

ESPÍRITO SANTO'S INNOVATION AND ENTREPRENEURIAL ECOSYSTEM

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Espírito Santo is a Brazilian state located in the Southeast region and has an industrial economy with a strong vocation for international trade. The degree of integration of the economy of Espírito Santo to the global markets is higher than Brazil's economy average, and in 2018 the state's exports reached US\$ 8.8 billion, the 9th highest value among states or 4% of the country's total exports¹. In addition to its high integration with international trade, the state of Espírito Santo has stood out nationally in 2019 for its efficient management², which has allowed its planning for a long-term development cycle in line with global trends in sustainable technological innovation.

In its small territorial extension, being the fourth-smallest state in Brazil, Espírito Santo has extraordinary biodiversity that is still little known, but that has immense potential to generate unexploited value. In the land area of Espírito Santo there is the Atlantic Forest, a forest characterized by high biodiversity and endemism, meaning that many species are found nowhere else in the world. In the coast of the state, there are also beautiful beaches and dunes, coral reefs, and mangroves that have many biomes with species of whales and algae³. All of these need more research and knowledge and technological advances for value creation, new products, and businesses that are also concerned with preservation for future generations.

One of the significant challenges of economic development is to improve life quality in cities by applying new technologies that are sustainable and thus contribute to improving mobility, safety, health, water use, and so on. Espírito Santo has 4.02 million inhabitants who live mostly (43.5%) in its metropolitan region formed by Serra, Vila Velha, Cariacica, Guarapari, Fundão, and the capital Vitória. Compared to other Brazilian states, Espírito Santo has reached above-average scores in socio-economic aspects such as the HDI (0.740), which places in 7th position, and also in the average per capita income of households which ranks as the 11th. Besides that, the Gini coefficient of Espírito Santo (0.514) is lower than the Brazilian average (0.549). In education, Espírito Santo has outstanding results in the Programme for International Student Assessment (PISA) (2015) and also in the national Index of Development of Basic Education (IDEB) (2017), and is in 9th position in years of schooling of the population. Thus, depending on continuing with education policies and improving people's quality of life, the new development cycle will have a solid foundation for more sustainability and inclusion.

A more dynamic economy is one of the main objectives of this new cycle of industrial development in Espírito Santo, which is one of the most industrialized states in the country, an essential factor for job and income generation. The manufacturing, construction, and industrial utility sectors together generate 24.5% of the added value of Espírito Santo's economy. The state's industry's most prominent activities are the manufacture of base metals, paper and paper products, non-metallic mineral products, food products, and metal products. In particular, the extractive industry has significant participation in local value generation and had a very high growth cycle with the start of the exploration and production of oil off the pre-salt

basins from 2010 on. Between 2000 and 2016, the Oil and gas production in Espírito Santo grew 21.1% Mtoe per year. The new development cycle of Espírito Santo calls for these industries to advance on the adoption and development of technologies for reducing CO2 emissions, water reuse, waste recycling, and renewable energy to reduce environmental impacts.

Facts about the state of Espírito Santo

9th largest exporting state in Brazil	Only state to get grade "A" for fiscal health from Brazil National Treasury (STN)	0.74 (high) is the state score at the Human Development Index (HDI)
Highest score in the Basic Education Development Index (IDEB)	4th in the efficiency ranking of the states (REE-F) (Folha de São Paulo)	8th in the competitiveness ranking of states (Centro de Lideranças Públicas)
The state's capital, Vitória is the 2nd in Best Cities for Doing Business Ranking 2019	The state's capital, Vitória is the 8th Connected Smart Cities - Ranking 2019	-32% was the decrease in the homicide rate between 2011-2016

The maturation of Espírito Santo's innovation ecosystem is the key to a more dynamic and sustainable, innovative future. An innovation environment is composed of mechanisms that help in the generation, support, and development of enterprises. These include incubators, accelerators, open laboratories, coworking, living labs, among others. Specifically, incubators have the role of supporting and facilitating early-stage ventures. Therefore, they are important actors in the local innovation network. In 2019 Espírito Santo had eight mapped incubators, the 14th largest number among the Brazilian states.

The growing importance of technology-based services and the digital economy is a worldwide trend present in people's daily lives and inserted in the productive processes of industries. The digital services economy has the potential to become more significant in Espírito Santo, which already has startup initiatives in the domestic market, and through programs that apply digitalization to public services, increasing efficiency and improving the quality of life in the cities. Companies linked to innovation, research and development (R&D) and information and communication technologies (ICTs) generate innovative solutions, skilled jobs, increase business competitiveness, and spread new technologies in the market. In 2017 there were 1,651 companies linked to innovation activities in Espírito Santo, corresponding to 1.95% of all the state's firms, also the 10th largest participation in Brazil.

From 2019 on Espírito Santo's innovation ecosystem has the potential to benefit from new partnerships between private organizations, academic institutions, and government. The Capixaba Mobilization for Innovation (MCI) emerged from this joint action with an essential role of articulation between the actors in favor of a more competitive future through structural efforts and the creation of an innovation fund for project financing. The objective is to bring the productive sector closer to the scientific community, in the permanent search for new business and growth opportunities. A practical result of this partnership was the

announcement of an investment from the State Science and Technology Fund (Funcitec) to foster innovation incentive programs such as the Startup Acceleration Program (Seed / ES) and the ES Innovator Program. In this innovation ecosystem, Findeslab is the innovation hub of Espírito Santo's industry. It consolidates the Federation of Industries' of Espírito Santo (Findes) efforts to contribute to higher industrial competitiveness by functioning as a bridge between various local actors in a solution-driven organization. This innovation environment differs from the others by focusing on industrial entrepreneurship with substantial experience and expertise in technological development.

Considering the importance of the articulation between innovation and the territory, to preserve local specificities, it is worth explaining the current technological infrastructure of Espírito Santo. The state has a federal university, Ufes, with three campuses, Vitória, Alegre and São Mateus, and also 19 Federal Institutes in different municipalities. The eight incubators already have startup companies prominent in the national market. Such institutions are of paramount importance and provide crucial support to the early stages of a company's life cycle.

Concerning state research, many institutes support the sectors of activity in which Espírito Santo has national prominence. Of these, the Capixaba Institute for Research, Technical Assistance and Rural Extension (Incaper), the Coffee Technological Development Center (CETCAF), the Center for the Technological Development of Marble and Granite (Cetemag), the Center for the Development of Metal-Mechanical Sector (CDMEC), and the Technological Center of Clothing Industries (Cetecon). Regarding innovation financing instruments, it is worth mentioning that Espírito Santo companies can access existing lines at state-owned sources at the Espírito Santo Development Bank (BANDES), the Espírito Santo Research and Innovation Support Foundation (Fapes), the State Science and Technology Fund (Funcitec), and in the case of the municipality of Vitória, the Science and Technology (Facitec).

Espírito Santo aims to achieve high levels of competitiveness in a beneficial development cycle with inclusion and sustainability. To this end, it will be necessary to improve the articulation of its local competences to generate new innovative solutions. Its future potential lies in having substantial companies, organizations, and institutions that have strategic actions aimed at strengthening their innovation ecosystem.

¹ All data in the text and more information about the state of Espírito Santo can be found at the website: <http://www.portaldaindustria-es.com.br>. For a complete publication on Espírito Santo's economy access [Sectors Bringing Future Prospect to the State of Espírito Santo 2035](#).

² THE ECONOMIST, 2019. One Brazilian state stands out as a model of efficiency. Aug 8th 2019. <https://www.economist.com/the-americas/2019/08/08/one-brazilian-state-stands-out-as-a-model-of-efficiency>

³ ARLINDO VILLASCHI E EDNILSON SILVA FELIPE, 2015. Desenvolvimento regional e biodiversidade: reflexões sobre as possibilidades do estado do Espírito Santo. Um olhar territorial para o desenvolvimento: Sudeste. https://web.bndes.gov.br/bib/jspui/bitstream/1408/4761/1/Desenvolvimento%20regional%20e%20biodiversidade_14_P.pdf