



PRO INNO EUROPE

INNO LEARNING PLATFORM

**Good practice Identification –
Advice for transferability
Innovation in Cluster Policies –
US Maine Technology Institute**

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1. CHAPTER I: Good practice identification

1.1 *General Introduction and Overview of the Policy Practice*

Since 2000, the non-profit, state-chartered Maine Technology Institute (MTI) has administered a state-funded cluster grant program. Replacing MTI's previous Cluster Enhancement Award Program in 2008 and expanding awards by \$2 million per year, MTI's new Cluster Initiative Program aims to boost the strength and scale of Maine's high-potential technology intensive clusters. It was initiated with support from the Governor and Legislature, and called for by the Brookings Institution report, "Charting Maine's Future," as well as the Governor-appointed Council on Jobs, Innovation and the Economy. It also draws on MTI's cluster enhancement award experience since 2000 and the recently released report, "Maine's Technology Sectors and Clusters: Status and Strategy." Awards of up to \$500,000 made through the Cluster Initiative Program support Maine's technology sectors and businesses by improving the effectiveness of their infrastructure, as well as resources and connections among firms, service providers, research laboratories and educational institutions. They focus on collaborative efforts to spread knowledge and skills, build connections among businesses, connect them to research and service partners, and address common opportunities and challenges, leading to more vibrant economic growth and innovation in Maine's high-potential technology clusters.

1.2 *Rationale and Objectives of the Policy Practice*

1.2.1 Rationale of Cluster Initiative Program

Since knowledge and skills and innovation are the defining elements of clusters, the first question that was asked was, "What are Maine's distinctive knowledge and skills?" To answer this question, a detailed analysis of patent, grant funding, and peer reviewed publications was undertaken, followed by an examination of the "human capital" in Maine that is responsible for technology research and innovation. It was found that Maine has a substantially smaller proportion of its workforce in science, technology, engineering, and mathematics (STEM) occupations than the U.S. as a whole and, despite some growth, is not producing the numbers of technically trained workers needed to create a competitive advantage for Maine. Specifically, the proportion of Maine's workforce in STEM occupations is 30-40% less than the national average, and Maine lost many jobs in these fields between 2000 and 2006. The strongest area for Maine and the one showing significant growth is in the physical and biological sciences. The biological and environmental sciences account for much of this strength in Maine.

The seven technology sectors defined by the Legislature broadly define the areas of the Maine economy where technological innovation is particularly critical to commercial success, but the sectors are very diverse in size and characteristics. Maine's seven technology sectors are: Biotechnology, Composites and Advanced materials, Environmental Technologies, Forest products and Agriculture, Information Technology, Marine Technology and Aquaculture, and Precision Manufacturing. It was found, that Maine has distinctive research capacities in a number of fields directly related to its cluster strengths. In addition to the wide ranging research strengths demonstrated by the outputs of research, Maine is home to a number of research institutions with distinctive capacities on which clusters can be built, especially in biomedical and biological research, composites and advanced materials, chemical engineering, forest management, and geographic information systems.

1.2.2 Objectives of Cluster Initiative Program

Maine's Cluster Initiative Program aims to boost the strength and scale of Maine's high-potential technology clusters, thereby expanding Maine's innovation economy and helping to create quality employment and increase living standards across the state. It does so by increasing the awareness of the benefits of strong industry clusters and by supporting cluster initiative projects. Such projects strive to enhance knowledge and skills, establish networks that spread the knowledge and skills, and develop entrepreneurship and innovation in technology clusters across Maine. The results for production and distribution and service businesses should be increased competitiveness and expansion of jobs, leading to increased wages and improved standards of living. Awards made under this program are intended to support Maine's high-potential technology businesses and sectors by improving the effectiveness of their infrastructure, as well as resources and connections between and among firms, service providers, research laboratories, educational institutions and other organizations.

Strong relationships among industry groups such as: specialized suppliers, industry-knowledgeable universities, trade associations, legal and financial experts, funding sources and government agencies are the key to being an innovative and self-sustaining cluster, rather than simply an industry concentration. Typically, a collective competitive advantage comes from the whole range of activities and sharing of knowledge within the cluster (e.g. supply-chain development, market intelligence, incubator services, attraction of capital, management training and education, joint R&D, technical standard setting, etc). Cluster Initiative Program aims to strengthen these factors.

1.3 Origin of the Concept of the Policy Practice

1.3.1 Origin of the Practice

The Cluster Initiative Program is the outcome of a variety of sources. The Maine Technology Institute (MTI) oversees the Cluster Initiative Program initiative. It is supported through the Governor of Maine, the Maine Legislature, and the Council on Jobs, Innovation, and the Economy. The concept was encouraged through the Brookings Institution through a report called 'Charting Maine's Future.'

The Maine Technology Institute (MTI) was created by the State Legislature in 1999 to encourage, promote, stimulate and support research and development activity leading to the commercialization of new products and services in the State's technology-intensive industrial sectors to enhance the competitive position of those sectors and increase the likelihood that one or more of the sectors will support clusters of industrial activity and to create new jobs for Maine people.

This appears to be a case of top-down public policy. The main actor in Maine cluster policy is the publicly funded Maine Technology Institute which was created in 2000 through the State Legislature. MTI grants money through its cluster initiative program (Cluster Initiative Program). The cluster policy practices have evolved from a synthesis of research and prior experiences with cluster awards. Organizations involved with the development of cluster policy include MTI, the Office of Innovation through the Maine Department of Economic and Community Development, and the Brookings Institution. Research that has led to the development of policy practice has been conducted through the University Of Southern Maine, Policy One Research Inc., Battelle, Planning Decisions Inc., and the Maine Science and Technology Foundation.

1.3.2 Preceding Practices on which the Cluster Initiative Program builds

The Cluster Initiative Program has emerged first from several prior projects and experiences. The success of a cluster of Maine boat builders throughout the 1990s and 2000s served as a prototype for this policy. The boat builder cluster began in the 1990s with the creation of the University of Maine's Advanced Engineered Wood Composites (AEWC) Center through state and federal funding. The cluster further developed in 2005 with the creation of the Maine Built Boats Inc (MBB). The MBB was created by individual companies that recognized the need to encourage and maintain the place of Maine in the worldwide boat building industry. The state of Maine promoted this cluster further by the creation of the North Star Alliance which brought together the AEWC Center, the MBB, marine and trade associations, and other organizations with the aim of advancing boat building innovation and market development.

As the current Cluster Initiative Program replaces a previous Cluster Enhancement Award Program through MTI which ran from 2000 to 2008, the new Cluster Initiative Program is a direct result of the experience and lessons learned through the 8-year run CEA program. Cluster policy in the state has evolved throughout the 2000s as a result of many initiatives, studies, and reports conducted. A report from the Maine Science and Technology Foundation (MSTF) published in 2002 entitled 'Assessing Maine's Technology Clusters' served as the first comprehensive analysis of technology clusters in the state. Since that time more research has emerged regarding general cluster policy. Additionally, cluster policy in Maine has been encouraged through the State Legislature, committees, and the Bookings report 'Charting Maine's Future.' Another comprehensive study was commissioned in 2006 in order to address recommendations from the Brookings Institution to build and expand clusters in the state. This study was overseen and funded through MTI and the Office of Innovation of the Maine Department of Economic and Community Development and the findings of the study were published in a 2008 report titled, Maine's Technology Sectors and Clusters: Status and Strategy. In addition to the study reports conducted in 2002 and 2006, the Maine cluster policy derived from a thorough review and analysis of known best practices of cluster initiatives for example, of course examining the Cluster Initiative Greenbook, also other US best practices, like the cluster initiatives in Oregon, and also drawing upon European best practices as well.

1.3.3 Program Running Time

The MTI began developing technology clusters by granting Cluster Development Awards in 2000 through the Cluster Enhancement Award (CEA) Program, when MTI began their operations.

As stated, the current Cluster Initiative Program (Cluster Initiative Program) that is operating today has replaced the Cluster Enhancement Award Program in 2008 (est. September). Therefore, the new Cluster Initiative Program is currently in its first year of operation, and new results and impact for this new revised program can not yet be fully measured. The MTI Cluster Initiative Program grants awards on two different timelines. Awards for applications for planning or feasibility studies that are under \$50,000 are granted on a rolling basis. The outcomes of these applications are announced no later than 75 days after the receipt of a completed application. Applications for projects of up to \$500,000 are competitively reviewed and awarded with two application windows a year. These applications exist on a specific timeline. There is a March 26, 2009 application deadline for January 2009 Request for Applications (RFAs). A previous round of applications ended on November 14, 2008 with awards announced on February 10, 2009.

1.4 Main Design Features of the Policy Practice

1.4.1 Targeted Beneficiaries

As clusters are an important driver of business growth and economic development in Maine, they are comprised of concentrations of companies that serve similar customers, draw on similar knowledge and workforce skills in the development of innovative products and services. They are actively supported by common organizations such as specialized suppliers, industry-knowledgeable universities, trade associations, legal and financial experts, funding sources and government agencies.

The ultimate target beneficiaries of the Cluster Initiative Program awards are for the Maine's private sector's benefit, specifically regarding the companies of their 7 technology sectors already mentioned, but they are also looking to promote and encourage strong and broad collaboration among universities, non-profit organizations, trade associations, and government agencies and programmes, in order to achieve better benefits for the clusters. There are several targeted areas for Maine cluster policy and the MTI Cluster Initiative Program. From these seven technology sectors, MTI has gone on to recognize different types of clusters. These categories of clusters are sustainable clusters, emerging clusters, and potential clusters.

Although not meant to be an all-inclusive list, the following technology clusters are identified below. Applications targeted to strengthen clusters that build on these foundations will receive priority by MTI.

Sustainable Clusters: Cultured Fish and Shellfish, Environmental and Civil Engineering Services, Forest Harvesting and Management, Shaping and Fabricating Wood, Crop and Soil Science/Food Production, Pulp and Paper, New Materials Development, and Shaping and Fabricating Non-wood.

Emerging Clusters: Diagnostic Materials, Genetics/Genomics and Geospatial/GIS.

Potential Clusters: Biomedical Research, "Green" Products, Bioinformatics, New Media and Measuring and Controlling Devices.

The Maine studies also rated the relative strength of key cluster elements and areas where additional clusters may develop in the future. Applicants to Cluster Initiative Program are encouraged to frame projects in ways that build on their cluster's strengths and shore up weaknesses, or that encourage the development of additional high potential clusters beyond those listed. This should be proposed with the broadest possible strategic context for the cluster and clearly demonstrate the sustainability and impact of the activity for the cluster development.

1.4.2 Criteria for Participation

The beneficiaries of the MTI Cluster Initiative Program are selected through an application and review process. There are two different procedures depending on the sum of the award and also the focus of the application.

For proposed projects that focus on planning and feasibility and that are for \$50,000 or under, applications are accepted on a rolling basis. For applications for proposed Cluster Initiative Program projects of up to \$500,000 a separate application procedure is utilized that involves the acceptance of applications on a semi-annual basis. MTI will solicit Cluster Initiative Program applications in specifically planned application windows called RFAs (Request for Applications). Applications resulting from this solicitation will be reviewed competitively.

Both application procedures for the two levels of awards have common application requirements which include a mandatory MTI Cluster Award workshop or an individual MTI meeting, contribution of matching funds at a 1:1 ratio, and the submission of the same application forms.

Matching Funds Criteria

Awards up to \$500,000 per proposal may be made for projects that carry a high probability for significant and sustainable impact. Awards can span multiple years and be for sequential tasks if key project milestones are successfully completed. It is expected that many awards will be in the range of \$50,000 to \$300,000. MTI will fund as many high quality projects as possible based on the availability of funds. All Cluster Initiative Awards require at least a 1:1 match. In addition to actual cash, salaries, staff time, equipment and overhead directly attributable to the project, whether in cash or provided as "in-kind," will be considered as cash for the calculation of the match. No more than 20% of the total project funding may be used for indirect/overhead costs. Examples of eligible in-kind matching contributions include: equipment that is pledged for use on the project, personnel time on the project that goes unpaid, or personnel who accept a reduced rate of pay. The quality and amount of matching funds will be an important consideration as part of the application evaluation and award determination.

Pre-Application Workshop/Meetings

MTI offers workshops or individual meetings across the state to present the Cluster Initiative Program including award eligibility requirements, the award application, the competitive review and award approval process and to address any questions. Workshop dates are generally announced in conjunction with the notification of the Request for Applications (RFA) dates. Attendance at the workshops, or an individual meeting, is a requirement for application submission.

1.4.3 Selection Criteria

For awards of \$50,000 or less, the outcome of the application will be announced within 75 days of receiving a complete application. For the larger funding awards are announced within 90 days of the Request for Application (RFA) deadline. All completed applications will be reviewed by a committee consisting of MTI, the MTI Board of Directors and outside experts, as invited by MTI.

The committee will make a recommendation for each application considered, but not limited to, the following: the collaborating organizations and individuals, the importance of the cluster to Maine, the amount and quality of matching funds, the quality and clarity of the application and the prospects for measurable impact. Specifically, the application will be evaluated against the following criteria: Project budget, project scale, breadth and sustainability, project outreach plan and transferability and results measurement. The result will be a designation of "Recommended for Interview" or Not Recommended for Interview."

The official evaluation process for the Cluster Initiative Program awards up to \$500,000 submitted by the due date is the following:

Step One: Applications submitted before 5 pm on the RFA due date will be reviewed by MTI for completeness. Only complete applications will be evaluated and the ultimate responsibility for completeness rests with the submitter.

Step Two: MTI will review the application and provide summary comments drawn on knowledge of the sector, its status as defined in the Maine's Technology Sectors and Clusters: Status and Strategy, 2007 (if the cluster is clearly identified in the report) and any applicable experience from the MTI predecessor Cluster Enhancement Award Program

made from 2000 to the present day. These summary comments are for internal MTI purposes.

Step Three: All complete applications and their summary will be forwarded to the Cluster Initiative Program Award Review Committee made up of two members from the MTI staff, the Program Committee of the MTI Board of Directors and outside experts as invited by MTI. The committee will make a recommendation for each application on a competitive basis considering: the total funds available for award during the current round, the experience and caliber of the collaborating organizations and individuals, the importance of the cluster to Maine, the importance of the project to the cluster, the quality and clarity of the application, the prospects for measurable impact and other appropriate factors. The result will be a designation of “recommended for an interview” or “not recommended for an interview” for each application reviewed. Each proposal will be confidentially evaluated based on content, and participants may view the Cluster Initiative Program Award evaluation sheet for reference.

Final Step: Recommended for interview applicants will be present their project, in person, to the MTI Board/Cluster Initiative Program Award Review Committee. Invited applicants will have approximately 30 minutes to present their project and to answer questions. Upon review of all recommended applications the MTI Board will consider projects on a competitive basis and take appropriate action based, among other things, on the availability of funds and the most strategic investments for developing Maine’s technology clusters. Once award decisions are made by the MTI Board, all successful applicants as well as unsuccessful applicants will be formally notified by MTI.

1.4.4 Policy Funding

MTI is publicly funded through a state appropriation to the Department of Economic and Community Development (DECD) which allocates the funds to its Cluster Initiative Program. Although the program is publicly appropriated by the state, the Cluster Innovation Program requires 1:1 matching funds from its applicants.

In April 2008, MTI and the Office of Innovation released the report “Maine’s Technology Sectors and Clusters: Status and Strategy” authored by Dr. Charles Colgan of the University of Southern Maine, written together with Battelle, PolicyOne Research and Planning Decisions. The report found that Maine’s effort to grow a more technology intensive economy is well underway and identified sixteen technology clusters that are sustained or in development. While there are weaknesses and challenges, the foundations are strong and can be further supported, particularly through nurturing these clusters, as proposed in a series of recommendations. Following the review of this report, by the end of 2008, the Legislature had appropriated additional funds for MTI’s cluster development program with \$2.5 million in funding (later reduced to \$2.28 million) that would help bolster the expanded new program, Cluster Initiative Program, early in FY09 and support the study’s recommendations.

Specifically in fiscal year 2008, MTI received a state appropriation totaling \$5.5 million. In 2009, the state appropriation is now almost \$7.5 million with the agreed \$2 million budget increase, specifically to be allocated towards Maine’s Cluster development program. Other sources of MTI’s income during FY08 included \$154,713 from the Department of Energy for a Forest Bioproducts contract, \$270,126 as a contractor to DECD for the North Star Alliance Initiative and approximately \$126,775 in Development Award repayments. Finally, assets under MTI’s management earned over \$508,547 in interest, a decrease over the previous year due to lower interest rates.

1.4.5 Supported Activities

The Cluster Initiative Program funds many types of cluster development project activities, including:

- Feasibility and Planning Studies
- Personnel
- Trade Association Creation and Funding for Director (Salary up to 18 months)
- Research and Development
- Equipment
- Communication and IT
- Infrastructure
- Training

The flexibility of the CE program means that there is a significant amount of variety in the projects that MTI funded. The Cluster development awards may be roughly grouped into five areas:

- Association Development Funds are used to support the development or enhancement of trade association services in one of the technology sectors.
- Demonstration/Education Funds are used to demonstrate the feasibility or applications of a Maine-developed technology and to educate the public or potential users about the technology.
- General Research & Development Research projects whose results will have broad applications in a technology sector.
- Market Analysis/Investigation of potential markets for Maine-based technologies.
- Research Capacity Enhancement Investment in physical facilities, including building and equipment, which may be used for expanded or enhanced research capabilities.

Types of Projects Encouraged

Generally, ambitious multi-year projects that strategically advance Maine's high-potential technology cluster development and strengthen critical elements are of highest priority. Projects that spur cluster formation are also of interest. Applicants should draw on cluster experiences in Maine as well as other regions to employ best practices and avoid "reinventing the wheel." Although it is generally recognized that no two clusters are the same, much can be learned from understanding both successful and less than successful clusters as well as cluster initiatives. There also should be an on-going effort to monitor customer and competitive needs and to insure cluster initiatives strengthen capability in this regard. The following strategies are applicable across all industry segments as a foundation for cluster initiatives:

- Building technology networks specific to one cluster or related clusters – for example, topical workshops, seminars, strengthening the capacity and sustainability of tech networks/trade associations and web sites for information sharing/blogging.
- Decreasing distance to cut down on isolation between cluster participants and boost the identification of shared obstacles and solutions for them – for example, virtual presence and new media activities.
- Developing services that support the growth of an individual cluster or strengthen a capacity that is weak across multiple clusters – for example expertise on the definition

of “green” products or resources to help early stage tech companies access the capital they need to grow.

- Making connections outside of Maine – for example forming and maintaining strategic collaborations with other parts of New England or Canada that will advance a cluster.
- Planning important infrastructure development – for example, capital plans for shared research and development facilities that will strengthen a Maine clusters competitive advantage.
- Addressing cluster weaknesses – for example, strengthening entrepreneurship, addressing the lack of knowledge transfer networks, boosting capital access and identifying or strengthening cluster production/distribution capabilities.

In particular, MTI is interested in supporting efforts to build cluster capacity for innovation that has a strong likelihood of commercialization. Activities that are needed to build and enhance clusters should be determined and driven by the organizations that comprise those clusters. Preferably, visionary business leaders should be at the center of such efforts. Applicant project teams are encouraged to develop a strategic plan for their cluster and to consider submissions that have multi-year timelines or phased approaches. Particular emphasis should be placed on identifying and addressing needs within an existing or potential cluster to create a pull on the collaborative organizations prompting them to work together for improvement. This is in contrast to collaborations that create capability and capacity which is then pushed out to potential beneficiaries.

In addition, and from time to time, MTI may also invite proposals that are focused on a particular cluster initiative element in need of special attention. In such cases the requested project scope and content will be defined to encourage targeted applications that will be competitively reviewed.

1.4.6 Validation of Activities

The validation of all program activities resides with the Maine Technology Institute.

Award Contract: Successful applicants will be required to enter into a contract with MTI which will include, as a minimum, the following attachments: the application, budget details, project milestones and timeline.

Reporting Formats and Meeting Attendance Requirements:

The award recipient is required to regularly report on the project progress and submit a full written report and meet with MTI as each milestone is due and at the completion of the project. Any request for changes to the project scope, milestone date(s) or project duration must be formally made to MTI and approved. MTI reserves the right to delay, or terminate projects for failure to achieve mutually agreed upon milestones.

As a condition of the award, and from time to time, the recipient and project collaborators agree to meet with MTI and other Cluster Initiative Program Award teams to discuss their experiences and share information aimed to facilitate learning. Upon completion of the project the award recipient(s) will be required to submit a final report which includes a measurement roadmap. Award recipients may be invited to present their final report to MTI and will also be asked to submit an annual written update on their project, including measured factors and impact, for a five year period.

The recipient will also be required to provide information annually on project progress for the independent evaluation of the Cluster Initiative Program Award during the project and for five

years after the project. This may take the form of an annual online survey or a telephone or in-person interview.

Project Funding and Payments: Where all Cluster Initiative Awards require at least a 1:1 match this is also a validation mechanism to ensure a sense of commitment from the recipient applicant. Advance funding is provided for the first phase of the project, but subsequent funding for the project is only provided after the recipient applicant meets the appropriate milestones and successful evaluation of their reports to MTI. A final report is required in order to receive the last funding of the project.

1.4.7 Organizations that Provide Support

The primary supporting actor of Cluster Initiative Program is MTI. The Maine Office of Innovation through the Maine Department of Economic and Community Development is a supporting agency as it helped fund research regarding cluster policy in Maine (the report that was published in 2008). The Maine Science and Technology Foundation provided support for earlier cluster research and the report which came out in 2002. The Brookings Institution also produced several reports aimed at strengthening the Maine economy and advancing cluster practices in Maine. MTI also maintains a strong alliance with Maine's Public Universities (the University of Maine System). Maine universities and professors, in particular the Muskie School of Public Service at the University of Southern Maine, lead the research and investigation of cluster policy in Maine.

There are many organizations that support the goals of MTI. This includes government offices (in particular the Office of Innovation) and universities. The main form of support to MTI seems to be in the form of funding and research support on how to enhance Maine clusters and Cluster Initiative Program awards. Maine also works with the Maine Small Business Development Centers, Maine Technology Centers, and Procurement Technical Assistance Center.

Specifically MTI works in effective partnerships in Maine in the following way:

Small Business Development Center (SBDC): MTI and the Maine SBDC completed the sixth year of a contractual relationship to share the cost of a business counselor assisting technology-intensive businesses in Maine and to develop a competency in technology-based business counseling at the Maine SBDC. The SBDC's technology focus has included a business counselor dedicated to the Composite Technology sector and two additional counselors with technology expertise who work with MTI award recipients on their technology commercialization, IP protection, licensing and partnerships, as well as business and marketing planning. In addition, Maine SBDC counselors promote MTI's programs statewide. This agreement has included the conduct of a technology-focused training session each year that addresses MTI client needs. The Maine SBDC's technology center director was hosted at MTI and worked with 72 MTI award recipients during the fiscal year. According to Maine SBDC data, MTI clients received 445 hours of counseling from Maine SBDC counselors, and Maine SBTDC clients have received 347 hours of direct counseling; both groups worked on issues of business development and commercialization of innovative technologies.

Maine Manufacturing Extension Partnership (Maine MEP): In calendar year 2007, through an independent economic impact survey conducted by the National Institute of Standards and Technology for all MEP related projects, 13 MTI awardees reported that they:
Increased or Retained Sales by: \$11.6M
Invested: \$ 1.4M
Created or Retained Jobs by: 70

According to Maine MEP records, Maine MEP contributed over 475 staff hours during this period to promote MTI services to Maine manufacturers and introduce MEP services to MTI awardees.

To achieve the above reported impacts and return on investment rate by Maine manufacturers, Maine MEP engages with MTI clients for follow-on technical assistance. Approximately 25 MEP projects with MTI recipients concentrated on quality management systems, lean manufacturing, facility layout, and workforce development, accounting for hundreds of hours of focused training and consulting services.

In the late spring, Maine MEP requested that MTI help support the costs of Maine companies to use its new products growth service called Eureka! Winning Ways. MTI's board approved the project in July 2008 and Maine MEP will promote this product and process commercialization training to small and medium-sized manufacturers in Maine in the coming year.

Maine Procurement Technical Assistance Center (PTAC): Maine PTAC helps Maine companies secure contracts with government agencies at the federal, state and local levels. Maine PTAC fulfills its federal mandate to support the federal SBIR program by partnering with MTI. MTI's SBIR program expenses provided approximately \$98,174 of in-kind match funding for Maine PTAC's federal procurement assistance program in FY08.

University of Maine System: Active collaboration between the University system and MTI continued in FY08. The University of Maine in Orono received seven MTI awards for technology development during the fiscal year. Moreover, the University of Maine System has provided assistance to numerous MTI-funded companies, including direct technical assistance, informal advising, proposal writing and feedback, commercialization of University-developed technologies and graduate student support.

Maine's Technology Development Centers: MTI continued its relationships with Maine's Technology Centers. Five of the seven Center directors served on MTI technology boards and thereby participated in MTI award review processes. In addition, the Centers provided facilities for MTI's workshops and seminars and promoted MTI programs to their clients. Moreover, the MTI president sat on the Technology Center coordinating board to maximize the impact of both MTI and the Centers. The partnership is paying off: Half of companies affiliated with the Maine Center for Enterprise Development in Portland and the Target Technology Center in Orono have obtained MTI funding.

Maine Patent Program: MTI continued to fund intellectual property-related activities as part of its awards to Maine companies. However, this work is only funded after companies have received assistance from the Maine Patent Program. In FY08, 11% of MPP clients received funding from MTI. In addition, MTI staff presented at MPP events and MPP participated in the MTI Mixer as part of its outreach to technology companies in Maine.

Small Enterprise Growth Fund: MTI continued a close and mutually supportive relationship with the State-sponsored venture capital fund, the Small Enterprise Growth Fund (SEGF). The director of the Office of Innovation sits on both the MTI and SEGF boards, providing an important link between MTI funding assistance and the equity investments made by SEGF. Eight out of the 35 SEGF portfolio companies previously secured financing and other assistance from MTI. This confirms that MTI is helping to build a pipeline of companies ready for equity financing here in Maine.

Maine International Trade Center: Export markets are an increasingly important source of customers for Maine technology companies. MTI and the Maine International Trade Center have partnered for a second year to offer MTI development award companies one year of

free membership to the Trace Center so that they can access the Center's export assistance services.

1.4.8 Cooperation and Knowledge Transfer between Actors

Award Contract: Successful applicants will be required to enter into a contract with MTI which will include, as a minimum, the following attachments: the application, budget details, project milestones and timeline. Also MTI tries to enforce a Memo of Understanding between the involved actors in the projects and also encourages them to formalize a cooperation agreement among the partners of the project to ensure the effective collaboration during and surely after the project for better sustainability.

Commercialization (IPR) – MTI works strongly with the Maine Patent Program, which is funded by the state legislature "to support the commercialization and manufacturing of innovations in the State by providing education and assistance with the patent process of the United States Patent and Trademark Office to companies, inventors and entrepreneurs in the State."

1.5 Implementation and Operation of the Policy Practice

1.5.1 Overall Budget

MTI is funded through an appropriation to the Department of Economic and Community Development (DECD), and is limited by statute to using no more than 7% of the appropriated funds for its operations. They consider this a very strict lean operation plan to ensure economic efficiency.

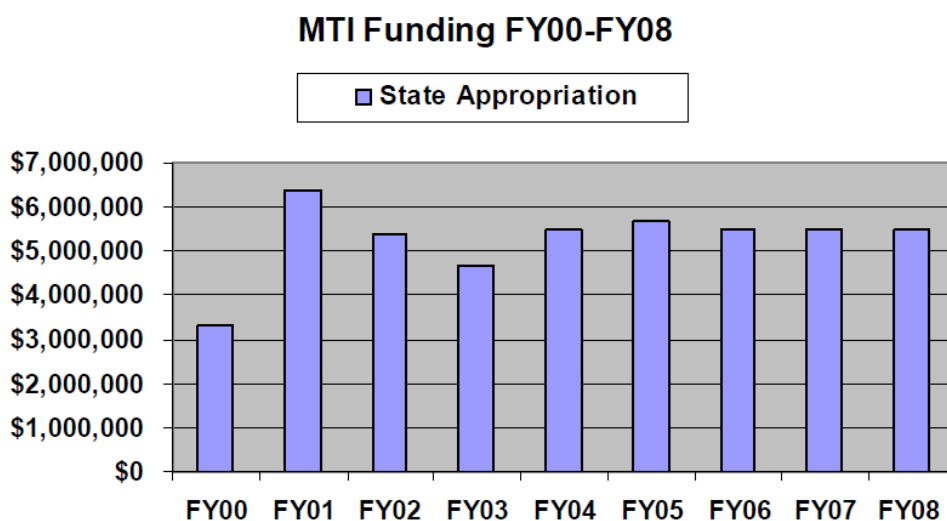


Figure 1 - MTI Funding FY00-FY08

MTI received a state appropriation totalling \$5.5 million in FY08 for the operations of all its programs, not just the Cluster Development Program. In 2009, the state appropriation is now almost \$7.5 million with the agreed \$2 million budget increase, specifically to be allocated towards Maine's Cluster development program.

Other sources of MTI's income during FY08 included \$154,713 from the Department of Energy for a Forest Bioproducts contract, \$270,126 as a contractor to DECD for the North

Star Alliance Initiative and approximately \$126,775 in Development Award repayments. Finally, assets under MTI's management earned over \$508,547 in interest, a decrease over the previous year due to lower interest rates. Ninety-three percent of award repayments are used to fund additional awards. Interest and seven percent of award payments funded operations.

MTI approved funding of approximately \$7 million to total of 165 projects in FY08 for all its programs. MTI had just over \$3.8 million in outstanding commitments to awardees, not including approximately \$2.8 million in approved awards with unsigned contracts as of June 30, 2008. (These were to be signed early in the next fiscal year.) MTI disbursed over \$5.3 million according to agreed-upon and approved milestone schedules for each award.

Administrative and operating costs were approximately \$1,188,000, an increase over the previous year related to administering the \$50 million Maine Technology Asset Fund and the \$2.8 million expansion of the Cluster Innovation Program, which incurred hiring several new staff. MTI's operating expenses were paid for by 7% of the state's appropriation and interest income and administrative funds provided to administer the Maine Technology Asset Fund.

Maximum Budget per Project

The maximum award for Cluster Initiative Program awards is \$500,000.

For planning and feasibility applications, the maximum funding award is \$50,000.

It seems that the typical funding range for projects has been between \$50,000 and \$300,000.

As the budget has increased for 2009, larger projects up to 500,000 will be hopefully be more common.

1.5.2 Managing Actor

The overall managing actor for the Cluster Initiative Program is MTI. The relationship appears to be mainly between the recipient (project) and MTI. There do not seem to be any intermediaries. The recipients report to MTI in a manner of ways. Most of the more formal reports coincide with designated project milestones along with progress reports and occasional meetings with MTI. MTI is a state run program which is annually evaluated by state legislation through MTI annual reports. Furthermore, MTI and its programs are biannually evaluated through an assessment conducted by the Center for Business and Economic Research of the University of Southern Maine.

1.5.3 Size of Policy

Grant Close Year	Number of Awards	Award Amount	Matching Amount
2002	2	\$173,981	\$377,716
2003	4	\$235,000	\$1,018,500
2004	3	\$131,000	\$200,499
2005	4	\$223,770	\$959,073
2006	6	\$788,435	\$2,391,082
Total	19	\$1,552,186	\$4,946,870

Figure 2 - Funded Cluster Development Projects from 2000-2008

In fiscal year, 2008, MTI approved funding for six new cluster enhancement awards, totaling over \$842,000 and matched by over \$2 million. All together MTI, in the past years of operation, has provided almost \$5 million in cluster awards, matched by more than \$12.6 million for 48 projects that support Maine's technology-driven businesses by improving the infrastructure, resources, connections and linkages necessary for the innovation economy to thrive. New Cluster Enhancement Awards made in FY08 included projects in composite

materials, aquaculture and marine technology, advanced technologies for forestry and agriculture and environmental technology.

Already in the first round of the Cluster Initiative Program for the 2008-2009 fiscal year, they have funded 3 projects for almost \$1million (2 large projects at max \$500,000 and one small feasibility planning project at max \$50,000).

Going forward in 2009, they aim to fund additional 4-6 larger projects.

1.5.4 Application Acceptance Rates

Through an interview with MTI, it was learned that MTI typically receives about 4 times the number of applications they can fund. They are funding about 25-30% of the project applications they receive for cluster development in Maine.

1.5.5 Changes in Design/Implementation

This new Cluster Initiative Program was launched in September 2008, replacing the Cluster Enhancement Awards Program that ran from 2000-2008. Changes included a budget increase of over \$2 million per year and also the maximum award limit per project from \$200,000 to \$500,000 in order to increase the size of projects and competition. The new program Cluster Initiative Program still requires matching funds for projects.

1.6 Evaluation and Assessment of the Policy Practice

1.6.1 Evaluation of the Policy Practice

MTI is a state run program which is annually evaluated by state legislation through MTI annual reports. Furthermore, The Maine Technology Institute (MTI) is charged by the Legislature to conduct an evaluation of its programs every two years addressing issues of the effectiveness of MTI's grant programs in fostering technology-based economic development. MTI has engaged the Maine Center for Business and Economic Research (MCBER) at the University of Southern Maine to conduct the evaluations. The latest evaluation report was the fourth report prepared by MCBER at the end of 2008. Previous reports were released in 2003, 2005, and 2007. These results are then presented to the Joint Standing Committee on Business, Research and Economic Development.

Also, all MTI-funded companies are required to submit information to a third party annually for five years following a project's completion. The compiled data are independently evaluated to determine the impact on Maine's economy, with a report to the Legislature prepared every odd-numbered year.

Additionally, every year, MTI funded companies are independently surveyed to measure the return on investment of MTI's awards for the Maine economy. The measures include jobs created, wage levels, attraction of additional financing, new products and services developed and brought to the market, and other important impacts.

1.6.2 Results and Impact of the Practice

Over its first five years, MTI has largely succeeded in fulfilling the mission of the agency to assist in the development of new technical products for markets in Maine and elsewhere. The Cluster development program has funded a variety of projects to provide research equipment and facilities, to assist in the development of trade associations, to prepare

analysis of the markets for Maine technological products, and to conduct research of general interest to sectors. These projects have largely succeeded in their goals, though their impacts on overall cluster development and Maine economy are difficult to be assessed.

Overall, MTI-funded projects have had a high rate of success. Ideally, the strongest contribution to cluster development will be in sectors that have strong input purchases from within Maine and a high proportion of sales to other Maine firms, extensively use in-state supporting organizations, have high rates of innovation, and show strong growth. Based on these factors, the growth performance and the improvement of MTI clients in the seven technology sectors can be briefly summarized in the table below:

	Inputs	Outputs	Supporting Organizations	Innovation	Growth
Biotech	Lowest proportion of service inputs, second lowest in materials	Weakest expected sales in Maine	Strong in-state	Third highest in patents, fifth in total IP	Strong Growth
Composites	High inputs of services	Second weakest sales in Maine	Strong in-state	Smallest IP Secured	Strongest Growth
Environmental	Highest inputs of materials	Strongest expected sales in Maine	Stronger out-of-state	Second highest patents, fourth overall	Strong Employment, Middle Revenue Growth
Forestry & Ag	High inputs of both services and materials	Second strongest sales in Maine	Stronger out-of-state	Tied for second lowest patents; 6th overall	Weak Employment & Revenue Growth
Info Tech	Lowest proportion of materials	About average for all sectors	Equal in- and out-of-state	Second highest because of copyrights	Moderate Employment, Weak Revenue Growth
Marine	Highest proportion of services	About average for all sectors	Equal in- and out-of-state	Third highest overall	Weak Employment & Revenue Growth
Precision Mfg	About average	About average for all sectors	Slightly more use of in-state	Highest in patents and overall	Employment decline & weak revenue growth

Figure 3 - Performance of 7 Maine Technology Sectors Clusters

The below example of progress made in a specific award shows the type of projects awarded to develop growth in Maine's sectorial economy.

Cluster Enhancement Award Feature: Potatoes to Plastics 2008

<p>Over a period of 18 months, nine companies, nonprofit groups and university researchers will work together to demonstrate the feasibility and marketability of producing an environmentally friendly organic plastic from one of the state's traditional crops. In addition, they will evaluate establishing a trade association to exchange information, influence related policies, educate consumers and other companies, and build market awareness for Maine-made potato plastic products.</p>	<p>Initiative Members:</p> <ul style="list-style-type: none"> • Maine Initiatives (fiscal agent) Environmental Health Strategy Center • True Textiles, Inc. • Rynel, Inc. • Tom's of Maine • The Margaret Chase Smith Policy Center • UMaine's Process Development Center • The Maine Potato Board • Maine Organic Farmers and Growers Association • Green Harvest Technology
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Moreover, recently measured successful economic impact as a result of MTI initiatives includes:

- Employment in MTI-funded companies grew at a rate of 6%, compared with the average Maine company, which grew by less than 1%;

- MTI companies pay higher wages by 20% than the average Maine company;
- They buy one third of their materials and almost one half of services from other Maine companies; and
- MTI clients leverage more than \$12 in private and other government funds for every \$1 of MTI funding.

1.6.3 Main Conclusions of the Impact Evaluation Assessment

Clients continue to give MTI very high marks for the quality and usefulness of their services. Substantial majorities of MTI grant recipients agreed or strongly agreed that their working relationship with MTI was positive (>97%), that MTI was helpful (>79%), and that MTI assistance had been important to their commercial success and in finding other funding (>81%).

Recommendations for Cluster Development in Maine (resulted from 08 survey)

It is clear from our analysis of clusters that they are complex and multifaceted. Clusters that can sustainably contribute to economic growth and prosperity in a region require the actions of many different types of people and organizations, sometimes in cooperation with one another and sometimes in competition. Government and public policy must play a number of different roles simultaneously, which puts great demands on public institutions particularly at a time of resource scarcity.

Maine is fortunate in that the organizational and programmatic infrastructure needed to foster cluster development is largely already in place thanks to the investments made in such organizations as the Maine Technology Institute, the Office of Innovation, the Maine Economic Improvement Fund and other elements of the research and development strategy that have been pursued now for more than a decade. The future tasks consist, therefore, of continuing and expanding what has been working and making adjustments in existing programs to take advantage of the opportunities identified here, rather than having to build entirely new efforts from scratch. Four key elements of strategy need to be followed:

- Feed the R&D Pipeline
- Catalyze Clusters
- Put a Priority on People
- Continue to Fund Innovation That Contributes to Clusters

1.7 Role of Policy Involvement or Connections

MTI Purpose: The Maine Technology Institute (MTI) was created by the State Legislature in 1999 to encourage, promote, stimulate and support research and development activity leading to the commercialization of new products and services in the State's technology-intensive industrial sectors to enhance the competitive position of those sectors and increase the likelihood that one or more of the sectors will support clusters of industrial activity and to create new jobs for Maine people (5 MRSA c. 407).

There are no other similar local practices in Maine that overlap, duplicate or compete with the MTI's Cluster development program in any way.

MTI Program Mix

The MTI Cluster Initiative Program is a practice that is part of a larger program mix offered by MTI to the Maine industries and technological sectors.

In addition to the Cluster Initiative Program that supports Maine's technology sectors and businesses by improving the effectiveness of their infrastructure, as well as resources and connections among firms, service providers, research laboratories and educational institutions, MTI's additional programs are listed and detailed below.

Maine Technology Asset Fund

The Maine Technology Asset Fund is a two-year, competitive award program funded by a \$50 million bond approved by Maine voters in November 2007. The awards must be used to fund capital and related expenditures supporting research, development and commercialization projects that will lead to significant economic benefits for Maine. The expenses may include facilities construction and renovation, machinery and equipment (including computers, software and licenses required for their use, as well as related technician training for operation of equipment and machinery purchased) and land purchase. This may also include expenses directly associated with the acquisition and installation of such assets. The awards may not be used to fund ordinary annual operating expenses.

There will be two rounds of awards. The MTI Board approved the first round of awards on August 11, 2008 that resulted in total requests for \$29,919,446. The MTI Board plans to issue a second Request for Applications again in 2009.

Business Innovation Programs

Four MTI programs for research and development financing

1. Seed Grant Program

Offered to Maine companies and entrepreneurs six times a year, these grants range from \$1,000 to \$12,500 to help fund small, early-stage R&D projects and activities leading to commercialization. Activities include market research, intellectual property filing, and prototype development. Seed grants require at least a 1:1 match from the applicant. The next deadline for seed grants is April 16, 2009.

2. Development Awards

Offered three times a year, these awards fund \$12,500 to \$500,000 per project for comprehensive, later-stage R&D activities leading to commercialization. Activities include those funded by the seed grant program, as well as small-scale manufacturing. Repayment of this award is required when the product, process or service developed is successfully commercialized. Development awards require at least a 1:1 match from the applicant. The next deadline for development award applications is June 15, 2009.

3. Accelerated Commercialization Fund (ACF)

This program can help selected Development Award recipients bridge the financing gap between R&D and sales.

4. SBIR/STTR Phase 0 Proposal Assistance Program

MTI helps small companies identify business opportunities within a \$2 billion federal market for research and development. MTI grants of up to \$5,000 are offered to support competitive federal Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) proposal submissions from Maine applicants. These grants are awarded on a rolling basis and require at least a 1:1 match from the applicant. MTI also provides no-cost guidance to Maine technology companies to help prepare competitive proposals.

1.7.1 Cluster Initiative Program's Comparison's to Other Cluster Policies in the US

Maine's industry clusters can be compared to a set of benchmark states that also utilize cluster policies. They do not compete in any way.

The following factors were used to identify potential benchmark states:

- Presence of industry sectors that are found in Maine
- Similarity in size as measured by total employment
- Similarity in economic structure as measured by manufacturing as a share of total employment
- Limited R&D base as indicated by EPSCoR status
- Presence of port technology-based economic development.

These criteria resulted in identification of 6 states that are comparable to Maine.

Connecticut: Connecticut is a good match with Maine in terms of the presence of similar industry clusters. It is located in New England and state government has a history of active programs to promote science and technology-based development, similar to Maine.

Idaho: Among the states, Idaho is most comparable to Maine in terms of size and economic structure. Both states have a small population base (519,000 total employees in Idaho and 497,000 total employees in Maine) spread out over a large geographic region. Both states have a strong agricultural and food products sector, a significant aquaculture industry, established electronic sectors, and emerging bioscience sectors. Idaho is also an EPSCoR state. State government in Idaho has not as actively supported technology-based economic development as has the State of Maine.

Iowa: Iowa is a somewhat larger state with almost 3 million workers but its economy is similar to Maine's. It has both an agricultural and manufacturing base. Iowa is largely rural with a dispersed population. Its largest industry clusters are processed food manufacturing and financial services. Its universities have played a strong role in technology-based economic development and state government is seeking to grow its IT, bioscience, and advanced manufacturing industry clusters.

Oregon: Oregon is a good match for Maine in terms of its industry make-up with forestry, wood products, agriculture, aquaculture, and IT being important contributors to the Oregon economy. State policy has a focus on cluster development but state support to technology-based economic development has been limited.

Vermont: Vermont was included less because its economy is similar to Maine but because it is a neighbouring small state with a limited R&D base that appears to be succeeding in growing its IT sector. Vermont has a food processing and furniture industry.

Wisconsin. Wisconsin is one of the top states in forest product shipments and an emerging bioscience sector. It has seen strong growth in the medical device cluster but its biotechnology sector is still emerging. The university has played a strong role in technology-based economic development but state support has been somewhat limited.

1.8 Good Practice Features Benchmarked against European practices

According to the “Policy Priority” categorization through both ERAWATCH and INNO Policy TrendChart, the specific policy priority category this practice, MIT Cluster Initiative Program, belongs to is clearly the 1.3.1 “Cluster Framework Policies.”

1.8.1 US Cluster Initiatives/Policies versus European peers

National government throughout the world play a very central role in cluster development but this is not the case in the United States. In nations across the globe, the number of cluster initiative programs has grown substantially in recent years in response to the pressures of international competition. Twenty-six of 31 European Union (EU) countries have cluster initiative programs in place, as do Japan and Korea. Building on the efforts of its member states, the EU has published The European Cluster Memorandum, a multi-country cluster initiative to promote innovation through cluster development.

In the US, cluster initiative programs are a component of economic development efforts only in a small number of states, including Maine and also in Connecticut, Oregon, Maine, North Dakota, South Carolina, and Washington.

In addition, a few local economic development organizations administer cluster initiative programs. In contrast to the examples around the world and among the states, the U.S. federal government has been almost entirely absent from the realm of cluster initiative programs. The most prominent exception, an innovative effort to stimulate collaborative regional efforts in economic and workforce development, is the Department of Labor’s WIRED (Workforce Innovation in Regional Economic Development) program. While WIRED is not solely a cluster initiative program, a good many WIRED projects are cluster-focused (such as Upstate New York’s Optics and Imaging cluster, Northeast Pennsylvania’s Wall Street West cluster, and Maine’s North Star Alliance). WIRED, however, was developed internally by the DOL in 2005 utilizing H1-B visa fees and appears likely to be short-lived. Though limited and insufficient, several other federal economic and workforce development programs—including the Community-Based Jobs Training Program, the Manufacturing Extension Partnership, and the Partnerships for Innovation Grant Program—are available to support particular slices of cluster collaboration. However, at present, unlike most other developed nations, the U.S. has no legislatively authorized programs specifically dedicated to comprehensively supporting cluster initiatives.

1.8.2 Comparison between the Cluster Initiative Program and Similar European Policy Practices

As it is described above, the US falls behind most developed nation’s government initiative to support clusters, as there is no real national-wide effort to encourage and fund cluster development in the US. During the interview with MTI for the Cluster Initiative Program, it was actually noted that when MTI did a major research in order to improve their state’s cluster development initiative program, they studied European cluster initiative practices a great deal in order to learn from best practices.

In Europe there are numerous cluster development initiative policies with different regional or sectorial development goals. In order to fairly compare and contrast Maine’s Cluster Initiative Program with European Cluster policy practices, certain similar features should be considered, for example: grant funded, application process, technological sectors, etc. A search was made using ERAWATCH and ProINNO Trendchart in order to find European

practices with similar policy features as Maine's Cluster Initiative Program; two policies are described and compared with Cluster Initiative Program below.

1. Germany – Top Cluster Competition

Like the Cluster Initiative Program, this public German Cluster programme provides funding for clusters through grants and targets beneficiaries that are a group of organisations (firms, research organisations, government authorities, NGOs) that aim at jointly developing and introducing innovations in a certain field of technology or sector within a region.

Also, like Cluster Initiative Program, cluster activities of the German initiative may involve skill development, long-term oriented research strategies, close-to-market technology development, facilitating new business ventures and international cooperation. Similarly like the Cluster Initiative Program initiative, in the German initiative a joint strategy, which has to consider the whole supply chain, is obligatory. Also in both initiatives, proposals for clusters are evaluated by a steering committee.

In the German initiative, it is intended to conduct three rounds of competition. (Similar to Cluster Initiative Program in the sense, there is a tender, and application process, and evaluation process). In every round, a maximum of five clusters is chosen which are promoted for up to five years with up to €200 million € in total, i.e. the programmes total volume is up to €600 million. This program is much larger than Maine's Cluster Initiative Program terms of financial funding, but we must also compare the size of the target region. Maine is only one small state in the US, in comparison to the country of Germany.

In the German initiative, there are no thematic requirements at all. Rather in the Maine initiative, the project application for cluster development should fall into one of the main seven technological sectors of Maine. In this direct and focused way, it ensures the constant development and growth of the important technological sectors of Maine. The German initiative could try implementing a similar focus, in order to best promote the most important technological sectors of Germany.

2. Sweden – Cluster Programme

The Sweden Cluster Program is a similar program to Maine's Cluster Initiative Program in regards to objectives and background rationale. In Sweden, the regional Cluster Programme is an initiative seeking to strengthen regional concentrations of enterprises and public as well as non-public organizations, both competitive and cooperative, i.e. clusters. Similarly like in Maine, some of the advantages with regional geographical concentrations are easy access to specialised labour, products, information and technology. Also like Cluster Initiative Program, cluster initiatives should work as joint ventures between industry and public sector, and set off from current clusters. The overall goals are to increase economic growth and strengthen regional and national competitiveness.

Differently from Maine's Cluster Initiative Program, the Swedish clusters programme has an international focus. Clusters that wish to strengthen their international competitiveness can be given grants from another public program on a three year basis. Funding for the Swedish program is similar to the Cluster Initiative Program, where the 2005-2010 is budgeted 70 million SEK (approx 7,5 million Euro).

Funded activities in both initiatives in Sweden and Maine are similar. Among the activities supported are commercial cooperation (analysis, purchase collaboration), networking (triple-helix, dialogues) and cluster expansion (new establishments, spin-offs etc.). Specifically in the Swedish initiative it mentioned that all activities should moreover have clear market oriented qualities, which implies that the program does not support basic research and product development, whereas the Maine Cluster Initiative Program does in fact fund basic research and product development if they believe the project will support later phases of development or assist in other state project aims. The Swedish regions co-financing must be

at least 50 % of the grants given and the program is co-financed by the private sector. In this case, the Cluster Initiative Program differs.

1.9 Review and Implications of Good Practice Features

After reviewing the success and impact of the MTI's Cluster Development initiatives (the former Cluster Enhancement Award – CEA – Program and the new improved Cluster Initiative Program program), certain best features can be highlighted that clearly have helped make the program successful. The major indication that the CEA program which ran from 2000-2008 was successful was that after the review of Maine's technological clusters the program was enhanced with an increased budget of \$2 million in 2009 to help support cluster initiative projects going forward.

- MTI's program mix is a factor of the programs success. MTI implements a portfolio of programs to address specific needs consistent with its purpose.
- The requirement of 1:1 matching funds demands the commitment of the applicant and better ensures the aims and goals of the proposed project.
- The new competitive nature of the program is also a good feature. Increased competition, increased standards, and increased budget are indications of Maine's commitment to the program and its state cluster development.
- The use of the external experts in the field to be part of the Committee to evaluate project applications and review project results ensures an outside expert opinion and feedback. The involvement of these outside experts educates MTI staff and committee members which improves the Cluster Initiative Program.

1.10 References of the Good Policy – Sources and Contacts

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2. CHAPTER II: Advice for transferability

2.1 *De-contextualize the good practice*

2.1.1 Context Dependency of the Rationale and Objectives of the Good Practice

The Cluster Initiative Program of Maine's Technology Institute (MTI) is a state-administered and public funded cluster grant program that replaced MTI's previous Cluster Enhancement Award Program in 2008 by expanding the program and increasing award funding by \$2 million per year. As its primary objective, MTI's new Cluster Initiative Program (CIP) aims to boost the strength and scale of Maine's high-potential technology intensive clusters. The rationale of the cluster program were to support Maine's seven technology sectors defined by the Legislature as the areas of the Maine economy where technological innovation is particularly critical to commercial success. The technology sectors are very diverse in size and characteristics. Maine's seven technology sectors are: Biotechnology, Composites and Advanced materials, Environmental Technologies, Forest products and Agriculture, Information Technology, Marine Technology and Aquaculture, and Precision Manufacturing. It was found, that Maine has distinctive research capacities in a number of fields directly related to its cluster strengths. In addition to the wide ranging research strengths demonstrated by the outputs of research, Maine is home to a number of research institutions with distinctive capacities on which clusters can be built, especially in biomedical and biological research, composites and advanced materials, chemical engineering, forest management, and geographic information systems.

It is clear the rationale of Maine's Cluster Initiative Program good practice is quite context dependent on the specific research and technology sector environment that naturally formed in Maine. Clusters and sub-clusters for these 7 sectors naturally were born and matured over time. Maine's state government ensured the continued success and growth of these sectors through the creation of this public funded competitive program.

2.1.2 Context Dependency of the Emergence of the Good Practice

As an overview, in general, the origin of the practice is the outcome of a variety of sources. The public organization entity that manages the Program, the Maine Technology Institute (MTI), was created by the State Legislature in 1999 to encourage, promote, stimulate and support research and development activity leading to the commercialization of new products and services in the State's technology-intensive industrial sectors to enhance the competitive position of those sectors and increase the likelihood that one or more of the sectors will support clusters of industrial activity and to create new jobs for Maine people. Overall, the origin of the practice is not entirely context specific, as the program was simply a cluster initiative aimed to help improve and develop the Maine technology sectors and thus the Maine economy as a whole.

However, specifically, the emergence of the Cluster Initiative Program in 2008 is the direct result and replacement of the previous Enhancement Award Program, which ran from 2000 to 2008. In this case, the Cluster Initiative Program is quite context dependent as it builds directly from a previously 8-year run program.

Also, this Cluster Initiative Program was planned to be an improvement from its predecessor program, and therefore the practice has evolved from a synthesis of research and prior experiences with cluster awards that is makes the emergence of the policy fairly context dependent and specific. Various state government organizations involved with the development of cluster policy include MTI and the Office of Innovation through the Maine

Department of Economic and Community Development. Cluster policy in the state has evolved throughout the 2000s as a result of many initiatives, research, studies, and reports conducted.

- A report from the Maine Science and Technology Foundation (MSTF) published in 2002 entitled 'Assessing Maine's Technology Clusters' served as the first comprehensive analysis of technology clusters in the state. Since that time more research has emerged regarding general cluster policy.
- Additionally, cluster policy in Maine has been encouraged through the State Legislature, committees, and the Bookings report 'Charting Maine's Future.' Another comprehensive study was commissioned in 2006 in order to address recommendations from the Brookings Institution to build and expand clusters in the state. This study was overseen and funded through MTI and the Office of Innovation of the Maine Department of Economic and Community Development and the findings of the study were published in a 2008 report titled, Maine's Technology Sectors and Clusters: Status and Strategy.
- In addition to the study reports conducted in 2002 and 2006, the Maine cluster policy derived from a thorough review and analysis of known best practices of cluster initiatives for example, of course examining the Cluster Initiative Greenbook, also other US best practices, like the cluster initiatives in Oregon, and also drawing upon European best practices as well.

Particularly this research and studies has lead to the emergence from one policy program to the new Cluster Initiative Program in order to ensure and boost the maximum results for the state's sectors and clusters.

2.1.3 Context Dependency of the Design Features of the Good Practice

The design features of the MTI Cluster Initiative Program are very context dependent regarding the following important design aspects:

- (1) Targeted Beneficiaries
- (2) Strict Participation Criteria and Selection Criteria
- (3) Policy Funding

1. The ultimate target beneficiaries of the Cluster Initiative Program awards are for Maine's private sector's benefit, specifically regarding the companies of their seven technology sectors as already mentioned. These 7 targeted technology sectors defined by the Maine Legislature broadly identify the areas of the Maine economy where technological innovation is particularly critical to commercial success. There are several targeted areas for Maine cluster policy and the MTI Cluster Initiative Program. From the seven technology sectors, MTI has gone on to recognize different types of clusters. These categories of clusters are sustainable clusters, emerging clusters, and potential clusters. The success of this cluster policy is highly context dependent on the fact that the program directs a specific attention and focus on these Maine technology sectors. Legislature is also looking to promote and encourage strong collaboration among universities, non-profit organizations, trade associations, and government agencies and programmes, in order to achieve better benefits for the clusters.

2. The Participation and Selection Criteria have been defined and better perfected over time. As the Cluster Initiative Program is the successor of a previously 8-year run Cluster Award Program, the participation eligibility and award selection have become more and more competitive. As award amounts have increased, the selection criteria have become stricter over time. It's important to note that the awarding also requires mandatory participation on Cluster Award workshop and even more significantly, the contribution of matching funds at 1:1 ratio. The quality and amount of matching funds is an important consideration as part of the application evaluation and award determination.

3. The funding of the cluster policy is an important design feature as the Cluster Initiative Program is strictly publicly funded through a state appropriation through its organizer, the Maine Technology Institute and the awards themselves require matching funding from the winning organizations. The policy does not receive any private contributions from the technological sectors that continue to grow due to this policy. The design features like: the specific funded activities of the program and the validation of these activities are not highly content specific, as these types of activities can be implemented with many policy structures in different environments. The Cluster Initiative Program funds many types of broad cluster development project activities. The flexibility of the Cluster Initiative program means that there is a significant amount of variety in the projects that MTI can fund. The Cluster development awards may be roughly grouped into five areas: Association Development Funds, Demonstration/Education Funds, General Research & Development Research projects, Market Analysis/Investigation of potential markets for Maine-based technologies and Research Capacity Enhancement Investment in physical facilities, including building and equipment.

The validation of such activities simply resides in the program's administrative organization, the Maine Technology Institute, through reporting formats and meeting attendance requirements. As mentioned above, these activities are not greatly context specific to the Maine's Cluster program structure and environment and can easily be transferred to other settings in various regions.

2.1.4 Context Dependency of the Implementation Aspects of the Good Practice

The aspects of implementation of the Cluster Initiative Program are an important factor to the success of the program, are also dependent on the context. General factors like good organization, continued and growing state funding appropriation, and a constant managing administrator, the Maine Technology Institute, have maintained the program and have propelled it to even grow over the years of the policy's operation.

Also, it's important to note that the size of the policy is an important factor in the overall context of the policy. In the previous Cluster Enhancement Award program, in 2002, the number of grants awarded was two; in 2008, the amount rose to six awards. MTI typically receives about 4 times the number of applications they can fund. They are funding about 25-30% of the project applications they receive for cluster development in Maine. The program is operating in an environment that continues to need this type of cluster policy, as demonstrated by the high demand – the number of applications they receive.

The dedicated managing administrator, the budget and size of the policy are significant to the policy's growth, and these implementation aspects are dependent on the environment (the state of Maine) in which the program operates.

2.1.5 Context Dependency of the Outcomes and Impacts of the Good Practice

The outcomes and impact of the Cluster Initiative Program are highly dependent on the specific context the program, especially the emergence, design and implementation aspects and the Maine environment in which the policy operates.

The impact of the program has proven strong. Overall, MTI-funded projects have had a high rate of success. Clients continue to give MTI very high marks for the quality and usefulness of their services and awards. Recently measured successful economic impact as a result of MTI initiatives includes:

- Employment in MTI-funded companies grew at a rate of 6%, compared with the average Maine company, which grew by less than 1%;
- MTI companies pay higher wages by 20% than the average Maine company;
- They buy one third of their materials and almost one half of services from other Maine companies; and
- MTI clients leverage more than \$12 in private and other government funds for every \$1 of MTI funding.

It is clear from any analysis of clusters that they are complex and multifaceted. Clusters that can sustainably contribute to economic growth and prosperity in a region require the actions of many different types of people and organizations, sometimes in cooperation with one another and sometimes in competition. Government and public policy must play a number of different roles simultaneously, which puts great demands on public institutions particularly at a time of resource scarcity.

Maine is fortunate in that the organizational and programmatic infrastructure needed to foster cluster development is largely already in place thanks to the state investments made in such organizations as the Maine Technology Institute, the Office of Innovation, the Maine Economic Improvement Fund and other elements of the research and development strategy that have been pursued now for more than a decade.

2.1.6 Context Dependency of the Relation to Other Policies of the Good Practice

The Maine Technology Institute’s Cluster Initiative Program is a practice that is part of a larger program mix offered by MTI to the Maine industries and technological sectors. In addition to the Cluster Initiative Program that supports Maine’s technology sectors and businesses, MTI offers other programs that improve the effectiveness of Maine’s infrastructure, as well as improving the resources and connections among firms, service providers, research laboratories and educational institutions.

It is clear that MTI’s involvement in other public economy boosting programs has strengthened the Institute’s impact in the state. Had MTI only been involved in this cluster policy it may not have been as successful as a whole, and have received such strong public support from Maine government organizations, like the Maine Office of Innovation, the Department of Economic and Community Development, the Maine Science and Technology Foundation and the University of Maine System.

2.1.7 Context Dependency of the Good Practice Features of the Good Practice

The table below provides a review of the good practice features and highlights the extent of their context dependency.

Good Practice Feature	Policy Aspect	Extent of Context Dependency/Specific
Developed from a previously successfully run program for 8 years	Emergence	Highly Dependent
MTI’s program mix is a factor of the programs success. MTI implements a portfolio of programs to address specific needs consistent with its purpose.	Relation to other Programs/Policies	Highly Dependent
The requirement of 1:1 matching funds demands the commitment of the	Design Feature – Participation Criteria	Highly Dependent

applicant and better ensures the aims and goals of the proposed project.

The new competitive nature of the program is also a good feature. Increased competition, increased standards, and increased budget are indications of Maine's commitment to the program and its state cluster development.

(1) Design Feature – Participation Criteria

(2) Implementation Feature – Committed Managing Actor

Moderately Dependent

The use of the external experts in the field to be part of the Committee to evaluate project applications and review project results ensures an outside expert opinion and feedback. The involvement of these outside experts educates MTI staff and committee members which improves the Cluster Initiative Program.

Design Feature – Selection Criteria

Moderately Dependent

2.2 Summary of the De-contextualized Lesson of the Good Practice

Certain features which determined the Cluster Initiative Program's success can be separated by its context and turned into lessons applicable to good practices designed in different frameworks but aiming to similar objectives.

Here some of the achievements and lessons that could be applied by other programs with similar objectives.

- Strong commitment from local state government that develops and continues to strengthen their technological sectors through innovative cluster policy can result in success.
- Continued evolution throughout almost a decade to improve the program through outside research and internal/external evaluations
- Maintenance of high standards in awarding grants through a highly competitive proposal awarding process
- Managing actor was robustly involved in other innovative economic policies in the state that strengthened their influence and their own programs
- The ability to hold the standard of requiring a 1:1 matching funds demands the commitment of the applicant and better ensures the aims and goals of the proposed project

2.3 Are there Favourable Circumstances and Atmosphere for Transfer?

2.3.1 Is there good codified material in English, such as reports, studies, evaluations and assessments to transfer?

The website for the Cluster Initiative Program, <http://www.mainetechnology.org>, provided much useful information about the design and implementation of the program and some evaluation reports as well, but this web site did not entirely provide all the information necessary in order to thoroughly describe the good policy practice.

Assessment reports that were used to assess Maine's already formed Technology Clusters are available online and state financial appropriation information is also publicly available as all US state appropriates must be kept public.

The research interview with a Cluster Support Program Specialist was a substantially supplementing way to obtain more important information about the size of the policy, the funding and budget details, and the program's evolution over time.

2.3.2 Are there relevant people willing/capable to transfer their knowledge? Proud of the practice? Attitude towards Europe?

There are relevant people willing and capable to speak more about the program and their experience. Specifically, the Manager of Commercialization and Cluster Support, Roger Brooks was very forthcoming with further information and analysis through an interview that was conducted. He had not worked on the program since its initiation so he was not able to offer many details on the start-up of the program or its early years.

They were proud of the success and involvement of the program and actually Mr. Brooks noted specifically that when assessing their own cluster initiative program they also consulted and compared with various assessments of European policy initiatives. They were happy to hear that they were selected to be further studied and were interested in hearing the impact of this report.

2.4 *Select two EU countries or regions where the context would be favourable*

Cluster policy development has now become an integral innovative tool in all EU countries. In fact, as mentioned above, when MTI re-evaluated and assessed their own cluster initiative policy, they actually took recommendations and lessons learned from EU policy examples. The context of this particular good practice is indeed very similar to EU cluster policies in the sense that many policies are publicly funded; that many require a 1:1 matching ratio from the recipient; and that the participation criteria includes a strict application proposal process with strong competition.

Because of the successor nature of this particular Cluster Initiative program developed by MTI, we found only one EU country, Estonia, that is in the process of developing the same type of cluster development program. The Cluster Development Program was initiated in 2008 and will expire in 2013; when it will then require a follow-up successor program to continue the developmental efforts accomplished. It is recommended that the Maine Technology Institute's Cluster Initiative Program service as the successor program in 2013.

2.5 *Re-contextualize the practice in those countries and regions, discussing the new characteristics to the issues (2-8) of the good practice.*

2.5.1 Re-Contextualisation in Estonia

From 2008-2013, Estonia's government is implementing a new Cluster development programme inspired from other EU initiatives.

The Cluster Development Program have the same objectives as the Maine Cluster Initiative Program:

1. To increase the added value of Estonian companies, to increase the sales of the products and services, and to stimulate exports.

2. To promote cooperation between companies (both within and between sectors), and between companies and research organisations.

The cluster development programme also intends to support the international competitiveness of the Estonian industrial manufacturing companies.

Potential beneficiaries are companies registered in the Estonian Business Register. Moreover, the eligible companies have to be members of a cluster-establishing consortium, including non-profit organisations or foundations with certain cluster-developing objectives.

The creation of domestic clusters in Estonia has repeatedly been high on the political agenda and the issue is highlighted in numerous policy documents, such as: Knowledge-Based Estonia- Estonian Research and Development and Innovation Strategy 2007-2013 and especially the National Strategic Reference Framework 2007-2013 and Operational Programmes. MTI similarly began in the same way to develop their Cluster Program, by relying on official state research reports for the states economic and innovation development. Unlike the MTI program, the Estonian Cluster Development Program does not indicate any specific technology fields referred to in the regulation of the program.

It is the recommendation of this report that MTI’s new Cluster Initiative Program, as the successor to its previously 8-year run Cluster Enhancement Award program, be transferred to act as the follow-up program of Estonia’s first Cluster Development Program planned to run from 2008-2013. In 2013, after the first 6 years, the Estonia program will be ready for a follow-up action to develop on the lessons learned and will also need a successor program to put in place.

- Program aspects like: Beneficiaries, Participation Criteria and Selection Criteria, funded project activities, and evaluation methods are already very similar in both the MTI and Estonia Cluster initiatives.
- Currently the Estonia offers up to 75% of reimbursement of costs; in the successor program, we propose they follow the MTI example and utilize a 1:1 matching funding ratio.

2.6 Propose an actual plan on how to transfer practice

2.6.1 Who should be involved?

US – Maine Involvement	Estonia Involvement
Maine Technology Institute – Program Administrator	Management Board of Enterprise Estonia Ministry of Economic Affairs and Communications

2.6.2 What kind of visits would you recommend?

Theoretically, this type of transfer may not require physical visits from one side to the other. It is still recommended, if budget allows, that the Management Board of Enterprise Estonia plan a visit to the Maine Technology Institute to meet with the Program Manager during a crucial time in the program’s executive, for example in the selection process after a Call for Proposals is closed. In this way, Enterprise Estonia could observe not only the call for proposal procedure and the participation criteria, but the types of more developed cluster projects considered for funding, and also the selection process.

2.6.3 What could be the main barriers, and how could they be addressed?

- Estonia is still in very early innovation policy formulation phase in defining a framework, and it does not have the well-structured and experience of the Maine system.
- Estonia's government policy making and institutional support system is undergoing complete restructuring and rationalization which means it's in a constant changing and adaptive state.
- Few concrete innovation measures have been successfully implemented due to an absence of provision in the government budget
- Difficult goal to continue to increase funding level for R&D and innovation due to macroeconomic and budgetary constraints
- Another challenge that Estonia will encounter is to address how the industrial value chain can be reorganized and better aligned to be more competitive in the global market.
- Inter-cluster cooperation will be difficult at first but should be encouraged.