



# REPORT

A nighttime photograph of the Medellín skyline, Colombia. The image shows several illuminated skyscrapers, including the Torre del Reloj, and a prominent elevated train track (TransMilenio) with a train visible. The city is set against a backdrop of dark mountains under a cloudy night sky. The overall color palette is dominated by the blues and yellows of the city lights and the sky.

## Building a Circular Conscious Continent

29-30 November 2017 | Medellín, Colombia

**Circular Economy Forum of the Americas 2017**

A decorative horizontal bar at the bottom of the page, consisting of four segments of different colors: yellow, teal, light grey, and dark blue.

## What is CEFA™

The Circular Economy Forum of the Americas (CEFA™) is the meeting point of people, companies and institutions that are working and collaborating to make possible the transition towards a Circular Economy in the American Continent.

CEFA gathers industry leaders, entrepreneurs, NGOs, universities, and governments from across the Western Hemisphere and beyond who are involved in circular economy initiatives to discuss the state of the needs, challenges, and opportunities of this emerging and rapidly expanding field of work.

CEFA2017 is the inaugural Forum on Circular Economy for the Americas. This annual international event offers unique and interactive sessions hosting a wide range of international speakers, including inspirational speakers who encourage reflection and thinking, business developers, and other key actors in the field of Circular Economy.

CEFA is organized by the Circular Economy Platform of the Americas, an initiative founded and powered by the Americas Sustainable Development Foundation (ASDF).

### **REPORT: CIRCULAR ECONOMY FORUM OF THE AMERICAS 2017**

Building a Circular Conscious Continent

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Disclaimer. This report has been produced by a team from the Americas Sustainable Development Foundation (ASDF), which takes full responsibility for the report's content and conclusions. While the members of the advisory panel, publishing partners, and the experts consulted and acknowledged on the following pages have provided significant input to the development of the report, their participation does not necessarily imply endorsement of the report's contents or conclusions.

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## Preface

CEFA2017 was a success! We are very proud to have successfully launched the Circular Economy Forum of the Americas (CEFA). This first edition of CEFA held on November 29 and 30, 2017 in Medellin, Colombia was well received with ample national, regional, and international support and representation.



This international forum is organized by the Americas Sustainable Development Foundation (ASDF) in close collaboration with the Circular Economy Platform of the Americas (CEP-Americas) responding to a gap and need in the American Continent. CEFA brings together North-, Central-, South-America and the Caribbean for regional dialogue and exchange about the opportunities and benefits that can be obtained by the application of Circular Economy principles.

This CEFA2017 Report captures the key outcomes of the plenaries and panel discussions held during the forum and includes brief inputs, discussions and recommendations from our experts of ASDF and the CEP-Americas Platform for the accelerated Circular Economy development in several nations of the American Continent.

Our objective is two-fold. First to continue to develop and grow CEFA in the coming years into the largest and most valuable annual gathering of Circular Economy minded individuals, companies, NGO's, academia, and governments from all over the American Continent to discuss the needs, challenges, and opportunities to promote and make the transition towards a Circular Economy possible. Secondly to monitor, assess, and communicate the Circular Economy implementation progress in the American Continent to stimulate concerted action.

We hope that this CEFA2017 Report is insightful and leads to inspiring you as a reader to take action to become a Circular Economy change agent and join us in the effort of facilitating the beneficial Circular Economy transition in the Americas.

On behalf of the organizing committee of CEFA, I hereby express our utmost gratitude to the Ministry of Commerce, Industry, and Tourism (MINCIT) of the Government of Colombia as main sponsor and host, the City of Medellin, the local and international sponsors, partners, and volunteers for their contribution to making CEFA2017 a reality and valued forum.

A stylized, handwritten signature in black ink.

**ing. Kevin de Cuba, MSc.**  
Founder and President

Circular Economy Forum of the Americas (CEFA)

## Introduction by the Ministry of Commerce, Industry and Tourism of Colombia



### Circular Economy, an Opportunity for a Sustainable and Competitive Industry

To contribute to the country's sustainable development, it is necessary that businesses incorporate a vision that entails profits and value creation by using resources effectively. The development of products which are designed to close their use cycle properly is a fundamental step to achieve this vision and to reduce important environmental impacts such as waste which is affecting the quality of life of our population.



Like the rest of the world, Colombia is interested in improving competitiveness indexes. To achieve this, we must incorporate sustainability practices as key pillars in companies' strategic planning as well as make these practices part of the businesses DNA. To reaffirm companies' sustainable practices, it is important to measure companies' performance in comprehensive terms which include the environment that provides resources, the manufacturing of products, and the population that accesses the basket of intermediate or final products.

The country is committed to long-term sustainable growth by involving all sectors of the economy. But beyond that inclusion, it is necessary to define a policy with articulated lines of action, which lead to a transition to understand and take advantage of new opportunities. In this context, the National Development Plan 2014 - 2018 "Todos por un nuevo país", formulated a long-term Green Growth Policy which includes objectives and goals of sustainable economic growth, involving proposals for the promotion of research, technological development, and innovation to strengthen national and regional competitiveness.

Addressing the challenges that bring a Green Growth is needed to achieve 65% of the commitments framed in the Sustainable Development Goals (SDGs). They are also key to materialize development opportunities for peace because we must generate spaces to promote the use of Colombian resources and biodiversity, which are undoubtedly a competitive

advantage of the country.

One of the identified strategies to articulate a Green Growth is the circular economy. A new way of doing things, and to make the transition between a linear model of production and a circular model that incorporates new ethical and economic values to generate economic benefits.

This change in the productive sector requires to be accompanied by a national strategy that addresses the needs that arise during the development of the model, particularly in what has to do with training programs, projects with a regional focus, the designation of national financial resources -or cooperation- and capacity building with specialized technical support, among other actions.

There is some progress in knowledge generation and capacity building initiatives lead by public-private institutions, but it is still necessary that the Government and the private sector work decisively to internalize the key elements of the circular economy as the economic model that leads to an efficient use of resources. This entails promoting knowledge management, develop new materials, design innovative products and packaging, take advantage of materials before considered waste. In short, a model that promotes eco-design and eco-innovation but also generates new opportunities to educate next generations of professionals, as well as innovative businesses that serve increasingly demanding and specialized markets.

As part of the actions that we are fostering to share knowledge and successful national and international experiences, we were glad to support and participate during the first Circular Economy Forum of the Americas, which took place in the city of Medellín. This space allowed businessmen to learn about the concept through conferences with experts implementing the model, as well as sharing in different scenarios with speakers who presented the lessons learned, the process of generating awareness and transformation, and the benefits of the model among other topics.

We are on the road to achieving the country we have always dreamed of: a more productive, competitive and peaceful country.

**María Lorena Gutiérrez**

Minister of Commerce, Industry and Tourism  
Government of Colombia



## Foreword



The Americas Sustainable Development Foundation (ASDF) is a non-profit independent advisory foundation established in 1998 in Aruba, Dutch Caribbean that focuses on linking people, ideas, and action toward the sustainable development of communities throughout the American Continent. One of its principal programs to achieve this goal, is ASDF's Circular Economy program launched in the summer of 2016 with the creation of the Circular Economy Platform of the Americas (CEP-Americas). Through this program several new projects and activities have been initiated, such as ASDF's Circular Island Economies Program, the Circular Economy Forum of the Americas (CEFA), and a series of Circular Economy awareness raising, capacity building and training workshops to help plant the Circular Economy concept and guiding principles throughout the Americas to inspire people and trigger action. We are proud of our role as a lead entity in this field to help facilitate and accelerate the transition toward circular economies in the Americas.

**Henry de Cuba**

President

Americas Sustainable Development Foundation



TNO is a global not-for-profit research institute committed to innovation, circular economy and the sustainable development goals (SDGs), worldwide. With our office in Aruba established in 2011, TNO Caribbean, we aim to promote an efficient transition to a circular economy for both the Caribbean and Latin America which interrelates the areas of energy, water, food supply and waste management. TNO Caribbean has experience in both eco policy support and stakeholder management as well as in the support of practical implementations of eco-innovations. With our knowledge and experience in local conditions TNO Caribbean is proud to support CEFA and its stakeholders to further the common goal towards a truly circular world.

**Eric Veldkamp**

Executive Director

TNO Caribbean, Netherlands Organisation for  
Applied Scientific Research TNO



Building a Circular Conscious Continent

The innovation for sustainable development network is a new global initiative funded by the European Commission ([www.inno4sd.net](http://www.inno4sd.net)). It aims at disseminating the global knowledge around the role of innovation for a circular and inclusive economy and the fulfilment of the sustainable development goals (SDGs). By supporting CEFA 2017 and the Circular Economy Platform of the Americas, inno4sd aims at fulfilling part of its mission to promote innovation and change in the Americas. The exchange of ideas, experiences and information is a vital component of the knowledge economy. And the so called policy-science knowledge brokerage events and platforms are one of the most powerful ways to connect people and ideas. In this way, we hope to help to the identification of relevant knowledge and solutions that can bring about transformative change towards sustainability.



**Dr. Fernando J. Díaz López**

Director

Innovation for Sustainable Development Network ([inno4sd.net](http://inno4sd.net))

The United Nations Development Program – UNDP – is privileged to join CEFA's efforts to expand the horizons of Circular Economy. It was an honour to be part of its first event held in Medellin last November, together with engaging with the global network thinking and developing strategies to generate prosperity through innovative sustainable economic models. Circular economy is not only contributing to economic efficiency. It is addressing social inclusion and environmental responsibility, in line with the 2030 Agenda promoted by the United Nations. There is an urgent need to rethink our economic models in an inclusive way promoting one of the crucial SDG commitments to leave no one behind



**Lina Arbeláez**

Poverty Reduction Manager

United Nations Development Program

An OCA Group company



As a global consulting company working towards the transition to a smart, prosperous and sustainable future, we are glad to foster eco-innovation and low carbon technologies promotion in the Americas. With our support to CEFA, we engage with organizations of tomorrow and accompany them as they manage the changes that the circular economy brings. We aim to continue to help CEFA and its stakeholders to stay connected with the latest research on sustainability, eco-design and eco-innovation, sharing our experience in applying circular economy and industrial ecology principles in business practices and in government policies. CEFA's existence is a positive turning point for the promotion of circular economy in the Americas. Let's move forward, let's move further together.

**Lluís Vilardell**

Executive Director  
EQO-NIXUS (OCA Group)

## Acknowledgments

### Partners for this publication

This CEFA2017 report is made possible through the support from the Netherlands Organization for Applied Scientific Research (TNO) and the Innovation for Sustainable Development Network (Inno4SD.net), the United Nations Development Program (UNDP) through its Colombian Social Innovation Program; and the Spanish sustainability consulting firm, EQO-NIXUS (OCA Group).



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### Core project team

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- **Claudia Lorena García**, ASDF Program Manager, Manager Circular Economy Platform of the Americas
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### Hosting entities

The CEFA organizing committee hereby would like to thank the Government of Colombia, in particular the Ministry of Commerce, Industry and Tourism (MINCIT) and the City of Medellín (Alcaldía de Medellín) for hosting CEFA2017 and their support in the realization of this first edition of the Circular Economy Forum of the Americas (CEFA) on November 29 and 30, 2017 in Medellín, Colombia.



Alcaldía de Medellín  
Cuenta con vos

<sup>1</sup> The inno4sd network is supported by the green.eu project, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°641974

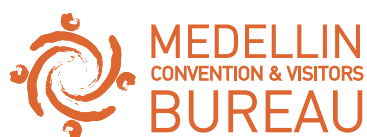
## Local and international partners

We hereby thank the national and international speakers and experts who made themselves available to join us in Medellín to share their knowledge and experience with the participants of CEFA2017. Thanks to EAN University, Jorge Tadeo Lozano University, the Inter-American Development Bank (IDB), and the Medellín Convention & Visitors Bureau for supporting the travel, participation, and accommodation of key international and national speakers. As well as thanks to key local sponsors as AREA Metropolitana (AMVA) and Grupo SURA.

We thank also partner entities as Ideia Circular, the Circulars, the Circular Economy Club, and the C2C-Centre, for helping promote CEFA2017 in the international social media outlets.



**IDEIA CIRCULAR**  
Economía Circular de Berço a Berço



We are very grateful for the multiple international and local sponsors for their foresight, commitment, and financial support for making the forum possible and we look forward to a continued cooperation and support for future editions of CEFA. We would like to take this opportunity to thank in particular the Jardín Botánico for their flexibility and cooperation to serve as the venue for CEFA2017, and VRICA for sponsoring the CEFA2017 Innovation Square and the CEFA2017 Media Corner.



Finally, thanks to the ASDF volunteers and the logistical support provided by BeMarketing for the splendid organization of CEFA2017.



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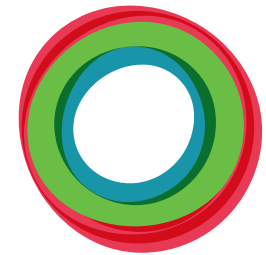
## The Circular Economy Platform of the Americas

The Circular Economy Platform of the Americas (CEP-Americas) is the regional Platform that fills the vacuum for an easy-access one-stop-shop portal where information about Circular Economy from and for the Americas is made available. The vision to be achieved is a Continent where the resources, knowledge, capacity, and wealth is adequately distributed among its people to satisfy current and future needs while they prosper in harmony with nature.

Circular Economy serves as a suitable guiding framework and offers a significant space and opportunity for the development of new tools, business models, design methods, and performance criteria to apply in real-life to achieve measurable results toward a Circular Economic reality.

The Circular Economy Platform of the Americas (CEP-Americas) is committed to promote a regional Circular Economy agenda that respects the leadership of the regions, complements the efforts that are made in other regional areas, seeks an adequate collaboration between actors, and contributes to the development of regional and local capacities.

By linking people, ideas, and actions through this Platform the transition toward a Circular Economy in the Americas is facilitated. The Platform opens new avenues for profitable business, embraces the innovative and positive human intent, and allows for creative thinking and development of eco-friendly products and services to satisfy needs of the people of the Americas.



**circular  
economy  
platform**

For more information, please visit: [www.cep-americas.com](http://www.cep-americas.com)



## Partners for this publication



AMERICAS  
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Americas Sustainable Development  
Foundation – ASDF

The American continent in all its extension - 1.002 billion people and 35 countries - has been subject to global sustainability challenges as a consequence of their dependence on the wasteful and damaging linear economic model and not having a unified sustainable growth strategy. Thanks to their inherent heterogeneity, the different countries in the continent have adopted different approaches to find solutions to these challenges. The most developed nations such as Canada and the United States have addressed these challenges by using their strong institutions, extensive technology and innovation capacity yet their production and consumption patterns are still considered unsustainable and locked-in a linear economic model. In contrast, Latin American and the Caribbean (LAC) countries due to their dependency on primary agricultural and extractive activities and existing gaps in infrastructure and technology, are struggling in finding a clear strategy to progress without harming the society and environment.

Within this context the Americas Sustainable Development Foundation (ASDF) decided to launch its Circular Economies Program. With the aim to find ways to transition to a regenerative and restorative economic model. Under this program, the Circular Economy Platform of the Americas (CEP-Americas) was launched in 2016, which is a convening platform to enable, expand, and scale-up

Circular Economy in the Western Hemisphere and looks for articulating a regional strategy towards sustainable development based on Circular Economy principles (CE). The CE is increasingly being recognized as the most logical and promising model to decouple economic growth from environmental damage, but its transition in the Americas is still in a very early stage opening opportunities to develop new tools, business models, design methods and performance criteria, tailored to regional needs.

CEP-Americas' role in the transition towards a CE goes beyond serving as capacity building agents. ASDF with its platform is committed to carefully understand the local needs and circumstances to identify and deploy the most suitable circular solutions. In addition, acknowledging the fact that most of the American continent is not as locked-in in the linear economy as the developed world is, this initiative looks for integrating existing businesses compatible to CE principles which can support a CE transition. Apart from this, CE appropriation is generated by awareness creation and feasibility demonstration among different sectors in the Americas. Accordingly, a transition toward CE in the Americas is facilitated by linking people, business, governments, academia, ideas, strategies and actions across the continent, which emulates ASDF's core raison d'être.



## The Netherlands Organisation for Applied Scientific Research TNO

The Netherlands Organisation for Applied Scientific Research TNO<sup>2</sup> was founded in 1932 by an act of the Dutch parliament to make scientific research accessible and applicable for businesses and government. TNO is a not for profit organisation which by law is required to operate in an independent and objective way. At the start of 2018 TNO employed around 3.600 highly qualified professionals with a revenue of 530 million Euros.

TNO is composed of 9 units : 1) Circular Economy and the Environment, 2) Energy Centre of the Netherlands, 3) Healthy living, 4) Buildings, infrastructure & maritime, 5) Defence, Safety and Security, 6) Industry, 7) ICT, 8) Traffic and transport and 9) Strategic analysis and policy. TNO is internationally active in over 25 countries worldwide; with regional hubs for Latin America and the Caribbean (Aruba), the Middle East (Qatar) and South East Asia (Singapore). In April

2018 the Energy Centre of the Netherlands became part of TNO, becoming one of the largest institutes in Europe dedicated to the sustainable energy transition.

TNO is one of the most internationally oriented research and technology organisations in Europe. TNO is periodically audited by an independent panel of experts to assess the relative level of expertise on a global scale. These audits have confirmed that in many areas our knowledge base can be characterised as distinctive, both nationally and internationally. Maintaining and improving this knowledge base is a major focus of TNO as it continues to increase its presence in the international knowledge arena. In 2016 TNO's internationally generated revenue was 100 million Euros, which represents approximately 35% of the total revenue from the market.

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2 <https://www.tno.nl/en/about-tno/>

TNO is an internationally leading player in the field of green economy, resource efficiency, eco-innovation and circular economy in a broad set of industries and economic sectors. TNO was part of the preparatory studies of the Environmental Technologies Action Plan and contributed with expertise to the Sustainable Consumption and Production action plan and to the Resource efficiency flagship initiative. Experts of TNO contributed to the very first report of UN on Green Economy, assisted the UN Eco-innovation and Resource Efficiency programme and have contributed to the work of the International Resource Panel. Our expertise described above has been translated into a number of methods and practical toolkits widely implemented by business intermediaries and promoted by governments worldwide.

TNO leads the Global Network of Innovation for Sustainable Development ([www.inno4sd.net](http://www.inno4sd.net)), sponsored by the European Commission. TNO is a founding member of the European and Latin American Business Services and Innovation Network (ELAN) supporting European and Latin American SMEs in order to implement and transfer knowledge and innovations, including those related to the circular economy. TNO is also the knowledge partner of UNDP in the Centre for Excellence for the Sustainable Development of Small Islands (SIDS), providing advice on sustainability policies to 62 SIDS countries worldwide.

## TNO Circular Economy initiatives

### **Assessing the potential of the circular economy of countries and cities**

The widely cited TNO study on opportunities for circular economy in the Netherlands was commissioned by the Dutch Government and adopted by the Parliament <sup>3</sup>.

TNO estimated the value of a circular economy in the year 2013 to be about 7.3 billion euro and it would create 50,000 new jobs. The methodology guiding the study has been widely cited by the Ellen McArthur Foundation as one the most comprehensive approaches informing policy makers on how to estimate a country's potential and the economic and job creation value of circular economy<sup>4</sup>. Undoubtedly, the messages included in the TNO report, and presented by initially developed in the Netherlands inspired the European Commission and other European Governments to follow (e.g. Finland and Luxembourg).

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<sup>3</sup> <https://www.government.nl/documents/reports/2013/10/04/opportunities-for-a-circular-economy-in-the-netherlands>

<sup>4</sup> [https://www.ellenmacarthurfoundation.org/assets/downloads/government/EMF\\_TFPM\\_FullReportEnhanced\\_11-9-15.pdf](https://www.ellenmacarthurfoundation.org/assets/downloads/government/EMF_TFPM_FullReportEnhanced_11-9-15.pdf)

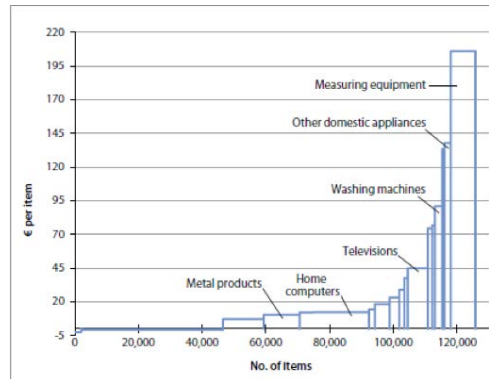


Figure 1 Example: circular value in the year 2013 of the six highest products using metals in the Netherlands

TNO and partners produced a report commissioned by the City of Amsterdam that contains a roadmap with key projects for the implementation of the circular economy agenda of the metropolitan region of Amsterdam<sup>5</sup>. Additional studies are being conducted for city and regional authorities in the Netherlands (i.e. Rotterdam) and abroad (e.g. China). These studies not only demonstrate the potential gains and benefits of adopting a circular economy model. They also quantify the generation of employment, the amount of value preservation, the ecological impact, and the added value to the economy. They also go one step further by specifying which specific value chains are to gain the benefits and which specific projects can be developed throughout time. Such step-wise approach constitutes a an action oriented roadmap guiding local authorities in their transformational quest at the time it helps managing uncertainties and risks inherent to the process of innovation and implementation of solutions.

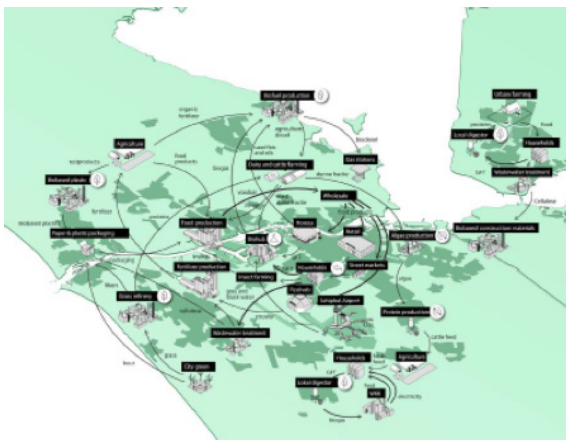


Figure 2 Schematic representation of selected chains of abiotic synergies for Circular Amsterdam

## Smart Community Aruba

Smart Community Aruba entails the creation of a residential neighborhood in Aruba comprising of 20 houses geared at sustainable living. The neighborhood will serve as a small scale environment for researching, testing and demonstrating sustainable solutions specific

<sup>5</sup> <https://www.amsterdam.nl/bestuur-organisatie/organisatie/ruimte-economie/ruimte-duurzaamheid/making-amsterdam/circular-economy/report-circular/>

to the Caribbean's climatic conditions.

Smart community Aruba contributes to real life testing of new circular economy business models and tailored approaches to public private partnerships, novel to the Caribbean. In the case of the former, different product-service confirmations are to be tested. For the case of the latter, Smart Community Aruba was founded by a consortium comprising of the Government of Aruba, FCCA (Aruba's national housing development foundation), Utilities NV (Aruba's national utility holding), ELMAR (Aruba's national electricity distribution net operator), WEB ARUBA NV (Aruba's national water and electricity generator),

SETAR (Aruba's national telecommunications carrier) and TNO (a Dutch independent R&D institute).

Research and innovation activities within Smart Community Aruba are structured into eight (8) innovation areas as pictured below. These areas are inter-related through a circular economy philosophy: renewable energy (P2) is generated and used, for example for waste water treatment (P6), treated water is used for innovative agriculture (P7), organic waste then feeds into a bio-digester (P8) which generates biogas for fueling an emergency generator in a microgrid.

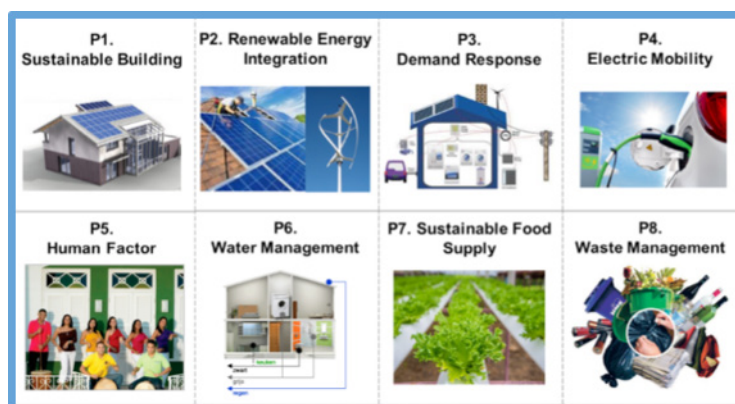


Figure 3 Areas of research and demonstration for circular living

As a living lab, Smart Community Aruba offers an Open Innovation Platform to business partners who would like to join shared research initiatives in the above mentioned areas. Also, Smart Community Aruba offers the possibility to business partners for testing or show casing their specific sustainable solutions and systems in a real life environment. Construction of Smart Community Aruba is in its final stages and inauguration is expected by Q3 2018.<sup>6</sup>

<sup>6</sup> For more information, please visit the website: [www.smartcommunity.aw](http://www.smartcommunity.aw)



**inno4sd.net**  
Innovation for Sustainable  
Development Network

The inno4sd® network (Innovation for Sustainable Development Network)

The inno4sd® network (Innovation for Sustainable Development Network) brings together networks dedicated to innovation for sustainable development with the aim of reducing fragmentation and supporting collaboration, whilst engaging policy-makers, research & development, and businesses to achieve the sustainable development goals.

inno4sd® aims to consolidate the global eco-innovation community and foster collaboration and knowledge sharing by bringing people together from all sectors related to the green economy, sustainability and innovation. It

is an action-oriented network which will support the practical application of solutions to stimulate transformative change and support sustainable development, worldwide. To this end, inno4sd® aims to advance the state-of-the-art in innovation for sustainable development by:

- Reducing fragmentation by connecting multiple networks;
- Supporting knowledge connectivity for collaboration and co-generation;
- Engaging policy-makers, businesses, and researchers to enact change.

Through symposia, networking events and webinars, inno4sd supports co-generation of knowledge, finding new ways to overcome barriers to sustainable development between policy-makers, academia, research and business. inno4sd provides access to policy reviews, guidelines and briefs on how to set policy frameworks for sustainability, promotes case studies on policy and business best practices, and provides practitioner-focused webinars, trainings and services. Actors from across the globe are engaged through an online knowledge platform, which includes a networking and discussion tool for sustainability practitioners. An overview of services is provided in the figure below.





Figure 4 inno4sd® knowledge services for networks, entities and individuals

The inno4sd network is coordinated by the Netherlands Organisation for Applied Scientific Research TNO. Founding members include leading institutions working on eco-innovation, green economy and sustainable development: University College London - Institute for Sustainable Resources, Kings College London, Stellenbosch University, University of Ferrara, Catholic University of Milan, Research Institutes of Sweden, TECNALIA Research & Innovation, Centre for Economic Research ZEW, ICLEI - Local Governments for Sustainability (European Secretariat), Greenovate! Europe, and the specialised consultancy firm Knowledge srl.<sup>7</sup>

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<sup>7</sup> Entities and individuals interested to become inno4sd.net members or affiliates may contact [inno4sd@tno.nl](mailto:inno4sd@tno.nl) for further enquiries. inno4sd.net was created as part of the work programme of the H2020 Green.eu project. The latter project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 641974.



## United Nations Development Program and Circular Economy

The United Nations has as its cornerstone the fulfillment of the Sustainable Development Goals (SDG) for the year 2030. Within the framework of this Agenda UNDP seeks to generate new opportunities to develop models that integrate principles such as economic efficiency, social justice and environmental sustainability. For that purpose, UNDP's strategies have as a starting point the principle of No one is left behind. This entails focusing on closing the gap in achieving sustainable development among regions and population groups.

SDG's like Goal 8, which relates to decent work and economic development or Goal 11 which refers to sustainable cities and communities are linked to new ways of conceiving the Economy and how it impacts society and the environment. Particularly, Goal 12 is about developing a new and responsible model for production and consumption by having a more effective use of resources by the industry and reducing the waste generated by costumers.

Precisely, achieving the SDG's demands a shift from linear to a Circular Economy, in which products are designed trying to extend their useful life through distinctive methods. Indeed, the Circular Economy entails an alternative to change the way value chains work, reduce the demand for water and energy and diminish the overall ecological footprint caused by globalization. Building on the strong connection between SDG's and Circular Economy, the United Nations Development Program (UNDP) in Colombia is developing a Circular Economy strategy to address poverty and create new sources of income for the most vulnerable communities.

For UNDP, the Circular Economy principles can be driven to promote entrepreneurship and innovation at the base of the pyramid. This can happen working at three different levels: individual, business and market. At the individual level, soft and hard skills must be developed to lead a Circular venture. At the business level, technical assistance and access to markets should be provided to incubate an idea or transform a business from linear to Circular. At the market level, partnerships with private and public sectors should be built to provide reverse logistics mechanisms, infrastructure, technology, customer education, policy and regulation adjustment.

Therefore, if Circular Economy is conceived as an economic development strategy and is driven addressing market failures and working with the entrepreneur and the firm, new opportunities for employment and income generation will emerge for and among low-income population. That is exactly UNDP's bet for the coming years.



## Circular Business Cases

UNDP fosters entrepreneurship at the base of the pyramid in Colombia providing capacity building, technical assistance and financial capital. In this process, it has been proven that Circular Economy principles can be applied at different scale and scope by base of the pyramid entrepreneurs. Two examples can be provided: Mas Fabrica Total and Samanea.

Mas Fábrica Total (MFT) is a small business located in Ibagué, Colombia which designs lamps and furniture using recycled materials. MFT identified the existing value from construction waste and through creativity and innovation, they remanufacture the components and develop new products. Once the product is not in use or the client wants a new unit, they operate a reverse logistics scheme to take-back the product.

As they say, “being Circular is a good business”: their cost structure is low given that the inputs are free and easily found. Their revenue is high given that they charge around USD80 per unit and they can produce between 6 and 8 units per month. Nowadays, regardless existing challenges related to scale, technology, and financial resources, they have identified new Circular business opportunities and they plan to expand their product portfolio using different recycled materials.

Samanea, is a micro franchise located in Cartagena, Colombia focused on collecting and transporting used cooking oil. They collect the oil from the source and transport the material to collection centers where it is transformed and converted into biofuel. Multiple premium restaurants and hotels serve as suppliers and big fuel producers serve as clients. Currently, the firm has an inventory of three tuk-tuks, and each motorcycle entails an independent business franchise. Each franchise generates 4 direct jobs for vulnerable people and overall 60 families are benefited because of this business operation.

As in the case of MFT, being involved in a Circular model is a good business for Samanea. Inputs are for free and their monthly sales are around USD500. Given the business opportunities, they plan to collect different recycled materials and attend new segments like households. With the novel approach, they expect to increase sales and provide alternative sources of income for new vulnerable families.


As seen, entrepreneurship projects as MFT and Samanea are examples of new ways of conceiving business at the base of the pyramid. They operate based on closing loops at different levels and their business models make them sustainable and scalable. In fact, in the coming years, UNDP wants to multiply these cases around the country.



EQO-NIXUS (<http://eqoglobal.com/>) is an international consulting firm, based in Barcelona (Spain), member of OCA Group, specialized in the provision of consulting services in the fields of climate change mitigation and low carbon economy worldwide for the private sector, public institutions and multilateral organisations (IDB, EC, EIB, WB, ADB, IDB, AfDB, KfW, UNIDO, UNDP, etc.). EQO-NIXUS provides technical assistance for developing Climate Change mitigation initiatives, from GHG Accounting and Emission Factors calculation to development of MRV (Monitoring, Reporting and Verification) systems; nurturing the elaboration of Low Emission Development Strategies and sectorial Climate Change Mitigation Strategies. In relation to this approach, EQO-NIXUS is fully committed with the development of the Circular Economy in both developed and developing countries. On this regard, the organisation is focused on gathering know-how and best practices on Circular Economy promotion applied in the European Union by developing partnerships with research institutions and monitoring the European Union strategy on Circular Economy and the latest developments on the EU's Circular Economy Package published this year. EQO-NIXUS' goal is to catalyse this knowledge to developing regions, where the potentialities of applying the principles of Circular Economy are vast due to the relative lack of linear economy constraints that developed countries may face. Specifically, Latin America and the Caribbean region is the main target, due to our extensive experience in previous projects in the region and our strong network of local partners.

As an example of our approach, EQO-NIXUS is implementing since 2015 the Low Carbon Business Action in Brazil, funded by the European Union. Under this project, a mapping of specific needs and gaps in the application of innovative practices for low carbon technologies deployment has been carried out. A substantial part of this mapping is focused on founding innovative Circular Economy opportunities in Brazil along with specialized local companies. After that, several matchmaking events were prepared between Brazilian and European companies in order to promote potential partnerships for the development of environmentally friendly initiatives. Among these companies, several were focused on Circular Economy principles, including waste management, organic packaging manufacturers, recycling education and awareness raising and healthy raw materials producers. The project was an example of successful cooperation between European and American organizations for knowledge sharing on Circular Economy principles and unlocking investment opportunities in the Americas for Circular Economy development.

## Executive Summary



The first Circular Economy Forum of the Americas (CEFA2017) took place on November 29th and 30th of 2017 in Medellin, Colombia. This meeting brought together leaders in the field of Circular Economy from the Americas and beyond, with a total of 220+ participants from 20 countries, a marketplace with +15 organizations and start-ups, 2 plenary sessions, 8 panel discussions and 3 side events.

The aim of CEFA2017 was to discuss what Circular Economy stands for and how it can benefit the American communities, recognizing the diversity of realities, needs, and priorities present in the Western Hemisphere.

Colombia, as the host country, presented the advances and challenges that the country is facing including key issues where the application of Circular Economy principles can serve as a solution to urbanization, waste and materials management, biodiversity preservation, innovation and entrepreneurship, technical and financial support to SMEs and social inclusion.

During CEFA2017, diverse topics were discussed, starting from the basics, with the question “What is Circular Economy?”, to more specific topics such as the role of education in a transition to Circular Economy in the Americas; the business opportunities and city challenges to be addressed through a Circular Economy lens and framework, among others.

Next, you will find a summary of the key findings, recommendations and “takeaways” that emerged from the discussions held during the plenaries, some literature quick scan, and the observations, inputs, and recommendations from the multiple panel discussions and insights by the organizing committee of CEFA.

- There is a need of continuous dialogues to reach a global consensus on the definition of Circular Economy and having a unified vision that will help address the many different and sometimes contradicting interpretations and understandings of what Circular Economy is. This will also help filter and distinguish between linear versus circular compatible ideas, products, solutions, and business models to create consciousness among producers and

users and help accelerate the transition toward a global circular economy.

- Concerted action toward a global Circular Economy, regardless of the definition used, can best be achieved by a global adherence to its basic and fundamental guiding principles which are well-defined and derived from the seven fundamental schools of thoughts, namely Cradle to Cradle, Performance Economy, Biomimicry, Industrial Ecology, Natural Capitalism, Blue Economy, and Regenerative Design, as promoted by the Ellen MacArthur Foundation and other international knowledge partners.
- With the aim to contribute to the ongoing conceptual evolution of the definition of Circular Economy, based on findings and feedback at CEFA2017, the following definition of Circular Economy is proposed: “Circular Economy is a comprehensive approach which proposes a set of guiding principles to sustainably and beneficially manage resources within the biosphere, the techno-sphere, and the human sphere. Human beings have a central role to play to achieve positive changes for sustainable development”.
- The transition towards Circular Economy implies a profound paradigm change which requires establishing the right enabling conditions which can be created by the collective efforts of governments, technology, product and service providers in the private sector, academia, and modifications in existing use systems and use patterns driven by the citizenry.
- A Circular Economy transformation can be brought about by achieving a consensus on its meaning and by using common language and strategies among academics and practitioners. One of the key requirements to transition towards a Circular Economy is to achieve a common understanding of its underlying principles and to communicate in transformative language using key words such as USE (users) instead of CONSUMPTION (consumers) of products, USE CYCLES and USE CYCLE ASSESSMENT in place of LIFE CYCLE and LIFECYCLE ASSESSMENT. Also including key strategies such as Circular materials assessment, design for disassembly and others to incentivize the re-thinking, re-designing, re-materialization and conceptualization of new beneficial products, services and businesses based on sustainable Circular Economy principles.
- International experiences on Circular Economy have shown the importance of transitioning towards a GLOBAL Circular Economy managing effectively complex global supply chains
- The first steps to transition towards a Circular Economy are: raising awareness and education in the public, private and academic sectors; the integration of key stakeholders; to establish a clear and unified goal for all the stakeholders, and to promote changes through incentives and awards.
- A Circular Economy can benefit the American continent by achieving a consensus on its meaning and practice. American communities must understand that despite CE can serve as a mechanism to help re-think and gradually solve current waste management challenges, a CE is far more than recycling strategies and represents a paradigm shift and

a new framework, where we need to start to rethink our relationship with nature, rethink our global economic model, and rethink production and consumption patterns by designing and manufacturing products, creating intelligent business models and solutions, and creating an enabling environment that lead to intended beneficial outcomes to help addressing human needs.

- The American continent has unique opportunities for implementing a beneficial Circular Economy which are worth exploring in priority sectors such as plastics, packaging, the built environment, agriculture, and biodiversity preservation. This requires identifying new alliances to foster re-thinking of the existing economic models and promote design and innovation for Circularity as a key strategy to develop beneficial, regenerative Circular economies.
- The needs and priorities within the countries and sub-regions of the American Continent can be addressed through circular solutions. These solutions require social inclusion and financial support from governments to educate and incentivize private sector investment in these solutions.
- Higher Education Institutions play a key role to enable a paradigm change for a Circular Economy transition in the Americas. The main challenges for the universities of the region include finding effective ways to integrate Circular Economy principles within the curricula; financing support to research and generate knowledge in this field; to integrate diverse complementary disciplines to propose viable solutions to real problems; to have a real positive impact on communities where projects can be developed and enabling next generations of professionals to identify business opportunities related to Circular Economy.
- In the Americas, the Circular Economy represents far more than recycling and resource efficiency. Using and recycling materials and products that are designed for a linear Economy more efficiently will not be enough to enable the American Continent to leap-frog to Circular economies. Instead it is fundamental to think outside of the box, rethink the use of raw materials available within and imported to the region and redesign our products and services using materials preferentially selected for a sustainable and beneficial Circular Economy.
- To make innovations within a Circular Economy in the Americas viable and practical they must be economically, socially, and environmentally profitable and beneficial. We can start by saying “We Prefer Goods & Services Designed for A Circular Economy” and send a strong signal into the global marketplace that we want goods and services in the Americas region that become perpetual assets, not liabilities.
- Innovation and entrepreneurship are key building blocks for a Circular Economy. Through innovation it is possible to create new materials, products, services, and business models for a Circular Economy. In addition, financial and technical support is highly required not only for universities but also to build capacities for SMEs which are present in a high proportion in the Americas.

- Communities at the base of the pyramid could benefit from a CE approach which is socially inclusive having into consideration that Latin American and Caribbean needs are best dealt with LOCAL solutions and ensuring that the people-social aspects are fully included in the solutions proposed.
- Cities' challenges such as water and waste management can be addressed through Sustainable Circular Economy lenses and by facilitating spaces where communities, enterprises, governments, and academia can propose circular solutions.
- The American continent provides plenty of opportunities to develop circular business models and to showcase its economic, environmental and social benefits. We need to innovate and lead circular change.
- Island territories offer unique opportunities to develop sustainable circular economy models based on blue economy concepts to address current energy, water, and food supply challenges.
- As a region, there is a need to continue learning and dialoguing around CE to propose concrete actions that involves all the stakeholders (enterprises, entrepreneurs, society, academics, and policy makers) to set and communicate a clear vision of a Circular Continent that offers environmental quality, economic prosperity, and social equity for all

This first edition of CEFA has certainly set up the baseline to further conversations and take actions around Circular Economy in the Americas. As the organizers of the Circular Economy Forum of the Americas, we recognize the strong need and are committed to continue fostering dialogue and work agendas that allow progress in the American communities towards a Sustainable Circular Economy that benefits all. We hope that during next editions more and more countries, sectors and change agents can join the discussions and share the progress of Circular Economy in the region.

## Introduction:

### The Circular Economy Forum of the Americas

The Circular Economy Forum of the Americas (CEFA) is the largest annual gathering of Circular Economy minded individuals, companies, NGO's, academia, and governments from all over the American Continent to discuss the needs, challenges, and opportunities to promote and make the transition towards a Circular Economy possible.

CEFA is an annual event organized by the Americas Sustainable Development Foundation (ASDF) and the Circular Economy Platform of the Americas (CEP-Americas). The Platform fills the gap and need for an easy-access one-stop-shop portal where information about Circular Economy from and for the Americas is made available.

The main objective of CEFA2017 was to respond two main questions:

1. What is Circular Economy?
2. How does Circular Economy benefit the American Continent?

Furthermore, CEFA2017 also served as a mechanism to start understanding the Continent's unique realities and dynamics and offered an exceptional framework for action and space that allowed its participants to reflect on the opportunities, challenges, and implications of a Circular Economy transition in the Americas.

## Structure of the Report

In the first chapter of this report a summary is provided regarding the main activities that took place during CEFA2017. The next chapters are structured based on the chronological order of the CEFA2017 Program and captures the key topics discussed, conclusions and recommendations of the plenary and discussion panels. In the concluding chapter specific attention is placed on providing a summarized answer to the two main questions to be answered during CEFA2017 and the Report is closed with a description of the recommended Next Steps. Please find below the CEFA2017 program as a general guide and overview of all the topics discussed.



## 1. What happened during CEFA2017

CEFA2017, as the inaugural edition of the Circular Economy Forum of the Americas was a great success! It was held on November 29 and 30, 2017 at the beautiful Botanical Gardens, in Medellin, Colombia.



CEFA2017 was attended by more than 200 senior experts and representatives of private firms, the public sector, academia, NGO's, and other organizations originating from more than 15 nations in the American Continent and several participants from Europe and Asia.



Among the participants, there were some of the globally recognized leaders, representing the most important schools of thought that serve as fundamental guiding principles to realizing a global Circular Economy, from William McDonough (Cradle to Cradle®), Ken Webster (Ellen MacArthur Foundation), Lewis Perkins (Cradle to Cradle Products Innovation Institute -C2CPII), Mark Dorfman (Biomimicry 3.8) to Carlos Bernal (Blue Economy).

Next among the participants there were senior level representatives of international political and financial institutions such as the Inter-American Development Bank (IDB), the Organization of American States (OAS), the Latin American Development Bank (CAF), the United Nations Development Program (UNDP), the European Union (EU), and several national associations and ministries such as the Ministry of Commerce, Industry and Tourism of Colombia, the Transformación Productiva Program and BANCOLDEX among others.

Several national and international knowledge and research institutions were represented, such as the Netherlands Organization for Applied Scientific Research (TNO), the Innovation for Sustainable Development Network (inno4sd.net), Utrecht University (UU), and leading regional and national universities as the University of West Indies (UWI), the EAN University, EAFIT University, Universidad Nacional de Colombia, San Buenaventura University, Universidad Pontificia Bolivariana, Universidad de los Andes, Jorge Tadeo Lozano University, SENA, Universidad Catolica del Norte and Instituto Tecnológico de Antioquia among others. Other organizations present during CEFA2017 include Servicios Nutresa, Ciudad Saludable Perú, Eco-Profile, C-Creators, Banco de Alimentos de Quito, Sindicato

de Industriales de Panamá, Ecologística, Ecologica Urbana, Caja de Compensacion Familiar de Caldas, Grupo Sura, Low Carbon City, Craneo, Euco SAS, Secretaría Distrital de Ambiente, Diálogo Energético, CEMPRE, Más Bosques, Banca de Alimentos Merca Ahorro, Alcaldía de Rionegro, Gaia Servicios Ambientales, Cornare Antioquia, Emprende Social, the National Cleaner Production Center of Colombia, Fundación Socya, Grupo Bancolombia, Renting Colombia, Ruta N, Area Metropolitana, Centro de Ciencia y Tecnología de Antioquia, Bioestibas, Unipagospass, Pueblos en red, Vinalarte Galería, Perímetro Inmobiliaria, Mesoamerica Investment, Prochile, Eco-intelligent Growth, Alcaldía de Envigado, Neptuno Pumps, Grupo Escato, EPEA Brasil, Evolution Engineering, AdCircular, ECOR Europe, Valopes, el Transformador, Por el Ambiente, IT Green Colombia and Ecoil Energía.

Furthermore, CEFA2017 was attended by representatives of large, medium, and small private firms exploring new business opportunities in this quickly evolving CE market. At the CEFA2017 Innovation Square, more than 15 companies, universities, start-ups, and entrepreneurs highlighted their innovative products, services, and solutions compatible with the CE principles and connected with potential clients and providers to start new business ventures.

“CEFA2017 was highly relevant for networking. Most of the professionals involved in the Circular Economy transition in our countries met in person and exchanged learnings, ideas and discussed potential collaboration opportunities”

**Ricardo Weigend, Circular Economy Business Development, ECOR**



As expected, many participants learned for the first time about CE by attending CEFA2017, which triggered a new wave of enthusiastic individuals interested in furthering their knowledge about CE. Participants expressed interest to join the CEP-Americas Platform and other initiatives, or start taking action in their own respective country, city, or organizations as change agents. The latter, irrespective of the need for more depth and concrete examples of practical CE applications, is the inspirational strength and value of the concept of Circular Economy to mobilize people to create positive outcomes.

“The Forum is the first space specifically focused on discussing and learning about Circular Economy, convening different perspectives which makes it an enriching event”

**Lorena Mejía, Director, El Transformador (Translated from Spanish)**

CEFA2017 was a great success because it addressed a need for an annual continental forum for gathering CE experts, enthusiasts, stakeholders, and newcomers to exchange knowledge, lessons learned, new ideas and innovations regarding CE implementation in the Americas. CEFA2017 also served to facilitate the creation of new partnerships among actors and stakeholders from different sectors of the Economy.

“CEFA2017 convened multiple perspectives and ideas around Circular Economy and this is very important for creating a local movement that spreads to the national and continental level. This dynamic needs to be repeated and maintained as a working agenda”

**Carlos Fernando Cadavid Restrepo,  
Centro de Producción más Limpia  
y Tecnologías Ambientales de  
Colombia**

## CEFA2017 Innovation Square

Thanks to VRICA, Casaingenia, and BeMarketing, the set-up of the CEFA2017 Innovation Square was amazing and illustrated several circular economy compatible solutions and products! Majority of the material used for the assembly and set-up of the stands and open spaces were locally sourced sustainable materials and products.

For instance, all the tables and seats in the stands were made of intelligently designed light-weight re-usable cartons that are easily assembled and disassembled. This has the benefit that they can be disassembled into a pile of carton sheets, stored, and transported in a single truck (as not much space is required and optimizing time and transport costs). And because the material is light-weight and can be assembled from a single carton sheet, the staff does not have to carry heavy furniture or carry and use tools to assemble the event's temporary furniture. This is a great example of circular economy principles in practice. For more info please contact Mr. Carlos Barrios at [info@casaingenia.com.co](mailto:info@casaingenia.com.co)

Another feature at the CEFA2017 Innovation Square was that instead of installing full-fledged metal frames for the stands, it was opted to create separations using biodegradable pallets made from flower stems that are sourced and manufactured locally. The pallets are made from flower stems that were originally seen as a waste product in the cultivation of “hortencias”, a highly valued flower grown in Antioquia, Colombia. Because of its design and composition, it is a suitable alternative

to conventional wooden-pallets. It complies to general requirements, standards, and generates additional benefits leading to its increased demand and showcasing a viable business model developed by a local SME that is compatible to the circular economy principles. This is another great example of applying Circular Economy principles to CEFA's organization, for more information about the pallets, please visit [www.bioestibas.com](http://www.bioestibas.com).



Among the companies, start-ups, NGOs and universities at the CEFA2017 Innovation Square, great ideas and innovations were shared with the participants. Below, a brief description of these organizations' initiatives are presented:

1. **Universidad Pontificia Bolivariana, UPB:** : UPB has included at the postgraduate level some modules about Circular Economy such as the Sustainability Management Master's degree and the Professional Training for Senior Management in sustainability
2. **San Buenaventura University:** The design programs offered by this university have been including circular design thinking within its curriculum and have developed some workshops and product development following Closed-Loop Cycle Production standards.
3. **EAFIT University:** EAFIT University being aware of the need of education for next generation of professionals has undertaken different initiatives in the academic field. For example, the Research Center on Environmental Sciences (SIAM), the Award for Sustainable Entrepreneurship, the Environmental Culture program, a circular economy module included in some institutional programs, PhD. Research projects on Circular Economy, eco-design subjects in the Product Design Engineering Program, among others.
4. **Sustainable Engineering Program, Universidad Nacional de Colombia:** This program has taken actions to promote and include sustainability and the circular economy into the different programs of the faculty of Engineering.
5. **The United Nations Development Program:** Building on the strong connection between SDG's and Circular Economy, the United Nations Development Program (UNDP) in Colombia is developing a Circular Economy strategy to address poverty and create new sources of income for the most vulnerable communities.
6. **The National Cleaner Production Center of Colombia(CNPML):** The National Cleaner Production Center of Colombia offers technical services to foster sustainable development among the Colombian productive sector. Some of its consulting services include the development of projects oriented to eco-design, cradle to cradle design, eco-efficiency, cleaner production, chemical leasing among others.
7. **Bolsa de residuos y subproductos industrializables -BORSI:** BORSI, an initiative of the CNPML, is a virtual platform that promotes the recovery of waste and by-products through transactions of sale or exchange fostering their reuse or recycling in different supply chains
8. **El Transformador:** This organization fosters sustainable and responsible consumption through raising awareness campaigns, connecting companies and users. One of the work areas is circular economy projects.



9. **Por el Ambiente:** This consultancy company focuses on the design and development of strategies for carbon and water footprint calculation and environmental compensation.

10. **Bioestibas:** Bioestibas produces biodegradable pallets made from flower stems that were originally seen as a waste product in the cultivation of “hortencias”, a highly valued flower grown in Antioquia, Colombia. Because of its design and composition, it is a suitable alternative to conventional wooden-pallets. It complies to general requirements, standards, and generates additional benefits.

11. **The Circular Economy Platform of the Americas:** The Circular Economy Platform of the Americas (CEP-Americas) is the regional Platform that fills the vacuum for an easy-access one-stop-shop portal where information about Circular Economy from and for the Americas is made available. The vision to be achieved is a Continent where the resources, knowledge, capacity, and wealth is adequately distributed among its people to satisfy current and future needs while they prosper in harmony with nature.

12. **IT Green Colombia:** This company manufactures biodegradable and compostable packaging products such as bags, dishes and bottles made of cornstarch, providing solutions to current plastic challenges.

13. **Ecoil Energía:** This company performs activities of collection and recycling of vegetable oils to produce animals feed and other value-added products.

Another signature mark of CEFA is creating a pleasant, enjoyable and laid-back environment to stimulate outreach among participants and establish new contacts and alliances for concerted action. It's during the lunch-, coffee- and other breaks that people interact and when the business is done. The CEFA organizers are very well aware of this, and therefore aim to build in sufficient flexibility and time to allow for networking opportunities in an inspiring environment, as was the case at the Botanical Gardens in Medellín, Colombia.

## CEFA2017 Pitch Corner

The Pitch Corner was a space where everybody could present his or her innovative ideas and developments around Circular Economy. This was a high-valued space because any student, entrepreneur or established business representative had the opportunity to introduce his or her products, services, or business ideas to all the public who were enjoying the coffee break. Local companies and start-ups launched their ideas catching attention including Ecoil, El Transformador, Fiquitex and BORSI (an initiative powered by the National Cleaner Production Center of Colombia).

## CEFA2017 Media Corner

Thanks to the support by VRICA, a media corner was set up at CEFA2017 to allow for interviews

with speakers, high level authorities and other key participants. Several short interviews are recorded and can be found online at: [www.cefa2017.com](http://www.cefa2017.com) and will be distributed through the Circular Economy Platform of the Americas' social media channels.

### CEFA2017 Picture Award

Thanks to the Ministry of Commerce, Industry, and Tourism (MINCIT) of Colombia, an inspirational winning picture was presented and awarded during the CEFA2017 closing ceremony. The award was handed out by Mrs. Claudia Bedoya, Director of Productivity and Competitiveness at MINCIT to the winning picture, made by Ms. Leslie Aguirre. The award includes her participation to CEFA2018 and coverage of flight and accommodation costs.

The awarded picture reflects collaboration and human commitment as enablers for a Circular Economy transition. This was inspired by the MUD jeans circular business model that proposes designing denims which can be safely and profitably returned and cycled in different applications, generating positive impacts into the fashion industry.

### CEFA2017 Carbon Footprint

In addition to “talking the talk”, CEFA2017 “walked the talk”. During CEFA, the (negative) Carbon Footprint of CEFA2017 was calculated by the local environmental consultancy company “Por el Ambiente” following the UNFCCC Greenhouse Gases Protocol (GHG protocol) with technical guidance by the National Cleaner Production Centre of Colombia (CNPML). This included emissions from different activities such as (1) consumption of fossil fuel in food processing, (2) energy consumption for electric equipment used during the Forum, and (3) fossil fuel consumption for transportation of all the participants.

The total CO<sub>2</sub> emissions were estimated to be 20.4 tons which thanks to a contribution by Casaingenia, a local marketing agency fully inspired and convinced about Circular Economy, will be mitigated by planting 80 trees, and help reforest an area near Medellin, Colombia.

Carbon offsets and other circular strategies will be applied in the organization of future editions of CEFA and will include the scoping of opportunities to make changes in among other, mobilization habits of participants, reduce the distances between the venue and the accommodation of participants, opt for locally and organically produced food, encouraging the use of public transportation or bicycles to get the venue, and opt for sustainably designed products and rationale cyclical use of materials.

### Annual CEFA Closing Ceremony

After two days of interactions, discussions, and networking, CEFA2017 arrived at its closing ceremony which was addressed by Mrs. Claudia Bedoya, Director of Productivity and Competitiveness of the Ministry of Commerce, Industry and Tourism of Colombia as CEFA2017



host country representative, Mr. Kevin de Cuba, Founder and President of CEFA, and by Mr. Luis Martinez, Director of Sustainability of ProChile of the Ministry of Foreign Affairs of Chile as CEFA2018 host country.

The welcome video for CEFA2018 was launched to invite all circular economy experts, enthusiasts, and newcomers to visit Santiago, Chile as the next venue for CEFA2018. This was accompanied by the official hand-over of the symbolic host trophy from Colombia to Chile, received by Mr. Luis Martinez and CEP-Americas colleague and one of the leading Circular Economy experts in the Americas, Mr. Petar Ostojic.

After the closing plenary, among the ones still present, a group picture was taken to commemorate the first edition of the Circular Economy Forum of the Americas held on November 29 and 30, 2017 at the Botanical Gardens in Medellin, Colombia.



## 2. The Circular Economy in the International Context

### 2.1. What is Circular Economy and why does this matter?

#### PLENARY SESSION

As a starting point, CEFA2017 explored the questions: what is Circular Economy (CE) and why does this matter? This allowed the participants to gain a better understanding of its principles thanks to the inputs of different experts working on different CE schools of thought including Industrial Ecology, Biomimicry (Biomimicry 3.8), Cradle to Cradle® design (William McDonough, C2CPII and MBDC), Performance Economy (Wize Impact) and Blue Economy (ZERI). Following, a summary of the presentations and key messages of this plenary is presented:

#### 2.1.1. La visión del diseño Cradle to Cradle®



William McDonough  
CEO, McDonough Innovation, and William  
McDonough & Partners Architects  
United States

During his video message, Mr. William McDonough highlighted the Circular Economy as a guiding principle for a new economic activity. As the co-creator of the Cradle to Cradle®(C2C) framework, Mr. McDonough pointed out the importance of thinking in a Circular Economy which includes: materials health, materials reutilization, renewable energy, water stewardship and social fairness.

**Materials health:** Making products out of materials that are safe for humans and the environment. William McDonough highlights that a Circular Economy requires to recirculate “good goods not bad goods” which have into consideration human and environment health.

**Materials reutilization:** Designing products so all materials can return safely to nature or industry. In this way, materiality is available to be reused by generations. Here strategies such as design for reuse and disassembly are key to enable the safe and

viable recovery of materials and components and shifting towards products-as-a-service models.

**Renewable energy and carbon management:** Assembling and manufacturing products with clean, renewable energy and designing products that use renewable energy.

**Water Stewardship:** Making products in ways that protect and enrich water supplies.

**Social Fairness:** Treating all the people involved in manufacturing considering human rights and fair-trade agreements.

Mr. William McDonough pointed out that if the Circular Economy is going to matter, we must let it grow to benefit all. This will enable the creation of a collaborative Economy which will be driven by designing and manufacturing safe and healthy products that are worth to be recirculated within the Economy.

Lewis Perkins  
President  
Cradle to Cradle Products Innovation Institute  
United States



Lewis Perkins introduced the Cradle to Cradle Products Innovation Institute (C2CPPI) which was established in 2010 to certificate products which are safe and healthy for a CE. The C2CPPI has currently awarded around 650 certifications globally. These products use materials that can be reused and have a long life in both biological and technological cycles.

Mr. Perkins pointed out that there is not any problem in current production and consumption system but in designing products. Clearly, cradle to cradle principles require careful attention to product design as well as supply chain management.

The vision of Lewis for a CE is “A prosperous Economy where safe materials are intelligently cycled and manufactured in ways that positively impact people and planet.” He also highlighted that Cradle to Cradle design is more than design for Circularity, it is also regenerative design which uses safe materials that can be biologically or technically cycled, eliminates waste and

extends product and material life.

Different companies and sectors have already embraced C2C philosophy as a competitive advantage, from personal hygiene products, toys, textiles to the built environment. As Mr. Perkins stated that at the heart of the CE products life extension is key, and many of the companies that currently work with the C2C framework are developing products that will last for generations. Eventually, all these materials will return to new cycles.

The certification process starts by the identifying used materials and conducting an environmental impact assessment. In addition, renewable energy and water stewardship are promoted, the latter by designing products without chemicals that return to natural water systems, looking at how much water is used into industrial processes, and analysing the Circularity of water in production processes. Moreover, the certification is based on social justice, human rights and fair trade.

The C2CPH is currently working on an initiative called Built Positive for construction materials and Fashion Positive, for the textile and apparel industry. Finally, Lewis Perkins noted that a Circular Economy powered by Cradle to Cradle® design requires to increase diversification and commitment of different interest groups and that the First Circular Economy Forum of the Americas is an opportunity for the community to continue engaging and growing.

### 2.1.2. Circular Economy 2.0 and the role of humans

Alexander Lemille  
Circular Economy 2.0 Lead  
Founder WizelImpact  
France



Alex Lemille, founder of WizelImpact, going beyond the current approach to Circular Economy 1.0 has proposed the Circular Economy 2.0 highlighting the important role of human beings in the transition towards a Circular Economy. In his words, “if the Circular Economy does not augment human value, we’d rather stay in our linear paradigm and enjoy until we can no longer.”

He proposes to make an intelligent use of labour for a Circular Economy because, Human

labour is:

- The only renewable resource with a qualitative characteristic
- versatile, creative, adaptable,
- able to be educated...

Humans are more versatile than more advanced robots. This is changing the perspective of ourselves and developing four strategies within the next economic model:

- Adaptation strategy in our relationship with nature, being part of nature itself.
- Evolution strategy, where we receive better services and better conditions from the biosphere.
- Valorization strategy, where our main role will be to improve the value of technical nutrients.
- Strategy of advance, where we advance as a species away from the thought of “growth at all costs”.

These new roles of the human being in the next economic model lie in changing our tax system of taxing job generation to resources, which fits perfectly within the central concept of recognizing that both waste and poverty do not exist in nature. Alexander Lemille proposes that we need to reinvent our relationship with nature, addressing our social needs first, beyond our approach based on the recirculation of materials.

### 2.1.3. The Ellen MacArthur Foundation vision

Ken Webster  
Director of Innovation  
Ellen MacArthur Foundation  
United Kingdom



As Ken Webster highlighted a Circular Economy is related to rethink current businesses and to have a systemic approach. Following the analogy of a sandwich, a Circular Economy involves:

- (1) Outside, a Systems Thinking understanding and managing complex and adaptive systems.
- (2) In the middle, Production and Consumption models, which present multiple opportunities with design-led approaches to production such as Cradle to Cradle design and others that will help to change the paradigm from planned obsolescence to designing durable and products which can cycle safely at end of use.
- (3) Outside, and as the fundamentals, the right enabling conditions which refer to the rules of the game established by governments (taxation from people to resources), ICT revolution, and others.

A Circular Economy transition would be possible by having a vision and direction. We are currently living in a period of potential and disruptive innovations, brought not only by the digital revolution, but also because our current system is not benefiting most people. It is needed to understand that a Circular Economy requires new rules of the game and that this transition will take time, this can seem a controversial and despite the path is not easy is possible by achieving a global consensus.

#### 2.1.4. Biomimicry vision



Mark Dorfman  
Principle and Biomimicry 3.8 Chemist  
Biomimicry 3.8  
United States

Mark Dorfman from Biomimicry 3.8 pointed out that “Nature is the Ultimate Circular Economist” acknowledging the fact that all the chemical processes and substances present in nature are already working in a Circular way by building-using-breaking down- building materials safely.

Mr. Dorfman highlighted that nature is a very rich source of innovative ideas to achieve a Circular Economy and that we can understand this through biomimicry, which is a systemic

approach to understanding the chemistry of nature's processes.

As he stated, chemistry is the basis of modern life, chemistry is found in everything around us, in energy, in cosmetics, in agriculture, medicine, electronics, textiles, additives, among others. However, current chemicals value chain is linear. We take the resources, we process them with chemicals, then we use products that will end up in water bodies, air or soil. This chemical linear system is affecting us, some evidence has been studied by the US Centre for Disease Control, where they conclude that there are carcinogens, endocrine disruptors and other chemicals in our bodies.

Mr. Dorfman also pointed out that chemicals must be considered substances that nurture our environment like it happens in nature, as opposite to current idea that chemicals are made by humans and are pollutant. Indeed, some chemical functionalities required by organisms are aligned with the desired functions of commercial chemicals, for example, organisms use functions such as adhesion, antioxidation, taste, colour, odour, among others and the same happens with functionalities of chemical products which imitate from nature flexibility, weight, softness, hardness, resistance, among others.

According to Mark Dorfman, nature creates all these functions by creating specific conditions, chemistry of nature is Circular as it builds materials and uses complex chemical compounds to decompose and to regenerate valuable material in other processes. For this, nature uses about 28 elements of the periodic table. However, in our current industrial Economy, we use many more elements, which may be toxic or may become scarce.

Biomimicry considers nature as an infinite source of inspiration to create safe products for a Circular Economy and, proposes identifying the key principles of chemistry that underlie a function in nature to understand deep patterns of their processes and to create new inventions in chemistry for a CE. To understand nature's strategies and translate them into new inventions, biomimicry teaches us to learn from nature.

Some examples of biomimicry applications are products such as Hairprint, which restores gray hair and was inspired by exoskeletons that use their melanin. Another product for the cosmetics industry was inspired by a butterfly whose layers and pigments let light through. L'Oréal used this function and developed eye shadows.

Finally, Mark Dorfman encouraged business action for a Circular Economy, citing this quote from the Fortune Magazine (March, 2017): "If you're not incorporating the most brilliant ideas from the natural world... you're leaving money on the table. Forward-looking companies are releasing ingenious products that mirror innovations found in nature..." and closed his speech giving some prospects about the future of Circular Economy enabled by biomimicry and information technology.



### 2.1.5. The journey towards Circular Economy



Nicola Cerantola  
Founder and Director  
Ecologing  
Italy/Spain

Making an interesting analogy, Nicola Cerantola claimed that a CE transition is like a journey towards open sea where we will find storms and drawbacks but that we need to take the first step, given current economic, social, and environmental challenges and uncertainty.

Firstly, Mr. Cerantola introduced some of these challenges in the journey towards CE such as an increase of middle class consumers who want to live as the first world has lived up to now. Consequently, an increase in energy and food demands will arise, leading to continuously stress planetary boundaries as the result of current linear economic model where we extract resources, transform them, use them and finally dispose them into landfills. The objective of current business is to produce in mass, reduce costs and then sell products with competitive prices to gain market share with aid of marketing campaigns which create consumer's needs. However, this economic model incentivize value and capacities loses when we dump all the created products.

Current linear Economy has led to natural resources depletion and planet degradation. Elements such as antimony is expected to totally deplete by for 2020. This situation sets us in the position of finding effective solutions to current challenges, as Nicola expressed, this is no longer a matter of using less but to innovate and use regenerative principles and replenish resources.

Nicola encouraged the audience to a paradigm shift where we stop seeing nature as an infinite source of materials but as a “mentor” that guides towards sustainable livelihoods. He highlighted that one of the key guiding principles of CE is to close the loop, which is taken from the C2C vision and states that wastes equals food. However, if a company, citizen or organization wants to bring this principle in practice it is important to co-create with political institutions a mechanism that enables a Circular Economy.

Furthermore, Nicola encouraged entrepreneurship and start-ups creation to question our current economic model and propose alternative Circular businesses using available tools and resources to rethink products and services. These new business models should also think

about social benefits for all.

Finally, Mr. Nicola stated that “Circular Economy is not waste management, but the ambitious search of mechanisms that will allow the regeneration of natural capital meanwhile wellbeing, health and happiness for all is ensured”.

### 2.1.6. Conceptualizing the Circular Economy: An analysis of 114 Definitions

Dr. Julian Kirchherr  
Professor  
Sustainable Business and Innovation and  
Circular Economy  
Utrecht University  
The Netherlands



Dr. Julian Kirchherr presented the results of a work conducted by himself and some colleagues where they collected different definitions around Circular Economy to understand its meaning. They found 114 definitions which were analysed. In addition, they compared the definitions according to who used them, in this case practitioners or academics.

This work concluded that the term CE was linked to terms such as Reuse, Reduce and Recycle. Meanwhile academics used the three terms, practitioners only associated CE to reusing and recycling. Practitioners preferred not to use the term “reduce” because they assumed this is related to reducing consumption. Moreover, the analysis also allowed to conclude that there is no convergence in CE definitions over time.

Mr. Kirchherr highlighted that economic prosperity, environmental quality and social equity are also important components of a CE definition. However, economic prosperity is frequently used by practitioners since this is appealing for business.

This work proposes a meta-definition for CE, cited below:

“A Circular Economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which

implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations”

Julian Kirchherr indicated that it is important to understand the Circular Economy concept and achieving a global consensus on its meaning among academics and practitioners, because this will allow to have a more pragmatic approach to Circularity.

Finally, and going further, some barriers to transition towards Circular Economy were identified in this study, these include:

**Cultural barriers:** company culture, willingness to collaborate in the value chain, consumer interest and awareness, operating in a linear system.

**Technological barriers:** Circular design, ability to design high quality remanufactured products, lack of data (e.g. impacts), too few large-scale pilot projects

**Market barriers:** High upfront investment costs, limited funding for Circular business models, low virgin material prices, standardisation

**Regulatory barriers:** Obstructing laws and regulations, limited Circular procurement, lacking global consensus.

### 2.1.7. Conclusions of the plenary session

- The Circular Economy as opposed to the linear economic model in which we currently operate, has positioned itself as an effective strategy to decouple economic growth from environmental damage and to recouple material use in safe cycles by rethinking how we design, produce, and use products.
- A Circular Economy, powered by Cradle to Cradle® design principles, proposes to distinguish between biological and technical cycles to recirculate safely and infinitely all the nutrients and materials found on the planet and aims to eliminate all negative externalities such as the emission of toxic substances that harm the environment and humans; climate change and pollution of water, air, and soil. In addition, it foresees a world powered by clean energy and with diversity celebrated.
- Innovation is one of the building blocks of a Circular Economy to generate profound

changes and to create an Economy that is restorative and regenerative intentionally, by design.

- A pragmatic approach to Circular Economy requires global consensus on its definition and understanding, this will allow creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations
- Nature must be seen as an infinite source of inspiration to develop chemicals and manufacture products that are aligned to Circular Economy principles by adapting tools that Biomimicry science provides.
- A global transition towards Circular Economy must adopt a systemic approach where all the stakeholders are engaged to set first a consented vision and direction, to establish the right enabling conditions (policies, taxation, technology), to rethink current production and consumption patterns, to implement design-led approaches to production such as C2C or biomimicry.
- Circular Economy is a comprehensive approach which proposes a set of guiding principles to sustainably and beneficially manage resources within the biosphere, the technosphere, and the human sphere. Human beings have a central role to play to achieve positive changes to sustainable development

## 2.2. Lessons learned from international Circular Economy efforts

### DISCUSSION PANEL

Different regions in the world have been working for several years on developing new solutions and products that are compatible with the Circular Economy principles in this way different actors from the public, private and academic sector have contributed to enable a Circular Economy Transition.

During this discussion panel, international experts Mr. Carlos Poveda and Mr. Cletus Springer shared how they have engaged in promoting and creating awareness about Circular Economy and the lessons that have arisen from their experience.

### PANELLISTS:



Carlos Poveda Galeano  
Business Manager Colombia  
TNO Science and Innovation  
The Netherlands



Cletus Springer  
Director, Sustainable  
Development  
Organization of American  
States (OAS)  
St. Lucia

Some of the questions and opinions presented during this session are summarized below:

1. How to enable a Circular Economy transition?
  - a. International experiences on Circular Economy have shown the importance of transitioning towards a GLOBAL Circular Economy managing effectively complex global supply chains

- b. Leadership from governments is fundamental to make a Circular Economy transition having a top-down approach
- c. The first steps to transition towards a Circular Economy are: raising awareness and education in the public, private and academic sectors; the integration of key stakeholders; to establish a clear and unified goal for all the stakeholders, and to promote changes through incentives and awards.
- d. Establishing international trade agreements with strategic partners who have already implemented successful Circular business will enable a transition toward Circular Economy.
- e. Education is a key building block to enable a Circular Economy transition. The Circular Economy must be included within the curricula of universities and schools.
- f. Involving civil society in proposing Circular Economy solutions to be implemented by companies and governments will provide a source of public engagement and awareness raising.

2. How to foster a Circular Economy in the private sector?

- a. Enabling integration of universities, public institutions, private industries, and communities will allow to foster a Circular Economy which is based on scientific research, is profitable for businesses and is enabled by regulations and legislation.
- b. Financial incentives through the whole value chain can foster a Circular Economy transition and encourage investment from the private sector.
- c. Capacity building among SMEs is fundamental to enable innovations for a Circular Economy, here is where the change comes from.
- d. Showcasing business cases is a key issue to encourage companies to invest in Circular Economy solutions. Companies need to understand that a well-implemented Circular Economy can profit them while avoiding environmental damage.
- e. Developing country-wide seminars for business and incentivize the creation of industrial clusters.

3. Successful case studies to inspire action

- a. Some companies have developed technologies to add value to waste streams, for example in Amsterdam, The Waste Transformers have transformed low value waste from a park into high value products and energy, on-site, using a compact installation.

### 3. The Circular Economy in the American Continent

#### 3.1. What benefits does the Circular Economy bring to the Americas?

#### PLENARY SESSION

##### 3.1.1. What benefits does the blue Economy bring to the Americas?



Carlos Bernal Quintero  
Director  
ZERI Foundation for Latin America  
Colombia

Mr. Carlos Bernal presented how blue Economy is integrated to CE and its benefits for the Americas. He highlighted the guiding principles of Blue Economy which have inspired current CE framework, these principles are:

- a. Learn from nature (wisdom of nature can lead to create efficient economic systems)
- b. Take advantage of physics and gravity
- c. Everything is interconnected (systems thinking)
- d. Substitute something with nothing (dematerialization)
- e. Work with available resources
- f. Search multiple benefits (eliminate or modify what does not creates benefits)
- g. Health is a priority

Economically and environmentally, Carlos Bernal, pointed out that the Americas could benefit from the wide biodiversity and agricultural activities by creating sustainably high value-added products such as biofuels, clothes and bioplastics citing examples such as “Las Gaviotas Park” in Colombia where biofuels are produced thanks to the wide biodiversity available, and water is recirculated in a way that waste is avoided. Other examples include the production of textiles made of coffee waste, the production of bricks made of recycled glass, integrated bio-systems for fishery and production of algae to produce biofuels among other.



### 3.1.2. Circular Economy and waste management

Dr. Albina Ruiz Ríos  
Founder and President  
Ciudad Saludable  
Peru



Dr. Albina Ruiz, from a waste management perspective highlighted the role of a CE to address current sustainability challenges in the Americas. Some of her suggestions include encourage manufacturers and designers to rethink from the conceptualization phase the materials and strategies used in products development. She considers that plastics, packaging, and the built environment are priority sectors to start proposing Circular Economy strategies in the Americas. Dr. Ruiz also highlighted that the aim should be avoiding waste generation from the beginning rather than increasing recycling rates in Latin America. Therefore, she points out the important role of consumers in making responsible decisions when buying stuff, that governments commit to creating regulatory frameworks that support a Circular Economy and tracking this progress should be one of the key outcomes of events such as CEFA.

### 3.1.3. Can we make the Americas better because we create a Circular Economy?

Ken Alston  
Senior Advisor,  
Circular Economy Platform of the Americas,  
United States



An interesting point of view was given by Mr. Ken Alston, Senior Advisor of CEP-Americas who highlighted that a Circular Economy could benefit the American continent only by intentionally designing a Sustainable Beneficial Circular Economy based on Cradle to Cradle® principles. This will allow to innovate at different scales, provide safer materials to be recirculated and

include social aspects in the proposed solutions. He pointed out that being Circular (closing the loop) is not always being sustainable because we can still be recirculating toxic materials which are damaging human and environment health. He also highlighted the fact of including within any Circular Economy framework social fairness practices, considering the huge challenges that most of the American countries have at the social level.

A premise from his intervention is that the American continent must understand that recycling more and better is not Circular Economy. Using and recycling materials and products that are designed for a linear Economy more efficiently will not be enough to enable the American Continent to leap-frog to Circular economies.

One of the key requirements to transition towards a Circular Economy is to achieve a common understanding of its underlying principles and to communicate in transformative language using key words such as USE (users) instead of CONSUMPTION (consumers) of products, USE CYCLES and USE CYCLE ASSESSMENT in place of LIFE CYCLE and LIFECYCLE ASSESSMENT. Most products are not consumed, only used.

Similarly, using MATERIALS MANAGEMENT in place of WASTE MANAGEMENT helps to show we intend to reuse, not waste materials. Changing the language helps to promote the idea of use, next use and reuse as drivers of design changes. We can start to PREFER products in procurement that are intentionally designed “Cradle to Cradle”, ready for collection, re-materialization and next use. By increased emphasis on developing services we can also move from a product ownership model to one where the producer wants their materials back for reuse.

### 3.1.4. Conclusions of the plenary session

Una Economía Circular beneficiosa abordará efectivamente los desafíos actuales de A beneficial Circular Economy will effectively address current sustainability challenges in the Americas and will contribute to achieve a global Circular Economy transition. For this, it is important to understand the specific circumstances of each country in the continent as well as recognise that their needs are best dealt with, with local Circular solutions with a high requirement to ensure that social, economic, technological, and educational aspects are included in these solutions.

A CE can benefit the American continent by achieving a consensus on its meaning and practice. American communities must understand that despite CE can serve as a mechanism to solve current waste management challenges, a CE is far more than recycling strategies and we need to start to rethink our production and consumption patterns by designing and manufacturing products that are beneficial and for a Sustainable Circular Economy. We as the Americas, need to continue learning and dialoguing around CE to propose concrete actions that involves all

the stakeholders (enterprises, entrepreneurs, society, academics, and policy makers) to set a clear vision of a Circular continent that offers environmental quality, economic prosperity, and social equity.

### 3.2. Circular Economy entrepreneurship among the most vulnerable communities in the region

#### PANEL DISCUSSION

Considering that base-of-the-pyramid communities in the Americas are numerous and face different social and economic challenges, this discussion explored the opportunities to generate productive processes for them and how to expand Circular Economy opportunities to the base of the pyramid.

This session was sponsored by



#### PANELLISTS:



Octavio Torres Quintana  
Co-Founder  
Valopes  
Colombia



Adriana Alzate  
Business Manager  
National Cleaner Production  
Center of  
Colombia



Dr. Keron Niles  
Lecturer, Sustainable Green  
Economy  
Transition  
Institute of International  
Relations at the  
University of the West Indies  
Trinidad and Tobago



Daniela Gómez Caro  
Social Director  
Bancalimentos  
Colombia

Mrs. Adriana Alzate, Business Director of the National Cleaner Production Center of Colombia, highlighted that a Circular Economy must be an opportunity to create jobs at different scales along the whole supply chain, including specialised jobs and manual jobs.

A cited example was the repair fairs which take place in different open spaces in Latin American cities. She also pointed out the importance of encouraging local markets to incentivize entrepreneurship among vulnerable communities and reducing environmental impacts. Mrs. Alzate also highlighted that Circular Economy benefits can be embraced by base of the pyramid communities through resilience, thinking in systems and seeing us as part of this system, and by changing the vision of “waste” to valuable resources.

Moreover, considering current recycling practices, Mr. Octavio Torres, Co-founder of Valopes, a start-up that seeks to collect and manage data on waste streams to enable closing the loop in industry, pointed out that many actors and entrepreneurs on the base of the pyramid are collecting and transforming waste and gaining social and economic value from Circular Economy opportunities, he encouraged providing safe and rewarding work conditions to the people involved in these activities.

Another point of view provided by Dr. Keron Niles, Lecturer at the University of West Indies, also encouraged local inclusive development within a Circular Economy taking advantage of the extractive nature of most of the American nations which represents an opportunity to generate inclusive Circular Economy business models. These business models would reincorporate

materials to the supply chain providing entrepreneurship opportunities for the base of pyramid communities

Finally, Ms. Daniela Gómez, Social Director of Bancalimentos, pointed out that it is important to create strategies of organic waste recovery to guarantee food security. She also stated that education and awareness raising among vulnerable communities to help them to identify and structure opportunities of local economies.

### 3.3. Circular Economy awareness and education in the Americas

#### PANEL DISCUSSION

Awareness and knowledge are the fundamental pillars for realizing paradigm shifts as required for realizing a global Circular Economy. Building the right type of knowledge and awareness is becoming increasingly important to guarantee the integrity of the principles of the Circular Economy.

This session was dedicated to discussing what type of changes are needed in the education system and in the research field to make sure there is a collective and coherent understanding of what Circular Economy is and to start preparing a new generation of experts and professionals for future expected demand in businesses and industry. A summary of the main insights of this session is presented below.

#### PANELLISTS:



Sandra Liliana Palacios Velez  
School of Management  
EAFIT University  
Colombia



Paulina Criollo Alvarez  
Industrial Ecology Expert  
Evolution Engineering  
Ecuador



Federico Gomez Guisoli  
Circular Economy Consultant  
Mas Oxigeno / The Circulab  
Argentina



Ricardo Weigend  
Circular Economy Business  
Developer  
ECOR  
Mexico

Well-Informed actions are required to make a beneficial and sustainable Circular Economy possible. Here is where education and awareness are fundamental to achieve the needed changes for a Circular Economy. Therefore, Higher Education Institutions play a key role to enable a paradigm and language change for a Circular Economy transition in the Americas.

The main challenges for the universities of the region include finding effective ways to integrate Circular Economy principles within the curricula; financing support to research and generate knowledge in this field; to integrate diverse complementary disciplines to propose viable solutions to real problems; to have a real positive impact on communities where projects can be developed and enabling next generations of professionals to identify business opportunities related to Circular Economy.

Despite the efforts of some regional universities to include Circular Economy within their curricula, there is still a significant gap and need for a massive effort through collaboration that enables a Circular Economy to be included in all the education levels from schools to universities.

### 3.4. Cities for life - let's co-create: how to solve city challenges through Circular Economy?

#### PANEL DISCUSSION

This session was facilitated by:



This session brought together decision makers from the public sector, experts in research on Circular Economy in urban areas and entrepreneurs who have started to apply the concept, to create effective responses to shared city challenges, understand the concrete role that the Circular Economy can have in their resolution, its limits and potentialities. A summary of the main insights during this session is presented below.

#### PANELLISTS:



Agostinho João Almeida  
COO  
Ruta N  
Colombia



Carlos Fernando Cadavid  
Vice Director  
National Cleaner Production  
Center  
Colombia





Esteban Salazar Ramirez  
Planning Secretary  
Municipality of Envigado  
Colombia



Rob Oomen  
C-Creators  
The Netherlands



José Alejandro Martínez  
Director of Sustainability Department  
Institute for sustainable  
entrepreneurship  
EAN University  
Colombia



Tomas Villamil Parodi  
Founder  
Kaptar – Effiteco, Sustainability  
and Innovation  
Colombia

Current city challenges could be solved through Circular Economy solutions. As it was pointed out in this session, current urban centres which concentrate most of GDP are not offering quality of life for habitants and experience huge challenges such as mobility, energy, water supply and food security.

Some examples of Circular Economy solutions for cities include:

- Planning and construction of buildings inspired in Cradle to Cradle® principles. These buildings

will shift towards renewable energy to supply electricity demands, healthy raw materials to ensure safe rooms and indoor air quality, reducing CO2 emissions, purifying outdoor air quality and recirculating water supply, among others.

- Renewable energy for transportation: smart cities can provide green public transportation
- Food waste cascading: There are different examples where the potential economic value of organic waste is displayed while reducing its environmental effect when it is discarded, for example by methane production. In Brazil, the cascading of this waste for producing fertilizer through composting processes has been a very appealing option for the emerging organic farming. This will also enable local production of healthy food.

Moreover, Mr. Rob Omen shared an interesting Dutch initiative to enable city Circular solutions, the Circular Valley that helps organizations to further develop Circular Economy projects. He highlighted that the building sector offers big opportunities to develop Circular projects and as a driver to foster the creation of Circular products and services and that local governments play a huge role to enable these projects.

## PANEL DISCUSSION

### 3.5 Social benefits of transitioning to a Circular Economy

The Circular Economy offers opportunities to address different social challenges present in low and middle-income countries. In the Americas, these opportunities include social inclusion, more job opportunities and how to address inequality. In this session, the panel discussed which are the social opportunities within a Circular Economy framework to address the different social challenges present in the continent.

## PANELLISTS:



Marcela Godoy  
President  
Sustainable Circular Consumers  
Association (AdC Circular)  
Chile



Lorena Garcia Caicedo  
Program Manager, ASDF  
Circular Economy Platform of the  
Americas  
Colombia



Alexandre Gobbo Fernandes  
Senior Circular Economy Specialist  
Fernandes & Rossetto Consultores  
Brazil



Andrea Herrera  
Lecturer  
Jorge Tadeo Lozano University  
Colombia

The social context of the Americas differs from other regions where the Circular Economy has been developed and must be considered. Informality is highly present in most of the American nations related to activities such as recycling, repair, and remanufacturing. Here is where a Circular Economy must be well-thought through and have a systems thinking approach to ensuring that solutions in one end are beneficial to the whole system and will not affect vulnerable population such as waste pickers. A Circular Economy should offer rewarding job conditions to those involved in informal activities.

Marcela Godoy, Co-founder and director of the Sustainable Circular Consumers Association, Chile, reported social benefits of a Circular Economy as greater efficiencies, material savings, cost savings, energy, and emissions reductions. Ms. Godoy did a passionate call for people to buy less. Marcela framed the issue as a political act, voting for the company whose product you purchase.

The aim of the Circular Consumers Association is to promote change in sustainable development via reducing consumption of products, the ultimate goal is to do informed purchases rather than 'consumerism'. Her intervention had a major focus on educating people and dealing with the SDG 12 "Sustainable Production and Consumption". The Association runs a 6-day intensive training course to create "Ambassadors" and opinion leaders.

Moreover, Alexandre Gobbo Fernandes, co-founder of EPEA Brasil highlighted the need for people-social aspects to be included considering that waste is both an economic asset and has a social value.

Some examples cited included:

- Agro-ecology

- Bio-gas digesters
- Community leaders
- Solidarity Economy (Co-ops)

He also pointed out that some regulations may be needed to encourage players who operate in the linear Economy to change. For example, public utility companies do not have incentives to change to a Circular model. Tax incentives may be needed for second cycle products as the externalities are different from the first cycle.

Alexandre also highlighted that Community Associations are good at including social aspects of Circular Economy and suggest more education to increase awareness and demonstrate the value of social inclusion. Overall, the Circular Economy provides a big opportunity to have humane and local inclusion – but the positive results are not automatic.

Other views of the social aspects to be considered in a Circular Economy transition is the participation of communities during the conceptualization of products, services, or projects for a Circular Economy.

Andrea Herrera, circular economy specialist and professor at the Jorge Tadeo Lozano University presented the successful case of participative design for change with Circular Economy in mind. Importantly, the community participation was included right from the start of the initial design stage. Using neighborhoods in Belen, Bogota, and in France, the project showed the many positive outcomes from talking with people in the neighborhood from start to finish. Now there are plans for a community orchard in 2018 and looking for new ways to empower the community.

Finally, Ms. Lorena García, presented the results of her Master's thesis: "Circular Economy in low to medium income countries" where she identified three differences between Latin American countries and Europe, China and Asia such as Recovery rates at the end of use cycle, national resource use and feasibility considering current innovation support. Lorena's thesis provided a facilitating framework – top-down (public policy) and bottom-up (Industrial sectors) and an additional need for supporting infrastructure was identified.

She pointed out that current informal recycling approaches were noted to be unsafe due to the lack of knowledge as to what is being recycled or recirculated as well as the lack of proper infrastructure and rewarding conditions for people involved in recycling activities. The speaker called for more repair, remanufacture and innovation and additionally asked the question "what happens to waste pickers when we go to a circular economy?" This is an important social aspect to consider from a system thinking perspective.

### 3.6. Circular Economy business opportunities in the Americas

#### PANEL DISCUSSION

Circular Economy business opportunities have already been explored by some enterprises in the continent. In this session, some examples were presented by international experts. Another relevant example written by Circular Economy Business Developer, Ricardo Weigend was also included.

#### PANELLISTS:



Garrett Scheffler  
Former Ecovative Circular  
Economy  
Product Development Manager  
United States



Adrian Velasco  
Project Director  
Grupo Escato  
Mexico



Ignasi Cubiñá  
Founder and Director  
Eco Intelligent Growth  
Spain



Petar Ostojic  
General Manager, CEO, Neptuno  
Pumps  
Chile

## Industria Manufacturera:

### Manufacturing:

Petar Ostojic, CEO of Neptuno Pumps, Chile has been developing a Circular business case. Neptuno pumps, aiming to reduce the environmental impact of energy consumption started designing more efficient pumps, however, they realised that a paradigm change towards Circularity was needed to solve solid waste challenges and started to design pumps which used 100% recyclable raw materials. The materials used in these pumps become new raw materials for other pumps at the end of the use period. Neptuno Pumps has been working on remanufacturing rather than repair because it offers more efficiency. This reduces the dependence on minerals and the impact of non-renewable energy consumption.

### Furniture:

Adrian Velasco, Project Manager at ESCATO Group presented some successful cases addressed in the furniture sector showing a plan to transform an organization from within. Adrian has worked in several areas of the company preparing the foundations to enable the application of Circular Economy and the result is that the organization has implemented Circular Economy principles in the manufacture of stands for exhibition following a strategy that includes, (1) redesigning the business model (2) redesigning the product by including Circular raw materials (Made by ECOR), implementing a modular design, using mechanic assemblies, with using finishes, having in mind materials reutilization and using complementary materials which are easily recyclable or reusable.

### Packaging:

This business case was written by Ricardo Weigend – ECOR Europe

In industries, especially in cases where organic waste is generated, such as the brewing industry, some opportunities have been found to apply Circular Economy principles. One of the two main brewers worldwide started a collaborative project with ECOR during 2016 to develop packaging, merchandising material and displays for their points of sale. These products had a better performance than traditionally used materials, leading to positive economic and environmental impacts.

The innovation in this case was that these three types of applications could be made in the short term from the organic waste of the brewing process. Currently waste is only used to fatten cattle, which is very positive, but the demand of farmers is very fluctuating and often in months of low demand organic waste is landfilled because it has no assured destination. With ECOR's innovation that surplus can be used to replace synthetic raw materials that are currently used for the manufacture of applications, by natural raw materials containing fiber. This type of project in the American continent will lead to greater economic prosperity, environmental

quality, and social equity.

Moreover, Mr. Garrett Scheffler presented the case of Ecovative Design, where biodegradable packaging and building materials were developed by using mushroom technology. He highlighted that innovation is crucial to disrupt current linear economy and encouraged to continue exploring and developing technologies for a Circular Economy like the case of the smartphones.

Finally, Mr. Ignasi Cubiñá, Founder and Director of Eco-intelligent Growth a Spanish consulting firm that leads the transformation towards Circular Economy from its expertise in Cradle to Cradle® design and implementation, pointed out that the first step to transition business towards a CE is to understand how we can relate with nature and humans and encourage to the American countries to take advantage of their abundance of natural resources to create a CE which is regenerative and restorative by design.

### 3.7. Cutting-edge thinking on Circular Economy in island territories

#### PANEL DISCUSSION

Side Event organized by:



The location, scale, and existing conditions determine to a great extent a communities' readiness to adopt Circular economic thinking and implementation. In island states, the introduction and development of solutions and tools compatible with Circular Economy principles require a completely different starting point and perspective compared to larger nations.

This side-event hosted by the Inter-American Development Bank (IDB) was dedicated to understanding how Circular economic thinking can be applied in the context of small island states and whether service-based economies (e.g. tourism, banking, and e-commerce) can effectively benefit of adoption of Circular Economy principles.



### 3.7.1 Blue and Circular Economy principles to foster sustainable and economic growth in island territories

Experts from the fields of Climate Change, Blue Economy, Circular Economy, and Small Islands shared their views on how to foster sustainable growth in island territories.

#### PANELLISTS:



Luis Miguel Aparicio  
Climate Change Consultant (CSD/CCS)  
Climate Change and Sustainable  
Development  
Inter-American Development Bank (IDB)



Ken Alston  
Senior Advisor, Circular Economy  
Platform  
of the Americas, and Former CEO  
McDonough Braungart Design Chemistry,  
United States



Vintura Silva  
Team Lead, Regional  
Cooperation Center  
UNFCCC



Cletus Springer  
Director, Sustainable Development  
Organization of American States  
(OAS)  
St. Lucia



Asha Singh  
Director  
Environmental Governance  
Consulting  
Guyana

As it was pointed out by Mr. Luis Miguel Aparicio, IDB Climate Change Consultant, island territories challenges can be addressed by using a Blue Economy Framework which considers activities that take place in marine environment and focuses on using sea resources as an input. Furthermore, there is an imperative need to focus on the importance of protecting marine and coastal infrastructure as well as improving green infrastructure. This approach should focus on individual island and at the regional level (Caribbean).

Moreover, Mr. Cletus Springer, Director of Sustainable Development Department of the Organization of the American States, suggested that islands need a vision for the Circular Economy that outlines the importance of this approach, while Circular Economy strategies are framed. He points out that policies for a Circular Economy must not be rushed and must address national contexts as well as different and relevant stakeholders. For a Circular Economy transition in insular states is highly important knowledge diffusion.

Mr. Ken Alston noted that islands represent a concentrated microcosm of the issues driving the needs for change from linear to circular economies. With their high reliance on imports they present both a challenge and an opportunity to apply sustainable circular and blue economic approaches to move towards more sustainable outcomes.

According to the view of Ms. Asha Singh, a Circular Economy tends to be more industry specific while the blue economy tends to be more generalised - as the development of marine spaces. She suggests thinking about developing ocean sustainable activities such as ocean services, established industries and emerging industries such as pharmaceutical, aquaculture, deep sea mining, renewables, desalination and blue carbon. Some recommendations to governments to make the transition towards Circular Economy include:

- Create an enabling environment
- Focus on Research and Development
- Encourage Growth - integrating the blue into green Economy
- Need to build awareness
- Need to partner with universities, governments and private sector.

Finally, Mr. Vintura Silva acknowledged that Caribbean islands are diverse, have opportunities for a better waste management avoiding waste to end up into the ocean and to promote a better stewardship of oceanic resources such as fisheries and coral reefs as well as the importance of encouraging a regional approach to address current sustainability challenges.

### 3.7.2 How to scale up and down practical implementation of the Circular Economy

Experts shared practical examples/case studies of circular economy inspired initiatives and provided insights on how these can be applied to island territories, including the identification of challenges and opportunities. The main insights are summarized below.

#### PANELLISTS:



Estella Peinado-Vara  
Senior Specialist  
Housing and Urban Development  
Inter-American Development Bank  
Spain



Luis Daniel Sierra  
International Consultant  
Factor Ideas for Change  
Spain



Federico Apestegui Guardia  
Innovation Officer  
Smith MacArthur Circular Economy Fellow  
Mesoamerica Investments  
Costa Rica



Petar Ostojic  
General Manager, CEO, Neptuno Pumps  
Founder and Executive Director of the  
Center for Innovation and Circular  
Economy – CIEC  
Chile

During this session some recommendations were provided to making Circular Economy solutions applicable in the context of island territories:

1. Systems thinking to create a network of island states for a Circular Economy.
2. Encourage entrepreneurship for a Circular and blue Economy
3. Every island can serve as a small laboratory to collect valuable information regarding materials flows.
4. To mobilize human and financial capital towards the development of Circular solutions in island territories.
5. Adopt and leverage emerging technologies for a Circular Economy
6. Showcase the business opportunities of a Circular Economy and blue Economy “better business, better world” linked to SDGs.
7. Some opportunities include: shifting towards a renewable grid, agriculture and food by integrating biological partners, and the building environment for tourism

### 3.8. Conclusions of panel discussions

- The very specific realities present along the American Continent as well as the progress of the Circular Economy globally establish a set of challenges to make a Circular Economy transition a reality in our region. Some of the identified challenges are related to get a common understanding of what a Circular Economy means for the different communities of the region, innovation capacity of enterprises and education and awareness raising.
- Innovation and entrepreneurship is a key building block for a Circular Economy. Through

innovation is possible to create new materials, products, services, and business models for a Circular Economy. However, investment in innovation is still low in most of the American nations. Here is important to think the role of government to support the creation of innovation centres for a Circular Economy and clusters where universities can develop the required local knowledge which will provide solution to local needs. In addition, Financial and technical support is highly required not only for universities but also to build capacities for SMEs which are present in a high proportion in the Americas.

- Communities at the base of the pyramid could benefit from a CE approach which is social inclusive, and namely that Latin American needs are best dealt with LOCAL solutions and with a high requirement to ensure that the people-social aspects are fully included in the solutions proposed.
- Cities challenges such as water and waste management can be addressed through Sustainable Circular Economy lenses and by facilitating spaces where communities, enterprises, governments and academia can propose circular solutions.
- The American continent provides plenty of opportunities to develop circular business models and to showcase its economic, environmental and social benefits. We need to innovate and lead circular change.

## 4. Building a Circular Conscious Continent

In this chapter the two main questions to be addressed by CEFA2017 are answered and discussed. These answers are compounded from the discussions held during the plenaries, some literature quick scan, and the observations, inputs, and recommendations from the multiple panel discussions and insights by the organizing committee of CEFA.

### 4.1 ¿Qué es Economía Circular?

To start understanding what Circular Economy (CE) is, it is important to be aware that different schools of thought have enriched its current holistic and integrated set of principles. The fundamentals of a Circular Economy are traced to early 1962 with the concept “waste equals food” (Skene & Murray, 2015). Since then, the circular economy concept has been developed through different sustainability schools of thought such as industrial ecology, regenerative design, biomimicry, natural capitalism, cradle to cradle®, blue economy, and performance economy, conducting to the current CE framework popularized nowadays by the Ellen MacArthur Foundation (EMF) and other key international knowledge partners. A brief description of each school of thought is given below:

#### Industrial Ecology (Frosch & Gallopoulos 1989)

Industrial Ecology has largely contributed with decades of research taking inspiration on biological ecosystems to achieve more efficient industrial systems focusing on materials and energy flows. Industrial ecology adopts a system thinking approach, which means considering the global impact of local interventions. Some of the contributions to circular economy include concepts such as closed-loop processes, eco-industrial parks where companies are co-located so the waste of one process is an input for another, waste elimination and systems thinking.

#### Regenerative Design (Lyle 1994)

Regenerative design takes the agricultural notion of regeneration and extends it to industrial systems. This school of thought establishes that these systems could be orchestrated in a regenerative manner with a focus on community support systems. The regenerative nature of a CE is inspired by this school of thought.

#### Biomimicry (Benyus, 1998)

Biomimicry for Benyus (1998) is “a discipline that studies nature’s best ideas and then imitates these designs and processes to solve human problems”. Biomimicry considers nature as an

infinite source of inspiration to create safe products and technologies for a Circular Economy and, proposes identifying the key principles of chemistry that underlie a function in nature to understand deep patterns of their processes and to create new inventions in chemistry for a CE.

At CEFA2017, Mark Dorfman, Principle at Biomimicry 3.8 couldn't have stated the biomimicry perspective any better than stating that "Nature is the Ultimate Circular Economist" acknowledging the fact that all the chemical processes and substances present in nature are already working in a Circular way by building-using-breaking down- building materials safely.

### Natural Capitalism (Hawken & Lovins, 1999)

Natural capitalism enacts that sustainability is a good business by reducing the use of natural resources (efficiency), redesigning products and processes to close the loop, regenerating human and natural capital and reinvesting through replenishing stocks of natural capital.

### Cradle to Cradle® (McDonough & Braungart, 2002)

This school of thought has largely influenced the current vision of a Circular Economy. William McDonough, co-founder of the Cradle to Cradle® concept, elaborated during his video intervention at CEFA2017 on the guiding principles that makes Cradle to Cradle® one of the fundamental schools of thought for a Circular Economy. The notion of biological and technical nutrients in the CE are taken from the Cradle to Cradle® approach as well as key guiding principles that rely on "rethinking the way we make things". Cradle to Cradle® principles require careful attention to product design as well as material health, material reutilization after use, clean energy, water stewardship, social fairness and supply chain management.

Lewis Perkins, President of the Cradle to Cradle Product Innovation Institute, presented during CEFA2017 a vision for a Circular Economy that is "A prosperous economy where safe materials are intelligently cycled and manufactured in ways that positively impact people and planet." He also highlighted that Cradle to Cradle® design is more than design for circularity, it is also regenerative design which uses safe materials that can be biologically or technically cycled, eliminates waste and extends product and material use.

### Blue Economy (Gunter Pauli, 2010)

Blue Economy is a notion championed by Gunter Pauli, Founder of the ZERI Foundation. According to his manifesto: 'using the resources available in cascading systems, (...) the waste of one product becomes the input to create a new cash flow'.

Some of the guiding principles presented by Mr. Carlos Bernal, Director of the ZERI Foundation for Latin America during CEFA2017, included:



- Learn from nature, this promotes efficiency in industrial processes.
- Take advantage of physics and gravity
- Everything is interconnected (systems thinking)
- Substitute something with nothing (dematerialization)
- Work with available resources
- Generate multiple benefits
- Health is a priority

## Performance Economy (Stahel, 2010)

Stahel suggests that the goods of today could become the “resources of tomorrow ... at the prices of yesterday”. He argues that smaller loops preserve more value through the inertia principle: “don’t repair what is not broken; don’t remanufacture what can be repaired; don’t recycle what can be remanufactured”. This will require a shift to services – because then the manufacturer has an incentive to increase the useful life of the product and to secure the ownership of resources when the user no longer requires the product.

Stahel also proposes sustainable taxation, a shift from taxing labour (he calls labour a ‘renewable resource’) to non-renewable resources. This would enable jobs generation within a circular economy and avoid resources depletion.

Within this same line of thinking, Alex Lemille, Founder of WizelImpact, and developer of Circular Economy 2.0, proposed during his video intervention at CEFA2017 that we need to reinvent our relationship with nature, addressing our social needs first, beyond our approach based on the recirculation of materials.

In his view, humans need to be centred in any circular economy framework. This is changing the perspective of ourselves and enables us to develop four strategies within the next economic model:

- Adaptation strategy in our relationship with nature, being part of nature itself.
- Evolution strategy, where we receive better services and better conditions from the biosphere.
- Valorization strategy, where our main role will be to improve the value of technical nutrients.
- Strategy of advance, where we advance as a species away from the thought of “growth at all costs”.

These new roles of the human being in the next economic model lie in changing our tax system of taxing job generation to resources, which fits perfectly within the central concept of recognizing that both waste and poverty do not exist in nature.

## The Ellen MacArthur Foundation vision

Thanks to the Ellen MacArthur Foundation (EMF) the term Circular Economy has been gaining international attention since 2012 with the publication of the report: “Towards the Circular Economy”, Volume 1 (EMF, 2012). The EMF explicitly acknowledges the different schools of thought in the Circular Economy principles, which is summarized as follows:

1. Design out waste: Waste does not exist within a CE. This incentivizes to design products that fit biological or technical cycles to be recirculated infinitely within the economy. Materials are non-toxic and safe.
2. Build resilience through diversity: Features such as modularity, versatility, and adaptivity are key to face current challenges where uncertainty is predominant.
3. Renewable energy: “Systems should ultimately aim to run on renewable sources”
4. Think in ‘systems’: through the ability to understand how parts influence one another within a whole, and the relationship of the whole to the parts, we should think on the global impact of local interventions.
5. Waste is food: all the materials are cycled in technical or biological cycles.

As Ken Webster, Head of Innovation at Ellen MacArthur Foundation highlighted during his presentation at CEFA2017, a Circular Economy is related to rethinking current businesses and applying a systemic approach. Following the analogy of a sandwich, from his point of view, a Circular Economy involves:

- (1) Outside, a Systems Thinking understanding and managing complex and adaptive systems.
- (2) In the middle, Production and Consumption models, which present multiple opportunities with design-led approaches to production such as Cradle to Cradle design and others that will help to change the paradigm from planned obsolescence to designing durable and products which can cycle safely at end of use.
- (3) Outside, and as the fundamentals, the right enabling conditions which refer to the rules of the game established by governments (taxation from people to resources), ICT revolution, and others.

## An academic analysis of the evolution of the definition of Circular Economy

The work of Kirchherr et al. (2017) which Dr. Julian Kirchherr presented at CEFA2017, has noted the divergence of the Circular Economy (CE) understanding among academics and practitioners in time. They found 114 different definitions of CE and highlight the importance of having a common understanding of CE to make its implementation more pragmatic.

His work proposes a meta-definition for Circular Economy, cited below:

“A Circular Economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro

level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations” (Kirchherr et. al, 2017).

At the Ellen MacArthur Foundation the definition of Circular Economy has also been undergoing changes in time. In the early stages EMF defined Circular Economy as:

“The circular economy refers to an industrial economy that is restorative by intention; aims to rely on renewable energy; minimises, tracks, and eliminates the use of toxic chemicals; and eradicates waste through careful design” (Ellen MacArthur Foundation, 2012)

A few years later, EMF started to use the following definition of Circular Economy:

“Circular Economy is an economy that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles” (Ellen MacArthur Foundation, 2016).

The latest version of Ellen MacArthur Foundation’s definition of Circular Economy is cited below: A Circular Economy looks “beyond the current “take, make and dispose” extractive industrial model, the circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimising negative impacts. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital” (Ellen MacArthur Foundation, 2018).

## Discussion and Recommendations

From the presentations, literature quick scan, and feedback received during CEFA2017, it becomes clear that Circular Economy is still undergoing a conceptual evolution and presently is best defined or explained by its guiding principles.

A key point is that there is a need for a unified vision and definition about the Circular Economy among governments, industries, academia, practitioners, and other critical stakeholders in the global society in order to speak the same language, establish objective targets and criteria to accelerate and achieve a full-scale transition toward a global circular economy.

Most of the international experts and practitioners that spoke at CEFA2017 highlighted their own specific school of thought or discipline as the starting point or central focus as means for explaining what Circular Economy is.

This analysis concludes that there is a continued need for further and more in-depth multi-sectorial and multi-disciplinary dialogues to reach a global consensus on the definition of Circular Economy. With other words, a unified vision and definition will help address the many different and sometimes contradicting interpretations and understandings of what Circular Economy is. This will also help filter and distinguish between linear versus circular compatible ideas, products, solutions, and business models to create consciousness among producers

and users and help accelerate the transition toward a global circular economy.

Moreover, concerted action toward a global Circular Economy, regardless of the definition used, can best be achieved by a global adherence to its basic and fundamental guiding principles which are well-defined and derived from the seven fundamental schools of thoughts, namely Cradle to Cradle, Performance Economy, Biomimicry, Industrial Ecology, Natural Capitalism, Blue Economy, and Regenerative Design, as promoted by the Ellen MacArthur Foundation and other international knowledge partners.

## 4.2 How does Circular Economy benefit the American Continent?

During the plenary session, Carlos Bernal, Director of ZERI Latin America, from the Blue Economy's school of thought, shared that the Americas could benefit from the wide and rich biodiversity and the large scale agricultural activities by creating sustainable high value-added products. He gave examples of biofuels, clothes, bioplastics, the production of textiles made of coffee waste, the production of bricks made of recycled glass, and setting up integrated bio-systems for fishery and production of algae to produce biofuels, which are all viable within the region's context.

From Ken Alston's point of view, Senior Advisor at the Circular Economy Platform of the Americas and former CEO of MBDC, thus originating from the school of thought of Cradle to Cradle, a Circular Economy could benefit the American continent only by intentionally designing a Sustainable beneficial Circular Economy based on Cradle to Cradle® principles. This will allow to innovate at different scales, provide safer materials to be recirculated and include social aspects in the proposed solutions. He pointed out that being Circular (closing the loop) is not always being sustainable because we can still be recirculating toxic materials which are damaging human and environment health. He also highlighted the fact of including within any Circular Economy framework social fairness practices, considering the huge challenges that most of the American countries have at the social level.

A Circular Economy perspective may encourage manufacturers and designers to rethink from the conceptualization phase the materials and strategies used in products development and contribute to the transition toward circular economies in the Americas. Next to this point, Dr. Albina Ruiz, Founder and President of Ciudad Saludable, with a background in Industrial Ecology, one of the fundamental schools of thoughts of Circular Economy, believes that we all should aim to avoid waste generation from the beginning rather than increasing recycling rates in Latin America and the wider region. For this it is critical to recognize the role of the producers in designing products and consumers in making responsible choices and decisions when buying stuff, and having governments commit to creating regulatory frameworks that support a Circular Economy.

A premise from both Mr. Alston's intervention is that the American continent must understand

that recycling more and better using conventional approaches is not Circular Economy. Using and recycling materials and products that are designed for a linear Economy more efficiently will not be enough to enable the American Continent to leap-frog to Circular economies.

In Ken Alston's view, one of the key requirements to transition towards a Circular Economy is to achieve a common understanding of its underlying principles and to communicate in transformative language using key words such as USE (users) instead of CONSUMPTION (consumers) of products, USE CYCLES and USE CYCLE ASSESSMENT instead of LIFE CYCLE and LIFECYCLE ASSESSMENT. Most products are not consumed, only used.

Similarly, using MATERIALS MANAGEMENT in place of WASTE MANAGEMENT helps to show we intend to reuse, not waste materials. Changing the language helps to promote the idea of use, next use and reuse as drivers of design changes. We can start to PREFER products in procurement that are intentionally designed "Cradle to Cradle", ready for collection, re-materialization and next use. Inspired by other schools of thought, by increased emphasis on developing services we can also move from a product ownership model to one where the producer wants their materials back for reuse.

From a business perspective case studies or projects from several companies such as Neptuno Pumps (Chile), Escato Group (Mexico), ECOR (Mexico), Ecovative (United States), and Eco-Intelligent Growth (Colombia) were presented and discussed during CEFA2017 where a common denominator was innovation. Innovation is crucial to disrupt current linear economy and encourage the continued exploring and developing of technologies, products and solutions for a Circular Economy that results in increased productivity, competitiveness, and sustainability.

A key repeating issue during CEFA2017 was the critical importance of considering the social wellbeing as part of any Circular Economy framework. This issue was brought forward by Alex Lemille, founder of WizelImpact, during his video intervention at CEFA2017, where he is taking steps to go beyond the current approach of Circular Economy and proposes the Circular Economy 2.0, highlighting the important role human beings have in the transition towards a Circular Economy. In his words, "if the Circular Economy does not augment human value, we'd rather stay in our linear paradigm and enjoy until we can no longer." Likewise, Nicola Cerantola, Founder and Director of Ecologing, stated that "Circular Economy is not waste management, but the ambitious search of mechanisms that will allow the regeneration of natural capital meanwhile wellbeing, health and happiness for all is ensured".

## Discussion and Recommendations

Not much attention was spent on responding to the question of how Circular Economy can benefit the American Continent. Instead most interventions focused on highlighting the ‘to do list’ for intervening at different levels of the social construct for realizing objectives that are believed to be compatible with circular economy principles.

We, of the Circular Economy Platform of the Americas, believe that Circular Economy is a very valuable paradigm shift and framework of guiding principles that can trigger conscious and collaborative efforts towards a new Economic model which will lead to effective solutions to current trends in population growth and urbanization, and related impacts, in the Americas.

The 53 American nations represent 14% of the world population with an estimated growth of 23% by the year 2050 (1.2 billion people), with 80% of the population living in urban areas and 70% representing the economically active population. With a CE framework this population trend represents great opportunities to generate high-quality and inclusive jobs and to develop more sustainable cities and communities.

Moreover, a CE transition will benefit the regional economy by significantly reducing dependence on the extractive sector and intensive agriculture and foster more added-value economic activities. A CE in the Americas will boost innovation and regional competitiveness diversifying the economy and reducing reliance on non-renewable resources. Innovation is one of the building blocks of a Circular Economy to generate profound changes and to create an economy that is restorative and regenerative by design and intent. Through innovation, the American Continent will have greater opportunities to get access to global value chains by fulfilling the circularity requirements that have started to emerge in the international markets.

A Circular Economy eliminates the concept of waste by designing for and promoting the recovery of materials at the end-of-use and reincorporating them into the value chains in a cost-effective way. In addition, the emission of toxic chemicals and greenhouse gases harmful to the environment and humans will be eliminated avoiding contamination of water, soil, and air in communities throughout the region. The restorative nature of a Circular Economy will allow better resources stewardship and will stop the constant loss of biodiversity in the Americas.

This transition will only be possible through an objective evaluation of these opportunities and benefits, and through alliances of cooperation and collaboration between different actors, nations and regions that have already undertaken concrete actions towards a CE. Although the contexts in North, Central, South America and the Caribbean are different, there are common trends across the territory that will unify efforts to achieve a Circular Conscious Continent operating under a Circular Economic framework.

Furthermore, a general observation, based on the presentations, discussions and feedback received during CEFA2017, is that the term Circular Economy is being introduced in the Americas without concentrating on the fundamental guiding principles, making it subject

to different interpretations. This leads to a situation where newcomers and even seasoned experts, may fall into many of the usual traps and do not demonstrate a good grasp on what CE is, stands for, and what solutions or quality programs might be useful to promote and share among colleagues throughout the region.

An important observation and learning from CEFA2017 was the general consensus of the need for recognition that Circular Economy is not solely a technocratic solution, but is more so an anthropological paradigm shift, which needs to have the human being at the epicentre of any Circular Economy framework.

Another resonating point is that tailoring and coming with localized interpretation of the Circular Economy principles are deemed the best way forward to match the region's realities, needs, and opportunities to ultimately improve the wellbeing of the people of the Americas.

Circular Economy can benefit the American continent by achieving a consensus on its meaning and practice. American communities must understand that despite CE can serve as a mechanism to help re-think and gradually solve current waste management challenges, a CE is far more than recycling strategies and represents a paradigm shift and a new framework, where we need to start to rethink our relationship with nature, rethink our global economic model, and rethink production and consumption patterns by designing and manufacturing products, creating intelligent business models and solutions, and creating an enabling environment that lead to intended beneficial outcomes to help addressing human needs.

We, of the organizing committee, believe that the fundamental guiding principles of Circular Economy have sufficiently been developed at a deep level, now the challenge is to understand them, adhere to them, and place them into practice in the local context to generate sustainable circular solutions in the broader sense of the word (achieving economic prosperity, social equity and positive impacts on the environment).

As a region, there is a need to continue learning and dialoguing around CE to propose concrete actions that involves all the stakeholders (enterprises, entrepreneurs, society, academics, and policy makers) to set and communicate a clear vision of a Circular Continent that offers environmental quality, economic prosperity, and social equity for all.

CEFA2017 was a first step to start gaining this understanding and some interesting reflections arose where social challenges such as inequality and informality present in the region should be addresses in any CE strategy. With the aim to contribute to the ongoing conceptual evolution of the definition of Circular Economy, based on findings and feedback at CEFA2017, the following definition of Circular Economy is proposed:

“Circular Economy is a comprehensive paradigm shift which proposes a set of guiding principles to sustainably and beneficially manage resources within the biosphere, the technosphere, and the human sphere. Human beings having a central role to play to achieve positive changes for sustainable development” (CEFA, 2017)



CEFA2017 sets the precedent to begin a dialogue throughout the American Continent and will continue to be developed annually as the means that will facilitate this understanding with the ultimate goal of proposing concrete actions that involve all the stakeholders.

The organizing committee believes that CEFA and other events that have emerged in the last couple of years in the region are fundamental to continue boosting dialogues around CE and expanding a correct understanding of its principles. It is recommended that these meetings promote concrete work agendas for governments, companies and civil society.

## 5. Next Steps

The first edition of the Circular Economy Forum of the Americas, CEFA2017, was the needed step to start understanding CE and contextualizing its principles into the realities of the American communities. Different discussions during CEFA2017 concluded the importance of achieving a consensus on what CE means for the Americas and to start proposing and executing concrete actions, CEFA is one of these concrete actions that we want to continue fostering across the continent.

As it was acknowledged during CEFA2017, there are different opportunities to embrace and barriers and challenges to overcome, and despite the path towards circularity in our continent and globally can be challenging but it is also a path that is worth to explore by convening all the stakeholders and building a CE that benefits all: business, governments, society and the environment.

CEFA is committed to continue enabling the discussions that will make a Sustainable Circular Economy a reality in the Americas, and therefore for next editions we would like to call for contributions that allow to expand and going deeper in the conversations started during CEFA2017. These contributions can be framed within the following topics and are subject to feedback of change agents that would like to participate and join the conversations.

1. Are we locked-in in recycling?
2. Circular Economy Practical business cases and its benefits at the social, economic and environmental level.
3. How to bring into practice Circular business models
4. Collaboration and alliances among different regions and actors to make a CE transition.
5. Governmental progress for a Circular Economy transition
6. Education progress to support a Circular Economy transition in the Americas

The organizing committee of CEFA welcomes you to join the next edition of CEFA in Santiago, Chile for CEFA2018! We look forward to hosting you and welcoming you and colleagues to share experiences, ideas and solutions toward a circular conscious continent.

## Abbreviations

ASDF	Americas Sustainable Development Foundation
CAF	Latin American Development Bank
CE	Circular Economy
CEFA	Circular Economy Forum of the Americas
CEP-Americas	Circular Economy Platform of the Americas
C2CPiI	Cradle to Cradle Products Innovation Institute
EU	European Union
EMF	Ellen MacArthur Foundation
IDB	Inter-American Development Bank
Inno4sd	Innovation for Sustainable Development Network
MINCIT	Ministry of Commerce, Industry, and Tourism of Colombia
OAS	Organization of American States
TNO	Netherlands Organization for Applied Scientific Research
UNDP	United Nations Development Program
UU	Utrecht University
UWI	University of West Indies

The Circular Economy Forum of the Americas (CEFA) is an annual event organized by the Americas Sustainable Development Foundation (ASDF) and the Circular Economy Platform of the Americas (CEP-Americas) to discuss the needs, challenges, and opportunities to promote and make the transition towards a Circular Economy possible in the Americas.



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