



Regional Innovation in 15 Mexican States

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Introduction

Innovation is an important component of economic development and productivity growth. Indeed, governments are aware that one of the ways they can begin to pull themselves out of the current financial and economic crisis is to invest in innovation. Several OECD countries have followed such a strategy in the past and come out ahead. Such investments in regional innovation systems and technology-transfer mechanisms can facilitate the transition to a knowledge economy and create jobs. Actions are needed by all levels of government with the private sector to support a transition from “made in Mexico” to “created in Mexico”.

A key question for Mexico, and other OECD countries, is whether national policy supports the development of regional innovation systems generally, and, if so, does it address the development needs of lagging regions as well. National policy approaches should better serve different types of states based on their industrial and scientific capacities. Not every OECD region can be a leader in technology like Silicon Valley, but all regions need to improve their capacity to adapt knowledge for their innovation needs.

Firms are at the heart of innovation, but they do not operate in isolation. Policy trends in OECD countries in regional development, science and technology, enterprise, and higher education include regional approaches to achieve national innovation and economic growth goals. Mexico’s national policies do not yet sufficiently promote competitiveness in all types of regions. This must be addressed urgently, as there are high inter-regional disparities in income levels and productivity in the country.

Mexican states are increasingly encouraging clusters and regional innovation systems, but their efforts could be re-focused to emphasise a knowledge-based economy. States need to make greater efforts to integrate S&T (science and technology) and innovation into their broader economic development and competitiveness agendas. And they need to co-operate more with each other.

This *Policy Brief* explores how national and state policies in Mexico can improve regional innovation, which, in turn, can help grow the national economy and boost productivity. ■

How can Mexican states continue to grow during the crisis?

Despite major improvements in Mexico’s macroeconomic stability, stagnant labour productivity has led to insufficient economic growth. Greater investment in innovation is therefore essential. For example, research and development (R&D) as a percentage of GDP for Mexico stands at 0.5% (where business R&D plays a particularly small role), while the OECD average is over 2%. In light of the current financial and economic crisis, and given that innovation investment is pro-cyclical, even greater investment efforts are required during these difficult times to ensure future growth.

The data illustrate different Mexicos with respect to income levels, productivity and innovation-related performance. The country’s growth goals therefore can’t be achieved in the same way in all states.

- The economic performance of Mexican states is below OECD averages; however there is a great diversity in both levels of per capita GDP and economic growth rates.
- Poverty is still a widespread problem in Mexico and a drag on country competitiveness. Although poverty levels are declining, over 40 million Mexicans (42% of the population) experience some form of poverty, with the incidence of poverty varying greatly not only across states, but also between urban and rural settings.
- Among OECD countries, Mexico has one of the highest levels of productivity differences (GDP per worker) across regions.

Figure 1.
PARTICIPATING STATES



- Mexico’s overall rate of tertiary educational attainment is below OECD averages; the country also has the highest disparities in tertiary education rates across regions among OECD countries.
- Specialisation across Mexican states has increased since NAFTA. Northern border states and larger regional economies show greater levels of specialisation among manufacturing industries, with preliminary analysis showing a positive link between productivity and specialisation. Fifteen out of 32 Mexican states have a share of less than 1% in high-tech sectors.
- Some 90% of foreign direct investment (FDI) flows into Mexico are concentrated within the centre and northern border multi-state regions. While it is presumed that big manufacturing firms and FDI will bring technological spillovers through S&T expenditures, greater productivity and higher wages, this is not necessarily the case. Productivity and wages per employee are highest in firms with less than 50% FDI (as opposed to none or more than 50% foreign capital). And, surprisingly, branches of large manufacturing firms with no FDI show the highest rate of S&T expenditure – 6% of GDP.
- A high concentration of innovation-related inputs and outputs deepens regional differences in terms of competitiveness and, hence, economic performance. Unfortunately, due to a lack of comparable sub-national data, Mexican states can’t be easily compared with other OECD regions in terms of regional innovation. ■

How can national policy help?

National policies in Mexico do not sufficiently support clusters or regional innovation systems. While definitions of clusters may vary, they are commonly known as concentrations of firms and other related actors and institutions that are inter-connected, and where geographic proximity facilitates this interaction. Clusters can be part of a broader regional innovation system, where knowledge is created and/or diffused and adopted. In most OECD countries, there is a convergence of policies that contribute to regional competitiveness through support to regional clusters and innovation systems. These policies focus on regional development science and technology or innovation, higher education, and enterprise (see Table 1).

Table 1.
POLICY TRENDS SUPPORTING CLUSTERS AND REGIONAL INNOVATION SYSTEMS

Policy stream	Old approach	New approach
Regional policy	Redistribution from leading to lagging regions	Building competitive regions by bringing local actors and assets together
Science and technology policy	Financing of individual, single sector projects in basic research	Financing of collaborative research involving networks with industry and links with commercialisation
Higher education policy	Focus on teaching role of HEIs and basic research	Promoting closer links with industry and joint research; more specialisation among HEIs
Enterprise-related policies	Subsidies to firms; national champions	Supporting common needs of firm groups and technology absorption (especially SMEs); promoting FDI spillovers

Notes: HEI = higher education institution; FDI = foreign direct investment; SME = small and medium-sized enterprises.

Source: OECD (2007), *Competitive Regional Clusters: National Policy Approaches*, with modifications.

There is no co-ordinated regional development policy approach in Mexico; current efforts to improve regions focus on poverty or infrastructure rather than competitiveness. However, regional development policies support growth in all regions. In Mexico, 41% of GDP is concentrated in only 10% of its regions (11 OECD countries have at least 40% of GDP in the top 10% of regions). In addition, strong performance in one region can have positive spillover effects in a neighbouring region. The opposite is also true, as weak performance in one region can have negative effects on a neighbouring region. Regional development policies can also address equity and efficiency concerns, alleviating some of the disparities across Mexico.

Only a few enterprise-related policies (sectoral, small and medium-sized enterprises, FDI programmes) are developed jointly with states and take regional specificities into account. Most sectoral programmes are place-blind, even though in some cases a few states account for most of the national output in those sectors. National programmes that focus on cluster development and innovation in co-operation with states include Prosoft (software) and Prologyca (logistics clusters).

Policy measures should address the lack of a positive association between FDI, S&T and productivity that limit the positive spillovers of FDI. National FDI policy has so far not allowed for a harmonisation of FDI incentives and benefits at the state level, leading in some cases to a “race to the bottom”. There is a lack of co-ordination of federal and state-level policies to attract FDI, and there is little long-term strategy at both levels. There is also a lack of agreed statistics, which differ substantially between state and federal authorities.

Increasing the innovation-absorption capacity of micro-enterprises and SMEs is vital to improving productivity in Mexico. SME policy does include programmes that encourage collaboration and innovation explicitly. Prior OECD reports have noted some areas of progress in the SME Fund. Nevertheless, many challenges identified, including operational issues, have not yet been addressed, thus undermining efforts to support regional innovation systems. One of the positive results of the SME Fund strategy is the development of private intermediaries that can provide technical services to SMEs. Capacity-building and certification of intermediary organisations, in addition to vouchers, are strategies to ensure a higher quality of services to boost innovation in SMEs. Given the large size of the SME Fund, a greater amount could be set aside for monitoring and evaluation, where sub-national governments could play a key role, especially if some funds are decentralised.

S&T and innovation policy is increasingly recognising the importance of regional innovation systems; however there is a great need for capacity-building in Mexico. The OECD has previously identified the country’s high level of territorial concentration of innovation resources as a threat to Mexico’s national innovation system. Therefore, states must become more involved in supporting S&T and innovation, but they need greater capacity to do so. The overall national budget for science, technology and innovation

programmes is very small, and the regional allocation is a small, but increasing, share of that budget.

The National Science and Technology Council (CONACYT) uses the programme *Fondos Mixtos* (FOMIX) to promote scientific and technological development at the sub-national level. Several states already have an agreement with CONACYT regarding decentralisation of other innovation funds, and such lessons should be applied to FOMIX.

The FORDECYT (Institutional Fund for Regional Development through the Promotion of Science, Technology and Innovation) was created in 2009 to complement the FOMIX programme. The Fund has an innovative approach of targeting both geographic regions (neighbouring municipalities or states) and thematic regions (groups of municipalities or states that share a common problem). The instrument could serve to build flexible regional collaboration, address major socio-economic problems for Mexico more effectively and potentially increase the average size of financed projects, to reduce transactions costs and provide better incentives for project participants.

Higher education policy needs to engage with regional clusters. Institutions of higher education play a vital role in supporting regional clusters and innovation systems, but this “third mission” of regional engagement is under-developed in Mexico. While the Ministry of Education does not use policy to promote engagement, other federal actors, such as CONACYT and, to a lesser extent, the Ministry of Economy through the SME Fund, offer incentives. There are many examples in OECD countries of cluster-based approaches with a focus on universities, and other higher education policies, that Mexico could consider to increase regional engagement. ■

What should states do?

States need to adapt their approaches to competitiveness to a knowledge-based economy. Mexican states have made competitiveness a priority for state action, but they take a more ranking-based than holistic approach, with a focus on regulation and the general business environment. The approaches tend to focus on a state’s position relative to other Mexican states, but not relative to global competitiveness. One positive trend is the increasing involvement of civil society actors in developing these strategies through public-private councils or initiatives. There is an opportunity for the federal government to set an example for states by taking a more holistic approach to competitiveness.

States have to co-operate with each other on cluster policy and set realistic goals. Prioritisation is not necessarily consistent among different sets of actors, such as the economic development secretariat and the same state’s S&T council. In many OECD regions, what makes the difference is not one sector but the combination of different specialisations and technologies that create a region’s niche in the global context. Stronger links across states should be encouraged when a cluster footprint crosses state lines.

States should go beyond project-based approaches to supporting regional innovation systems and better integrate S&T policies with broader economic-

development goals. The concept of a regional innovation system is not yet integrated into most states' policies, and related studies are rare. Consistent with the tradition of different ministry or government-wide plans, the S&T plans tend to be more ideals or action items rather than strategies. The prominence and effectiveness of the S&T councils vary widely across states, and their effectiveness does not always relate to state's level of economic development.

Mexican states have created or supported different kinds of innovation-related programmes. At a minimum, states implement the national FOMIX programme for joint research projects. Different states have shown greater success in capturing other national scientific and industrial research funds, but this is not always related to a state's scientific or industrial capacity. State-initiated programmes may include exchange visits and scholarships, support for intellectual property registration, technology transfer and innovation network support, including the creation of new intermediaries, and even technology parks, the most prominent of which is the PIIT in Nuevo Leon, part of the City of Knowledge initiative. More measures are need at state level to engage HEIs and ensure a diversity of technology-transfer intermediaries. ■

What governance tools support these policy objectives?

All levels of government are responsible for regional competitiveness. Most Mexican states are now passively implementing national policy or simply replicating a trend across states, such as technology parks. Only a few states have exercised greater autonomy to be partners with the national government.

The fiscal centralisation, lack of state capacity, and tradition of following national policy cues help to explain why most states do not take an active role as independent regional innovation policy makers. Only some 3% of total tax revenue comes from sub-national sources, and state budgets are overwhelmingly made of transfers from the federal government, about three-fifths of which are earmarked. In addition, the overall level of government expenditure is low, preventing sufficient investment to sustain regional competitiveness.

A lack of continuity in governance is another barrier to long-term strategies in support of regional competitiveness. Re-election rules result in frequent turnover in political leadership and public servant staff. Changes in administration are marked by changes in policies, as well. Thus, private actors should be encouraged to help to develop and implement strategies for regional innovation to ensure that they are successful in the long term.

Cross-sectoral collaboration and "gatekeepers" are also needed for regional competitiveness. Models of gatekeepers in OECD countries include: dedicated ministries, national regional development agencies or inter-ministerial co-ordination bodies. There are at least seven ministries that have an impact on regional development in Mexico, and while there have been some attempts to develop a national gatekeeper, there is none in place with an over-arching regional development mission.

There are a number of interesting cross-sectoral initiatives at the state level to support regional competitiveness. These models include a gatekeeper within the governor's office or in the state's economic development ministry, in some cases involving private sector councils. These groups tend not to incorporate many science and technology-related actors at the state level. While most science and technology councils are not given prominence within the state, some have multiple ministries on the board or have sought to be placed outside of a particular ministry so as to play a greater cross-ministerial role.

Vertical co-ordination tools, including joint funding and "relational" contracts, help policies adapt to regional specificities. These contracts are agreements across levels of government to work together to achieve policy outcomes. Beyond co-financing, contracts are a commonly used tool in OECD countries for joint action across levels of government. However, when the funds are to be used to improve regional competitiveness by supporting clusters and regional innovation systems, it is not always clear what the best solutions are. This is why the concept of "relational" contracting, as opposed to "transactional" contracts, is more adapted to regional development.

OECD experience reveals that relational contracts help to build capacity and trust between national and sub-national levels. In Mexico, *convenios* serve as a contract between federal and state governments, but there are several characteristics that could be improved to match OECD good practices. Examples that could serve as models for Mexico include the *Contrats Plan État Région* in France, the *Accordi di Programme Quadro* in Italy, or the *convenios* in Spain. Monitoring and evaluation are not sufficiently developed in Mexico, but they are needed to improve policy and support these vertical co-ordination efforts for increased sub-national participation in national programme goals. ■

For further information

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For further reading

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