

Chapter 2. Production development policies in Colombia: Tapping the potential of all regions

To achieve prosperity Colombia needs to transform its economy and create opportunities for all. This entails a renewed policy approach that prioritises enlarging the knowledge base and increasing the benefits from trade and investment with a view to unlock the potential of all regions in the country. This chapter reviews the policy approach towards industrial development and economic diversification in Colombia, in comparison with other countries, and it identifies the key policy reforms needed to speed up economic transformation in the country.

Introduction

Colombia is a growing, relatively stable economy, but it needs to diversify, increase productivity and benefit more from trade and investment. The first chapter has highlighted this. The changes in the global landscape and the new aspirations of its society are opening up unprecedented opportunities to advance on a reform agenda that aims to achieve shared prosperity.

Colombia needs to tackle the issue of competitiveness. This means modernising its infrastructure and updating its regulatory framework to foster business development. The country also needs to mobilise more public and private investments and partnerships to modernise its production structure, and enlarge the domestic knowledge base, fostering competitiveness in new areas and in all regions of the country. To do so, Colombia can count on public and private institutions, which share a tradition of debating and sharing ideas. It also has a track record of policies for production development. Not all have been fully successful but they provide a base to build on.

This chapter reviews the planning process in Colombia. It analyses how Colombia compares to other countries in its approach towards industrial development and economic diversification, and it identifies the key policy reforms to forge ahead. The Production Transformation Policy Review (PTPR) looks at these reforms, including how to facilitate co-ordination with the digitalisation agenda and create mechanisms to allow the local production and innovation system to benefit from Industry 4.0. This topic is discussed in Chapter 3 of this report.

Colombia counts on an established planning process

Colombia has an institution in charge of long-term planning, the National Planning Department (DNP). The DNP is *primus inter pares* among national ministries. It formulates the National Development Plan, draws up the budget in co-operation with the Ministry of Finance and Public Credit, and defines national policies that require inter-ministerial co-ordination. These are then formalised in documents for the National Council for Social and Economic Policy (CONPES). Since its creation in 1958, the role of the DNP has evolved, as line ministries have strengthened. The DNP is perceived to be an eminent public institution, attracts top civil servants and plays a major role in co-ordinating public policies.

In the area of production development and innovation the DNP facilitates co-ordination among different agencies, including the Ministry of Trade, Industry and Tourism (MINCIT), the Ministry of Agriculture and Rural Development (MADR) and the Administrative Department for Science, Technology and Innovation (Colciencias). In 1991, Colombia set up an industrial development bank that operates as a second-tier bank (Bancoldex). It also has two development banks specialised in agro and rural development (Finagro) and infrastructure (FDN), and FINDETER that operates as second-tier bank at the regional level. To implement policies, Colombia has different specialised agencies. Pro-Colombia, created in 1992, fosters export promotion and investment attraction. The Productive Transformation Program (PTP), launched in 2008 and reformed in 2011 to strengthen its operational capacities, provides financing and services to foster competitiveness in specific industrial areas, including agro-food, tourism and pharmaceuticals. In addition, iNNpulsa, created in 2012, fosters entrepreneurship and start-up development. These three agencies now answer to the Ministry of Trade, Industry and Tourism. Colombia set up a National Training Service

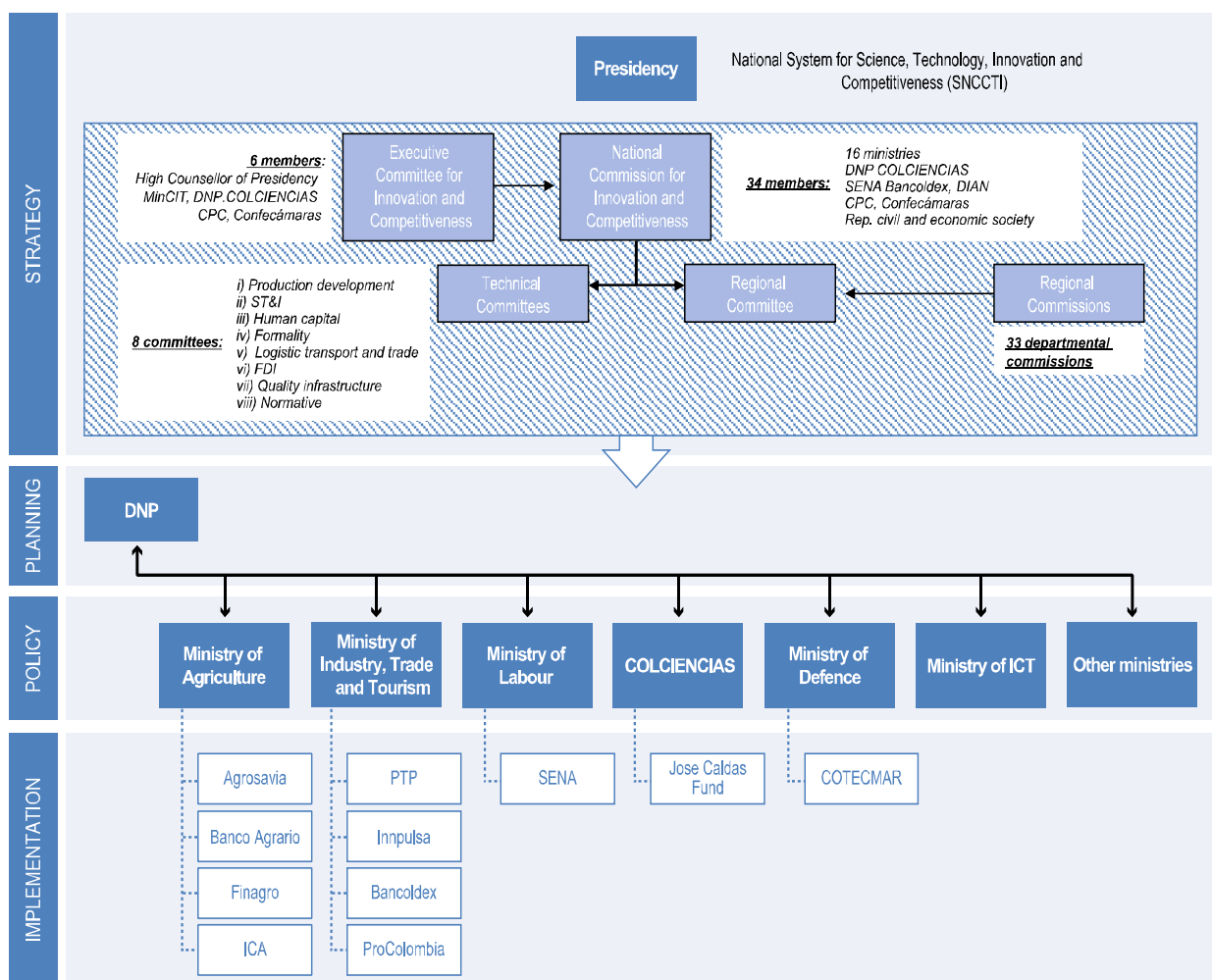
(SENA) in 1957, and it provides technical training in the country and answers to the Ministry of Labour (Figure 2.1).

Colombia has multiple spaces for co-ordination both within government and between government and the private sector and there is discussion and follow-up on policy implementation. However, the enforcement capacity of these spaces to mobilise joint actions is limited. The DNP facilitates co-ordination in areas such as production development and innovation, which are cross-ministerial and cross-agency, but co-ordination is limited to public-private committees which discuss and support the elaboration of policy documents, and does not always include mechanisms to generate shared financing lines or concrete joint projects.

A relevant high-level co-ordination space is provided nowadays by the National System for Science, Technology, Innovation and Competitiveness (SNCCTI). This system is led by the President and it is co-ordinated by the High Advisory Body for Private Sector and Competitiveness (*Alta Consejería para el Sector Privado y la Competitividad*). The SNCCTI is in charge of co-ordinating, proposing, synthesizing and guiding the discussion on production transformation policies that will eventually be translated into policy actions. The system counts with a National Commission for Innovation and Competitiveness, where high-level private and public stakeholders meet to identify shared priorities and it includes specific spaces for co-ordination with regional actors. The current system was actually first created in 2012 with a focus on competitiveness, and in 2015 its mandate has been enlarged to enable co-ordination in competitiveness, science, technology and innovation.

Colombia has a well-established culture of private sector institutions which play an important role in shaping public policies. The National Confederation of Chambers of Commerce (Confecámaras), founded in 1969, groups the 57 local chambers in the country. The Chambers of commerce in Colombia have played an important role in private sector development in the country, especially in poorer, remote regions where government capabilities were weaker. The National Industrial Association (ANDI) was set up in 1944 as a voice for the industrial sector in the country. Since 2006, Colombia also has a Private Council for Competitiveness (CPC) composed of the main domestic and foreign large firms in the country. As of 2018, its members include more than 30 large firms from different industries, such as energy, transport and food manufacturing. The Council is particularly active in shaping the national policy debate.

Figure 2.1. Institutional governance for production development and innovation, Colombia, 2018



Note: This figure does not include all institutions in Colombia; it only includes the principal ones linked to policies for production development and innovation.

Source: Authors' elaboration based on DNP official information, 2018.

The country has a vision for transforming the economy

Since the mid-1990s Colombia has experimented with different approaches to foster production development

In Colombia, policies for economic transformation, i.e. policies to foster industrialisation, upgrading and to reduce dependency on natural resources, have followed a similar path to other Latin American countries (UNIDO, 2013^[1]). Such approaches are present in the national debate, but fail to achieve an effective alignment between aspirations, plans and actual achievements (Peres and Primi, 2009^[2]; Peres and Primi, 2019^[3]). Production development policies in Colombia have been dispersed across several relevant, but small initiatives. There has been no major co-ordinated effort towards economic transformation. Some notable exceptions have been registered in policies for competitiveness and SMEs development and in the agro-food industry (Dini and Stumpo, 2011^[4]). Here Colombia

relies on private and public laboratories for applied research and technology transfer, as in the case of sugarcane and palm production, and specific forms of organisation for small producers. One example is the coffee cooperatives, notably the Coffee Producers Federation of Colombia (*Federación de Cafeteros*) (Kotler and Gertner, 2002^[5]; Doner and Schneider, 2000^[6]). They are effective intermediary institutions capable of thinking long-term and fostering innovation,

The story of production development policies in Colombia resembles that in other countries in Latin America. There was an initial period where foundations were laid for domestic industrialisation. This stretched from the aftermath of World War II until the mid-1970s. Since then, the country has witnessed a halt in targeted policies for building capabilities in domestic industries. From the mid-1970s until the 1990s, Colombia adopted a liberalisation and structural reforms agenda. This corrected certain imbalances and inefficiencies in the early import substitution efforts, but also hampered some industrialisation processes and reinforced the country's specialisation in natural resources (Peres and Primi, 2019^[3]; Cimoli et al., 2005^[7]; Ocampo, 2017^[8]).

The mid-1990s saw a return of industrial development policies, under the umbrella of “competitiveness” (Porter, 1990^[9]; Ocampo, 2017^[8]; Meléndez and Perry, 2010^[10]). The interest in fostering technological development, innovation and competitiveness coincided with the negotiation of the Free Trade Agreement (FTA) with the United States (which was signed in 2006, and entered into force in 2012). At that time, business associations and entrepreneurs highlighted the need to strengthen the domestic economy to increase the benefits of trade and to effectively compete in global markets (ANDI, 2017^[11]; CONPES 3866, 2016^[12]; CPC, 2017^[13]; Cimoli et al., 2017^[14]). Responding to this, different governments since the mid-1990s have tried to define and implement new approaches to foster competitiveness and innovation in the economy. This has resulted in no fewer than 11 programme documents in the period 1994-2018, but little continuity and implementation (Table 2.1).

Table 2.1. Policy documents on competitiveness and production development, Colombia, 1994-2018

Document/law	Year	Title	Objective	Policy areas	Main outcomes
CONPES 2724	1994	For a competitive Colombia	Promoting competitiveness of specific value chains	Competitiveness	Not approved
CONPES 2739	1994	Strategic export plan	Strengthening Colombian exports in the long term based on competitive advantages	Export promotion	Trade facilitation reforms
CONPES 2748	1994	National Policy for Science and Innovation	Definition of guidelines and strategy to foster innovation	Science and innovation	Introduction of policy evaluation mechanisms
CONPES 3297	1998	A methodology for an Internal agenda for productivity and competitiveness	Improving institutionalities for production development and export promotion	Competitiveness & export promotion	Not available
CONPES 3439	2006	Institutionality and principles for competitiveness and productivity policy	Modernisation of governance	Competitiveness & productivity	Creation of the National System for Competitiveness (SNC) and the National Commission for Competitiveness (CNC)
CONPES 3527	2008	National policy for competitiveness and productivity	Fostering upgrading and exports of priority sectors	Competitiveness & export promotion	Creation and implementation of the Productive Development Programs (PTP),

				& Regional development	Creation of the Regional Commission of Competitiveness (CRC)
CONPES 3582 and Law 1286	2009	National policy for science, innovation and technologies	Improve the capacity to generate and use scientific and technological knowledge in the country	Science, technology and Innovation	A reformed Colciencias becomes an Administrative Department at ministerial level.
Legislative decree 1500	2012	Definition of organisation, articulation and operation of the National Administrative System of Competitiveness and Innovation	Institutional reforms	Competitiveness & trade & Start-ups	Creation of the National System of Competitiveness and Innovation (SNCI); CRCs embedded in the SNCI; Expansion of PTP programmes and; Creation of iNNpulsa
CONPES 3834	2015	Fiscal incentives for R&D and innovation	Fostering private investment in science, technology and innovation	Science, technology and Innovation	Introduction of fiscal incentives for R&D and innovation
National law 1753	2015	National Development Plan PND 2014 –2018: Todos por un nuevo país	Institutional reforms	Competitiveness & Science, technology and innovation	Reform of the SNCI into National System for Science Technology, Innovation and Competitiveness (SNCCTI)
CONPES (draft)	2015	National Policy for Science, Technology and Innovation 2015-2025	Fostering STI activities in the country	Not approved	Not approved
CONPES 3866	2016	Production Development Policy (PDP) 2016-2025	Fostering production development and increasing productivity in existing firms in all regions	Productivity & export promotion & Start-ups & Regional Development	Ongoing
CONPES 3956	2019	Business Formalisation Policy	Improve the information about an enterprise's dynamics and its formalisation level and improve benefit-cost relation to be formal.	Formalisation & Enterprise development	Ongoing
CONPES 3957	2019	National Laboratory Policy	Fostering international trade and STI activities	Productivity & Science, technology and innovation	Improve the technical capabilities of laboratories

Note: The table only includes main policy documents.

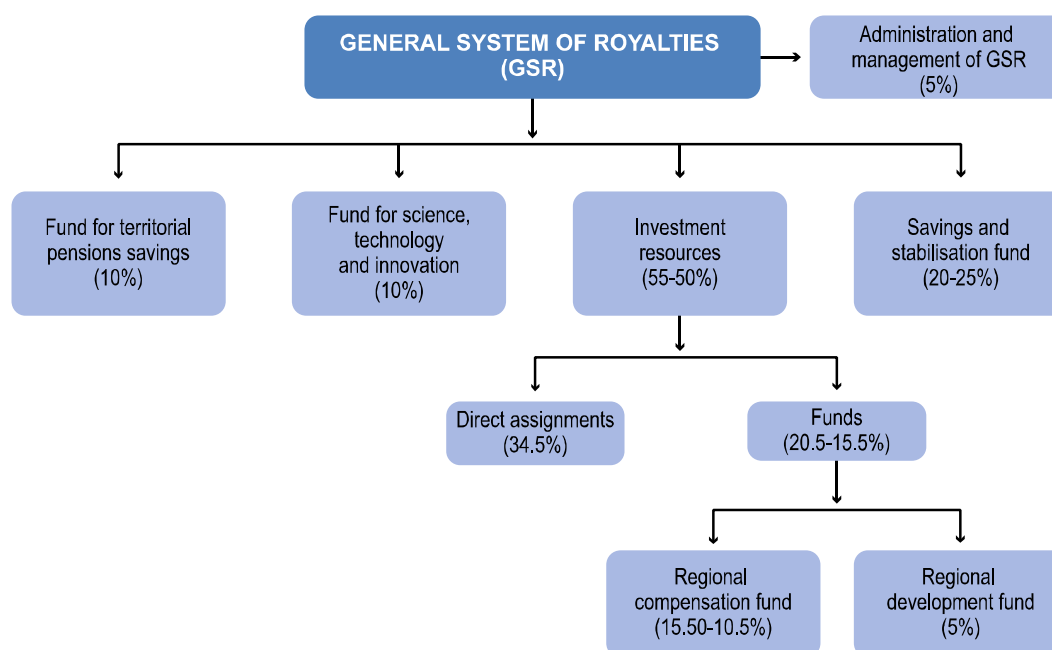
Source: Authors' elaboration based on CONPES 3866, Espinal and Roldán, 2000^[1]; Martínez and Ocampo, 2011^[2] and interviews in the framework of the PTPR of Colombia, February and April 2018.

1. Over the years, production development policies evolved from cluster-based and competitiveness à la Porter (1990), to a new approach, which looks at productivity as a key development driver and at regions as main agents for change. Nevertheless, a persistent weakness of the prevailing policy approach in Colombia, which is common to many countries in Latin America, is the insufficient co-ordination between production development, and the innovation and trade agenda (Cimoli et al., 2005^[7]; Ocampo, 2017^[8]). During the last decade, the country has implemented reforms to address the productivity challenge in several areas. Among the most significant reforms are:
2. *Strengthening the institutionality for science and technology.* In 2009, the Colombian Institute for Science and Technology (Colciencias) was reformed. It became an Administrative Department, with a director at ministerial level. Then

in 2019, the law 1951 further transformed Colciencias into the Ministry of Science, Technology and Innovation.

3. *Promoting industrial development in priority areas and fostering start-ups.* In 2008, the Ministry of Industry Commerce and Tourism (MinCIT) launched the Productive Transformation Program (PTP). This co-ordinates activities to sustain productivity and competitiveness in 15 economic areas. In 2012, MinCIT created iNNpulsa, to foster entrepreneurship and innovation.
4. *Modernising trade and investment institutions.* In 2014, Proexport, the governmental agency in charge of promoting non-traditional exports, was transformed into ProColombia, merging export promotion and the FDI attraction function, in line with OECD standards. In 2015, Bancoldex absorbed the functions of the former Institute for Industrial Development (IFI). It is now responsible for facilitating access to finance also for SMEs.
5. *Fast-tracking digital connectivity.* Colombia took a lead in Latin America in expanding its digital infrastructure and facilitating connectivity across the country. In 2011, the Ministry of Information and Communications Technology (MINTIC) launched the agenda *Vive Digital* to mobilise investments and implement reforms to improve digital infrastructure. This resulted in a major increase in digital connectivity and by 2017 98% of municipalities were connected to the internet.
6. *Improving financing for innovation and regional development.* In 2006, in parallel with the creation of the National Commission for Innovation and Competitiveness (CNC), 33 Regional Commissions for Innovation and Competitiveness (CRC) were established to foster innovation and production transformation at the regional level. This was a key step in putting regions at the core of national development. In 2009, regional development governance was further strengthened with the establishment of Councils for Science, Technology and Innovation (CODECTI) at the departmental level, building on pre-existing departmental committees. In addition, in 2012, Colombia reformed its national royalties system to allow all regions to receive resources. Until then, only mining regions and departments could benefit from these funds and, in practice, 80% of the resources accrued to nine departments. Since 2012, all regions and departments can access these resources, through a complex allocation mechanism. Each region and department had to set up a targeted body for resource allocation and management (OCAD, *Órganos Colegiados de Administración y Decisión*). The 2012 reform also included an amendment that earmarks 10% of these royalties to fund science, technology and innovation activities (Figure 2.2). However, the distributed funds to regions and departments can finance only projects linked to those territories. As a result, they operate more as a series of regional innovation development funds than as a national innovation fund. This limits their capacity to act as sources of financing for major national innovation challenges. Colombia is progressively making the royalties system more effective. Since 2018, the limitation that only public actors could present projects for approval has been removed, allowing private entities to propose and help decide funding. The mechanism for project selection and disbursement is, however, quite cumbersome and, in many cases, available resources are not actually used.

Figure 2.2. National Royalties System of Colombia, 2018



Note: The % in brackets indicate the distribution by funds

Source: Authors' elaboration based on DNP information, Sistema General de Regalías, February 2018.

Despite some progress over the years, none of these policies and reforms have really managed to kick-start a process of deep economic transformation in the country nor to make production development a key priority in the national development agenda.

The Production Development Policy (PDP) 2016-2025: a step forward

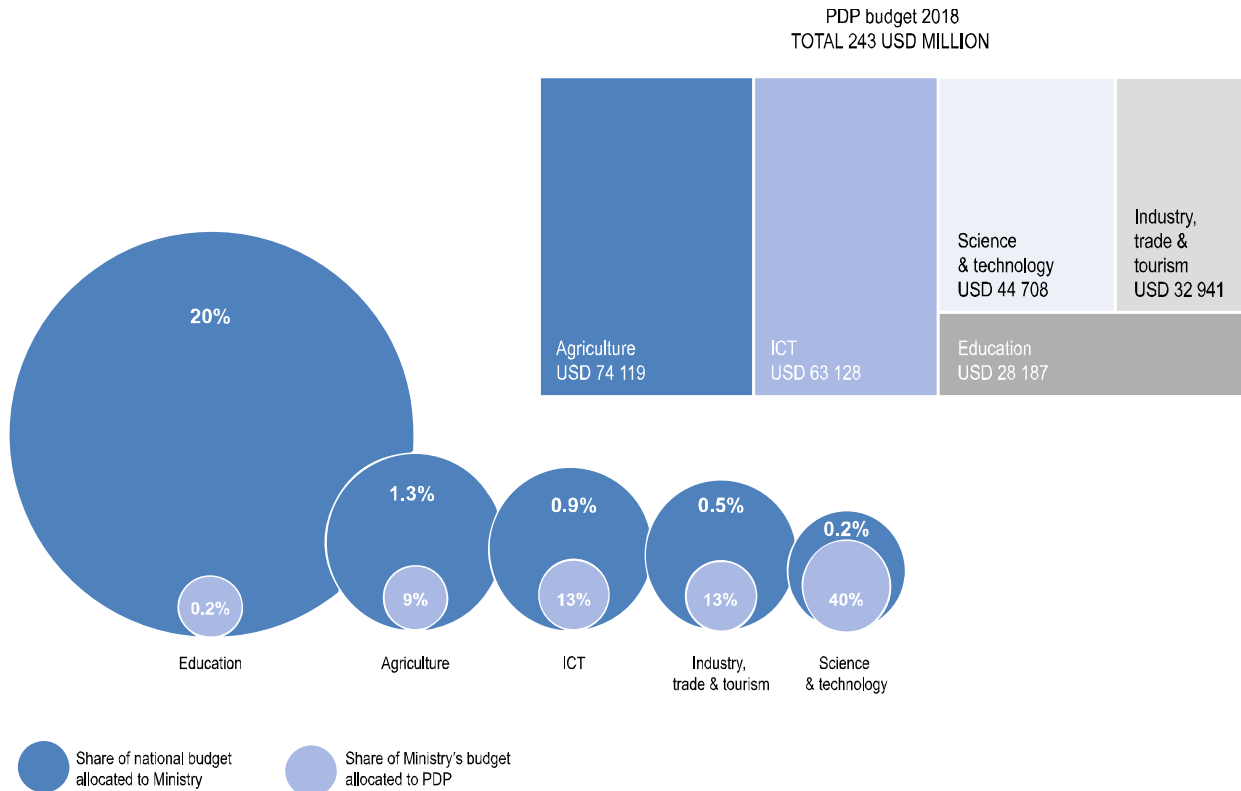
In 2016, the DNP, with the co-operation of entities such as the Ministry of Trade, Industry and Tourism, the Ministry for Agriculture and Rural Development, the Ministry of National Education and the Ministry of Labour, as well as with the support of the National Training Service (SENA), released the Production Development Policy (PDP) 2016-2025. The PDP was approved by the National Council on Economic and Social Policy in 2016, with a provisional budget equal to 0.04% of 2017 GDP. The PDP is a step forward in consolidating efforts to transform the economy.

The PDP is based on three principles:

1. *Regional differentiation*: the PDP identifies, through a participatory process, priority sectors in regions, based on local comparative advantages and productive capacities.
2. *Evidence based*: the policy applies a rigorous empirical methodology for identifying priority sectors; it also fosters piloting of actions and scaling-up upon effective results.
3. *Co-ordination*: national, regional and private sector entities work together to define the priorities and lines of action of the PDP. The 33 CRC (Regional Commissions for Innovation and Competitiveness) have been the key actors in the PDP process.

The PDP articulates actions from different ministries and functions: 30% of the budget is linked to agriculture (USD 74 million), 26% to ICT (USD 63 million) and 18.5% to science and technology (USD 45 million). While the PDP includes 40% of the total national budget for science and technology, it only accounts for 13% of the total budget for industry and trade (Figure 2.3).

Figure 2.3. The PDP budget allocation by ministry, 2018



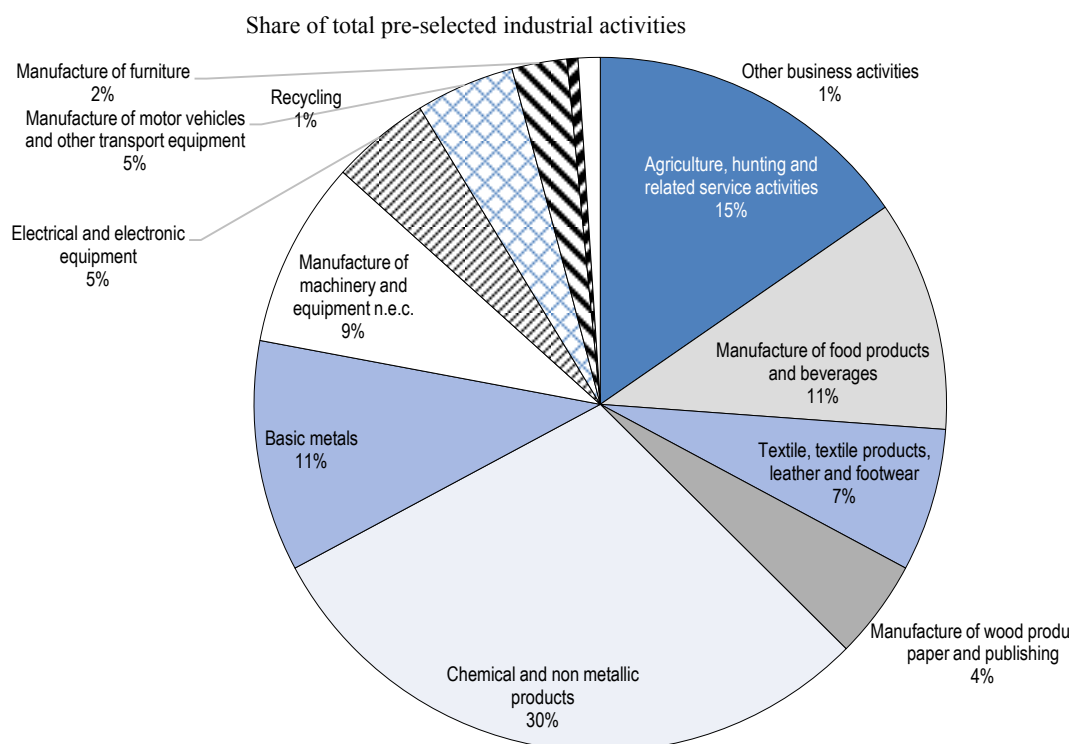
Note: A. the share of each ministry in the total budget is calculated on the total national budget net of debt. B. Industry, trade and tourism accounts for three instruments active in 2017. C. For agriculture, science, technology, and industry trade and tourism, the aggregate budget of specific instruments is split according to the evolution of the budget of each function category across the years. D. The total budget of the PDP refers to the sum of each (financial and non-financial) instrument that reports financial resources.
Source: Authors' elaboration based on 2018 National Budget Law (Ley No. 1873-20/122017) and DNP information.

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The PDP followed an evidence-based prioritisation methodology. This included the pre-identification of sectors with comparative and latent competitive advantages based on export data. Then, based on these pre-identified priority areas, some were selected through consultations with national and local actors; the methodology also included the identification of products that showed limited growth due to the existence of specific barriers (e.g. lack of information on market potential or technology). The pre-identification phase identified 195 sub-sectors across the 33 regions. These sub-sectors can be clustered in 12 industrial activities: 30% of these pre-identified activities are linked to chemicals and non-metallic products, 15% are agricultural products, 11% are

linked to food and beverages manufacturing, 11% with basic metals and 9% with machinery equipment (Figure 2.4).

Figure 2.4. Distribution of pre-selected industrial activities identified by PDP, 2016-25



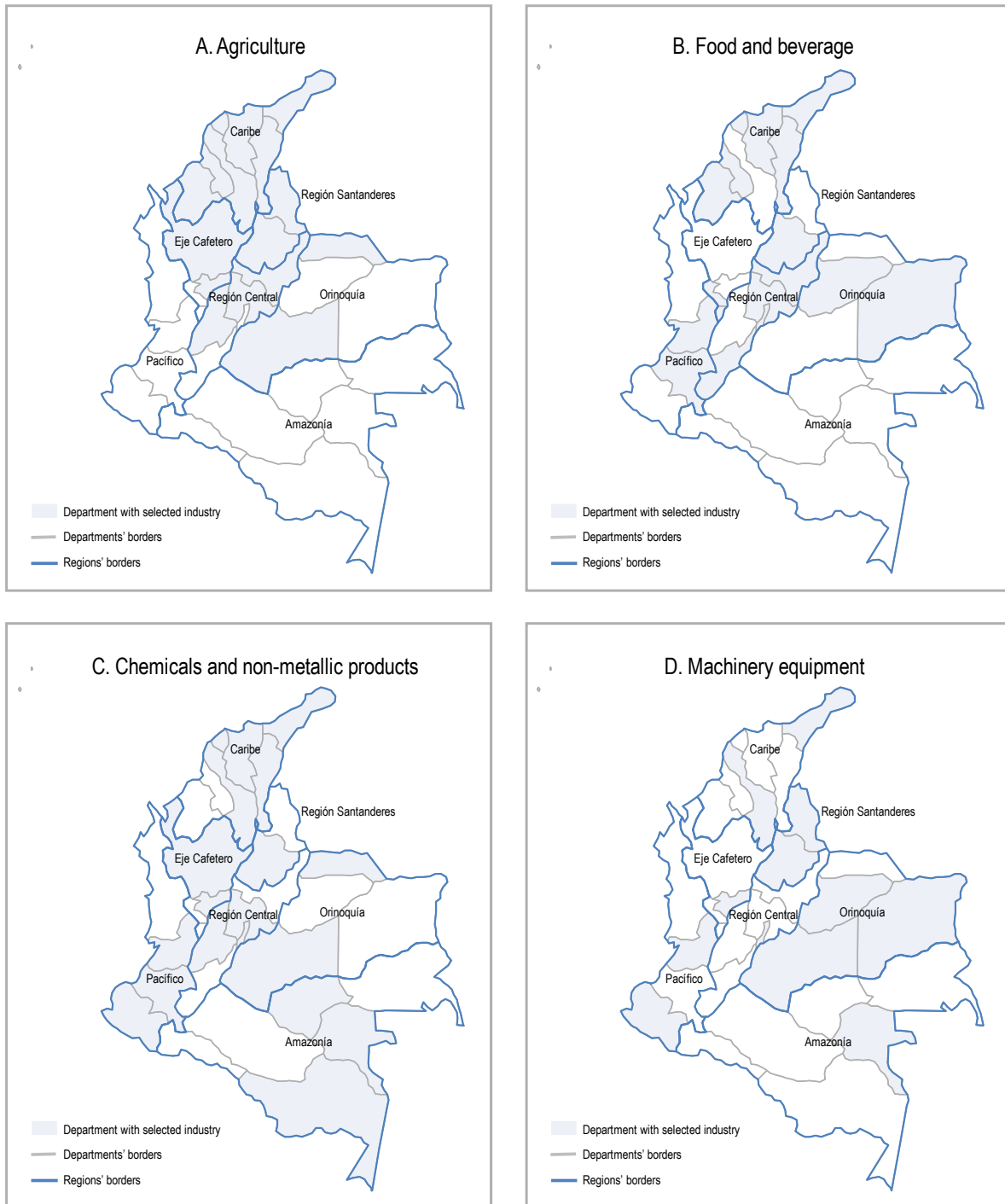
Note: Products have been grouped into ISIC REV 3.1 divisions and industry cluster according to the OECD grouping in Trade in Value Added (TiVA) database. For more information, see <http://stats.oecd.org/>. The final selection is run by the SNCTII based of the pre-selected sectors presented here.

Source: Authors' elaboration based on CONPES 3866, DNP 2018.

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While empirically rigorous, this selection process presented a main challenge as it limits the scope of the PDP to the existing industrial base and does not leave room for identifying new areas or activities in which the country could, through shared public and private efforts, develop new capabilities. In going forward, the PDP could include a scenario-setting exercise to identify priorities, which would entail innovation and diversification in the current production matrix (as for example, identifying shared commitment to greening the economy). Prioritising by adopting a functional territorial approach could increase the effectiveness of policies and enable a more forward-looking approach (OECD, 2011; Barca, McCann and Rodríguez-Pose, 2012_[15]; OECD, 2013_[16]). For example, 75% of the total prioritised sectors of the PDP correspond to four industrial activities: i) agriculture, ii) food and beverages, iii) chemicals and non-metallic products, and iv) machinery and equipment). These are clustered in areas of the country that span two or more regions. For example, the activities linked to agricultural, farming and food products are clustered in the centre and northern regions. Planning strategies centred on those functional regions could increase policy impact and facilitate synergies, especially in areas linked to infrastructure and services for industrial development (Figure 2.5).

Figure 2.5. Geographical distribution of PDP of selected industrial clusters, 2016-25



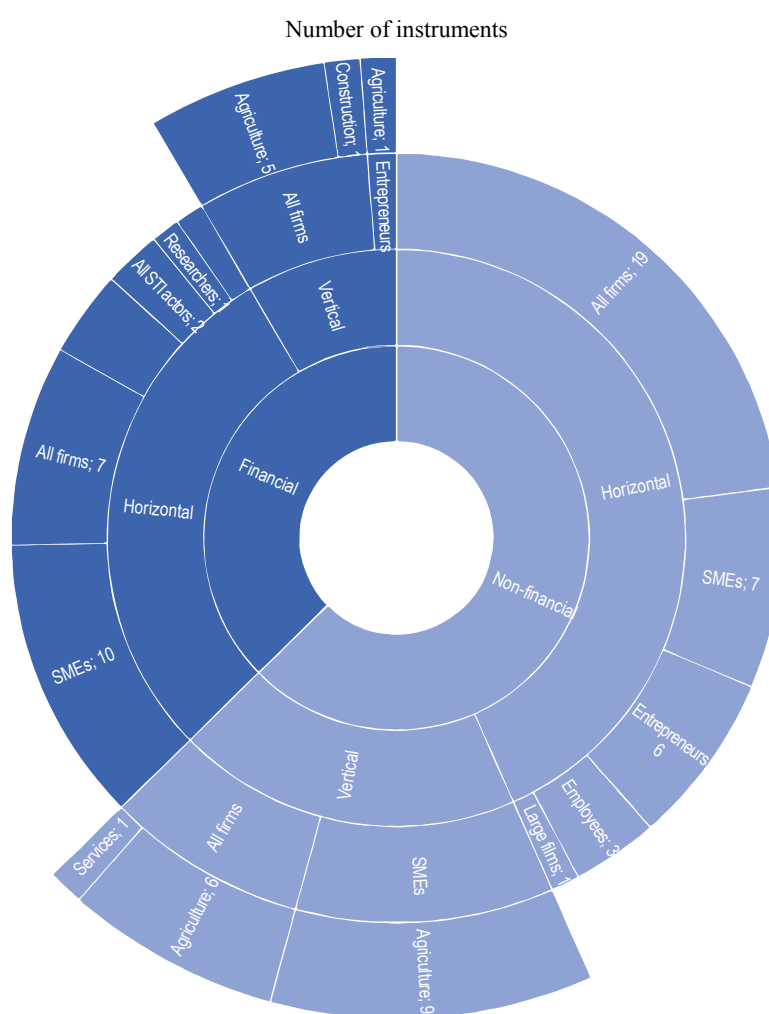
Note: Products are grouped according to ISIC REV 3.1 divisions and industrial clusters. The maps are indicative and rely on the pre-selected sectors. The final selection is run by the SNCTII based of the pre-selected sectors shown here.

Source: Authors' elaboration based on CONPES 3866, DNP 2018.

As of 2018, the PDP has identified 83 instruments that can be mobilised by different ministries and implementing agencies to channel financing and services to firms, people

and other institutions in the national innovation system (Figure 2.6). The policy mix of the PDP mobilises actions that address market and co-ordination failures by providing public goods in the prioritised sectors and by offering horizontal support to firms, establishing also specific lines of actions for SMEs. More than 60% of the instruments are linked to services, including rural extension services and platforms to connect buyers and suppliers. The other 40% include financial instruments, which, for the most part (68%), are co-financed loans (68% of all financial instruments). The others include non-repayable contributions. Since 2014, Colombia also has a tax incentive for R&D. More than 70% of these instruments are horizontal. The few targeted instruments are aimed mostly at agriculture and some specifically target SMEs.

Figure 2.6. Policy mix associated with the PDP, by type, Colombia, 2018



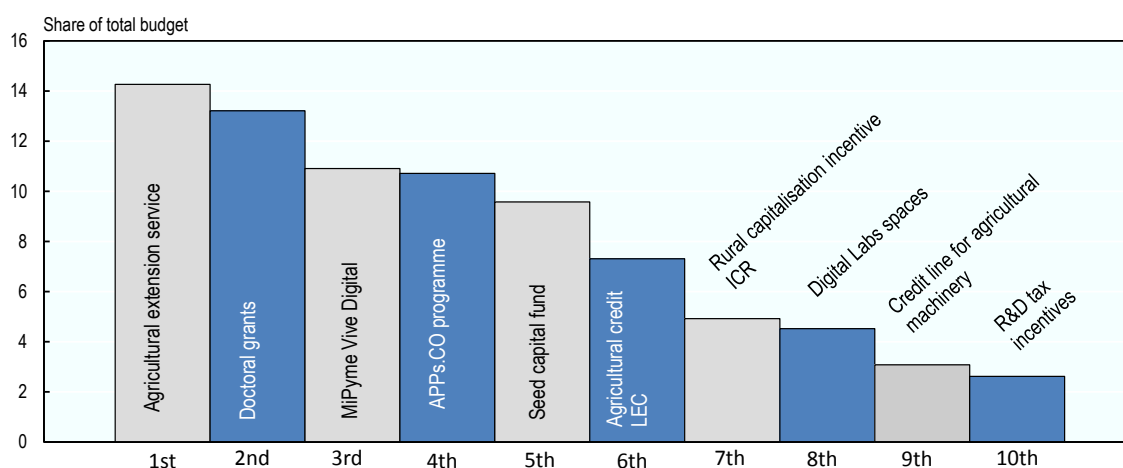
Source: Authors' elaboration based on DNP information, 2018.

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Just 10 out of 83 instruments of the PDP account for 81% of the total budget. Agricultural extension services make up 14% of the total, the highest budget allocation. These extension services are managed by the Rural Development Agency (ADR) and offer integrated technical support to small farmers on issues related to technology adoption,

marketing and good agricultural practices to develop marketable sustainable products. The second most important instrument, with 13% of the total budget, are the grants to students obtaining PhDs abroad, managed by Colciencias. The third instrument, which accounts for 11% of total budget, is *MiPyme Digital*. It fosters the use of ICT for SMEs, and is managed by the Ministry of ICT (Figure 2.7).

Figure 2.7. Ten instruments account for 80% of the PDP's budget, 2018



Source: Authors' elaboration based on DNP information and Colombian Observatory on Science and Technology (OCYT, 2018_[17]), 2018.

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Overall the PDP 2016-2025 represents a step forward in production development policies in Colombia, notably on two fronts: i) it has explicitly created a mechanism to work with regions on identifying priorities for production development and innovation and ii) it has enabled co-ordination among different ministries in areas linked to strengthening the competitiveness of existing firms. The PDP, through its Technical Committee, has benefited from a continual dialogue between different public and private stakeholders. In future, more information on incentives would help the Committee to co-ordinate and implement shared actions between the different stakeholders. The PDP, however, falls short in identifying future issues. Therefore future efforts should put clearer emphasis on Industry 4.0 and new technologies (this issue is further discussed in Chapter 3 of this report) and on ensuring co-ordination with science, technology and innovation policies. Table 2.2 summarises a progress overview of the PDP following the pillars of the Production Transformation Policy Review (PTPR) (OECD, 2017_[18]).

Table 2.2. Progress overview of the Production Development Policy, 2016-2025

Governance dimensions		
Anticipation capacity	x	The policy aims at providing guiding principles until 2025, but it falls short in anticipating future potential scenarios and in taking into account the impact of the ongoing digital revolution. Increasing future-oriented strategic thinking would be required in defining priorities. Industrial development strategies work better when they have clear targets that, at the same time, leave room for manoeuvre to the private sector.
Adaptation capacity	√	The PDP fosters piloting actions before scaling them up and includes a monitoring mechanism that can support policy reforms if targets are not achieved.
Learning and upgrading potential	x	The PDP falls short in identifying future issues. Future efforts would benefit from putting a clearer emphasis on Industry 4.0, new technologies and innovation and in exploring how to unlock the transformative potential of large firms in the country. The prioritisation process identified key products and activities in each region. This approach risks limiting the potential for identifying big challenges and promoting broad innovations that could spill over to the whole system. A production development policy would need to be defined in line with the national innovation strategy. Addressing the issues in two separate policy documents increases co-ordination failures.
Interconnectedness propensity	≈	Within government. While the PDP has a Technical Committee for follow-up to which all relevant government agencies are invited to participate, the PDP would benefit from explicit co-ordination with the innovation policy and with the digital and green economy agendas. The practice of addressing each issue in separate programme documents limits the possibilities for effective co-ordination.
	√	With the private sector. The PDP has spaces for co-ordination with the private sector. ANDI and CPC are members of the Technical Committee of the PDP and regularly contribute to policy definition. Their participation in this committee facilitates information sharing. More could be done to mobilise private financing in specific lines of work of the PDP.
	√	Regional entities. The PDP works hand in hand with all regional governments and private sector representatives.
Embeddedness potential	≈	The place-based approach of the PDP is a positive step. There is a need to examine regional disparities related to financing and administrative capacities and defined mechanisms in order to offer more support more to the regions.

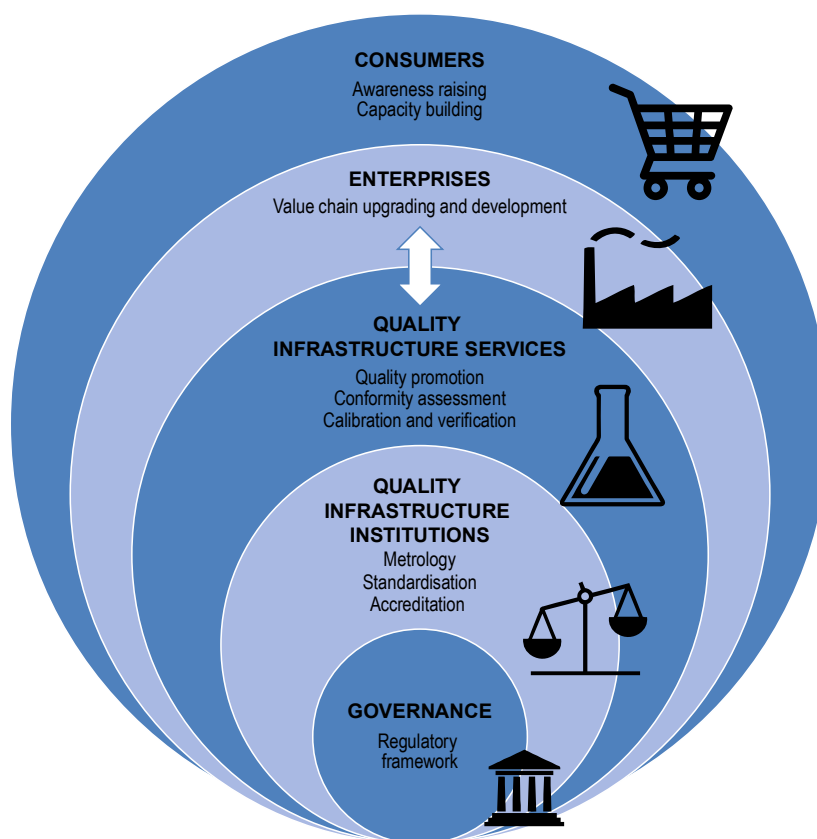
Note: √ : positive progress; ≈ : margin for improvement; x: reform needed. This progress overview contains information updated until October 2018.

Colombia counts on a quality infrastructure system in line with regional leaders

A national quality infrastructure system, which means public and private institutions in charge of defining, implementing and ensuring the conformity of scientific, legal and industrial standards, is a key component of an effective production and innovation ecosystem. In Germany, for example, the National Metrology Institute (PTB) and the National Standardization Body (DIN) were founded in 1887 and in 1917 respectively. These agencies have been the cornerstone of the development of the domestic manufacturing system in the country. In fact, a well-performing quality infrastructure system fosters competitiveness by improving the quality of domestic products and services, by ensuring compliance with international standards and by signalling the conformity and quality of domestic products and services.

There is no blueprint or ideal model for organising a national quality infrastructure system. In each country, institutions related to governance are set up and evolve according to the specificities of the productive system. In general, these institutions are organised around three functions: metrology, normalisation and standards development, and accreditation and conformity assessment (Figure 2.8).

Figure 2.8. Key functions and actors of a quality infrastructure system



Source: (UNIDO, 2017^[19]) *Quality Infrastructure. Building Trust for Trade*, https://www.unido.org/sites/default/files/2016-05/UNIDO_Quality_system_0.pdf.

In Colombia, the National Institute for Technical Standards and Certification (ICONTEC) was set up in 1963 as part of the early national industrialisation strategy. The institute is a private non-profit organisation in charge of defining norms and ensuring compliance with domestic and international standards. Since 2006, with the elaboration of the “Guidelines for a national quality policy” (CONPES Document 3446), Colombia has consolidated its national quality infrastructure system. In 2008, the national agency charged with overseeing the technical competence of the conformity assessment bodies, *Organismo Nacional de Acreditación de Colombia*, ONAC was set up and, since 2011, the country has had the National Metrology Institute (INM), which offers metrology services in line with regional and international best practices. Regional and international co-operation and peer learning has been important in strengthening the domestic national quality infrastructure. Colombia has benefited from international technical co-operation with the National Institute of Standards and Technology (NIST) of the United States, the German National Metrology Institute (PTB), the Korean Standards Research Institute (KRIS) and with the United Nations Industrial Development Organization (UNIDO), which has recently focused on supporting quality infrastructure for the cosmetics and automotive industries.

Colombia today can point to a national quality infrastructure system on a par with regional leaders, such as Argentina, Brazil and Mexico, and not far behind global leaders, such as Germany, Korea and the United States (Figure 2.9).

Figure 2.9. Colombia has a national quality infrastructure system in line with regional leaders

After 2006 (CONPES 3446) Colombia consolidated the National QI

ICONTEC - Standardisation

- 1963 founded
- ISO and IEC Member State
- Secretariat ISO Subcommittee for Coffee
- National IEC Committee (one of 5 in LA)

INM – Metrology

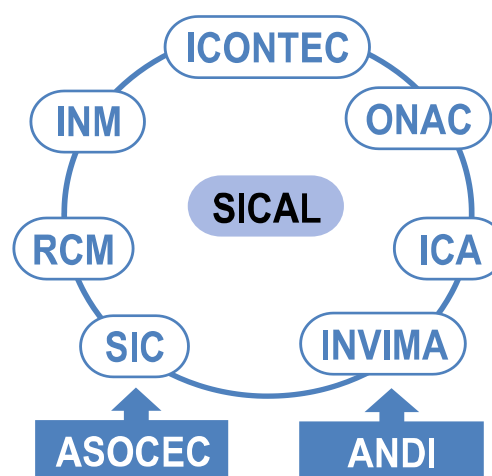
- 2011 founded
- 2013 Full Member State of Meter Convention
- 9 labs internationally recognised
- 60 CMCs

ONAC – Accreditation

- 2007 Creation
- Assignment of 9 MRA/MLA + BLP (OECD)
- Chair of the MLA Committee of IAAC

SIC – Legal metrology

- OIML Member State
- Chair OIML-CS Management Committee



RCM – National Metrology Network

ICA – Instituto Colombiano de Agricultura

INVIMA – Instituto Nacional de Vigilancia de Medicamentos y de Alimentos

Source: Karl-Christian Göthner, German National Metrology Institute (PTB), presentation at the PTPR Peer Learning Group (PLG) of Colombia, Paris, 26 June 2018.

A quality infrastructure system is recognised as an important component for economic transformation and export sophistication in Colombia. The National Development Plan (NDP) 2014-18, identified the update of the national quality infrastructure as a priority to increase participation in global and regional value chains. In line with the priorities established by the NDP, the PDP, launched in 2016, includes the development of high quality national laboratories as a key to helping innovation and the competitiveness of Colombian enterprises and to attracting foreign investment. Colombia has adhered to the OECD Principles of General Laboratory Practices. This creates opportunities for mutual acceptance of data. It avoids testing duplication by industries, reduces non-tariff trade barriers and facilitates co-operation between countries.

Yet, when compared with international practices, Colombia's quality infrastructure system still suffers from weaknesses that hamper its capacity to enhance productivity and innovation in firms. The participants at the PLG meeting highlighted the following ones:

A predominantly top-down governance system. The quality infrastructure system in Colombia is still driven by a top-down process within the government. The bottom up approach, however, has advantages as consumers and firms take a proactive role in informing the national policy.

The regulation mind-set prevails over the innovation mind-set. While standards and norms are necessary to ensure competitiveness, an excessive proliferation of regulations can result in barriers to productivity and innovation. At present, there are 345 norms in place in the automotive sector in Colombia. A conclusion of the Peer Learning Group meeting of the PTPR of Colombia was that the National Metrology Institute is perceived as an instrument to ensure standards, rather than as a tool to foster innovation. This is

reflected in the current governance system, where the National Quality Subsystem (SICAL) is subordinate to the Directorate for Regulation of the Ministry of Industry, Tourism and Trade of Colombia.

Lack of strategic co-ordination. Even though specific roadmaps exist in each institution, there is little co-ordination between the national quality infrastructure embedded in the PDP and the science and innovation policies. This limits the capacity to foster innovation, and reinforces the regulation versus productivity-enhancing approach. In Germany, by contrast, a Scientific Advisory Board for PTB ensures strategic and forward-looking decision-making (Box 2.1).

More agile governance could increase effectiveness. The autonomy of quality infrastructure institutes, such as the INM, could be increased. For example, participation in international activities is subject to Presidential decrees, hampering these agencies' ability to operate in a network with international counterparts. It also burdens ordinary procedures with bureaucracy. Since its creation, INM has been hampered by high turnover at the top level, creating a lack of stability. This adversely affects long-term strategic decision-making.

Proximity with industrial and innovation ecosystems could be improved. Accredited calibration and testing laboratories should be close to their users to ensure high performance. In Colombia, most of these laboratories and services are concentrated in the main industrial centres and cities (Bogotá, Medellín and Cali) (Unidad de Planeación Minero Energética, 2015_[20]) hampering increased industrial development in other regions. Collaboration among laboratories and research centres in different regions should be encouraged to provide services because local demand may not be high enough to justify localised institutions. Regional co-operation in Latin America could also help. For example, the European Metrology Programme for Innovation and Research (EMPIR) facilitates co-operation between European national metrology institutes in research on metrology, traceability of measurements, international recognition of national measurement standards and related Calibration and Measurement Capabilities (CMC).

Ensuring that the standards and norms are effectively used by small and medium size enterprises (SMEs). There is a need to raise awareness in SMEs about the quality infrastructure system and its potential support to productivity. It is also necessary to identify mechanisms through which standards and norms can work as productivity enhancers and not as barriers to market participation for small firms. For example, in Germany, the Ministry of Economy and Energy launched the Central Innovation Programme for SMEs (ZIM) in 2012. It provides SMEs with services to foster standard compliance, such as advice on standards' implementation, market research access to databases, specialised libraries, use of office space and laboratories for labels, tests and certifications.

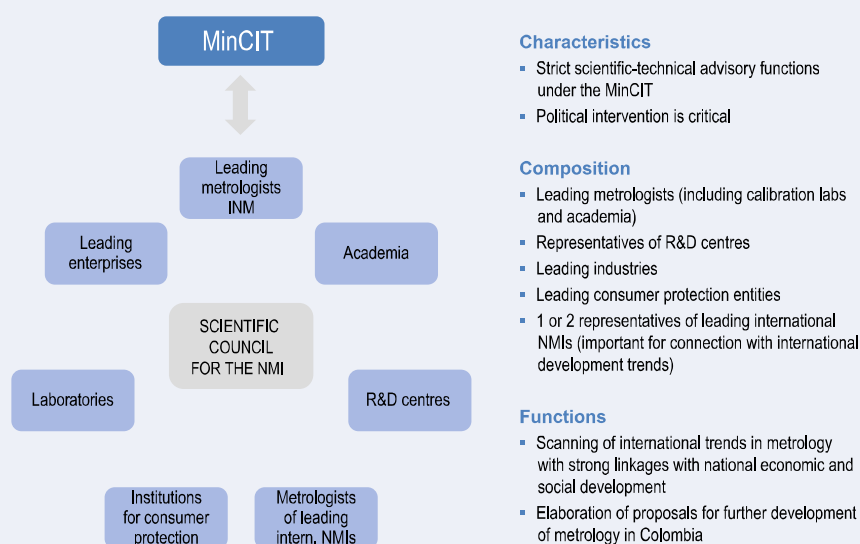
Box 2.1. Increasing co-ordination between QI, science and innovation: The experience of Germany and the United Kingdom

Countries where the quality infrastructure systems act as innovation enhancers have governance systems that generate incentives for strategic co-ordination between different policies. A way to achieve this is to endow the metrology institutions with Scientific Advisory Boards that can facilitate long-term strategic decision making. The participation of leading metrologists, scientists, representatives of R&D centres and entrepreneurs can boost the performance of existing institutions. In Germany, the PTB has an advisory board chaired by the Ministry of Economy and Energy (Table 2.3). In this respect, creating a stable management structure in the NMI and recognising the scientific and technical character and the importance of the institution will quicken implementation of the QI policy in Colombia (Figure 2.10).

Table 2.3. Composition of scientific advisory boards of metrology and laboratory institutes, Germany and UK

National Metrology Institute (PTB)-Germany	National Physical laboratories (NPL)-United Kingdom
Kuratorium (Advisory Board)	Science & Technology Advisory Council
26 members	18 members
President: Representative of the Ministry of Economy and Energy (BMWi)	Chair: National Laboratory for Nuclear Physics
Vice-President: Director of an Institute of the University of Hannover	Representatives of leading Physical Research Institutes
Representatives of leading Research Institutes (University, Leibniz-and Helmholtz-Institutes)	5 representatives of industry
Representatives of industry (mostly researchers and developers)	2 representatives of NIST (U.S.A.)
Representative of the Institute for Consumer Protection and Food Security	
Representative of the Siemens Family	
3 Nobel Prize Winners	
Guest: Ministry of Economic Cooperation and Development	

Figure 2.10. Improving co-ordination through a Scientific Council for NMI in Colombia



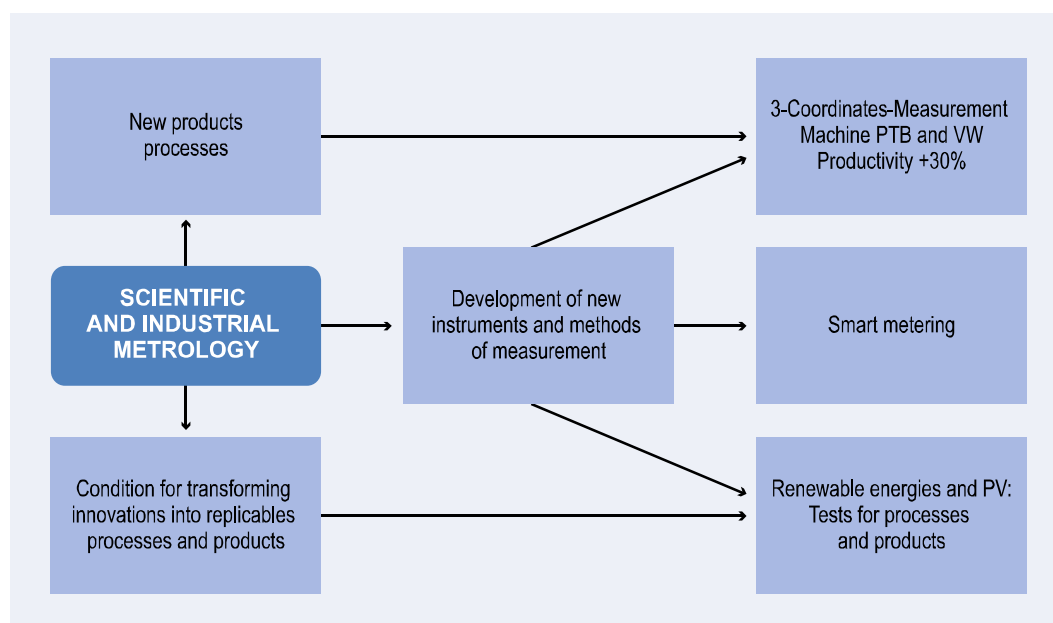
Source: Karl-Christian Göthner, German National Metrology Institute (PTB), Presentation at the PTPR Peer Learning Group (PLG) of Colombia, Paris, 26 June 2018.

In future, it will be important to modernise the quality infrastructure system to make it effective in an Industry 4.0 environment. Updating the quality infrastructure system is necessary to increase industrial productivity and innovation in firms. Advanced countries are already taking steps in this direction (Box 2.2).

Colombia is doing the same. The Laboratory for Electrical Magnitudes of the INM is preparing to support digitalisation. However, important reference laboratories are still missing in the country in areas such as acoustics, photometry and radiometry. In addition, co-ordination between the INM and the innovation system and policy is weak. The official recognition in 2018 of the INM as a national scientific research institute by Colciencias is a positive step forward. This reform brings Colombia in line with good international practices.

In Colombia, private lead firms (such as the local providers to Airbus and the coffee producers in *Valle del Cauca*) tend to operate through international channels and have few links to and little trust in the domestic public quality infrastructure system and the local ecosystem. While several university laboratories are accredited, a more rigorous screening process is needed to ensure that accuracy, reliability, and traceability of measurements match international standards. Such improvements would encourage lead firms to strengthen their co-operation with the national quality infrastructure system. A good example is the Research and Training Institute for Plastic and Rubber (ICIPC) in Colombia, which follows the German model. Germany is known for its capacity to articulate public and private partnerships for metrology, innovation and services to firms. It is now modernising its metrology system to foster digitalisation. In particular, the quality infrastructure system in Germany is fostering Industry 4.0 through public-private partnerships (Figure 2.11).

Figure 2.11. Metrology in Germany is enabling innovation in Industry 4.0



Source: Karl-Christian Göthner, German National Metrology Institute (PTB), presentation at the PTPR Peer Learning Group (PLG) of Colombia, Paris, 26 June 2018.

Box 2.2. Quality infrastructure for Industry 4.0: Examples from Germany

Innovation and production development policies in Germany co-ordinate innovation and quality infrastructure policy for Industry 4.0 through collaborative platform initiatives. Germany places a strong emphasis on SMEs.

Germany has at least three initiatives for innovation and production development that come with quality infrastructure components:

- **Industry 4.0 Platform:** Companies and industrial associations related to this platform set up the Labs Network Industry 4.0 (LNI). The LNI fosters knowledge transfer, develops certifications and benchmarks measurements related to new disruptive technologies.
- **Central Innovation Programme for SMEs (ZIM):** One of the ZIM's core aims is to facilitate access to standards for SMEs.
- **Innovation policy of the Federal Ministry for Economic Affairs and Energy (BMWE):** This initiative aims at the upgrading of the national quality infrastructure (standardisation, accreditation, conformity assessment, metrology, product safety, market surveillance). This will be achieved by strengthening co-operation between the German National Metrology Institute (PTB) and the Federal Institute for Materials Research and Testing (BAM). PTB will lead research in areas like Q-communication, Q-cryptography and Q-radiometry, Q-simulation and applications of the Q-logics for precision measurements. It will be the co-ordination point for quantum technology with a strong private sector demand.

Source: Karl-Christian Göthner, German National Metrology Institute (PTB), presentation at the PTPR Peer Learning Group (PLG) of Colombia, Paris, 26 June 2018.

Sustaining progress in quality infrastructure: Key takeaways for Colombia

Since 2006, Colombia has taken several steps towards best practices in accreditation and standardisation. The next challenge is to provide the production system, national and foreign, with high-level testing and calibration laboratories. The goal is to be competitive in global markets, to boost the reputation, brand and stakeholder value of companies, and to meet the demands of aware consumers.

Colombia needs to improve its governance system to make the quality infrastructure system work for innovation and productivity, and not only as a “regulator”. It also needs to update its tools in line with Industry 4.0 requirements and strengthen the INM to offer up to date metrological services to the Colombia industrial base.

Improving co-ordination between innovation, production development and quality infrastructure policies.

- Greater co-ordination between MinCIT, Colciencias and the Quality Infrastructure institutions is needed. Innovation and production development projects should also include the necessary metrology and standardisation component.

Strengthening the calibration and testing laboratory network

- Upgrading technical competences is needed in accordance with the national economic structure and development strategy. Traceability from the INM must be ensured via secondary calibration laboratories to the testing labs and the industry.
- The needs of industrial ecosystems throughout the country beyond Bogotá, Medellín and Cali must be considered.
- Regional co-operation with other countries in Latin America has to be fostered to enhance the quality infrastructure services provided in Colombia.

Strengthening public-private partnerships

- Increased co-operation and trust between lead firms, SMEs and quality infrastructure institutions is needed, especially in the context of Industry 4.0 where proximity to plants is increasingly relevant.
- Specific instruments to facilitate access to metrology, standardisation and testing and accreditation services for SMEs are needed (e.g. special financial lines, platforms, shared laboratories).
- Recognising the technical nature of INM and setting up management incentives is needed to simplify its functioning to make it more responsive to private sector and innovation.

Reforming governance to make it more pro-innovation

- The creation of a Scientific Advisory Board for INM could foster a pro-innovation attitude and increase co-ordination between different policies and with the private sector.
- Increased international co-operation and increased exposure of national representatives of quality infrastructure institutions and R&D laboratories to international trends could enhance innovation.
- Existing strategic initiatives should be implemented, e.g. SICAL Roadmap, Strategy for Metrology and the National Laboratory Policy (CONPES Document 3758)

Increasing awareness of the role of quality infrastructure for national socio-economic development

- Awareness-raising activities for policy makers, entrepreneurs and consumers across the country, and not only in main industrial centres, should be undertaken. The goal is to make these actors aware of the role and potential of the quality infrastructure institutions and to increase their participation in the different quality infrastructure activities. This will help foster the client-orientation of the national quality infrastructure system.

Key policy reforms to transform the economy

The traditional drivers of growth are becoming exhausted, the global economic landscape is changing fast and Colombia is aspiring to advance towards a new pact for prosperity.

In this context, it becomes more urgent than ever to address the pending challenges of diversification, productivity and increased benefits from integration in the regional and world economy. To do so Colombia can best use the existing governance system and its experience in planning and implementation to address some of the problems that are holding back change in the economy.

This PTPR has identified four key areas to advance the transformation of the economy. These include: i) modernising planning and ensuring increased co-ordination between industrial, innovation and trade policies; ii) refining prioritisation through a place-based and challenge-driven approach; iii) updating the policy mix to facilitate implementation; iv) unleashing the transformative potential of digital technologies for production development. The following paragraphs will address points i) to iii). Chapter 3 will focus on point iv).

Modernising planning

Colombia needs to modernise its planning process. The DNP would benefit from increasing its strategic and forward-looking capacities by institutionalising a function to explore future issues and identify new challenges and opportunities.

Colombia's anticipatory capacities could be assigned as a function to the DNP. This could support the presidency in defining innovative and game changing approaches. Different countries have structured this function in different ways, according to their institutional governance and historical patterns. Most countries now recognise the need to have someone in the public sector in charge of long-term thinking (Box 2.3).

Clearer and stronger linkages between planning and budgeting would help to shift incentives towards implementation. It would also reinforce the relationship between the planning body and the presidency. Policy documents seem to have lost their operative function. Institutional incentives seem to be more oriented towards accomplishing document elaboration and approval, rather than towards using these documents as tools to reach agreements on funding and partnerships for change. The experimentation with a Delivery Unit in the presidential office seems to be a step in this direction. In going forward, this could be instrumental in redefining the role of the DNP in the national governance system towards a more operative, results-oriented and forward-looking body. Some countries, like Malaysia with PEMANDU, have temporarily linked such units to the Presidential office and then transferred their capacities to other reformed bodies, (Box 2.4).

Box 2.3. Anticipatory capacities enhance planning quality

What are government anticipatory capacities?

They refer to a structured, systematic approach to thinking about the future. This requires exploring and preparing for a range of plausible alternative futures. Most of the work in public policy is on the expected possible outcome of existing events. Anticipatory capacities provide decision makers with an analysis of potential future scenarios to define better policies for today and tomorrow. The pace of change at the global level is so rapid and uncertain that it is impossible to do responsible policy making without preparing for a range of alternative possible futures.

Good practices

There is no single best way to increase governments' anticipatory capacities. Several countries have invested heavily in developing these capabilities, including Canada, Finland, Sweden and Singapore. From their experience it is possible to identify six key features required for an effective governance of anticipatory capacities:

1. Political demand. High-level political demand is a precondition, because foresight in policy making requires a prior cultural change. In Finland, for example, the Parliament calls for future scenarios to be developed. In the United States, potential scenarios are developed and given to the new President at the beginning of each mandate.
2. A dedicated centre of expertise. There is no ideal institutional arrangement, and each country needs to identify the solution that best fits its institutional governance and culture. However, a common approach is to identify and empower a dedicated centre of expertise in charge of strategic foresight.
3. Co-ordination of foresight exercises across the whole government. The experience of countries, which have advanced the most in the elaboration and use of scenarios for public policies, shows that the most interesting changes and solutions have come from interactions across different institutions, and not just within institutions.
4. Targeted training for experts in charge. This should be part of the overall training of public officials.
5. Multi-stakeholder dialogue. Strategic foresight cannot be done behind closed doors and in isolation. There is a need to bring unusual stakeholders and disruptive voices on board. Strategic foresight can also be a powerful tool to align shared visions across different groups. Very often ideologically polarised views tend to move into alignment when looking at medium- and long-term perspectives.
6. Integration of strategic foresight in a national strategy setting. There should be a mechanism to ensure that the results of the strategic foresight processes are embedded in the national strategy. They should then trickle down to each policy area.

Source: OECD (2017), Key Outcomes of the Peer Learning Group (PLG) Meeting of the PTPR of Chile, hosted by the OECD in Paris, May 2017.

Box 2.4. Co-ordinating actions and monitoring implementation: PEMANDU in Malaysia

Since its independence in 1957, Malaysia's development has been guided by five-year development plans and longer-term ones that set broad goals for the country. These are drafted by the Economic Planning Unit (EPU) in the Prime Minister's Department. The EPU also serves as the secretariat to the National Planning Council (NPC), which is chaired by the Prime Minister and has ultimate responsibility for the content of development plans. The position of the EPU close to the decision-making centre of the government has been key in reducing the gap between plans and implementation in the country. The EPU prepares the development budget in co-ordination with the Ministry of Financing and other implementing agencies, linking development priorities to the country's budget (World Bank, 2017).

In 2010, the country announced a ten-year plan (New Economic Model, NEM), with the aim of doubling national per capita income by 2020 and making the economy more inclusive and sustainable. In order to achieve these goals, a new implementation agency, the Performance Management and Delivery Unit (PEMANDU) was created. The agency operates within the Prime Minister's Department, and is in charge of elaborating and monitoring the implementation of the ten-year plan. PEMANDU was set up as an independent agency with flexibility over hiring and procurement but still subject to government's transparency regulations. PEMANDU's first CEO was a highly experienced private sector figure. The agency had 135 employees in 2015, including 33 support staff, drawn from the civil service and the private sector. To attract experienced staff, competitive salary packages were offered. PEMANDU contributed to some of the successes achieved by Malaysia in 2010-17, including the reduction in the gap of income per capita compared to high-income countries. But it was not meant to be a permanent feature of the government. It aimed at creating an implementation-focused and performance-based culture that could be mainstreamed. In 2017, PEMANDU was disbanded and its portfolio was passed to the Civil Service Delivery Unit (CSDU) under the Economic Planning Unit.

Source: (Brown et al., 2017^[21]; Sabel and Jordan, 2015^[22]; PEMANDU, 2018^[23]),

Ensuring increased co-ordination between industrial, innovation and trade policies

To transform the economy, Colombia needs to align actions across several ministries and agencies. Production development, trade, FDI and science, technology and innovation have been historically planned and managed in separate ways. Realising the potential of their synergies could be a major game changer for Colombia. While these agendas target different firms and agents in the production system and respond to different objectives, their transformative impact is higher when they act together. Production development policies should identify mechanisms to increase productivity by learning from exporting and FDI by working hand in hand with research and technology centres. At the same time, technical training programmes work better when they are conceived in partnership with the private sector.

To be effective, the production development policy would need to be accompanied by and co-ordinated with a research and innovation agenda. The PDP 2016-2025 assumed that another policy (and therefore another budget) would be approved to address

innovation and technological development. The innovation pillar, however, was never approved, leaving the PDP 2016-2025 lacking that forward-looking component. Despite that, some components to foster innovation in existing firms were included in the PDP. Drawing up separate budgets and policy tools for innovation and production development undermines the transformative potential of the competitiveness agenda. But Colombia has made advances in co-ordinating production development and trade and investment policies. The PDP 2016-2025 includes a target to increase national exports. However, more can be done at the level of trade negotiations and strategic partnerships. Trade and investment agreements, if properly negotiated, could include provisions to foster learning in domestic firms (Box 2.5). While free trade agreements commonly include provisions for technology transfer and technical co-operation, Colombia has not taken advantage of this in its current bilateral agreements. Other countries in the region, such as Chile and Peru, are benefiting from such provisions (Table 2.4).

Table 2.4. Provisions to foster learning in FTAs, selected countries

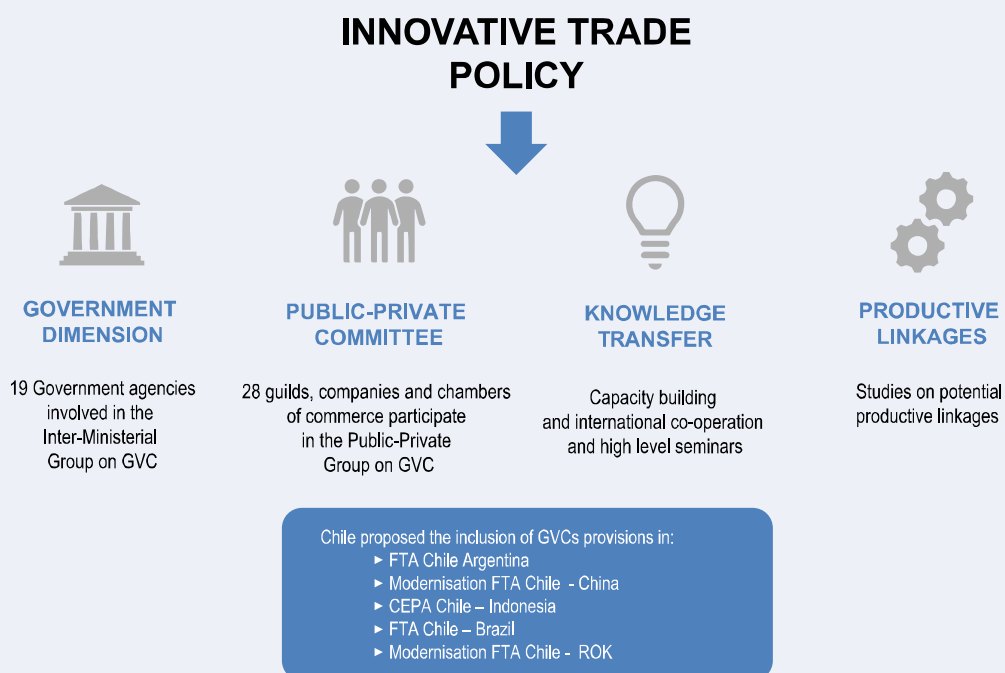
Trade agreement	Entry into force	Technical co-operation	Technology transfer	R&D and innovation	Patents and intellectual property
CHILE-CANADA	05/07/1997	YES	No	No	No
CHILE-CHINA	10/01/2006	YES	YES	YES	YES
CHILE-USA	01/01/2004	YES	No	YES	YES
COLOMBIA-CANADA	15/08/2011	No	No	No	No
COLOMBIA-USA	15/05/2012	No	No	No	No
COSTA RICA-CANADA	01/11/2002	YES	No	No	No
COSTA RICA-CHINA	01/08/2011	YES	YES	YES	YES
PANAMA-CANADA	01/04/2013	YES	No	No	No
PANAMA-USA	31/10/2012	YES	YES	YES	YES
PERU-CANADA	01/08/2009	YES	No	YES	No
PERU-CHINA	01/03/2010	YES	YES	YES	YES
PERU-USA	01/02/2009	YES	YES	YES	YES

Source: (Chelala and Martínez-Zarzoso, 2017^[24]) based on the legal texts of the agreements, WTO and OAS.

Box 2.5. Facilitating GVCs participation in trade agreements: The experience of Chile

Chile has a long-standing, effective trade policy (OECD/UN, 2018_[25]). The country keeps updating its policies to face emerging challenges including, for example, ensuring better participation of domestic firms in GVCs. In particular, following the recommendations included in the PTPR of Chile (OECD/UN, 2018_[25]), the country set up an inter-ministerial group on GVCs. The group, led by the General Directorate for International Economic Affairs (Direcon) in the Ministry of Foreign Affairs, is composed of 19 public institutions. This group has elaborated concrete proposals to include GVCs provisions in trade agreements. In addition, Direcon also hosts a public-private committee on GVCs where local firms willing to increase exports and participation in GVCs can share their experiences and knowledge to identify potential solutions.

Figure 2.12. Chile innovates in trade policy and adds provisions to benefit from GVCs in trade agreements



Source: Viviana Araneda Urbina, Head Global Value Chain Division, Bureau of International Trade Relations, Ministry of Foreign Affairs, Chile Presentation at the PTPR of Colombia PLG meeting, Paris, 26 June 2018

The benefits of trade and FDI do not automatically trickle down to the local economy. Many emerging economies are taking steps to turn increased participation in the world economy into a driver of industrialisation. In Colombia the current regime of Free Trade Zones, most of which are linked to specific enterprises, does not work well enough to drive trade and investment for local industrial development. Morocco, for example, is acting on several fronts to attract FDI, increase trade and industrialise its domestic economy (Box 2.6).

Box 2.6. Learning from FDI: The experience of Morocco

Morocco has invested in a targeted strategy to strengthen basic infrastructure to connect the country. Morocco is pursuing infrastructure building to leapfrog in certain areas. These include the use of renewable energy, and in particular solar energy. In parallel, the country is reforming its policy mix to improve its business environment and to define appropriate framework conditions for trade and investment. In priority areas, such as the automotive industry, Morocco is also defining new relationships with foreign investors. It is setting up innovative partnerships that enable local providers to learn and upgrade, and to benefit from specific conditionalities in the supply chain partnership agreements. In particular, the country is:

1. Defining an appropriate framework for investment and exports:
 - Creation of national and local investment and export agencies (AMDIE, CRI)
 - Liberalised capital account for non-resident transactions
 - Free Zones with preferential regimes, offshore areas and Casablanca Finance City
 - Free trade and investment protection agreements concluded with a large number of countries
 - Adopting legislative and regulatory reforms such as a Charter on Corporate Social Responsibility
2. Improving the business environment:
 - Strengthening the position of the National Business Environment Committee (NBEC) as the only platform for public-private dialogue through the simplification of administrative procedures related to the promotion of private investment;
 - Strengthening institutions in charge of good governance and the promotion of ethics;
 - Implementation of a strategy to fight corruption (2015-25);
 - Deepening the public administration modernisation
3. Modernising the financial sector to support investment dynamics through the diversification of financial instruments, the strengthening of the stock exchange and the consolidation of Casablanca Finance City.
4. Increasing support to companies, through Innov Invest Fund, a special fund created to support start-ups and innovative projects.
5. Adopting legislative and regulatory reforms such the Investment Charter, the Charter on Corporate Social Responsibility, the Public-Private Partnership Contracts Act, the decree on Public Procurement, the General Regulation of Construction, the Supreme Council of the Judiciary and the Statute of Magistrates.
6. Simplification and digitalisation of administrative procedures for businesses by introducing an online platform to reserve the company name and reducing registration fees, opening a one-stop shop for obtaining building permits, improving the online system for filing and paying taxes, implementing a paperless customs clearance system.

Morocco is also implementing targeted policies in priority sectors. In the automotive sector, for example, the country has set up industrial zones in partnership with foreign investors, and has developed a targeted policy mix for investment (Table 2.5).

Table 2.5. Policy mix for investment in automotive industry, Morocco, 2018

Tax and customs exemption (indirect)	Financial support provided by the Hassan II Fund (direct)	Specific support
<p>In Free Trade Zones</p> <ul style="list-style-type: none"> - Total exemption from income tax (RT) for the first 5 years, then an 80% tax abatement on gross taxable business income for the next 20 years - Total exemption from corporation tax (CT) for the first 5 years, then the application of a rate of 8.75% for the next 20 years - Total exemption from business tax and urban tax for 15 years - Exemption from the tax on shares, dividends and similar income for non-residents and the reduction of this tax to 7.5% for residents - Exemption from registration and stamp duties on acts of incorporation or capital increase of the company, as well as on the acquisition of land - Total exemption from import duties and simplified customs procedures 	<p>Direct financial support for:</p> <ul style="list-style-type: none"> - 30% of professional construction costs, limited to 180 € / m² - 15% of equipment costs for investment in machinery - Contribution of the fund to 15% of the investment amount, capped at D30 million 	<p>Specific aid for large-scale projects: i.e. Renault Tangier project in a PPP approach</p> <ul style="list-style-type: none"> - Provision of land and off-site infrastructure, - Creation of the Training institute for automotive industry jobs, - Construction of a railway line linking Renault - Construction of the Port Tangier Mediterranean factory

Source: Mounssif Aderkaoui, Director of Studies and Financial Planning Ministry of Economy and Finance, Morocco. Presentation at the PTPR PLG of Colombia, Paris 26 June 2018.

Refining prioritisation through a place-based and challenge-driven approach

Identifying priorities for public investment in industrial and technological development is the million-dollar question in public policy making. There is no consensus on the best approach to prioritise and despite improvements in evidence-based policy making, political and managerial feasibility plays a major role in defining priorities. In Latin America and in Colombia since the 1980s, there has been a generalised mistrust of government's capacity to select winners and prioritise sectors. This, combined with the action of strong established interests and lobbies, has often maintained the *status-quo* of existing incentives. Overlong priority lists, which include all existing activities in the economy, have led to a dispersion of already limited budgets into a multiplicity of small actions and programmes (Peres and Primi, 2019^[3]; Cimoli et al., 2017^[14]).

The PDP 2016-2025 marks progress by focusing on evidence-based priorities and by fostering dialogue and concentration at the regional and departmental level. Colombia should refine the prioritisation process by adopting a place-based approach and by introducing a challenge-driven focus. This means working on production development policies together with the territories and not behind closed doors at central government level. In Europe, the Smart Specialisation approach offers valuable insights into this approach. It also requires focusing on technologies and challenges that joint public and

private forces can address, instead of prioritising specific industrial sectors. This is how leading economies such as the United States, Germany and, more recently, China operate.

Working with functional and economic regions and not only with administrative borders would bring Colombia in line with the good practices of some OECD countries (OECD, 2013_[26]). Functional regions are territories that do not have specific administrative borders and agencies in charge, but that share specific features that make them worth considering as units for planning and implementing and policies. In Colombia, a good example is the coffee-area (known as *Eje Cafetero*), or the textile cluster in Italy which spans between Emilia Romagna, Tuscany and Umbria regions. Identifying priorities through functional regions also helps in identifying needed public goods that could be effectively provided across regions. It also helps in clarifying future challenges. In going forward, Colombia also needs to address the asymmetries in administrative capabilities between regions and departments. These could be done by channelling part of the resources accruing to regions from the national royalties system to foster knowledge sharing among regions and to train local administrators to strengthen execution and planning capacities in regions.

Identifying priorities based on challenges rather than on improving competitiveness of existing products and sectors could also improve the PDP methodology. Prioritising products, as the PDP 2016-2025 does, risks limiting the potential for diversification and innovation to existing goods and services. Some countries and regions have made manufacturing a priority. China is a case in point, as is the Basque Country. It aims to have 25% of its GDP generated by industry by 2020. Morocco wants to increase the share of industry in GDP from 14% to 23% by 2020. Major challenges, such as mobility and greening the economy could provide an indication of major goals to achieve and leave room for the private sector to organise and co-invest in business and technological development.

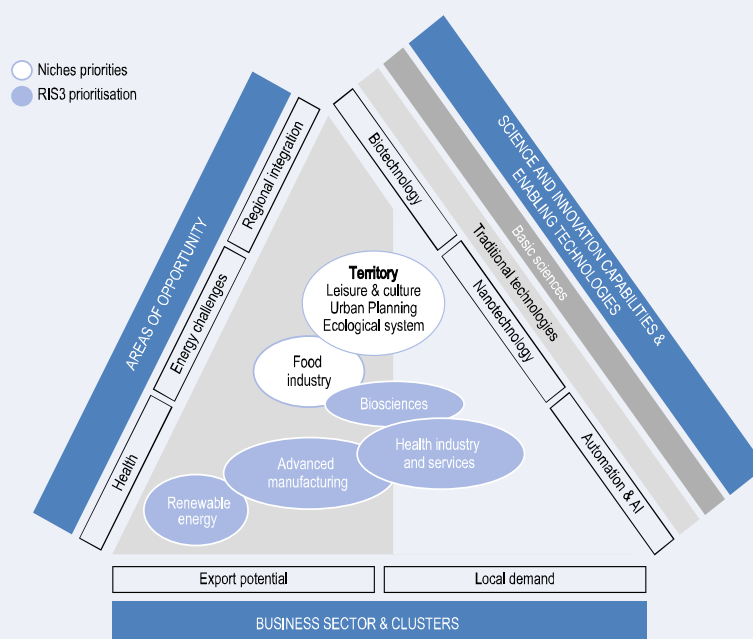
Prioritisation also benefits from clear targets that make tracking and communicating easier. Societies increasingly demand accountability. Governments today need to be able to show progress in a transparent and regular way, even if developing industrial capabilities takes time. The EU Smart Specialisation Strategy has enabled several regions in Europe to advance by easing access to resources. It has also engendered a prioritisation mechanism that is participatory and transparent. The Basque Country has adapted the EU methodology to its own institutional characteristics and has come up with a plan with clear, shared objectives (Box 2.7).

Box 2.7. Prioritising industry: The experience of the Basque Country

The Basque Country has promoted industrial development for 35 years. Its main priorities have remained constant. Currently, the Basque country has a vision towards 2020 based on sustainable, human and smart growth. Using the EU Smart Specialisation Strategy, the Basque Country has identified two criteria for priority action:

- Investing in areas where the region has identifiable strengths including a competitive business sector and some local technological and scientific capabilities;
- Focusing on challenges in which the Basque Country has the capacity to provide knowledge-based solutions.

Figure 2.13. Priorities of the Basque Country regional smart specialisation strategy



Source: Cristina Oyon, Head of Strategic Initiatives, Basque Business Development Agency (SPRI), Basque Country, Spain. Presentation at the PTPR Peer Learning Group (PLG) of Colombia, Paris, 26 June 2018.

Updating the policy mix to facilitate implementation

Colombia would benefit from updating its policy mix to facilitate implementation. Like many countries in Latin America, Colombia has too many lines of action. A one-window system for firms and research centres to access all the instruments offered by the country would help. This would create incentives for the different agencies to co-ordinate and create synergies among similar programmes. Currently start-up programmes are offered by several institutions including universities, iNNpulsa and the national training institute (SENA) (ref. Chapter 3 of this report). It would also help raise awareness among potential beneficiaries. In addition, Colombia would benefit from strengthening the tools for technology transfer and for fostering innovation in firms.

Colombia lacks instruments to address big challenges. Despite the 2012 reform in the National Royalties System which earmarked 10% of funds for innovation, these resources are still channelled and used by departments and regions. The country still lacks a major fund for national innovative challenges. This new fund could be based on existing practices in the system, with updates to deal with new issues. For example the country could consider introducing a cross-sectoral para-fiscal fund targeting specific major challenges (such as mobility and green energy). It could start by identifying two or three main challenges and piloting the creation of targeted funds, benefiting from the experience of the para-fiscal funds. Para-fiscal charges are used in sectors such as agriculture. These financial resources are earmarked to provide specific services and programmes, including research and technology transfer and technical assistance. In this respect, Colombia could also take a further step and address some of the weaknesses of these mechanisms, such as the risk of capture. One innovation would be to focus on major

national challenges, going beyond specific sectors, through a tripartite management committee, with representatives from relevant government agencies, the private sector and the research community. This would ensure that the management of these challenge-driven funds would be innovative and future-oriented.

Conclusions

Fostering diversification, increasing productivity and benefiting more from trade and investment are shared objectives in Colombia. To tackle these challenges, the country needs not only to address basic competitiveness gaps, such as in the infrastructure and regulatory framework, it also needs to identify mechanisms to foster production development across all its regions.

Through the PDP, the country has moved to define a long-term policy for production transformation. It has also made progress in creating a consultative and open process with the private sector and regional stakeholders. Now Colombia must update its planning capacities to cope with the complex economic and political landscape of today and tomorrow. This would also allow the country to advance in accomplishing the objectives of the Agenda 2030. The challenges ahead include:

- Strengthening the capacity to think long-term, addressing production transformation from a comprehensive point of view, fostering co-ordination on trade, investment and innovation, and shifting attention, and therefore governance and incentives, from planning to implementation.
- Improving the prioritisation process by identifying future industrial scenarios and the impacts on existing production chains and on new activities that the country could develop. Improving the place-based approach and working with regional actors to identify priorities. Focusing on challenges and on value chains rather than a conventional approach linked to specific products and services, avoiding leaving more space for private sector initiative.
- Updating the policy mix by facilitating access through a one-window system and by piloting the introduction of new, challenge-oriented funds to address the current gap in tools for financing and fostering major production development and innovation projects.
- Unleashing the potential of digital technologies for economic transformation and productivity. This issue is addressed in Chapter 3 of this report.

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