

Study of Social Entrepreneurship and Innovation Ecosystems in the Latin American Pacific Alliance Countries

Case Study: Groncol, Colombia

Fundación Ecología y Desarrollo

Office of the Multilateral
Investment Fund

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CASE STUDY

GRONCOL, COLOMBIA



**Multilateral Investment Fund (IADB) ·
Fundación Ecología y Desarrollo**

July 2016



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Alberto Riaño, Director of Social Investment Fund, Inversor
Juan Carlos Rebolledo, Commercial Director and co-founder of Groncol
Ximena Trujillo, Associate, Social Investment Fund, Inversor

1. Introduction

Name: Groncol	
Description	Colombia's leading green infrastructure company specializing in green roofs and vertical gardens and other green building innovations to change the construction paradigm in Colombia.
Founded	2009, Bogotá Colombia.
Legal format	Private limited company (<i>Sociedad de Acciones Simplificada</i>).
Num. employees/volunteers	79
Geographical reach	Colombia
Certifications/ awards	Endeavour
Social innovation variables	
1. Innovation type	Innovative multidisciplinary product design with high social, environmental and financial impact. The most recent product innovation is a roll-out "living" green roof carpet.
2. Social impact	150,000m ² of green roofs installed with rigorous measurement of improved air quality, water savings, noise reduction, increased green space and improved wellbeing for citizens.
3. Financial sustainability	Groncol has been profitable since 2011 with an annual turnover of 3.8 million USD and a 21% profit margin in 2015. The acquisition of <i>Metro Verde</i> as a strategic plant supplier offers potential for future growth and higher profit margins.
4. Key Partners and Support ecosystem players	Key partners include Colombia's green building council and green infrastructure network, strategic suppliers in the construction sector and most recently the social investment fund, <i>Inversor</i> .
5. Scalability and Replicability	Groncol's current focus is on national expansion and the acquisition of the company <i>Metro Verde</i> offers potential for international growth.
References	www.groncol.com

2. Local Social Issue and the Challenge

Groncol sets out to tackle a variety of challenges at both the global and local levels. At the global level the team are motivated by the need to create viable solutions for resource scarcity, in particular energy, water and food. At the local level they are keen to solve air pollution and its effects on health; unsustainable water management causing high public infrastructure costs; and the lack of green space in cities undermining citizens' wellbeing.

Air pollution

The World Health Organization (WHO) estimates that 1 million premature deaths each year are caused by high levels of air pollution in cities. These are caused by high levels of Particulate Matter (PM) as well as Ozone (O₃). More than 80% of people living in urban areas are exposed to air quality levels that exceed WHO recommended limits, with populations in low-income cities worst affected. As urban air quality declines, the risk of strokes, heart disease, lung cancer and respiratory diseases, increases for the urban population, particularly for children and the elderly.¹ Bogotá has the highest levels of PM in Colombia, at 52 ug/m³, with several other cities above 45 ug/m³ including Medellin, Itagui, Caldas and Bucaramanga. This is over double the WHO recommended levels of 20 ug/m³. In addition the ozone levels of Bogota are exacerbated through the city's altitude (2,600m). Particulates and ozone are considered the key air pollution problems for Bogotá.

Unsustainable water management

Bogotá experiences sudden, heavy rainfall and as the city has poor drainage systems these downpours can result in floods and subsequent health related problems. In addition, the precious resource of clean rainwater is wasted as it enters the contaminated drainage systems. Acid Rain is an additional problem for Bogotá and other Latin American cities, whereby chemical pollutants (NO_x, VO_x, O₃, SO_x) combine with oxygen and water to form an acidic substance, which damages buildings and green space in the city.

Lack of green urban space

The WHO recommends that cities should have 15m² of green space per citizen to ensure personal wellbeing. Bogota only has 4.9 m² of green space per person, Santiago has 10m² and Chicago has 100 m². An additional consequence of the lack of green space is heat islands. More heat is absorbed and retained by cement than vegetation, and this in turn requires higher use of energy for air conditioning and attracts higher levels of ozone formation.

Groncol sees both these global and local urban problems as highly complex and interrelated and the company has set out to create a simple solution that addresses them all in a holistic manner.

¹ http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/

3. Solution and Social Impact

Groncol's founders have a vision of literally turning Colombian cities green, hence the name GRØN, which means green in Danish, and COL, which stands for Colombia. Their ambition is to create more livable, healthy, and functional cities and they are driven by a strong conviction that increasing the surface area of urban vegetation has a huge part to play in this transition.

Green urban revolution

Groncol's mission is to lead the green building revolution in Colombia and other Latin American countries via the creation of products that generate positive environmental, social and financial impacts. Their overall aim is to bring about a shift to a more sustainable paradigm in the construction sector. Groncol designs and installs several green urban infrastructure systems, including green roofs and green walls and also provides ecological landscaping and green infrastructure maintenance services. The products are designed to have a significant environmental impact; generate savings for clients; improve individual wellbeing and be technically viable, guaranteeing their long-term effectiveness. Groncol is Colombia's most established green infrastructure company, with 87% of all green roofs in the country installed by the company. It is one of the largest players in the sector in Latin America and has constructed the second tallest green wall in the world, which is 92m high.

Environmental impact

Groncol has completed 200 green infrastructure projects in the last six years, creating a total of 150,000m² of new green space in cities across Colombia. 572 tons of organic waste have been processed, 2.8 million liters of rainwater has been recovered and 530 kilos of Particulate Matter captured. The projects have also generated improvements in the wellbeing of the individuals living and working in the buildings where Groncol has worked, including better electromagnetic and thermo-acoustic insulation and more access to green space with the consequent benefits of reduced stress and better productivity.

Social and economic impact

Groncol has generated stable employment for 79 people, has helped achieve a total of 48 million USD in savings for clients, has co-founded the Colombian Association for Green Infrastructure and is member of the Colombian Council for Sustainable Construction. The company has had a considerable part to play in the greening of the construction sector in Colombia. The country now hosts 13 LEED certified buildings,² the first of which Groncol worked on in 2011. In the words of Pablo Atuesta, one of the founders of Groncol, *"There is a growing tendency in the sector for more sustainable projects which have lower operational costs. For this reason the construction sector is so interested in creating green buildings that are both efficient and give a better economic return than the traditional models."*

² LEED is the most widely used third-party verification for green buildings, with around 1.85 million square feet being certified daily around the world. www.usgbc.org/leed

4. The Social Entrepreneurs



The Groncol story began when Mario España, a civil engineer graduate from the University of the Andes, who had always had an eye for innovation, spotted the opportunity that green roofs and walls represented in some of the engineering projects he had worked on. In 2009 he set out to create

a team to develop his idea. He first invited his University friend Juan Carlos Rebolledo, an electrical engineer with commercial experience to come on board. Mario and Juan started working on the business model, and very soon realized that they would need an architect. At this point Nicolas Borda appeared on the scene, an architect who was at the time running his own practice and looking for new opportunities. Mario, Juan and Nicolas registered the company and set out to capture their first clients. The business started slowly and today they look back at this time as one of *“waiting for the phone to ring.”*

During the startup stage the team had to convince people of a product that was still being developed. Looking back at this time they felt that it was key to be able to get the business off the ground quickly, even though the product was not 100% developed. In 2010 they had their first two clients. These were relatively small domestic projects, one of which was the green roof of an architect friend’s house. Shortly afterwards, an opportunity to develop one of the largest green roof projects in Colombia appeared, a famous building known as the Argos Tower. This remains one of the largest green roofs in the country. As Groncol had no competitors at the time this was their chance to position themselves in this new market.

Faced with the challenge of kick-starting the company with this first large project, the three initial co-founders decided they needed to complement the team with someone with a business administration and entrepreneurial background. Nicolas called Pablo Atuesta, a business administrator with experience of setting up six different businesses. Pablo had experience setting up businesses in China, Colombia and Peru. In 2011 he invested 25,000 USD in the company and alongside Mario, Juan and Nicolas became the fourth co-founder.

Three years later, and after a period of steady success and growth, the co-founders set up another company, *Metro Verde* with the agronomist Ruiz Shnitter. This new company specializes in producing the soil and plant material needed for the green roofs and walls and is now entirely owned by Groncol. Today Groncol has a staff of 79 people and *Metro Verde* has 7 staff. The co-founders are increasingly focused on building capacity in their employees to ensure the long-term viability of the company.

5. Business Model

Groncol is lead by a multidisciplinary team of biologists, engineers, architects and environmental specialists who share the same values and believe that the sum of many environmental and social innovations will lead to a tipping point in the construction sector. The company has become the leader in design and installation of green roofs and walls across Colombia over the last six years. It has also become the main supplier of green building technologies for the maintenance of vegetated infrastructure including waterproofing, watering systems, managing plants and soils. The most recent innovation includes a rollout vegetation “carpet” with a new soil design for roofs that can be installed instantly. The company has seen steady growth since its creation in 2010, reaching breakeven in the second year and the first million USD in revenue in the third year.

5.1 Characteristics

Details of the different products are described below.

Green roofs

Groncol's first two projects were green roof design and installations. The green roof system comprises a vegetation cover system on the top of a building, which is installed with a process of waterproofing, followed by layers of drainage systems, suitable structures for plant growth, adequate soil and finally plants that are selected for their endurance over time in the given climatic conditions. Groncol works with the Colombian construction company SIKA, which is specialized in sophisticated waterproofing technologies. SIKA ensures the maximum safety and durability of the installations. 15% of the criteria for a LEED certificate are related to green roofs, so this product is considered key for the growing green building sector. Green roofs are key for rainwater catchment, as they are able to capture from 70-90% of the rainwater that normally falls onto a roof, depending on the depth of soil structure. A regular roof with a 3-degree angle typically loses 100% of rainwater to the drains.



Green walls

Green walls are vertical gardens developed with a hydroponic system which enables a regulated access to nutrients for the plants. It is a very useful design to incorporate more green space and vegetation in cities where space is a limited resource and the benefits include improved insulation as well as the health benefits related to the perception of more green space in a city. Groncol's green wall design uses a technology that was originally developed by the Spanish company *Paisajismo Urbano*. The Spanish company gave them some technical support at the start and Groncol has now grown into a company that has built one of the highest green walls in Latin America, which is 92m high. As with the green roofs the projects designed provide an integral solution for the client, based on the team's multidisciplinary approach, whereby environmental, social and economic benefits are incorporated into the design.



Landscaping

Groncol has a department specialized in sustainable architecture solutions that promote wellbeing, healthy and attractive buildings. Projects include urban roof top vegetable gardens and most recently a new line in interior greening with a catalogue of interior products branded as "*Decoverde*." This latest range provides nature lovers who would like to integrate the natural environment into their home with vertical growing technologies, indoor and outdoor plants, waterproofing sealants, floor installations and other accessories to help green their homes or offices.



Maintenance

Finally, Groncol provides services to maintain their own installations or those of other players in the construction sector who are increasingly incorporating vegetation into building design. With an established seal of quality and a large market share, Groncol is an obvious choice in a growing market of green infrastructure.

Table 1. Environmental, health and economic benefits of Groncol products

Environmental Benefits
<ul style="list-style-type: none"> • 70-90% of rainwater can be retained and run-off avoided • 1m² of green roof can retain 50 liters of water per year • 1m² of green roof can re-use 5% of the organic waste produced by a person in one year
Economic Benefits
<ul style="list-style-type: none"> • 10-20% energy use reduced through improved insulation • 10% increase in property value through improved aesthetics, design and efficiency • Long lasting systems that last up to 20 years and improve maintenance of buildings
Health Benefits
<ul style="list-style-type: none"> • 1m² of green roof can produce the oxygen one person needs to breathe in a year • 1m² of green roof can absorb 15% of the particulate emissions caused by a car in a year • Thermo-acoustic insulation can reduce noise by 50 decibels • Electromagnetic radiation is also reduced

5.2 Fee structure

Groncol's fee structure has changed over time. The company has increased the charge per m² as the company has evolved, with more experience and a more sophisticated offer in its portfolio. In the first year of operations 4 projects were executed with a total of 645m² created in new green infrastructure. Over the first three years the number of projects increased exponentially from 4 in 2010 to 35 in 2013. However, since 2013 the projects have been far more profitable. The prices are not calculated purely in terms of the total meters covered, but

also take into consideration the technical characteristics, location, ease of installation and other factors. The price per meter is also affected by the amount of green zones and hard zones on the roof; the more urban design required - the higher the price. There have been notable fluctuations in fee per meter since the company began, however since 2013 the price has been lowering per meter.

Table 2. Groncol's number of projects, sales and meters constructed (2010-2015)

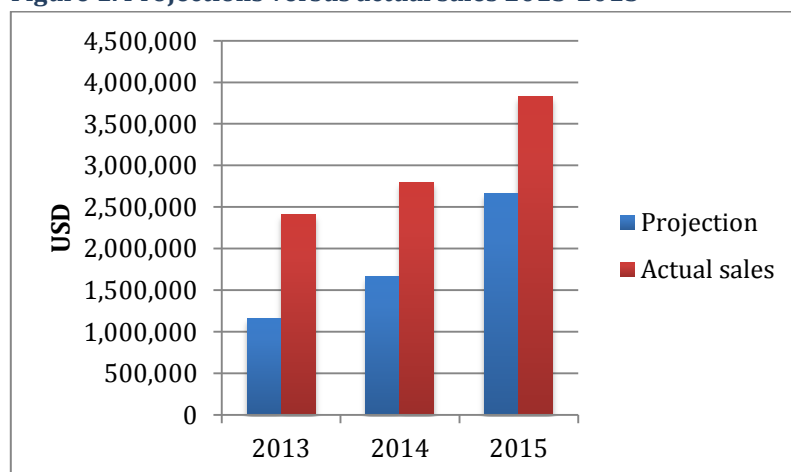
	2010	2011	2012	2013	2014	2015
Projects executed	4	31	28	36	58	36
Meters constructed	645	7,994	8,752	21,365	36,460	48,521
Sales USD	89,573	600,376	964,414	2,406,232	2,797,300	3,835,189
Fee per meter USD	139	75	110	113	77	79

5.3 Target beneficiaries

Groncol's mission is to make Colombian cities healthier and more pleasant places to live, so ultimately the target market is the urban population of Bogotá and other Colombian cities, although over time the company also aims to reach international markets.

To reach these direct beneficiaries traditionally Groncol has targeted the construction sector, which represented 80% of its client base in the first few years. However the company's target market has diversified over time, particularly with the help of the investor *Inversor*, which helped Groncol to develop a broader client base so as not to rely on a single sector. The private construction sector now represents 67% of Groncol's client base. Of the remaining clients, 26% are private firms (not from the construction sector), 4% are architecture offices and 3% are from the public sector. In terms of projections versus actual sales the company has exceeded its goals since 2013 as shown in figure 1. In 2015 Groncol created a sales department, which has implemented a far more effective sales strategy, creating market segments to target, realistic goals and projections for each segment.

Figure 1. Projections versus actual sales 2013-2015



6. Social and Financial Performance

6.1 Social Impact Performance

The social impact of Groncol can be considered in three dimensions. First and most obviously the positive environmental impact can be demonstrated in terms of rainwater savings, improvements to air quality, reduction in carbon dioxide and organic waste recycling. Second, these environmental savings bring about financial savings for Groncol's clients, through improved energy efficiency in the buildings as well as savings for the public sector, through consequent improvements to urban drainage and an increase in green space for citizens. The third dimension of Groncol's social impact is the improved wellbeing for citizens.

In addition, the social impact investor, *Inversor*, which invested in Groncol in 2013, has observed another type of social impact - job creation for vulnerable sectors. Groncol stands out from other companies in the way it treats its employees, providing more stable contracts for a notably precarious construction sector.

6.1.1 Social impact achieved

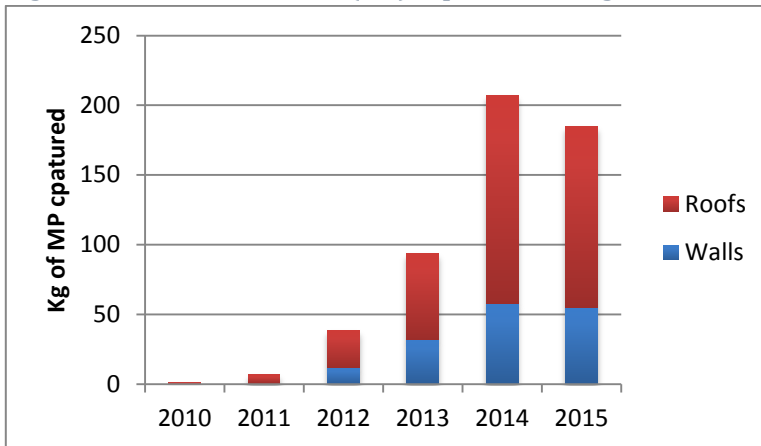
In the following paragraphs we outline the positive environmental, economic and social impacts generated by Groncol.

Environmental impact

Figure 2 shows the amount of Particulate Matter (PM) absorbed by Groncol's two main products; green roofs and green walls. The roofs have considerably more impact due to their greater capacity for absorption and the greater total surface area of installations. Since 2010, the company has captured a total of 530kg of PM, which represents the equivalent emissions of 5,900 cars driving on the roads for one year. In addition, the green infrastructure has a positive effect on reducing ozone pollution. The data below shows the huge potential of green roofs for improved air pollution.

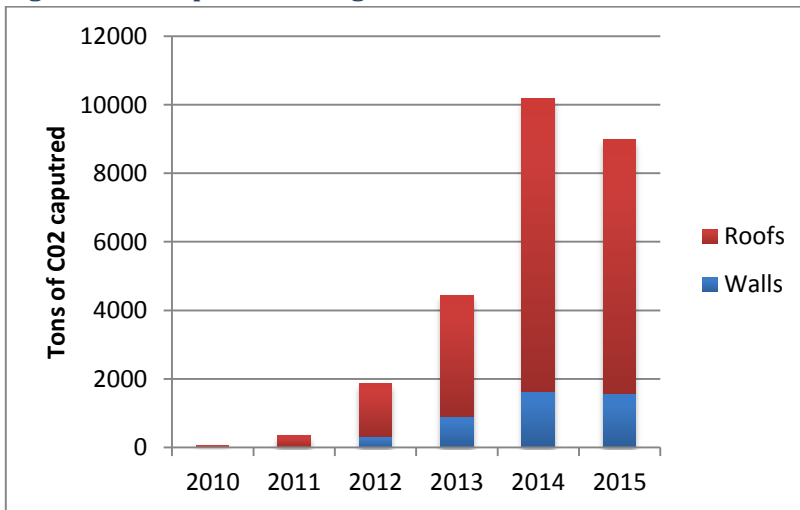
<i>If 3.6% of roofs in Bogota were covered with vegetation the total Particulate Matter caused by private vehicles in the city would be captured (www.groncol.com).</i>
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Figure 2. Particulate Matter (PM) captured through roofs and walls 2010-2015



Groncol's products also bring about a reduction in CO₂ as illustrated in figure 3, again with the roofs causing a greater impact for the same reasons described above. A total of 25,811 tons of CO₂ have been captured over the last five years, which has been calculated by the company as the equivalent of the reduced annual carbon footprint of 10,600 people. The reduction in CO₂ however is not considered nearly as significant as the improvements to air pollution from reduced Particulate Matter and ozone.

Figure 3. CO₂ captured through roofs and walls 2010-2015



Rainwater capture is another significant environmental impact generated by Groncol's green infrastructure and in the last five years a total of 2.8 million liters of water have been captured, and saved from run-off. Less run-off means less strain on the city drains, less erosion and potential for landslides and less contamination of the water that ends up in rivers. Groncol calculates this saving as the equivalent of 62,000 less showers.

If 10% of roofs in Bogota were covered with vegetation, 1,500 million liters of water could be saved, equivalent to 3,000 people's annual consumption. (www.groncol.com).

Financial savings

Groncol estimates that 48 million USD has been saved for clients over the last 5 years, which is due to the improved energy efficiency achieved through improved insulation when buildings are covered with a layer of vegetation as well as savings in water. The estimated energy savings are 10-20% for a building with a green roof and for every meter of green roof. The reduction in run-off as previously mentioned also brings about positive financial savings to the public purse, through reduced flood damage costs, erosion and landslide costs and reduced costs of cleaning up contaminated water that runs off buildings, through dirty city drains and into rivers. In the US, the Environmental Protection Agency prioritizes the control of run-off to fresh water sources as part of its water strategy and New York City has included green roofs as one of several measures as part of their green building strategy which estimates savings between 145 and 418 million USD over the next 20 years.³

Improved wellbeing

The improved sense of individual wellbeing generated through greater access to nature and green space is becoming a topic of increasing interest amongst health practitioners, urban planners, psychologists and environmentalists across the world. Behavioral psychologist Roger Ulrich published an article in Science magazine in 1984 on the benefits of having a window with a view of nature for patients recovering from surgery. Since this early work, several other authors have contributed to this area of study showing increasing evidence of improved wellbeing from being able to observe or be in a natural surrounding.⁴

In addition green roofs and walls also bring about improvements to the noise levels of a city, which also affects citizens' wellbeing. With a 12cm thick layer of soil on a green roof a reduction of 40 decibels can be achieved in urban noise and with 20cm thick soil structure a reduction of 45 to 60 decibels is possible.

6.1.2 Social impact measurement

Groncol takes great care to measure the environmental, social and economic impact of their installations as shown in table 2. The company has an environmental working group, which reports to the social and environmental committee, and is responsible for monitoring the impact of their installations and devise plans for ongoing environmental improvements. For example, the recent replacement of gravel with organic waste is one of the recent improvements. The working group provides reports of progress on a monthly basis.

Table 3. Environmental, health and economic benefits of Groncol products

Area of impact	Indicators used
Environmental	Rainwater: liters of water saved from run-off CO ₂ reduction: tons of CO ₂ captured by roofs and walls Organic waste recycled: kg of organic waste recycled
Economic	Savings for clients: savings from energy efficiency and water bills

³ Department of Environmental Protection, New York.

⁴ <http://www.greenspacehealth.com/tag/ulrich/>

	Value for clients: increased property value Savings for public sector: (estimated) savings from reduced run-off
Health	Air quality: kg of particulate matter captured by roofs and walls Wellbeing: increase in m ³ of green space per habitant Noise: reduction in decibels of surrounding noise

Since 2013 Groncol also measures its social impact through the percentage of workers from vulnerable backgrounds, and the percentage of workers who have formalized contracts. Although the majority of employees still work on a contracted project basis, the percentage of those with a formalized contract is increasing as is the percentage of women in the company at different levels. The formalization of contracts is pertinent for a company working in the construction sector, which is notorious for job precariousness with informal contracts for many workers in Colombia. It is also a sector in which there tend to be low levels of participation from women. Table 4 below shows more details.

In 2013 Groncol formalized the process of monitoring its internal social impact and ensuring fair wages for workers through the creation of a salaries and compensation committee, which defines the salaries, goals and compensation levels and also seeks to mitigate potential conflicts of interest between owners and workers. The committee also seeks to improve training and promotion opportunities for workers. Two areas of improvement over the last 5 years include the increase in formalized contracts and jobs for vulnerable communities.

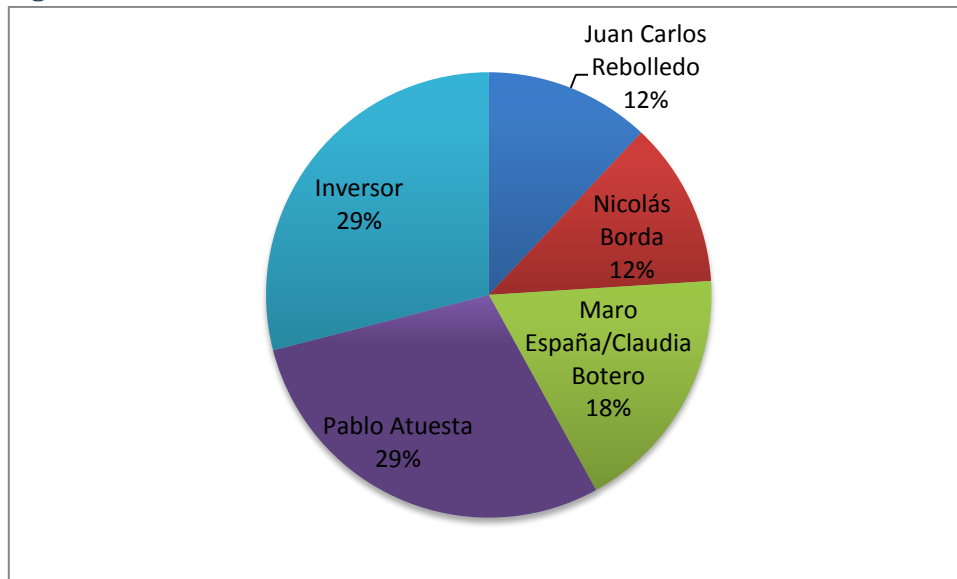
Table 4. Social impact measurement for Groncol workers

Indicator (including % of total staff)	2011	2012	2013	2014
No. of staff	49	92	78	79
No. of women (%)	26.5%	30.4%	29.3%	26.6%
No. of women in managerial positions (%)		44.4%	40.0%	37.5%
No. of formalized contracts (%)			29.7%	31.6%
No. of jobs with improved conditions (%)			42.1%	36.7%
No. of jobs for vulnerable communities (%)			70.6%	74.7%

6.2 Financial Performance

Groncol undertook a first round of investment with friends and family in 2011 and later in 2013 Colombia's first social impact investment fund, *Inversor* came on board, with "intelligent capital," bringing both financial investment and considerable strategic and operational support, particularly in terms of corporate governance. The current distribution of shares is described in figure 4.

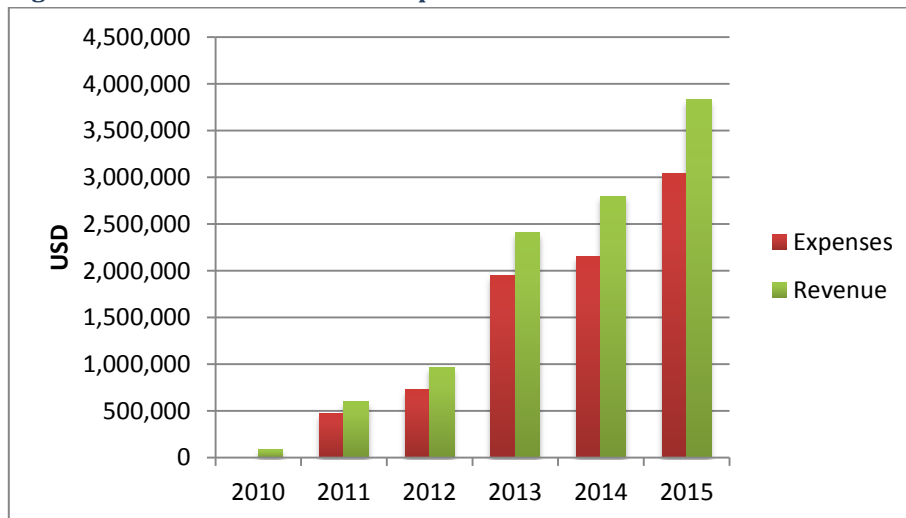
Figure 4. Groncol's distribution of shares



6.1.1 Revenue and Expenses

Groncol reached a break-even point in the second year of operations (2011), more than doubled its revenue between years 2 and 3 (2012-2013), reaching over 1 million USD in revenue in 2013, 3.8 million USD in 2015 and a profit margin of 21% in 2015.

Figure 5. Groncol Revenue and Expenditure 2011-2015



6.2.2 Financial management

Groncol has not received any additional income from grants or donations since the start of the business, therefore 100% of revenue is generated from sales.

Groncol has a financial committee responsible for the monitoring of the monthly balance and corresponding capital requirements, financial indicators, tax obligations, debt repayments and cash flow requirements as well as relevant information for the environmental and social impact. The director of administration Pablo Atuesta, the director of finance and a member of the company's main investor, *Inversor* make up this committee and meet monthly. *Inversor* obliges all of its companies to monitor their performance according to the Global Impact Investing Rating System (GIIRS), and has a high rating of 140 over 200 across its portfolio. Groncol is considered one of their best-rated companies according to the GIIRS criteria, which cover social and environmental aspects as well as corporate governance.

7. Business Development and Ecosystem Evolution

Since the company was registered in 2009 by the initial 3 co-founders, Groncol has grown steadily both in environmental and social impact with 200 green infrastructure projects implemented as well as having an influence on the construction sector as a whole in Colombia. Today Groncol has a diverse portfolio of products, 79 employees, a turnover of 3.8 million USD and growth at 37% between 2014 and 2015. Groncol is the leading green roof company in Colombia and 2nd largest in Latin America. The company's development can be categorized into three stages: Start-up Stage, Early Stage and Growth Stage.⁵

Table 5. Summary of Groncol's business development milestones from 2010 to present

Stage	Month/ Year	Description
Start-up	2009	Mario España spotted the business opportunity for green infrastructure projects, inspired by companies in Europe. Mario, Juan and Nicolas registered Groncol as a private company in Bogotá.
	2010	First sales made including two small domestic projects.
Early	2011	Pablo Atuesta joined the team as business administrator. 8 projects completed with first LEED Gold certified building. Started working with SIKA, leading waterproofing company. First large scale project, green roof for T3 Argos Tower (2,300m ³). Created RECIVE, Colombian Association for Green Infrastructure.
	2012	First round of investment from family and friends and loan from <i>Bancolombia</i> . 12 projects completed. Selected by Endeavor and undertake <i>Emprende País</i> acceleration program. Met investment fund <i>Inversor</i> and due diligence process began.
Growth	2013	<i>Inversor</i> invested in Groncol with 29% of shares. Sales doubled from 2012, company grew from 13 employees to 100. Created new company <i>Metro Verde</i> , contracts 9 staff. Groncol owned 35% of the shares.
	2014	Groncol acquired <i>MetroVerde</i> as strategic supplier of plant material. Established four new operational committees.
	2015	Created new line of business <i>Discoverde</i> , for interior green infrastructure. New governance structures in place, with directors no longer serving on the board.
	2016	Annual Congress of the World Green Infrastructure Network to be held in Bogotá, hosted by RECIVE with active involvement from Groncol. 87% of Colombian market for green roofs and 2nd position in Latin America.

⁵ **Start-up stage:** a preparation period for setting up a business or an enterprise. An entrepreneur's team develops a business idea and a business model. In some cases, they have product/service prototypes which are not fully developed or tested. **Early stage:** A period from business initiation until business scale-up. An entrepreneur's team may first deliver its products/ services in a test market to examine its business model. Also, the team may file patents or obtain licenses, if necessary. Once the business model is consolidated, it starts its business. However, the business remains quite small due to lack of capacity and resources. It may reach a breakeven point at the end of this period. **Growth stage:** A period after scaling up the business. The business exceeds the breakeven point and increases its sales, number of beneficiaries, the market share etc. The team revises the business model in order to sustain and/or expand the business, if necessary. In some cases, the team starts to investigate new products/services.

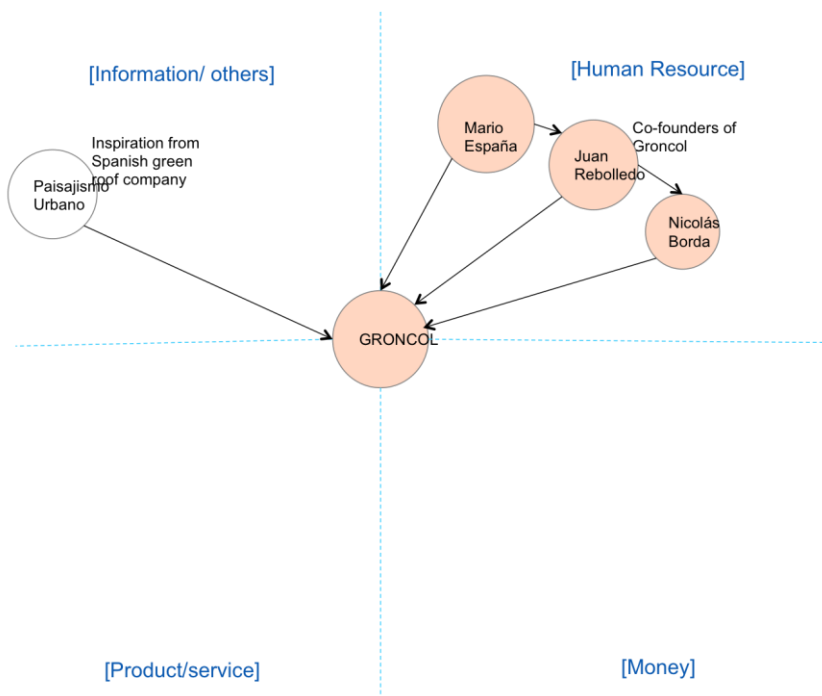
6.2 Startup Stage (2009-2010)

6.2.1 Milestones

The initial idea for the company stemmed from Mario España, a civil engineer graduate from the University of the Andes. His first step, which set the tone for the company, was to set up a multidisciplinary team, first an electrical engineer friend Juan Rebolledo, and soon after Nicolás Borda, an architect. The three of them set up the company in 2009 and although they carried out the first two projects in 2010, the team was not complete until 2011 when Pablo Atuesta came on board, complementing their skills with his experience in business administration and entrepreneurship. The first sale came about through a mutual architect friend and was a small domestic green roof project, which then led to early negotiations for the first large scale project, the T3 building known as the Argos Tower. The Argos Tower was completed later in 2011.

6.2.2 Key supporters

Figure 6. Groncol Startup Stage ecosystem players



6.3 Early stage (2011-2012)

6.3.1 Milestones

This stage was marked by the implementation of the first significant project, the green roof of the Argos Tower, an emblematic building in Bogotá. Before the project was carried out the existing 3 co-founders got Pablo Atuesta on board, and he entered the company with a contribution in capital of 25,000 USD, completing the multi-disciplinary team of four co-founders. At this stage fundraising began and the company took a loan from Bancolombia and also raised investment from a first round of friends and family.

Strategic suppliers

A key milestone early on in this stage, and in order to meet the first large-scale project was the collaboration with SIKA, a well-established Colombian waterproofing supplier. SIKA provided the waterproofing service for Groncol in their first large project, and from this point on became a key partner in the delivery of other projects. Rather than integrating this service into Groncol's offer, they chose to specialize in the overall design and installation process, and sub-contract out specific services such as waterproofing. SIKA provided the company with access to larger construction company clients who later became the principle client base for Groncol.

Association for Green Infrastructure in Colombia

A key milestone in 2011 was the creation of RECIVE, the association for green infrastructure in Colombia by Groncol and the other leading players in the emerging sector of green roofs and vertical structures. The association was created to represent the sector, lobby for more favorable public policies as well as raise public awareness of the benefits of green infrastructure through training and events. The association is a non-profit organization that is funded by member's subscriptions (with four tiers of membership) and technical trainings. Membership fees provide 50% of the income. Groncol is one of the four main members in the association and since its inception gave considerable support to the organization. Currently the offices are housed in the adjacent office to Groncol. According to the current coordinator of the association key to its success was the dynamism of Pablo Atuesta, who played an active role in the development of the membership and activities. RECIVE later became a key player in Groncol's evolution and its mission to influence the sector as a whole.

Engagement with Endeavour

In 2012 Groncol was selected by Endeavor to join its prestigious international mentoring program and networking facility along with other leading social enterprises in the region. This gave the team strategic support and participation in the acceleration program supported by the Bolívar Davivienda Foundation, known as "Enterprise Country" (in Spanish *Emprende País*). The connection with Endeavor was a significant moment for Groncol, as it is through this relationship that the company became known to its future investor, *Inversor*, in 2012.

While the team continued to refine their business model with this external support they continued to receive more demand for green roofs and vertical projects and between 2012

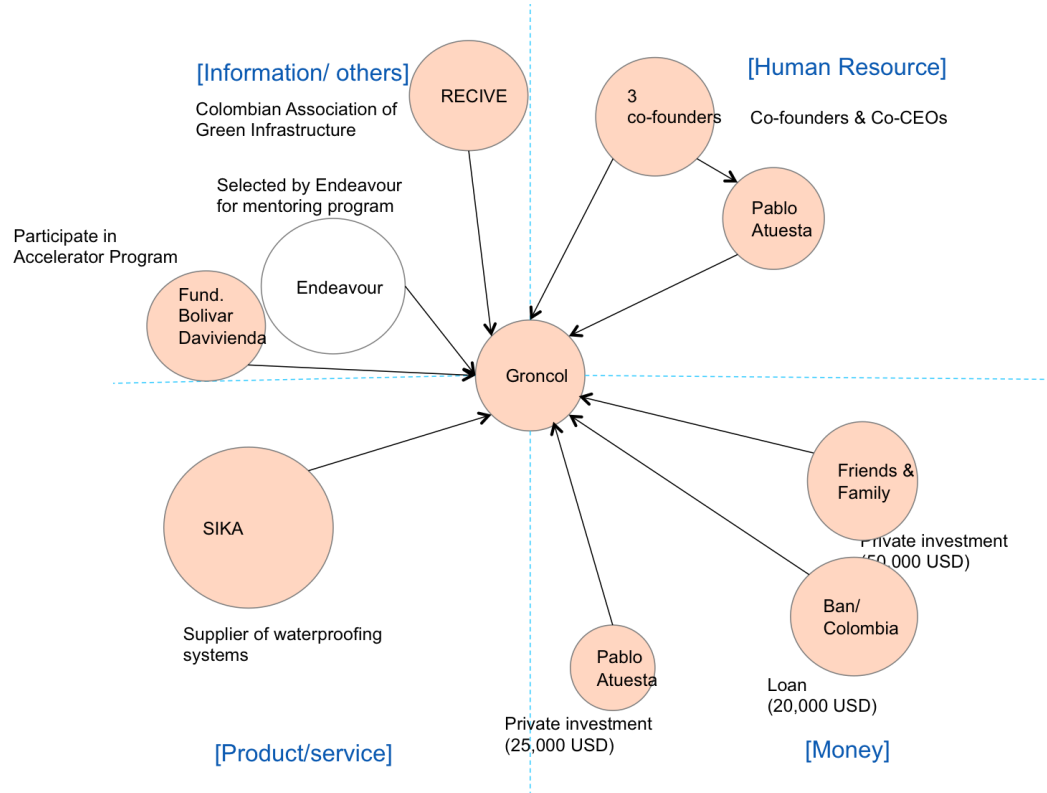
and 2013 their revenue more than doubled. During this period the company experienced extremely fast growth, growing from a staff of 20 to 100, however this was unstructured and at times chaotic, with insufficient financial and human resource systems in place. Many of the staff were associated with projects, and not working under formal contracts. Several internal processes were not yet formalized.

Inversor starts due diligence process

Another key development in this early stage was the beginning of the due diligence process undertaken by *Inversor*, which lasted 8 months. *Inversor* examined the market potential, the social and environmental impact of the products offered, the team and the corporate governance systems. A total of three investment committee meetings were held and there was close engagement with the company during this period.

6.3.2 Key supporters

Figure 7. Groncol Early Stage ecosystem players



6.4 Growth stage

6.4.1 Milestones

This final stage in Groncol's development to date was marked by the investment agreement established with *Inversor*, who became owners of 29% of the company. Alongside Pablo Atuesta, they became one of the two majority shareholders. The philosophy of *Inversor* is to

provide “intelligent capital”, hence they became intricately involved in the development of the business.

Metro Verde

In the early stage of Groncol’s development an increasing challenge for the company was how to secure a reliable supply of plant material for the roofs and vertical installations. Supply was sporadic and the company often relied on several different suppliers making the supply chain expensive and inefficient. In 2013 the co-founders made the strategic decision of creating a new company with the mission to deliver high quality and sufficient quantity of plants for their installations. They partnered up with an agronomist and invested in the creation of a new company, *Metro Verde*. Initially the agronomist owned 10% of the business, Groncol 35%, Pablo 20% and the landowner where the plants were grown the remaining 35%. *Metro Verde* began to supply Groncol with plants for their installations and grew fast to a team of 9 people within the first year. However, similar to Groncol’s growth process, the fast pace was not accompanied by the creation of the appropriate governance and human resources systems. Later in 2014 Groncol decided to acquire *Metro Verde*, and the company became wholly owned by Groncol as part of a series of strategic decisions undertaken in this period.

New Corporate Governance structures

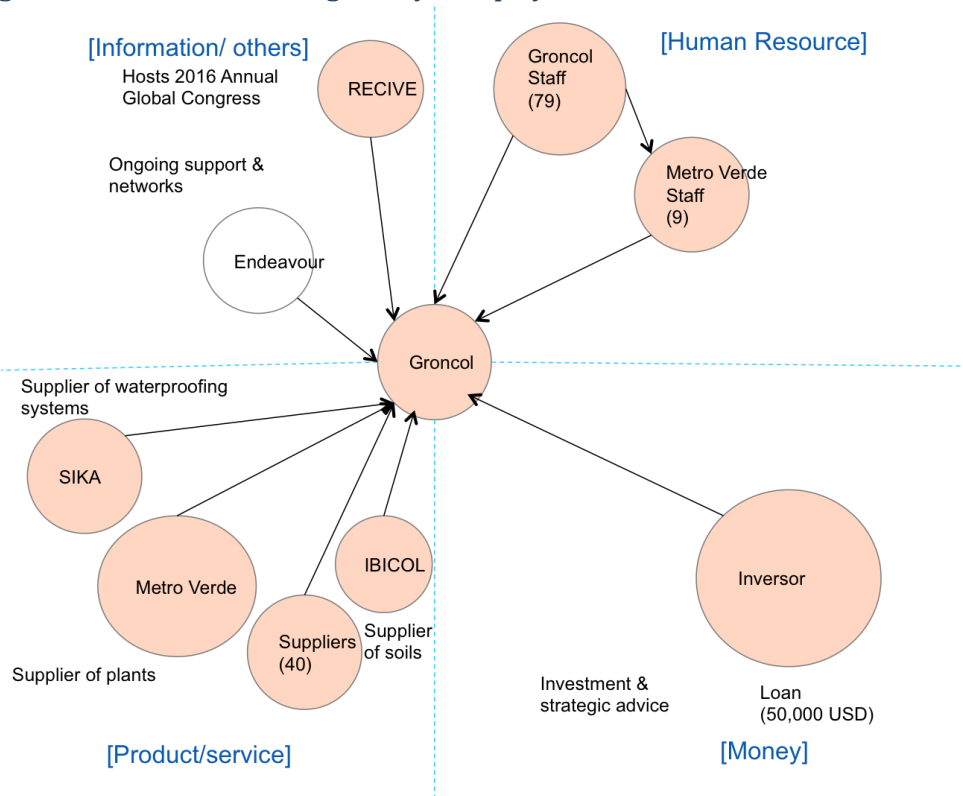
During the period 2014 to 2015 Groncol underwent a process of formalizing several internal structures as well as its corporate governance system. As part of this process, four new committees were created; the social and environmental committee, the financial committee and the salaries and compensation committee. Each of these committees adopted a series of procedures to formalize and professionalize internal management processes. In addition a new board was created with one seat from *Inversor* and two from earlier investors. An important change at this time was that the co-founders no longer sat on the board. This revised structure and good practice in terms of internal governance set up the company for a far more ambitious period of growth.

Early results of this process included the diversification of the client base away from the construction sector, which previously represented 80% and by 2015 represented 67% with an increase in clients from architects offices and the private sector. Within this context and to respond to the needs of a more diversified client base in 2015 a new line of products was established, *Discoverde*, with a catalogue of products for the interior of homes and offices.

The final key milestone for Groncol in this period was the successful candidacy of RECIVE to host the Annual Congress of the World Green Infrastructure Network in 2016 in Bogotá. This represented a significant step towards the greening of the Colombian construction industry as a whole.

6.4.2 Key supporters

Figure 8. Groncol Growth Stage ecosystem players



7. Scalability and Replicability

In the early stage of the business Groncol's work focused primarily in Bogotá, however as the company has grown so has its presence across Colombia, where it now occupies 87% of the green roof market. Since 2014 the company has put in place a commercial strategy with a national focus to meet its potential in other cities such as Medellín, Villavicencio, Ibagué, the coffee producing region, and the Caribbean coast.

National sales strategy

To achieve national coverage Groncol has made considerable improvements in terms of logistics, human resource strategies, product design and adapting to different climatic conditions across the country. In 2014 the company created a sales department, led by one of the company's co-founders, Pablo Atuesta with considerable experience in this field. The department implements a segmented sales approach by type of project, installation size and geographical location. Groncol has executed significant green infrastructure projects across the country, such as the Intelligent "EPM" Building in Medellín, the Unicentro Shopping Centre in Armenia, the Panamerican Bookshop in Ibagué, the Santander Industrial University's roof gardens in Bucaramanga amongst others. Groncol's continued involvement in sector wide organizations such as RECIVE and Colombia's Green Building Council are key to national expansion.

Metro Verde – growth in product sales

Another key element in the growth strategy was the acquisition of *Metro Verde* in 2014. The ambition for *Metro Verde* is to be world leader in terms of design, durability and reliability of plant products for green infrastructure projects. *Metro Verde* had already started to attract clients in the US, and given the nature of the business, it is projected to have considerable growth over the next few years. Groncol's core business of design and installation of projects relied on human capital and a specialized multi-disciplinary team, which was more challenging to replicate. The business model for *Metro Verde* on the other hand, is based on the sale of products (plants, soil structures and other for green infrastructure materials) so it is in principle an easier model to scale. The two company's have a mutually supportive role with Groncol's architecture department continually analyzing the potential for new products and innovations for *Metro Verde*.

International positioning

Finally, the celebration of the Annual Congress of the World Green Infrastructure Network to be held in Bogotá in October 2016 will be an opportunity for Groncol to position itself on the international stage. While this upcoming event will be key for Groncol's future international growth the current strategy is to further consolidate in Colombia where there are still considerable market opportunities before starting operations in another country.

8. Final Reflections

Groncol has made a positive contribution to the greening of Bogotá and other cities across Colombia, and has some clear metrics around the environmental and social benefits of its work. It is also a financially successful business achieving steady profits since 2011 and a profit margin of 21% in 2015. The positive footprint the company has made so far, both in environmental and economic terms has also served as a showcase for the construction sector as a whole, demonstrating that green building can be financially viable.

Key milestones

Decisive moments in Groncol's history include starting collaborations with SIKA in 2011, not only as a strategic supplier of waterproofing materials but also as an entry partner to the construction sector which evolved into the future client base of the company. A second key moment was *Inversor's* investment in 2013, giving Groncol both the financial muscle and the strategic guidance to systematize and professionalize internal processes and governance structures. Finally the acquisition of 2014 of *Metro Verde* marked a strategic move from Groncol, keeping this valuable resource with huge potential for growth as a core part of the overall business.

Challenges for growth

The co-founders have recognized that a key challenge for growth is for them to transfer their know-how to others in the company, so that the success of the projects does not depend on their direct, personal involvement in each project. In this sense, the co-founders are no longer on the board and are able to focus on this knowledge-transfer process, building capacity in their team to lead the different projects to the high standards that they have set for the company. A second challenge is to continue to innovate in terms of products and services, both for Groncol and *Metro Verde*. As the green infrastructure sector becomes more established and more competitors appear on the scene, Groncol needs to stay ahead of the game. Vertical food production, edible rooftops and social green housing are opportunities in this sense. A final challenge and potential barrier to growth is government support for green infrastructure. Achieving the policy support for green infrastructure as part of urban planning policy will be key for the future development of the sector as a whole.

Contribution to social innovation

From the outset Groncol has integrated systemic change into its mission, with an overall objective to bring about a paradigm shift in the construction sector. Progress towards this has been made, particularly with the creation of the Colombian Association for Green Infrastructure (RECIVE), the influential role the company has in the Colombian Council for Sustainable Construction and most recently co-hosting with RECIVE the prestigious Annual Congress of the World Green Infrastructure Network in Bogotá, which is expected to help to accelerate supportive policies for green infrastructure in Colombia.