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NEXUS FOR SUSTAINABILITY: SEARCHING FOR A NEW RATIONALITY

If we consider that social concerns and State affairs are separated in different sectors such as secretariats or ministries (energy, environment, agriculture, water resources, health), it is not shocking to be able to compare it with knowledge fragmentation and expertise. In fact, the outcry for interdisciplinarity goes hand in hand with the urgent need for relinking knowledge and searching cross-sector dynamics to tackle the imminent challenges of our times, such as: promoting social inclusion and reducing social-environmental vulnerabilities and deep inequalities; rationalizing resource scarcities and planetary limits; dialoguing with the uncertainties and threats of global change, by outlining mitigation strategies such as those for climate change, and by increasing resilience and adaptation capacities facing impacts with unknown magnitude.

However, there are plenty of advancements in favor of overcoming the supremacy regarding separation of knowledge and actions. We can mention new epistemology aligned with interdisciplinarity, the development of cross-sector public policies, and strategic territory approaches, premises and planning aimed at sustainability and accomplishing the UN Sustainable Development Goals. There is also a different and concrete rationality gaining space within science, and as a way of decision making and finding strategies that seek deep interdependences among sectors, especially concerning resource scarcity and reducing inequalities for those in need.

A key example is the water-energy-food nexus, of which Hoff's contribution (2011)¹ is considered a landmark; the author deals with contingency and interdependence among these sectors, while at the same time he considers them as essential elements for social inclusion, quality of life, and vulnerability reduction. It is the acknowledgement of scarcity and global interweaving among the water, energy, and food supply chains that this perspective emerges, especially considering the global contingency of water resources facing the demands of the human populations and the need to provide them with decent

1. HOFF, H. Understanding the Nexus, background paper for the Bonn 2011 Conference. In: The Water, Energy and Food Security Nexus – Solutions for the green Economy. 2011, Stockholm. Background paper: Stockholm: SEI, 2011. 52p.

living conditions. Hence, in order to produce and deliver energy, it should be taken into account the demands for water resources; likewise, water and sanitation services demand energy input, and finally food production is highly dependent on both. As an example, food wasting could be detrimental across the two other sectors.

Therefore the need for a water-energy-food nexus thinking arises, one that can break through the barriers of sectoral non-efficiency; that is to say, we cannot just simply systematically improve sectoral management. To illustrate this concept, we can think of a city that has the best management possible for its water resources, but with no warranties that this has the best possible effects on the energy and food production sectors. Cross-sector efficiency has to be considered to advance towards a synergy among the nexus components.

Evidently, the possibility of synergies within the nexus is something very challenging, since the involved chains are disposed differently in accordance to territory scales. Moreover, contingency and interdependence depend on the time-scale; in other words, serious damage caused in the past can jeopardize possible present synergies.

We must not nevertheless restrict the nexus thinking to a merely technical and fully objective perspective. Dialoguing with the fields of social sciences is a must, and so is providing the necessary conditions for the inclusion of the different stakeholders into governance structures, in order to grant them with increased robustness facing the water-energy-food nexus challenges. Thus in this way we would be able to get closer to the “relink”, to reconnect reasoning and attitudes through paths that were previously separated. We must not forget, however, that not only technical rationality and their applications must be taken into account, but also relinking people and social groups in an inclusive manner to dialogue and tackle issues so naturally interconnected but so scarce and unevenly distributed.

As utopic as the previously discussed may seem, it is worth thinking about some interesting points. For instance, some big global cities have been establishing goals for reduction of greenhouse gas emissions; these measures go beyond scales, functioning between global matters (climate change) for mitigation and the local need for adaptation. This kind of attitude and respective public policies could drive the implementation of the nexus thinking, where an integrated approach of water, energy, and food supply might enhance climate change policies, with further benefits elsewhere. In this sense, an urban approach could also be integrative if it allows a dialog among conditions of vulnerability in suburbs and if it searches for social inclusion alternatives based on the nexus synergies proposal. As an example, outskirts of big cities are usually considered to be food deserts, with poor offer of fresh products and nutritionally good foods. One alternative to synergize within the nexus, not to mention the increase in the overall health of the population, is to foster small free markets that sell fresh unprocessed locally-produced foods.

By the way, following the importance of healthy eating, nowadays it is common for people to choose their foods by considering many aspects of their production chain, or even the water and carbon footprints of some of them. In line with this, there is increasing interest for organic products or family agriculture. There is as well a movement towards

alternative urban transport other than the car, such as public transportation and cycling or even walking, which drive a connection between the global and the individual scale.

It is true that there is not only one formula for the water-energy-food nexus interdependence, but it is extremely important to identify the multiplicity of alternatives, from local to global, within trans-scalar dynamics and including all different social actors. Surely the perspective for a nexus thinking converges deeply with the contemporary challenge of relinking everything that had been segregated and treated as independent in the new modernity.

Opening this volume, the article **“Desastres naturais: altruísmo, interesses e oportunidades”** by Clovis Ultramari and Tami Szuchman analyzes, from the point of view of local agents and international support agencies, the paradoxal potentials or positive externalities of natural disasters, such as solidarity, altruism, or the role of the media and the State.

In the article called artigo **“Indicadores socioeconômicos e a desertificação no alto curso da bacia hidrográfica do Rio Paraíba”**, authors *Telma Lucia Bezerra Alves*, *Pedro Vieira de Azevedo* and *Gesinaldo Ataíde Cândido* identify the indicators positive and negative relationships with land degradation, checking out the way in which a rise in the socioeconomic index in the high basin is related to its present degradation state.

By means of the conflicts general theory and the actor-network theory, authors *Andreza Martins* and *Leila Christina Dias* discuss the mechanisms and social processes that influence the organization of environmentally preserved land, aside from seeking to understand which the necessary interactions are, and how they establish themselves, to promote land transformation in these areas. The article is called **“Atores na construção de territórios ambientais: o caso da APA da Baleia Franca”**.

The article **“Eficácia de diferentes estratégias no ensino de Educação Ambiental: associação entre pesquisa e extensão universitária”**, by *Maria Erivanir Rodrigues Nunes*, *Leonardo Fernandes França* and *Luciana Vieira de Paiva*, evaluate aspects of an Environmental Education (EE) process in high school students attending a public school in Rio Grande do Norte, observing issues related to the levels of knowledge and of interest in nature conservancy, as well as the efficiency of the environmental education actions on site.

Authors *Maria Rita Raimundo Almeida* and *Marcelo Montañó* review the effectiveness of Environmental Impact Assessment (EIA) systems by applying a set of 20 effectiveness criteria to 37 environmental licensing cases in São Paulo and Minas Gerais, in the article **“A efetividade dos sistemas de Avaliação de Impacto Ambiental nos estados de São Paulo e Minas Gerais”**.

Players involved in salmon farming are the starting point for *Beatriz Eugenia Cid Aguayo* and *José Barriga Parra*, who analyze the Chilean salmon farming regulation and certification process, from the point of view of national and global industry guidelines, as well as those promoted by the public sector. Their work is entitled: **“Governanças e invisibilidades: interesses e racionalidades na regulação socioambiental dela salmônica cultura em Chile”**.

Using the results of studies about the conflict of cellulose pulp industries in the Uruguay River and that of the restoration of the Matanza-Riachuelo basin, *María Gabriela*

Merlinsk analyzes the ways different collective actions promote public discussion arenas around environmental issues, in the article **“Conflitos ambientais e arenas públicas de deliberação em torno da questão ambiental na Argentina”**.

Taking the events that happened within the last 50 years in a *caçara* village located in the Serra do Mar State Park / São Paulo, authors *Rodrigo Penna-Firme* and *Eduardo S. Brondízio* approach the concept of “environmentalness”: a process by which local populations gradually tend to naturalize environmental policies by playing the role of environmental protectors. Its title is: **“Quilombolas como “coletividades verdes”: contestando e incorporando o ambientalismo na Mata Atlântica, Brasil”**.

Douglas Almeida Silva, *Paula Carnevale Vianna* and *Valéria Zanetti*, in **“Planejamento urbano, agentes e representações: criação do Banhado, cartão postal de São José dos Campos”**, perform an exploratory analysis about urban planning as a symbolic system by means of studying the documents of a case, aiming to investigate the symbolic power contained within the urban intervention plans proposed for an environmentally protected area.

In **“Regularização do passivo de Reserva Legal: percepção dos produtores rurais no Pará e Mato Grosso”**, authors *Rayane Pacheco*, *Raoni Rajão*, *Britaldo Soares-Filho* and *Richard Van Der Hoff* explore the declared preferences and motivational factors of rural producers in the regularization of the liabilities and use of the assets of the Legal Reserve.

Stemming from the hydrological, environmental, social, and political dimensions, authors *Isabella Ferreira Nascimento Maynard*, *Marcus Aurélio Soares Cruz* and *Laura Jane Gomes* propose an indicator organization using the Pressure-State-Response model for the calculation of a sustainability index, an important tool for water resources management. The result is their article called **“Aplicação de um índice de sustentabilidade na bacia hidrográfica do rio Japarutuba em Sergipe”**.

Luiz Enrique Vieira de Souza writes **“Riscos e governança ambiental na Baixada Santista: políticas climáticas ou gestão de desastres?”**, where he critically reviews the book **“Mudanças climáticas e respostas políticas nas cidades: Os riscos na Baixada Santista”** by author *Fabiana Barbi*.

Lastly, we conclude this volume by presenting a new section in *Ambiente & Sociedade*, called **“Ideas on the spotlight”**. In every volume, a specialized author is invited to debate important and growing topics in environmental and interdisciplinary sciences. For this trimester, our guest is Professor *José Eli da Veiga*, Ph.D., presenting **“A utopia do antropoceno”**, an article that discusses the implications of sustainable development for the next years.

We wish you all an excellent reading.

Pedro Roberto Jacobi

Editor-in-Chief, *Ambiente & Sociedade Journal*

Professor, Education School, University of São Paulo

Professor, Graduate Program in Environmental Science, University of São Paulo

Leandro Giatti

Adjoint Editor, Ambiente & Sociedade Journal

Associate professor, Environmental Health Department, Public Health Faculty,
University of São Paulo.

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