

Government Management, Higher Education, Science, Innovation, and Local Development

Gestión de gobierno, educación superior, ciencia, innovación y
desarrollo local

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ABSTRACT

Aim: To explore two types of government actions in order to encourage science-government ties that include the important role of universities.

Methods: Research-action, supported by document review, surveys, interviews, expert opinion, and workshops. Based on international experience, two key factors that have affected decentralization and local development were identified. Accordingly, there is a need to stimulate the creation of local capacities.

Main results: The actions developed by higher education in the last decade, and the government visits to territories since 2018 were discussed.

Conclusions: The position achieved by higher education as a relevant actor in processes of production, diffusion, and use of knowledge demanded by local development is outstanding. Generally, higher education has become a key ally of governments in terms of strategic management of local development. Government visits are presented as promising actions that promote university ties with national and local actors, and foster innovating dynamics locally.

Key words: science; local development; higher education; government; innovation.

RESUMEN

Objetivo: Explorar dos acciones gubernamentales para fomentar el vínculo ciencia-gobierno, con la participación activa de las universidades.

Métodos: Investigación-acción, respaldada por análisis de documentos, encuestas, entrevistas, consulta a expertos y talleres de trabajo. A partir del análisis de la experiencia internacional se identificaron los factores clave que han afectado los procesos de descentralización y desarrollo territorial. De ellos se deriva la necesidad de fomentar la creación de capacidades a nivel local.

Principales resultados: Se discuten las acciones desarrolladas por la educación superior en la última década y las visitas gubernamentales a los territorios a partir del año 2018.

Conclusiones: Se destaca que, en efecto, la educación superior se ha venido posicionando como un actor relevante en los procesos de producción, difusión y uso de los conocimientos que el desarrollo local demanda. De manera generalizada la educación superior se ha convertido en aliado clave de los gobiernos en la conducción estratégica del desarrollo local. Las visitas gubernamentales se presentan como acciones promisorias que fomentan los vínculos de las universidades con actores nacionales y territoriales y promueven dinámicas innovativas a escala local.

Palabras clave: ciencia; desarrollo local; educación superior; gobierno.

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INTRODUCTION

At the time this paper is being redacted, Cuba is unquestionably succeeding in the fight against COVID-19. One of the keys to this triumph is the close and fruitful link between government management, the health care system, and the intelligent consecrated work of several scientists and other professionals with all the people. The fight against COVID-19, besides talent and consecration, has demanded novel organizing mechanisms (the innovation committee coordinated by MINSAP and BioCubaFarma representatives), coherent work systems, concerted actions,

systematic exchanges between the government and the scientific community, and others, which have been presided over by the president of the Republic. These actions have produced a social, scientific, political, and sanitary response capable of meeting the challenge posed by the pandemic (Díaz-Canel and Núñez, 2020).

The science-government link is in concert with the Cuban political tradition, particularly, it is disclosed, considering the particular ties established by Fidel Castro during the founding process of the new revolutionary national science, especially in the 60s and 70s, and when he took the first steps that guided Cuban biotechnology, a few years later, just two mention two examples. In 1991, he would say, "There can't be, I reiterate, socialism without science. The issues we have been addressing these days, and the tremendous effort made this year _in recent years, generally, but particularly this year_ are intended to find the solution to our problems in science and technology" (Castro, 1991).

The experience acquired in the fight against COVID-19 suggests that the bonds between science and government must become a guideline, a model based on the particularities of each case that will be used to deal with the most important tasks in relation to Cuban development. The articulation between government and science is the key to succeed in addressing another of the greatest challenges posed to the nation: boosting local development, as a multidimensional process, which according to the concept of sustainable development of the 2030 Agenda of the United Nations, includes the social, economic, and environmental variables working in interrelation, as well as the institutional variable (Economic Commission for Latin America and the Caribbean [CEPAL], 2017) .

In the last decade, two important tendencies associated to this topic were observed. On one hand, local development gained relevance as a part of the model of economic and social development in Cuba. On the other, the Ministry of Higher Education (MES) inserted local development as a key goal of strategic planning for the 2012-2020 period, and is working along with other actors, programs, and projects to achieve that goal, namely the Articulated Platform for Integrated Territorial Development, led by the Ministry of Economy and Planning (2020), and other bodies of the central administration of the State, which is being implemented in 10 provinces under the leadership of their local governments. It has 13 national advising institutions, among them the Network of University Knowledge and Innovation

Management for Local Development (GUCID), which belongs to the Ministry of Higher Education.

The aim of this paper is to explore two government actions to foster the ties between government and science with university engagement. The Ministry of Higher Education, and the other from the Presidency of the Republic of Cuba, both focused on the needs of development using science and innovation, will conduct one of them. First, the international experience was reviewed, and two key factors affecting decentralization and local development processes were identified, which allowed researchers to highlight the determining role of local capacity creation in the success of these policies. The centrality of public policy directed to local development will be immediately channeled into the current Cuban social and economic model. Then the two government initiatives in favor of local development will be presented, with special emphasis on the creation of knowledge, science, technology, and innovation capacities. Each will identify the numerous issued to be addressed.

DEVELOPMENT

International experience: the keys of some failures

In Latin America, various efforts have been made to boost decentralization and local development policies. Many of them have been unsuccessful. In the search for an answer to this situation, several factors that produced the adverse outcome have been identified. Some of the most significant are processes of transferring decisions, resources, and competences from central levels to territories, which usually exclude transference process of knowledge, and the creation of capacities that permit effective practice of attributed authority; a true multilevel interaction is not promoted, in which the central level and the territories, both with the capacity to exercise their functions, can create the best policies through interaction. The conclusion is that multilevel decentralization and governance demand better distribution of knowledge, and the multiplication of learning spaces at all levels. The asymmetry observed in knowledge is in part the responsibility of the survival of verticalism and centralization (Canto, Costamagna, Eizaguirre, and Larrea, 2018; Costamagna and Larrea, 2017; Costamagna and Núñez, 2020; Girardo, Martínez, Salgado, and Costamagna, 2016; Rébola, 2020).

In Latin America and the Caribbean, universities are the main actors of science, technology, and innovation systems, including the formation of human talent (Castro and Sutz, 2010). However, universities are almost always located in the major cities, and the connection to local needs and knowledge is limited. Consequently, to contribute to local development, universities should change their traditional ways of interacting with the context, and advance toward better dialog with partners and local needs, substituting the classic model of knowledge offered by processes of collective construction of knowledge. It may look simple, but it calls for changes of traditional scientific and technological practices, which have been rooted in academic communities. New visions are necessary to boost practical transformation locally. Clark (2011) referred to the need of an epistemological movement that permits legitimation of new knowledge definitions, novel scientific and technological practices, new criteria of relevance, and alternative manners to validate the work of universities in this direction.

Local development as a key element in the adjustment of the economic and social development model. Diagnostics and proposals.

Local development occupies a relevant place in the adjustment of the Cuban economic and social development model. Guideline No. 17 of the Economic and Social Policy of the Party and the Revolution for the 2016-2021 period (Communist Party of Cuba [PCC], 2017) states that:

To promote the development of territories based on the strategy of the country, so municipalities are empowered as the main instance, with the necessary autonomy, sustainability, and a solid economic and productive base, thus reducing disproportions among them, making proper use of their potentials. To lay down the corresponding legal frame. (p. 6)

Article 168 of the constitution of the Republic of Cuba (National Assembly of the People's Power, 2019) defines that:

The municipality is the local society, organized by law, which is the primary and fundamental political-administrative unit of the national organization; it has

autonomy and full legal authority, with a territorial extension determined by necessary relations of vicinity, economy, and society of the population, and interests of the nation, with the purpose of satisfying local needs. (p. 12)

Local development has also been included in the National Plan of Economic and Social Development to 2030 (PCC, 2017).

Accordingly, it can be stated that local development is a strategically important public policy that occupies a central position in the agendas of governments in the municipalities and provinces, which also calls for the role of bodies of the central administration of the State, the Council of Ministers, and the Presidency of the Republic.

The policy to boost local development, approved in July 2020 _whose design included the participation of the academic sector_ took into account the diagnostic performed, which, among other aspects, concluded that there is no integrated and commonly accepted conception at the institutional level, in terms of local development and its mechanisms and managing tools, including local development projects.

These and other reasons helped identify the need to approve a policy to institutionalize local development as a legal and prioritized process within the Cuban economic and social development model. This policy should promote a more concerted work between territorial interests and national and sectoral programs.

The diagnostic also identified the need to strengthen local capacities. Among them are strengthening and managing municipal development strategies to ensure strategic management of local development by improving project management, using several funding sources and mechanisms efficiently, and others.

Likewise, it stresses on the absence of systemic innovation policies locally, and the need to prioritize skilled labor creation in the territories, in close relation with municipal development strategies.

Accordingly, necessary actions should be taken to promote local development. Some of them are,

1. To advance in the creation of capacities that permit strategic management of local development processes, particularly, project management, which can strengthen the productive base in the municipalities, and can generate welfare.

2. To promote systematic innovation policies locally, and prioritize the creation of skilled labor in the territories, associated to municipal development strategies.
3. To train public servants, and provide them with the necessary knowledge and tools.
4. To foster multilevel dialog in favor of concerted actions involving the national, provincial, and municipal levels, to strengthen their unity, and put away excessive sectoral, vertical, and centralizing tendencies. Moreover, this dialog demands proper legal and standard bases, and strengthened cognitive, scientific, and technological capacities locally.

Higher education and local development

The Cuban government has declared the three pillars of management: science, innovation, information technologies, and social communication. The three together were clearly expressed in the fight against the novel coronavirus.

A notable contribution to innovation processes is expected from universities, both strictly technological, as well as social, organizational, etc. Accordingly, the concept of innovation used in this paper demands reference; it must be explained in order to orient government policy better. Some key elements are (Núñez and Fernández, 2016):

1. Innovation must be understood as a social process which is developed from interactions (key term) among diverse actors; it includes universities, governments, and the productive sector within a regulatory context (highly important) that facilitates the process.
2. The policy of the government and the role of diverse actors should be oriented to strengthening the systemic nature of this social process of innovation. Innovation systems not only have a national projection, but also are sectoral and local. In relation to this study, it is important to stress on the need to make local systems of innovation (Pessoa, Borin, and Cassiolato, 2015).
3. The importance of innovation can be observed in all the areas of sustainable development: economic, social, environmental, and institutional. In a development model like the Cuban, systems should be oriented mainly to meeting productive and social needs that contribute to human welfare, with particular attention to social inclusion processes (Arocena and Sutz, 2014, 2015; Dutrénit & Sutz, 2014).

4. This approach, which is based on innovation systems, acknowledges the role of the government and public policies, without neglecting market elements. It has been assumed that government and State cadres must be prepared to act as conscious promoters of the connection between science, technology, and innovation (STI), and the problems of development that should be dealt with by every sector and territory.

5. In terms of innovation and university contribution to innovation, the so called broad approach is put into practice (Lundvall, Joseph, Chaminade & Vang, 2009), which, apart from research+development (R+D) activities, pays special attention to learning processes linked to work performance, interactivity, networking, and the association between producers and knowledge users.

The value of innovation systems to conduct public STI policies has been widely acknowledged (Dutrénit and Núñez, 2017). In Cuba, particularly in relation to local development, several singularities can be observed. For instance, the importance of companies is acknowledged, though a significant role is given to governments and public policies. In addition to it, the role of social pertinence, as a relevant value of the Cuban university model, implies that the university-society association inside innovation systems has certain particularities (Núñez, Montalvo, Pérez, Fernández, and García, 2011).

This perspective, which is the most important expression of the association between higher education and governments to boost local development is the one constructed as part of innovation systems in provinces, municipalities, and communities nationwide.

This local effort, however, benefits from several supporting national government actions. Development demands multilevel articulations. The contribution made by several initiatives of the Ministry of Higher Education to this effort can be immediately explained.

The ministry of higher Education pioneered, together with the bodies of the central administration of the State, the inclusion of a goal to encourage local development as a specific area of performance, as part of its strategic planning.¹ This possibility was fostered in 2009 and 2011, and was officially included in an official document of the Ministry by 2012 (Ministry of Higher Education [MES], 2012). So far, this goal has been confirmed and growingly backed, with a 2030 vision, which means that MES has encouraged a public policy in favor of local development in a stable and

persevering manner, to respond to the problems and needs to create human, scientific, technological, and innovative capacities in the territories.

Higher education is present in all provinces and municipalities of the country. One of the most relevant institutional innovations introduced by Cuba in this area is the creation of Municipal University Centers (CUM), frequently very active in the process of knowledge transference, with visible impacts. Another is the incorporation of local development as part of strategic planning and the working system of all the universities. More importantly, the construction of effective ties between higher education and governments, and other local actors, based on new conceptions, methodologies, tools, and working systems.

All this produces advances on the way to generate changes in the paradigms of production, diffusion, and knowledge use. Government management should contribute to it.

In many municipalities, local university centers gather an important share of the human capital available, working closely with governments and other actors; they guide education and training processes, and in concert with universities, networks, science, technology, and innovation entities, they lead knowledge management and innovation processes associated to the needs and demands of local development.

In order to achieve that end, MES uses the previously mentioned GUCID national network, created in 2006 (Núñez, Alcázar, and Díaz, 2017)²

This policy from the ministry was even maintained when the very existence of municipal structures of higher education was being discussed, and the idea of the importance of local development was not as accepted as today.

In a context of relative uncertainty, a GUCID workshop in October 2010 discussed two ideas-strengths (Díaz-Canel, 2010), which backed the projection of higher education into local development, still valid today. They are:

1. The projection into local development permits strengthening higher education, and its capacity to meet the needs and demands of the country. Díaz-Canel (2010) noted that in the history of Cuban higher education there would be no pertinence without local development. The same author added that "...the concrete results of local development implementation will be among the greatest contributions of higher education to the development of the country."

2. The task of higher education is not to lead local development, but to support it vigorously. In that sense, Díaz-Canel (2010) stated that the local Party leadership and governments should be the driving forces of this process, whereas higher education specialists (knowledge management) must become active participants. The author added that acknowledgment, authority, and respect will be earned through efficient management.

An important GUCID workshop held in May 2011, in the municipality of Yaguajay, which pioneered this approach, became a proper scenario to continue to encourage the role of higher education in favor local development.

Then it was an idea (Díaz-Canel, 2011) that later became an important government policy: to promote the link between universities and the local governments. In that sense, the author referred to the need to encourage a way of thinking in universities that helps detect problems in the country and territories, and immediately think of solutions using the scientific-technical, and pedagogical potential based on the existing culture at universities. He also stated that in face of new problems identified, the managing instances should think about universities as the way to address these problems, due to the contributions of this kind of education. These ideas became more systematized after the publication of a paper then (Díaz-Canel, 2012).

Based on these conceptions, in 2012, it was agreed that MES strategic planning and working system would include a goal directed to ensuring the impact of higher education on local social and economic development in the municipalities, starting in the 2013-2016 period. It was acknowledged within an area of key results, on “social and economic development”, and a master strategy known as “Innovating and Integrated University” (MES, 2012, 2017; García *et. al*, 2020). This was a brief formula, but it would pave the way to a pioneering public policy, and true institutional innovation that would be kept in subsequent years.

For instance, in a planning exercise of MES, in January 2020, local development was included as one of its eight priorities with a strategic goal that involves all university processes, based on concrete indicators and targets: to impact on local development through knowledge, strategies, technologies, and innovation processes that contribute to the identification of potentials to export, substitute imports, create production chains, and improve the quality of services (MES, 2019).

This goal has been projected to 2030 in the Program of Higher Education that tackles Post-Covid-19 recovery, as one of the three programs directly contributing to strengthening the economy in face of a prolonged scenario of crisis. In it, municipal university institutions play a significant role. CUMs are important, among other reasons, because they are carriers of what is known as situated knowledge (Fernández and Núñez, 2020). In face of the traditional understanding of science _whose characterized by universal dimension of knowing_ social studies of science and technology (González, López, and Luján, 1996) have defended the idea that the science that recognizes the importance of contexts _including the network of actors that constitute it_ in the processes of production, diffusion, validity, and utilization of knowledge (Bijker, Hughes, & Pinch, 1989; Latour, 1992; Latour, and Woolgar, 1995).

Situated knowledge means that every context, depending on their environmental, social and cultural particularities, the level of development, people's expectations, and opportunities, different types of knowledge, and interrelations will be required. Knowledge assumed as valuable for a particular context may not be that valuable in a different context. A technology that works well in a location may prove faulty in another. Local traditions, productive vocations, types of soil, occurrence of precipitation, accumulated tacit knowledge, the specific influence of public and private ownership on the means of production, and more, can vary from one territory to another, and it is relevant to manage human potential, choose technological options, and build research agendas.

One of the important tasks in which higher education, particularly CUMs, play a major role in the creation of local development capacities, is cadre training, and professionalization of local development management.

Following a visit of the Council of Ministers to the province of Pinar del Rio, on June 27-28, 2019 _where local development advances were observed in the territory_ the Minister of Higher Education was instructed to lay down a training program in collaboration with the University of Pinar del Rio, to provide training to local government, and state and private company actors, based on the experience of the province.

Consequently, MES, through GUCID, and the engagement of the Center for Management Studies, Local Development, Tourism, and Cooperativism at the

University of Pinar del Rio, designed a training program along with the Ministry of Economy and Planning, the National Institute of Economic Research, and other institutions. It covers basic courses on sustainable local development, local development project management, and specialized training actions in different strategic areas. The program is attached to the Policy endorsed to encourage territorial development.

The main contents of the program can be included in the system of cadre education and training, and a variety of postgraduate offers currently taking place. For instance, diploma courses in public administration and business management at the Higher State and Government Cadre School, which are implemented in all provinces, though the program contents are not always addressed in the ways demanded today. Master's courses in management are widespread in the country, along with doctorate programs in economic sciences, among others. Conveniently, these contents should be transversalized gradually in undergraduate education, particularly those in which graduates will address development.

Likewise, progress is observed in the use of opportunities offered by the new type of short higher education programs known as Higher University Technicians (TSU in Spanish) that can be designed with a local development profile. TSU has started with the Sustainable Local Development Manager (GDLS in Spanish) in the University of Pinar del Rio, and has spread to other provinces. In that sense, local capacities will be developed to manage several different issues to be addressed through local development. Based on this experience, the higher technician in GDLS must receive education through regular and meeting courses, with the highest possible attendance in CUMs.

In general terms, educational and training agendas in the municipalities will have to be stronger in major interest topics at that scale of development, whose particularities demand customized educational processes. Naturally, it will include improvements in other university studies, master's courses, and doctorate courses, that form capacities for local development.

In short, after more than a decade, the government policy aimed to create higher education-local development ties has advanced in the consolidation of such ties in most territories. Particularly, CUMs play relevant roles in terms of knowledge and

innovation management in several municipalities. These advances rely on new conceptions, methodologies, tools, working systems, and active engagement in all networks, programs, and work groups engaged in boosting local development (Fernández and Núñez, 2020).

However, there are still quite a few issues to be addressed. For instance, education of human potential, and knowledge and innovation management are not always placed properly within the municipal and provincial development strategies. Systemic innovation processes are not widespread; meanwhile, there are already excellent examples of government-higher education alliances in numerous municipalities, whereas others are lagging behind. The path is long and complicated, but the government-science alliance seems to be another promising model.

Government visits to territories

This is a novel initiative³ whose favorable results are becoming visible in the two planes mentioned above: they foster multilevel dialog and strengthen the ties between knowledge sector, especially universities and central administration bodies of the state (OACE in Spanish), and companies, two key entities for local development.

Government visits to the territories reveal how important they are for government management. These visits began on May 16, 2018, in the province of Havana, less than a month from the election of the president of the Councils of State and Ministers, on April 19, 2018. The first round of visits included all the provinces, and ended in February 2019. By March 2019, a second round was started, which ended in February 2020, for a total of 30 government visits.

During the visit to Granma province, the president of the nation said that the progress of the country is decided in the territories. He added that the policy of the nation, cemented on ruling documents such as the Constitution of the Republic, advocates for municipal development and strengthening. He indicated that reinforced companies and production facilities that meet the most pressing needs, and the production poles that take the best from the land, are joining efforts to strengthen the country in every territory, regardless of their size (Díaz-Canel, 2019).

The first vice-president of the Council of State and Minister (currently the first minister), other vice-presidents (now vice-first ministers), and most ministers, and

Party and government authorities of the corresponding provinces, have accompanied the president.

The general objectives of government visits are 1) to ensure the current and prospect state of the main development programs of the province⁴, and 2) hold discussions with cadres, workers, and the people.

Critical aspects for local development have been discussed, such as, food production, home construction, transportation, implementation of information technologies, situation of the economy, productive chains, investment, and other major programs. Other areas included the fight against corruption, illegal actions, and illegal social behavior; reinforcement of managing structures and boards, and economic management; strengthening of state companies and their link with foreign investment, exporting, and closing export cycles, by collecting the income produced; attention has also been paid to local development projects.

Particular emphasis has been placed on the importance of relying on scientific research, science, and innovation, use of information technologies, and communication, which are pillars of the government policy, to find solutions to the most varied problems. The morale and performance of cadres should be backed by knowledge, science, and technology.

Especial attention has been given to the need to change working systems and managing styles so problems can be addressed more speedily, and people's problems are given more attention. The importance of municipalities as places where results are materialized, has been emphasized.

In the logic of mobilizing knowledge in universities to boost local, sectoral, and national development, during visit No. 12 to the province of Sancti Spiritus, in January 2019, the president of the Republic included a meeting with universities in his agenda.

In these visits, several vice-presidents (vice-first ministers) and most ministers, have participated. The main purpose of these exchanges is to have the central state bodies establish closer ties with universities, and to enrich the mutual knowledge exchange that benefits the development of territories and sectors. Ministerial representatives have addressed university faculties and students to explain their work projections, and integrate them to their plans.

The role of science and innovation, particularly, the contribution of universities, has been highlighted, in order to produce direct economic and social impacts on local development.

Basically, all universities established agreements and identified promising alliances. A first-level agreement of supply and demand of knowledge and innovation was achieved, which is materialized in terms of R+D projects, innovation and education of the human potential.

The exchanges with universities evidenced student engagement and drive, with an innovating vision, and a sense of commitment to the development of the country and its territories.

The government visits to universities resulted in 101 indications to develop STI actions, training, and collaboration for the territory or national bodies in several tasks.

The most commonly accepted were in relation to information technology implementation, training in several topics, construction materials, housing and investment; automation, and robotics; local development, various topics related to industrial development; food production and sugar industry; energy; opening of new degrees and short-cycle programs requested by bodies or territories.

Still pending is an in-depth evaluation on the impacts of these visits. For now, a preliminary analysis of this topic, based on surveys to the presidents of the 15 universities, indicates that the visits have been broadly accepted, and have contributed to have a better vision of the potential contributions of universities, and the promotion of ties with companies, ministries, and other actors, with the perspective of permanent and effective university engagement in the solution of problems. They have received higher knowledge by OACE, in relation to the conditions in which professionals are trained after graduating, among other aspects. The direct dialog with students and professors with the leaders of the country was highly remarked.

The survey conducted also suggests the importance of improving particular aspects like previous organization, the amount of matters addressed, formulation and systematic follow up of agreements, effective incorporation of such agreements to the working systems of provincial and municipal governments, and by the

universities, among others. It is a relatively new government initiative, and it will need optimization.

CONCLUSIONS

Government management in Cuba has the purpose of turning science-government ties into a key element of the development strategy.

Two government actions focusing on the promotion of science-government ties were explored with the active participation of universities: the actions conducted by higher education in the last decade, and the government visits to territories that began in 2018.

The international experience indicates that the creation of capacities, particularly the formation of human talent, is a key element to encourage local development. In that sense, the fact that MES pioneered, among the central state administration bodies, in embracing the goal of boosting local development implementation in their strategic planning, which has been confirmed, and increasingly sustained through the last decade. It has encouraged a public policy in favor of local development with stability and perseverance.

Higher education has become a relevant actor in the processes of production, diffusion, and use of knowledge demanded by local development, it is increasingly becoming a key ally of governments in the strategic leading force of local development. The creation of municipal spaces of higher education, in the form of Municipal University Centers, offers great opportunities in this respect.

Government visits to territories are presented as promising actions that allow for multilevel dialog (national, provincial, and municipal). Particularly, they have enabled the promotion of ties between universities and national and territorial actors, and promote innovative dynamics with an impact on local development.

The results presented in this paper contribute to the purpose of exploring several ways through which science-government ties can be consolidated, in order to find more effective and innovating solutions to development problems in the country.

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Conflicts of interest and conflict of ethics statement

The authors declare that this manuscript is original, and it has not been submitted to another journal. The authors are responsible for the contents of this article, adding that it contains no plagiarism, conflicts of interest or conflicts of ethics.

Author contribution

Miguel Díaz-Canel Bermúdez. Principal managing actor of public policy actions presented in this paper. Conceptualization (leader). Redaction-original draft (equal participation).

Aurora Fernández González. Conceptualization (support). Data processing. Redaction-original draft (equal participation).

NOTES

¹Even before that date, several universities were involved in programs oriented to local development; for instance, in the Program of Local Human Development sponsored by UNDP. Since 2009, the University of Camagüey has a doctoral program in Local Development Management, which has widely extended to the eastern provinces. A number of 19 PhD theses have been discussed. Six from Granma, three from Holguin, and two from Camagüey, Ciego de Avila, Las Tunas, Santiago de Cuba, and Guantanamo. Two of them were nationally awarded by the Academy of Sciences of Cuba.

²Two awards granted by the Academy of Sciences of Cuba (2016 and 2019), corroborate the academic and practical advances of GUCID. The first was received in 2016: "Knowledge management and innovation for local development: the role of universities", with the participation of the authors of this contribution.

³The information collected in this part of the article originated from the review and analysis of the contents compiled after government visits, at the site of the Presidency of the Republic https://www.presidencia.gob.cu/es/noticias_, in which more detailed information is published.

⁴The first author of this paper has been able to gather plenty of personal evidence during these visits. An average of 10 entities from different sectors were visited in each province: agroindustry, housing, industrial production, health care, universities, and so on.