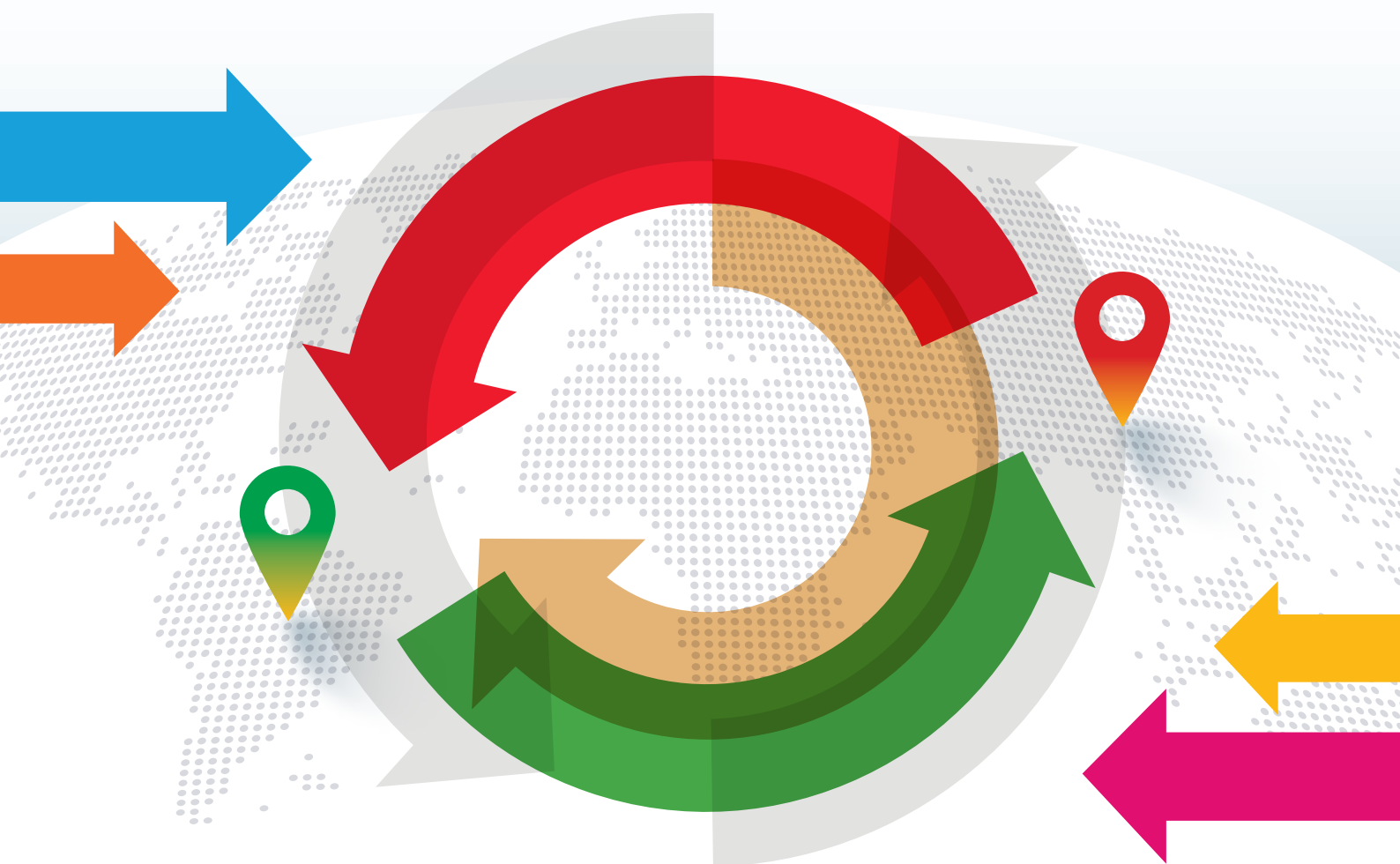




BRAZILIAN CENTER FOR
INTERNATIONAL RELATIONS



BRAZIL AND CHINA

**ELEMENTS FOR ENVIRONMENTAL
COOPERATION**

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INTERNATIONAL RELATIONS

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**ELEMENTS FOR ENVIRONMENTAL
COOPERATION**

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The text expresses the opinion of the authors, exclusively.

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PRESENTATION

The Policy Paper “Brazil and China: elements for cooperation on environment” is the result of a broad process of dialogue and consultations to Brazilian and Chinese experts, segments of civil society, private sector, national and international consultants and academics. It also results from the integration with other thematic programs of the Brazilian Center for International Relations (CEBRI), such as the Asia Program and the Energy and Infrastructure Program, in an effort to better understand the possible roles that environmental issues can play in the challenges that enclose bilateral cooperation between Brazil and China.

The debate was oriented not only by the opportunity to advance Sino-Brazilian cooperation on environment, but also by trying to understand how the results of this cooperation could influence the multilateral agenda. Brazil and China are important global players in tackling climate change, biodiversity protection and resource efficiency. As emerging economies and detainers of important environmental assets, their development challenges can seek the achievement of national objectives with global co-benefits following the tracks of sustainability.

The motivation for this discussion is based on offering foundations for a reflection on environmental issues from the perspective and purposes of other economic players and political constituencies. The objective is to build a new path seeking the conversion of interests between Brazil and China, based on the insertion of environmental issues into the development agenda that motivates the relationship between both countries. Under the perspective of having to tell new stories about the future, the significance of the environment and its role in the global development challenges of the XXIst Century express the political contemporaneity of the environmental agenda.

Brazil and China are important players in the in the global dynamics of commerce and investment, including in infrastructure. Based on this fact, the Policy Paper proposes possible routes for environmental cooperation that enable the advancement of theses interests, oriented by ambitions that should not be timid when it comes to environmental issues. On the contrary, they should allow for quicker and more efficient progress in tackling climate change, halting biodiversity loss and reversing the astounding scenario of waste and unsustainability in the use of natural resources.

Brazil and China face monumental obstacles in relation to the sustainability of their development processes and affirmation of their international insertion by addressing global environmental challenges. A well-structured approach to environmental issues, seeking solutions oriented toward promoting economic growth and decoupling environmental impacts, for example, reveals an important opportunity to deepen the bilateral relationship. The environment must be understood as part of the solutions for Brazil’s development and not as a barrier. In the past decades, China has been seeking incremental gains in the environmental quality of its natural and urban ecosystems, even though the challenges remain expressive.

It is possible to deal with demands such as food security and energy transition without being stuck to the environmental costs observed in the past. Establishing a dialogue with the future requires advancing Brazilian agriculture in the next 40 years based on a sustainable and low-carbon production of food and bioenergy, with scientific guidance and the preservation of biodiversity and ecosystem services. It further requires a strategy to ensure fair access to clean energy for all Brazilians in a context of reduced greenhouse gas emissions and disruptive technologies, where our energy transition should not be perceived as a barrier to national energy security or to the desired global energy transformation.

The possible paths to strengthen dialogue and cooperation are diverse and may assure benefits not only for Brazil and China, but also for other developing countries. Both countries can combine ambition and influence to conceive a new role for the Global South in terms of resource efficiency and environmental protection. A leadership which should be based on sharing, partnerships and trust to co-benefit other societies and establish new spaces of international insertion.

The Policy Paper aims to present a new perspective for seeking dialogue with China on the environment. The task is intense and continuous, oriented toward producing an adequate vision of the opportunities for strengthening the bilateral relationship between Brazil and China on environmental issues. The adequate framing of these issues should allow the right questions to be posed within the scope of the existing cooperation. Furthermore, it should lead to other fields of political action and of emergence of new leaders that will promote a more ambitious vision of sustainability, development and the relationship between man and nature.

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SINO-BRAZILIAN COOPERATION: AN OPPORTUNITY FOR THE MULTILATERAL ENVIRONMENTAL AGENDA

Over the past 30 years, environmental issues have become increasingly important globally and are promoting a political vision that is progressively influenced by science. Global environmental challenges are part of the multilateral agenda and are gaining relevance in the relations between societies and markets, and in international cooperation among countries.

In its current political significance, caring for nature is translated into the emergence of sustainability, guided by the coming together of economic, social and ecological dimensions and directed toward promoting human well-being and the integrity of the environment. These dimensions give sustainability political ambition to bring together culturally diverse societies and multiple values in pursuit of converging interests for the preservation of life on the planet.

In this century, the environment is one of the strategic and determining drivers for the global vision of economic growth and medium and long-term development. In the case of emerging and developing countries, environmental issues also affect the immediate demand for well-being and social inclusion. The scarcity of natural resources, or the limited access to them, and the impacts arising from their ownership and use, ultimately determine new risk, vulnerability and inequality scenarios for society.

Forging national development initiatives, based primarily on seeking solutions to short-term local needs and convergence of common interests in global environmental problems, requires a challenging political vision and, often, a singular one. It requires establishing interconnections between environmental issues and sectoral agendas, in addition to a critical perspective on the cause-and-effect relations in time and space that are involved in decision-making. It should further consider the diversity of purposes of every political action and must be driven by common goals, without diminishing the expected benefits and co-benefits.

Thus, it is not only a question of affirming the relevance of environmental issues when managing the development of these countries, but of how these issues can be addressed in policies for economic growth, social inclusion and development. This requires comprehensive and structured perception of the intentions and interests of governments and societies with respect to the changes required for sustainability.

On the other hand, the political feasibility of integrating economic, environmental, commercial and technological aspects into drivers of change and national development, in addition to strengthening equality and democratic values, becomes a challenge for contemporary society. This perspective requires more precise and strategic outlooks and decisions regarding the needs of society and proposition of new development paths, while not losing sight of Brazil's place in the world.

Contemporary society must face challenges posed by global issues – climate change, migration, security and defense, international trade, health, accelerated loss of biodiversity and water security – that increasingly affect national realities and relations among societies. These challenges mobilize the institutional and legal arrangements of international multilateral cooperation and also result in influencing the interests of bilateral cooperation.

The movements for change within the framework of international cooperation tend to be guided not only by the science-policy approach, but also by the more objective relations and concrete actions of market interests (finance-business oriented), consumer behavior (impact-oriented) and by the daily insertion of disruptive technologies (e.g. artificial intelligence and 5G). Changes are needed in the way international cooperation addresses these challenges and to redefine and strengthen multilateralism in this new world.

It is not only a question of affirming the relevance of environmental issues when managing the development of these countries, but of how these issues can be addressed in policies for economic growth, social inclusion and development.

These changes must be modeled on pragmatic, multi-sectoral approaches, not necessarily linked to specific political constituencies and institutional arrangements established in the last 30 years. Responsibilities need to be more clearly defined, including with respect to the specificities of a new globalization. The focus of action should be oriented to strengthen the global (legal) order.

Nevertheless, this moment should not be guided by the idea of a homogeneous international community and by single rules, or by the establishment of global objectives or targets without considering universal access and value-sharing. Action on global issues, in the context of democracies, requires addressing inequalities, vulnerabilities and national and international interdependence of countries and societies. It further determines coping with externalities (including disruptive ones) of the digital economy and the new productive economy (Jaguaribe, 2019).

In the field of politics and international environmental governance, now is the time to act and to strongly encourage action influenced by changes in the global order, by the connectivity of societies, by technological innovation and by the challenges imposed by investment and trade. In trade, control of information by consumer markets about adding sustainability values to production and supply chains reflects the new values and requirements associated to global consumption patterns.

Brazil and China are important players in global trade and investment dynamics, including in infrastructure, with a deepening bilateral relationship over time and, in the context of a more internationalized China, with a full, assertive agenda with truly preserved strategic aspects. China views Brazil as one of the largest western developing countries, a country with which it shares ambitions and nurtures a relationship developed on solid foundations. Relations are based on political pragmatism and both sides have strong expectations of deepening bilateral cooperation (CEBRI, 2019a). This alliance can be observed in the scope of existing cooperation agreements established by economic and political interests, such as the BRICS and particularly the BICS – referred to as the ‘big four’ in many multilateral forums, including on climate change. The New Development Bank (NDB), headquartered in Shanghai, is also an example of successful collaboration between China and Brazil.

Furthermore, Brazil and China are megadiverse countries¹ – which is strategic for addressing climate change – as well as significant holders of natural resources. Initiatives that provide solid environmentally sustainable responses to national development may represent an important opportunity to establish a bilateral relationship on environmental matters. If properly structured with regard to common interests, guided by a stepwise process and well defined over time as to its strategic nature, the Sino-Brazilian environmental agenda can result not only in bilateral benefits, but also in important co-benefits for environmental challenges under the domain of global and regional cooperation.

As will be seen further on, topics such as food security and sanitary standards for agricultural products, international trade, urban economies, environmental quality and well-being in cities, energy transitions, policies to tackle climate change, especially in terms of combatting deforestation and in the production of low carbon food, as well as sustainable infrastructure projects and efficiency in the use of natural resources, are indicated as routes for a bilateral cooperation with potential co-benefits for the multilateral agenda.

At first sight, the proposal of a structured bilateral cooperation on environmental issues is guided by mutual interests and opportunities to strengthen political, economic, technological and commercial ties between Brazil and China. In a perspective that considers this bilateral cooperation within a global context, mutual interests can (and should) go beyond converging national interests, favoring protagonism and leadership among the countries of the global South, through advances in South-South cooperation, for example.

Regional cooperation among developing countries is another relevant objective to be pursued within the framework of a structured bilateral cooperation between Brazil and China. Both countries can exert the strategic role of leveraging results in tackling climate change and promoting environmental sustainability through the proposal of innovative cooperation routes between developing countries or groups of developing countries.

In fact, Brazil and China should be allies in granting new momentum to the cooperation between developing countries, enabled by political leadership oriented toward a new strategic vision of the Global South as capable of offering innovative solutions in terms of environmental issues and resource efficiency. This path would grant robustness and global breadth to the results of the bilateral cooperation. Furthermore, it could result in a new expression soft power for Brazil and China, associated to the environment and climate change agenda.

1. Megadiverse countries are a group of countries that harbor the majority of Earth's species and, therefore, are considered to be extremely biodiverse. This group comprises 17 countries and most are located in the tropics. This is a classification made by the International Union for Conservation of Nature - IUCN and hosted by the multilateral conservation and preservation of biodiversity processes. The 17 countries are: South Africa, Australia, Brazil, China, Colombia, Ecuador, United States, Philippines, India, Indonesia, Madagascar, Malaysia, Mexico, Nepal, Peru, Kenya, Democratic Republic of the Congo and Venezuela. In 2002, the environment ministers of these countries declared the creation of the Group of Like-Minded Megadiverse Countries, as a mechanism for international consultation and cooperation (Cancun Declaration of Like-Minded Megadiverse Countries).

ENVIRONMENT: AN OPPORTUNITY FOR ENHANCING BRAZIL–CHINA BILATERAL RELATIONS

In bilateral relations, the China–Brazil High Level Cooperation and Coordination Commission (COSBAN) is the main political body responsible for documents and for the future of the relationship between the two countries. This institutional arrangement does not yet have a Technical Chamber dedicated to environmental, sustainability and climate change issues. Although this situation has not prevented dialogue and adoption of isolated initiatives in these areas, the existing bilateral cooperation on environmental issues could be seen as tentative, localized and recent², but with a promising outlook.

In the multilateral context, there are important political areas for dialogue and partnership on common global issues. In the specific area of climate change, the establishment, in 2009, of the BASIC Group (Brazil, South Africa, India and China) defines an innovative arena for dialogue and search for convergence of interests and visions on issues governed by the Climate Change Convention (UNFCCC) and, later, by the implementation of the Paris Agreement.

Two other blocs, BRICS (Brazil, Russia, India, China and South Africa) and the G20, have been increasingly defining mutual interests on environment, sustainability, energy transition and climate change. In the case of BRICS, relations between countries are still developing, albeit with slow, but incremental, progress.³

The recent G20 Leaders' Declaration, adopted at the meeting held in Japan, in June 2019, gives priority to topics that include:

- (a)** Investments in quality infrastructure, taking social and environmental aspects into account;
- (b)** Virtuous cycle of growth aiming at eradicating inequalities;
- (c)** Inclusive and sustainable world, with the commitment to exert leadership in the implementation of the Sustainable Development Goals (SDGs) and Agenda 2030, and in recognizing scientific recommendations (IPCC and IPBES) on the urgency of action to address climate change and protect biodiversity. Furthermore, the G20 assigns

2. In the bilateral context, in the 2010-2014 period, the two countries established, in April 2010, a Joint Action Plan, in which the themes of Climate Change and Environmental Protection were seen as of common interest for both countries, in addition to the water resources and biodiversity themes. This Plan was renewed, expanded and extended until 2021, in addition to the 10-Year Cooperation Plan, signed during the Rio+20 Conference, focusing on the areas of science and technology (S&T), energy and infrastructure, investment, trade and cultural cooperation. In 2015, the two countries signed a Joint Statement on Climate Change and an M.O.U for a private partnership for the protection of the Amazon (expansion of SIPAM).

3. The New Development Bank (NDB) expresses the commitment of its member countries to pursue the consolidation of the forum. The process is naturally incremental, with areas of greater progress than others (CEBRI, 2019). Emphasis has been given to energy research agendas for the transition to more efficient and cleaner systems and to other areas of interest for cooperation, ranging from geospatial technology to water resource management, going through biotechnology and biomedicine, research infrastructure and megaprojects, science, information and communication technology (www.brics2019.itamaraty.gov.br).

priority to the issues of health, energy transition and the environment, with emphasis on the efficient use of natural resources and circular economy⁴. In addition, it stresses the priority for combating marine pollution and degradation caused by plastics and microplastics.⁵

Brazil has a long tradition in multilateral (regional and global) and bilateral environmental cooperation, from the technical and political commitment during the development of multilateral environmental conventions (Basel, Rotterdam, Minamata, Climate Change, Desertification and Biological Diversity) to bilateral actions (with Japan, Germany, Norway, United States and the United Kingdom, among others). International cooperation is an important means to implement the country's national environmental policies. Initiatives like the National Environmental Program (with the World Bank), Environment and Indigenous Communities Program-PMACI (with the Inter-American Development Bank), National Program to Control Industrial Pollution-PRONACOP, the Pilot Program to Conserve the Brazilian Rain Forests-PPG7 and the Amazon Fund⁶, among others, demonstrate the capacity for international cooperation to achieve environmental protection objectives.

This tradition was always strongly geared to (or based on) the public environmental management systems in Brazil, with low resonance in other economic and social management systems. Although Brazil has a well-structured legal system with regard to the rights of its society to a healthy environment and to the obligation of protecting nature, the political and institutional capacity to address these issues in an integrated and convergent manner, involving the various levels of government and other public policies, still falls far short of Brazil's emerging needs. This condition may also be a limiting factor in the promotion of international cooperation involving developing countries and subnational actors.

Environmental challenges have been highlighted, together with poverty reduction and combating financial risks, as part of the priorities for China in a New Era and its desired global leadership role (SCIO, 2019; Qishan, 2019). This motivation for the environmental agenda cannot be explained only by the global importance of this issue, but also by the negative impacts on and degradation of the environment associated with China's rapid economic development over the past 40 years. With the transition from a quantitative to a qualitative economic development process, China wants to ensure the environmental sustainability of its development, establishing its political identity as a country that renews itself and seeks to lead the world's new technological paradigm (CEBRI, 2018a).

Environmental challenges have been highlighted, together with poverty reduction and combating financial risks, as part of the priorities for China in a New Era and its desired global leadership role.

China has been dedicating itself to environmental issues as an assertive action to solve national problems and as a political position to strengthen its image in multilateral forums. Furthermore, as a result of its economic growth over the past two decades and of the significant environmental impacts therefrom, including increased greenhouse gas emissions and natural resource use, China has been progressively called upon to act with political leadership in global engagements for climate change, to halt biodiversity loss and in the efficient use of natural resources. In this context, China has been seeking to promote structuring actions that offer effective responses to these global challenges. In the climate change agenda, the country played a decisive role,

4. The G20's decision is oriented by scientific and political-institutional processes that are promoted by the International Resource Panel - IRP/ UNEP and by the OECD.

5. G20 Osaka Leaders' Declaration (www.g20.org).

6. In the case of the Amazon Fund, beyond cooperation with Norway and later Germany, Brazil also advanced projects within the scope of South-South cooperation. The financial, technical and technological resources, besides the sharing of scientific knowledge, allocated by the Brazilian government to the countries of the Amazon Basin for projects that monitor deforestation in the Amazon, are examples of South-South cooperation.

together with Brazil, in the creation of the BASIC Group at the Copenhagen Conference in 2009, as well as in politically enabling the Paris Accord. The political decision to host COP 15 of the Convention on Biological Diversity, in 2020, and the recent creation of the Ministry of Natural Resources, are also part of the Chinese government's efforts to promote political and economic advances in the confrontation of these global issues.

This condition defines a unique and challenging situation. As the largest emitter of GHG in this century, there can be no effective solution for addressing climate change without having China on board. In structural actions to converge the climate and biodiversity conventions, as in the case of the adoption of the nature-based solutions (NBS) agenda, China⁷ is a strategic player not only because of its political role but also because of the capacity to carry out the proposed solutions on a large scale. The growing demand of Chinese society for natural resources pressures the global environment, with direct impacts on water security, biodiversity conservation, land use, control of environmental pollution and availability/use of natural resources.

China is in pursuit of a low-carbon sustainable society. Its forest restoration activities may have global impact on carbon sequestration. The development of local solutions to control urban atmospheric pollution and water pollution has led to measurable and significant results in the last twenty years, although the challenge remains. However, urban challenges are not limited to environmental pollution control. China is promoting green urban infrastructure, increasing city resilience in the context of climate change adaptation, exploring the concept of "sponge cities" and incrementing green urban areas, in an innovative approach to conservation of urban biodiversity that connects this agenda to the quality of life and well-being of city inhabitants. China is also guided by structured and progressive actions in nature conservation in cities of varying sizes, based on ecological restoration and renovation. These efforts are welcomed by the political vision of the "Ecological Civilization" promoted by the Chinese Government (SCIO, 2019b).⁸

The Chinese process of linking environment and development included the adoption of policies, legal norms and gradual transition procedures, aligned to political-institutional and economic reform processes, opening up of the country and enhancing the national capacity to implement public policies. This process can be divided into three distinct periods (Wang, 2019):

- **1978 – 1998:** driven by priority issues and by the development of new practices, the existing environmental conditions of degradation and pollution were decisive for China's decision. This period is marked by the attempt to control key pollutants and integrate sustainability principles into the responsibilities of government agencies. It is important to highlight that this is China's "open up" period. Although there were environmental protection and disaster prevention measures, the major priority was still economic development.
- **1998 – 2012:** large-scale investments in environmental infrastructure and in ecological restoration (like the Grain for Green reforestation program), by seeking efficiency in natural resource use and pollution reduction. In 2009, a low-carbon development agenda was implemented, as were structured processes for planning geared toward results (path-dependent and mission-oriented policymaking).

7. China's role is not limited to its individual capacity. The country's promotion of bilateral and regional partnerships has important potentials in biodiversity conservation that should be better explored. China and New Zealand jointly released an NBS declaration, followed by China's release of its position and action paper in the NBS agenda at the UN Climate Summit, available in the following link: http://english.mee.gov.cn/News_service/news_release/201909/t20190917_734051.shtml?from=timeline&isappinstalled=0

8. In November 2012, the 18th CPC National Congress articulated its strategic vision for institution building to promote ecological progress. An overall plan for institutional reform to achieve this goal was issued in September 2015, outlining measures for protection against excessive development, total resource management, ecological compensation, environmental governance, and performance appraisal, among others. The 19th CPC National Congress, in 2017, reaffirmed the importance of accelerating institutional reform to develop an "ecological civilization" and build a "beautiful China", specifying measures that include promoting green development, strengthening the protection of ecosystems, and improving environmental oversight and monitoring. It emphasized the need to create a unified environmental protection framework, under which oversight agencies are authorized to regulate the use of public-owned natural resource assets and land use, impose appropriate measures to protect and restore ecosystems, monitor pollutant discharge amounts and take enforcement actions whenever necessary.

- **2013 until now⁹:** top-down environmental governance and protection systems for the environment with broad implementation, driven by innovation, aimed at nature protection as a condition for the pursuit of economic growth, and strongly defined by results in environmental quality and co-benefits.

Since 2013, given the continuous and increasing economic growth and new drivers of change in the country's development, the Chinese government promoted top-down systems with the vision of building an "Ecological Civilization". To implement it, legal measures and new guidelines for development were drawn up by the Chinese Central Government, in addition to restructuring environmental governance and integrating key aspects of environmental management found in various ministries.

Since 2013, given the continuous and increasing economic growth and new drivers of change in the country's development, the Chinese government promoted top-down systems with the vision of building an "Ecological Civilization".

The guidelines and regulations established for this new Civilization can be understood as the Chinese version of sustainable development, reconciled with the values of China's society and organizational system. The political vision adopted by the Central Government is no longer guided solely by GDP growth and makes the protection of life and the environment a priority (summed up in the motto "Green is Gold"). It is guided by the "5-1" (five in one) system, integrating the Ecological Civilization along the entire process of economic, social, cultural and political development. It adopts reforms and commitments that are based on innovation, on strengthening integration and synergies between public policies and on improving public governance. These adopted priorities defined assertive paths for the development of the green economy, the circular economy and low-carbon economy, and for the establishment of a national system of protected areas based on national parks.

To do so, deadlines were established (2020/2035/2050), as well as a planning system and broad guarantee of implementation, science-based mandatory targets, indicators, legally binding national actions and efficient results-based management. The mandatory targets were allocated per economic sector, provinces and key industries, and they included interim evaluation and adjustment processes and low-carbon and energy efficiency pilot programs in cities and in the industrial sector.

China further adopted socioeconomic transition parameters and priorities for High Quality Development. This includes new patterns of economic and industrial development, of energy revolution, of changes in transport and land use¹⁰, the latter geared to national policies for biodiversity conservation, specially the adoption of nature-based solutions (NBS). The process to combat local pollution and improve the quality of the environment and the life of Chinese people has been presenting effective and progressive gains at the local level, in addition to generating co-benefits for the global environmental agenda.

In 2015–2016, China made clear that it was willing to cause impact on international cooperation, with the Belt and Road Initiative (BRI). In addition to the proposal with the largest geopolitical impact and investment in regional infrastructure today, the BRI makes China's ambition to deepen bonds with other countries very explicit, resulting, specially, in pragmatic efforts to

9. Since the 12th Five Year Plan (2011-2015) of China, and specifically in the 13th Five Year Plan (2016-2020), is when the environmental agenda gained the highest level of attention.

10. Greening of the global value/supply chains of soft commodities, from both supply and demand sides, such as trading of zero deforestation agro-products based on NDCs, including: (a) agro-products identify: palm oil and rubber in ASEAN countries, soybean in Amazon area, etc. (b) Partnership establishment: farmer, firm, e-commerce, etc.(c) Self commitment; (d) Regional climate- and environment-friendly supply/value chain; (e) Reduce the costs of certification by digital tech. (Prof. Dr. WANG Yi, 2019 – Brazil-China Innovation Dialogue).

expand investments in interconnection (CEBRI, 2019a). It is the “flagship” initiative of President Xi’s economic and foreign policies, referencing the ancient Silk Road as a platform for long-term Chinese plans. Driven by the awareness that a new world is being forged, the BRI is part of a vision of the changing patterns of economic and political power (Frankopan, 2018).

The BRI also encompasses the environment and sustainability agendas, with the so-called Green BRI, demonstrating other crucial aspects of the Initiative and of China’s ambition¹¹. It should be stressed that while the BRI is a concrete initiative, it should be understood as an open-concept project, a “constellational concept”, in which there is room for additionalities (Takahara, 2019).

There are other challenges for China in the so-called “Great Games” due to its power of global influence and strategic positioning, including in the areas of data management, energy, food, clean water and air, and natural resources. In fact, natural resources have always exerted a central role in global trends, and continue to do so. Today, there are a series of these political movements for global and regional influence. The outcomes will have a profound effect on the world in the decades to come (Frankopan, 2018).

Relations between Brazil and China have political and economic relevance. Additional importance could be attributed to the perspective of the sound use of natural resources by these two countries. By the same token, the potential for sharing benefits related to the challenges of sustainability and addressing climate change in their respective development processes should be highlighted. Cooperation on environment is a political and economic gap to be filled in the Sino-Brazilian bilateral cooperation¹². The question is under which approach and perspective could this cooperation take place, what are the political and economic aspects for this motivation and what are the benefits for the agenda of common interests between these two countries?

The question is under which approach and perspective could this cooperation take place, what are the political and economic aspects for this motivation and what are the benefits for the agenda of common interests between these two countries?

In order to propose possible dialogue and cooperation paths, it is essential to bear in mind that Brazil and China are emerging countries and strategic players on environmental issues within the multilateral system, with huge challenges to overcome in their respective development processes, as well as important partners in international trade, investments in infrastructure and technologies. Both have mutual interests in expanding the bilateral cooperation, which has been built on a solid foundation over the past decades.

To move forward in this cooperation, initially, a targeted approach should be employed through dialogue aiming to share visions of global and national environmental problems. Guided by national priorities and needs, an alignment of interests for the short and medium term should be sought, motivated by an innovative approach to dialogue on the environment. This process should also encourage identification of benefits (and co-benefits) for the economic, technological innovation, energy, land use, mining, international trade, infrastructure, industrial and urban development agendas.

11. An important set of recommendations on Chinese development and environmental policies, including the BRI, was the subject of the “2019 Annual General Meeting of the China Council for International Cooperation on Environment and Development”, held on 2-5 June 2019, in Hangzhou.

12. Brazil and China have a circumstantial environmental cooperation, with specific projects developed in the areas of biodiversity and water resources. The initiative was adopted in 2015 to advance the climate change agenda. However, there is no technical chamber dedicated to environmental issues and policy within the COSBAN, the main institutional mechanism for bilateral cooperation. The recommendation of establishing this technical chamber was seen by specialists, policy makers and Brazilian diplomats as an important measure within the scope of formal bilateral cooperation mechanisms. This situation does not exclude the relevance of specific projects of mutual interest which are being discussed or implemented by other cooperation segments, such as land use, energy, science and technology.

From an international perspective, Brazil and China have traditionally been in agreement over the importance of the multilateral cooperation system. Nevertheless, the crisis faced by this system today cannot be overlooked. There is a growing doubt as to whether it will be able to cope with the new transformative realities or to resolve structural problems that have become permanent, such as social inequality and environmental degradation.

Even so, considering China's ambition for an Ecological Civilization and the opportunity for better alignment of new Brazilian development policies with the protection of the environment, the political context seems to be advantageous for bilateral decision-making on the environment. This partnership may also consolidate positive impacts for successful the implementation of the global environmental agenda. Prospects for long-term alignment between Brazil and China in the areas of climate change, biodiversity, sustainability, new economies and cities have enormous potential bilateral benefits and multilateral co-benefits. The main objective would be to seek an innovative and transformative level of political alliance and joint action governed by the synergy of strategic interests involving economic growth, well-being and protection of the environment, and the convergence of benefits between the two countries, with gains for global and regional multilateral action.

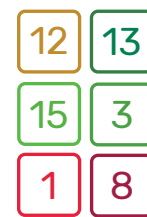
MUTUAL BILATERAL INTERESTS: TOPICS WITH POTENTIAL ALIGNMENT FOR ENVIRONMENTAL COOPERATION

BILATERAL COOPERATION

AGRICULTURE, INTERNATIONAL TRADE AND ENVIRONMENT (SDG 2)

- Traceability and environmental sustainability of supply chains and agricultural commodities
- Technology exchange to advance low-carbon agriculture and ensure food safety
- Agro-environmental planning with pricing and management of environmental and climate risks
- Sustainability branding of Brazilian agricultural products to meet new consumption and production patterns

INTERCONNECTED SDGs



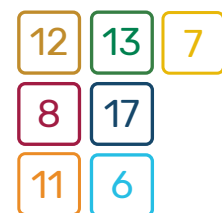
ENERGY TRANSFORMATION AND ENERGY TRANSITIONS (SDG 7)

- Access, efficiency and quality of energy use in Brazil
- Technology exchange in the development of renewable energies
- Energy security with decentralization of energy systems and diversification of sources
- Neutralization and decarbonization of the energy matrix



SUSTAINABLE INFRASTRUCTURE, BELT AND ROAD INITIATIVE AND GREEN FINANCE (SDG 9)

- New sustainability standards for Chinese infrastructure investments in Brazil
- Regulation, planning and financing of low-carbon infrastructure projects
- Green finance: regulatory model, market compliance and integration with international markets
- BRI: perspectives for cooperation in infrastructure and environment



TECHNOLOGICAL INNOVATION, NEW ECONOMIES AND SUSTAINABLE CITIES (SDG 11)

- Technological innovation: disruptive technologies and the development process
- Circular, low-carbon and green economies: a bilateral agenda
- Economic diversification and sustainable development of the Amazon, including connectivity
- Urban agenda: opportunities in mobility, sanitation, digitalization of services and big data



I. Agriculture, international trade and the environment

In 1993, Brazil and China began a strategic partnership guided by mutual search for higher levels of development and technological capacity (CEBRI, 2019a). The alignment of Sino-Brazilian interests in the environmental agenda falls under the context of a more international Brazil and China, and may represent an innovative step in the process of consolidating and moving forward in this strategic partnership.

Although the current bilateral agenda is solid, dense and dynamic, sharing visions in the areas of trade, economic investments, energy, agriculture, infrastructure, mining, communications and technological innovation, the prospects for the future should not be driven by linear medium and long-term ambitions. The future should not be approached as a linear projection of the present, since emerging geopolitical and economic challenges are guided by new contexts of globalization and by uncertainties arising from the international order, technological innovation and extreme natural events.

In the current context of global debate on economic risks and vulnerabilities and of crisis in the international cooperation system, it is pertinent to recall that during the 2008 economic crisis and the collapse of international markets, governments assumed responsibilities and took action. These actions involved not only solutions for intervention and financial regulation to save markets and the global economy, but also additional measures to tackle the inequalities and insecurities of unbridled globalization (UNCTAD, 2019).

With 2030 – the agreed deadline for implementing transformative global objectives – looming ahead, these same global markets are progressively being mobilized to prevent the threat of the planet's environmental destruction. The new processes that modulate corporate social responsibility – investment impacts, market and consumer behavior or financial innovation – are perceived as possible paths toward major investment projects for a more inclusive, equitable and sustainable future.

From an international perspective, other economic agendas and players must join the ongoing processes, or those that come to be adopted, to address problems that represent vulnerabilities to the integrity of the global environment or that entail risks to the global economy. The political roles and approaches should be more comprehensive, interconnected, and with new individual and collective responsibilities assumed by countries. The emerging society will be increasingly demanding of alliances and partnerships based on concrete missions and solutions for the climate crisis and environmental integrity. Sustainability has been gaining strategic importance as a pillar of the construction of new paths for capitalism in the world (Schwab, 2020).

The emerging society will be increasingly demanding of alliances and partnerships based on concrete missions and solutions for the climate crisis and environmental integrity. Sustainability has been gaining strategic importance as a pillar of the construction of new paths for capitalism in the world.

According to UNCTAD (2019), we cannot ignore existing macrostructural and interdependent challenges – especially those that advance without solutions, such as the falling income share of labor, the erosion of public spending, the weakening of productive investment and the increase of CO₂ in the atmosphere. This scenario has implications for the short and medium terms. Since the future should not be perceived as fiction, it is important that transition solutions and more permanent long-term solutions, driven by more sustainable and structured development

processes, be addressed and that they include current and future economic interests. It is also crucial to define the outlines of a “stakeholder capitalism”, where broader shared values are an essential condition for future consumer markets (Schwab, 2020).

The most recent discussions on international trade are attaching increasing importance to the demands of consumer markets with respect to environmental impacts, nature conservation and sustainability of commodity production chains, as well as to the transparency of results-based public policies. There is an increasing demand for environmental traceability of products consumed all over the world. This process already has specific references in some situations, as in the case of the recent European Union and Mercosur Agreement (and the reservations of some countries regarding its adoption) or directly involving the international image of exporting countries and consumer markets, as in the case of the moratorium¹³ on Brazil’s soybeans.

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The economic system is also sustained by nature, from natural resources to ecosystem services. Agriculture is heavily dependent on the use of land, water, soil and biodiversity. Nowadays, food production and supply systems are globally interconnected. That is, natural capital assets and ecosystem services are “marketed”, shared and consumed in a globalized world.

On the other hand, the debate on global food security can acquire new paths because of other modes of producing food, of implementing sanitary and phytosanitary standards and of providing the required protein diet (human health and nutrition). These modes are steered by the well-being of the population, new technologies/biotechnologies (for example, knowledge of the genome of cultivars and production of food in the laboratory), by the scarcity of natural resources and/or impaired nature services, by the use of urban spaces for food production and by climate and global health vulnerabilities.¹⁴

The commercial relationship between Brazil and China is considered strategic in their partnership and constitutes the Chinese method of diversifying partners and suppliers to meet their national demands. Brazil plays an important role in attending to this demand, especially in the food, mining and oil sectors. The prospects for this relationship involve topics such as the accession of Brazil to the BRI, new relations in financial regulations and bilateral trade, denser and more strategic partnerships in the food sector, exports of higher-added value goods and cooperation in innovation and technology. Much can and should be done between Brazil and China in the international trade agenda, at the same time as current efforts for modernizing the multilateral trade agenda are expended.

Among the relevant economic segments in the Brazil-China trade dialogue, tropical Brazilian agriculture can exert an innovative role in addressing environmental issues from a perspective of sustainability and low carbon emission potential. The challenge is how to bring together worlds and outlooks that are so different, even if possible convergent bilateral interests are considered. In this scenario, motivations and specific short-term expediency should not limit the scope and ambition of the bilateral dialogue or block the exploration of relevant and innovative thematic

13. Soy moratorium is the name that was given to the environmental pact between the representative entities of soy producers in Brazil, environmental non-governmental organizations and, later, from the federal government itself by the Ministry of the Environment, providing for the adoption of measures against the Amazon’s deforestation. In practice, the Soy Moratorium forbids the purchase of soy from deforested areas in the Amazon, as of 2006.

14. This Policy Paper was organized and redacted before the global COVID-19 pandemic. The references to health issues are essentially related to the way they are approached in the global sustainability, climate change, biodiversity and technological innovation agendas.

connections. This movement should be guided not only by the search and consolidation of good sectoral practices or by the decoupling of environmental impacts. It should, rather, provide the coordination of common interests over time, consistently and transparently, preserving respective national gains. Furthermore, it should seek a better political understanding of international image, going beyond the so-called “war of narratives”.

China is the world’s largest buyer of food. Brazil, after the transformations in agriculture over the past 40 years, went from food importer to one of the largest agricultural producers and exporters in the world, based on a competitive tropical agriculture driven by technological innovations. The key question is: what are the paths and respective challenges for agriculture in Brazil over the next 40 years? On the other hand, China is promoting advances in the ways through which it meets its demand for food. The search for adding value in grain processing by Chinese companies, and not only large global food companies (ADM, Bunge, Cargill and Dreyfus - ABDC) suggests that the country wants to follow new paths in the global chain of food production and supply. Partnerships are being implemented, as in the case of COFCO and IFC, to seek international sustainability standards. Another example comes from the China Meat Association and its recent signature of a manifesto supporting the conservation of the Brazilian Cerrado, in an initiative that seems to illustrate the interest of a consumer market in minimizing environmental impacts associated to food production, as was the case in Brazil with the soy moratorium and the will to halt deforestation in the Amazon.

Brazil aspires to having a strategic role in global food security and wants to increase the environmental sustainability of its agricultural activities. However, the international image of Brazilian agriculture has been negatively impacted by illegal deforestation in the Amazon and Cerrado, by a history of non-compliance with the Forest Code, and by recent increases in pesticide use and their impacts on pollination. All over the world, food consumption increasingly seeks choices that minimize the impact of agricultural production on the environment. Access to information about the origin of foods and their potential to be linked to environmental damage, particularly deforestation and the loss of ecosystems, is a real growing demand of consumer markets. Brazilian agriculture must be prepared to meet this demand, going far beyond narratives about past performance.

This scenario is decisive for Brazil’s image and new pathways for agriculture, its role in global food security and its ambitions in terms of international trade and investment. On the other hand, we cannot ignore that the science-based revolution undergone by the Brazilian tropical agriculture in the last 40 years received significant contributions from international cooperation and was possible thanks to technology and innovation developed in house.¹⁵ Nevertheless, advances are needed to increase productivity, preserve ecosystem services (pollination vectors, in particular), add value to agricultural production chains, halt deforestation and provide continued technical assistance to rural producers.

Present times require new stories about the future, not more new narratives about the past. Challenges include low-carbon agriculture, higher productivity of livestock production and associated negative environmental impacts, gains in efficiency of crop-livestock-forest integration and protection of soil and water resources. It is necessary to think outside the box and innovate in new proposals, establishing connections with other agendas that generate benefits and may define the value of sustainability to Brazilian agriculture.

New guidelines for the sustainable development of Brazilian agribusiness, summarized in a document published in January 2020 by the Ministry of Agriculture, seek to establish connections between the environment and land use agendas, according to its own narrative and aimed at changing the image of Brazilian agriculture throughout the world. The present government’s bet is that “the ability of Brazilian agriculture to ensure healthy and safe food, with respect to the

15. The transformation of acid soils into fertile ones, the tropicalization of production systems (since most of our products do not have biological origin in Brazil) as in the case of planting soy without using nitrogen or Brazilian eucalyptus, the occurrence of two to four harvests/year of several cultivars or direct planting in straw are illustrative of this combination of science - technology & innovation - public policies - investments. Regarding international cooperation, it is important to note that technical and financial cooperation with Japan, in the 1970’s, helped to make possible the agricultural use of the Cerrado, opening up a safe source of grain supply for that country (Ricupero, 2020).

environment, and with positive social externalities, can project Brazil as the future leading supplier of a population with consumption habits that value sustainability, transparency, traceability and origin of products” (MAPA, 2020).

According to the Ministry of Agriculture, the initiatives that provide these advances are shaped by technological innovation, compliance with environmental legislation, with emphasis on the **New Forest Code** (NFC), and by the new system of public governance of environmental sustainability in agriculture. The chosen challenges involve continuous productivity increase together with environmental conservation and adoption of low-carbon tropical technologies, environmental regulations and land tenure, valuation of ecosystem services and respective remuneration of rural producers, productive inclusion of farmers to added-value chains, development of new bioeconomy production chains and the opening of new markets for existing agricultural products, in addition to maintaining existing markets.

These guidelines, if implemented in a transition and medium term perspective, and in a structured and continuous manner, informed by and based on science and transparency, can lead a greener agricultural sector to provide an innovative boost to Brazil’s trade agenda. Delivery should involve innovative management, processes, production standards, products and results in order for environmental sustainability to be definitively associated with the future of agriculture. Producing food with a positive impact on biodiversity is an essential condition to achieve credibility in consumer markets. Guiding production by the “3S agenda” - articulating food sustainability, safety and security - is a strategic measure to protect Brazilian agricultural value chains.

It is essential to know how to explore, in a more structured manner, the complementarity with China and Asia on food and energy supply (Ricupero, 2020). The environmental aspect is part of this perspective. Exporting to China requires planning, robust investments, product branding and a multi-scale commercial strategy, especially given the specific subnational requirements and demands of Chinese society (CEBRI, 2019a). In all its priorities for the Ecological Civilization, China established outlooks and commitments that govern their geopolitical, political and economic interests. Objectives such as the greening of soft commodity supply chains with measures for both demand and supply, nature based solutions (NBS), zero deforestation associated with agricultural production (as in the case of Brazilian soybeans produced in the Legal Amazon Region), efficiency in the integration between rural and urban environments, and the connection of these issues to CO₂ mitigation, are illustrative of how China wants to play more prominent roles in global economic and environmental agendas.

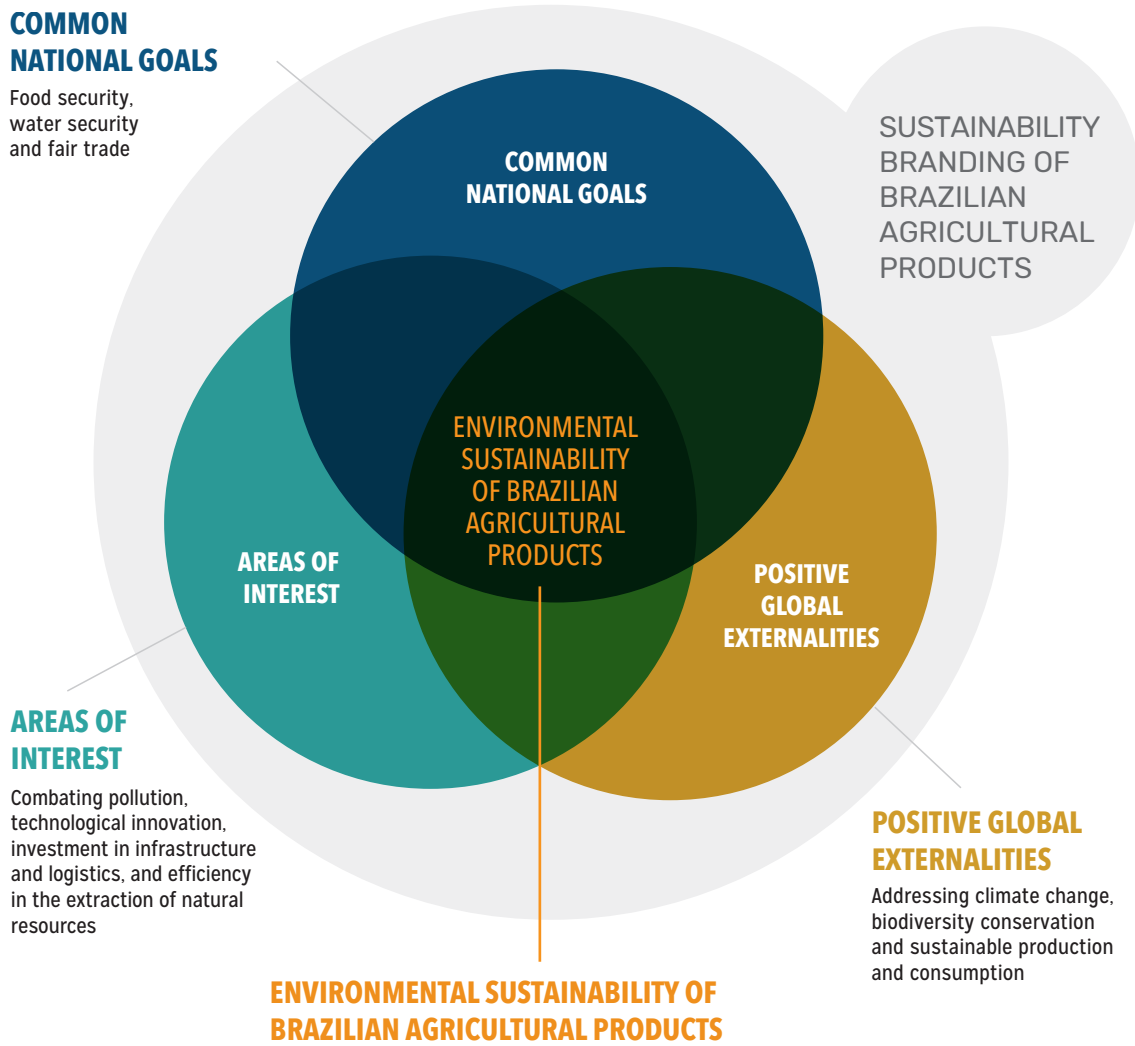
This context may suggest a unique opportunity for dialogue and identification of new demands and markets between Brazil and China (and Asia) for land use, not only in regard to agricultural products, but also to the forestry sector (native and planted forests), involving restoration and forest management. Dialogue should be guided by sustainable food production, biodiversity protection, sustainable forest management, and efficient natural resource use. Promoting this transition requires agreeing on a roadmap, with established time frame, priorities, strategies for technological innovation and for meeting associated demands for results, for example related to infrastructure and other co-benefits for mitigation and adaptation to climate change.

This context may suggest a unique opportunity for dialogue and identification of new demands and markets between Brazil and China (and Asia) for land use, not only in regard to agricultural products, but also to the forestry sector (native and planted forests), involving restoration and forest management.

Commercial cooperation between Brazil and China can be enhanced through an innovative vision of the alignment of common national goals (food security, water security and fair trade) with positive global externalities (addressing climate change, biodiversity conservation and sustainable production and consumption), based on the connection of areas of interest (combating pollution, technological innovation, investment in infrastructure and logistics, and efficiency in the extraction of natural resources). The result of this process could be the sustainability branding of Brazilian agricultural products (according to the 3S standard bilaterally agreed upon). This process must be structured and driven by environmental traceability of the production chains, technological innovation for productivity gains and low-carbon production, efficient use of natural resources (soil and water, in particular), protection of biodiversity, agricultural safety and agroenvironmental planning to meet the demands of adaptation in the light of climate risks and vulnerabilities.

The bilateral dialogue in agriculture, trade and environment can lead to the adoption of standards and parameters for the environmental sustainability of Brazilian agricultural products, in the context of the 3S agenda, providing the Chinese consumer market with a new reference. In turn, this process can lead to the attribution of these standards and parameters to the values of reference that qualify Brazilian agricultural products to access future markets and consumers, as well as offer new political and economic foundations to the exercise of Brazilian food diplomacy.

BRAZIL AND CHINA COOPERATION IN AGRICULTURE, TRADE AND THE ENVIRONMENT



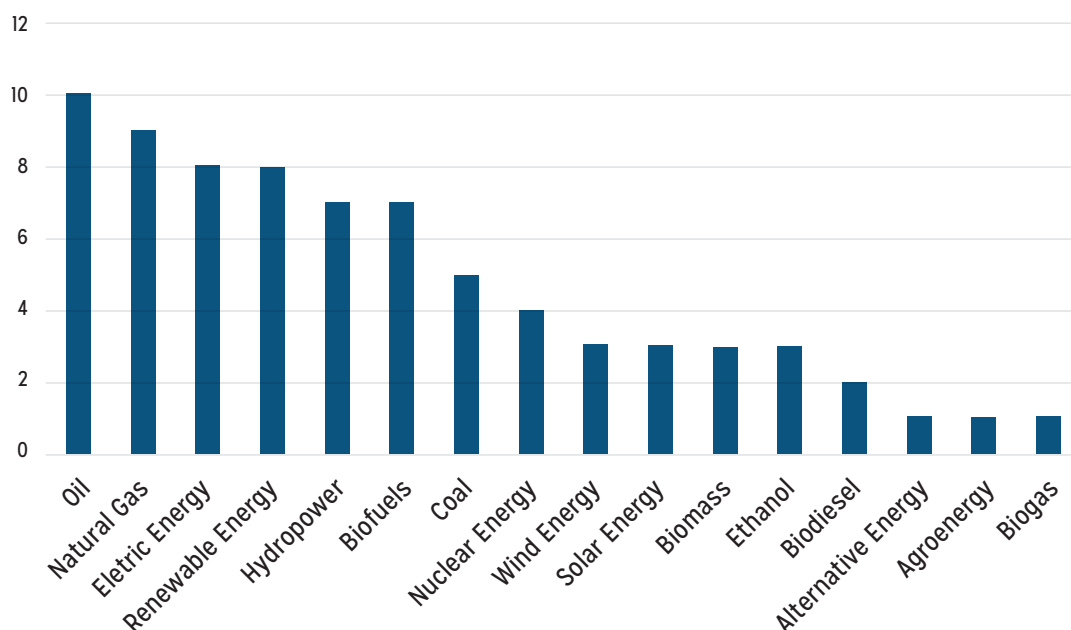
ENVIRONMENTAL SUSTAINABILITY OF BRAZILIAN AGRICULTURAL PRODUCTS

Environmental traceability of production chains, technological innovation for productivity gains and low-carbon production, efficient use of natural resources (soil and water, in particular), protection of biodiversity and agroenvironmental planning to meet climate change adaptation demands, following the 3S standards for food production (sustainability, safety and security)

II. Energy transformation, energy transition and the environment

Driven by interests in investments, privatization and technological innovations, the Brazil–China dialogue on energy generally takes place within the COSBAN and with Brazilian regulatory agencies. This cooperation goes back to the 1990s, in the Collor Administration, and advanced particularly during the Itamar and Lula Governments, involving efforts in the areas of non-renewable energy, especially fossil sources, and renewables, including biofuels (GESEne, 2019).

Number of Diplomatic Acts between Brazil and China in which Energy Resources Appear (from 1990 to 2018)



Source: Energy Security Study Group (GESEne) of the Department of International Relations in the Federal University of Paraíba (DRI/UFPB)

Brazil is an attractive market for direct Chinese investments (CEBRI, 2019a). These investments are driven by desires to access natural resources, such as agricultural and energy commodities, as well as obtaining competitive returns in key sectors, such as infrastructure and energy. International Chinese investments were concentrated, from 2010 to 2017, mostly on energy (36%), transportation (21%), metals (7%) and agriculture (6%) (CGTI, 2019).

The new regulatory and business environments, with favorable conditions for increasing participation of the private sector, and the growth in sectoral planning with investment predictability in the oil, gas and electricity sectors, establish the context for national and international investments in Brazil. In the oil and natural gas sectors (exploration) and electricity generation (wind, solar, biomass and oil & gas) and transmission, recent auctions demonstrate the appeal of the Brazilian market. Unlike other economies that have established laws restricting the entry of investments with Chinese technology, Brazil has a tradition favorable to foreign investments in the sector (CEBRI, 2018c).

One of the most mobilizing topics in the world currently is the global transformation of energy, which involves technological innovations associated with new energy sources, energy transitions and tackling climate change. Energy is essential for our civilization and for the prosperity of

humankind. The generation, distribution and use of energy have a central and determining role in the global economy and in geopolitical relations between countries.

The early 21st Century saw the emergence of a global energy transformation as an inkling of the future, based on the feasibility of new renewable energy sources as a result of bringing together technological innovation, cost reduction/competitiveness and efficiency, as well as the emergence of new business models and consumer markets. This global energy transformation is also becoming a new important and disruptive geopolitical force with the potential to transform the dominant conventional geopolitical energy map for over 100 years (IRENA, 2019).

Energy transformation is a key pillar of the efforts to mitigate greenhouse gas (GHG) emissions, just as the increasing use of renewable energies is key to achieving this goal. The political-economic imperative of global energy transformation is driven and accelerated by technological innovations for efficiently producing, transmitting, distributing, accessing and using energy in the future. Climate change and climate urgency determine a new impetus to global energy transformation and put the spotlight on energy transition. They further require that the security of energy systems be based on environmental sustainability criteria, since modeling for both energy transition and transformation require decoupling growth from energy supply and the respective decrease of environmental impacts. That is, the challenge is to ensure quality and stable low-carbon energy in a manner that is efficient, fair, safe and environmentally sustainable over time.

Energy transition¹⁶, with varying strategies and designs in several countries, is one of the core topics of economic and technological debate in the world. It includes issues such as energy and climate security, combating air pollution and energy access by off-grid populations, in addition to reducing generation and transmission costs and the final consumer price. Increases in renewable energies, associated to promoting innovation, can generate positive externalities in job generation in energy production chains, where jobs have greater labor intensity than in fossil chains (IRENA, 2019).

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In the case of Brazil, the fact that the energy mix already has a high share of renewables, and therefore a low impact energy profile (43% of primary production is renewable in origin, while the world average is 14%, and electricity supply is approximately 80% based on renewable resources), associated with the abundant supply of renewable natural resources, results in the concept of energy transition having a greater reach in comparison with other countries (E+energia, 2019). G20 adopted the term “energy transitions” because each country starts out from its own scenario and should define, based on multiple possible arrangements and barriers to be overcome¹⁷, its own paths to the low-carbon era.

In addition to the unexplored possibilities deriving from the abundance in natural resources, Brazil needs to tackle regulatory, economic, financial and technical changes in order to increase

16. The term “energy transition” has been used to designate the replacement of the use of fossil fuels with renewable energy sources (IRENA, 2019). In most parts of the world, the main dimension of the energy transition is associated with changes in the electrical matrix with a view to reducing GHG emissions. Since the electrical matrix is predominantly fossil in most countries, as it is in China, energy transition and decarbonization can be approached as part of the same context. This is not the case in Brazil, which has a predominantly renewable electrical matrix. The energy transition is not limited to the decarbonization of the electrical matrix. Its search has brought about transformations in the industry, from the use of renewable resources and digitalization. Climate change cannot be considered the only motivation for this process. Technological innovation also plays a central role in allowing the decentralization and democratization of electricity markets, transforming the geopolitical, technological, economic and social dynamics of energy production and consumption in the world (E+energia, 2020).

17. In Brazil’s case, two barriers must be surpassed: (i) investments in infrastructure, technological developments, market redesign and regulation, as well as changes in behavior and consumer choice patterns; (ii) the need to reconcile national interests with global common interests, as in the case of tackling climate change and the necessary reduction of GHG emissions (EPE, 2019).

the low-carbon nature of its energy mix. This also requires a change in the way that the Brazilian consumer understands and relates to energy consumption and production (E+energia, 2019).

Energy transition poses challenges to the Brazilian electrical system. With an installed generation capacity of 170 GW (Aneel, 2020), it is the 9th largest consumer electricity market in the world. The energy mix has a sizable share of renewable sources, particularly in the electricity supply mix (82% in 2018 - EPE, 2019). This share of renewable energies grants Brazil a privileged position in the global debate on energy transition, particularly regarding the decarbonization of its electricity mix (E+energia, 2020). The diversity of energy resources available for Brazil to make its future choices provides unique opportunities, including the export of clean energy to other South American countries in a new perspective of regional energy integration.

Therefore, the field of debate and decision-making in which Brazil finds itself with respect to the global energy transition involves national interests like energy security and cutting carbon emissions to tackle climate change. It also involves minimizing the impact of climate risk in the country's economic growth, economic competitiveness of energy sources and transformation of the energy industry. However, it is also important to discuss the role of Brazil in production, internal use and export of oil and natural gas and their impact on the Brazilian energy matrix.

In 2007, when the pre-salt layer was discovered, the Brazilian potential for oil and natural gas production increased significantly. According to EPE (2019), it is expected that oil production will double by 2029, reaching 5.3 million barrels/day. Exporting the surplus of this oil potential will award Brazil a strategic role in the international supply market outside the Organization of Petroleum Exporting Countries (OPEC).

In regard to natural gas, important challenges include the demand for investments in infrastructure for outflow (pipelines), the high CO₂ content in the gas fraction of the pre-salt layer, the need for an integration strategy with the electrical and industrial sectors, thus defining a "New Gas Market", as well as the search for competitiveness in relation to other renewable sources, including hydropower, in electricity generation.

In the context of the search for a more inclusive, competitive and sustainable economy, Brazil must soon make choices that will determine the ownership and management of its energy sources, as well as enable investments and international partnerships. It is important to note that having significant resources with lower (or zero) carbon emissions, which are economically competitive and complementary, these choices provide Brazil with several possibilities to benefit from the energy transition process.

In the context of the search for a more inclusive, competitive and sustainable economy, Brazil must soon make choices that will determine the ownership and management of its energy sources, as well as enable investments and international partnerships.

In the context of energy transformation, Brazil also has several possibilities and needs to consolidate a narrative of its own. The economic competitiveness of renewable energies allows for their expansion. The synergy of production with other sources allows their integration to the electrical system at potentially lower costs than those in other countries. On the other hand, the possibilities for consolidating distributed resources (distributed generation, energy storage and energy efficiency, in addition to the acceleration of the sector's digital transformation) associated with biofuels, provide the country with ample conditions to define the benefits of this transformation.

Further according to the Instituto E+ Diálogos Energéticos (2019), although Brazil has a singular energy matrix with regard to the share of renewables, the challenges of seeking a low-carbon energy mix are still multiple. It is necessary to define an efficient strategy for transition, with the

establishment of principles for decision-making and of objective and conceptual criteria for the formulation of public policies. Technological innovation and environmental sustainability should be the guidelines of energy policies and their respective regulatory frameworks, in a reality characterized by sectoral planning and also motivated by climate change.

In China, the debate and decisions on the future of energy are considered strategic. Chinese companies are positioned as global leaders in the development of technologies related to energy transition and climate change (such as electric vehicles, solar panels and wind turbines)¹⁸. As the largest producer and consumer of renewable energies in the world, China pays attention to and places strategic importance on its energy transition process and on addressing climate change. The scope of interventions in the so-called “energy revolution” includes changes in consumption patterns and in energy supply, technological innovation, energy security strategies and the establishment of a modern low-carbon, green and highly efficient energy system. China also intends to reduce the dependence of coal in its energy matrix.

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In the field of renewable energies, the announced change involves migrating from individual technological development to scaling up to improve the Chinese energy system. In 2018, the total installed capacity of electricity from renewables exceeded 728GW. Clean energy is responsible for 22.1% of total electrical power consumption. Coal accounts for 59% of the total of electricity consumption and the Chinese Government continues to plan the shutting down of small coal thermopowers, a total of 110 GW (involving the withdrawal of plants made obsolete due to pollution and inefficient energy generation).

China’s heavy dependence on non-renewable energies (86.2% of its energy mix in 2017) is a key challenge in the equation development vs. responsibilities related to the growth of Chinese GHG emissions recorded in recent decades . Although fossil fuels will continue to have an important role in China’s and in the world’s energy matrix for quite a while, domestic production of crude oil is falling, while their foreign investments should continue to grow in this sector. Furthermore, the debate on incentives to increase the share of natural gas in the Chinese economy has been gaining traction. The prospect of increased demand for energy associated with the adoption of electric vehicles should have an impact on the energy and transport sectors in China (CEBRI, 2018b). The potential for incrementing cooperation with China on the segment of biofuels is also worth mentioning.

China has reiterated its strong political stance of supporting multilateralism and having a leading role in addressing climate change, suggesting an objective and pragmatic understanding of the opportunities, challenges and trade-offs associated to the energy transition, and how they relate to its own interests and responsibilities. Its action is guided by clearly defined national motivation and drive, as well as by delimited transition costs and associated benefits at national, regional and global levels, considered in a long-term perspective (UN Climate Action, 2019).

Brazil can benefit from Chinese expertise in both energy transition and energy transformation. The definition of structured pathways for technical, economic and technological choices, as well as for environmentally sustainable access to and use of energy in the future, may foster a new chapter in bilateral Sino-Brazilian cooperation. China’s actions can lead to efficiency and effectiveness gains in using the large potential for power generation from renewables.

In a global environment of profound transformation, it is important for Brazil to develop

18. In 2018, China was accountable for 55% of global electric vehicle sales and 50% of solar panel production (McKinsey, 2019).

a consistent narrative for its energy transition, which can be used as a geopolitical asset in international trade and climate negotiations. Without its own narrative, consistent with its national interests and global insertion strategy, Brazil will remain subject to international narratives, with diverse interests, and may lose opportunities to add value to its own economy (E+energia, 2020) or to define more solid and ambitious guidelines for the bilateral relations considered important for its development.

In a global environment of profound transformation, it is important for Brazil to develop a consistent narrative for its energy transition, which can be used as a geopolitical asset in international trade and climate negotiations.

Thus, the dialogue between the two countries should evolve based on a long-term vision, correlating energy and the environment and defining common results-based narratives of mutual interest and global co-benefits. The prospect of prior alignment of these interests in environmental issues that are also found in other regional blocs, such as BRICS and the G20, can result in a new momentum for the current bilateral cooperation, going beyond the already consolidated routes of investments by Chinese companies. Gains related to decoupling environmental impacts, economic growth and energy security may be the result of solutions built around priorities such as more cost-efficient integration of renewable energies, energy efficiency and decentralized generation.

III. Sustainable infrastructure, Belt and Road Initiative and green finance

The political dialogue that drives bilateral cooperation must also be motivated by thinking and proposing possible futures. One of the key issues in Brazil's development involves infrastructure and logistics (I&L), be it by its precariousness, or by the capacity of national investment to tackle the shortcomings of the existing infrastructure.¹⁹ The implications of this scenario involve loss of competitiveness of the Brazilian economy, insufficient transport structures (which have a broad impact from the agricultural sector to urban mobility), inefficiency of urban systems, environmental air and water pollution, mainly because of the lack of sanitation systems, among other aspects that affect productivity, income and inequality.

Air pollution, mostly caused by vehicles and heavy industry, is responsible for about 50,000 deaths per year in Brazil (IPEA, 2015). Gains related to cargo logistics in a country of continental proportions are one of the challenges for Brazilian agribusiness. The demand for a national logistics plan and for less impacting modes of transport, from an environmental and emissions point of view, is a strategic requirement for the use of land in Brazil and to enhance the competitiveness of Brazilian agricultural and industrial production. The predominance of road transport at the expense of other modes, particularly rail, reveals another technical, economic and political bottleneck to be overcome.

¹⁹ According to recent estimates, Brazil should invest about 4.2% of its GDP over the next twenty years to meet the demand resulting from 20 years of low investment (Frischtak, 2019).

Solving the Brazilian infrastructure problem is an essential condition for the sustainable development and economic growth of the country. Some of the challenges involve overcoming internal barriers to promote improvements in the investment environment, in the national capacity for designing and implementing projects and in the development of tools to enable the necessary investments, with the participation of private financial capital (national and international).

Solving the Brazilian infrastructure problem is an essential condition for the sustainable development and economic growth of the country.

Investing in sustainable infrastructure (projects with technical, economic, financial, social and environmental sustainability, including climate resilience) requires alignment with new technologies, including with regard to use of materials and project techniques, in addition to greater efficiency in the use of natural resources and the decoupling of environmental impacts. This requires learning and capacity building in new regulatory models and institutional tools for public governance, gradually improving legal security, economic profitability and the investment environment in the country. It may also require a new way of dealing with risks and vulnerabilities in order to enable projects that are more resilient to the uncertainty of extreme events or to make projects more attractive because they result in less environmental degradation.

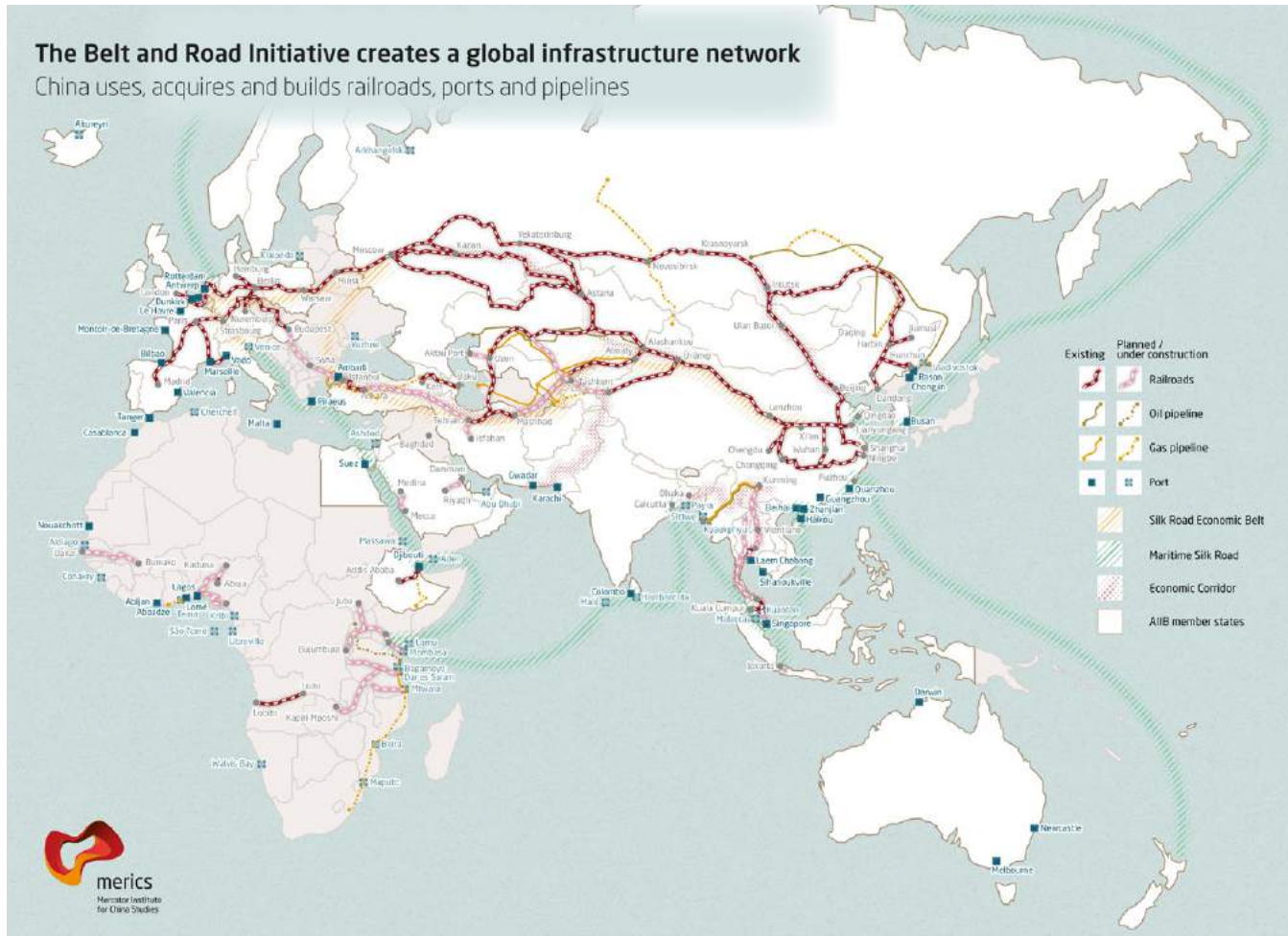
The demand for sustainable infrastructure in Brazil gains more ample dimensions when the natural or green infrastructure agenda is included²⁰. Natural infrastructure is defined as a restored or properly managed natural ecosystem that rehabilitates landscapes to provide goods and services that are essential to development and well-being. The potential for natural infrastructure in Brazil is huge and with diffuse benefits such as thermal comfort, carbon capture and sequestration, stock and refuge for pollinators and protection of soil and water.

For China, this issue is not only strategic for its national development, but assumes, with the Belt and Road Initiative (BRI), a vision and a determining role in the Chinese decision to enhance international investments as a path to greater insertion in global issues and geopolitical influence (McKinsey, 2019). Inspired by the original Silk Road, the BRI is defined as “the ice-breaking journey of the 21st Century”, and vividly conveys Chinese aspirations for peace, development and win-win international cooperation (Zongze, 2019).

Launched in 2013, with completion planned for 2049, the Initiative is open and inclusive, guided by a concept of progressive cooperation, with several possibilities for accession and for bilateral and multilateral engagement. At its core is the international connection of China with other key countries and regions, based on regional development strategies. The model is three-pronged: infrastructure, industry and capacity for cooperation. It also helps member countries to achieve their national development objectives. Its economic rationale is expressed in two main points: (i) infrastructure projects will always have a positive impact, even if only in the long term; (ii) efficiency gains can be ensured by investment planning based on connectivity, according to the idea of major economic corridors (CEBRI, 2019a).

20. Due to the legal requirements for compliance with the New Forest Code, in particular with regard to the restoration of permanent preservation areas and the associated water recharge systems, Brazil has a unique opportunity to reconcile the advances in land use (agricultural and forestry systems) with green infrastructure demands.

**BELT AND ROAD INITIATIVE:
MAJOR ECONOMIC CORRIDORS**



Source: Mercator Institute for China Studies (MERICS). Available in: <https://www.merics.org/en/bri-tracker/mapping-the-belt-and-road-initiative>

China's international interests in infrastructure follow distinct, and possibly complementary, paths: direct investments in partner countries, contracted projects and investments in BRI, its major global infrastructure and cooperation initiative. Despite the criticism of the Chinese government's expansionist goals and the opportunities related to greater Chinese participation in other regions, South America is gaining importance in Chinese interests of BRI accession. The region accounted for about 10% of Chinese investments in 2018 (CEBRI, 2019a) and its appeal has been driven by the availability of natural resources and of soft and hard commodities.

The BRI has been the object of much criticism, including over the potential of national and transnational environmental impacts and increase of carbon emissions. In 2019, at the Second Belt and Road Forum for International Cooperation, China reaffirmed the environmental guidelines of the initiative, identified by the United Nations as "Green BRI". The scope of the environmental approach goes beyond the traditional vision of the environmental impact of infrastructure projects and is also based on positive environmental externalities, on global sustainability with the implementation of Agenda 2030 and the Sustainable Development Goals (SDGs), on the conservation of biodiversity and addressing climate changes through mitigation and adaptation. The possible alignment of Brazil with the BRI should consider, among the variables that guide decision-making, its own innovative vision on sustainable and green infrastructure.

The main criticism lies in the requirement that infrastructure investments must indeed be sustainable and climate resilient, so that the BRI will not engender climate risks or negative

impacts associated with many infrastructure projects in land and marine environments. However, a BRI based on low-carbon investments has the potential to contribute significantly to Agenda 2030 and to the achievement of the SDGs.

Another critique involves the BRI's system of environmental governance. The demand for scientific assessments and the availability of data and information that allow monitoring of its implementation and decision-making processes, and that ensure standards of investment based on sustainability, place the initiative in doubt. It is essential to build credibility and mechanisms for transparency, accountability and responsibility to deal with the multiple scenarios of social and economic inequality, with a view to ensuring positive outcomes for the sustainable development of member countries.

Brazil has maintained a deliberate distance from the BRI. As it looks forward to a long-term relationship with Brazil, China would like to have Brazil's explicit association to the Initiative (CEBRI, 2019a). Its proposal for Brazil is focused on concrete investment projects. Part of the Brazilian demand for investments in infrastructure is in the Amazon and this perspective is directly related to the emergence of China as a new economic partner of Amazon Basin countries.

Brazil has maintained a deliberate distance from the BRI. As it looks forward to a long-term relationship with Brazil, China would like to have Brazil's explicit association to the Initiative.

Brazil needs new policies and criteria to deal with the social and ecological impacts associated with the implementation of infrastructure projects in the Amazon. The initiatives of the past 50 years in the Amazon reveal negative environmental externalities that are increasingly contributing to the degradation, fragmentation and destruction of the forest, threatening the integrity of its traditional peoples. On the other hand, the expectation of and need for development in the Brazilian Amazon indicates that the sustainable infrastructure agenda is strategic for regional development, for the well-being of the local population and for climate change mitigation and adaptation. Furthermore, it can be a precondition to improve Brazil's international image, if its implementation is not associated to increasing deforestation and does not create an incentive for illegal deforestation. Another aspect that should be noted concerns the possibilities of strengthening cooperation ties between Amazonian countries and leveraging the common interest in the demand for infrastructure and decoupling of socioenvironmental impacts.

In less than 20 years, China rose to become the foremost trading partner and the largest source of international funding in South American countries. Development finance is an important component of China's globalization strategy and of its new foreign policy, which has the BRI as its main platform. From 2013 onwards, China has established a number of new regional and interregional funds with a global scope, including the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB), both in which Brazil participates (CEBRI, 2018a). The main purpose of the NDB is to mobilize resources for the financing of sustainable infrastructure. Even without officially joining the BRI, Brazil could fortify its infrastructure program through a jointly developed framework for investments in sustainable infrastructure, created in a dialogue between Brazilian National Development Bank (BNDES), the China Development Bank (CDB) and the NDB.

This new scenario presents trade-offs associated to social and ecological impacts in the Amazon, especially because Chinese banks are on their way to becoming the main source of funding for infrastructure and development projects in the Amazon Basin. A study sponsored by the Moore Foundation (Gallagher et al., 2019) analyzed infrastructure projects financed by China in Bolivia, Brazil, Colombia and Ecuador, revealing issues that merit further analysis by these countries. A more fluid approach to the social and economic risks of infrastructure projects, when compared to criteria adopted by other international financial institutions, and the absence of due diligence or procedures that ensure benefits are maximized and risks minimized, are examples of issues for which the study has made recommendations.

Criticism aside, it is undeniable that the Chinese are highly capacitated in the planning, structuring and execution of infrastructure projects, having designed efficient (if not always transparent) institutions and processes that guide public investment management. In Brazil, on the other hand, there is a lack of cohesion and integration between regulations and the action of governmental agencies responsible for the planning, licensing, financing or concession of projects. The environmental damage caused by poorly planned infrastructure projects, which are interrupted by judicial determination or because they are not technically, financially or environmentally viable, is huge. The growing presence of Chinese companies in the Brazilian infrastructure sector, especially through brownfield investments, can be a path to deepen the dialogue between both countries on how to improve the planning cycle of infrastructure projects.

China possesses the instruments and expertise to help Brazil build a robust project pipeline that initiates with a comprehensive diagnostic phase, capable of anticipating the evaluation of risks and alternatives, and promotes the integrated action of the various institutions involved in the process, improving public investment governance and the territorial and environmental governance of the regions in which projects are developed. In this dialogue, it is up to Brazil to propose and define the environmental sustainability standards that apply to Chinese investments in its territory, but this circumstance does not diminish the opportunities that these investments present, or their potential benefits. Brazil has the installed capacity and the environmental assets needed to propose a clear set of norms and standards for the environmental sustainability of infrastructure projects, which, if transposed from the bilateral relationship to the BRI and regional integration projects, can contribute to increase the ambition of the global sustainable and natural infrastructure agendas.

Business opportunities and financing for sustainable low-carbon growth reflect the basic outlines of green finance agendas. This topic should no longer be seen as a trend in niche markets but rather as an aspect of the global economic system that renews and adjusts itself to the risks arising from the climate emergency, the scarcity of natural resources and the degradation of ecosystems around the planet. Caring for the environment already impacts financial investment flows in the world and has been particularly expressed by the urgency imposed by climate change. Market warnings about the risks of investments that are intensive in carbon emissions or about opportunities for transition to green investments, such as in the ongoing process of disinvestment in fossil fuels, are increasingly present in international economic and financial forums.

Caring for the environment already impacts financial investment flows in the world and has been particularly expressed by the urgency imposed by climate change.

National markets for green equities are emerging. The growth of credit in private banks in Brazil is increasing and it has an enormous potential for good prospects (FEBRABAN, 2019). With falling interest rates in Brazil and a favorable investment environment, new possibilities for ecological financial tools are appearing. Historically, the BNDES has played an important role in the funding of sustainable projects (Stuart, 2019) and in the emission of green bonds. Brazil launched the first green bonds in 2014, in London. Over the past three years, BNDES has issued US\$ 5.0 billion in green bonds, out of a total of US\$12.6 billion issued in Latin America and the Caribbean from 2014 to 2019 (IDB, 2019). As the market expands, investors demand more transparency and comparison tools.

There is room for progress in Brazil and in other Latin American countries. The interest of multilateral and private financing has been growing in recent years. Brazil's potential for green financing is high, including access to cheaper credit. Sustainable supply chains, sustainable infrastructure and green infrastructure represent direct benefits for Brazilian agriculture. To access these funds, Brazil needs to build paths to possible futures and address the socioenvironmental risks of investments in infrastructure. This requires objective and structured public commitment of

Brazilian interests, based on clear rules and solid partnerships.

This issue is particularly relevant in the Chinese strategy for building an Ecological Civilization. In 2016, “Guidelines for Establishing the Green Financial System” were adopted in China. Their implementation requires employing the full range of financial services that support the environmental transformation of the economy and the efficient use of natural resources. It is estimated that there were between 433 to 557 billion dollars a year in green investments from 2015 to 2020, according to figures supplied by the Ministry of Ecology and Environment and the China Council for International Cooperation on Environment and Development.

The Guidelines are a comprehensive plan to channel this investment. Although the political moment is favorable, several practical challenges still remain three years after the launch of China’s Green Financial System, such as: (i) finances are still not flowing in satisfactory volumes because the environmental externalities are still not fully internalized in market prices, (ii) the lack of consensus on the definition of “green” is also hindering progress, and (iii) the promotion of green finance must involve not only the financial regulators, but also governmental institutions related to political reform, environment, agriculture, infrastructure, industry, and science and technology, including information technology.

With respect to green bonds, China’s first corporate green bond was issued in Hong Kong by Xinjiang Goldwind Science and Technology, in August 2015. This was followed by the first issue of green securities by a Chinese bank, the Agricultural Bank of China, in London, in October 2015. China saw the release of their first two domestic green bonds (by the China Industrial Bank and the Shanghai Pudong Development Bank) in January 2016. Since then, the Chinese green bonds market grew rapidly, reflecting the ambitions of the government to make them a cornerstone of its plan to meet the annual needs for investment in clean energy, energy efficiency and environmental protection. Low-carbon transport is the issue most addressed by green bonds in China.

The Chinese experience demonstrates the complexity of the agenda, but also points to a learning process and an emerging opportunity, as in the case of green bonds. It shows the multiple and diversified paths through which development planning can incorporate green financing. It also reveals that the global green transition is underway, and that bilateral cooperation is an efficient mechanism to advance the relationship between environment and development, by addressing mutual interests and national needs. The Brazil-China bilateral cooperation indicates this new opportunity, in particular with regard to financing sustainable infrastructure, including in cities, and the establishment of green value chains in soft commodities (considering the end of deforestation, trade in sustainable agricultural products and the demand by agriculture for green sustainable infrastructure).

IV. Sustainability in the context of technological innovation, new economies and cities, in addition to challenges of climate adaptation and resilience

Innovation is a key driver of economic growth and long-term development. But innovation for what purpose? To make changes. This requires not only science and technology, but strategies and connections among realities, players and challenges. This implies choosing directions. The 21st Century is being defined by the need to provide solutions to environmental, social and economic problems (Mazzucato, 2018). Advances achieved in the last century have not proved enough to cope with the economic and social inequalities in the world, neither to provide permanent solutions to global problems such as environmental degradation, climate change, hunger, poverty or the promotion of health and well-being.

Problems are complex, systemic, interconnected and urgent (Mazzucato, 2018). One of the key challenges of Agenda 2030 is exactly how countries will define their national narratives, based on the interconnection of issues and on the implementation of the SDGs. Which instruments or mechanisms will be needed to advance its execution and ensure continuity of results? These are the realities that must be transformed, requiring insights from various perspectives. Moreover, the challenges of sustainability represent problems for both developed and developing countries. The processes require strategies and mission-oriented approaches to innovation, so that public policies established at the frontier of knowledge are directed to the solution of specific national problems and demands or represent advances in addressing complex problems and global political ambitions.

One of the key challenges of Agenda 2030 is exactly how countries will define their national narratives, based on the interconnection of issues and on the implementation of the SDGs. Which instruments or mechanisms will be needed to advance its execution and ensure continuity of results?

The 2030 Agenda for Sustainable Development establishes ambitious global objectives, requiring actions and efforts that interconnect social, economic and environmental issues. Science, technology and innovation have a central role in achieving these objectives and goals. Harnessing frontier technologies, together with actions to address gaps between developed and developing countries in the access and use of existing technologies and in the development of innovation (including new forms of social technologies), could be transformative in delivering the SDGs and Agenda 2030 (UNCTAD, 2019a).

Cheaper, easier and more efficient solutions to achieve greater sustainability are emerging from the new paths opened by technological innovation and have transformative effects. Concrete evidence of these effects can be seen in information and communication technologies, in urban mobility, in renewable energies, in health and well-being, in artificial intelligence, Internet of Things, Big Data, biotechnology, drones and satellites.²¹ Countries should be more ambitious in leveraging advances in technology and innovation to deliver on the SDGs and on their national sustainable development agendas.

21. The so-called disruptive technologies show great potential to enable the achievement of the SDGs. Big Data analysis can assist in the management or solution of critical global problems, based on advances in scientific knowledge, improvement in decision-making processes, or in health, by providing required information in real time. The Internet of Things allows new conditions for monitoring the natural world and people, through the connection of objects and machines. These two technologies are strategic for advances in health and well-being, agriculture, energy and water resources management. Drones are important for precision agriculture. Customized satellites are more accessible for developing societies, businesses and universities, and can facilitate monitoring of agricultural areas and environmental degradation.

Technologies should not be used to increase the differences between countries. On the contrary, they can even help countries reduce inequalities. The best use of technological frontiers requires political priority, establishing efficient innovation and regulatory systems, results-based public policies, governance and institutional arrangements designed to be productive, flexible access to financing for undertakings, competent structures for capacity building of human resources and development of effective and permanent research and development (R&D) infrastructure.

Science, technology and innovation must become key components of Brazil's ambition. In addition to ensuring greater efficiency than we have today in agriculture, infrastructure, energy and industry, innovation is the condition for Brazil to enter the world of "innovative economies". The new global technologies are disruptive, with varied uses, and it is necessary to define which strategy the country will adopt to promote their development and leverage their potential benefits.

The greatest economic value of the world in the future will come from biology, from understanding life. For the country holding the greatest biodiversity on the planet, it is a unique and exceptional way to construct new Brazilian narratives about the future. The Law on Access to Genetic Resources from Brazilian Biodiversity²² is visionary. It deals separately with the scientific knowledge of the information, which has economic value, while seeking compliance with the Nagoya Protocol²³ under the Convention on Biological Diversity (CBD). Therefore, Brazil is unlikely to have problems reconciling data for science and data for business, and should strategically aim to develop a high-technology bioeconomy.

Given its political aspirations of becoming a global superpower by 2050, China has implemented policies that ensure leadership in the industries that shape the present and future of innovation. With the expansion of its technological capacity, China will increasingly offer solutions that allow the insertion of countries and societies into a more modern reality (CEBRI, 2019a). Technological innovation was one of the pillars of the transformation and evolution that China underwent in recent decades. In the age of data, China has been accumulating a series of experiences in various sectors that certainly provide benchmarks for the development of projects in Brazil (CEBRI, 2019b).

The process of promoting an innovation ecosystem in China reached a point of inflection in 2016.²⁴ In this process, the Chinese academia developed a series of technological roadmaps, carried out long-term prospecting and presented their inputs. One of the specific projects was the current National Plan for the Medium and Long-Term Development of Science and Technology. Thus, the idea of building an innovation ecosystem like the one we have today comes from previous planning periods. Strategic planning seems to be the key to Chinese development (CEBRI, 2019b). As a matter of fact, the Five Year Plans are China's guiding strategy for all aspects of its development. There is a remarkable level of political continuity between each of them, with priorities adjusted every five years based on the targets that were met, the gaps that remain and the new challenges that arise.

Analyzing the Chinese experience, it is possible to conclude that the innovation process is born in companies, out of the need to face daily challenges, and materializes in cities (CEBRI, 2018a). Technological development also stimulates the generation of jobs and income. In this regard, Brazil has strong synergy with China on various issues and, with planning and strategy,

22. Law No. 13123, dated May 20, 2015, regulates access to genetic heritage, protection and associated traditional knowledge, alongside the sharing of benefits for conservation and sustainable use of biodiversity. This legislation is closely related to the Convention on Biological Diversity - CBD, whose objectives include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits derived from the use of genetic resources. The CBD also established that it is up to each country to regulate, through national legislation, access and benefit sharing, as well as prior informed consent, related to genetic resources and traditional knowledge. Thus, Law No. 13123 of 2015 and its regulations are some of the instruments utilized by Brazil to achieve the objectives established by the Convention on Biological Diversity (MMA, 2019).

23. The Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing resulting from their use (in English, ABS, Access and Benefit-Sharing) is an international agreement supplementary to the Convention on Biological Diversity, adopted at CO 10 of the CBD, held in Nagoya, Japan, in 2010. Through it, suppliers, such as countries with great biodiversity, users of genetic resources and pharmaceutical companies, will enjoy greater legal security and transparency in their relations, since the new protocol establishes more predictable conditions concerning the access to genetic resources and ensures that their benefits are shared with those who provided them.

24. The process of preparing these plans is extremely capillary, with the involvement of many and different agents, including national and foreign companies, think tanks, the World Bank, universities and others, who are invited to participate to build the sense of the next level of China's evolution. China is currently preparing the 14th edition of the Plan (CEBRI, 2019b).

as well as political determination, it can benefit not only from promoting local sustainable development – providing a better quality of life for its people –, but also from acquiring a competitive edge in the global market.

Among the possible benefits that enable Brazil to move forward in this agenda with China is the opportunity for economic diversification and for sustainable development of the Amazon. In the case of the state of Amazonas, given the need to bolster the Manaus Free Trade Zone, opportunities include bioeconomy, digital transformation industries, ecotourism and fish farming (Escolhas, 2019). In the case of other proposals linked to sociobiodiversity chains, the potential scope is the entire Amazon region, the Cerrado and the Caatinga. It is important to encourage the emergence of these new economies in Brazil, based on the biodiversity conservation model and with strong appeal for cooperation among countries and societies.

Brazil is a predominantly an urban country. Fittingly, the challenges and benefits of innovation, new economies and sustainability are profoundly related to urban development. The report “The Weight of Cities: Resource Requirements of Future Urbanization” - IRP/UNEP (2018), emphasizes that the consumption of materials by cities will grow 25% from 2010 to 2050, reaching approximately 90 billion tons a year. On the other hand, the report estimates that it would be possible to save 44 billion tons per year by the year 2050 if cities start to consume resources more efficiently, reducing the domestic material consumption (DMC) to around 6 to 8 tons per capita. Therefore, it is possible to state that cities have a strategic role in solving global environmental problems such as climate change and biodiversity loss, and that the issue of resource efficiency should be a key component in the design and implementation of new urban policies.

The urban metabolism model, described in the report “The Weight of Cities”, imagines the city as an ecosystem with multiple global and local flows (water, energy, food, people, etc.). Mapping these flows of ecosystem services and products contributes to a better understanding of the resource consumption patterns in urban centers and may enable a more efficient management of resource use. The development and sharing of methodologies for the use of big data in urban management is an essential component of the UN’s strategy to promote more sustainable cities. Data that describes these flows and supply chains that feed and permeate cities can be used to determine the need to build resilient urban infrastructures, capable of withstanding abrupt changes, and tackle the new climate, water and food vulnerabilities of the 21st century.

In 2019, another report entitled “Next Civilized Cities” and published by the Yeosijae Consensus Institute and Ban Ki-moon Center for Global Citizens, sparks an urban debate based on the global challenge of building new cities to harbor the kind of civilization we want to shape for the future. The report heavily criticizes the unsustainability of large cities²⁵ and the emptying of rural areas. The idea that emerges is that the cities of the future need to be “people-centric” in the perspective of a new era of civilization. Cities need to provide harmony among people, nature and societies. In order to do this, it is important to seek convergence between eastern and western values in the world. Digital transformation is an essential condition for the viability of these new cities, where the well-being of people shapes both interpersonal and service relations. Furthermore, these cities must be sustainable including in relation to the prospect of reducing the cost of living in urban areas.

Although they have undergone very different urbanization processes, Brazil and China currently face similar challenges related to sustainable urban development and quality of life in cities. The search for solutions, based on the knowledge acquired by each country, for these urban problems common to both countries – such as climate change, water and waste treatment, pollution, security, housing and transport – is an opportunity for strengthening bilateral cooperation.

25. According to the Report, large cities are a significant threat to the planet’s sustainability and to humanity as a whole. They are responsible for 70% of global CO₂ emissions and nine million people/year die prematurely due to pollution caused by dust (fine particles). Urban pollution is not limited to country boundaries, having transnational impacts. Urban residents spend more than 30% of their income on housing, about a quarter of their lives are spent on roads or transport routes, and the differences between poor and rich in these big cities continue to grow. It is also observed that, according to the Asian Development Bank (ADB), the number of climate refugees is expected to reach 410 million people by the year 2025.

The lifestyles that drive new consumption and production behaviors, as well as the role of digital transformation, new materials, urban design and innovation, are guiding the search for more permanent urban solutions and can be the framework for Sino-Brazilian cooperation on environment and sustainability. Furthermore, they can address the common challenges that both countries are already dealing with regarding the resilience of urban areas to extreme weather events and necessary adaptation to climate change.

Although they have undergone very different urbanization processes, Brazil and China currently face similar challenges related to sustainable urban development and quality of life in cities.

International cooperation in this agenda should not be limited to the federal sphere, since cities already have their own channels for exchanging experiences (such as C40 and ICLEI) and are capable of proposing models and strategies that go beyond business as usual. These institutional spaces allow the exchange of knowledge about diverse experiences, promote adaptation to local particularities, and facilitate access to resources and establishment of partnerships by offering technical and financial support.

The recent Chinese experience in addressing its urban problems, recognized as a priority of State, is a potential area for cooperation to develop solutions for Brazilian cities. In addition to the pollution of rivers and environmental degradation, the greatest challenges faced by Brazilian cities are related to the lack of infrastructure, especially in the areas of sanitation, housing and mobility. In China, the interventionist state, the role of the business sector and the mobilization of the population through digital media has allowed the development of innovative solutions for issues such as transport, management of urban solid waste, access to (renewable) energy and tackling pollution. These environmental solutions were partly made possible by technological advances, such as the digital transformation and dematerialization trends driven by the private sector, and partly because cities came to be a national priority in the Chinese political agenda.

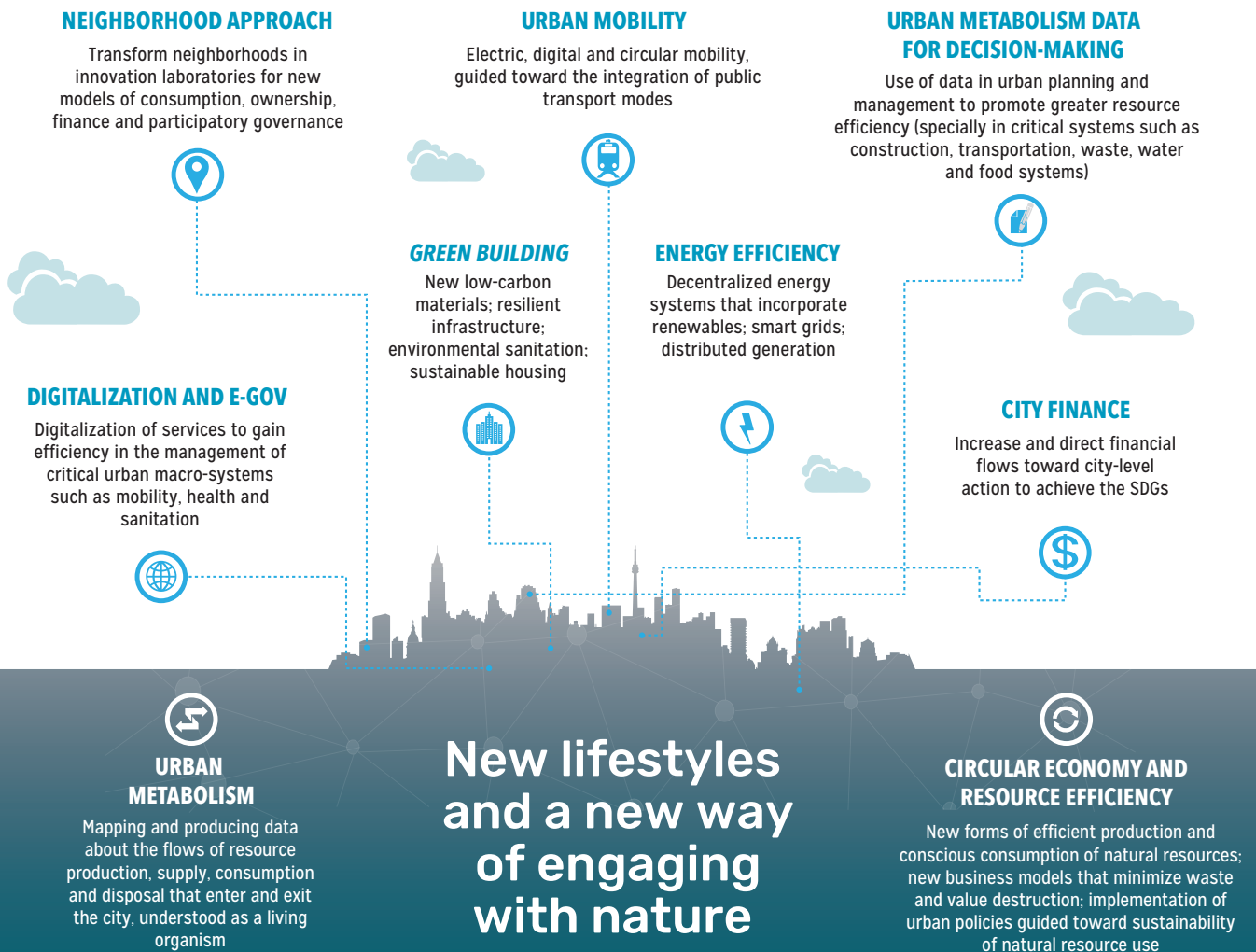
The actions of the Chinese corporate sector to rationalize public transport and promote energy transition in cities demonstrate the creation of new business models that are at the same time profitable and sustainable, generating positive externalities for society. On the other hand, the inclusion of cities in the political agenda is illustrated by the government's response to social mobilization against urban pollution and by the subsequent adoption of the concept of Ecological Civilization as a priority of State. The urban agenda was recognized as a priority because the implementation of several state driven initiatives only happens at the city level. For these initiatives to materialize, it is important to incentivize cities and mobilize resources to provide seed funding for their work. In China, almost all state driven initiatives start with a selection of pilot cities or provinces. This strategy creates a sort of "public policy laboratory", where initiatives are tested and then replicated and escalated if they prove to be successful.

As in China, Brazilian municipalities should encourage a greater role for the corporate sector in the design and implementation of sustainable urban solutions. Local governments can establish public-private partnerships for sharing data to be used in urban planning and can create channels for dialogue with start-ups that are developing environmental innovations. Technological innovations, especially the trend toward digital transformation and dematerialization, are profoundly transforming the ways of living, producing and consuming in cities. These tendencies point to the emergence of a new urban economy, based on the circular economy, on the sharing of resources, data and services, and on a new way of dealing with nature.

A possible and suitable Chinese-Brazilian cooperation route could involve an agenda for urban sustainability and innovation in the Amazon Region capitals, medium-sized cities such as Altamira, Santarém (Pará), Sinop (MT), and cities in areas of agricultural expansion, such as Miritituba (PA) or LABREA (AM). Urban sprawl in the Amazon Region occurs in detriment of forests or other native vegetation areas. The design of a bilateral dialogue and cooperation structure that

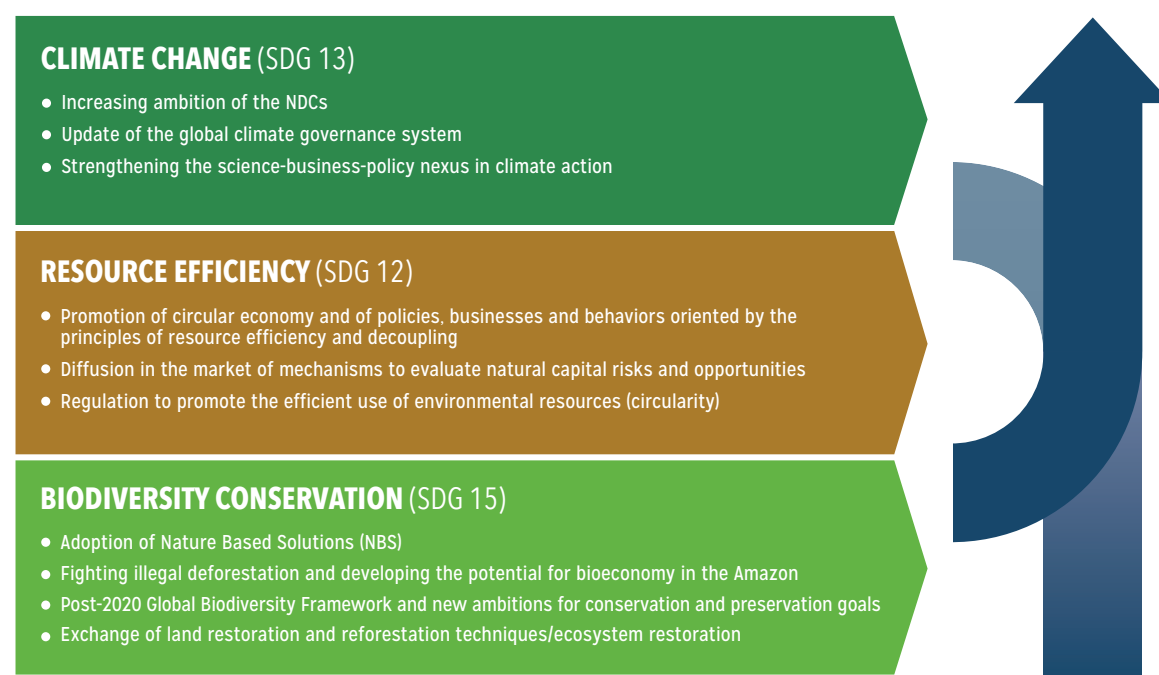
integrates innovative urban solutions to the Amazonian reality, in particular where international investments are foreseen (in infrastructure, mining, energy and logistics), could result in a regional development process that no longer contributes to the degradation of the Amazon Forest or prevents the local population from having better public governance and access to alternatives for their well-being. Connectivity is a strategic issue for cities in the Amazon, not only physical-territorial (infrastructure), but digital connectivity, particularly regarding telecommunications. The Brazilian Amazon must be interconnected with Brazil and the rest of the world.

SUSTAINABLE CITIES



BRAZIL AND CHINA: COMMON MULTILATERAL INTERESTS IN ENVIRONMENT, SUSTAINABILITY AND CLIMATE CHANGE

MULTILATERAL COOPERATION



In this century, the sustainability of global development, as agreed upon by the countries within the multilateral system, is guided by Agenda 2030 and achievement of the SDGs. Since the adoption of Agenda 2030, in 2015, in spite of advances in the decline of child mortality and diseases such as hepatitis, decline of urban populations living in slums, or growth of global access to electricity, contrary winds have prevented the implementation of the SDGs at the required speed. Weakening global economic growth, rising income inequality, unwavering global warming and climate change, in addition to the new conflicts related to these issues, are hindering the implementation of the SDGs (UN-DESA, 2019).

The main stimuli reside in the connection between the SDGs and the implementation challenges, seeking a political approach that prevents these from being understood as specific agendas, separate from national and subnational development narratives. The challenges that affect their implementation, as mentioned above, should be addressed from the perspective of cross-cutting issues, under Agenda 2030, and involve all countries.

Other issues represent challenges to the world in dealing with economic growth: the pressure on international trade; the growth of populism; national security priorities; disputes over intellectual property rights; rapid advances in renewable energy technologies; development of new materials and their effects on the terms of trade for economies based on commodity exports; automation and the impact of reshoring manufacturing on developing countries; disrupting global value chains and the effects on export and growth; and, finally, reduction in the pace of global trade and its respective impacts on employment and income (UN-DESA, 2019).

Thus, addressing global environmental issues requires geopolitical ambition, political will and action through key economic systems for global development, such as energy, urban, land use and food production, water security (including its various uses, such as sanitation), industry and finance. However, stakeholders with mobilizing capacity seek robust, efficient, low-risk, and usually immediate outcomes. This implies the need to propose paths of dialogue and international cooperation guided, at the same time, by the pragmatism of short-term results and by the ambition of a common long-term vision, essential to the ongoing partnership between Brazil and China.

The processes for tackling and seeking solutions to global problems find their political environment of dialogue, negotiation and agreement in the multilateral cooperation system in addition to the instruments and the decision-makers responsible for their implementation.²⁶ The United Nations Organization does not only deal with governments, but rather with people and societies. Global sustainability policies are science and evidence-based, and seek to mitigate social and economic inequalities, to protect the planet, to transform lifestyles and to produce wealth, alongside peace and security.

The global environmental issues that require urgency and priority of engagement are climate change, biodiversity protection and the efficient and sustainable use of natural resources. This is justified by the fact that these issues have a direct influence on economic growth policies, either by demand for products and commodities, or by the risks and vulnerabilities they pose for investment planning, capital markets and international trade. Furthermore, if urgent solutions are not found for these complex problems, this will lead to increased uncertainty and vulnerability for the conditions of human life on the planet.

The global environmental issues that require urgency and priority of engagement are climate change, biodiversity protection and the efficient and sustainable use of natural resources.

The required change of direction of the global economy toward sustainability, low-carbon emissions and a new relationship with nature is no longer a hypothesis, but a political reality for all countries and societies in the world. We are living the urgency of climate change, loss of biodiversity at an unprecedented rate and linear and unsustainable use of natural resources. The resiliency of the planet is under strong scientific scrutiny.

The world is experiencing times of transition with the emergence of disruptive changes. It all points to the arrival of a new era: the Anthropocene, a concept which is still under construction, guided by science and with its political root defined by the transformative power of human action over the paths of life on the planet. Accepting the hypothesis that human action is at the center of the changes in the atmosphere and the environment leads to a deep bond of interconnection between Man and Nature, not felt until now. In the Anthropocene, everything is interconnected (Kelly, 2019).

26. The multilateralism instituted after 1945 has come to an end. The no longer hegemony of the United States, the political redefinition of Europe and the rise of China as a world power, in addition to the breach of trust in the system for not having been able to deal with social and economic inequalities and with changes in global geopolitics, place the adopted model under strong questioning. The trend is toward the emergence of a new multipolar system and guided by a global order resulting from the transition in which the world lives.

Living in transition determines new political urgencies in relation to the future. Nonetheless, it also means understanding the interactions between climate change, people and nature. Addressing global problems which already have an impact on current ways of life, on the political structures that represent rights and duties (both individual and collective), and on the exercise of governing, suggests a demand for new arrangements and mechanisms guided not only by the need to achieve global solutions in a timely manner, but also to deal with the needs of the present (Teixeira, 2020).

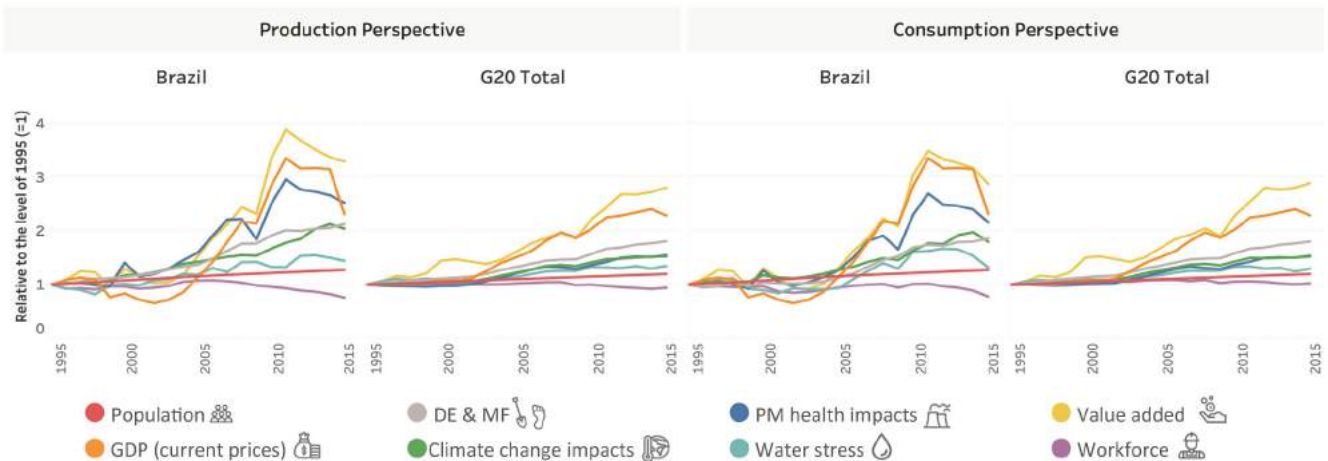
All of these circumstances may suggest going beyond the decisions motivated by known or consolidated common interests, by also including interconnections with other political actors, values and contexts – until then seen as unlikely by prevailing economic and political constituencies. To address the future, one should perhaps go beyond the established scenario, connecting new networks and developing new consensuses in a diverse and multipolar international reality.

The global use of natural resources is described in the *Global Environmental Outlook*, prepared by the International Resource Panel – IRP/UNEP and released in March 2019. At the request of G20, IRP-UNEP launched, last October in Japan, a document on the use of natural resources and trends for the period 1995-2015, for the 20 countries of the bloc. The data related to Brazil and China are described below in the factsheets produced by the panel.

■ BRAZIL

Status and trends of natural resource use

Figure 1: Socio-economic indicators, domestic extraction, material footprint, and material-related environmental impacts in Brazil and in the G20 (1995 – 2015) *

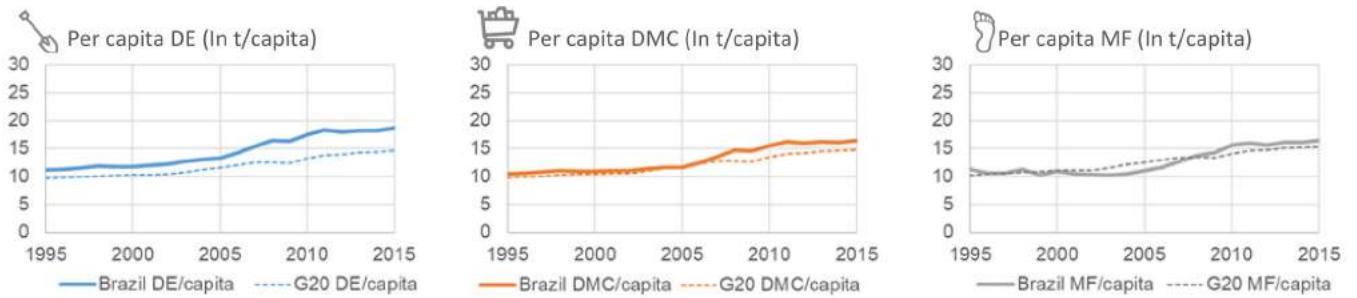


DE: Domestic extraction (production perspective);
 MF: material footprint (consumption perspective);
 GDP: Gross Domestic Product;
 PM: (primary and secondary) particulate matter.

* Data after 2011 was nowcasted.

Source: IRP database, Exiobase 3.4 and Cabernard et al. 2019

Figure 2: Domestic extraction, domestic material consumption, and material footprint per capita in Brazil and in the G20 (1995–2015)



Source: IRP Database

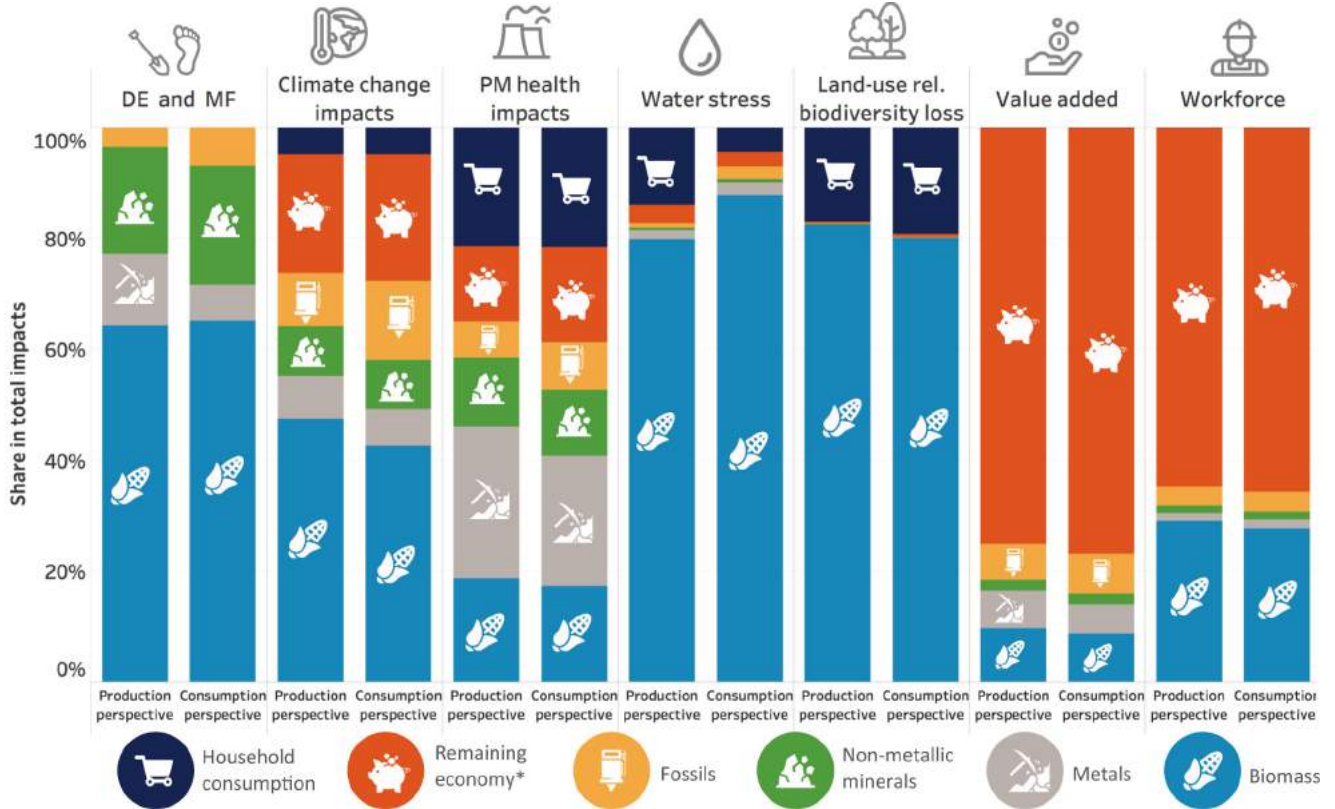
During the 1995–2015 period, the Brazilian population increased by 28% and the GDP more than doubled (with economic recessions at the beginning and at the end of this period). Domestic extraction of natural resources is at the average level observed in G20 countries. The environmental impacts associated with the extraction of materials distance themselves with respect to GDP, except for particulate material and the effects on health (air pollution).

Biomass and non-metallic minerals dominate extraction in Brazil. Extraction and processing of natural resources accounts for over 70% of the impacts associated with climate change (the G20 average is 50% for both production and consumption) and more than 40% of these impacts have their origin in the biomass sector (in the G20, the average is less than 20%). These impacts are caused by livestock, cement, milk production, oil extraction and steel production. The impacts related to land use, i.e. deforestation, are not part of the IRP analysis. From the point of view of water resources, as Brazil has an abundant reserve of water, the impacts are insignificant when compared to the G20 average. However, from a production perspective, the loss of biodiversity associated with land use in Brazil is almost four times the G20 average. Finally, in terms of consumption, the loss is three times the average of the other G20 countries.

Brazil is a net exporter of all materials, except for fossil fuels. More impacts associated with climate change are related to exports rather than imports, except again for fossil fuels.

Contribution of natural resources by category

Figure 3: Contribution of resource types to domestic extraction, material footprint, and total environmental and socio-economic impacts in Brazil (2015)*

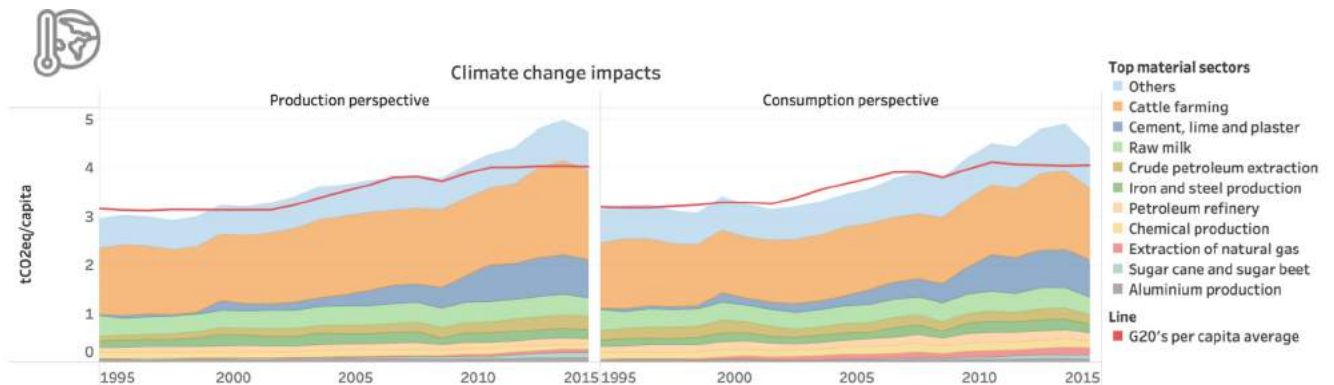


* Remaining economy refers to activities other than resource extraction and processing (e.g. manufacturing of finished products, construction).

Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

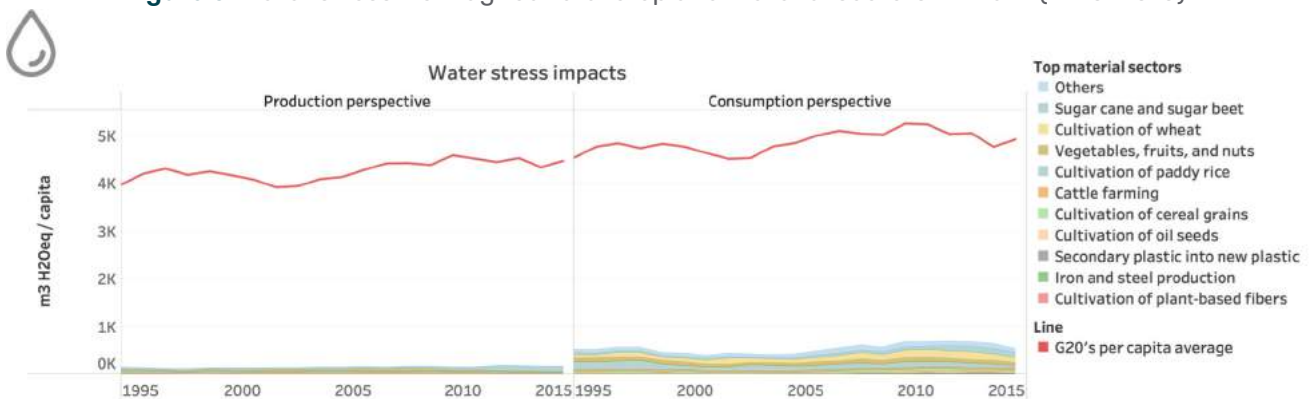
Key sectors and resources

Figure 4: Climate change impacts from material sectors in Brazil (1995–2015)*



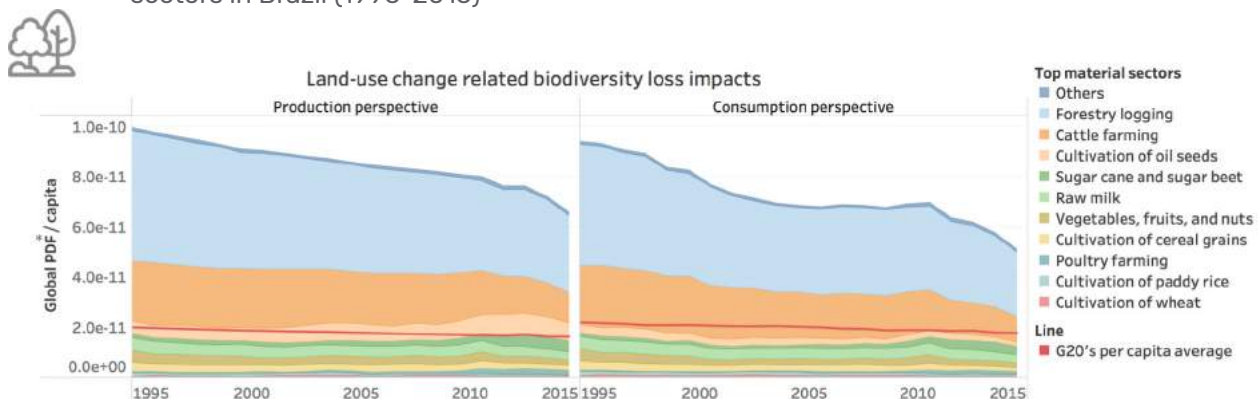
* Data after 2011 was nowcasted. Climate change impacts from deforestation were not included.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

Figure 5: Water stress from agricultural crop and material sectors in Brazil (1995–2015)*



* Data after 2011 was nowcasted.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

Figure 6: Land-use related biodiversity loss from agricultural crops and material sectors in Brazil (1995–2015)*



* Data after 2011 was nowcasted. Only biodiversity impacts of deforestation registered as land used for cropland or pasture were accounted for.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

The environmental effects of trade

Figure 7: Per-capita footprints of trade (above) and net traded impacts (below) in Brazil (1995–2015)*



* Data after 2011 was nowcasted.

Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

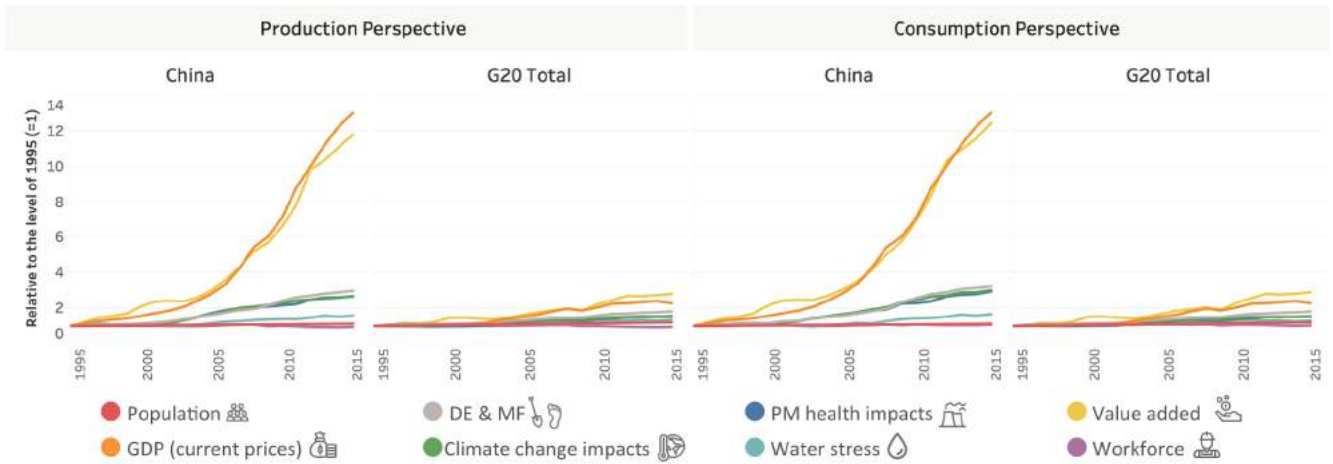
■ CHINA

Status and trends of natural resource use

During the 1995–2015 period, the Chinese GDP multiplied by 13 times while the population growth was modest. In 2015, more than a third of global resource extraction and 45% of total resources extracted in the G20 were intended for China. The material footprint, the impacts on health due to particulate material, and the impacts associated with climate change in extraction and processing tripled during this period and are currently much higher than the G20 average. Water stress grew by 50%. On the other hand, China has undergone a certain decoupling of the use of materials from their respective impacts on GDP growth, in addition to improving the ratio material intensity/environmental impact intensity (impacts/GDP). Extraction and processing of natural resources generate 70% of jobs in China, most being low-wage jobs in the agricultural sector.

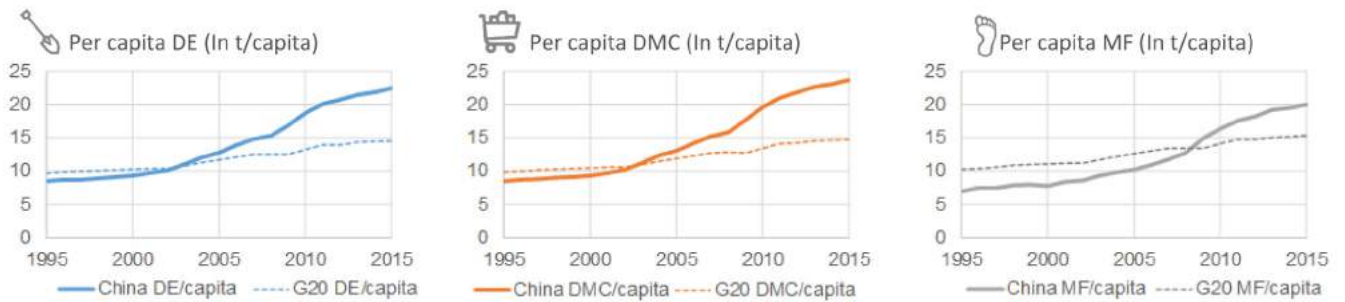
Over the past 15 years, the new level of Chinese infrastructure caused the greatest increases in impacts associated with climate change, particularly in the cement and steel industries. China has become the world's largest producer of steel and cement, contributing to more than half the GHG emissions of these sectors in 2015.

Figure 8: Socio-economic indicators, domestic extraction, material footprint, and material-related environmental impacts in China and in the G20 (1995 – 2015) *



DE: Domestic extraction (production perspective);
 MF: material footprint (consumption perspective);
 GDP: Gross Domestic Product;
 PM: (primary and secondary) particulate matter.
 *Data after 2011 was nowcasted.
 Source: IRP database, Exiobase v3.4 and Cabernard et al. 2019

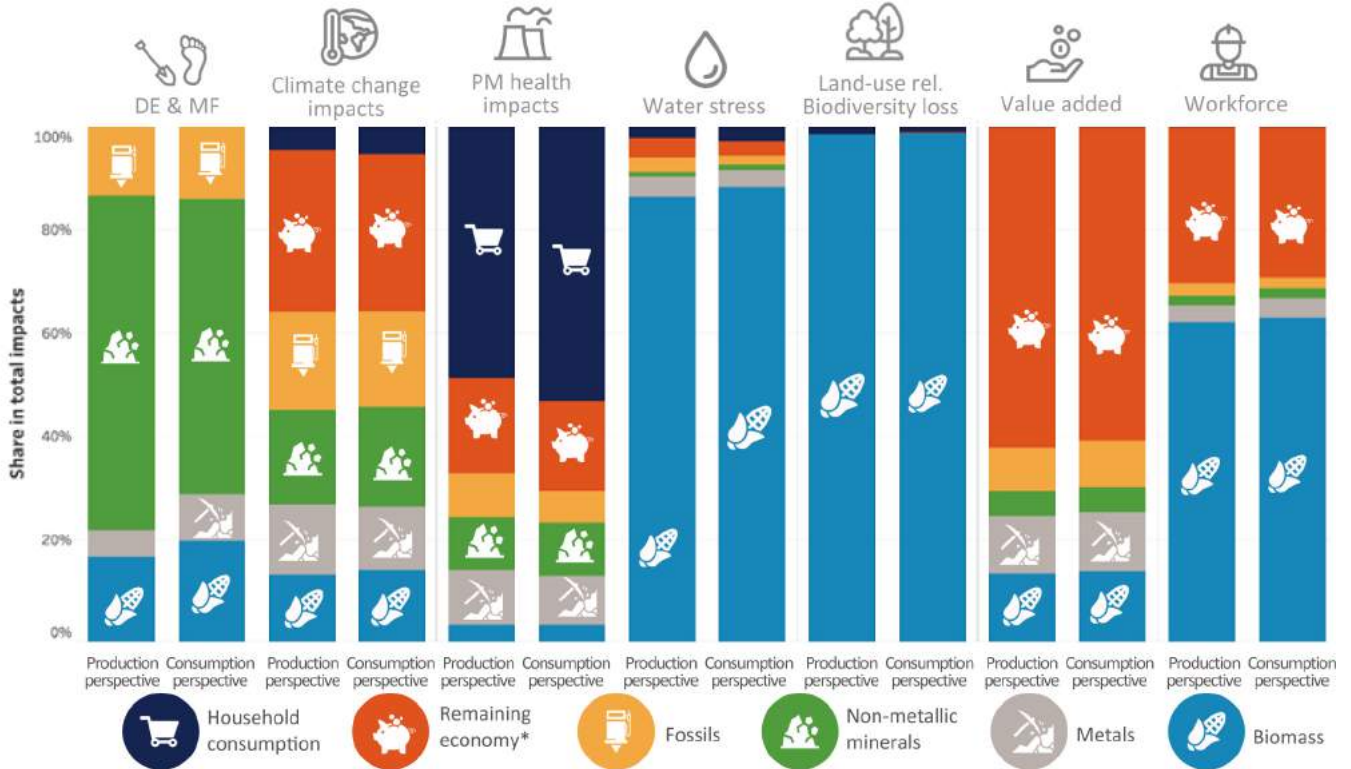
Figure 9: Domestic extraction, domestic material consumption, and material footprint per capita in China and in the G20 (1995-2015)



Source: IRP Database

Contribution of natural resources by category

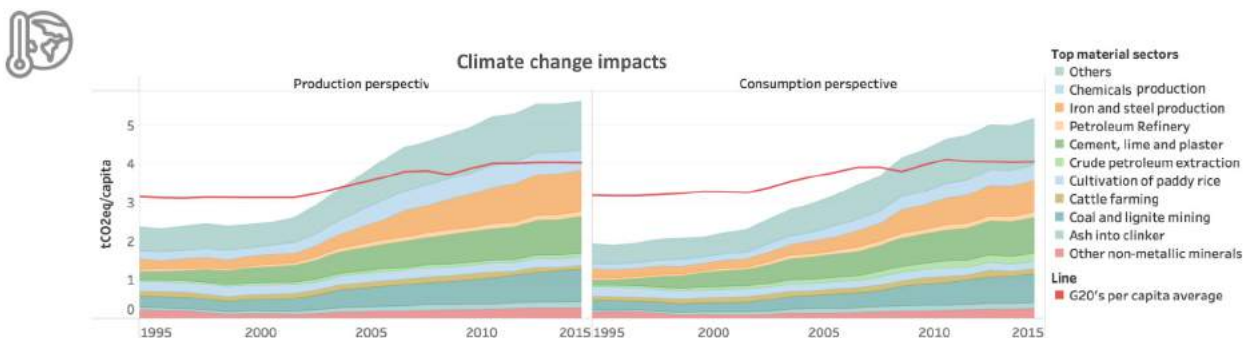
Figure 10: Contribution of resource types to domestic extraction, material footprint, and total environmental and socio-economic impacts in China (2015)*



* Remaining economy refers to activities other than resource extraction and processing (e.g. manufacturing of finished products, construction).
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

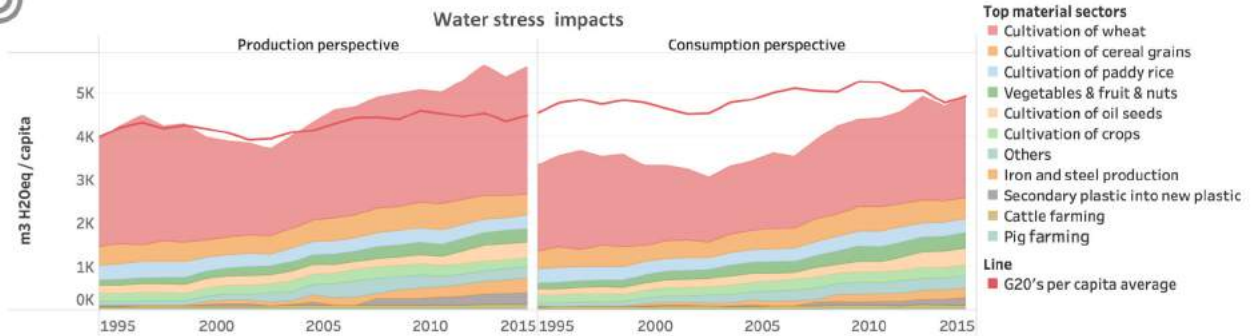
Key sectors and resources

Figure 11: Climate change impacts from material sectors in China (1995–2015)*



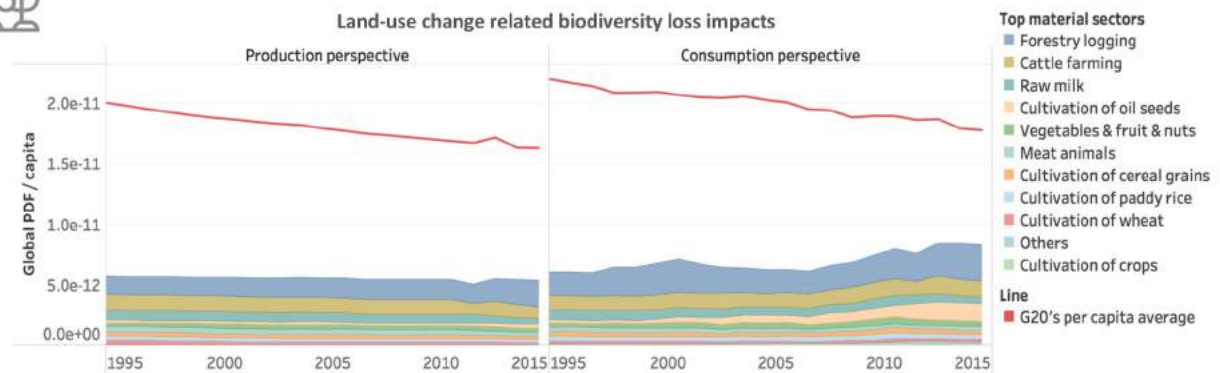
* Data after 2011 was nowcasted. Climate change impacts from deforestation were not included.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

Figure 12: Water stress from agricultural crop and material sectors in China (1995-2015)*



* Data after 2011 was nowcasted.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

Figure 13: Land-use related biodiversity loss from agricultural crops and material sectors in China (1995-2015)*



* Data after 2011 was nowcasted. Only biodiversity impacts of deforestation registered as land used for cropland or pasture were accounted for.
Source: IRP database, Exiobase 3.4, Cabernard et al. 2019

The efficient use of natural resources is the foundation of the circular economy, based on decoupling economic growth from environmental impacts. Circularity in the economy is essential for the sustainability of development and addressing climate change. Scientific analyses reveal how the efficient use of natural resources can positively affect the efforts to achieve the SDGs.

As indicated in the Global Resource Outlook (2019), decoupling the use of natural resources and ensuing environmental impacts from economic growth and human well-being is a key strategy that can contribute to attaining the SDGs. It is possible to achieve decoupling and ensure positive net environmental, social and economic gains (IRP, 2019). Recent scientific studies²⁷ recognize the potential for contributing to all the SDGs related to land restoration and rehabilitation, bearing in mind the factors that limit the potential for soil restoration. Analyses are modulated from the perspective of maximizing the conservation of natural capital according to the hierarchy of responses that initially prevent degradation, followed by reducing land degradation and then reversing it, through the restoration and rehabilitation of ecosystems.

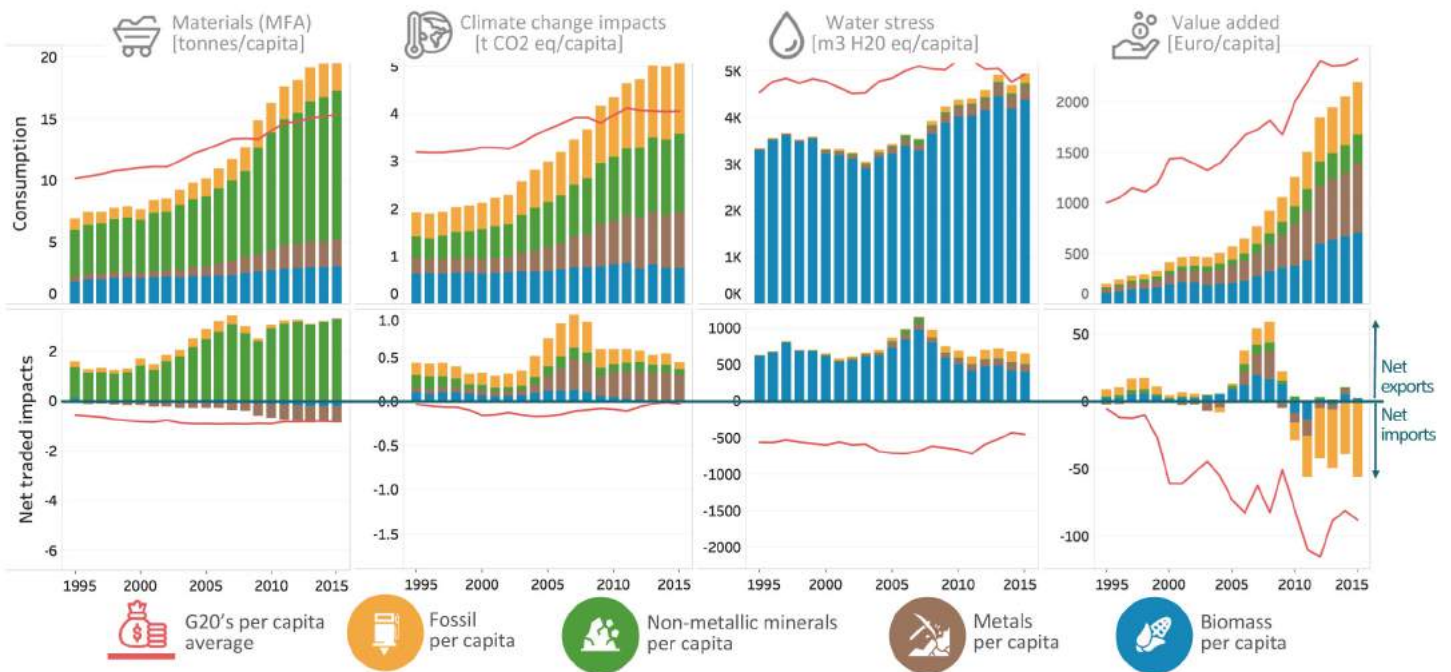
27. IRP (2019). "Land Restoration and the SDGs - the art of the possible". Herrick, J. and Abrahamse, T.; IRP (2019). "Resource Efficiency and Climate Change: material efficiency strategies for a low-carbon future". Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N.

Likewise, the efficient use of natural resources to assist in addressing climate change proves to be a promising and key opportunity to move forwards on attaining the 1.5°C target. There are significant opportunities for reducing GHG emissions associated with the construction of residential buildings or with the use of light vehicles. Public policies are needed to change the use of natural resources and to obtain the benefits indicated by science.

To promote socioeconomic transition and the necessary structural changes in its economy, China is adopting the efficient use of natural resources and the circular economy as priorities. The innovation-leading agenda is also considered strategic due to the requirements for training specialized labor and the potential for generating new jobs and industrial development.

The environmental effects of trade

Figure 14: Per-capita footprints of trade (above) and net traded impacts (below) in China (1995-2015)*



*Data after 2011 was nowcasted.

*Consumption: Impacts throughout the supply chain from goods imported and consumed in China.

*Net traded impacts: Difference between material-related impacts from a production and consumption perspective.

Source: IRP database, Exiobase v3.4, Cabernard et al. 2019

The international debate, negotiation and cooperation to address climate change gained new levels of political commitment when compared to the global emergence of this issue, in 1992, with the establishment of the United Nations Framework Convention on Climate Change-UNFCCC. During the five years after the negotiation and adoption of the Paris Agreement, but especially in 2019, with the declaration of climate emergency in the UN Climate Action Summit,²⁸ climate change gained unprecedented global importance and geopolitical expression. On the other hand, the pressure of global society for immediate action, the demand for government and private

28. The UN Climate Action Summit, held in September 2019, under the UN Secretary-General's leadership, marks the beginning of this political process of seeking to increase ambition in the reduction of GHG emissions and should last for 15 months. The Climate Action Summit seeks new commitments in three key tasks: (1) the promise of carbon neutralization by 2050; (2) demonstrate how signatory countries will build their commitments in line with the future ambition of zero net emissions; (3) new commitments to cut emissions, decarbonize the industry and adapt.

sector accountability, the effects of polarization between the United States and China and the complexity of advancing negotiations to establish the rules required to effectively implement the Paris Agreement, define unique political sensitivity for the countries that have the highest GHG emissions. The time for action is now!

With the expected conclusion of negotiations at COP 26 and the political priority accorded by the UN, the strategic dialogue of the Paris Agreement will be driven by the need for greater ambition. In the short-term (in 2020), a second round of commitments of the signatory countries will be sought to allow a more ambitious alignment so that the increase in global temperatures remains below 2°C, further ensuring efforts to achieve the target of 1.5°C.

Global measures to address climate change involve other aspects and actors, in addition to the so-called national narratives of governments. The corporate world also seeks to enhance its engagement. Major companies are undertaking commitments of low-carbon performance guided by the objectives defined by science, in line with the Paris Agreement. In the financial sector, processes comprise groups of investors that exert pressure on companies and investment funds by banning the funding of economic activities linked to increased emissions (e.g. coal-fired plants) or by restrictions imposed by insurers to undertakings that emit carbon.

In the area of multilateral financial cooperation, the Coalition of Ministers of Economy and Finance for Climate Action was created in 2019, endorsing the Helsinki Principles, that is, essentially aligning policies and practices with the Paris commitments. Nine multilateral development banks also agreed to the alignment in six areas, including emissions reduction and building of resilience to climate change.

The Paris momentum also mobilizes global sectoral initiatives in the areas of energy²⁹, cities and agriculture/land use. In the case of cities, these initiatives will promote new paths in transport/mobility, in civil construction and in the adoption of disruptive technologies in energy consumption, in urban resilience and in the redefinition of urban spaces. The Coalition for Urban Transitions³⁰ is seen today as the largest global initiative to support national governments in accelerating economic growth and addressing climate change by transforming cities.

In Asia, another urban movement is emerging to go beyond Intelligent Cities. The New Civilized Cities strategy is guided by people-centered, digitally based and sustainable lines of action and refers back to the scenario of 3 billion people migrating to urban centers, 500 million of them in China alone. It aims to go beyond energy and environmental problems in cities and is focused on social problems such as inequality, harmony between people, nature and society, on the circularity of resources, climate resilience and the search for convergence between the eastern and western values. China must be the starting point of a new era of cities for the next civilization (Yeosijae, 2019).

Addressing climate change is also gaining importance in other sectors, such as in agriculture with the Food and Land Use Coalition and the Global Commission on Adaptation, or the Initiative for Growth and Sustainable Finance, which promotes the engagement of the UN, G7, G20, One Planet Lab and multilateral development banks with a view to financing sustainable infrastructure.

In 2014, when the Joint Announcement on Climate Change was made by the United States and China, China stated, for the very first time, that it would limit CO₂ emissions in absolute terms and said emissions would peak in 2030. It stated further that it intended to increase the share of renewables in its primary consumption by 20%, also by 2030. It was the position of a developing country in dialogue with a developed country that, together, represent 45% of total global CO₂

29. The expectation regarding solar energy participation in the global generation of electric energy is to go from the current 2% to 22% in 2050 (Bloomberg NEF). In the case of coal, a global decline is projected, with wind and solar energy surpassing coal around 2032 (Bloomberg NEF).

30. The Coalition for Urban Transitions is a global initiative to support national governments to unlock the economic power of low-carbon and inclusive cities, led by the New Climate Economy, together with the WRI Ross Center for Sustainable Cities and the C-40 Climate Leadership Group (WRI Brasil, 2016). Its report "Climate Emergency, Urban Opportunity" (2019) concludes that low-carbon cities can reduce emissions and offer economic opportunities. The research that was carried out shows that investing in 16 low-carbon measures in cities could reduce global emissions by 90% by 2050 and has a net present value of almost \$24 trillion (Lazer, L. Haddaoui, C., Wellman, J. "Low-carbon cities are a \$24 trillion opportunity". Available at: <https://wirbrasil.org/pt/blog.2019>).

emissions from burning fossil fuels³¹. The geopolitical moment between the two countries was defined by rising tensions (cybersecurity, human rights in Hong Kong, the Chinese program to build islands in the South China Sea, among others) and climate change was not considered a top-tier issue by the foreign policy establishment of either nation, although their actions were marked by impasses in the context of the UNFCCC negotiations (Gallagher & Xuan, 2018).

In 2014, when the Joint Announcement on Climate Change was made by the United States and China, China stated, for the very first time, that it would limit CO₂ emissions in absolute terms and said emissions would peak in 2030.

From Rio-92 until present day, many changes have taken place in China in terms of implementing the climate agenda. Overcoming the initial understanding that climate policy would limit development was important for progressive change in thinking and for adopting policies geared to the solution of national problems with co-benefits for the global climate. Over time, many co-benefits were recognized: structural economic reform to boost cleaner industries, controlling air pollution in Chinese cities, development of the renewables industry, building an international reputation and image, increased access to international markets, and the acquisition and development of advanced low-carbon technologies (Hu & Guan, 2008). Supporting the climate change agenda reflects China's interest in transforming its economic structure, from largely relying on exporting manufactured goods (and importing commodities from the developing world) to developing products of higher value-added associated to an innovative economy.

The Chinese strategy for reforming its economy through innovation and a service-based approach allows innovative low-carbon policies and ambitions to expand under the Chinese development process. In 2012, China even put forward a proposal seeking to increase bilateral cooperation with the United States on global issues such as climate change, public health, food security, disaster prevention and energy (Gallagher & Xuan, 2018).

Responsible for 30% of global CO₂ emissions, China has an increasingly clear stance on combating associated climate risks through government directives and public policies (CEBRI, 2019b). This posture enhances its position of alignment with global trends, assigning priority to the implementation of the Paris Agreement, biodiversity protection and sustainability of its development process.

With the withdrawal of the United States from the Paris Agreement, China took, in 2017, the political decision to remain a signatory country and reaffirmed the direction adopted by its climate policy. The green dimension is referenced in different aspects of its development strategy: (a) promotion of a robust economic structure that favors green, low-carbon and circular development; (b) creation of a market-based system for green technological innovation; (c) development of a green finance system; (d) promotion of a revolution in energy production and consumption; (e) construction of a clean, low-carbon, safe and efficient energy sector (Xinhua, 2017).

These elements reveal the complexity of the evolution of the political decision to move toward a new economy (green, circular and low carbon), tackling climate change and using this transformation to promote an Ecological Civilization. The moment to implement Paris is approaching, with increasing pressure by global society for the adoption of concrete solutions to address the challenge of climate change. According to the IPCC (2019), the absolute halt of GHG emissions is the only effective solution for tackling the warming of the planet, i.e., to ensure a future with a temperature increase of only 1.5°C. The world is still far from achieving this goal.

31. The US was the largest GHG emitter in the 20th century. China accelerated its emissions in an exponential trajectory, surpassing the US in 2007. The political and economic dispute between the two countries has been called a "suicide pact", for disregarding the countries' compulsory emission mitigation commitments, condemning them and the world to the (catastrophic) effects of climate changes in the future.

Brazil is a strategic country for combating climate change. This importance is seen from several angles. Brazil makes use of specific favorable situations, such as a competent diplomacy, with proven negotiation skills, and a balanced energy mix of renewable and fossil fuels, to make strides in a new low-carbon economy. As it seeks economic reforms and international partners to invest in innovation, infrastructure and logistics, Brazil identifies opportunities to pursue national solutions with global co-benefits.

Brazilian CO₂ emissions have a challenging characteristic. Most emissions come from land use conversion, a result of illegal deforestation in the Amazon and Amazonian Cerrado. Public policies voluntarily adopted by the Brazilian Government, since 2004, to combat illegal deforestation in the Amazon and Amazonian Cerrado, led to effective emissions reductions and were recognized worldwide as a major contribution to combating climate change. Since then, the results of these policies have been showing oscillations in the rate of deforestation in the Amazon. In 2019, deforestation increased sharply, returning to the levels of ten years ago and revealing other political problems that need to be addressed.

Because the deforestation in the Amazon has a predominantly illegal origin (illegal public land grabbing and illegal mining), the loss of the forest brings no developmental gains for the region. As this is an illegal and criminal activity (defined as an environmental crime), it is further associated with tax evasion, slave and child labor, prostitution and illegal trade of gold and diamonds, as well as animal trafficking. The consequences go far beyond losing the tropical forest and jeopardizing its global ecosystem services. The Amazon region has the lowest HDI and regional GDP of Brazil. On the other hand, it holds within its borders the greatest biological diversity of the planet, with the largest program for protected areas (ARPA, with 60 million hectares under federal and state control), and one of the largest ethnic and cultural diversities of indigenous and traditional peoples in the world.

The challenge impelling sustainable development in the Amazon requires Brazil's strategic political decision to seek paths in synergy with the future of the world and not with its past, which resulted in the negative externalities that today jeopardize the existence of the forest. All paths and solutions for the Amazon, that are driven by possible futures and based on the integrity of the largest tropical forest in the world, will necessarily consider the following aspects:

- (i)** Defense and security aspects, including with respect to the interconnectivity of the Amazon Region (off-grid communication technologies, internet, satellites, drones).
- (ii)** Economic aspects, seeking to redefine the resource-intensive economy, including in relation to climate resilience, and build paths for the new economies (circular, green, low-carbon and bioeconomy).
- (iii)** Human development aspects, with particular attention to socio-cultural diversity, and associated land tenure, in addition to health and education policies.
- (iv)** Urban aspects, from the perspective of well-being, resilience, and quality of life in cities of the Amazon Region.
- (v)** Environment and innovation aspects, with a focus on climate solutions and low-carbon technologies, in addition to protecting the forest and the other Amazon ecosystems.

Emissions linked to economic sectors are mainly associated with agriculture and energy and, to a lesser degree, with solid waste. In agriculture, Brazil can undertake a "second agricultural revolution" driven by low-carbon agriculture and sustainable and green infrastructure. Implementation of the NFC should ensure consistent gains in carbon fixation through the restoration of native vegetation in permanent preservation areas. The prospect that land use could cease to be a carbon emitter to become a carbon sink can be real if overseen by robust and permanent policies for agricultural development and environmental sustainability. The progressive increase of Brazilian ambition in mitigating GHG emissions depends essentially on political vision and decisions guided by compliance with the regulatory framework and transparency of environmental and agricultural policies, in addition to advances in scientific knowledge.

To this end, it is necessary to ensure the continuity of investments in climate science in Brazil. It is important to better organize the available scientific knowledge as well as to set priorities to develop new knowledge on extreme weather events and on the impacts climate change on Brazilian production systems. It is vital to have tools that are adapted to national or regional realities to better understand the risks, vulnerabilities and resilience of economic and social processes: something akin to a science of transition.

Deforestation must exit the climate and agricultural development agendas in Brazil. Brazilian agriculture does not need to deforest to advance its global role in food security and in international food trade. Neither is there time to lose while other economic sectors formulate their demands, paths and challenges in a low-carbon scenario. The economic Brazil cannot delay its essential commitment to this agenda because of the “fog” of emissions from illegal deforestation. Focusing on this is maintaining dialogue with the past, and not with possible futures.

In the energy sector, it is necessary to agree on an energy transition strategy and on a vision for energy transformation. The possibilities in the areas of urban mobility, carbon neutralization associated with the use of fossil fuels, potential uses of bioethanol in aviation or cargo transport, the so-called Industry 4.0, bioeconomy and biomaterials (with its potential for carbon storage during the lifetime of the infrastructure asset), represent solutions to current problems and generate global co-benefits.

It is also essential that Brazil define strategies for implementing its NDC under the Paris Agreement, as well as new paths, together with society and government, to increase efforts for mitigating GHG emissions. This is a crucial condition to allow the integration of the green finance, carbon market and technological innovation agendas into national development paths for the low-carbon era. Implementing Brazil’s NDC can also be an opportunity to deepen bilateral cooperation interests, as is the case with China. It is necessary to show investors that there has been a change of direction. The Paris Agreement should be implemented by groups of actors. Moving forwards on addressing climate change means being aligned with new realities, new investment opportunities and businesses. The transition to a low-carbon world is not only a moral imperative; it is also an attractive path for the Brazilian economy and for the quality and sustainability of its development.

The interactions between climate change, nature and people are the basis of scientific findings and recommendations of the recent IPCC, IPBES and IRP reports. Understanding how the increase of anthropic GHG emissions is affecting the oceans, glaciers and terrestrial ecosystems, and that these negative climate effects tend to worsen as the planet’s temperature increases, is key to understanding the role of nature itself in finding solutions to climate change. The reports from the UN scientific panels place climate change as the key factor for loss of nature and reinforce the argument that nature itself provides the answers required to deal with the climate problem.

Nature and its contributions are essential to permit the survival and prosperity of humankind. The accelerated loss of biodiversity is related to five key factors: changes in land use, the direct exploitation of organisms, climate change, pollution and invasive alien species. It is also important to observe the connection between several of these factors and the worsening of the situation due to climate change (IPBES, 2019). The approximate 1.0°C increase in global average temperatures, which occurred since the pre-industrial era, still causes damage to global ecosystems. More than 30% of the world’s forest areas were lost since the pre-industrial era. It is expected that the damage to nature will worsen with the temperature increase caused by climate change.

However, nature protection and restoration can help in mitigating climate change and protecting human life. These are the so-called nature-based solutions (NBS): interventions that capitalize on the contributions of nature to achieve objectives of society and human development, and consider the protection of the environment, addressing climate change, food security and population growth. IPCC and IPBES do not use the NBS terminology, but describe similar concepts, including sustainable land management and green infrastructure. According to WWF (2019), NBS should be

used to respond to climate change. Furthermore, the Convention on Biological Diversity (CBD) highlights that “NBS with biodiversity safeguards are an essential component of the ecosystem-based approaches to the actions for adaptation, mitigation and disaster risk reduction”.

More than 30% of the world's forest areas were lost since the pre-industrial era. It is expected that the damage to nature will worsen with the temperature increase caused by climate change.

The CBD seeks new paths for the convergence of interests, commitments and action by the signatory countries to reverse the loss of biodiversity and to enable new narratives for the protection of nature based on the interconnection of agendas, in particular to cope with the impacts of climate change. The Convention is a global environmental and sustainable development agreement and it is structured as a platform that enables continuous evolution. With the exception of the United States and the Holy See, all other countries are signatories and it has two protocols – the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access to Genetic Resources. Its key instruments are the National Biodiversity Strategies and Action Plans, based on platforms negotiated among the parties. The political commitment is real. 189 countries (96% of the parties) took part in the fifth generation of national reports and submitted national strategies and plans, with 76% of the parties updating their targets since 2010 (the Aichi Targets).

2020 is the deadline for implementation of the Second Global Strategic Plan for Biodiversity, established in 2011 at a meeting convened by the United States and the United Kingdom, in London. The main objective of the Plan is to implement the Aichi Targets by 2020. However, it is clear that there is a deep chasm between the ambitions of the Aichi targets and the national targets translated in the plans and strategies of the signatory countries. There is a suboptimal level of implementation of the national targets in many countries and of their respective contribution to global commitments. These shortcomings are due to the non-incorporation of commitments to biodiversity protection in the economic and social sectors, leading to a lack of possibilities for public policies and of opportunities for engaging the private sector. The symptoms are very similar to what happens in the UNFCCC.

This scenario determined the decision to seek new arrangements to halt the accelerated loss of biodiversity on the planet. In addition to science-oriented action, based on the IPBES recommendations, the CBD is directed to promote transformative changes in man-nature relations, in the perspective of a sustainable and plausible future, and in the behavior of producers, consumers, governments and the private sector. The premise is that a better evaluation of the effects of disruptive technologies on possible transition scenarios can lead to progress in achieving the SDGs, sustainability and the objectives of the Convention itself. It also shows that new ways and means must be identified in order for the CBD and the Post-2020 Global Biodiversity Framework to jump start this change.

China, which is preparing to host COP 15, plays a strategic role guided by enabling the success of the Conference itself and achieving an agreement on the Post-2020 Framework, with a period of implementation of up to 30 years. This means that the world must agree to act on a call for new commitments to protect nature and on the search for synergy of actions and results in tackling climate change and promoting sustainable development.

As to the Brazil–China cooperation, this is a strategic moment for the two emerging and megadiverse countries, who are also important actors in food security. The sustainable use of biodiversity is a key theme of the CBD, but generally lacks effective results. Agriculture is the main economic sector that uses biodiversity and ecosystem services, but it is also the main cause of degradation and loss of biodiversity. China and Brazil are connected by this sector, by their common interests in a bilateral cooperation which is successful in the trade of agricultural commodities and has promising prospects for developments in other areas, such as investments in infrastructure and technological innovation. A structured action between the two countries

to advance solutions for food security and reduce loss of biodiversity, further ensuring nature conservation and ecosystem services as a structural part of a sustainable and resilient food production system, suggests an innovative path of national benefits and global co-benefits.

Other possible areas of interest are advances in agroforestry and agroecological systems and removing deforestation from global agricultural supply chains, the latter being a transformative agenda with great potential for global benefits. Brazil–China cooperation in biodiversity could also influence other emerging economies, seeking synergies with the climate change agenda (BASIC Group) or in the Group of 20 megadiverse countries, which represent 29% of the terrestrial coverage and more than 50% of global biodiversity and endangered species hotspots.

In addition to political will, this step requires a good capacity for governance of the bilateral cooperation between Brazil and China and a strategic vision of possible paths to implement a Post-2020 Framework. Therefore, it is important to know Brazil's guidelines and ambitions in this agenda, so that prospects are translated into real opportunities.

CONCLUSIONS

In just 60 years, humankind began to move closer to the maximum limit of the systems and processes of the biosphere and geosphere, which regulate the state of the Earth System. Science suggests that we are living the Anthropocene, a period marked by the transformation of the planet, with human beings as the driving force. For the first time in the history of humanity, we are facing a global threat that places our way of living and being in jeopardy. Our ability to prepare ourselves for the future is doubtful. A future as linear projection of the past also seems to be out of the question. How, then, should we deal globally with the future?

Dealing with the future also requires progress in caring for nature and urgently seeking ways of halting and reversing environmental degradation. There is no way of controlling environmental risks. It is necessary to change the direction of the global economy and deal with the social inequalities and political exclusion that deeply mark the asymmetries between countries and societies. A recent report by the World Economic Forum³² identified climate change and biodiversity loss as two of the highest global risks in terms of potential impact, in addition to relating them to other risks such as voluntary migration, natural disasters, water crises, hunger, social and political instability and collapses of systems of government. Another Forum report pointed to climate change as the greatest threat to health in this century (Steiner, 2019).

Environmental issues are gaining strategic importance in the global development agenda of the 21st Century and need to be addressed from both multilateral and bilateral perspectives. The urgency of the present requires renewal and innovation in international cooperation, even in a world in transition in its geopolitical, economic and climate order. The multilateral sustainability agenda built at the end of the last century imposes an unprecedented political reality to humanity: the need for coordinated action between different societies and cultures, guided by a sense of common responsibilities and commitments in the face of development challenges.

Despite the heterogeneity of countries, societies and cultures, the appropriate responses to environmental problems that affect the planet highlight the importance of the global order. These problems affect everyone in all corners of the world, and no country or group of countries alone holds all the solutions. Thus, all existing successful paths, as well as new ones that bring countries and societies together and that seek to establish permanent means of development and political and social inclusion, should be the object of the gaze of international cooperation. We need to change; we must be bold in seeking new ways of enabling the sustainability of global development and adaptation to the new times, particularly characterized by vulnerabilities and risks associated to climate change and the planet's resilience.

The world is changing, and this includes the shift of its economic and demographic center from the West to Asia (Frankopan, 2018). The pressure to cope with local environmental problems is growing and guided by the search for quality of life and new development opportunities in Asian societies. The solutions to environmental problems facing the world today will be significantly addressed by fostering the sustainable development of the region. Other developing countries can make use of and benefit from these solutions, whenever applicable, oriented by national interests

32. World Economic Forum. "Global Risks Report". Switzerland: 2019.

that shape their paths toward economic growth and environmental protection. Brazil, being a country of the far West and with a solid partnership with China, could promote strategic ambition for greater efficiency in the use of its natural resources and conservation of the environment, according to its own development perspectives and interests.

As emerging countries with well-defined mutual cooperation interests, Brazil and China can exert an important role in seeking solutions to global environmental problems through the implementation of their economic, commercial and technological development policies. Approaching environmental issues within the scope of the bilateral cooperation, especially in terms of integrating the issue into the development agenda of both countries, can also be understood as a singular opportunity to deepen Sino-Brazilian relations. China is a central player in the reversal of GHG emissions and Brazil has various possible solutions for its development based on the paths to a low-carbon economy. Both are countries rich in biodiversity and with significant challenges in the protection and sustainable use of this biological wealth. The prospects for this cooperation may be addressed in the context of international image and multilateral action, both regional and global. They must also be modeled on specific, robust and continuous bilateral interests that provide measurable benefits in the short and medium-terms within the development and environmental protection agendas, *stricto sensu*.

As emerging countries with well-defined mutual cooperation interests, Brazil and China can exert an important role in seeking solutions to global environmental problems through the implementation of their economic, commercial and technological development policies.

Even without specific institutional arrangements within the COSBAN, the current possibilities for deeper dialogue and cooperation on issues of environment are real and timely. The approach should initially be focused on the economic sectors, where technology, innovation and change of market behavior are recognized as vectors of transformation, economic growth and global competitiveness. In addition to these aspects, in order to move forward on establishing mutual interests in environmental issues, it is also important to explore possible opportunities that arise from ongoing bilateral cooperation. Thus, the process for consultation and dialogue should allow the proposition of a platform of interests and the design a roadmap for actions, players, results and international insertion, including dialogue with multilateral institutions.

There are many possibilities for designing Brazil-China relations in possible futures. Both countries will probably undergo economic transformation processes in the coming years. Brazil will continue to attract growing investments in infrastructure and China will remain a strategic partner. In this scenario, it is important first to investigate the potential for addressing environmental issues within the agricultural and urban economy sectors, for mutual interests in infrastructure and logistics, for the emergence of green markets and for the interests of international investors. The potential for cooperation must not be analyzed in the traditional manner, based on specific areas or economic sectors, but rather on the possibilities of daisy-chaining multiple interests and benefits.

International cooperation on environment has a long tradition, primarily guided by the interests of the environmental constituency. The proposal presented here is guided by three premises established based on current political and institutional specificities related to Brazilian public environmental governance:

- a)** The reorganization of the public environmental governance system at the federal level, with parts of its institutional responsibilities being attributed to other federal agencies or subnational players;
- b)** The demand of different economic sectors for sectorial public policies that address

environmental issues such as climate change, hydric security, ecosystem protection, non-degradation and the end of illegal deforestation; and

c) The perspective for engagement of the private sector and the demand for environmental regulation and international investments.

Considering these premises, the four possible paths for bilateral dialogue on the environment are suggested, tacking into account current cooperation interests in the areas of agriculture, infrastructure, energy, finance, cities and science, technology and innovation. In fact, the linkages between topics aim to suggest new ways of approaching environmental issues according to investment interests and strategies for economic growth and development. Environmental issues would be addressed within the context of these choices and oriented toward advancing environmental sustainability - no longer through pilot initiatives, but on a larger scale and dealing with the trade-offs inherent to decision-making processes. Furthermore, the enchainment of topics and respective agendas is also suggested according to their potential co-benefits for the global environmental agenda. Pragmatic bilateral cooperation should allow the formulation of the right questions so that environmental issues are dealt with in a way that effectively contributes to address challenges such as productivity gains in economic sectors, decision-making processes based on science and innovation and increasing international insertion.

These linkages do not exclude other interests, nor are they exclusive. They are proposed in this way to allow other political, economic and social constituencies to enhance the bilateral dialogue and to identify proposals that positively affect other common interests. Brazil and China have distinct processes for development planning and decision-making. As strategic partners in environmental issues, they may establish innovative ways of enhancing and strengthening regional cooperation or South-South cooperation with other developing countries.

Brazil and China can assume new political leadership in the context of building a strategic vision of the Global South influenced by the concrete and pragmatic insertion of environmental issues in the economic development processes of emerging countries. The ambition would be to establish, through cooperation among countries of the South, a leading role in environmental issues and in the sustainable use of natural resources.

Within the Brazilian context, three areas mentioned in the proposed agenda for bilateral environmental cooperation can also deliver more effective outcomes in terms of national interests. The first involves potential international investment interests in the Amazon. The second involves aspects related to the challenges of energy transition in China and energy transformation for both countries. And the third involves the challenges of sustainable agriculture in the context of global food security and food safety. These issues directly affect the global agendas of climate change, biodiversity and natural resource use, and are in the immediate interest of most developing countries.

In the case of the Amazon, it is important that Brazil provide clarity in its vision of regional development and of the potential for sustainable appropriation of natural resources in the area, based on ending deforestation and reversing the environmental degradation of forest ecosystems. This vision must be guided by the integrity and defense of its territory, forest protection, reduction of social inequality, human development and the end of poverty, improved urban life, and by the emergence of new economies and of a new environmental agenda focused on the efficiency of subnational public governance.

The interests of the Brazil-China partnership in the Amazon region should not be limited to the primary export of agricultural commodities, iron ore and oil. It must go further, structuring and adding value to production chains and implementing instruments that lead to a fairer and more transparent trade in the eyes of consumer markets. One of the driving aspects of economic globalization has been the transformation of traditional natural resource and energy management into an open field of new directions and forms of capital flow (Ioris, 2011).

In infrastructure, there is growing potential for attracting international investments and

these should seek the decoupling of environmental impacts from economic growth interests. Indirect environmental impacts and the integrity of nature should also be considered. Mutual interest infrastructure projects cannot be seen in isolation and separated from the dynamics of environmental impacts over time.

Cooperation should also consider the potential for green infrastructure, in particular the restoration of forests and ensuing potential for sequestering carbon from the atmosphere. The end of deforestation, the restoration of degraded areas (in compliance with the NFC) and natural regeneration grant the Amazon the potential of being a carbon sink, in the context of global carbon neutralization. This perspective can be strategic in a process of energy transformation and of dealing with climate change.

The structured insertion of environmental issues in the regional development agenda of the Amazon requires a diverse, multiple and flexible approach, based on a broadened perspective in relation to its various territories. Its environmental, territorial, cultural and social diversity requires solutions that conciliate development and environmental protection and are shared with other countries in the Amazon Basin. The agenda of mutual interests can be broad and diverse, ranging from paths toward new economies (bioeconomy, circular economy and low carbon economy), technological innovation, urban well-being, infrastructure and logistics, until the renovation of strategic economic sectors such as mining and forest fostering.

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We cannot ignore the interests of China in advancing the dialogue on the BRI. The initiative is crucial for the Chinese in terms of their global insertion, but it also requires mutual understanding among partners on the possible routes for the future. This understanding should be the guideline of strategic partnerships in international cooperation and not of strategic asymmetrical dependence. It is necessary for Brazil to own its narrative on national infrastructure, as well as regarding its regional integration interests, particularly with regard to the Amazon and Plata Basins. South America is a region rich in natural resources, with peaceful borders consolidated for over a century and with incremental interest in a partnership with China, in particular in the areas of infrastructure, agricultural commodities, minerals and energy. For the Chinese, the BRI belongs to the world. It is considered to be the largest platform for international cooperation today. This is not, however, a geopolitical or military alliance, nor a “pro-China club”. For China, the BRI is directed toward international economic cooperation and the improvement of global governance (Frankopan, 2018).

In the area of energy, prospects for cooperation are also varied. To ensure greater objectivity, Brazil needs to establish its narrative for the energy transition, in particular with regard to the ambitions for renewable energy sources and natural gas. The presence of Chinese companies in this sector is significant in electricity generation and shows promise in oil exploration, in addition to the growing potential for cooperation in the field of renewable energies, particularly solar energy. The vision of sustainability aligned with energy security in the medium and long-term should not be set aside.

A possible deepening of Sino-Brazilian cooperation in energy may result in impacts (positive or otherwise) on the demand for greater cuts in GHG emissions. According to China’s NDC, it is expected that by 2030 it will have reached its emissions peak. Brazil, on the other hand, has various alternatives for its energy transition given the advantages of its current energy matrix. Bilateral arrangements could, for example, establish new levels of access to innovation in urban and cargo mobility for Brazil, resulting in impacts on investments and on electricity supply and demand scenarios. A similar situation regarding the digital transformation and off-grid access to

electricity can determine new efficiency gains for the Brazilian electrical system and social and economic benefits for specific regions. These possibilities are linked not only to regulation and the necessary investments in the electricity sector, but also to innovation access and to the design of business models that are sustainable in time and adapted to the territory in question.

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It cannot be left unnoted that Brazil's NDC, though ambitious and structured to enable, in a conciliatory manner, advances in the energy and agriculture sectors, still requires an implementation strategy bearing in mind the imminent expiry of the deadlines established within the scope of the Paris Agreement. The next steps in the global climate change agenda involve increasing ambition to cut GEE emissions and implementing structured policies to promote climate change adaptation. Without clarity as to where the country is heading in terms of the ambition to tackle climate change, Brazil could be compromising, in the short-term, new possibilities of cooperation and international investments. Bilateral cooperation with China on climate change could be directed toward an agenda of concrete results that contribute to increment the political role of emerging economies within the scope of BASIC, G20 and in association with other blocs, such as the OECD. It is also worth giving special attention to the possibility of strengthening dialogue and cooperation between countries who are food producers in order to promote a more efficient approach to tackling climate change and the challenges associated to the implementation of the Paris Agreement.

In agriculture, cooperation on environment directs the interests to meet the challenges of low-carbon tropical agriculture in the next forty years, with a strong demand for technology, innovation and infrastructure. It is important to recognize the challenges of productivity and competitiveness, as well as the new demands of consumer markets for products not associated with environmental degradation but with sustainable production (including in relation to production chains).

The food security and food safety agendas (considering but also going beyond phytosanitary standards) are of global relevance. They present one more opportunity to leverage the benefits of Sino-Brazilian cooperation in terms of the joint development of low carbon agriculture projects, technologies, knowledge, capacitation and learning based on the sustainability standards of production and supply chains with other developing countries that are food producers. They also represent a strategic possibility to be explored in the sense of achieving goals related to sustainable agriculture and hunger eradication.

There are many alternatives for cooperation, and they involve not only technological and innovation instruments, but also access to data and information by consumer markets. The traceability of production chains, as well as the greater scientific and technical knowledge of their impacts, suggest a new threshold for environmental control of production activities and for the competitiveness of Brazilian agriculture. China should not be perceived only as a consumer market, but also as a partner of Brazil in the pursuit of new routes for innovation and fairer international trade. Possible environmental benefits include gains in biodiversity protection and in the efficient use of natural resources, particularly water for irrigation, in addition to boosting a mitigation and adaptation agenda for climate change.

There are many alternatives for cooperation, and they involve not only technological and innovation instruments, but also access to data and information by consumer markets.

Cities and the so-called urban economies are a challenge for both Brazil and China. They are both continental-sized countries, although with differing populational and urban realities.³³ Alternatives can embrace not only investments in environmental sanitation, with reform of the sector in Brazil, but also the sharing of solutions for public transport, urban mobility, green buildings, efficiency and circularity in the use of natural resources in cities, control of water and air pollution, digitalization of services and more efficient urban environmental management systems. The linking of urban agendas, including with respect to cargo transport, connections to the rural environment and the concentration of the urban population in Brazil, can confer expectations and facilities that are important for bilateral cooperation, with ensuing local and regional environmental gains.

It is also important to emphasize the urgent demand for adaptation of urban ecosystems to climate vulnerabilities, in particular concerning increasing exposure to extreme weather, and the need to preserve the resilience of urban and natural ecosystems as a priority aspect of strategic interest to strengthen the bilateral cooperation. Even though in different environmental, social, economic and political realities, the urban agenda in China is considered strategic to advance the country's economic development, social equity and the well-being of the population. Brazil has multiple demands concerning cities in the Amazon, metropolitan regions that are densely populated and represent strategic consumer markets, or the connectivity of medium-scale cities situated in agricultural areas to ports and cities in border regions. Technological innovation in services, public administration, digitalization and communication is a challenge for urban management, including in relation to protecting the urban environment with green areas and water reserves.

Cooperation between Brazil and China on environmental issues represents more than an opportunity. Its potential to exploit new rationales of cooperation and development narratives is challenging. The possibilities are numerous and can be guided by local, regional or national interests, with potential global impacts over time. However, its robustness and sustainability, considering the diversity of both countries' territories, require scientific and technological knowledge.

The opportunity to advance in regional cooperation among developing countries is a strategic path to ensure that the gains associated to the Brazil-China partnership do not remain limited to national and bilateral benefits. The possibility of building a coordinated leadership of countries in the South, determined not only by detaining natural resources and biodiversity assets, but also by the capacity of leading the environment and resource efficiency agenda, should not be set aside. It boils down to a repositioning of the scope and ambition of the bilateral relationship to leverage gains in South-South cooperation and reaffirm the global role of Brazil and China in the sphere of multilateral environmental cooperation.

To address global environmental problems and to adopt nationally designated solutions, it is essential, for example, to rely on science directed and applied to the challenges inherent to a tropical country like Brazil: a science of transition that allows faster progress on the sustainability of its development. In today's urgent scenario, it is important that a Sino-Brazilian partnership in environment be based on a science-policy oriented approach, with multiple national benefits and global co-benefits.

In recent years, the environment was being conducted in Brazil as a political and economic asset, an expression of soft power in foreign policy and as a key issue for the well-being of its society and for addressing the challenges of its development process. The new world that emerges places the environment as one of the key issues of this century. Brazil needs to advance in its processes for land use; appropriation of natural resources; energy, food, water and climate security; industrial, urban and social development; and in its business, production and consumption practices. It

33. According to IBGE (2018), over half of the Brazilian population lives in 6% of the country's cities. Just 317 municipalities, out of 5,568, concentrate a population of 118.9 million people (57%) out of 208.5 million inhabitants in the country. The municipalities with more than 500,000 inhabitants (of which there are 46, that is, 0.8%), concentrate 31% of the Brazilian population, which is equivalent to almost 65 million people. In 2019, IBGE announced that Brazil's population is of 210.1 million inhabitants. The estimate for the Chinese population is 1.433 billion, giving China the title of world's most populous country, with just over half of that population living in cities (Wikipedia, 2020).

should use international cooperation on environment to promote advances in its development agenda and adapt to the emerging world.

Cooperation on environment can lead to a more permanent and continuous alignment of interests with China, since a possible strategic partnership may also require coordination of actions in other sectoral policies. It can also be perceived as an opportunity to perform with originality in the global environmental agenda, with better control over the narratives and results. In other words, as a path to telling new stories about the future, and no longer restating the past. Brazil and China have much to gain from a well-structured partnership on environmental issues. The Planet also.

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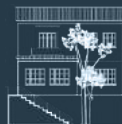
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