

Innovation Policies for Inclusiveness – Policy Cases

Experimental Program to Stimulate Competitive Research (EPSCoR)

Country: United States

1. Short Description

The **Experimental Program to Stimulate Competitive Research** (EPSCoR) was founded in 1979 to tackle territorial disparities with regard to research, development and innovation capacities in the United States. The programme intends to increase competitiveness for Federal research funding and develop the S&T research basis and educational resources of US states that receive little federal funding. Currently, 28 EPSCoR jurisdictions (US states and territories) meet the eligibility criteria (i.e. they receive less than 0.75% of the annual NSF research funding).

This policy profile is part of a [policy toolkit on innovation policies for inclusiveness](#). It is relevant for territorial inclusiveness.

2. Policy Characteristics

Basic Information

Country and implementing institution(s):	Timeline:
United States of America National Science Foundation with state administrations	1980 to the present
Target group	Size and budget:
A jurisdiction (a state or territory) is eligible for EPSCoR funding if it receives less than 0.75% of the budget (USD 6 billion in 2015) that NSF spends annually on research	USD 160 million in 2016
Type of policy instrument(s)	Inclusiveness focus
Financial support: awards	Territorial inclusiveness

Policy objectives

The policy objective of the EPSCoR programme is to **develop the S&T research basis and educational resources of US states that receive little federal funding**. This is achieved through partnerships between state universities, industry actors, state administrations and



Federal, private and public actors. The main goal is to raise the capabilities of research institutions in EPSCoR jurisdictions.

The NSF describes the specific goals of the programme, through which the policy objective is achieved, as follows:

- catalysing key research themes and related activities within and between eligible jurisdictions;
- activating effective jurisdictional and regional collaborations between academic, government and private sector stakeholders, in order to advance scientific research, promote innovation and provide broader social benefits;
- broadening direct participation in science and engineering by institutions, organisations and people within eligible jurisdictions;
- affecting future research, education and economic development programmes.

Rationale

The EPSCoR programme was founded in 1979 in response to concerns from the US Congress and scientific community that the geographic distribution of Federal research and development funds was too concentrated. In 1971, 54.2% of all Federal R&D funds went to ten states, half of which (27.8%) was awarded to the three largest recipient states (California, New York and Massachusetts). Concentration at the institutional level was also significant, with 95 universities (that received more than USD 10 million) accounting for 68% of all federal funding. EPSCoR was designed to help achieve broader geographical distribution of R&D support by improving the research infrastructure of states that have historically received low Federal R&D funds.

Policy target recipient and selection mechanism

Target groups consist of jurisdictions (states or territories) that historically have received little Federal research and development funding, and that have demonstrated a commitment to developing their own research bases and improving science and engineering research and education programmes at their universities and colleges. A jurisdiction is eligible to participate in the EPSCoR if its most recent (three-year) level of NSF research support is equal to or less than 0.75% of the total NSF budget for Research and Related Activities. The following states are currently eligible: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia and Wyoming, as well as Guam, Puerto Rico and the US Virgin Islands.

Selection mechanism and criteria: submitted proposals are reviewed by ad hoc reviewers and/or panel review. Reviewers are asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional programme-specific criteria. The Programme Officer assigned to manage the proposal's review considers the advice of reviewers and formulates a recommendation to the Division Director, as to whether to recommend or reject the proposal for an award.



After programmatic approval has been obtained, the proposals recommended for funding are forwarded to the Division of Grants and Agreements for review of business, financial and policy implications. Once an administrative review has taken place, Grants and Agreements Officers perform the processing and issuance of a grant or other agreements.

Policy instrument(s)

- **Research Infrastructure Improvement Program (RII):** awards provide funding to a jurisdiction for infrastructure development to strengthen academic research competitiveness. They consist of three different awards:
 - **Track 1 awards** provide up to a total of USD 20 million over a period of up to five years, with at least 20% own funding. They are intended to support physical, human and cyber infrastructure improvements in research areas selected by the jurisdiction's EPSCoR steering committee as having the best potential to improve the future R&D competitiveness of the jurisdiction.
 - **Track 2 awards** provide up to USD 1 million per year for up to four years shared between two EPSCoR jurisdictions, or up to USD 1.5 million per year for up to four years to a consortia of three or more EPSCoR jurisdictions. These awards build inter-jurisdictional collaborative teams of EPSCoR investigators in scientific focus areas consistent with NSF priorities. For 2016, EPSCoR invited RII Track 2 FEC proposals on two topics: (i) understanding the brain; and (ii) sustainable food, energy and water systems.
 - **Track 3 awards** were piloted in 2013 and provide a maximum of USD 750 000 per award for up to five years to support the strategic goal of increasing the participation of under-represented groups in STEM fields supported by NSF (i.e. under-represented minorities, women, persons with disabilities and those in underserved rural regions of the country). This is expected to improve the future R&D competitiveness of EPSCoR jurisdictions.
- **Co-funding of Disciplinary and Multidisciplinary Research:** EPSCoR joins with NSF Directorates and Offices to support proposals from individual investigators, groups and centres in EPSCoR jurisdictions that are submitted to the Foundation's research and education programmes and cross-cutting initiatives. These proposals have been merit reviewed and recommended for award, but could not be funded without the combined, leveraged support of EPSCoR and the Research and Education Directorates. Co-funding leverages EPSCoR investment and facilitates the participation of EPSCoR scientists and engineers in NSF-wide programmes and initiatives.

Policy challenges

A programme evaluation conducted by the National Academies in 2013 identified the following challenges endangering the achievement of the programme objectives:

- **Declining research budgets:** state funding for universities in general and research more specifically has declined. Accordingly, eligible jurisdictions must sustain and expand their research capacities with funds from other sources than those coming from EPSCoR, or co-ordinate investments between state and federal governments.



- **Increasing competition:** since 2010, the number of research institutions applying to the programme has increased, while funding has remained stable.
- **Changing R&D landscape:** Due to the changing landscape of international R&D activities (the rise of BRICS countries), the United States is facing challenges to its position as world leader in many scientific and research areas. This raises the question as to whether it is more appropriate to concentrate on a few centres of excellence.
- **Unsuitable eligibility criteria:** the programme's eligibility criteria may not be the most suitable, since they do not take into account the vast demographic differences between US states. Instead, eligibility should be based on a "per person" criteria (i.e. federal R&D funding per person instead of federal R&D funding per state).

Actions undertaken to address challenges

The programme evaluation conducted by the National Academies in 2013 contains the following recommendations to address the above challenges:

- Regarding budget constraints and potential trends towards other policy priorities (based on excellence), the programme should focus on its core element (i.e. enhancing research excellence through competitive processes).
- Concerning the challenge posed by the changing international R&D landscape and to defend against arguments favouring other policy priorities (based on excellence), a "blended" funding strategy should be adopted with two tracks combining beneficial aspects of the programme: (i) a competitive grant track providing fewer and larger grants evaluated first for scientific merits; and (ii) a smaller-scale, infrastructure investment or state-wide investment track to ensure that every state has the capacity to provide advanced education and research experience.
- A realistic framework for state eligibility and graduation from the programme should be developed and enforced that takes into account population, state commitment, total research funding, proposal success rates per research university faculty member, financial need, etc. This will enable the programme to concentrate on states and universities that really need funding, and ensure a higher long-term impact.
- The proposal review for prospective EPSCoR projects and the evaluation process conducted during and after an EPSCoR project should be more rigorous.

Evaluation and outcomes of the scheme

There are four parts to the post-award evaluation process. During the first year the project's strategic planning is controlled to ensure that goals, strategies, metrics, milestones, timelines and merit review comments are adequately detailed. This is followed by annual project reporting. Site visits are also performed with panels of external experts evaluating projects based on progress relative to the proposed activities and strategic plan. Lastly, independent evaluators conduct external evaluations by developing and tracking quantitative and qualitative metrics.



The overall programme was evaluated by the US National Academies in 2013 (together with the other related experimental programmes), and again in 2015, upon request of the NSF, by the IDA Science and Technology Policy Institute. The latter report was tasked with finding out whether EPSCoR has met its legislatively mandated objective of avoiding undue concentration of research and education in the United States.

The report detailed the following achievements:

- 5 874 graduate students and 964 post-doctoral students were supported by EPSCoR;
- 9 184 research articles indexed in the Web of Knowledge were supported by EPSCoR;
- 2 400 pieces of equipment were purchased with the support of EPSCoR;
- 186 academic courses were developed based on EPSCoR activities;
- 190 EPSCoR-associated patents were filed;
- 52 EPSCoR-associated start-up companies were established;
- 15 EPSCoR jurisdictions became comparable to non-EPSCoR jurisdictions in terms of innovation indicators, such as patenting, S&T workforce and venture capital investments.

Based on these achievements, the report produced the following main findings:

- The legislative mandate for EPSCoR is broad but funding is limited, with 28 jurisdictions competing for USD 160 million.
- Earlier EPSCoR cohorts (1980, 1985, 1987 and 1992) became more competitive for NSF funding; however cohorts from 2000 onwards have not become more competitive.
- The programme has contributed meaningfully to the increased competitiveness of jurisdictions for NSF funds.
- Hiring faculty has been an effective EPSCoR strategy.
- Jurisdictions across all EPSCoR cohorts have developed their research bases and increased their science, education and research programmes, in certain cases, reaching parity with non-EPSCoR jurisdictions.
- The identification of jurisdictions receiving relatively little funding depends strongly on the chosen indicators.
- The geographic concentration of NSF research and development funding has decreased slightly since 1980, but attribution of this decrease to the programme could not be established.



Sources

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Background

*This document is part of a repository of examples of **innovation policies that have for explicit aim to contribute to territorial, industrial and social inclusiveness**. The repository is part of an innovation policy toolkit developed for the **Innovation for Inclusive Growth** project and gathers national innovation policy programmes that:*

- A.** Explicitly target **lagging and less innovative regions** (outside of regions that are highly innovative) or by design are more likely to support these lagging / less innovative regions.*
- B.** Explicitly aim to include in innovation activities **individuals and groups that are not usually participating** in those activities and in support of broadening the group of innovators.*
- C.** Explicitly aim to foster innovation activities in non-innovative firms, in particular by targeting **non-innovative sectors and non-innovative Small and Medium-sized Enterprises (SMEs)**.*

*Policies are searchable by inclusiveness type, objective and implementation challenge on:
<https://innovationpolicyplatform.org/inclusivetoolkit>*