



D. Public innovation for a modern country¹

Introduction

Public innovation looks out for new ways to create public value; that is, value that is shared by the public. To achieve this, public innovation processes focus on public challenges of high complexity and uncertainty, and explore and test alternative solutions, fostering learning on each step of the process until finding the most effective solutions that can be scaled up.

Public innovation initiatives can result in improved public sector productivity, more open and robust democratic institutions, and more relevant and effective public policies or services that lead to greater confidence and citizen satisfaction. (Bason, 2010).

For example, in Colombia the National Office of Taxes and Customs (DIAN) and Ministry of Information and Communication Technology (MinTIC) led a public innovation project to address the unsolved problem of contraband in Colombia. Through an experimentation process involving customs office officials and data scientists, emerging technologies such as advanced data analytics and Artificial Intelligence (AI), were used to optimize the customs clearance process of cargo entering the country. The tested prototype improved the customs clearance times saving up to 2 hours a day in checkup times.

Digitalization, urbanization, globalization and demographic growth characterize a global context of accelerated change, with growing levels of uncertainty and complexity. This context defies the government's response capacity and reveals the need to explore new approaches to generate timely solutions to public challenges (OECD, 2017).

In Colombia, factors such as geographic complexity, territorial diversity and rural population dispersion add up to the complexity and highlight the need to design adequate responses to the local context.

Traditionally, public challenges are first approached “on paper”, with great allocation of time and resources in planning and designing solutions. However, these answers are often disconnected from the realities of implementation and find difficulties and disappointments in the implementation, which demand great creativity and commitment to be solved, and increase the probability of failure. In contrast, public innovation processes recognize the complexity and uncertainty from the beginning and, using experimentation, they explore, test and validate ideas, gaining knowledge, and gathering evidence about the challenge and the alternatives to solve it in practice, until finding an answer that leads to the desired impact.

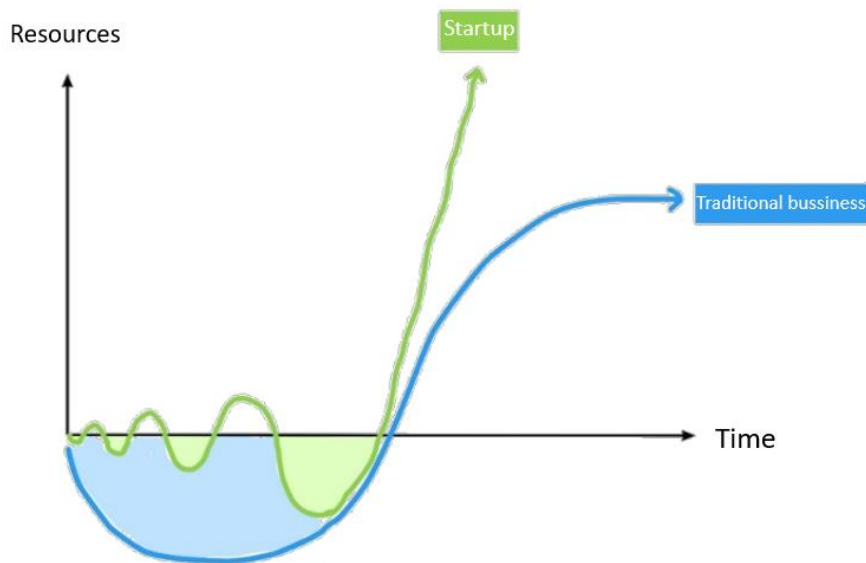
¹ Unofficial translation for information purposes, by Equipo de Innovación Pública (EiP), DNP.



Thus, after a process of research and participation led by the EiP, the public innovation ecosystem in Colombia identified experimentation as the key ingredient in innovative strategies to approach complexity and uncertainty. Understanding experimentation as a continuous approach to explore, test and evaluate solutions, to boost the potential to generate value at a greater scale.

The importance of experimentation as an engine for public innovation can be understood using an analogy with entrepreneurship. A dynamic innovative entrepreneur (startup) is not a small-scale company, it is an organization devoted to explore and learn which business model works best (Figure 1). To face uncertainty, a startup experiments and looks for constant feedback from its users, who participate as co-creators of their products or services. In a similarly, public innovation processes try to find new solutions, extracting evidence and cocreating products and services with the citizens.

Figure 1 Startups experiment to test their business models



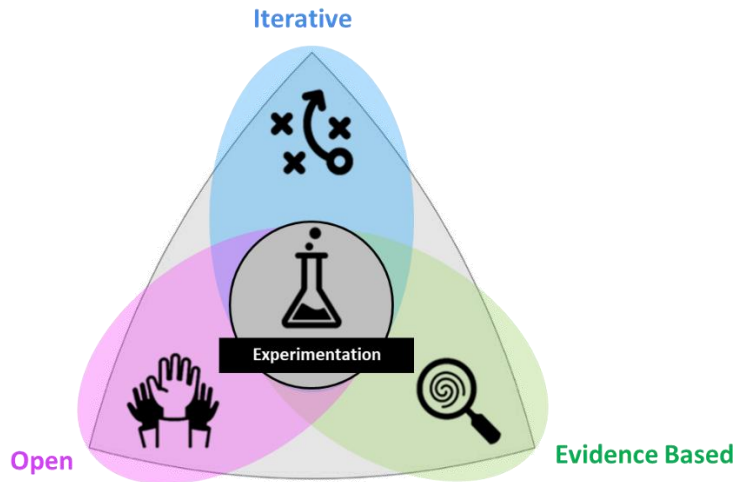
Source: EiP-NDP.

For experimentation to contribute effectively to the generation of public value, it must be (Figure 2):

1. Adaptive: runs in iteration cycles, in which learnings from one cycle are used to feed and adjust the next.
2. Based on evidence: evidence must generate options and support decision making to choose the best option
3. Open: from creating value for people to create value with them, harnessing collective intelligence and strengthening democratic legitimacy.



Figure 2 Characteristics of the experimentation process



Source: EiP-NDP.

An example of this type of experimentation in the public sector is the program Ideas for Change, led by Colciencias. The program promotes the social appropriation of scientific and technological knowledge to solve local challenges. Another example, is the strategy Lenguaje Claro, led by the National Department of Planning (NDP). Lenguaje Claro transforms the interaction between the State and the Citizens through simple communications that make it easier for citizens to exercise their rights and abide duties. In both cases, the process has been adaptative (each version of the solution builds on the learning s from past iterations), based on evidence (data is gathered and analyzed), and open (working jointly with the citizens to define problem and generate answers).

There are multiple examples of public innovation with an experimental focus, the goal of this plan is to stop seeing public innovation as a collection of isolated initiatives and recognize it as a crosscutting approach to solving public challenges.

Diagnostic

Our development agenda grows in complexity. The 2030 Agenda for Sustainable Development highlights the interconnections between goals, and the potential synergies and tradeoffs between them (Figure 3). New innovative approaches are required to understand and address these interactions effectively, and involve the actors immersed in specific contexts, including the citizenship.



Figure 3 Map of interconnections between the Sustainable Development Goals (SDGs)

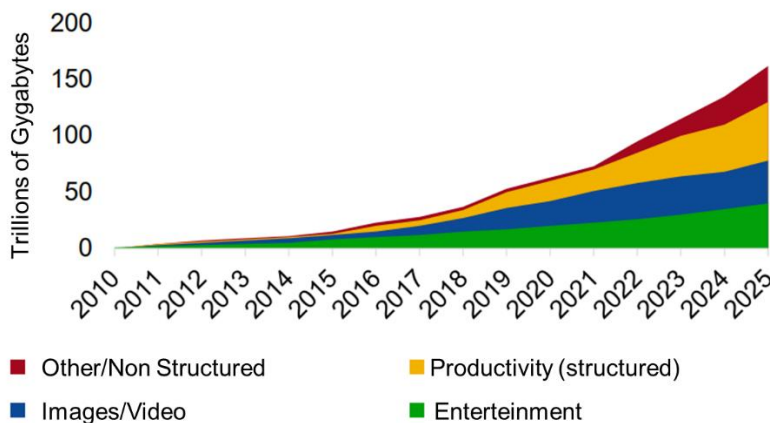


Source: (Mohr, 2016, con base en Le Blanc, 2015).

Note: the size of the icons represents the total number of goals of that indicator that share content with goals of other SDGs. The thickness and the numbers on the lines indicate the number of goals shared between two SDGs.

Furthermore, SDG achievement is immersed in a context of accelerated change, led by the transformations associated to the 4th industrial revolution. This is evident, for example, in the exponential growth of data generated at a global scale (Figure 4) This increases the level of complexity and challenges the ability of governments to respond to new challenges in a timely manner (OECD, 2017).

Figure 4 Growth of data in the world



Source: NDP with data from International Data Corporation (2017).

Now well, governments have dedicated decades to improve systems to manage complex problems. These are problems that we can comprehend, even though they are made off multiple elements, and where a solution's effectiveness can be predicted.

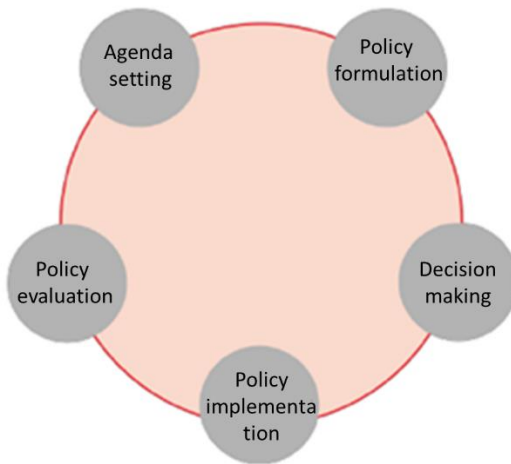
One example of such type of problem is the construction of basic infrastructure, like roads.



In contrast, complex problems have many interacting actors and the relationship between the problem's causes and effects are difficult to grasp, and they are highly sensitive to the context (Dorst, 2015). Examples of this type of problem are air pollution or food market regulations.

The traditional answer to complex problems can be summarized in the public policy cycle (Figure 5). One of the underlying assumptions of the cycle is that technical knowledge is enough to predefine solutions, and increased complexity can be answered by allocating more resources (Junginger, 2014; NDP, 2016; OECD, 2017).

Figure 5 Public policy cycle



Source: EiP-NDP.

This approach to public management is not effective for complex problems, particularly so, because it is difficult to calculate the probability of success and the risks associated to a potential solution. To approach complexity, it is necessary to test the effects of possible interventions, to learn and understand the context, and to adapt and adjust the solutions.

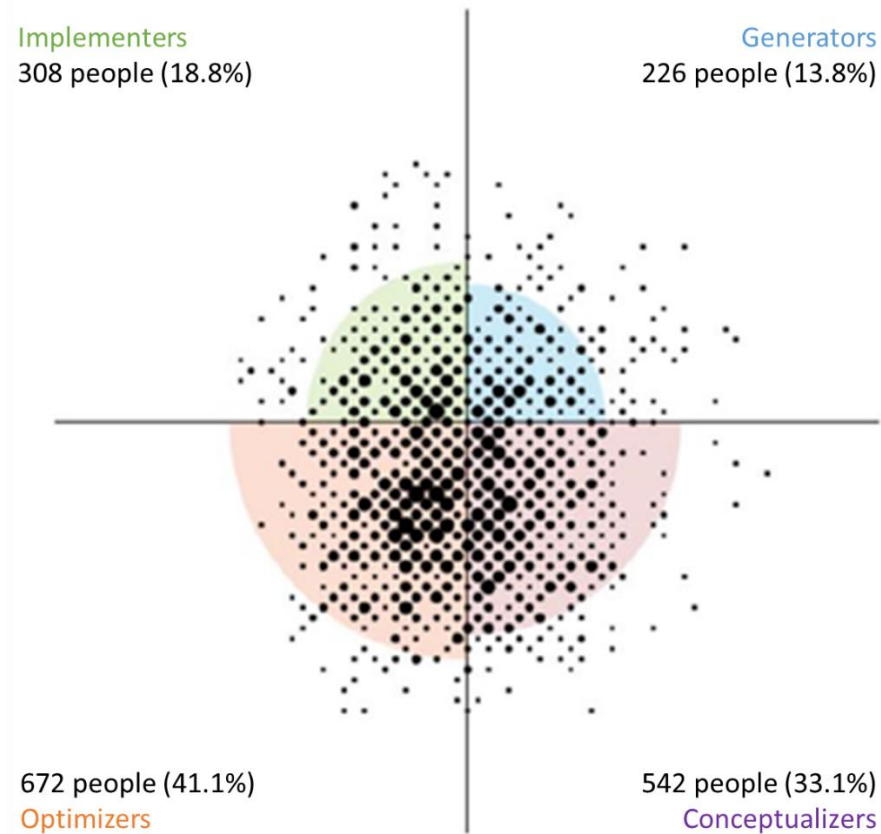
People directly affected by a problem need to be involved in the design of effective solutions for it, as their own experience is vital to understanding the situation and creating solutions. A couple of good examples of this are: the 3rd edition of Ideas para el Cambio (Bio 2016) (BIO), where participants cocreated a rain water collection system to provide water supply in remote areas; and MinTIC's model of entrepreneurship support and development of applications and digital content (Colombia 4.0).

Although there are multiple innovation initiatives in the public sector, there is a need to strengthen the skills for innovation, with emphasis on skills for the generation of new ideas and to implement innovation projects, as showed in the results of the Basadur Test on a sample of civil servants. The test mapped creativity profiles in innovation teams (Figure 6), and showed that most of the civil servants participating in the test have strengths relating ideas (conceptualize) and turning abstract ideas into practical solutions (optimize). But fewer participants are dedicated to coming up with new ideas (idea generation) or implementing them. Answering to this diagnostic, MinTIC has developed a capacity



development program (Catalizadores de la Innovación). The program run its 7th version and has learned from each iteration (for example the necessity to strengthen capacities using team activities as opposed to individual activities).

Figure 6 Results of the Basadur Test in the Catalizadores de la Innovación Program (2016- 2018)



Source: MinTIC.

Note: The test was applied to 1549 civil servants, in national and local institution, both to directives and operational personnel (not a representative sample)

Additionally, existing innovation initiatives are isolated and dispersed, thereby missing the potential to coordinate efforts and to use learnings. This point was highlighted in two surveys where 59 national public sector institutions reported 362 ongoing initiatives incorporating an innovation approach. This proves not only an interest on innovation initiatives, but also a growing need to support and connect the teams working on these initiatives, and the need to promote public innovation as a “way of doing things” that transcends individual isolated initiatives.

Finally, there are significant obstacles to implement a crosscutting experimentation approach in the public sector. This plan answers to them promoting actions in five categories: (1) strengthen the public innovation ecosystem; (2) strengthen institutional conditions to boost public innovation and remove barriers; (3) promote a mindset and culture related to innovation; (4) create support and financing mechanisms to realize innovation; and (5) manage knowledge and learning to create public value.



This classification is the result of a participatory process to diagnose the state of public innovation in Colombia, carried out with Nesta (leading British innovation organization), under a cooperation agreement funded by the Newton-Caldas Fund (Nesta, 2018).

In this process, a series of myths related to experimentation were identified as a central barrier to innovation. For example, thinking that experimentation is improvisation (and not a structured activity), that it is too risky (and doesn't allow managing complex risks) or that it is too expensive (when it is possible to deploy experiments with few resources). However, beyond pointing out general aspects of public procurement processes, specific regulatory barriers to advance innovation initiatives in the public sector have not yet been identified.

Goals and strategies

To promote public innovation in Colombia, the national government will work on the following goals: (a) strengthen the public innovation ecosystem; (b) strengthen institutional conditions to promote public innovation and remove barriers; (c) promote embracing an innovation mindset; (d) create support and funding mechanisms for innovation; (e) manage knowledge and learning to create public value.

a. Strengthen the public innovation ecosystem

Public innovation is promoted by an ecosystem in permanent change and evolution and with multiple national and subnational actors, from the public and private sectors, from the academia and civil society, with different capacities, resources, channels, and scopes of action. To strengthen public innovation, it is necessary to recognize this ecosystem and guide its collective action to answer to citizens needs and local contexts. To optimize this effort, the following actions must be met:

1. Revitalize the national public innovation ecosystem with a digital platform

NDP will lead the creation of a digital platform to: promote effective communication and articulation between initiatives with shared goals at the national and subnational levels; to effectively match the supply and demand for public innovation resources; and to bridge connections with regional and global actors working on public innovation.

Also, the platform will promote live spaces to share knowledge and lessons learned, which will be communicated to a larger audience.

2. Map individuals, teams and initiatives promoting experimentation in the public sector

NDP, with MinTIC and iNNpulsa, will continuously document the diverse actors and approaches to promote experimentation in the public sector in Colombia. This effort will include agile mechanisms to update and share the information to its potential users.

3. Create and manage communities of practice and learning about public innovation

NDP will promote Colombia's participation in the global community of practice "States of Change" hosted by Nesta to promote a better quality, coherence and learning about public innovation. Formal accession to the OECD Declaration on Public Sector Innovation, led by the Observatory for Public Sector Innovation (OPSI), will be pursued.



iNNpulsA, in coordination with MinTIC and NDP, will lead the development of the Community of Innovation and Entrepreneurship (CIEN), to promote and enliven the interaction between public and private actors, the academia and multilateral organizations, within the broader ecosystem of innovation and entrepreneurship. This platform will be linked to the innovation portal (innovamos.gov.co)

DPS will continue to strengthen the Latin-American Network of Social Innovation, as a space of public dialogue and participation between the public and private sectors, the academia and social organizations in Latin America

4. Establish the 2030 agenda for Sustainable Development and the SDGs as a shared long-term framework to prioritize and focus experimentation initiatives

NDP will lead a program to identify gaps, barriers and bottlenecks in SDG achievement, to promote and guide the prioritization and focalization of public innovation initiatives. An experimentation module will be included in the Colombian SDG platform. It is also important that local governments can appropriate the Sustainable Development Agenda, and its connection to public innovation (via, for example, the welcome kit for local officials including thematic and technical planning tips and methodologies).

b. Strengthen the institutional context/organizational culture to promote public innovation and remove barriers

To support the mainstreaming of public innovation as an approach for the development of national and local public policies and initiatives, institutions need to promote the value of existing initiatives and create spaces to connect and inspire.

1. Include in the role of the NDP to study, coordinate and provide technical support for public innovation initiatives aimed at improving efficiency, management impact, public interventions, the construction of citizen-centered services, and the openness of the State

This answers to the existence of three long standing pioneer initiatives by the NDP that incorporate a public innovation approach:

- The National Programme of Citizen Services (PNSC), designs tools, interventions and delivery and cocreation models to bring the State closer to the citizen, and to articulate efforts with the National System of Citizen Service and territorial entities for its implementation.
- Improve regulation, and support capacity development in the framework of the implementation of the regulatory improvement policy, to obtain better regulation, based on participation and evidence.
- The Public Innovation Team enables innovation to create public value, by developing capacities for experimentation and generation of public policies with the national public innovation ecosystem.



2. Create a Colombian Public Innovation Index (ICIP) to provide input to national and subnational institutions to define and guide strategies of public innovation

The ICIP will be designed by NDP building on the lessons learned from the Departmental Public Innovation Index (IDIC) and the Public Innovation Index of Bogotá. The ICIP will focus on measuring capacities for public innovation, so that the individual needs of each organization can be met and will include elements that promote interinstitutional cooperation. To continue the work to streamline processes, the index will be aligned with existing tools (such as the integrated planning and management model [MIPG] and the single management progress report form [FURAG]).

3. Promote an open dialogue with control institutions at the national and local level, and with internal audit offices, to draft an agenda to remove normative barriers and organizational culture barriers to public innovation

The NDP will lead this process, in order to diagnose potential regulatory barriers to public innovation in Colombia and define opportunities to dispel fears related to innovation from the public sector. This diagnosis will include the analysis of barriers to the use emerging technologies in the public sector. The diagnosis should lead to the definition of guiding principles and an agenda for regulatory reform to promote public innovation in Colombia.

4. Assess and support the creation of public innovation units at the national and subnational levels

The NDP will lead an investigation to identify sectors and institutions where there are opportunities to consolidate public innovation units, and foster their creation adopting a collaborative learning framework. The goal is to explore opportunities and consolidate teams, with emphasis on the development of inputs and methodologies for a broad range of institutions. Some types of public innovation units to be considered are:

- Public innovation labs: as spaces for experimentation, trying on new approaches, methodologies and tools to answer to specific public challenges. NDP and MinTIC, will support iNNpulsa in the creation of a public innovation lab; it will typify and connect public sector challenges with private entrepreneurs. The ESAP will create a public administration innovation lab, it will operate in alignment with iNNpulsa's lab and provide tools to strengthen civil servant's skills for innovation. To harvest and build on lessons learned, the labs will have the support of the public innovation ecosystem.
- Incubators and accelerators are units designed to accelerate the generation, test and scaling up of solutions.

c. Promote the adoption of/embracing an innovation mindset

An innovation mindset and organizational culture are prerequisites for public innovation to be mainstreamed as an approach to solve public challenges, with the potential of structural and sustainable impact. To this end, the following actions will be implemented:

1. Develop and disseminate a toolbox to promote an experimental mindset

NDP Will led the creation of a toolbox to promote an experimental mindset. The tool will be developed in a cocreation process using an experimental approach and will have both a



digital and an analog version. On each iteration the toolbox will be tested with different members of the public innovation ecosystem, so it can be adjusted and scaled up effectively.

2. Create, implement and scale up capacity development programs on public innovation for civil servants

Civil Service Administration (Departamento Administrativo de la Función Pública) jointly with NDP, will include contents about public innovation in the national program of education and training for civil servants. Emphasis must be made on developing competences for: building an innovation mandate, managing experimentation projects and scaling up solutions, and for the effective use of the potential of new technologies. For this purpose, the program will build on the lessons learned from Catalizadores de la Innovación, and will be implemented using digital platforms that boost the potential to scale up the program.

Specific programs will be developed for local government managers and officers in planning, procurement and internal audit roles, as well as other key officials who facilitate the communication and appropriation of an innovation culture.

ESAP will create lifelong learning projects on innovation and intrapreneurship in public administration. Social Prosperity and ESAP will develop training programs for its regional offices.

3. Promote the use of simple/plain language to optimize the communication between the Government and Citizens and facilitate the interaction between civil servants and citizens

The National Plan of citizen services will lead the initiative Lenguaje Claro with the support of the Lenguaje Claro network in Colombia, will provide the guidelines and tools to guarantee the access, comprehension, and usefulness of public communications.

One of these initiatives will be Programa Ley Fácil. It will translate legal contents to simple language for better understanding by the citizens, it will promote the Lenguaje Claro at education institutions, develop guidelines for inclusive clear language to make contents accessible and available in native languages too, and continue effective communication training programs for civil servants. This strategy will be implemented with an experimental approach for the implementation, evaluation and adaptation of the strategy to make it a benchmark for public innovation.

4. Data for better services and processes, and for stronger evidence-based decision making

MinTIC, with the support of NDP, the high commissioner for innovation and digital transformation and iNNpulsa, will create and consolidate initiatives to promote data culture as stated in the document CONPES 3920 of 2018, aiming to promote public innovation. These initiatives will focus on the following actions:

- Optimize open data platforms: openness and reuse of public information has the potential to generate private and/or public value.



- Generate public innovation projects based on data: structure and analyze information to solve public challenges and improve the efficiency of the public administration.
5. Promote cocreation processes between the public sector, private sector, academia and citizenship, based on the principles of open government.

NDP will led a strategy to promote the effective use of:

- Citizen participation platforms on public innovation: actively engaging citizens on the definition and solution of specific challenges, as well as on general interest decision making
- Tools to facilitate co-creation for public innovation: for example, to facilitate spaces, manage projects and share knowledge.
- Methodologies for the use of digital or emerging technologies in the resolution of public challenges (startups Govtech).

To this end, together with the public innovation ecosystem, it will be necessary to design and implement effective and sustained communication strategies, directed to potential users.

d. Create support and funding mechanisms for innovation

A funding support strategy is necessary to solve the myths about public innovation, bridge gaps and remove barriers for its implementation. Funding platforms for public innovation need to be flexible enough to be adjusted as needed to adjust to the users needs. To this end, the following actions will be implemented:

1. Design and disseminate guidelines and templates to promote intersectoral and interinstitutional cooperation on public innovation

The NDP, harnessing the experience of the ecosystem, will led the design and dissemination of guidelines and templates to draft interinstitutional cooperation agreements on public innovation, designed to promote public innovation, at national and local institutions. Some of these are:

- Interinstitutional agreements and memorandums of understanding: documents between public, or public private institutions, that describe a cooperation framework o project, with or without resources.
- Public innovations competitions or prizes: Multidisciplinary meetings aimed to finding solutions collaboratively in short periods of time.

2. Review and promote the use of the Public Procurement for Innovation Tool (*Compra pública para la innovación, CPI*)

Colombia Compra Eficiente, with the support of NDP and Colciencias, will lead a strategy to promote public innovation using the CPI, focused on meeting the demand for goods and services that are not ready made in the market. The current tool will be revised, based on feedback from its pilot interventions and international experiences. To promote its use, it's necessary to train civil servants, revise and communicate more broadly on the normative defining which science, technology and innovation activities can be financed with public



resources and share best practices about procedures.

3. Explore and promote payment-for-performance mechanisms, such as social impact bonds and funds for payment for performance

The NDP will lead this strategy for several sectors. For the social inclusion and reconciliation sector, the strategy will be led jointly with DPS, based on the experience from the first pilot of social impact bonds (BIS). BIS are a mechanism on which payment is based on results achieved and verified. To make it usable, the following restrictions must be lifted: (1) to allow budget allocations for more than one period; (2) allocate and make available public funds to match cooperation funds. The creation of a fund for payment for performance will be explored, as a strategy for sustainability and scalability of BIS in Colombia.

4. Envision new public innovation practices based on the social appropriation of scientific and technological knowledge, at the national and regional levels

Colciencias will lead this strategy, by deepening the lessons learned in the A Ciencia Cierta and Ideas para el Cambio programs and will explore alternatives to promote social appropriation of scientific-technological knowledge to civil servants in national and territorial entities.

e. Manage knowledge and learning to create public value

Knowledge management skills are essential to create value from public innovation, as enablers to iterate, learn and transfer learnings to other areas. To accomplish that, it is necessary to undertake the following actions:

1. Build specific documentation, measurement and evaluation tools for innovation initiatives in the public sector, that value results and processes, integrate quantitative and qualitative evidence, and lead to results that are widely disseminated to support institutional and citizen confidence

The civil service administration and the NDP will collaborate with the ecosystem to design, measure, analyze and disseminate knowledge management tools that support public innovation initiatives, within the framework of the Integrated Planning and Management Model (MIPG). These tools should incorporate both tacit knowledge derived from the practice of innovation, as well as explicit knowledge derived from documentation and systematization processes. To this end, digital and analogous tools will be explored with the users to incorporate differential criteria in their design and communication.

The NDP will carry out case studies according to public innovation typologies. Different formats and channels will be used for broad dissemination and to inspire more actors to execute initiatives in this field.

The civil service administration will create the Program *El estado del Estado* and an academic network with the same name to connect academic actors with the strengthening of this strategy.

The NDP PNSC will promote citizen access to information, with the creation of a citizen



observatory and a catalogue of public resources; the design of measurement and evaluation schemes on issues such as citizen perception regarding their relationship with the State; and drafting policy orientations from the use of large-scale data on citizen requirements, assessments and opinions.

2. Design an evaluation model for the management and performance of public innovation teams, that contributes to strengthening the knowledge management and innovation dimension in the Integrated Planning and Management Model (MIPG)

The NDP will lead the design, test and scaling up of this model, to motivate the continuous improvement of teams dedicated to promoting public innovation initiatives, based on a framework of competencies for this area. There is a first version developed between the NDP and the Colombian Observatory of Science and Technology (NDP and OCyT, 2015). The impact evaluation model developed by the MinTIC will be taken as a reference.

3. Carry out impact evaluation, cost-effectiveness studies and document qualitative learnings from public innovation initiatives, and disseminate their results through a differential communication strategy

The NDP will carry out studies to quantify and qualify the effects and impacts of public innovation initiatives, in order to support decision-making in this area. The results should be disseminated using different formats for different potential users (e.g., decision makers in public entities, servers of entities in the national and territorial order, academic actors, the private and multilateral sectors, and general citizenship).

Targets

Sector	Program	Indicator	Baseline	Target	Primary SDG	Secondary SDG
Civil Service	Strengthening public administration in the national and local level	Civil servants trained on public innovation	0	8.300		
Commerce, industry and tourism	Productivity and competitiveness of Colombian businesses	Public challenges characterized and connected to the public innovation ecosystem (private sector)	0	24		
National Planning	Improve sectoral and territorial planning	National and local institutions measured with Colombian Public Innovation Index (ICIP)	0	50		

Source: NDP, sectors.



Bibliography

Agencia Nacional de Hidrocarburos. (2018). Producción Mensual de Petróleo. Bogotá.

Banco Mundial & NDP. (2018). Análisis de Gasto Público en CTI Subnacional. Bogotá. Banco

Mundial. (2015). Análisis de Gasto Público Nacional en Ciencia, Tecnología e

Innovación: Funcionalidad y Gobernanza. Washington.

Banco Mundial. (2018). Commodity Markets Outlook. Recuperado de <http://www.worldbank.org/en/research/commodity-markets>

Bason, C. (2010). Leading Public Sector Innovation: Co-Creating for a Better Society. Policy Press.

Cirera, X., & Maloney, W. F. (2017). The innovation paradox: Developing-Country Capabilities and the Unrealized Promise of Technological Catch-Up. World Bank Group.

Contraloría General de la Nación. (2016). Informe de la situación de las finanzas del estado 2016: Resultados del sistema general de regalías a diciembre 2016. Bogotá.

Cornell University; INSEAD; WIPO. (2018). Global Innovation Index. Nueva York.

NDP y OCyT. (2015). Modelo de seguimiento y evaluación a la gestión de los equipos de innovación en instituciones del sector público. Bogotá.

NDP. (2017) Índice Departamental de Innovación de Colombia 2017. Departamento Nacional de Planeación. Recuperado de https://colaboracion.NDP.gov.co/CDT/Prensa/Informe%20DIC%202017%20aj_rev%20NDP_120218.pdf

NDP. (2016). El Equipo de Innovación Pública de NDP: Una primera aproximación a su propósito, oferta y apuesta metodológica. Recuperado de <https://innovacionpublica.atavist.com/eipNDP2016>

Dorst, K. (2015). Frame Innovation: Create New Thinking by Design. London, England: MIT Press.

Fedesarrollo. (2014). Recuperado de https://www.repository.fedesarrollo.org.co/bitstream/handle/11445/1706/Repór_Septiembre_2014_Nu%C3%B1ez_Castro_y_Rincon.pdf?sequence=3&isAllowed=y.

Fedesarrollo. (2016). Levantamiento y consolidación de la línea de base de las inversiones. Bogotá.

GEM. (2018) Global Entrepreneurship Monitor 2018/2019 Global Report. Global Entrepreneurship Monitor. Recuperado de <https://www.gemconsortium.org/report>

International Data Corporation. (2017). Data Age 2025: The Evolution of Data to LifeCritical. Don't Focus on Big Data; Focus on the Data That's Big. Recuperado de <http://www.seagate.com/wwwcontent/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf>



Junginger, S. (2014). Towards Policymaking as Designing: Policymaking Beyond Problem-solving and Decision-making. En C. Bason, Design for Policy. London: Routledge.

Ministerio de Hacienda y Crédito Público. (2018). Marco Fiscal de Mediano Plazo. Bogotá. Ministerio de Hacienda y Crédito Público. (2018). Plan de recursos del sistema general de Regalías. Bogotá.

Mohr, J. (2 de septiembre de 2016). A toolkit for mapping relationships among the Sustainable Development Goals (SDGs). Recuperado de <https://blog.kumu.io/a-toolkit-for-mapping-relationships-among-the-sustainable-development-goals-sdgs-a21b76d4dda0>

Nesta. (2018). Recomendaciones de política pública para la innovación en el gobierno colombiano y el Departamento Nacional de Planeación. Manuscrito.

Observatorio Colombiano de Ciencia y Tecnología. (2017). Informe anual de ciencia y tecnología. Bogotá.

OCYT., (2014) Percepciones de las ciencias y las tecnologías en Colombia. Resultados de la III Encuesta Nacional de Percepción Pública de la Ciencia y la Tecnología. Observatorio Colombiano de Ciencia y Tecnología (OCyT). Recuperado de <http://percepcionescyt.ocyt.org.co/files/assets/basic-html/page-1.html>

OECD. (Noviembre de 2017). Innovation in Government: The New Normal. Recuperado de <http://www.oecd.org/gov/innovative-government/innovation-conference-november-2017.htm>

OECD. (2014). Science, technology and industry outlook. Paris: OCDE Publishing. OECD. (2017). Fostering innovation in the public sector. Paris: OECD Publishing.

OECD. (2017). Systems approaches to public sector challenges working with change: Working with change. OECD Publishing.

OLE-MEN. (2015) Hacia Colombia la mejor educada 2025. Diapositivas. Observatorio Laboral para la Educación. Ministerio de Educación Nacional. Recuperado de https://www.mineducacion.gov.co/1759/articles-355258_archivo_pdf.pdf

Pacto Nacional. (2018) Gran Acuerdo Nacional por el futuro de Colombia. Memorias. Universidad de los Andes, Universidad del Rosario, Banco Interamericano de Desarrollo, ANDI, Consejo Privado de Competitividad, Proantioquia, Fundación Saldarriaga Concha, Fundación Excelencia por la Justicia, Camacol, SAC, BVC, CCI, y McKinsey and Company.

PNUD. (2017). Spark, Scale, Sustain: Innovation for the Sustainable Development Goals (UNDP Innovation Facility Report). Recuperado de http://www.undp.org/content/undp/en/home/librarypage/development-impact/spark-_scale-_sustain---2016-year-in-review.html

Red de Indicadores de Ciencia y Tecnología. (2018). Indicadores de Insumo. Bogotá.