

VICENTE BAGNOLI
(PROFESSOR LEADER)

DATA SHARING AND CLIMATE ACTION IN BRAZIL

ANNALS OF THE WORKSHOP

Professor Leader:
Vicente Bagnoli

Professor:
Juliana Abrusio

ANNALS OF THE WORKSHOP “DATA SHARING AND CLIMATE ACTION IN BRAZIL”

(15-16 DECEMBER 2022 – SÃO PAULO)
MACKENZIE PRESBYTERIAN UNIVERSITY

Reporters:
Ana Cláudia Ruy Cardia Atchabahian
Christiane Bedini Santorsula
Douglas Telpis Ferrante
Maria Beatriz Monteiro da Silva Elias
Vinicius Cervantes G. Arruda



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Max Planck Institute
for Innovation and Competition



WORKSHOP ANNALS

December
15-16
2022

DATA SHARING & CLIMATE ACTION IN BRAZIL

📍 MACKENZIE PRESBYTERIAN UNIVERSITY
São Paulo, SP



13 CLIMATE
ACTION



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PRESENTATION

At the end of 2022, on December 15 and 16, Mackenzie Presbyterian University was the stage of an intensive journey of debates, exchange of ideas, as well as different and complementary points of view. A joint effort to discuss and ponder the Data Sharing and Climate Action in Brazil.

The setting for the debates was a modern building opened in 2016, the home of MackGraphe, the Center for Advanced Research in Graphene, Nanomaterials and Nanotechnologies, where different actors from a variety of backgrounds came together. Germany, Senegal, India, Ecuador, Chile, Colombia, Italy, Spain, and of course Brazil, were the multiple nationalities that joined together their efforts to address a goal that goes beyond Brazil. It is a mandatory topic of discussion for the whole world.

The Workshop is part of an international research project entitled “Regulation of the Data Economy in Emerging Economies: Shaping Data Sharing Policies to Promote the Sustainable Development Goals” headed by Max Planck Institute for Innovation and Competition in collaboration with international partners: Mackenzie Presbyterian University, Université Virtuelle du Sénégal, BML Munjal University of India and National Law School of India University, Bengaluru.

The international research is led in Brazil by the Competition Law Study Group of the Graduate (PhD and Master) Program in Political and Economic Law at Mackenzie Presbyterian University Law School.

The data economy offers great potential for emerging economies to achieve sustainable development goals (SDGs). However, data-sharing policies must be properly framed to leverage this potential. The workshop is a remarkable occasion which allows for the exchange of experiences and the collective creation of alternatives

for building a better, fairer, inclusive, and more equal society in different countries.

The project aims to define a holistic normative regulatory theory on promoting data sharing that will help to fulfill SDGs. It further aims to develop specific policies for data sharing in emerging economies and, ultimately, assist with possible legal reforms.

The Brazilian focus is on Climate Action (SDG 13) due to its relevance to the country and the world as well as the limited progress in achieving environmental goals, and especially the great potential to advance in this area by fostering the data economy.

SDG 13 takes urgent action to combat climate change and its impacts and according to the United Nations this is part of humanity's code red warning: "Our window to avoid climate catastrophe is closing rapidly".

Given the scope of the topic, the project is narrowed down to address environmental issues from a territorial perspective, considering the interrelation between agricultural production, transportation processes, and product consumption in cities. This poses questions on how agribusiness and excessive consumption impact climate change, a matter related to economic growth (SDG 8) and responsible consumption and production (SDG 12). It also raises questions about the impact of climate change on rural and urban life, which connects to issues of deforestation and life on land (SDG 15), and how to promote sustainable and clean cities (SDG 11). All of these are relevant topics on the Brazilian policy agenda.

In its first stage, the project is focused on the Amazon and Sao Paulo regions, each with their own rural/urban dynamics, but also interconnected along the national agribusiness product value chain. As evidence shows, agribusiness is one of Brazil's main economic sectors, accounting for about 27.4% of GDP in 2021. It is also one of the sectors with the greatest potential to reduce greenhouse gases.

As noted by the OECD, while combating illegal deforestation is a priority, digital technologies based on big data and machine learning are also key to increasing farming efficiency and thus also

contribute to climate action. Finding more evidence on how data-sharing initiatives can promote green production and growth, as well as deciphering the policy and technical challenges are concrete goals of the project.

The potential of the data economy also brings together stakeholders that promote a transition to more innovative, profitable, and less invasive business models. At the same time, it is essential to formulate concrete hypotheses in the field of competition, consumer protection, environmental law, data policy and innovation.

Prior to the workshop in Sao Paulo, the international research experienced a great sharing of knowledge in Dakar – Senegal and Bangalore – India. Those workshops raised the bar and inspired - but also compelled - the Sao Paulo Workshop Team to put forth its best efforts to bring together different stakeholders, with specific skills, from different backgrounds, different institutions, and a variety of nationalities, to share their vast knowledge. Before the speakers had been invited, meetings were held to understand how they could contribute to the workshop.

The Workshop had the unique opportunity to listening to and debate with the speakers in five different panels.

PANEL 1 - The role of the SDGs and data sharing to better address climate change and promote shared prosperity and inclusive growth;

PANEL 2 – The current data-related legal framework to tackle climate change: what is there and what is missing;

PANEL 3 - Producing from the land: data-related business and technologies to tackle climate change and fostering prosperity and inclusiveness;

PANEL 4 – Consumption in the city: data-related initiatives to foster a sustainable consumption culture; and

PANEL 5 – Data-based initiatives to fight climate change: going beyond the market.

The full agenda of the Workshop and the YouTube link of the recordings of each panel can be found on the following pages of this Annals. The following pages also present a summary of the discussions held on each panel, the main contributions of the speakers, the highlights of what has already been achieved and the challenges to be faced.

A very special thanks to the Max Planck Institute for Innovation and Competition, represented by its director Professor Josef Drexler, for leading and funding this international research, and to Mackenzie Presbyterian University for taking part on this project and for hosting the Workshop.

The following academics were on the Sao Paulo Team to make the Workshop possible:

From Max Planck Institute for Innovation and Competition: Carolina Banda and Germán Johannsen.

From Mackenzie Presbyterian University Law School: Professor Juliana Abrusio, PhD and LLM candidates Giovanna Failache and Maria Beatriz Monteiro and undergraduate student Lucas Morimoto. A very special thanks to PhD candidate Christiane Bendini whose efforts and commitment were essential to make this Workshop happen.

Also from Mackenzie, Giovanna Guilherme, Sofia Donario, Douglas Ferrante, Vinicius Cervantes and Gustavo Altomari, all joined the team for the preparation of the Workshop.

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AGENDA

“DATA SHARING AND CLIMATE ACTION IN BRAZIL”

(15-16 December 2022 – São Paulo)

Rua da Consolação, 930 - Consolação, São Paulo - SP, 01302-907, Brazil
Mackenzie Presbyterian University

THURSDAY 15 DECEMBER 2022

Registration (8:00 – 09:00)

Opening Remarks (09:00 – 09:40)

- Reverend Marcelo Coelho - opening prayer – Presbyterian Church of Brazil
- Maria Cristina Triguero Veloz Teixeira (Mackenzie, Coordinator of the PhD and Master Programs)
- Pedro Buck (Mackenzie, International and Interinstitutional Cooperation Coordinator)
- Josef Drexl (Max Planck Institute for Innovation and Competition, Director)
- Vicente Bagnoli (Mackenzie)

Intro to the MPI project (09:40– 10:30)

- Regulation of the Data Economy in Emerging Economies: Shaping Data Sharing Policies to Promote the Sustainable Development Goals. Josef Drexl (MPI)
- Previous experiences in Senegal - Mor Bakhoun and Minata Sarr (Université Virtuelle du Sénégal)

- Previous experiences in India - Arul George Scaria (National Law School of India University, Bengaluru), Vikas Kathuria (BML Munjal University) and Shraddha Kulhari (MPI)
- Brazil, Data Economy & Climate Action: methodology overview, Carolina Banda and Germán Johannsen (MPI) and Vicente Bagnoli (Mackenzie)

<https://youtu.be/pUiUbas4yVw>

Coffee break (10:30 – 11:00)

PANEL 1 - The role of the SDGs and data sharing to better address climate change and promote shared prosperity and inclusive growth (11:00 – 12:45)

Summary: The panel will discuss the validity of the SDGs framework for law and policy design, as well as the interconnection between the different SDGs in the world and in the specific context of Brazil, will be discussed in this panel. The project's primary focus is on Climate Action (SDG 13) due to its relevance for Brazil and the world. Given the scope of the topic, the project is narrowed down to address environmental issues from a territorial perspective, considering the interrelation between agricultural production, transportation processes, and product consumption in cities. This opens up questions on how agribusiness and (city) consumption impact climate change, a matter related to economic growth (SDG 8) and responsible consumption and production (SDG 12). It also raises questions about the impact of climate change on rural and urban life, which connects to deforestation and life on land (SDG 15), and how to promote sustainable and clean cities (SDG 11).

Intro / Moderator: Vicente Bagnoli (Mackenzie)

- Giovanni Napolitano (WIPO, Director Intellectual Property and Competition Policy)
- Paulo Furquim de Azevedo (Insper and former Commissioner of CADE)
- Dashiell Costa (TCU's Secretariat for External Control of Agriculture and the Environment – SecexAgroAmbiental – and technical coordinator of the Global ClimateScanner Initiative)

<https://youtu.be/Ir1HQY6xulg>

PANEL 2 – The current data-related legal framework to tackle climate change: what is there and what is missing (14:00 – 15:45)

Summary: The focus of this panel is bringing together law and policymakers from relevant fields to assess the existing legal framework on data sharing and discuss the potential of the data economy for climate action in Brazil (and Latin America). Hence, we would like to invite relevant experts in the field of competition, consumer protection, environmental law, data policy and innovation. The idea is to formulate concrete hypotheses that can then be discussed considering the insights provided in the following panels.

Intro / Moderator: MPI Mack Team – Carolina Banda & German Johannsen

- Juliana Abrusio (Mackenzie) – Open data, data portability and environment
- Nicolo Zingales (CTS-FGV, Brazil) – Open data, data collaboratives: leveraging points to increase data sharing in the Brazilian framework
- Roberto Pfeiffer (USP, Brazil)
- Juan David Gutiérrez (U. del Rosario, Colombia) – Is antitrust a balm or a thorn in the side of the Amazon?
- Felipe Irrarrázabal (CeCo, Chile) – The importance of a regional approach in digital markets

https://youtu.be/klQft_Ol7yg

PANEL 3 - Producing from the land: data-related business and technologies to tackle climate change and fostering prosperity and inclusiveness (16:15 – 18:00)

Summary: This panel focuses on the potential of the data economy to support a more environmentally sustainable use of the land. It brings together different stakeholders in order to show already existing market-based solutions, better assess drawbacks and already glimpse (potential) policies in that regard. It has a particular emphasis on the Amazon and Sao Paulo regions. This panel also brings stakeholders that promote a transition to more innovative, profitable and less invasive business models.

Intro / Moderator: MPI Mack Team – Giovanna Failache & Germán Johannsen

- Ary Fortes (Embrapa, Brazil)

- Fernanda Facchini (Natura)
- Tiago Reis (Trase, Brazil) – Tracing the origin of products
- Andressa Schmeling (Agrosmart, Brazil) – Precision agriculture
- Tereza Carvalho (Amazonia 4.0) Transition to bioeconomy

<https://youtu.be/hnyfkhXMf7s>

FRIDAY 16 DECEMBER 2022

PANEL 4 – Consumption in the city: data-related initiatives to foster a sustainable consumption culture (9:00-10:45)

Summary: The flip side of production in the land is consumption in the city. One of the major problems with respect to sustainable consumption is the lack of information along the product value chain as to whether it respects environmental standards. Research shows that traceability might be a tool for reducing the effects of climate change and it also addresses informational market failures and generate trust in public policies. Hence, from our methodological perspective, traceability will be a central concept. This panel narrows down to São Paulo city, and we would like to invite private and public initiatives that focus primarily on solving this information-related problem through data-based technologies.

Intro / Moderator: MPI Mack Team – Christiane Bedini & Vladimir Maciel (UPM)

- Bruno Flach (IBM Research Group)
- Andrea Malerba and Mariana Gonçalves Castro Thome Soares (ENEL)
- Anna Carolina Meireles de Oliveira (TIM)
- Simão Saura Neto (SP Trans - Superintendente de Engenharia Veicular e Mobilidade Especial)
- Marcela Santos (São Paulo Parcerias)

<https://youtu.be/2p7mBtY0HRI>

Coffee break (10:45 – 11:15)

PANEL 5 – Data-based initiatives to fight climate change: going beyond the market (11:15–13:00)

Summary: Several data-related initiatives have been identified whose main objective is not to correct a market failure, but to produce a common good to fight climate change. Many of these initiatives come from organizations formed by private companies, research centers and public agencies, in a joint effort to create relevant inputs to fight climate change. Concerns about deforestation and greenhouse gas emissions are some of the main issues that will guide this panel discussion.

Intro / Moderator: MPI Mack Team – Maria Beatriz Monteiro & Carolina Banda

- Carolina Andrade (IGARAPE, Brazil) – deforestation and criminal offences
- Leonardo Capeleto (USP, Brazil) – Fighting the impact of climate change and urbanisation with MAR
- Marcos Rosa (MAPBIOMAS, Brazil) – mapping deforestation
- Julia Shimbo (SEEG, Brazil) – measuring GHG emission
- Marcelo de Medeiros (IMAFLORE, Brazil) – open data & environmental authorities

Closing remarks (14:00 – 14:30)

- Josef Drexler (Max Planck Institute for Innovation and Competition, Director)
- Vicente Bagnoli (Mackenzie)

https://youtu.be/1gd_yzwLQEk

PANEL 1

PANEL 1 - The role of the SDGs and data sharing to better address climate change and promote shared prosperity and inclusive growth

Summary: The panel will discuss the validity of the SDGs framework for law and policy design, as well as the interconnection between the different SDGs in the world and in the specific context of Brazil, will be discussed in this panel. The project's primary focus is on Climate Action (SDG 13) due to its relevance for Brazil and the world. Given the scope of the topic, the project is narrowed down to address environmental issues from a territorial perspective, considering the interrelation between agricultural production, transportation processes, and product consumption in cities. This opens up questions on how agribusiness and (city) consumption impact climate change, a matter related to economic growth (SDG 8) and responsible consumption and production (SDG 12). It also raises questions about the impact of climate change on rural and urban life, which connects to deforestation and life on land (SDG 15), and how to promote sustainable and clean cities (SDG 11).

Intro / Moderator: Vicente Bagnoli (Mackenzie)

Reporter: Douglas Telpis Ferrante (Mackenzie – PhD candidate)

- Giovanni Napolitano (WIPO, Director Intellectual Property and Competition Policy)
- Paulo Furquim de Azevedo (Insper and former Commissioner of CADE)
- Dashiell Costa (TCU's Secretariat for External Control of Agriculture and the Environment – SecexAgroAmbiental – and technical coordinator of the Global ClimateScanner Initiative)

The panel discussed the validity of the SDGs framework for law and policy design, as well as the interconnection between the different SDGs in the world and in the specific context of Brazil. The project's primary focus was on Climate Action (SDG 13) due to its relevance for Brazil and the world. Given the scope of the topic, the project is narrowed down to address environmental issues from a territorial perspective, considering the interrelation between agricultural production, transportation processes, and product consumption in cities.

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Vicente Bagnoli (Brazil, professor at Mackenzie Presbyterian University) was the moderator, introducing the panel. The speakers were: **(i) Giovanni Napolitano** (Italy, WIPO, Director Intellectual Property and Competition Policy); **(ii) Paulo Furquim de Azevedo** (Brazil, Insper and former Commissioner of CADE); **(iii) Dashiell Costa** (Brazil, Secretaria de Controle Externo de Agricultura e do Meio Ambiente do TCU – SecexAgroAmbiental – e technical coordinator at Global ClimateScanner).

Giovanni Napolitano began the presentations, explaining what the WIPO Green is: a global online marketplace for sustainable technologies with the following purposes: (i) boost global efforts to address climate change by connecting providers and seekers; (ii) support innovation and innovators, particularly in the developing world; (iii) guide member states to leverage IP and innovation to address major policy issues related to climate change, food security and the environment. There are more than 120.00 technologies available, more than 2.500 user worldwide and more than 800 connections (i.e., more than 800 joint projects have been established). Then, he mentioned and explained the acceleration projects. The panelist mentioned several annual acceleration projects since 2015, except in 2020 because of COVID-19: wastewater treatment (2015: Indonesia, Philippines and Vietnam); agriculture and water (2016: Ethiopia, Kenya and Tanzania); water (2017: Switzerland); energy, clean air and agriculture (2018: Cambodia, Indonesia and Philippines); climate smart agriculture (2019: Argentina, Brazil, Chile, Peru); palm oil treatment (2021: Indonesia); China Cities (2022: China). Projects since 2019 are still ongoing.

Acceleration projects work with partners to explore local environmental challenges and green opportunities. Main points explored within the subject WIPO Green acceleration projects: (i) active and focused matchmaking; (ii) need to identify needs and propose solutions; (iii) specific subject and location; (iv) work through local consultants; (v) act as technology agent for need owners; (vi) matchmaking events as relevant; (vii) database is a central tool. The following projects were mentioned as highlights: (i) Climate Smart Agriculture in America; (ii) China Smart Cities; (iii) Treating and valorizing palm oil mill effluent in Indonesia. In several countries, with emphasis to Brazil and Latin America, there is a project named “Climate Smart Agriculture in America”. There is a focus in specific areas (such as forestry water and coastal regions) and technologies that may help in the implementation of the project’s purposes. Intellectual property may also help in the implementation, not only to make sure that the parties would agree on the transfer of technology but also to make it happen in an expedite way. Climate change is leading to multi-billion-dollar losses in crop yield and affecting the health of forest ecosystems. Technology can help farmers and forest managers monitor crop and forest health, adapt their practices, use resources more efficiently and manage climate risk. Embrapa is one of the representatives also involved in this project. It was presented at COP27 in Egypt.

The panelist then mentioned the LAC Climate Smart Agriculture project in Brazil, Argentina, Peru and Chile, aiming at identifying needs and propose solutions related to sustainable agriculture, forestry, soil-decarbonization, zero-till, wine sector. It stressed the fact that it was launched in 2019, creating strong network of partners, with more than 200 stakeholders contacted, 185 uploads to database, 70 needs and 115 technologies. Japan government provided funds to the second and third phase. Brazil Acceleration Project is therefore part of the LAC acceleration project. Phase 2 of this project focus on no-till agriculture and renewable energy in NE Brazil, identify needs with no-till farmers and farmers/communities, especially solar powered irrigation. Phase 3 started in 2022, with

focus in agriculture sector: renewable energy, sustainable mechanization, integrated pest management.

Lastly, he explained the relationship between competition and sustainability, and implications for Intellectual Property. Competition and sustainability have only recently started to be discussed among competition agencies at the international level. The discussion affects several aspects of a competitive assessment in relation to sustainability: (I) dealing with cooperation among competitors; (ii) assessing a merger that results in the development of long term green technologies; (iii) dealing with dominant companies' decisions to possibly introduce green solutions more expensive for consumers.

Competition and sustainability implications for IP: (i) identifying the IP-related conducts under potential antitrust scrutiny, particularly when competitors share sensitive data; (ii) assessing the different operational option concerning the joint endeavor (e.g. a third party research lab to which participating companies confer their IP); (iii) assessing the options concerning the management of IP resulting from joint research activities on sustainability vis-à-vis antitrust assessment; (iv) identifying good practices that may help companies and competition agencies find balanced solutions to the IP / Competition interplay.

Implications for IP: (i) management of IP input by companies participating in joining projects (so called background IP); (ii) ownership of the IP generated by collaborations (so called foreground IP); (iii) exclusive / open licensing; (iv) the IP contribution in private/public partnerships.

Conclusions - upsides and downsides, and what should be improved: His presentation stressed the importance of WIPO Green acceleration projects as well as the importance of each stakeholder to its purpose, including the important role of technology and cooperation between companies. It entails risks when it come to the interpretation of competition authorities upon such cooperations. Prudent interpretation of competition law may induce timid initiatives with little environmental impact. Another one is how to deal to what happens to mergers in terms of what could be the de-

velopment of long-term green technologies. There is a concern that maybe some of the innovation avenues will be disrupted because the merged company will not pursue all the different options that the independent companies were carrying out before. A concern, therefore, arises: is the merger going to help the development of green technologies or is it going to slow down that development? Another concern: what happens when a dominant company a company that therefore has a significant market power introduces possibly some green solutions that are more expensive for consumers? Will that company be put under scrutiny by a competition Authority because maybe prices are excessive? or will the sustainability element with the green element sort of counterbalance the short-term higher cost for consumers? He mentioned an important final question: is the “sustainability element” going to affect the competitive assessment of IP licensing? And then mentioned a few examples: (i) exclusive vs non-exclusive licenses; (ii) pricing: free / fixed / FRAND; (iii) commercial vs non commercial scope; (iv) restriction of some sectors; (v) perpetual vs fixed term durations; (vi) territorial restrictions.

Paulo Furquim de Azevedo presented three issued related to the main topic at discussion, and explained how they interconnect: (i) data and sustainability; (ii) regulation and norms; and (iii) climate actions in Brazil: challenges and opportunities. The presentation discussed these 3 topics separately and then explained the relationship between them. He began exploring data as a good, its importance to the demand side (it is always good o spread its use and to foster legally accepted data sharing) and supply side (weak incentives to provide it), as well as policy implications, which are: artificial scarcity (e.g. private rights on data) and data disclosure or public provisions concerns. He then concluded that creating value from data requires tacit knowledge, which is sometimes something non tradeable and not easily copied. Access to data, he concluded, is not enough to create value do data. He explored, after that, the legal background related to data, exploring data protecting issues and competition policy related to data. At one side, there are laws, such as the LGPD and GDPR, that protects individual rights, implying restrictions to using and data sharing, and also gridlock effect. On

the other side, there are competition laws and decisions imposing limits to data sharing, as also explored on the previous panel (professor Giovanni Napolitano). Is not unusual to notice competition authorities imposing sanctions to the sharing of sensitive data between competitors. Data property is not usually incorporated in merger analysis, he concluded.

Then he explored the subject climate actions in Brazil and related challenges, as well as opportunities in that regard. The main challenges are: the fact that Brazil is the largest meat produce (along with methane) and the problems related to deforestation in Brazil. On the other hand, Brazil is also a model for sustainable clean energy: (i) Brazil is the world leader in clean bioenergy; (ii) Brazil has flourishing wind and solar energy; (iii) Brazil has a huge hydropower. There is a huge potential in Brazil as well as opportunities, related to ongoing revolution in agriculture in Brazil, and no-tillage and integrated agri-forest systems. This has a strong relation also with Embrapa. Brazil has also the potential to be the largest supplies of carbon credit, with comparative advantages in extracting carbon and opportunities for international trade.

Conclusions - upsides and downsides, and what should be improved: Bringing about the 3 issues together, he mentioned that there are several opportunities to trade environmentally sustainable goods, but this is not an easy task. A substantial problem is related to credence goods. There is an urge to regulation or a system of private information sharing. Two solutions: (i) private certification standards and (ii) smart contracts and blockchain. Private system of providing information by means of these smart contracts may be in conflict with the data sharing law of data protecting law. Although it is important to have data flowing in favor of sustainability and pro-environment actions, information may have some restrictions. For this information to flow, companies have to agree on standards that may be a problem to competition law. Therefore, there is a need to have an adequation in the application of competition laws. Moreover,

When it comes to IP rights, there are IP rights related to Green economy nowadays that may be concentrated in few actors and there is a discussion on what are the -offs of providing the incentives for Innovation but also providing the benefit for sharing data. A last issue and concern is how to reconcile protection to privacy and creation of value to society as well as urban climate action concerns (also huge challenges and opportunities in Brazil).

Dashiel Costa was the last to speak. He began the panel exploring the Climate Scanner Global Initiative. This project has the following main goal: to answer the question of what is the role of Supreme Audit Institutions (SAIs) regarding climate change. These are institutions that every country in general has. Their role is important to have independent assessment over government actions. Main features of SAIs: (i) technical authority; (ii) reliable data; (iii) transparency; (iv) social control. The TCU in Brazil (Tribunal de Contas da União, or “Brazilian Federal Court of Accounts”) is an example of a SAI.

The activities of such institutions have been recognized by the UN General Assembly (A/RES/69/229, December 19th, 2014). Main points of A/RES/69/229: (i) encourages member states and UN institutions to intensify cooperation with SAIs in order to promote good governance by ensuring efficiency, accountability, effectiveness and transparency. (ii) acknowledges the role of SAIs in fostering governmental accountability for achieving development goals.

In 2022, the TCU has assumed the chairmanship of the INTOSAI – International Organization of Supreme Audit Institutions. This will last until the end of 2025.

Moving back to the Climate Scanner initiative, he emphasized that this project is aligned with international agreements, such as the Paris 2015 UN Climate Change Conference (COP21 – CMP 11) and SDG 13. Main features: (i) adaptation and resilience; (ii) mitigation; (iii) capacities; (iv) finance (USD 100 billions / year donation target). Purposes: (i) assess national governments’ climate action; (ii) consolidate data in a global overview; (iii) support decision

for future works; (iv) communicate relevant information; (v) share knowledge and experience; (v) contribute to INTOSAI's global voice.

Conclusions - upsides and downsides, and what should be improved: This initiative has a valuable upside, since this initiative aims to conduct assessments at the national level, consolidate data in the global panorama, produce useful information for planning future work by SAIs on climate and communicate relevant information to actors interested in the topic. In addition, the project could contribute to the exchange of knowledge and experiences between SAIs and to the strengthening of Intosai as a relevant global actor. The core of the project is the development and availability of an evaluation tool. This will be done throughout 2023, within the ClimateScanner Executive Group, comprised of various SAIs, under the leadership of TCU and Intosai, as well as with the support by experts. On the other hand, it is necessary to understand the complexity of this initiative and the proper working of such system, which may be a downside. It is necessary, therefore, to have a proper training on the parties involved.

PANEL 2

PANEL 2 – The current data-related legal framework to tackle climate change: what is there and what is missing

Summary: The focus of this panel is bringing together law and policymakers from relevant fields to assess the existing legal framework on data sharing and discuss the potential of the data economy for climate action in Brazil (and Latin America). Hence, we would like to invite relevant experts in the field of competition, consumer protection, environmental law, data policy and innovation. The idea is to formulate concrete hypotheses that can then be discussed considering the insights provided in the following panels.

Intro / Moderator: MPI Mack Team – Carolina Banda & German Johannsen

Reporter: Vinicius Cervantes G. Arruda (Mackenzie – PhD candidate)

- Juliana Abrusio (Mackenzie) – Open data, data portability and environment
- Nicolo Zingales (CTS-FGV, Brazil) – Open data, data collaboratives: leveraging points to increase data sharing in the Brazilian framework
- Roberto Pfeiffer (USP, Brazil)
- Juan David Gutiérrez (U. del Rosario, Colombia) – Is antitrust a balm or a thorn in the side of the Amazon?
- Felipe Irrázabal (CeCo, Chile) – The importance of a regional approach in digital markets

The focus of this panel was bringing together law and policymakers from relevant fields to assess the existing legal framework on data sharing and discuss the potential of the data economy for climate action in Brazil (and Latin America). Relevant experts in the field of competition, consumer protection, environmental law, data policy and innovation were invited to share their knowledge in their respective areas and thoughts about the subject of the panel, which was divided into two parts. The first focused on the legal framework for data sharing in Brazil, its importance to understanding climate

problems and interventions and how to improve data sharing, including databases initiatives discussed in Brazil in the public sphere. The second part focused on how competition policy, competition law, consumer protection or market regulation can contribute to data economy for climate action.

Carolina Banda and Gérman Johannsen, researchers at Max Planck Institute for Innovation and Competition, introduced the topic and moderated the panel. Prof. Juliana Abrusio, from Mackenzie University (Brazil), Prof. Nicolo Zingales, from Fundação Getúlio Vargas (Brazil), Prof. Roberto Pfeiffer, from São Paulo University (Brazil), Prof. Juan David Gutiérrez, from Universidad del Rosario (Colombia) and Prof. Felipe Irrarrázabal, director of Competition Center of the Adolfo Ibáñez University (Chile), attended the panel.

Carolina Banda started the discussions by highlighting the importance of Amazon to the world, since it is directly related to Earth's health in view of its pivotal role in climate. Banda also highlighted the existence of other problems, such as those linked to agriculture and indigenous communities, emphasizing climate problems and Brazil's difficulty in achieving the goals for the 2013 agenda, given the growth in gas emissions in 2022. Such climatic problems, however, are not restricted to the Amazon and extend to São Paulo, which faces huge problems with pollution caused by motorized vehicles. On the other hand, Banda noted that São Paulo has been developing mobility, as well as pointing out the need for cities that embrace growth, citizens and sustainable ecosystems. For these reasons, it is essential to think about consumption and production around the world.

Juliana Abrusio brought her thoughts about the Brazilian open data program, exposed the current scenario regarding legislation related to data, portability and also called attention to the understanding of the Brazilian Supreme Court in this area. Abrusio highlighted that the Brazilian open data program started from law number 12.527/2011, which aims at the availability of information in the interest of society regardless of the request. Abrusio

highlighted that in 2011 Brazil signed a partnership agreement with other countries aiming to improve transparency, accountability, innovation and technology, and also to develop and implement plans actions every two years. By highlighting the measures adopted by Brazil, Abrusio recalled the creation of the open data infrastructure by the Federal Government in 2012 and the creation of the Brazilian Open Data Portal, which gathers databases from various public bodies and different areas.

Regarding legislation, Abrusio highlighted that in 2016 the Decree 8,777 instituted the Executive Branch's Open Data Policy, which established data disclosure as a general rule and secrecy as an exception and guaranteed unrestricted access and use of data, to be disclosed fully and up to date, in open format. Moreover, Abrusio remembered that in 2018 the Brazilian General Data Protection Act (LGPD), regulated personal data, both in the public and private spheres. Data protection, according to Abrusio's speech, created new obstacles that for organizations to sharing data, then challenges to openness data began to emerge. The works developed by the Ministry of Environment together with the Digital Governance Committee were also exposed and fostered the discussions in this sense. Through the available data it is possible, for example, to map areas where there are greater deforestation, or areas of soil contamination, and, based on this data, public policies can be developed and applied to generate improvements. The United Nations works developed together with Brazil to achieve sustainable development goals, known as SDG, among them, Goal 13 were also exposed and discussed. Finally, Abrusio affirmed that the use of data for the maintenance of climate change enables the monitoring, control, and execution of public policies aimed at society. However, it is important to be compliant with the rules that already exist on the subject.

Nicolo Zingales highlighted that the main concerns are data privacy and competition since sharing information can be considered an offense of competition law under certain circumstances in Brazil and there are no guidelines addressing what constitutes an infringement of the law. Zingales observed the importance of incentivizing people to act sustainably and responsibly and exposed

sources of international law that can justify claims of access to data especially when it comes to government data, like Article 27 of the UN Declaration and the Convention of 1998. The Brazilian Federal Constitution rights established to ensure transparency and publicity in the scale of public administration and the right to access information were also highlighted by Zingales.

Another important point observed was that Brazilian law is really intended to avoid personal data and confidentiality claims to be used as a shield to hide crimes. In 2021, following the international trend of “government as a platform”, the Brazilian government published the 14.129 Act, which provides for principles, rules and instruments for Digital Government and for increasing public efficiency, besides that, Zingales pointed out the proposed bill 2.224/2021, which aims to foster the provision of real-time data carried out by the public administration, in order to facilitate its reuse by people and also may improve interoperability and innovation. The proposed bill of regulation artificial intelligence in Brazil was also emphasized. According to Zingales, there are interesting opportunities at the interface of public and private contexts and a sandbox would facilitate market players’ collaboration, but predictability should be strengthened.

Gérman Johannsen initiated the second part of the panel by bringing thoughts about how data economy and climate chances are connected and if competition policy and competition law could work in this scenario or if it would be necessary to look at different tools. Roberto Pfeiffer focused his speech on how data sharing could promote competition and bring solutions to climate change and highlighted that it is important to analyze how competition authorities will decide about data sharing agreements and look at environmental issues. Pfeiffer observed that people may play a relevant role in this scenario in Brazil and in Europe, considering the rights provided by data protection legislation, which has increased the power of individuals to control their data. Besides that, Pfeiffer highlighted a lack of regulation in terms of data portability and interoperability in Brazil, which may jeopardize, for instance, consumers’ choices for sustainable providers, products, and services. On the other hand,

Pfeiffer considered that portability may foster competition and reduce operation costs, then competition authorities may think about sustainability in a scale of competition policy and the environmental agency could provide a regulation concerning data.

Juan David Gutiérrez brought his thoughts about the intersection between competition law and environmental policy's objectives, and whether and how national competition law policies contribute to fostering or hindering initiatives related to deforestation in the Amazon. Gutiérrez highlighted that the demand for timber, cattle raising, gold mining, soy and coca crops has been improving deforestation in the Amazon and highlighted the lack of transparency in the market and problems with traceability. The results of the research conducted by Gutiérrez in Brazil, Bolivia, Colombia, Ecuador and Peru could not demonstrate that competition and environmental policies are aligned, in spite of highlighting that, hypothetically, in general antitrust promotes efficiency which may mean that fewer inputs are used in the processes and may require less sourcing from the Amazon. Between some examples, Gutiérrez pointed out the Biopalma case, submitted to the Brazilian Competition Authority (CADE), which involves a merger of companies that explored palm oleo. In this case, environmental arguments were not considered. Although the research conducted by Gutiérrez was ongoing, he could conclude that competition law is not an obstacle up to now and there are few significant antitrust cases. This may stem from the characteristics of the value chain and priorities of competition authorities and there are limitations, at least in South America, of using competition law as an instrument for environmental purposes.

Felipe Irrázabal highlighted the complexity of competition law which brought bigger challenges when added to data. However, competition should not be an obstacle, at least, to sustainability. Irrázabal emphasized that competition policy should consider environmental policy and highlighted some challenges to be faced in Latin America, such as political instability, concentrated and traditional economy, lack of independence of competition agency in relation to government, lack of expertise in Courts, limited understanding about market by citizens. A threefold approach was proposed

by Irarrázabal, based on sustainability, digitalization and data, and competition law. In this scenario, businesses could use data tools to collaborate and optimize decision-making to achieve environmental goals and competition agencies could use data-based tools to assess and quantify the effects of market conduct on sensitive competitive parameters that could be related to environmental harm or benefits. According to Irarrázabal, however, it may be risky to entrust competition agencies with novel goals, agencies should be seen as technical entities, an administrable system and regulation are important in this scenario and predictability is essential.

From the speeches and discussion during the panel, it is possible to conclude that data sharing may be considered in competition and environmental policies, besides efficiency and consumer welfare, especially in the context of developing countries. In terms of climate change, data sharing is extremely important to monitor, control, and execute public policies and to enable progress in sustainability. At this point, environmental agencies may provide guidance or regulation together with data protection authorities, when dealing with personal data. Despite being important to observe competence regime and recognize the challenges with metrics, environmental concerns may be considered by competition authorities, under the point of view of competition, efficiency and, mainly, consumer welfare. Consumers may also play an essential role in terms of competition and environmental issues and data protection legislation has increased consumers' power. In this sense, the traceability of products and services may be improved to facilitate consumers' choices in terms of sustainability, in spite of being important to analyze the costs and benefits involved.

Portability is also highly important in this scenario and although data protection and consumer law may be used as instruments to enable portability, the lack of guidance and regulation about portability and interoperability may jeopardize consumers' choices, competition, and environmental policies. Portability may also foster competition and reduce operation costs, bringing benefits to society. However, incompatibilities between different systems may jeopardize the entire plan in terms of data sharing. In general

terms, predictability, legal certainty, and trust must be improved through guidance and regulation to foster data sharing in competition and environmental policies. For this, guidance and regulation, besides databases, data sharing, and traceability tools shall be available for consumers, private and public sectors. On the other hand, sandboxes can provide a safe space to be compliant, since it may involve and gather different regulators aiming to foster innovation, policies, and predictability. Finally, it is important to keep in mind that relevant proposed bills focused on regulating digital platforms (PL 2768/2022), artificial intelligence (PL 21/20) and digital content on the Internet (PL 2630/2020) are under discussion in Brazil and may bring new standards to all this scenario related to data.

PANEL 3

PANEL 3 - Producing from the land: data-related business and technologies to tackle climate change and fostering prosperity and inclusiveness

Summary: This panel focuses on the potential of the data economy to support a more environmentally sustainable use of the land. It brings together different stakeholders in order to show already existing market-based solutions, better assess drawbacks and already glimpse (potential) policies in that regard. It has a particular emphasis on the Amazon and Sao Paulo regions. This panel also brings stakeholders that promote a transition to more innovative, profitable and less invasive business models.

Intro / Moderator: MPI Mack Team – Giovanna Failache & Germán Johannsen

Reporter: Ana Cláudia Ruy Cardia Atchabahian (Mackenzie – Professor of Law)

- Ary Fortes (Embrapa, Brazil)
- Fernanda Facchini (Natura)
- Tiago Reis (Trase, Brazil) – Tracing the origin of products
- Andressa Schmeling (Agrosmart, Brazil) – Precision agriculture
- Tereza Carvalho (Amazonia 4.0) Transition to bioeconomy

The conceptualization of the workshop wanted to focus on supply chain in both sides (production and consumption). In this sense, panel 03 was dedicated to build the discussion on data-related business models that focuses in tackling climate change and fostering prosperity and inclusiveness.

Ary Fontes (Embrapa) was the first specialist to conduct his presentation. After presenting the history, the mission and activities of Embrapa (Brazilian Agricultural Research Corporation – a public company), the specialist mentioned that the organization

came across the need to develop data to promote better production systems, by creating some specific centers, such as: Thematic center (Embrapa digital agriculture); product center; and ecoregional centers. Afterwards, Embrapa started Proagro, an important program for small and medium enterprises with the development of data for identification of producers' profiles to receive investments from national financial institutions. In this sense, the mission of Embrapa is to create research, development and innovation solutions to ensure sustainability for agriculture and in benefit for Brazilian society. Embrapa also developed international partnerships with educational institutions worldwide for cooperation in data-sharing and innovation for the productive sector. Nowadays, the company focuses on projects in private-public partnerships, innovation-driven projects, co-funding, and intellectual property rights sharing.

Considering the research teams for R&D Programming, Embrapa has a Scientific Computing, Information and Engineering Automation group; a Agro-Environmental Modeling and Geotechnologies group; and Bioinformatics and Biotechnology group, with five great areas, such as improvement in the pursuit of agricultural sustainability, strategic and competitive insertion in the bioeconomy, contribution to public policies, productive insertion and poverty reduction and positioning at the frontier of knowledge, all linked to the United Nations Sustainable Development Goals (SDGs). In 2022, Embrapa was rewarded by FAO for its work in accordance with the SDGs.

Ary's project is about how to measure risk when someone does not have information about producers. It's necessary to develop modelling systems and producing accurate and impartial information to the Brazilian government and financial institutions for rural insurance policies. Embrapa does experiments producing data (data, however, is not the object per se) to represent how plants grow, when it's the best time to sow plants (collecting data on weather, soil, among other important factors for the crops). The program is based on scientific knowledge, modelling, simulation and validation. They give to each municipality every ten days data on sowing risks for some crops. This can also help developing agricultural and

environmental policies in the country (in land occupation in Brazil), as well as aiding the Public Administration in protecting the environment and not financing, for an example, activities that might harm the environment in some protected areas. The information obtained is shared and is also recalculated to future climate scenarios, especially considering climate change. Considering the climate change impacts in agriculture, there are the Climatic Scenarios, with GCM (IPCC) and regional models (RCP + SSP); Agricultural Scenarios, with crop simulation – yield and climatic risks and adaptation through management; and National Economic Impacts, with GCE models to measure sectorial impacts.

Embrapa is now under the Coupled Model Intercomparison Project Phase 6, which is “the set of global models used in the analysis of climate change by the Intergovernmental Panel on Climate Change (IPCC) and has as a new methodology the use of warming levels compared to radiative force scenarios (RCPs), as in CMIP5”¹. Ary also presented a project named Agroideal, developed by Nature Conservancy, trade companies and Embrapa to measure gaps and how to improve the yield and Terra Class project, which measures areas with secondary vegetation and to tackle deforestation and speculation.

Tereza Carvalho (Amazonia 4.0) was the second specialist to present her research about Amazonia 4.0, a project that aims to create a local economy in order to decrease Amazon deforestation. Nowadays, the idea is to introduce different laboratories in the area to increase local economy in the production of some natural products, such as cacao, cupuaçu, among others (LCA – Amazonian Creative Laboratory, LCA Architecture, LCA Cacao-Cupuaçu, LCA Amazon Biobank – in the latest, local communities can produce data with local knowledge to other organizations outside the region about their own natural products – such as pharmaceutical companies).

1 Available at: <http://mtc-m21c.sid.inpe.br/col/sid.inpe.br/mtc-m21c/2019/11.04.16.10/doc/Carolina_Daniel_Gouveia_et-al.pdf>. Access on: April 14, 2023.

Among the challenges of the project, some are specified in Tereza's speech: (i) is it possible to reconcile economic development in the Amazon Forest with forest protection?; (ii) how can the traceability of Amazon product be guaranteed?; (iii) how to stimulate local economy?; and (iv) how digital technologies can support the creation of smart product chain based on Amazonian products?

Theoretically, three models were discussed. The first one focuses on preservation of the Amazon Forest (Pan-Amazon, that includes the Amazon Forest in other countries other than Brazil), especially considering that 47% of the Pan-Amazon is formed by protected areas and indigenous territories with international funds for preservation. In this model, the criticism is that there is no focus on modernization, in the sense that poverty and land conflicts remain in the region. The second theory focus on intensive traditional development, with farming (crops and livestock), mining (gold and other commodities) and energy production (such as hydroelectric plants). The criticism in the second theory is that this production stimulates deforestation, land fraud, forest fires and is destructive. In the third model, biodiversity is considered the main unique wealth from the Amazon Forest, and the use of knowledge from science and traditional communities would be desired. To mobilize this wealth, preservation and value creation is needed.

Project Amazon 4.0 focus on Sustainable development based on science, technology innovation and strategic planning to establish a bioeconomy based on standing forests with the rivers flowing, valuing biodiversity and the sustainable work of local communities (Carlos and Ismael Nobre). The pillars of the project are Industry 4.0 (with digital technologies, automation, innovation, IoT, artificial intelligence and blockchain); Science (genome, biomimetics, use of forest inputs); sustainability (circular economy and SDGs); and Socio-biodiversity (biodiversity, traditional knowledge and cultural aspects). As an example, in the LCA – Cacao and Cupuaçu Laboratory, they will provide the identification of all participants in the chain; the traceability of cacao and cupuaçu extracted from the Amazon Forest; the deployment of digital technologies for automating the Amazon goods production and creating disruptive solutions;

creation of value-added products with a certified origin; empowering of local communities; fostering of equitable distribution of socioeconomic benefits and local economy; proof-of-concept for bio-factories creations. There are still some challenges to the entire project, but the expectation is to support sustainable development through biodiversity research.

Tiago Reis (Trase) was the third specialist to present in the abovementioned panel. Trase is a program and a partnership with transparency initiative which stands for transparency and intelligence for sustainable economies. It is a data-driven transparency initiative that maps the international trade and financing of agricultural commodities which drive tropical deforestation. In its formation, Trase is a civil society, a consortium of organization involving the Stockholm Environment Institute (Sweden), Global Canopy (England) as founders and other research partners around the globe. In Brazil, they are partnered up with Imaflora (NGO). Trase's clients vary from companies, import country governments, investors, NGOs and the media all over the world and has a strong connection to the Sustainable Development Goals (SDGs 13, 12, 15 and 16).

Trase also maps supply chains, financial sector and insights on the area. They look for subnational jurisdiction of production in its supply chain program. The idea is to map the suppliers in the middle of the production and supply chain. In this sense, the organization focuses on connect consumer markets and trading companies to sourcing regions and associated deforestation impacts in these regions (municipalities of production, slaughterhouse, port, exporter, importer and port in the country of import. In the south cone of South America Trase maps almost all commodities cycle. This can help stakeholders in developing strategies for the production, consumption and importation of products. It's also possible to map deforestation areas in the countries and develop programs to tackle this problem. With the data initiative it is also possible to trace which stakeholders are buying commodities from endangered areas.

The organization also maps the limits of commitments, such as the Soy Moratorium. They can trace supply chains, contribut-

ing for the enforcement of some national and international rules on supply chain, such as the European proposal for a directive in supply chains, or the French or German rule on the matter. Tiago also showed the app “from pasture to plate”, an initiative that the person can scan a code in a meat pack and have access to information from the slaughterhouses and have data such as to forced labor, environmental impact, among others. The consumer can also rate the company involved, by creating a virtuous circle of sustainability. There are some challenges for Trase, such as developing the debates on data protection and sensitive information on supply chains and farmers for sustainability.

The last specialist to present her work was **Andressa Schmeling**, ESG specialist at Agrosmart, a company that uses technology and design to accelerate the transition for a more productive, sustainable, and climate-resilient agriculture. The company is situated in more nine countries, mapping more than ninety crops (+48m hectares) and attending more than one hundred thousand farmers, by supporting certification and compliance for farmers and corporations. The company is also signatory for the Global Compact and the Nature Climate Solutions Alliance, working in accordance with the SDGs.

Agrosmart nowadays has a climate smarter and culture platform, which paves the way to become the operational system for sustainable food systems by monitoring all climate-related information in specific crop areas. This information can help farmers and other stakeholders. Nowadays the company started to track ESG platforms to track other sustainable conditions, such as social impacts – this can improve farmers to invest in a better and more sustainable production (connected to ESG perspectives).

The company has a climate smart agriculture platform, where it collects and process agronomic and meteorological data and deliver insights that enable best practices at the cutting edge. The information varies from geolocated weather forecast to sensors telemetry (by sending information to farmers via WhatsApp), custom alerts, smart irrigation water usage, management reports, field notebook

and satellite images. In the field notebooks it is possible to allow specific checklists and insert offline data capture, as well as other documents and evidence to help numerous farmers. It is also an important initiative for data collection by using farmers' knowledge and information and interacting with the community. The second platform is an ESG platform, designed to monitor, report and verify social and environmental impacts of farming activities in the country, with the purpose to help corporations and investors. The data is gathered in the following areas: carbon footprint, deforestation, energy consumption, waste management, fair work, and water usage as well as other KPIs.

The benefits of the platforms for farmers are the following: improvement of water usage, increasing yield, optimizing spraying, reducing risks and costs, facilitating the certification process, engaging suppliers, centralizing data and increasing transparency and traceability of the chain, monitoring progress and achieving impact KPIs and adding value to the products, facilitating communication with the stakeholders. Considering the impacts, the productivity of its clients increased up to 20%; water savings up to 60%, energy saving up to 40%, as well as achieving SDG 9 with digitalization and connectivity, producers being more resilient and reducing the carbon footprint (SDG 13) and a more conscious consumption and production (SDG 12).

PANEL 4

PANEL 4 – Consumption in the city: data-related initiatives to foster a sustainable consumption culture

Summary: The flip side of production in the land is consumption in the city. One of the major problems with respect to sustainable consumption is the lack of information along the product value chain as to whether it respects environmental standards. Research shows that traceability might be a tool for reducing the effects of climate change and it also addresses informational market failures and generate trust in public policies. Hence, from our methodological perspective, traceability will be a central concept. This panel narrows down to São Paulo city, and we would like to invite private and public initiatives that focus primarily on solving this information-related problem through data-based technologies.

Intro / Moderator: MPI Mack Team – Christiane Bedini & Vladimir Maciel (UPM)

Reporter: Christiane Bedini Santorsula (Mackenzie – PhD candidate)

- Bruno Flach (IBM Research Group)
- Andrea Malerba and Mariana Gonçalves Castro Thome Soares (ENEL)
- Anna Carolina Meireles de Oliveira (TIM)
- Simão Saura Neto (SP Trans - Superintendente de Engenharia Veicular e Mobilidade Especial)
- Marcela Santos (São Paulo Parcerias)

The primary goal for this panel was to approach the flip side of production in the land, which is consumption in the city. Sustainable consumption enhancement would be weakened by lack of information along the product value chain as well as by environmental ramifications without proper analysis and disclosure. The negative impacts are being experienced worldwide but the studies and actual initiatives to address the problem as still undermined.

The panel has aimed to foster discussions regarding what extend traceability might be a tool for reducing the effects of climate change. Also, the debates intended to demonstrate how traceabi-

lity solutions might be able to address informational market failures and generate trust in public policies. The panel narrowed down to São Paulo city and joined speakers from private and public sectors to discuss ongoing and potential initiatives that focus primarily on solving such information-related problem through data-based technologies.

Each speaker's intervention took 10 minutes followed by questions posed by other speakers and by the audience. Presentations and corresponding discussion were consolidated in a nutshell as set forth below:

Interventions and Debates:

Contributions from Speaker Anna Carolina Meireles de Oliveira (TIM)

Data based solutions developed by TIM were exposed by Speaker, including joint initiatives with Brazilian government most of it embedding intersections with SDG 13. High connectivity related projects might decrease use of energy, water consumption and enable predictive models to be created. Nonetheless, 4G or 5G technologies can be challenging as it leads to concerns related assessment of efficiency and sustainability corresponding to data itself and data centers.

Speaker continued to elaborate relevant thoughts by demonstrating that responsible data use, applications and storage also implicate the assessment of smarter and more sustainable infrastructure opening wider ways to achieve an eco-efficient connectivity. She highlighted how 5G technology allows solutions for data sharing, i.e., having all municipalities of São Paulo connected with greater opportunities and problem solving mechanisms for both field and city.

Finally, Speaker highlighted the importance of renewable energy investments and the need for innovation related to sources of energy to ground sustainable development and enhance sustainable consumption. Her intervention was seconded by debates related to digital transformation as a challenge to sustainable consumption itself and the necessity for broader risk analysis and management in respect to impact of connectivity solutions for society and environment.

Contributions from Speakers Andrea Malerba and Mariana Gonçalves Castro Thome Soares (ENEL)

Electrical sector is an important part of the discussion proposed by the panel. Therefore, Speakers pointed out how the gigantic amount of data leads to a whole new transition to different business models and strategic decision making in that regard. Ethics, confidence, protection, security and data governance are only a few examples of matters to be remodeled. The control and traceability of electric energy consumption must be combined and assured by data and privacy intelligence, stronger compliance and cybersecurity.

Likewise, an effective system of data connection and sharing relies on proper consideration of what would be, from a conceptual point of view, strong and necessary data to achieve such goal and moreover, projects of that sort would only be successful if customers are confident to share data and companies are prepared to keep those data secured to maintain society trust on data management and digital compliance. In reference to challenges as to data sharing in a climate action context, Speakers deem the incipient open data sources as well as regulatory scenario as those to be faced to improve current status of data management that may assist the fight against climate change.

Finally, the speakers focused on the analysis of ongoing projects related to measurement of energy consumption and energy production. In Brazil, customers may have access to its consuming parameters based on what local law and regulatory agency permit. When it comes to ENEL specifically, there are technologies in place that represents higher level of smart solutions for consumption / production traceability and data sharing. However, data protection law is of essence in this point and there are certain difficulties to be cleared out.

Contributions from Speaker Bruno Flach (IBM)

Speaker intervention was based on the proposition of how to create a framework to better approach the debate. Thus, Speaker suggested that companies and governments should adequately

evaluate what, how and why data would be used and/or targeted in relation to solution for either sharing or traceability. Reliable governance and auditable processes are only a couple of examples of features and attributes that might be present to guarantee a scenario where data sharing is responsibly operated and consequently used as a tool for climate change mitigation.

In order to create an ecosystem in which companies may concurrently achieve its business results and provide positive impacts for environment and societies a proper landscape must be carefully modeled. Intelligence assets, facilities and infrastructure, responsible computing and green IT and sustainable supply chain are being subject of more attention for companies. Nonetheless, the stacks for such are basically related data reliability and management which represent challenges referred to current level of sharing, reliable sources for such sharing, responsible decision making related to the sharing.

Speaker explained some IBM's initiatives related to data and climate actions. Federalization of data is definitely a challenge as well as reliable escalation of such data. Blockchain was discussed as one of new technologies that might help to gain scalability, transparency, immutability and reliability although blockchain is not the only solution to be deployed in this scenario. Having data centers are not alone the solution, but rather geospatial data storage and management and machine learning and artificial intelligence tools as technologies able to model more efficient strategies to deal with data sharing in the context of climate change.

Contributions from Speaker Marcela Santos (SP Parcerias)

Smart cities were the main subject exposed by Speaker. She explained the dilemmas faced in the cities, those being, hyper population, enormous energy consumption and greenhouse gas emissions. The ways of productions and consumption must be changed. The concentration of innovation investment in the cities may be used to provide solution and mitigate risks. The next step of evolution for cities, departing from digital cities and subsequently smart

cities, would be the climate smart cities embracing ideas of substantiality, resilience and a low carbon urban planning.

Private-Public partnerships are one of the keys to be considered. Speaker mentioned Green Energy Program using solar energy. This project focus on São Paulo city as a producer and as a consumer. The core idea is to change the way energy is produced.

There are various points to addressed related to data quality, proportionality and measurement. Notwithstanding, based on her point of view Brazil has solid legal framework, large number of data, available technology, international standards, interested stakeholders. She mentioned important initiatives in main cities of the country related to climate change and carbon emission regulation as well as digital education on how to generate stronger data that could be shared in order to contribute to climate actions.

Contributions from Speaker Simão Saura Neto (SP Trans)

Bus transportation mobility in the city was the core of Speaker's presentation. São Paulo Climate Change Law was mentioned to explain the level of challenges to achieve the metrics for gas emission. Electric vehicles were seen as the solution to comply with the law.

The pilot project for electric buses in the city of São Paulo is already in place and there is a strategic plan to increase the number of vehicles of this nature the next few years. The challenges pointed out for this initiative were: high costs, exchange fluctuation for imported parts, lack of national suppliers, absence of specific electric tariff for electro mobility, autonomy, batteries EOL, investment lines.

There are technical cooperation agreements in force as explained by speaker, i.e., with University of São Paulo, ICCT (International Council of Clean transportation) , C4OCities, among others.

Main outcomes

Stronger points perceived:

- The current legal framework might be the sufficient to support the development of initiatives of that nature;

- Companies are more concerned about the kind of data that are collected, used and stored;
- Corporate and Data governance is improving;
- There are technologies available to permit projects aiming to consider data sharing for climate actions purposes.

Weak points perceived:

- Absence of specific regulation;
- Data management immaturity;
- Lack of institutional cooperation;
- Need for more public-private partnerships;
- Poor knowledge about circular economy and poor consumer awareness;
- Data sources without federalization;
- Low level of connectivity;
- Data strength and reliability to be improved.

PANEL 5

PANEL 5 – Data-based initiatives to fight climate change: going beyond the market

Summary: Several data-related initiatives have been identified whose main objective is not to correct a market failure, but to produce a common good to fight climate change. Many of these initiatives come from organizations formed by private companies, research centers and public agencies, in a joint effort to create relevant inputs to fight climate change. Concerns about deforestation and greenhouse gas emissions are some of the main issues that will guide this panel discussion.

Intro / Moderator: MPI Mack Team – Maria Beatriz Monteiro & Carolina Banda

Reporter: Maria Beatriz Monteiro da Silva Elias (Mackenzie – LLM candidate)

- Carolina Andrade (IGARAPE, Brazil) – deforestation and criminal offences
- Leonardo Capeleto (USP, Brazil) – Fighting the impact of climate change and urbanisation with MAR
- Marcos Rosa (MAPBIOMAS, Brazil) – mapping deforestation
- Julia Shimbo (SEEG, Brazil) – measuring GHG emission
- Marcelo de Medeiros (IMAFLORE, Brazil) – open data & environmental authorities

This panel focuses on several data-related initiatives whose direct objective is not to correct a market failure but to produce a common good to combat climate change. Many of these initiatives come from organisations formed by civil societies research centres and public agencies in a joint effort to create relevant inputs to fight climate change from public policymaking. Concerns about deforestation and greenhouse gas emissions are some of the main issues guiding this roundtable. It is essential to consider that in this panel,

none of the speakers have a background in Law, so their presentations were more focused, in general, on presenting the results of their research.

Carolina Andrade (IGARAPE, Brazil) – deforestation and criminal offences

Igarape is a think and do tank that some women lead, and Carolina is currently acting as an advisor to the Igarape Institute Climate Security Program. The discussion was made around the “EcoCrime data” project, which provides an overview of how environmental crime threatens forests, traditional peoples and communities, and the region’s biodiversity.

The platform offers an immersive experience showing how land grabbing, illegal logging, illegal mining, and the illicit wildlife trade damage our climate. It also reveals the many societal challenges that emerge from environmental crimes, including corruption, slavery, and violence.

The project works on improving supply chain transparency and workings with a bank and private sector. One of them focused on mapping the carbon scale dimensions of environmental crime, and in parallel, they are also working on further research that will briefly introduce how the Strategic situation in the Amazon region is what is happening related to Amazon crimes and how also those crimes are related to Money laundering networks. Understanding how these illicit financial flows feel in environmental plans and climate crises is essential. Still, it is crucial to empower indigenous environmental defenders, as it is critical to develop and bridge trust among different stakeholders in the region, especially the prosecutor’s found department and stakeholders related to law enforcement

The objective of this research is to understand the roots of environmental crime. It has been a work of collecting, cleaning, and gathering data information from different sources and trying to understand the dynamics of the scope and the scale of this ecosystem of crimes fueling the Amazon environmental region.

Igarapé has been gathering all this data information and what they are considering integrating into the eco-crime platform as a database to bring this approach to a different level. One challenge they see for deforestation in the Amazon region is the roads in the Amazon basin, which are called the “arteries of Destruction” and are related to the first step to start this land-grabbing process and develop other industries related especially to soybean and beef. For that, it is crucial to have a public policy to avoid the infrastructure improving or motivating this land-driving and this related actions. Another challenge is related to illicit economies; the illegal airstrips in the Amazon can be seen at the borders, and most are close to clandestine mining sites.

All the information, the data, and the evidence they have been collecting during the past years make them understand that we don't have authorities, and law enforcement authorities seem to have specific crimes happening isolated one from the other. In reality, the Institute has an ecosystem of environmental crime that is happening on the street in the Amazon, so it has dominant environmental crimes, such as public land grabbing, deforestation, illegal logging, illicit mining, agriculture and livestock farming, and wildlife trafficking, but also have converging crimes, such as administrative crime, financial and tax-related crime, violent crime, trafficking crime and, organized crime.

They did research when they made a review of 369 Police Operations provided by the Federal Police of Brazil, so that they can learn more about the priorities of action to tackle this challenge that has been organized by these kinds of organizations and where these operations by the Brazilian Federal Police are focused on what part of the country.

Leonardo Capeleto (USP, Brazil) – Fighting the impact of climate change and urbanisation with MAR

The second panelist, Leonardo Capeleto, is an environmental engineer, doctor in soil Science, and his post-doctoral fellow at the Institute of Geosciences IGc/USP, and his research in Mamirauá

Institute of Sustainable Development, in the state of Amazon. As he began his presentation, he focused on the importance of knowing that the Amazon occupies a large area in Brazil and, therefore, it is impossible to generalize about this region. Therefore, when considering dates in Brazil, especially in the Amazon, it is necessary to specify the area being studied.

In his research in Mamirauá, 80% of the population use rain-water for their own use since the Amazon is where it rains the most in Brazil. However, the flow of water changes according to the time of year, and the flow of rain has changed due to climate change. Moreover, periods of drought have been more intense, and communities have been living with a lack for a period.

At the same time, other cities in the State of São Paulo face the same problem (drought). The data show that, in Bauru (a city in the countryside of São Paulo), 1/3 of the population uses water from the Bauru River, which fluctuates with the water level. Other inhabitants use water from ground water - which causes problems. Some data show that the Aquifero Guarani water is going down one meter yearly, and the population does not return this water to the aquifer.

That said, Capeleto presented some solutions inspired by experiences from other countries. The first is based on the Malaysian aquifer, where water is returned to the aquifer by infiltration. In China, a wetland was created.

According to the researcher, some things could be improved in the legislation to make improvements. However, in Amazonia, little data is available, and no money is invested in this study.

In the end, it was asked why there is not much data on Amazon. There is a lot of data in Amazon, but they need to be centralized when you think about the region as a whole, and this happens because, as it is an extensive area, the data are produced on a small scale, referring to specific places. Furthermore, Universities do not have enough money for research. Still, most of the scientists are in São Paulo, and compared to the Amazon, the difference in number is very large, making it difficult to get data.

Marcos Rosa (MAPBIOMAS, Brazil) – mapping deforestation

MapBiomass is a global achieve land use and land cover mapping. This collaborative network, comprised of Non-Governmental Organizations, universities, and technology startups, has produced annual maps of land cover and land use since 1985, in addition to preparing reports for deforestation events in Brazil. All your data is open, public, and available for download. Marcos Rosa, the speaker, is the technical coordinator of MapBiomass in Brazil, and he is a Ph.D. in Geography at the University of São Paulo (USP).

MapBiomass uses land images, the same type of image as since 1985, and all available images are used. All data available is used, and the behavior of each target is classified. For example, a tree or a forest will be very green or have a lot of biomass; when you have a copy, you have the growing season and then move it; that way also maps the behavior. Many data (e.g., Google Earth) and artificial intelligence produce this classification. The points they use to validate and include all the codes are also available on GitHub (a cloud-based service hosting a version control system (VCS) called Git). This allows developers to collaborate and make changes to projects shared while keeping a detailed record of your progress).

All information collected (regarding land use and land cover) is on their website. In addition to deforestation data across Brazil and all information about the age of the secondary vegetation, irrigation, infrastructure, pasture quality, water use (including irrigation, how much water is used for agriculture), and mining (including mining) Also, they offer maps with legends where you can see which regions do you want to see, based on states, municipalities, indigenous territories, conservation units, etc. And, as there have been many images since 1985, observing the history of land use and the cover is possible. It is also possible to find the map with the record of fires when they happened, what they are burning (faster agriculture or natural vegetation), and the frequency of these events.

MapBiomass research is present in several academic articles (more than a thousand) and more than six thousand News (which

was very important when the Bolsonaro government tried to remove the transparency of some data).

Currently, to fight against illegal deforestation, MapBiomas is using a new initiative with more than 11 systems that produce alerts on this theme. First, it was necessary to map all the biomes. For that, first, all available sources were aggregated, then the validation and selection of the images (before/after) to produce the proof and refinement of the image, and then overlay with public data, auditing, and finally, publishing on a public platform. In this way, the land owners where deforestation occurs and the CAR number (remembering that all this data is shared) are known.

Another MapBiomas tool is the Inspection Monitor, which collects and organizes information on deforestation authorizations, assessments, and embargoes issued by federal and state environmental agencies. The objective of the analysis is to monitor how much deforestation verified and published by MapBiomas, was authorized or had inspection actions by the public power.

At the end of the presentation, a question was asked about how to work with traders to help them remove people from companies that are part of their supply chain but are contributing to deforestation. I understand everything is open, but there is no closer collaboration with this kind of trader.

The answer was that most merchants had engaged the company to provide support on the JIS system, and they have applied training on how to use the data for all these companies and merchants.

MapBiomas has a technical agreement to ensure they are using the data produced. An example of this data is the pasture quality data, especially the MapBiomas alert (so, if they have a deforestation alert from one of these suppliers, they even accept authorized deforestation in the Atlantic Forest). To this end, the organization holds a monthly meeting with them. MapBiomas has yet to release these results because it can only post that it has this partnership when it has some numbers (for example, the number of suppliers that were removed from the list based on deforestation data). They

made agreements with Caixa econômica, Santander, Banco do Brasil, BNDES.

Julia Shimbo (SEEG, Brazil) – measuring GHG emission

SEEG is a System of Estimates of Emissions and Removals of Greenhouse Gases, an initiative of the “Observatório do Clima” that includes the production of annual estimates of emissions of greenhouse gases (GHG) in Brazil, analytical documents on the evolution of emissions and an internet portal to make the methods and data of the system available simply and clearly. In addition to identifying greenhouse gas emissions, SEEG mapped and compiled, in a didactic manner, mitigation and adaptation actions at the municipal level to promote sustainable development with reduced emissions, equipping and engaging key actors to face this challenge.

The lecture by Julia Shimbo was about the data collected in the last report produced by SEEG in 2021. Therefore, Brazil is the fifth largest emitter of greenhouse gases (behind China, United States, India, and Russia), and most gas emissions are related to land use, which represents almost half of Brazil, being agricultural, characterized by 25%, and land use, 49%.

In one year, from 2020 to 2021, Brazil increased its gas emissions by 12.2%, which makes Brazil go the wrong way since it should be embracing its emissions. Considering that most emissions occur thanks to deforestation, the Amazon is the biome that contributes the most to this data. On the other hand, the Amazon biome has the highest proportion of removals due to the protected areas. All data is available. Viewing all data in your biomes, states, countries, and municipalities is possible, and all are available for download.

Marcelo de Madeiros- IMAFLORA – open data & environmental authorities

Marcelo, the Public Policy Coordinator from Imaflores, a Brazilian NGO that concerns environmental conservation, discussed the advocacy effort to open environmental databases with public

authorities or publications in Brazil. The advocacy strategy from Imaflora is based on Science, on their research, and publications.

In addition, the NGO has several documents on open data and climate power in agriculture, and, its lecture, was focused on the publication 2019: Evaluation of Open Data Plans (PDA) of federal environmental agencies in Brazil (“Dados abertos e meio ambiente: uma avaliação dos planos de dados abertos dos órgãos federais ambientais do Brasil”).

This is a crucial instrument for encouraging and managing open data in Brazil. It was established by the available data policy of the executive in 2016. Because of this policy, all the public administration needs to do is an open data plan saying which database they have will be released and published to society.

Imaflora did an analysis on this, and they need to improve: (I) there was general difficulty in the measures related to communication and participation, (II) there was some difficulty in having the inventory and cataloging of the databases.

However, thanks to this report, public bodies built their public consultation on knowing society’s demands or opinion to elaborate the open data plan, thanks to the pressure put on them. Afterward, IMAFLORA published this study in *Folha de São Paulo*, a newspaper with wide circulation in Brazil, saying that, for example, INCRA (National Institute of Colonization and Agrarian Reform) had never carried out a PDA. Within six months, his first PDA was published.

Finally, the objective of this study is to know which data was open or not, if it is open, complete, and current. The excellent result was that environmental data with a strong connection with the private sector is transparent, producing strategies or lobbying for the government not to expose such data. In addition, the study proposed recommendations for each agency regarding their data sharing. In 2020, another report was made to assess whether the Bolsonaro government (2019-2022) and the level of data openness increased from 67% to 70% because IBAMA, in September 2018, opened the most important environmental data, responsible for this

3% increase. However, in the Bolsonaro government, there were no further improvements in this case.

Moreover, other platforms were discussed, such as Timberflow (is a platform created with the support of ICMC/USP, dedicated to generating information about the production, markets, and flows of wood extracted from natural forests in the Amazon) and also Simex (The Logging Monitoring System (Simex) is an Amazon monitoring tool based on satellite images, developed by Imazon in 2008 to evaluate Forest Management Plans and map areas subject to logging in the region.). Imaflora does everything with excellent transparency and believes advocacy has contributed to achieving a high level.

At the end of this panel, Prof. Drexel commented that we have a lot of data available, and the question is, do we make enough use of it? Does that use to happen in both directions if law enforcement agencies make use of that data across all these initiatives? Does society have any commitment if the state fails in this regard? And to what extent is the private sector or the NGOs not taking into account the data that is already available in the states? Marcos Rosa, from MapBiomas said that the organization don't just show the data. They show information, it is data that has been processed, we overlay it with other data, and we produce this information, so they publish information that is right to use. We have many institutions using this data, but we don't have enough people and the necessary structure to use the data we are making available. However, the Bolsonaro government has not even tried to use the data, in addition to refusing to talk to MapBiomas in recent years. Juliana Shimbo, from SEEG, completed by saying that if civil society produces more complete and complex data every year, this should put pressure on the government to do the same (which, in recent years, has not happened). Furthermore, since SEEG started releasing data by states, some of them started looking for a partnership with the organization to begin building a plan on mitigating their emissions, which is an example of how the government uses these data.

At the end of 2022, on December 15 and 16, Mackenzie Presbyterian University was the stage of an intensive journey of debates, exchange of ideas, as well as different and complementary points of view. A joint effort to discuss and ponder the Data Sharing and Climate Action in Brazil.

The Workshop is part of an international research project entitled "Regulation of the Data Economy in Emerging Economies: Shaping Data Sharing Policies to Promote the Sustainable Development Goals" headed by Max Planck Institute for Innovation and Competition.

The international research is led in Brazil by the Competition Law Study Group of the Graduate (PhD and Master) Program in Political and Economic Law at Mackenzie Presbyterian University Law School.

The data economy offers great potential for emerging economies to achieve sustainable development goals (SDGs). However, data-sharing policies must be properly framed to leverage this potential. The workshop is a remarkable occasion which allows for the exchange of experiences and the collective creation of alternatives for building a better, fairer, inclusive, and more equal society in different countries.

The Brazilian focus is on Climate Action (SDG 13) due to its relevance to the country and the world as well as the limited progress in achieving environmental goals, and especially the great potential to advance in this area by fostering the data economy.

The Sao Paulo Workshop Team put forth its best efforts to bring together different stakeholders, with specific skills, from different backgrounds, different institutions, and a variety of nationalities, to share their vast knowledge.

The Workshop had the unique opportunity to listening to and debate with the speakers in five different panels.