

Global Sustainability and Structural Power: The Case of Bioeconomy in a Transitional World

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ABSTRACT

This article studies the incidence of the bioeconomic agenda within the ongoing technological and scientific revolution and its link with inter-regional relations, in the framework of an international system in transition. In this sense, the theory of structural power is proposed as an analytical tool to observe the power relations that can emerge in relation with the development cooperation processes and the consequent configuration of new governance articulations related to sustainable development. It also reflects on the opportunities and challenges concerning this productive paradigm and it focuses on the upcoming relevance of its agenda for the east-west relations between Russia and the European Union. The article argues that although Russia is not among the most important global competitors in the field of bioeconomy, its structural qualities gives the country an important relational power in its connections with other countries/regional configurations. Within the framework of its relations with the European Union, the development of the bioeconomy emerges as a possible scenario of negotiation and dialogue that may renew the currently conflicted bilateral agenda in the face of future development challenges. That would create possibilities to boost confidence in the sharing of scientific and technological information, and also to forge mutually beneficial inter-dependencies. Regarding the methodological strategy, the general approach consists of the premise that global systemic changes generate either incentives or restrictions for technical cooperation around scientific and technological innovation. In this framework, global changes refer both to globalization, as well as to the technological revolution and the urgency around contemporary socio-ecological challenges, and the growing importance of the bioeconomic paradigm in the multilateral spheres of international cooperation. The methodological design is based on a qualitative-exploratory case study, with an explanatory aim.

Keywords: International cooperation, structural power, bioeconomy, Russia, European Union

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Глобальная устойчивость и структурная власть: место биоэкономики в переходном мире

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РЕФЕРАТ

В данной статье исследуется место биоэкономической повестки дня в рамках продолжающейся технологической и научной революции и ее связь с межрегиональными отношениями в рамках переходной международной системы. В этом смысле теория структурной власти предлагается в качестве аналитического инструмента для наблюдения за отношениями власти, которые могут возникнуть в связи с процессами сотрудничества в целях развития и последующей конфигурацией новых артикуляций управления, связанных с устойчивым развитием. В нем также рассматриваются возможности и проблемы, связанные с этой продуктивной парадигмой, и акцентируется внимание на предстоящей актуальности его повестки дня для отношений Восток — Запад между Россией и Европейским Союзом. В статье утверждается, что, хотя Россия не входит в число наиболее важных глобальных конкурентов в области биоэкономики, ее структурные качества дают стране важную реляционную силу в ее связях с другими странами / региональными конфигурациями. В рамках его отношений с Европейским Союзом развитие биоэкономики

выступает как возможный сценарий переговоров и диалога, который может обновить двустороннюю повестку дня, которая в настоящее время находится в противоречии, перед лицом будущих проблем развития. Это создаст возможности для повышения доверия к обмену научной и технической информацией, а также для создания взаимовыгодных взаимозависимостей. Что касается методологической стратегии, то общий подход состоит в том, что глобальные системные изменения создают либо стимулы, либо ограничения для технического сотрудничества в сфере научно-технических инноваций. В этом контексте глобальные изменения относятся как к глобализации, так и к технологической революции и актуальности решения современных социально-экологических проблем, а также растущей значимости биоэкономической парадигмы в многосторонних сферах международного сотрудничества. Методологический дизайн основан на качественно-исследовательском тематическом исследовании с пояснительной целью.

Ключевые слова: международное сотрудничество, структурная власть, биоэкономика, Россия, Евросоюз

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Introduction

The scientific and technological innovations in relation with sustainable development are issues of utmost importance for global affairs in the contemporary world. That is mainly in terms of the confection of public strategies regarding the improvement of productive activities, in times of the scientific and technological revolution that is currently taking place, in which the bioeconomic paradigm is gaining prominence. Additionally, it also has an impact in geopolitical and geoeconomic terms, taking into account the upcoming wave of rules and standards towards a more greener economy that are being promoted and debated in a multilateral level, in the framework of the 2030 global agenda. These processes are going to have profound impacts on the international insertion of several regions and countries, in a global context determined by globalization instability and the return of a more regional oriented productive economies [12]. In this sense, in times of growing uncertainty in the international system and the structural transitions of power towards a more multipolar world, this article focuses the theoretical analysis on the topic of international cooperation processes in relation with bioeconomy, in order to bring some insights regarding its geopolitical implications in inter-regional relations. Then, it reflects on the opportunities and challenges concerning the implications of the bioeconomic agenda. Finally, it focuses on the upcoming relevance of this agenda for the east-west relations between Russia and the European Union.

A critical perspective of globalization

As Bizzozero warns, the intensification of global processes and the consequent globalization of capitalism in recent decades has generated a series of changes in the global productive structure, which translated into a strong conditioning of the response of States in the international system [3]. In this sense, the reconfiguration of production processes and the complexity of power structures at the global level have raised new implications regarding the resignification of national borders in the face of increased circulation and consumption of goods, services and capital flows. From a critical perspective regarding the intensification of capitalist globalization, Harvey argues that this has put pressure, particularly in the countries of the Global South, on processes characterized by a reduction in the size of the State in its role as guarantor of the provision of public goods, through the commodification of common goods [15]. As the author

states, "in those areas where there is no market (such as land, water, education, health care, social security or environmental pollution), it must be created, when necessary, through state action" [15, p. 8].

On the other hand, the productive changes related to the scientific-technological revolution of the last 10 years have promoted an increasingly transnational reconfiguration of global production dynamics, which generates impacts on socio-ecological systems [5]. In this framework, the increasingly prominent role of transnational companies in the negotiation processes between States is highlighted, which has intensified the north-south character of the links between those countries that are on the technological frontier and those that have specialized their production in the primary sector [5]. As Drago expresses, globalization has accentuated the concentration of power of transnational companies through the expansion in various territories, which conditions their different forms of occupation and exploitation [10].

In this sense, the processes of building power between the different units of the international system with asymmetrical structural characteristics refer to the definition or questioning of the rules that less developed State actors establish, which leads, in certain circumstances, to pressure to modify regulations that have to do with natural assets [5]. In this context of deepening global processes, Carrau alleges that, within the framework of the so called "neoliberal globalization", new rules are proposed that favor the privatization of nature and public services, as well as the promotion of productive investments that can damage ecological systems [5].

Taking into account the new global production system configuration, this is characterized by the fragmentation of the productive units and their delocalization on behalf of the transnational enterprises, which organize their productive chains in accordance with the advantages offered by countries or group of countries [16]. In this sense, the productive segmentation can be differentiated into four characteristic links of the value chains: 1) the countries in the technological border, which are specialized in research and design, leaders in the industrial sector and know how referred services; 2) those that develop complementary technologies and products of medium and high technology services; 3) those who ensemble the production and produce low technology goods; 4) and the raw materials providers. The growing international specialization of several regions in the lower links of the agricultural global value chains is directly related with the intensity of the natural resources usage, applied to the agricultural production [19]. The fact that if these resources (land, water, biodiversity) are not used in a sustainable way, may put its availability into question for future generations.

In this context, the productive specialization in the agricultural sector implies the emergency of new challenges related to the socio-economic and ecological sustainability, which is directly linked with the global challenges of food security and climate change. On the other hand, other risks are related to the technological backwardness with regards of being part of the ultimate link of the global value chains. This implication defies countries in the emerging world to promote the innovation in science and technology, so as to sophisticate the production and therefore reach upper stages in the global value chains.

Structural power

These processes and its geopolitical implications can be observed through the lenses of the structuralist paradigm of International Relations, whose scholars study the relations of power in international affairs concerning the establishment and control of certain structures [17]. Among the most prominent authors is Susan Strange, who defined the concept of structural power as the ability "to decide how things shall be done, the power to shape frameworks within which States relate to each other, relate to people,

or relate to corporate enterprises" [25]. In this sense, the author warns that structural power implies the ability to define and design the political agenda, arguing that power over structures is more important than power over resources.

Additionally, Strange raises a reconsideration around the importance of issues related to military capabilities in the study of controversies between countries in the post-Cold War international system [26]. In this way, the author distances herself from the concepts related to soft or hard power, since she refers to a notion of power as a dispositional concept. On this, as Volgy and Imwalle stress, Strange maintains that the notion of power between States is not only constituted in ideational or material terms, but also that structural power can define and shape the institutional frameworks of which the States are part of [28]. Moreover, the authors argue that structural power becomes what Steven Krassner calls metapower, in terms of the ability to change the rules of the game, as well as highlight how the structural capabilities of a State can define its hegemonic projection in the international system [28]. Therefore, the structure can become a source of power and through it, those actors with greater structural capacity can shape the behavior of other actors.

In addition, Susan Strange posits structural power in terms of the ability of the actors in the international system to influence the configuration of the rules of the game, within the framework of which both States and non-state actors relate to each other [25]. Moreover, from Strange's perspective, there are two types of power: relational power, based on the actor's ability to defend his interests in a given framework of interactions; and structural power, which refers to the ability to define the rules that determine the structure according to the convenience of the predominant actor [26]. Therefore, the theory of structural power focuses on this type of power, from which Strange locates four primary structures, these being security, production, finance and credit, and knowledge, ideas and beliefs. According to Strange, although these structures are interdependent and have a different distribution of power, the author tries to understand who benefits as a result of the structural changes in the international system. Likewise, Strange warns of the existence of secondary structures, such as those referring to energy, trade, transportation and welfare [26]. As Cohen alleges, from this perspective her analysis focuses on the link between authority and the market, referring to aspects of what she establishes as certain basic values of any society, such as wealth, security, freedom and justice, so as to understand how their combination varies according to the power links [9].

International cooperation and structural power

Regarding the characterization of international cooperation processes, the concept of "complex interdependence" developed by the authors Keohane and Nye stands out in particular, which gives cooperation a key role in the link between the various actors of the international system. From this perspective, the scientific advances related to globalization and its consequent effects on interdependence, both economically and politically, would enable the development of international institutions that promote the cooperative nature of interactions between the different units of the system. In this sense, both mutual aid and cooperation would be attainable, achieving peace through the political will of the actors.

Nevertheless, as mentioned above, from a structuralist perspective stand out those authors who subscribe to critical positions regarding the world economic system and study the implications of capitalism, with a focus on the issues of underdevelopment and existing inequalities between countries [2]. In this sense, cooperation within the framework of the global capitalist system would forge a situation of dependency determined by the conditioning of the economy of a certain group of countries at the expense

of the expansion and development of another. Therefore, the relationship of interdependence established by world trade would adopt asymmetric forms when the central countries have technological, commercial and capital predominance over other less developed countries. Therefore, it is established that the international division of labor determines the industrial development of some countries and limits that of others, the latter being subject to economic growth conditions imposed by the developed countries.

The bioeconomy in the context of the technological revolution

The concept of bioeconomy, as well as Green and Digital Economy, are related to the constellation of organizational and technical innovations of the 6th Technological Revolution, according to the Kondratiev cycles with regards to the history of capitalism. This revolution has emerged as the main vector of innovation and represents a key factor of the productive transformation. It is on an early stage and it is based on the Digital Revolution, as well as characterized by the sustainable development and the application of biotechnology and nanotechnology. In this sense, with Europe and China as the main actors of this revolution, the key input is biomass and its goals are the sustainable development in terms of mitigation and adaptation to climate change; the renewal energies; bio-refineries; circular economy, among others [24].

In this context, a sustainable practice in relation with the usage of bio-based resources may lead the way towards the achievement of certain Sustainable Development Goals (SDGs), which main objectives are the improvement of social, economic and ecological living conditions around the world. Moreover, current global challenges such as the climate change risks and the food security (among others) are some of the main issues of concern on the global agenda, and the development of a sustainable bioeconomy has been seen by many experts as the path to meet them [27].

Hence, in times of global uncertainty in relation with decision making processes to address the current global challenges, there is an increasing demand of comprehensive governance frameworks that includes not only national States and International Organizations, but also the private, academic and social sectors in relation with a broader inter-regional level. This is, in order to articulate the costs and incentives regarding the sustainable productive transformations, and also to address the conflicts that may arise as a result of the bioeconomy transition [8]. In this sense, apart from the food versus fuel debate in the field of bioenergy, there is growing concern in challenges such as water scarcity, land degradation and food shortage in several regions of the world. Thus, the articulation of specific political management to address these challenges has been seen of utter importance by scholars in the bioeconomic field [11].

The bioeconomy on the global agenda

Regarding the processes of cooperation in the contemporary international system, several authors underline the need for binding collective actions for the implementation of an expansion of the global development objectives that include the bioeconomy paradigm, for the purposes to generate new global governance frameworks [14]. In this sense, in times of increasing urgency regarding contemporary challenges related to climate change, financial instability and food insecurity, Gehring and Faude warn that the focus on local public policies is central to innovation around an expanded governance framework for international development cooperation [13].

In this framework, the Rio + 20 summit in Brazil in 2012 recommended the governments to create a set of objectives that would be integrated into the Millennium Development Goals, after their term expired in 2015. In this regard, with a planetary population that is estimated to reach nine billion people by the year 2050, and with the need for

a stable functioning of the systems concerning the diversity of the oceans, forests, as well as the biogeochemical cycles, the reformulation of the development goals have included issues concerning human and planetary security [23]. However, defining a set of SDGs is challenging, particularly when there are conflicts between individual goals, such as energy and food provision, as well as climate change prevention [6].

In this sense, there is a global consensus that efforts around local development policies are strongly influenced by the promotion of this agenda at the global level [13]. According to Paulo, the importance of the concept of global public good in the development discourse has reflected the growing attention towards collective actions related to the aforementioned global challenges. In this regard, there is an interrelation between domestic and global public goods and, in this sense, an interdependence between domestic actions and the role of international cooperation to promote new development paradigms. In this framework, according to Paulo, there is a correlation between domestic policies and global actions and objectives, which is key to understanding the functioning of international cooperation processes [23]. Therefore, it is interesting to note the importance of the concept of public good, in that while national public policies supported by international cooperation pursue objectives that can be analyzed as domestic public goods, at the same time actions that pursue objectives of common development.

Concerning the European Union, it is crucial to point out the relevance given to the development of the bioeconomy in the document "En route to the Knowledge-based bioeconomy" created within the framework of the German presidency of the European Commission in 2007. Two years later, within the framework of the OECD, the document called "The Bioeconomy to 2030: designing a policy agenda" stands out [18]. Subsequently, in 2010, Germany, which is the leading country in this regard, defined its "National Bioeconomy Research Strategy 2030", becoming one of the first countries in Europe [1]. Likewise, taking this as background information, on the occasion of the Global Forum for Food and Agriculture held in January 2015, 62 ministries of agriculture recommended to FAO the creation of the International Working Group for the Sustainable Bioeconomy.

In this framework, it is also of special importance to mention the Paris Agreement signed in December 2015, which consists of a binding international agreement to reduce the impacts of climate change. In particular, with regard to articles 9, 10 and 11, which concern the financing and transmission of technology, it is alleged that the agreement reaffirms the obligation of developed countries to support the efforts of developing countries for the implementation of "a future clean and climate resilient" [20]. In this regard, the agreement reads as follows: "a financing mechanism is provided that includes the Green Climate Fund (...). International cooperation in the development of climate-safe technologies and capacity transfer in the developing world is also strengthened: a technological framework is established under the Agreement and related capacity-building activities will be strengthened through of, inter alia, improved support to developing countries that are parties to the Agreement, as well as appropriate institutional arrangements. In this regard, it is important to mention that the Bioeconomy Strategy of the European Union in 2018 updated its objectives for the development of a sustainable bioeconomy in Europe, so that the measures adopted are in accordance with the UN SDGs and the objectives climate of the Paris Agreement.

On the other hand, of special importance it also refers to the growing prominence that the bioeconomy agenda has acquired in the frameworks of political coordination at a global level, particularly in the G20, which is the group that brings together the 20 most important economies in the world, constituting itself as a key forum for economic and political cooperation at a global level. As Chavarría et al. stress, there should be

a concerted effort to disseminate existing information and promote a shared understanding, both of the risks as well as of the objectives and strategies, in order to make effective the potential of the bioeconomy to present solutions to the prospective challenges, both economic and social [7]. In this framework, given the growing need for convergence among decision makers, “the G20 should formulate common methods for the development of effective and credible indicators in order to support decision-making processes at the domestic level, to ensure that the actions proposed in the Group are translated into concrete actions at the local level” [7].

Furthermore, the authors warns that in the last decade sufficient information has been developed to know which practices to promote and which to discard, to ensure safety and sustainability in the approach to production processes linked to the bioeconomy. In this framework, they ensure that these experiences can serve as a platform of great value for the promotion of sustainable processes that tend to an effective social transformation through the consolidation of the bioeconomic paradigm [7].

A brief review of the bioeconomic strategies in Russia: a possible scenario of cooperation with the EU?

Although the Russian Federation is not among the major competitors in the field of biotechnological development, partly because the technological development of the country is primarily linked to the defense industry, the Russian Government proposed in 2012 the BIO 2020 plan, which was the first strategic document for the development of the bioeconomic industry in the country [4]. It involved the areas of biopharmaceuticals, biomedicine, agriculture, food, forests, environment, marine biotechnology and bioenergy. As Boyarov, Osmakova and Popov establish, the program had a declarative character and it was very difficult to implement support measures for these industries for the period in which the program was framed. However, “some of the measures could be considered successful. It was the first time the Government and industry-specific ministries paid attention to issues related to bioeconomy core formation in Russia” [4, page 36]. Said program was created in parallel to the incentive programs for biotechnology in the economies with the highest level of global development. In this sense, there is the National Bioeconomy Blueprint program of the United States (2012), and the Bioeconomy Strategy in the European Union (2012).

Additionally, it is important to mention the Strategy for Science and Technology Development (SSTD), adopted by the Russian Federation in 2016. In resonance with the SDGs of the 2030 Agenda, this strategy is based on the study of the challenges (both internal and external) that pose risks to Russia’s society, economy and public administration, while foreseeing various opportunities for the country’s scientific and technological development. Among the most important challenges are: the “limited opportunities for economic growth based on extensive exploitation of raw materials, against the background of the formation of a digital economy and the emergence of a group of leading countries with new production technologies and a focus on renewable resources”; and “the requirements to guarantee the food security and food independence of Russia, ensure competitiveness of domestic products on world food markets, and reduce technological risks in the agro-industrial complex” [4, p. 38].

Moreover, the update of the plan carried out in 2021 is underway, in order to strengthen the State Coordination Program for the Development of Biotechnology in the Russian Federation until 2030 (BIO 2030). According to Boyarov, Osmakova and Popov, “this document is expected to set State priorities for developing the bioeconomy, will be equipped with necessary instruments and measures, and will enable specific mechanisms to support priority sector development” [4, page 36]. In this framework, given the growing importance placed by Moscow on the development of biotechnology, in view of the development

challenges that the country faces in line with the SDGs: what are the perspectives regarding the relationship with the European Union in the current bilateral situation? could the bioeconomy and sustainable development be cooperation scenarios that transcend the current geopolitical frictions?

As far as the cooperation processes between Russia and the European Union in this matter are concerned, it is firstly important to mention the Partnership and Cooperation Agreement (PCA), which was established in 1994, implemented in 1997, and further developed at the Saint Petersburg Summit of 2003. On this occasion, both parties agreed to create specific road maps for the implementation of the PCA. According to Pashentsev and Vlaeminck, despite the consolidation of positive progress in bilateral cooperation observed in the early years, "it did not take long before the relationship became soured and high expectations were swiftly replaced by an overall feeling of disappointment" [21, p. 11].

Naturally, the crisis over Ukraine has increased the conflicting narratives between both parties, and the intensification of mutual sanctions has generated serious challenges for the configuration of cooperation frameworks that go beyond defense and national security issues. It is important to note that the worsening of this crisis is linked to the structural changes of an international system in a process of transition, in friction between globalist tendencies linked to a declining international liberal order and the configuration of an emerging multipolarism. In this sense, the passage from a North American hegemonic unipolarism to a transition period in which the emerging powers grouped in the BRICS are having greater relative power in the structure of the system, generates uncertainties and opportunities in inter-regional borders [3].

Additionally, the rapid transformations in terms of technological development and the geostrategic struggle between the great centers of international power, in particular China and the United States, pose the appearance of new challenges, as well as opportunities for the relationship between the different regional configurations. As an example, among the challenges regarding the future of labor, it is eloquent to point out what was established by the World Bank in 2016, which warns that around 30% of jobs will disappear in the next three decades as a consequence of robotization in production processes [29]. That is one of the issues in which it is increasingly necessary to create new contact channels that would update the bilateral agenda within the framework of contemporary global challenges, in order to preserve the quality of life of citizens between both parties.

In this framework, the non-resolution of the conflict in Ukraine and the consequent geopolitical frictions, typical of the Cold War era, intensify the stagnation in the relationship between the EU and Russia, at a time when new opportunities are seen for technical and scientific cooperation with a view to the objectives of sustainable development. As Pashentsev points out, for a progressive development of relations between the European Union and Russia to arise, "it is necessary to avoid the policy of dictating and imposing decisions and to abandon the "demonisation" of the dialogue partner. We need compromises and the search for ways to combine our interests. Strategic communication is the synchronization of deeds, words and images in public policy on the most important and long-term issues" [21, p. 41].

Perspectives

Throughout this work, the focus was placed on the incidence of the bioeconomic agenda within the ongoing technological and scientific revolution and its link with inter-regional relations, within the framework of an international system in transition. In this sense, the theory of structural power is proposed as an analytical tool to observe the

power relations that emerge in relation with the development cooperation processes and the consequent configuration of new governance articulations related to sustainable development. This is of particular importance today, due to the structural transition that the international system is undergoing, from a US unipolarity in decline and a multipolarity on the rise, in times of the geopolitical struggle between the US and China. In this context, the case of the bioeconomy in the framework of relations between Russia and the European Union was given as an example, as a possible field of bilateral cooperation that transcends an agenda dominated by security issues.

Moreover, considering Strange's postulates regarding the analysis of structural power, a growing preponderance of the European Union stands out regarding its ability to influence the multilateral political agenda through the promotion of the bioeconomy, as a model of sustainable productive transition to face the global challenges related to climate change. This is particularly the case in the field of global governance for development cooperation. As Ferguson establishes, there is a growing importance of the exercise of indirect institutional power, in reference to what Krassner established about metapower, in terms of the ability to change the rules of the game. In this framework, both through the OECD and the FAO, the capacity of the European Union to influence the configuration of the rules of the game around the "good practices" related to the bioeconomic paradigm is observed, influencing the regulatory frameworks institutions for the purpose of promoting sustainable development models.

Regarding the Russian Federation, the importance given by the Government to the development of industries linked to the bioeconomy in the BIO 2020 plan and its reformulation towards 2030 is highlighted, where it is worth mentioning the development of the biopharmaceutical industry and bioenergy, among others. It is also important to mention the Strategy for Science and Technology Development, which was adopted by the Russian government in 2016. Although the country is not among the most important global competitors in the field of bioeconomy, the vast natural resources, the high technological development in other industries, the diplomatic power and its leading role in the Eurasian Economic Union, gives it an important relational power in its connection with other regional configurations. In this sense, within the framework of a relationship based on strong geostrategic frictions, the development of the bioeconomy emerges as a possible scenario of negotiation and dialogue for the renewal of a bilateral agenda in the face of future challenges regarding sustainable development. Considering the global leadership of the European Union and the consequent structural power it poses on this regard, one of the challenges is to acknowledge the development interests of both parties in future negotiations. That would create possibilities to boost confidence in the sharing of scientific and technological information, and also to forge mutually beneficial inter-dependencies.

Therefore, in these transitional times, not only in terms of the technological revolution and its production models, but also in the power configuration of the international system structure, in which a more multipolar world seems to be establishing, it would be of utter importance to inquire into how are the norms and regulations of the Governance processes going to be established, in relation with the transition towards Bioeconomy. In this context, returning to Strange's question related to who benefits from the structural changes, it is important to acknowledge the importance of State actors in forging symmetric interactions and mutually beneficial Governance framework's outcomes. Moreover, taking into account the structural conditions of Russia and its role as a natural leader of the Eurasian Economic Union, further research should be done regarding the perspectives of Russia in the promotion of its geoeconomic and geopolitical interests in its near abroad, in times of transitions regarding the productive innovation and digital incorporation towards a greener economy. In this sense, the norms and regulations convergence between regional configurations may create

new scenarios of cooperation, not only with its near abroad, but also with its western counterparts.

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