency
Small Business Administration*

- 21 ME - GreenME Renewable Energy Industry Cluster
- 22 NY - Finger Lakes Food Processing Cluster Initiative Food Processing
- 23 NY - New York Renewable Energy Cluster Renewable Energy
- 24 PA - Southwestern Pennsylvania Revitalization Energy/Health Care
- 25 OH - Northeast Ohio Speed-To-Market Accelerator Energy/Flexible Electronics
- 26 MI - Southeast Michigan Advanced Energy Storage Systems Initiative Advanced Energy Storage Systems
- 27 TN - Advanced Composites Employment Accelerator Advanced Composites with Focus on Low-Cost Carbon Fiber Technology
- 28 GA - Atlanta Health Information Technology Cluster Health Information Technology
- 29 FL - Space Coast Clean Energy Jobs Accelerator Clean Energy
- 30 WI - Milwaukee Regional Water Accelerator Project Water
- 31 IL - Rockford Area Aerospace Cluster Jobs and Innovation Accelerator Aerospace
- 32 MO - St. Louis Bioscience Jobs and Innovation Accelerator Project Bioscience
- 33 MN - Minnesota's Mining Cluster Energy
- 34 MO - Kansas City Regional Jobs Accelerator Advanced Manufacturing & Information Technology
- 35 AR - Launching the ARK: Acceleration, Resources, Knowledge Information Technology
- 36 KS - Center for Innovation and Enterprise Engagement Advanced materials
- 37 ND - Upper Missouri Tribal Environmental Risk Mitigation Project Environmental Risk Mitigation
- 38 WA - Washington Interactive Media Accelerator Interactive Media
- 39 OR - Portland Regional Clean Tech Advance Initiative Clean Tech
- 40 CA - San Diego-Imperial Valley Renewable Energy Generation Training and Demonstration Center Renewable Energy

56 Federally Funded Cluster Initiatives

Initial Clusters

- A PA - Greater Philadelphia Energy-Efficient Buildings Hub (SBA, EDA, NIST, DOE)
- B FL - Space Coast - Space Shuttle Shutdown Transition (SBA, EDA, NASA, DOL)
- C OH - Southwest Ohio Water Cluster - Water Research (EPA)

Rural Jobs Accelerator

*Economic Development Agency
U.S. Department of Agriculture
Delta Regional Authority
Appalachian Regional Commission*

- 41 MS - Community and Economic Development in Rural Mississippi Automotive, Furniture, Agribusiness
- 42 NC - WNC AgriVentures - Cultivating Jobs and Innovation Project Agribusiness
- 43 NC - North Carolina Eastern Region Aerospace and Automotive Cluster Project Aerospace, Automotive
- 44 SC - South Carolina Alliance Rural Jobs and Innovation Accelerator Challenge Nuclear Energy
- 45 LA- I-20 Corridor Regional Accelerator Bioscience
- 46 IL - Henry Rural Rock Island-Mercer County Economic Development Consortium Agribusiness/Food processing
- 47 KS - Project 17: Together We Succeed Advanced Manufacturing
- 48 CT - New England Food Hub Cluster Initiative Food Processing
- 49 NH - Northern Tier Farm and Forest Jobs Accelerator Agribusiness
- 50 VA - Appalachian Spring - Using Asset-Based and Creative Economy Methods to Catalyze Rural Job Acceleration Music/Craft/Local Tourism
- 51 WV - Southern West Virginia Rural Jobs Accelerator Partnership Music/Craft/Local Tourism
- 52 WV - Value Chain Initiative Food Processing
- 53 AK - Bristol Bay Jobs Accelerator Project Fisheries, Seafood Processing

Cluster Strategies for Washington

**Paul Sommers
Evans School of Public Affairs
University of Washington
Seattle 2000**

Major Regional Clusters

Paul Sommers

- Biotech/Biomedical
- Instruments
- Semiconductors
- Agriculture/Food Processing
- Forest Products
- Health Care
- Aerospace
- Aluminum
- Software/Internet
- International Trade
- Business Services
- Tourism
- Metals
- Basic Manufacturing

(2nd OTED study addresses only those in the left column)

Washington

Profile of the State Economy

Prepared for

Governor Gary Locke

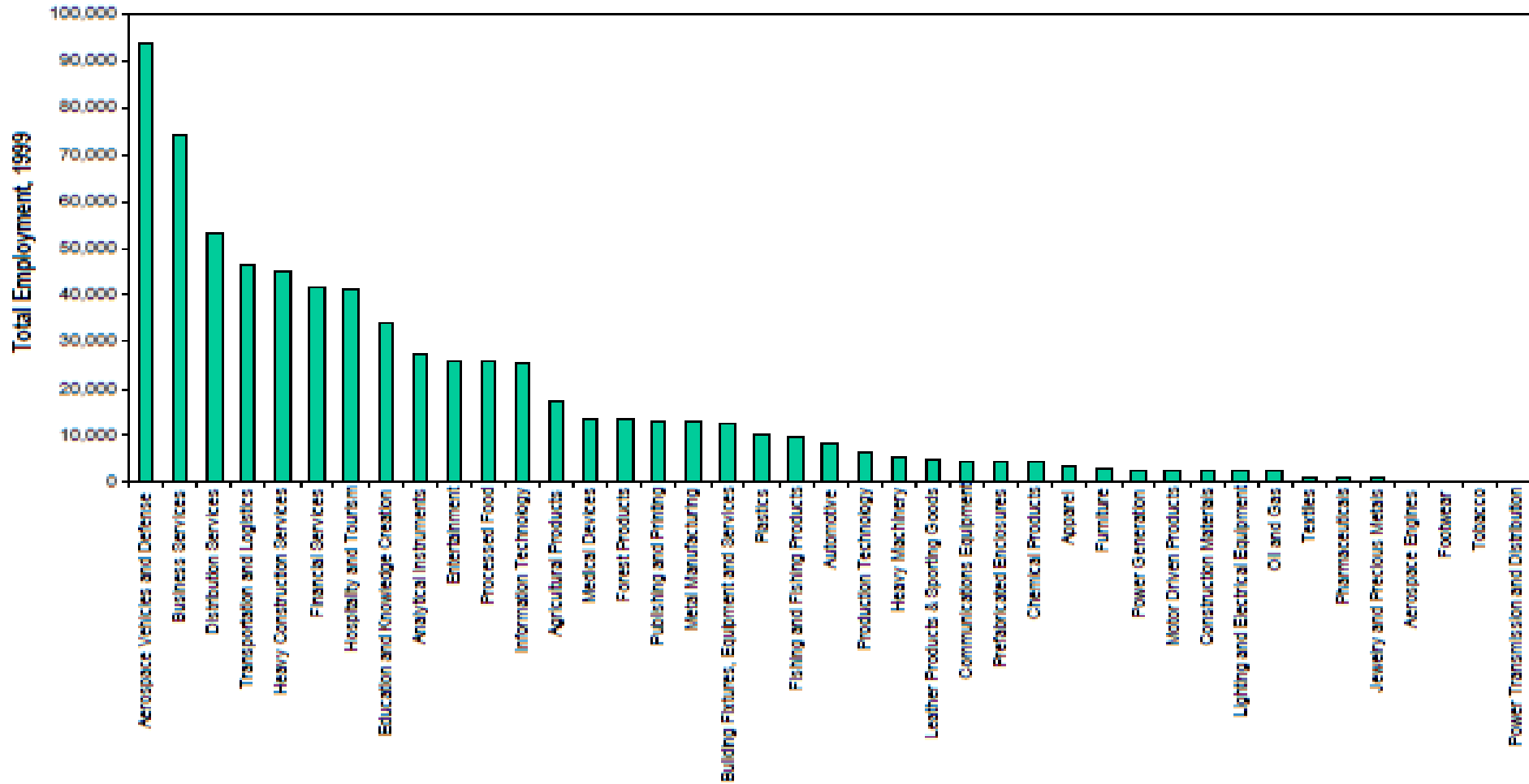
By

Professor Michael E. Porter
INSTITUTE FOR STRATEGY AND COMPETITIVENESS

HARVARD | BUSINESS | SCHOOL

Washington

Employment By Traded Cluster, 1999

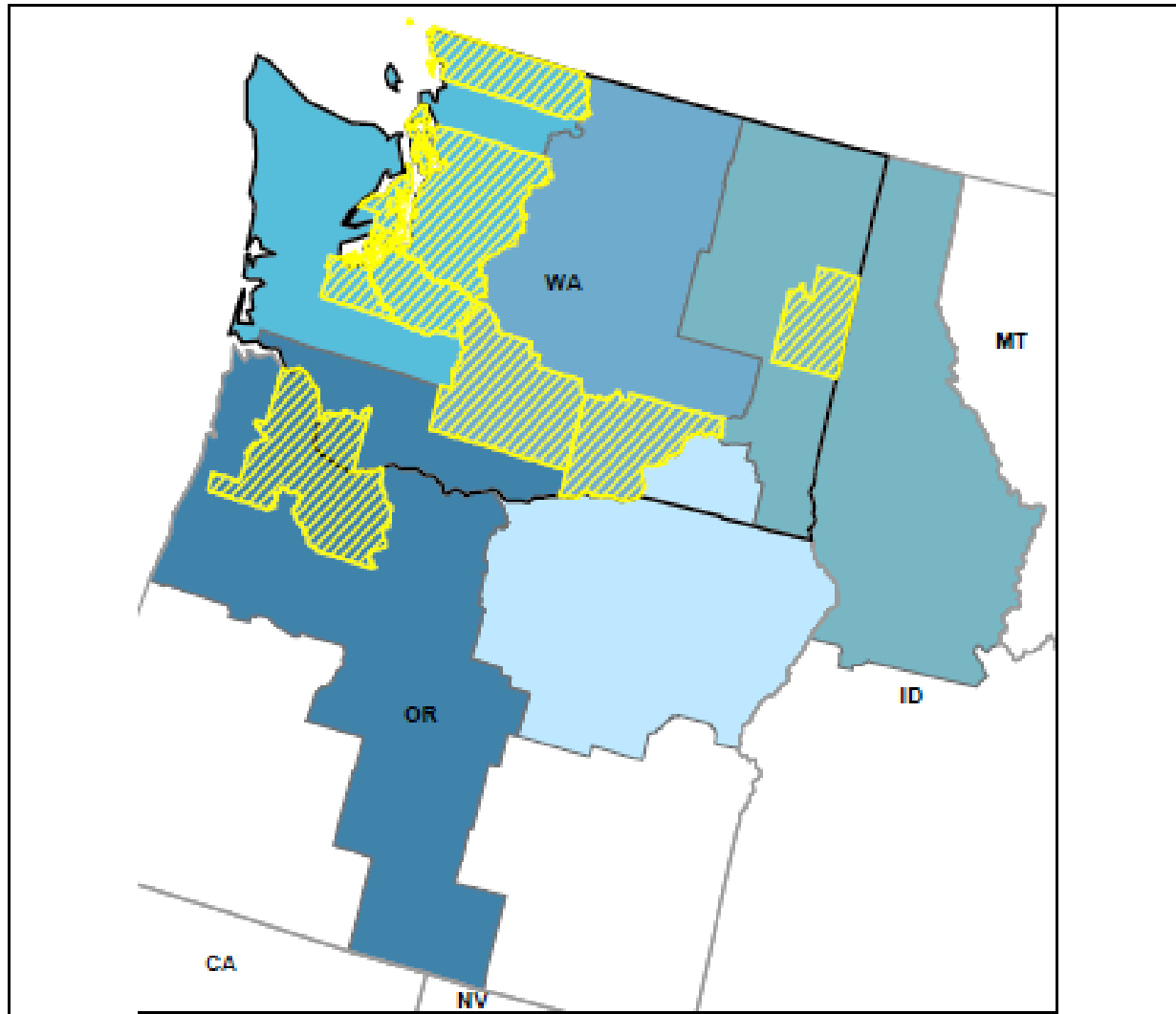


Note: Chart utilizes narrow cluster definitions to eliminate overlapping employment across clusters.

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School (www.isc.hbs.edu).

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Washington



Legend


 State Borders

 MSA


Economic Areas

 Pendleton, OR-WA [168]

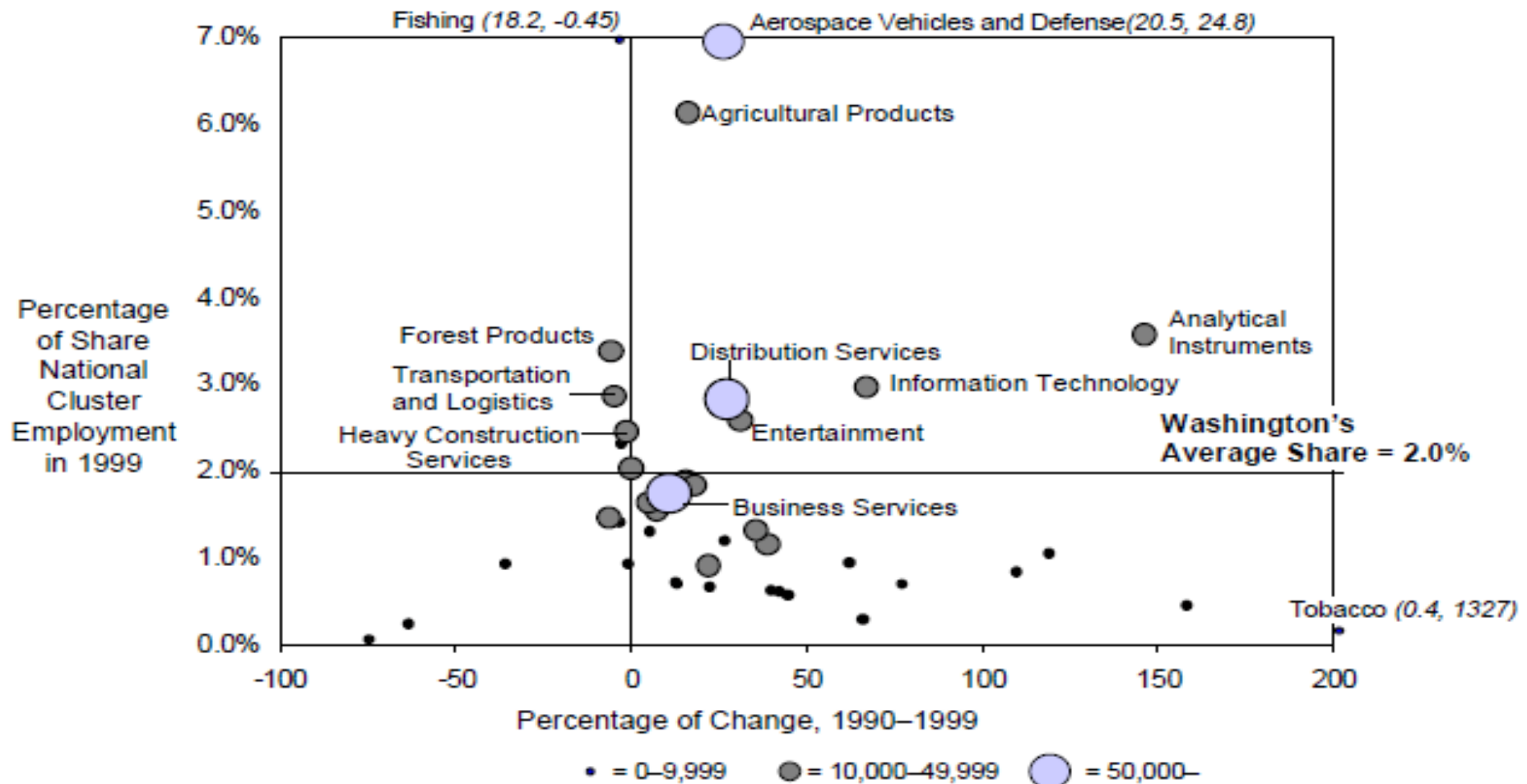
 Portland-Salem, OR-WA [167]

 Richland-Kennewick-Pasco, WA [169]

 Seattle-Tacoma-Bremerton, WA [170]

 Spokane, WA-ID [147]

Washington Specialization By Traded Cluster



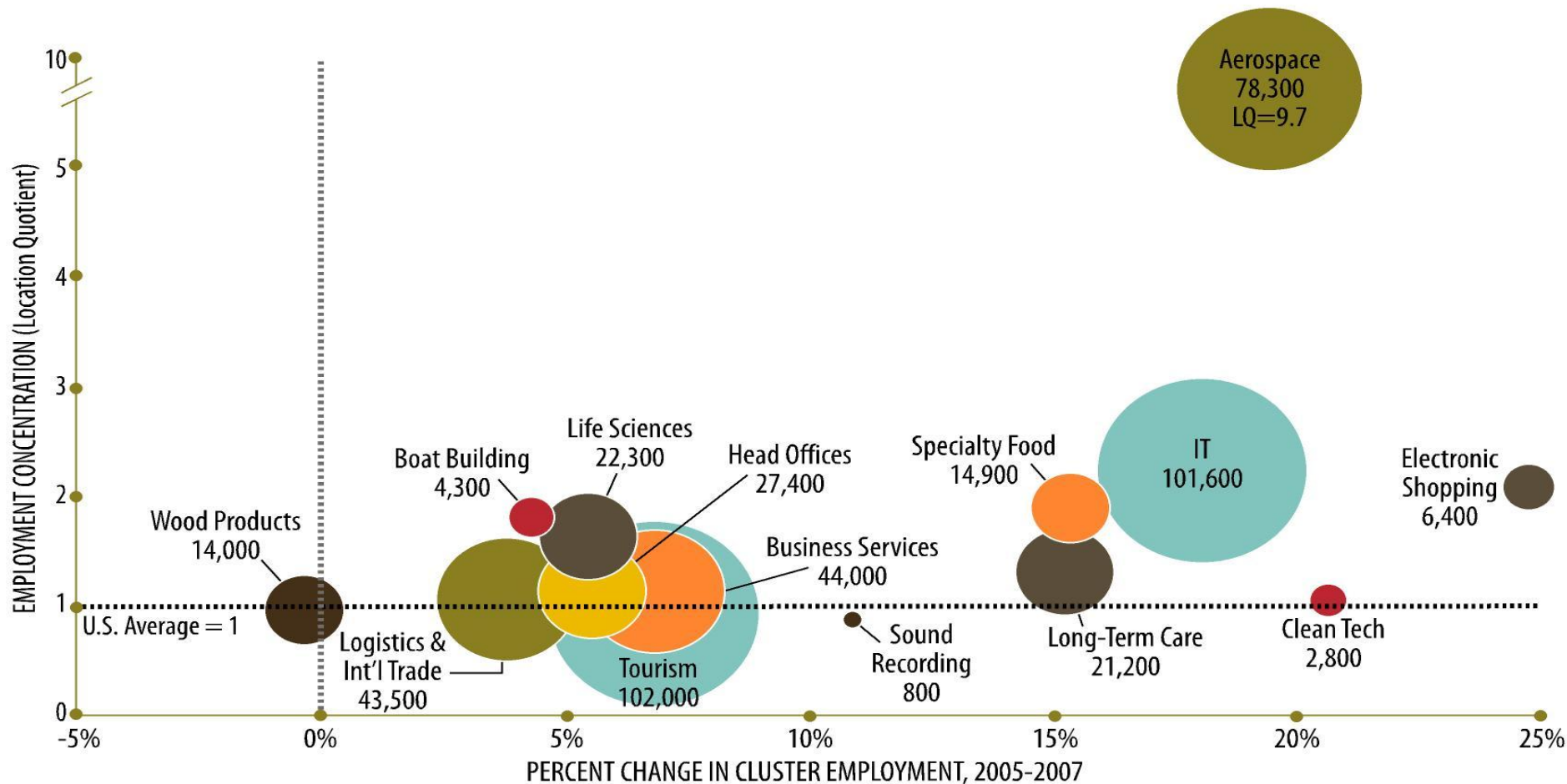
Note: Graph utilizes narrow cluster definitions to eliminate overlapping employment across clusters.
 Data points too large to fit on the graph are placed on the borders and the values are given as: (y-axis, x-axis).
 Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School



The Prosperity Partnership & Regional Economic Development

A Cluster-Based Strategy

Cluster Portfolio: Employment Change, Concentration and Size, 2007



Source: ESD, PSRC

Note: Covered employment only. Military not included. In this "bubble chart," the size of each bubble symbolizes the size of the cluster in terms of employment. Bubbles above the horizontal line at 1.0 are clusters in which our region has a higher concentration of jobs than the U.S. average. Those below the line are clusters that formerly had higher job concentrations in our region but currently are below the U.S. average. Bubbles to the right of the vertical line are clusters that experienced employment growth from 2005 to 2007. Those to the left experienced declines in employment during those years.

A Two-Pronged Approach

PROSPERITY PARTNERSHIP

ECONOMIC SUMMIT
11/19/05

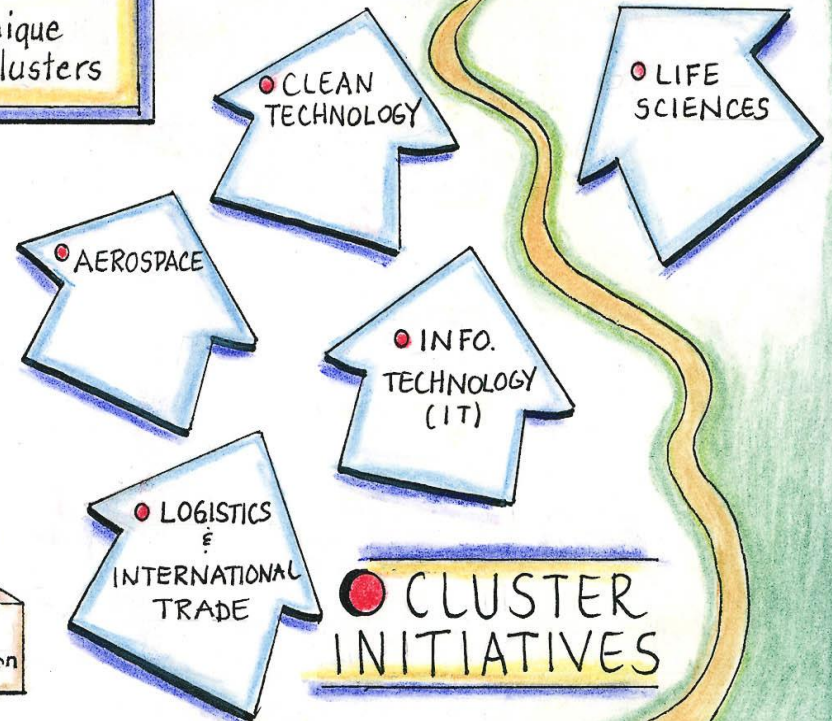
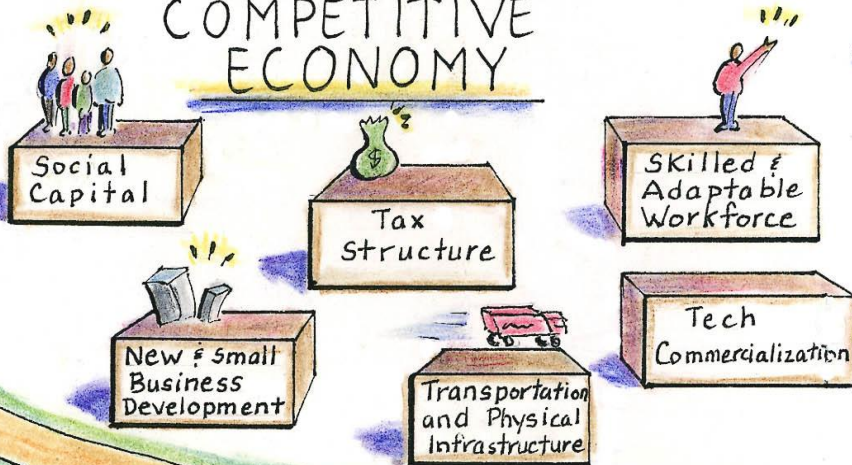
FIVE PILOT CLUSTERS

- Life Sciences
- Aerospace
- Clean Technology
- IT
- Logistics & International Trade

Two-Pronged Approach

- 1 Rebuild the region's economic foundations to meet the needs of the new economy
- 2 Meet the unique needs of our clusters

FOUNDATIONS of a COMPETITIVE ECONOMY



Washington Economic Development Commission

Driving Washington's Prosperity

**A Strategy for Job Creation and
Competitiveness**

WEDC Innovation Strategy

VISION: Make Washington the most attractive, creative and fertile environment for Innovation in the world by 2020.



World Class Innovation Ecosystem

Talent &
Workforce

Investment &
Entrepreneurship

Infrastructure

Smart
Regulations

International
Business



New Economic Development Model

Traditional Model	Innovation Driven Model
Attracting companies	Investing in talent, ideas and infrastructure
Jobs	Incomes
Top down development	Bottom-up organic growth
Closed innovation	Open innovation
Competing regions	Collaborating regions



2025

Envision Washington State
in the Year 2025:

SHARED ECONOMIC PROSPERITY

HIGH QUALITY OF LIFE

NATIONAL LEADERSHIP

GOAL areas

STRATEGIES



ECONOMIC DEVELOPMENT

1. Per capita GDP
2. Percent of people living in poverty
3. Percent of counties with unemployment rates & median household incomes better than U.S. average

1. Drive growth through a competitive business environment
2. Grow manufacturing & new product development
3. Attract tourism, investment, and international trade



EDUCATION

1. 8th grade math & science global competitiveness
2. High school grad rates and HS grads in population
3. Percent of residents holding postsecondary degrees

1. Align education system to the 21st century economy
2. Emphasize affordability, access & accountability in postsecondary education



ENVIRONMENT

1. Strengthen and sustainably utilize the state's natural capital balance sheet
2. Carbon competitiveness

1. Develop a natural capital management system.
2. Embrace opportunities in the low-carbon economy

GOAL areas

STRATEGIES



GOVERNANCE

1. Moody's credit scorecard
2. Compliance with state performance audits
3. Budget transparency

1. Make government more effective
2. Make government data openly available



HEALTH

1. Health outcomes and determinants
2. Prevalence of primary care physicians
3. Health care expenditures as a percent of GDP

1. Innovate to control health care costs & improve quality
2. Target chronic health conditions & workplace wellness



TRANSPORTATION

1. Condition of bridges, roads, and transit
2. Condition of freight rail system
3. Low per capita petroleum consumption

1. Generate long-term funding to maintain & improve surface transportation
2. Improve freight rail

The working assumptions of PLAN Washington are as follows:

1. Businesses are integral to community, and have a compelling economic interest in stewardship of natural and human assets.
2. Government funds are scarce, and should focus on investments with greatest value.
3. Transparent & meaningful data are essential for effective governance and democratic accountability.
4. Challenges are linked across topic boundaries and actors—solutions must be too.

Key to success: a broad range of stakeholders, each doing what each does best, with bold leadership. Visit [PLAN Washington](#) online



Economic Development

2025 GOALS

**TOP
5**

in per-capita gross domestic product



BOTTOM

5

in percentage of people living in households which fall below the Federal Poverty Level

ALL

Washington counties exceeding U.S. average for employment and median household income

11th

19th
Lowest

**30% (employment); &
33% (income)**

STRATEGY

Drive Growth through a
Competitive Business Environment

1st	in affordable business electricity rates ⁴
21st	best for business climate ⁵
28th	best in unemployment insurance costs ⁶
36th	best in business tax system competitiveness ⁷
38th	best in worker's compensation premium costs ⁸



Economic Development

2025 GOALS

STRATEGY

Grow Manufacturing and New Product Development

3rd in economic innovation capabilities¹⁴

5th in science and engineering patents¹⁵

13th in manufacturing worker productivity¹⁶

5th in R&D funding¹⁷

RECOMMENDATIONS:

1. Maintain robust R&D funding at public research universities, engage in federal lab partnerships, and maximize the realized value of intellectual property.
2. Provide state operational funding for the state's 18 Innovation Partnership Zones¹² which knit together efforts of economic development stakeholders.
3. Develop a means to provide a less restricted approach to tax increment financing in Washington.¹³ TIF is a proven economic development tool used in most other states.
4. Organize manufacturers to work collaboratively with labor and other stakeholders to "reshore" or bring back manufacturing from foreign sites to Washington State. Widen and strengthen supply chains that span the state.
5. Provide a three-year Business and Occupation Tax holiday on new products made in Washington, and establish rules and investor protections for startup crowdfunding.



Economic Development

2025 GOALS

STRATEGY

Make Washington a Magnet for Tourism, Investment, and International Trade

7th

in foreign exports
(excluding transportation equipment)²²

23rd

(Port of Seattle)

23th

(Port of Tacoma) in
foreign trade volume²³

RECOMMENDATIONS:

1. Advocate for strict enforcement of intellectual property rights overseas, particularly for the growing digital products and services industry.
2. Synchronize the state's disparate international business promotion efforts. Build a private, international trade promotion council and accompanying marketing plan. Underscore improving the competitive position of the state's deep water ports, and imports as well as exports. Increase and improve trade missions.
3. Support workers in Washington firms and students studying in Washington colleges by advocating for comprehensive immigration and visa reform at the national level. Entice the best talent in the world to live and work in Washington, filling critical workforce shortages in industries like software and agriculture.²⁰
4. Provide funding for the Export Voucher program²¹ to help small and medium-sized businesses develop opportunities in foreign markets.



Environment

2025 GOALS

Strengthen the state's natural resource balance sheet

TOP 5
in carbon competitiveness

N/A

7th

3rd best in drinking water quality⁶⁸

10th best in industrial toxins released⁶⁹

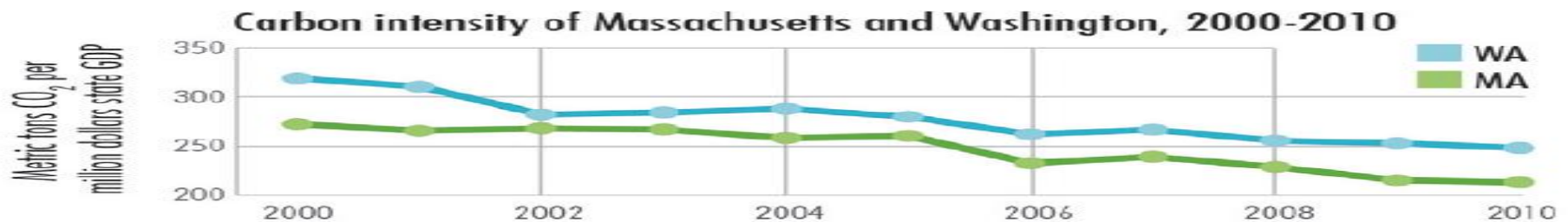
22nd best in percent of state population in polluted air areas⁷⁰

STRATEGY

Develop a Data-Driven Natural Capital Management System For Washington

STRATEGY

Embrace Opportunities in the Low-Carbon Economy



U.S. Energy Information Administration, "Table 8. Carbon Intensity of the Economy by State (2000-2010)," State Level Energy Related Carbon Dioxide Emissions, 2000-2010, (May 2013) p. 12.



Education

2025 GOALS

TOP 5
in math & science global competitiveness among 8th graders

TOP 5
in high school graduation rates; & graduates in population

TOP 5
in postsecondary degree holders among the population aged 25-44.

21st
in Math
30th
in Science

32nd
in Graduation Rates
28th
Graduates in Population

17th


STRATEGY

Emphasize Affordability, Access, and Accountability in Postsecondary Education

STRATEGY

Align Education System to the 21st Century Economy

17th		in postsecondary degrees ⁵³
11th	UW	Quality of public universities, nationwide ⁵⁴
96th	WVSU	
101st	WVU	of community/technical college students require remedial coursework ⁵⁵
57%		in per-student funding for higher education ⁵⁶
26th		
21st		in math
30th		in science out of 100+ foreign and domestic education systems ³⁶
19th		in AP test participation ³⁷
8th		in outcomes for AP Calculus AB ³⁸



Governance

2025 GOALS

TIER ONE
for overall ranking on scorecard by Moody's Investors Service

95%
of WA performance audit recommendations fully adopted by agencies

TOP 5
for budget transparency

TIER 3

65%

14th

STRATEGY

Make Government More Effective

RECOMMENDATIONS:

1. Invest in staff resources and structures to enhance the evaluation and scoring of proposed policies.
2. Promote the use of outcomes-based management systems and lean process in government agencies. Make comprehensive budget and performance data accessible to all members of the legislature.
3. Place greater emphasis on collaboration between the executive and legislative branches in the budgeting process. Results Washington can be the catalyst for engaging the legislature in setting priorities and



Governance

2025 GOALS

STRATEGY

Make Government Data Openly Available

RECOMMENDATIONS:

1. Convene a special state level task force to make recommendations on open government and open data. Evaluate new digital strategies to better engage citizens and strategically team with NGOs such as Code for America to develop useful public data applications.
2. Make available online statistical performance data across all state agencies in easily downloadable structured data formats. Local and regional governments should seek to adopt these open data best practices.



Health

2025 GOALS

TOP 5
in health
determinants
and outcomes

TOP 5
in quantity of
primary care
physicians

BOTTOM 5
for healthcare
expenditures
as a share of Gross
Domestic Product

19th
in outcomes

16th
in determinants

17th

14th



Transportation

2025 GOALS

NO LESS THAN A-
in condition of roads,
bridges and transit

**GRADED
NO LESS THAN A-**
in condition of freight
rail system

BOTTOM 5
in per capita
petroleum consumption

**C- (BRIDGES)
D+ (ROADS)
D+ (TRANSIT)**

C-

**26th
LOWEST**

Lessons Learned for the Podkarpackie Region

1. Regions are important drivers of national economies => appropriate regional policy matters.
2. Participatory policy design & implementation is crucial not only for its effectiveness and efficiency but also for building social capital.
3. Cluster-based policy works and, by creating a fair play field for all firms, support their drive to build their unique competitive advantage.

Lessons Learned for the Podkarpackie Region

4. Public support for cluster initiatives – strengthening existing or emerging clusters – should be well targeted, effective (timely) and efficient bringing the highest returns to the community.
5. Openness of the government, its transparency and effectiveness are critical for building SC necessary for high performance of clusters and the region.

Lessons Learned for the Podkarpackie Region

6. Active involvement of business, academic and NGO communities in policy design, its implementation and in clustering are the most critical factors for building regional competitiveness.

7. Academia has indispensable role in building human and social capital and contributing to R&D activities.

Thank you for your attention!

Questions please.