

BEST PRACTICES IN STATE AND REGIONAL INNOVATION INITIATIVES COMPETING IN THE 21ST CENTURY (2013)

In recent years public discussion has grown about the need to stimulate U.S. innovation to maintain the nation's competitiveness. While most policy discussion has focused on the federal level, a rich variety of policy initiatives to foster knowledge-based growth and employment are under way at the state and regional levels.

A committee of the National Research Council conducted a study to illustrate best practices among the approaches taken by states as they confront the challenge of global competition for the industries and jobs of today and tomorrow. The committee reviewed state innovation programs across a limited number of highly diverse states, holding conferences in Arkansas, Hawaii, Michigan, Ohio, Illinois, and New York. These conferences generated a better understanding of the challenges associated with translating research into products, the practices associated with some successful state and regional programs, and their interaction with federal programs and private initiatives. The committee's observations and insights into best practices are presented in their report *Best Practices in State and Regional Innovation Initiatives*.

BEST PRACTICE IN
STATE AND REGIONAL INNOVATION

Best Practices in State and Regional Innovation Initiatives

Competing in the
21st Century

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

State and Regional Innovation Efforts

Operating out of necessity, innovation policies at the state level often take advantage of existing resources and recombine them in new ways. These initiatives often involve partnerships among universities, industry, and government organizations that aim to grow the skill base and invest in the infrastructure needed to develop new technologies and new industries. Many of these initiatives are being guided by leaders from the private sector and universities. Increasingly, these initiatives seek to leverage complementary federal programs to support the development of regional centers of innovation, entrepreneurship, and high-technology development.

These developments mark a significant change in paradigm. For much of the 20th century, state officials pursued economic development by seeking to recruit companies from other states by offering a more competitive business and regulatory environment, lower taxes, supportive government policies, and other incentives. States officials still do this and sometimes see other states as competitors, but increasingly they see them as partners as well. Indeed, many states are shifting their policy focus to address competition from other regions of the world for leadership in the industries of the future.

Observations About State and Regional Initiatives

The committee offered observations about state and regional innovation initiatives, based on the experiences of states and regions examined in the study:

- **Leadership** by the public and private sectors, including elected officials, university presidents and industry representatives, is crucial to bring together public and private stakeholders in a region.
- **Investment of substantial public funds** by the states over a significant period, along with the development of intermediating institutions, provides the foundation for progress. These investments also often have a catalytic effect, attracting private investments, as well as support from foundations and the federal government.
- **Sustained support by states for educational institutions** can be important for long-term economic development. These institutions provide the research facilities, a trained workforce, a flow of ideas for commercial development, and the branding that characterize successful regions.
- **Community colleges** play an essential role in providing a trained workforce able to adapt to changing technologies and enable new opportunities. Many are working with businesses to identify and train for skills needed for the future.
- **Public-private partnerships** facilitate the collaboration needed to develop the necessary workforce, provide and enrich research facilities and agendas, help develop new ideas, and support bringing the resulting products to the market.
- **Funding from philanthropic foundations** can play a significant and often catalytic role in initiating, complementing, and sustaining action, by regional and state authorities.

Identifying Best Practices

It is clear from the symposia that even though historically successful innovation clusters warrant study, there is no magic formula for success. That said, it also emerged from the symposia that certain practices and techniques have proven successful in more than one or two innovation clusters and might readily be borrowed or adapted elsewhere under different local circumstances. A number of basic realities, institutional practices, policy measures, and trends have emerged with implications beyond their immediate local context.

U.S. research universities often play a key role in innovation-based regional economic development and are a cornerstone of U.S. international competitiveness. The university-driven character of the U.S. innovation system is a significant differentiator between this country and most other technologically advanced countries. University research programs and facilities that support cooperative R&D programs with local industries, along with specialized training programs, are key to all of the recently emerging clusters examined in the study. For this reason, it is of serious concern that U.S. public universities now confront a steep decline in their traditional sources of funding (primarily state budgets) that threatens their ability to play their role as innovation drivers.

Cooperative research arrangements involving universities and companies play an important role in fostering innovation. In the past three decades, a veritable explosion in cooperative research centers has occurred in the United States. These entities—known variously as joint laboratories, centers of excellence, engineering research centers, and industry-university research centers—break down barriers between academic disciplines and between scientific research, engineering applications, and commercialization of products and processes. Government organizations are shifting their emphasis from funding individual researchers to funding these research centers, effectively creating public-private partnerships.

Faculty recruitment, including the creation of endowed chairs, has emerged as an important tool in innovation-based economic development. By attracting and retaining prominent scientists and engineers as faculty members, universities not only improve the quality of their curricula and enhance their reputation, but also stimulate local economic development and attract federal and foundation research grants. Entrepreneurial faculty are particularly prized and sought after.

Innovation intermediary organizations often make significant contributions to innovation-based economic development. Often possessing a deep knowledge of local research and workforce competencies, innovation-based economic development organizations can align local institutions, assets, skills, and resources to advance the innovation potential of states and regions.

Successful innovation-based economic development is often fostered by a small number of key individuals bridging the space between science and commercialization. The successful innovation clusters examined in the report reflect, to a very substantial degree, the efforts of a few individual actors capable of bridging the gap between academic science and commercialization of new technologies. Despite diverse backgrounds, these individuals share an ability to appreciate the commercial potential of scientific discoveries and to mobilize the disparate talents and resources that combine to make successful commercialization possible. They did not act alone, but rather functioned as intermediaries, coordinating their jurisdictions' efforts to align locally developed knowledge with local resources to advance innovation.

State-of-the-art equipment has played a key role in the development of successful innovation clusters. A number of recent state initiatives to develop innovation clusters have demonstrated the powerful gravitational pull that can be exerted by sharing state-of-the-art scientific research infrastructure, particularly equipment and facilities that are costly and difficult for individual firms to acquire and operate on their own.

Non-profit organizations, philanthropies and foundations, and university affiliated research foundations can play a critically important role in regional innovation initiatives. Private foundations and philanthropies have played an extraordinarily important role in the development of some innovation clusters. Foundations are typically burdened less with bureaucratic structures than government agencies. In some cases, foundations benefit from being managed by the private sector entrepreneurs and others with experience in the business world. As a result, some foundations are willing to take risks and are able to act quickly. They are sometimes able to bring substantial resources to bear on new initiatives or institutions.

Entrepreneurs need early-stage financing to bring new ideas to the marketplace. At most of the symposia convened for this study, local economic development officials and entrepreneurs lamented the difficulty encountered by would-be innovative start-ups in attracting sufficient early-stage financing. Studies commissioned by state economic development authorities to address their prospects for innovation-based development commonly deplore the dearth of early-stage financing as a serious problem.

Policy continuity and sustained funding are essential for the development of innovation clusters. The risk exists that foreign industrial groups with greater financial stamina and government support will eclipse promising U.S. industries in their infancy. In the past, nascent U.S. sectors have benefitted from federal procurement in the early stages, which has enabled them to generate revenues and achieve cost competitiveness.

Political leadership and stability play an important role in successful state and regional innovation-based developments. Some of the most successful innovation clusters reflect, in substantial part, the existence of longstanding bipartisan support from local political leaders, which has provided a stable environment for long-range investments in innovation.

The examples of successful practices cited above should not be taken as an ironclad formula for success. They are intended to identify needs and illustrate arrangements that have proven to be a promising path forward. The development of regional clusters is not formulaic; much depends on continuity and a commitment of the political leadership that makes available a critical mass of funding and involves institutional partners, both private and public, that are committed to both broad goals and specific outcomes.

COMMITTEE ON COMPETING IN THE 21ST CENTURY: BEST PRACTICE IN STATE AND REGIONAL INNOVATION INITIATIVES*

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