

Creating local good green jobs in the City of Bogotá

Executive summary

October 2022





By investing in climate actions, the city of Bogotá has an opportunity to solve social and economic issues of today, building a resilient economy of the future.

It has an opportunity to stimulate economic activity by creating good local jobs whilst having cleaner air, more green spaces, improved public transport and waste management systems, which will also bring benefits to the health of city residents, plus make the city more resilient to the impacts of extreme weather.

In addition, there is an opportunity to ensure that the employment driven by these investments in

Bogotá also helps to build a better and more resilient economy for everyone, and addresses historic inequalities, by ensuring that these jobs are accessible by everyone and in particular by those who need them most.

This summary outlines the opportunities for job creation in a broad range of industries that contribute to greening the economy and address climate change.

Key findings of the research

- Ambitious climate action taken in this decade can create and support¹ **726,000** jobs in Bogota and its supply chains by 2030, in the sectors of buildings, public transport, clean energy and waste.
- Actions like making homes and buildings more energy efficient and electric transportation are among those with the highest job creation potential.
- In addition, **interventions to make the city more resilient to the impacts of climate change** - such as investing in urban drainage systems or urban parks could create and support over **60,000 additional jobs in the city**.
- These jobs supported from climate actions (particularly in energy, transport and waste interventions) generally require lower than average education levels, which means that they will be accessible by a larger group of the population and can reduce unemployment for citizens with lower education levels.
- It is important to **ensure that these jobs will be accessible to everyone**, as research shows for example that women will likely be underrepresented in these jobs.
- Climate intervention will likely create jobs in the formal economy, therefore strategies and policies to engage and include the informal sector are important for improving working conditions or incomes of 38% of the working population, which is employed in the informal economy.
- Significant investment is needed from public and private sources to realise this opportunity to improve communities, create good sustainable jobs, lower energy bills and bring additional benefits for all.

1. The job creation potential of climate action implementation refers to both new green jobs that will be created and to existing jobs that will be transformed into green jobs through these measures.

“The longer cities delay moving toward climate goals, the more difficult and costly the transformation will be. Bogotá is transitioning towards energy efficiency and by 20230 we will have created, supported or transformed over 700,000 green jobs. If the following governments align responsibly with climate goals, we will give the next generations a better chance – perhaps their only chance- to live and work in a stable economic environment.”

— Mayor Claudia López Hernández

Context

Bogotá is characterised by growing employment in the last decade. This progress has been disrupted by the pandemic in 2020 when unemployment rates rose from under 11% to about 18%. The gender disparity in unemployment grew to over four percentage points in 2020 (to the disadvantage of women) amid the socioeconomic challenges brought on by the pandemic.

Though Bogotá’s rate of informal employment of 38% in 2021 is low relative to other urban areas in Colombia – across all cities and metropolitan areas, about 46% of workers are informally employed - **it is still about 5 percentage points higher than the rate in Latin America.** Informal work is less stable and leaves workers vulnerable to socioeconomic shocks such as the Covid-19 pandemic. Following current workforce trends, climate interventions are likely to result in formal job creation and provide minimal benefits for the informal economy. Careful considerations are needed to support the equitable distribution of jobs when investing in and delivering climate interventions.

In October 2022, Mayor Claudia López Hernández of Bogotá joined other fellow cities in the [announcement](#) that C40 cities will drive the creation of 50 million good, green jobs by 2030.

Benefits of climate action in Bogotá

The implementation of Bogotá’s climate actions from the city’s climate action plan² will drive significant job creation both from the delivery of the interventions in the city (direct jobs, e.g. infrastructure and installation), from the supply chains (indirect jobs) and derived from the increased income of workers (induced jobs).

Investments in climate action will also create jobs within Bogotá and outside of the city in the rest of the country.

1. Mitigation actions

It is estimated that a total of **809,000 jobs** will be created and supported by Bogotá’s mitigation climate actions in the city and across its supply chains in the rest of the country. Out of these, 90% (**726,000 jobs**) will be supported in the city of Bogotá.

Interventions on new energy efficient buildings will create most of the green jobs in Bogotá, with an estimated 80% of city-level green jobs being created and supported in this sector. Making buildings more energy efficient helps to reduce the energy demand and people’s energy bills. Investments in commuter rail and electric cars interventions could also create over 89,000 jobs in the city.

These types of interventions are crucial, inclusive, fair and bold climate actions that can also help citizens with their energy bills and ensure everyone can access sustainable transport, whilst generating local jobs and reducing emissions.

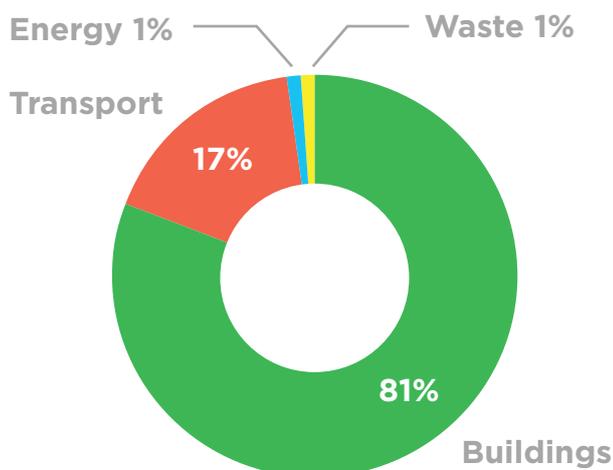
809,000 jobs

could be created and supported
in the City of **Bogotá**

2. [Plan de Acción Climática de Bogotá 2020-2050 \(PAC\)](#)

National jobs supported by mitigation interventions by 2030			City-level jobs supported by mitigation interventions by 2030		
Intervention	National jobs	Share of total national jobs	Intervention	City-level jobs	Share of total city-level jobs
Energy efficient new builds	600,136	74%	Energy efficient new builds	583,003	80.3%
Electric cars	69,996	9%	Electric cars	36,514	5.0%
Electric Commuter Rail	66,511	8%	Electric Commuter Rail	52,962	7.3%
Electric buses	16,581	2%	Electric buses	9,304	1.3%
Gasoline/ethanol cars	12,947	2%	Gasoline/ethanol cars	7,683	1.1%
BRT	10,234	1%	BRT	9,391	1.3%
Cycle infrastructure	9,145	1%	Cycle infrastructure	8,038	1.1%
Hydro power	7,631	1%	Hydro power	7,047	1.0%
Residential heatpumps	3,401	0%	Residential heatpumps	2,696	0.37%
Efficient lighting (buildings)	3,221	0%	Efficient lighting (buildings)	2,268	0.31%
Advanced Recycling	3,118	0%	Advanced Recycling	2,479	0.34%
Composting plant	1,986	0%	Composting plant	1,690	0.23%
EV infrastructure	1,273	0%	EV infrastructure	1,156	0.16%
Biogas Plant	1,065	0%	Biogas Plant	926	0.13%
Diesel/ethanol buses	599	0%	Diesel/ethanol buses	332	0.05%
Solar PV	322	0%	Solar PV	283	0.04%
Efficient street lighting	314	0%	Efficient street lighting	204	0.03%
Solar water heaters	142	0%	Solar water heaters	125	0.02%
Residential PV	10	0%	Residential PV	9	0.00%
Commercial heatpumps	3	0%	Commercial heatpumps	2	0.00%
Total jobs	808,633	100%	Total jobs	726,111	100%

Source(s): C40 and Cambridge Econometrics calculations based on estimated expenditure on selected climate interventions in Bogotá out to 2030, in line with the city CAP



Intervention cluster	City-level jobs
Buildings	588,307
Transport	125,380
Energy	7,330
Waste	5,094
Total jobs	726,111

Source(s): Source(s): C40 and Cambridge Econometrics calculations based on estimated expenditure on selected climate interventions in Bogotá out to 2030, in line with the city CAP.

Investment needed for a green and fair transition

For the mitigation actions, the capital investment (CAPEX) needed for the construction phase, from public and private sources, is estimated to be close to COP 428,000 billion (\$116 billion), or around COP 85,000 billion (\$23 billion) per year for the next 5 years³. The intervention category with the largest total estimated investment needed for mitigation interventions is buildings, with COP 281,000 billion (\$76 billion) in total investment. CAPEX investments make up the vast majority of overall investment needs.

It is to be noted that, normally, similar significant investments may be required under a carbon-intensive or polluting scenario, but it would not produce the same benefits across all parts of people’s lives nor bring savings in the long term in terms of health impacts and reduced energy demand. This is why it is critical to move current private and public investments from polluting industries and projects into low-carbon ones.

2. Adaptation actions

An additional 68,000 jobs could be created and supported in the city of Bogotá by 2030 from climate adaptation interventions, and about 61,000 of these jobs (89%) will be supported or created locally in the city. These actions are critical to ensure that the city is more resilient to the increasing impacts of extreme weather events. Out of the interventions analysed, the adaptation interventions with the highest job creation potential are Sustainable Drainage Systems (SuDS) and urban parks.

68,000

jobs could be created and supported
in the city of Bogotá from
climate adaptation actions by 2030,

About 61,000

of these jobs could happen
locally in the city.

3. This assumes that the construction phase, when capital investment is made, will happen over 5 years.

National jobs supported by the adaptation interventions by 2030

Intervention	National jobs	Share of total national jobs
Green SuDS	34,134	50%
Blue SuDS	14,261	21%
Urban Parks	11,817	17%
Living walls	6,356	9%
Green roofs	1,231	2%
White roofs	523	1%
Street trees	42	0%
Total jobs	68,365	100%

City-level jobs supported by the adaptation interventions by 2030

Intervention	City-level jobs	Share of total city-level jobs
Green SuDS	31,908	52.6%
Blue SuDS	11,501	19.0%
Urban Parks	10,850	17.9%
Living walls	4,906	8.1%
Green roofs	1,072	1.8%
White roofs	377	0.6%
Street trees	37	0.1%
Total jobs	60,653	100%

Source(s): C40 and Cambridge Econometrics calculations based on estimated expenditure on selected climate interventions in Bogotá out to 2030, in line with the city CAP.

3. Who will get these jobs?

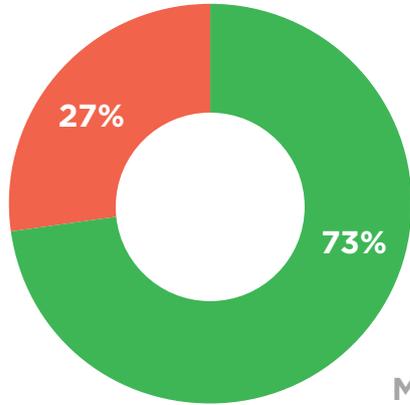
- **Green jobs are for everyone.** The jobs supported by climate actions generally require lower than average education levels, with only 15-23% of the jobs requiring a college degree or higher for entry. Energy, transport, and waste interventions have particularly low education requirements. These jobs will be accessible by a larger group of the population and thereby the interventions can help reduce unemployment in the city.
- **More needs to be done to ensure that women can access these jobs equitably.** It is estimated that women would occupy only approximately 27% of these jobs on average. This is partially because many of these jobs will happen in occupations related to construction and manufacturing,

which have been historically male-dominated. This shows that more needs to be done to ensure an equitable distribution of these jobs in the city and truly guarantee a fair transition away from polluting industries.

- **It is also important to ensure that informal workers can also benefit from these job opportunities.** Transport and waste interventions will provide formal working arrangements to less than 50% of workers. Alternatively, in the adaptation measures, around 60% of workers are likely to be formally employed, thus enjoying better job stability than in the other interventions. Investments in climate action will create more demand in the formal sector and provide opportunities to transition employees in the informal sector to new formal jobs, with higher job quality and social protection.

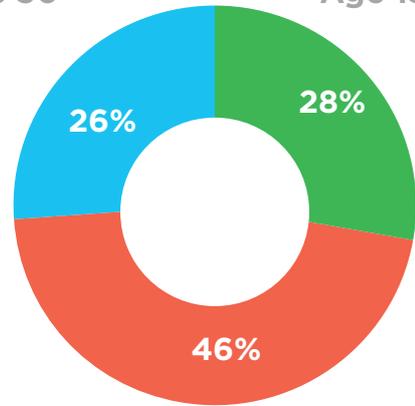
Expected distribution of Green jobs in Bogotá out to 2030,
by gender and age

Female



Male

Age 50+



Age 30-49

Source(s): C40 and Cambridge Econometrics



4. Key recommendations



Start with the interventions with the greatest job creation potential, like building retrofits, transport or adaptation, and ensure that its implementation is fair, addresses existing inequalities, and creates good green jobs (with decent pay and working conditions).

- Big city programmes that have an immense green job creation potential present a key opportunity to address existing inequalities, such as the low representation of women in the construction sector, or informality. For this, its implementation must be accompanied by workforce policies and mechanisms like specific hiring targets, and education and training programmes that ensure that women, young workers and other groups are equally represented in these good jobs.
- Specifically with the buildings sector, ensure that the green codes and regulations extend their benefits beyond retrofit-related jobs, and apply to any new building and built stock in the city, impacting other green jobs such as those related to efficient lighting, solar water heaters, solar PV, green/white roofs and water efficiency systems.



Develop a fair plan of action that involves all stakeholders in the transition to a green economy.

The implementation of climate action plans will be more effective and supported by citizens if a

wide variety of stakeholders are engaged, including unions, youth and women organisations, informal workers, unemployed people and workers who are or may be negatively impacted by the phase-out of fossil fuel industries, and develop plans based on their perspectives and needs. This can be achieved by setting up participatory governance mechanisms.

- Analyse the job creation potential of existing and planned public infrastructure projects and collaborate with workforce development organisations to match job seekers and necessary skills to the new green jobs.



Create job pathways and improve the capacity of women, youth, migrants, and people with disabilities to work in green industries. This can look different for varying demographics.



Promote climate action-related jobs that show clear benefits for people and the environment (living wages, stability).

Consider where job opportunities are promoted and who has access to them. Include **public campaigns** that show the clear benefits that climate action has for all (good jobs, clean air, public transport, clean energy, health impacts). This is critical to gain citizens' support towards these projects and to increase

the understanding that green jobs are good for people, not only for the planet. This awareness raising should also include the critical role that informal workers play, specially in specific sectors (i.e. waste).



Introduce policy/regulatory changes to incentivise the public and private sector to support equitable access to jobs.

Set contract standards for public procurement to hire locally wherever possible and work with companies using sustainable practices, providing decent pay and working conditions, and offering employment pathways to disadvantaged groups. Consider introduction of tax incentives for businesses adopting greener and fair practices and supporting reskilling of workers and gender, race and youth equitable access to jobs.



Analyse the skills gap and prepare the workforce for future demand.

The city could create a forum between local authorities, local skills partners and communities to quantify the skills that will be in demand for the new occupations, and co-develop skills training and apprenticeships. For example, what will be the demand for retrofit-related occupations, and what's the existing workforce in these occupations? Can training programmes be developed to fill the skill gaps identified?



Ensure ample workforce development opportunities are available, including training, upskilling and reskilling programmes.

Opportunities should be targeted at workers transitioning away from carbon intensive industries and workers who have low education levels, or other barriers to access jobs, to ensure they can increase their earning potential and have better stability of work. The city should ensure equitable access to training among genders, races, age groups, and other demographic groups to empower vulnerable groups.

- Programs such as the 'Mujeres que Reverdecen Program' ⁴ recognize the "care economy" and create jobs that are compatible.



Protect workers in extractive industries in transitioning to green jobs by implementing social protection measures in addition to re-skilling.

Provide job security through training opportunities and create a pipeline with green job employers for workers to transition into new roles. This will prevent increased unemployment rates for informal workers.



Support safe and decent working conditions for informal workers, including adequate income, access to municipal processes, legal recognition, work/life balance, and social security dimensions.

4. The [program](https://bogota.gov.co/servicios/oportunidades-y-apoyos/mujeres-que-reverdecen) aims to find the way in which woman (who are most of the workers providing care for their families) receive a monetary compensation for delivering products that could be performed together with their homecare activities (for instance, a woman that is taking care of her family could be engaged in activities such as planting trees, cleaning solar panel, building urban farms and other jobs that could be done in the available time). See: <https://bogota.gov.co/servicios/oportunidades-y-apoyos/mujeres-que-reverdecen>

Acknowledgements

Authors

Cambridge Econometrics

Boglárka Molnár, Dóra Fazekas, Cornelia-Madalina Suta; Ann Furbush

Vivid Economics

Jake Wellman, Inés Pozas Franco, Leire Sarasola

C40 Cities

Julia Moreno Rosino, Siwe Ntombela, Honorine van den Broek d'Obrenan, Korrin Davis

Christina Lumsden

Contributors

We are grateful to the city officials from the city of Bogotá (Alejandra Ucrós Silva, Javier Cifuentes Alvarez, Carolina Urrutia Vásquez, Ricardo Delgado, Liliana Castro, Maria Catalina Bejarano Soto, Juliana Aguilar Restrepo, Bernardo Brigard, and Nicolás Pacheco) for their valuable inputs and contributions to this research.



[C40.org](https://www.c40.org)

