

Automatic analysis of CIRED 2018-2023 publications

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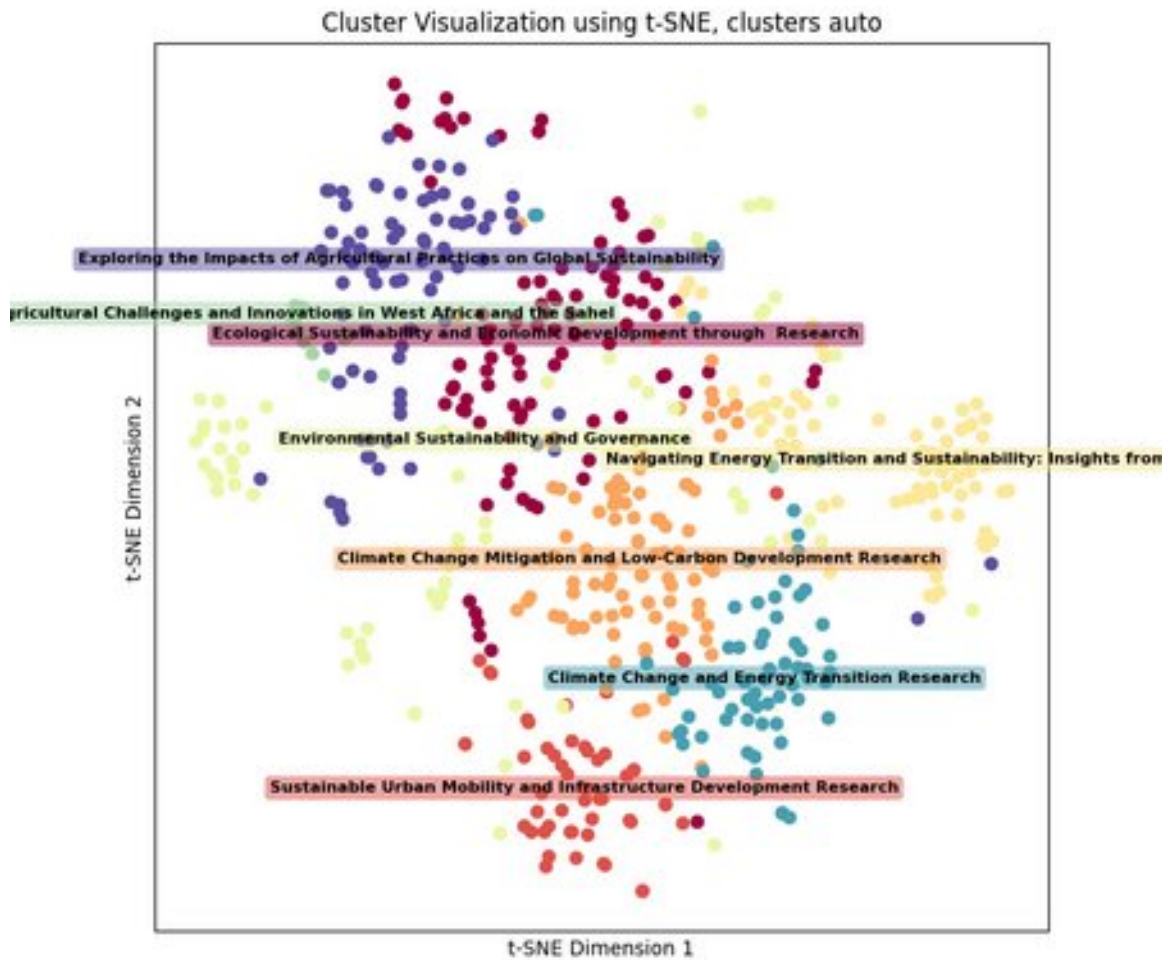
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All our abstracts in HAL for the period

all (n=558)



Abstracts clustering used in this report



0. Ecological Sustainability and Economic Development through Research



The research themes of this group revolve around the complex and critical intersection of ecology and economics, exploring the multifaceted ways in which economic activities and policies impact, and are influenced by, natural resources and ecosystems. This encompasses a vast array of topics, including bioeconomic modeling, the economization of nature, biodiversity offsetting, the societal implications of offshore wind farms, the theory of ecological transition, historical and conceptual examinations of natural capital, ecosystem services, interdisciplinary collaborations, and the conceptual and practical dimensions of ecological accounting. By addressing these themes, our group contributes significant insights into the challenges and opportunities at the nexus of ecological sustainability and economic development within the international context.

Interdisciplinary Approaches to Understanding Economic and Ecological Interactions

Our research advocates for a holistic understanding of the interactions between economic systems and ecological dynamics. Through interdisciplinary approaches, including those that bridge economics with physics, climatology, biology, and ecology, we have explored bioeconomic modeling and the economic valuation of ecosystems. By delving into historical analyses and conceptual explorations of natural capital, as well as examining the evolving methodologies of ecosystem services, our work underscores the complexity of integrating economic and ecological perspectives.

References:

Baptiste Parent, Lauriane Mouysset, Antoine Missemer, Harold Levrel.
BUILDING INTEGRATED MODELS IN ENVIRONMENTAL AND NATURAL

RESOURCE ECONOMICS: THE CASE OF GORDON'S 1954 FISHERY MODEL. Journal of the History of Economic Thought, 2023, pp.1 - 23. (10.1017/s1053837223000056). (hal-04250105)

Ève Chiapello, Antoine Missemer, Antonin Pottier. Faire l'économie de l'environnement. Presses des Mines, 2020, 978-2-35671-596-8. (halshs-02491366)

C. Feger, Harold Levrel, Alexandre Rambaud. Trois méthodes comptables pour mettre les problèmes écologiques au coeur de la chose publique. Revue française d'administration publique, 2022, 2022/3 (183), pp.815-829. (10.3917/rfap.183.0174). (hal-03977774)

Advancements in Ecological Compensation and Conservation Strategies

Significant advancements have been made in conceptualizing and implementing innovative strategies for ecological compensation and conservation. Research on biodiversity offsetting, for example, highlighted alternative designs focusing on functional biodiversity conservation. We explored spatially explicit land-use change models, offering novel insights into cost-effective and ecologically sound compensation policies. By challenging conventional paradigms, such as through the exploration of offshore wind farms as opportunities for redefining human-nature relations, our group contributes to reimagining conservation strategies in the face of anthropogenic pressures.

References:

Ilaria Brunetti, Rodolphe Sabatier, Lauriane Mouysset. A spatial model for biodiversity offsetting. Ecological Modelling, 2023, 481, pp.110364. (10.1016/j.ecolmodel.2023.110364). (hal-04083682)

A.-C. Vaissi re, F. Qu tier, Adeline Bas, C. Calvet, S. Gaucherand, et al.. France. Biodiversity Offsets: European Perspectives on No Net Loss of Biodiversity and Ecosystem Services, Springer International Publishing, pp.99-121, 2018, 9783319725819; 9783319725796. (10.1007/978-3-319-72581-9_7). (hal-02152857)

Valentin Cocco, Yann Kervinio, Lauriane Mouysset. Relaxing the production-conservation trade-off: Biodiversity spillover in the bioeconomic performance of ecological networks. Ecological Economics, 2023, 214, pp.107966. (10.1016/j.ecolecon.2023.107966). (hal-04238473)

Contributions to Ecological Economics and Sustainability

Our work has critically addressed the commodification of nature, dissecting the processes of privatization, marketization, and monetization that characterize contemporary environmental policies. By exposing the historical roots and conceptual underpinnings of natural capital, and by advocating for ecological accounting frameworks that align with strong sustainability, our research challenges mainstream economic narratives and

proposes alternative paradigms conducive to sustainable development. This includes elucidating the Lauderdale paradox within ecological economics and critiquing normative classifications in the field to encourage methodological and conceptual pluralism.

References:

Jacob Smessaert, Antoine Missemmer, Harold Levrel. *The Commodification of Nature, a Review in Social Sciences. Ecological Economics*, 2020, 172, pp.106624. (10.1016/j.ecolecon.2020.106624). (hal-03250086)

Antoine Missemmer. *Penser les mots de l'économie pour mieux panser les maux de l'environnement. Revue de l'Organisation Responsable*, 2021, 16 (2), pp.51-58. (hal-03502292)

Clément Surun. *La comptabilité des dettes écologiques nationales et d'entreprises, un outil de pilotage vers une économie durable. Economies et finances. Université Paris-Saclay*, 2023. Français. (NNT : 2023UPASB017). (tel-04135917)

Implications for Policy, Management, and Interdisciplinary Collaboration

The insights gleaned from our research have direct implications for environmental policy, management strategies, and the fostering of interdisciplinary collaborations. By developing bio-economic models, ecological accounting methods, and frameworks for analyzing ecosystem services, our work informs both the practical and theoretical dimensions of environmental governance. We advocate for engagement models that promote the meaningful inclusion of early-career specialists and interdisciplinary perspectives, aiming to enhance the efficacy and equitability of ecosystem services frameworks and sustainability initiatives.

References:

Diana M Hackenburg, Alison Adams, Katherine Brownson, Israel T Borokini, Tatiana M Gladkikh, et al.. *Meaningfully engaging the next generation of ecosystem services specialists. Ecosystem Services*, 2019, 40, pp.101041. (10.1016/j.ecoser.2019.101041). (hal-02894380)

Yann Kervinio, Clément Surun, Adrien Comte, Harold Levrel. *Defining ecological liabilities and structuring ecosystem accounts to support the transition to sustainable societies. One Ecosystem*, 2023, 8, (10.3897/oneeco.8.e98100). (hal-04146817)

C. Feger, Harold Levrel, Alexandre Rambaud. *Ecological Accounting : How to organize information for biodiversity conservation decision and action at the national, business and ecosystem levels?. 2021. (hal-03834734)*

Responding to Global Challenges

Our group's research themes are intrinsically linked to addressing global scientific, technological, cultural, economic, and societal challenges. By

interrogating the nexus of economic activities and ecological systems, we contribute critical knowledge and tools needed to navigate the complexities of sustainability transitions, biodiversity conservation, and climate adaptation. Our commitment to interdisciplinary and innovative approaches underscores the urgency of holistic and inclusive strategies in responding to the multifaceted challenges of ecological degradation and socioeconomic development.

References:

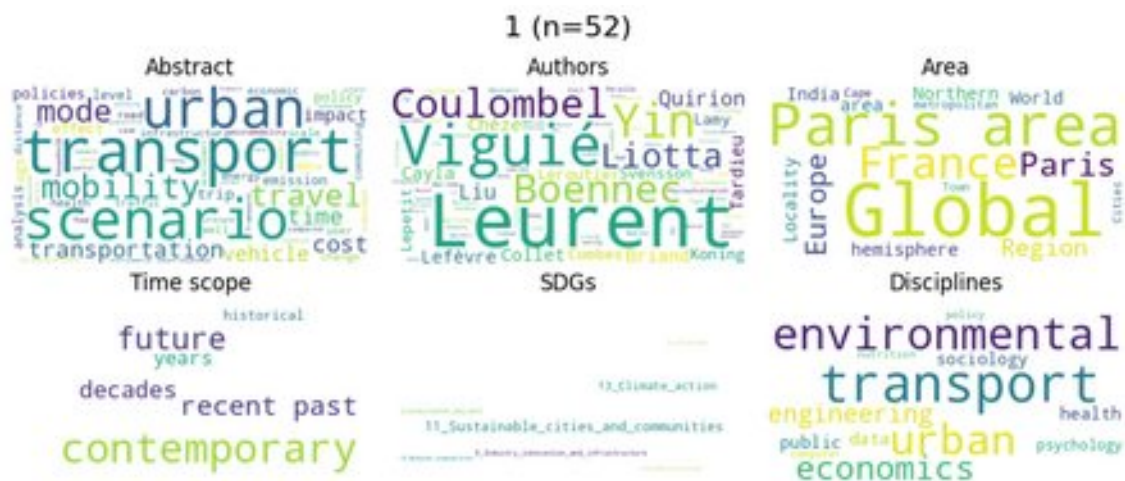
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Adrien Comte. *Coral reefs ecosystem services under global environmental change : interdisciplinary approaches to guide science and action*. Economics and Finance. Université de Bretagne occidentale - Brest, 2018. English. (NNT : 2018BRES0002). (tel-01870213v2)

Edi Assoumou, Frédéric Gherzi, Jean Charles Hourcade, Li Jun, Nadia Maïzi, et al.. *Reconciling top-down and bottom-up energy/economy models: a case of TIAM-FR and IMACLIM-R*. 2018. (hal-01734872)

In summary, the research themes addressed by our group not only advance scientific knowledge in environmental and resource economics but also offer substantive contributions to the debates on ecological sustainability, economic development, and the design of policies for a more equitable and sustainable future.

1. Sustainable Urban Mobility and Infrastructure Development Research



The research themes of this group are centered around sustainable urban mobility, urban planning, and the environmental impacts of transportation and urban infrastructure development. Our investigations contribute meaningful insights into the broader international discourse on the development of sustainable cities, addressing scientific, technological, cultural, economic, and societal challenges through multidisciplinary lenses. Our research spans various themes including the integration of real estate and transportation data for urban modeling, investment in low-carbon transportation infrastructure, the potential for modal shifts and teleworking to reduce car use, and the health benefits tied to active modes of transportation.

Urban Mobility and Infrastructure Development

One significant advancement in our research is the creation of a comprehensive dataset covering real estate and transportation in 192 urban areas worldwide, facilitating urban modeling and comparison of urban forms and transportation networks. This dataset, a pioneering effort to spatialize real estate and transportation data, addresses the gap in urban modeling tools and can inform policies on urban sprawl, access to transportation, and equity in housing and transportation access.

References:

Quentin Lepetit, Vincent Vigié, Charlotte Liotta. A gridded dataset on densities, real estate prices, transport, and land use inside 192 worldwide urban areas. Data in Brief, 2023, 47, pp.108962.

(10.1016/j.dib.2023.108962). (hal-04433873)

Basile Pfeiffer. Évaluation ex ante des effets redistributifs de politiques urbaines. Economies et finances. Université Paris-Saclay, 2022. Français. (NNT : 2022UPASB034). (tel-04074623)

Isabelle Coll, Arthur Elessa Etuman, Vincent Vigié, Nicolas Coulombel. Planification spatiale, consommation d'énergie, émissions de polluants et qualité de l'air en ville. Gallez Caroline, Coutard Olivier. Vers une Île-de-France post-carbone ? Freins et leviers d'une transition énergétique régionale, L'Oeil d'Or, pp.149-179, 2023, Cités et Pratiques, 978-2-490437-23-8. (hal-04493746)

Low-Carbon Transportation Pathways

Our analysis of investment needs for transportation infrastructure underlines the economic and environmental efficiency of low-carbon pathways across global and regional scales. By modeling socioeconomic scenarios and conducting sensitivity analyses, we demonstrate that expenditures on transportation infrastructure can be significantly reduced under climate policies, primarily through a reduction in transport activity. This finding reinforces the importance of strategic investment in sustainable transportation solutions to meet both development and environmental goals.

References:

Vivien Fisch-Romito, Céline Guivarch. *Transportation infrastructures in a low carbon world: An evaluation of investment needs and their determinants*. *Transportation Research Part D: Transport and Environment*, 2019, 72, pp.203-219. (10.1016/j.trd.2019.04.014). (hal-02131954)

Vivien Fisch-Romito. *'Bridging' human needs and carbon dioxide emissions reduction : the infrastructure dynamics at the core of the climate-development interplay*. *Economics and Finance*. École des Ponts ParisTech, 2021. English. (NNT : 2021ENPC0003). (tel-03272994)

Charlotte Liotta, Vincent Viguié, Felix Creutzig. *Environmental and welfare gains via urban transport policy portfolios across 120 cities*. *Nature Sustainability*, 2023, 6 (9), pp.1067-1076. (10.1038/s41893-023-01138-0). (hal-04445981)

Modal Shift and Environmental Externalities

We have scrutinized the potential for reducing environmental externalities through modal shift, teleworking, and transitioning to electric vehicles. In the Paris area, our research suggests that a substantial percentage of car trips could be shifted to low-emission modes or avoided altogether, presenting significant opportunities for reducing urban mobility emissions. Our findings stress the importance of encouraging modal shift and teleworking to achieve climate and health benefits worth millions of euros annually.

References:

Marion Leroutier, Philippe Quirion. *Tackling Car Emissions in Urban Areas: Shift, Avoid, Improve*. *Ecological Economics*, 2023, 213, pp.107951. (10.1016/j.ecolecon.2023.107951). (hal-04347120)

Fawaz Salihou, Julie Bulteau, Rémy Le Boennec, Jaâfar Berrada. *Which incentives toward sustainable mobility solutions for medium and short distances in Ile-de-France?*. *International Transportation Economics Association (ITEA)*, Jun 2023, Santander, Spain. (hal-04296148)

Biao Yin, Liu Liu, Nicolas Coulombel, Vincent Viguie. *Appraising the environmental benefits of ride-sharing: The Paris region case study*. *Journal of Cleaner Production*, 2018, 177, pp.888-898. (10.1016/j.jclepro.2017.12.186). (hal-01695082)

Health Benefits of Active Transportation

Quantifying the health benefits of increased physical activity from active transportation in the French negaWatt scenario, our research highlights that substantial public health benefits can be garnered from the energy transition. With projections indicating thousands of annual premature deaths prevented and significant economic benefits from increased life expectancy, our findings underscore the co-benefits of climate action and active transportation policies.

References:

Pierre Barban, Audrey de Nazelle, Stéphane Chatelin, Philippe Quirion, Kévin Jean. *Assessing the Health Benefits of Physical Activity Due to Active Commuting in a French Energy Transition Scenario*. *International Journal of Public Health*, 2022, 67, pp.1605012. (10.3389/ijph.2022.1605012). (hal-03761451)

Marion Leroutier, Philippe Quirion. *Air pollution and CO2 from daily mobility: Who emits and Why? Evidence from Paris*. *Energy Economics*, 2022, 109, pp.105941. (10.1016/j.eneco.2022.105941). (hal-03921086)

Léo Moutet, Aurélien Bigo, Philippe Quirion, Laura Temime, Kévin Jean. *Assessing the health impacts associated with active transportation within four different pathways to net-zero carbon emissions in France*. 2023. (hal-04252917)

Challenges and Opportunities in Urban Mobility

Our exploration into the use of Big Data for evaluating transport policies reveals both the value and limitations of this approach. While Big Data enables more efficient outcomes evaluation, certain impacts, particularly in informal settlements and during extreme weather events, may be less detectable. Ride-sharing, although beneficial in reducing CO2 emissions, exhibits significant rebound effects that could undermine its environmental benefits without careful policy consideration.

References:

Andrew Sudmant, Vincent Viguié, Quentin Lepetit, Lucy Oates, Abhijit Datey, et al.. *Fair weather forecasting? The shortcomings of big data for sustainable development, a case study from Hubballi-Dharwad , India*. *Sustainable Development*, 2021, 29 (6), pp.1237-1248. (10.1002/sd.2221). (hal-04501697)

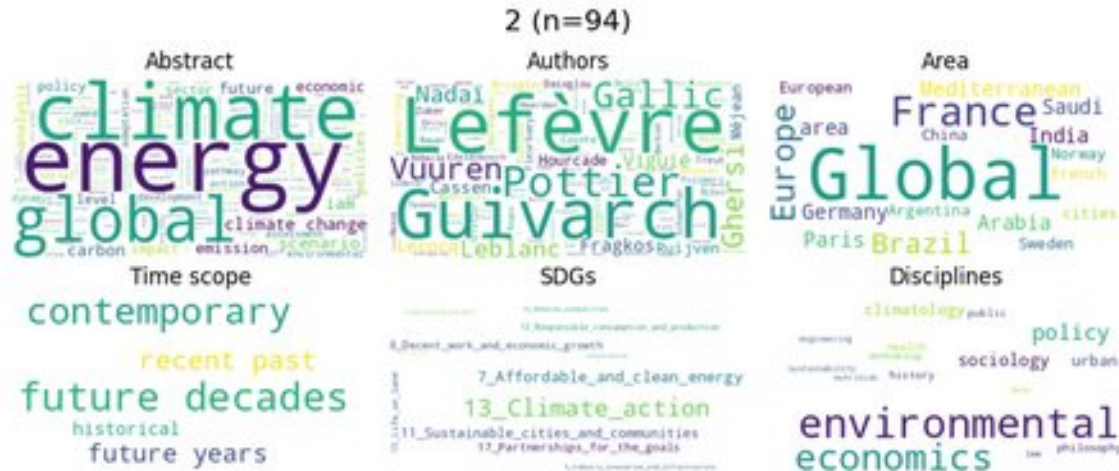
Nicolas Coulombel, Virginie Boutueil, Liu Liu, Vincent Viguié, Biao Yin. *Substantial rebound effects in urban ridesharing: Simulating travel decisions in Paris, France*. *Transportation Research Part D: Transport and Environment*, 2019, 71, pp. 110-126. (10.1016/j.trd.2018.12.006). (hal-01981292v2)

Vincent Viguié, Charlotte Liotta, Basile Pfeiffer, Nicolas Coulombel. *Can public transport improve accessibility for the poor over the long term? Empirical evidence in Paris, 1968–2010*. *Journal of Transport Geography*, 2023, 106, pp.103473. (10.1016/j.jtrangeo.2022.103473). (hal-04446606)

In summary, our group has made substantial contributions to understanding the multifaceted challenges and opportunities in achieving sustainable urban mobility, low-carbon transportation infrastructure, and the ancillary health benefits of active transportation. Our research not only adds to the scientific knowledge base but also offers empirical insights for policymakers

aiming to foster sustainable urban development and transportation solutions that are responsive to environmental and societal needs.

2. Climate Change Mitigation and Low-Carbon Development Research



The research themes of this group are centrally focused on climate change mitigation, economic development in the context of low-carbon transitions, the integration of energy systems into national and global economies, and assessing societal and environmental impacts of climate policies. This compilation of research themes places the group's endeavors within the international context of striving for sustainable development, addressing climate change, and fostering economic growth that is inclusive and respects environmental boundaries. Through innovative modeling, scenario analysis, and interdisciplinary approaches, several noteworthy scientific advancements have been made. These advancements respond to scientific, technological, cultural, economic, or societal challenges by offering insights into sustainable policy development, understanding the complex dynamics of energy systems, and contributing to the global ambition of reducing greenhouse gas emissions.

Dynamic Economic and Energy Systems Modeling

Our work on calibrating a dynamic recursive model for Saudi Arabia, incorporating specific macroeconomic features such as currency pegging and investment stability, represents a significant stride in understanding the economic impacts of global low-carbon transitions and domestic energy reforms. This modeling effort is crucial for countries like Saudi Arabia, where oil revenues significantly influence the national economy. It demonstrates how transformations in global energy markets and internal reforms can lead to robust economic diversification, thereby addressing

economic sustainability challenges in the face of declining fossil fuel demand.

References:

Salaheddine Soummane, Frédéric Gherzi, Julien Lefèvre. Macroeconomic pathways of the Saudi economy: the challenge of global mitigation action versus the opportunity of national energy reforms. Energy Policy, 2019, 130, pp.263-282. (10.1016/j.enpol.2019.03.062). (hal-02924714)

Salaheddine Soummane, F. Gherzi, Franck Lecocq. Structural Transformation Options of the Saudi Economy Under Constraint of Depressed World Oil Prices. Energy Journal, 2022, 43 (3), pp.181-200. (10.5547/01956574.43.3.ssou). (hal-03319116)

Salaheddine Soummane, F. Gherzi. Projecting Saudi sectoral electricity demand in 2030 using a computable general equilibrium model. Energy Strategy Reviews, 2022, 39, pp.100787. (10.1016/j.esr.2021.100787). (hal-03500916)

Integrated Assessment Models and Climate Policy

The development and application of integrated assessment models (IAMs) have been central to our group's research agenda. These models are pivotal for rationalizing climate debates, providing corridors of social costs of carbon that reflect diverse worldviews. Our work emphasizes the importance of IAMs in facilitating well-informed climate policy decisions, particularly in setting carbon pricing strategies that are less divinatory and more rooted in real-world dynamics. This theme responds directly to the need for scientifically grounded policy mechanisms to address climate change.

References:

Jean-Charles Hourcade, Peter Tankov, Stéphane Voisin, F. Gherzi, Julien Lefèvre. Les modèles intégrés économie-climat : quels usages pour quelles décisions ?. Opinions & Débats, 2021, 23, pp.16-42. (hal-03506990)

Ilkka Keppo, Isabela Butnar, Nicolas Bauer, Matteo Caspani, Oreane Edelenbosch, et al.. Exploring the possibility space: Taking stock of the diverse capabilities and gaps in integrated assessment models. Environmental Research Letters, 2021, 16 (5), (10.1088/1748-9326/abe5d8). (hal-03142411)

Lisette van Beek, Maarten Hajer, Peter Pelzer, Detlef van Vuuren, Christophe Cassen. Anticipating futures through models: the rise of Integrated Assessment Modelling in the climate science-policy interface since 1970. Global Environmental Change, 2020, 65, pp.102191. (10.1016/j.gloenvcha.2020.102191). (halshs-04486921)

Decarbonization Strategies and Climate Mitigation

Our analysis of deep decarbonization strategies (DDS) and the role of bioenergy with carbon capture and storage (BECCS) identifies pathways

towards achieving ambitious climate targets like the Paris Agreement's 1.5°C goal. By exploring the technical, economic, and social dimensions of transition pathways, this research sheds light on the crucial role of renewable energy sources, the potential of natural gas depending on methane emission abatement actions, and the importance of policy frameworks that enable a swift and inclusive transition to low-carbon economies. These insights contribute to addressing the technological and societal challenges of climate mitigation.

References:

Thais Diniz Oliveira, Thierry Brunelle, Bertrand Guenet, Philippe Ciais, Florian Leblanc, et al.. A mixed effect model approach for assessing land-based mitigation in Integrated Assessment Models: a regional perspective. Global Change Biology, 2021, 27, pp.4671-4685. (10.1111/gcb.15738). (hal-03251005)

Nico Bauer, Steven K. Rose, Shinichiro Fujimori, Detlef P. van Vuuren, John Weyant, et al.. Global energy sector emission reductions and bioenergy use: overview of the bioenergy demand phase of the EMF-33 model comparison. Climatic Change, 2018, Online: 02 July 2018, pp.1-16. (10.1007/s10584-018-2226-y). (hal-01972038)

Francisco Lallana, Gonzalo Bravo, Gaëlle Le Treut, Julien Lefevre, Gustavo Nadal, et al.. Exploring deep decarbonization pathways for Argentina. Energy Strategy Reviews, 2021, 36, pp.100670. (10.1016/j.esr.2021.100670). (hal-03663087)

Implications for Health Co-Benefits and Low-Carbon Development

Our work extends to understanding the health co-benefits of climate change mitigation measures and the socioeconomic implications of transitioning to low-carbon development pathways. In particular, our studies on India and Brazil illustrate how economies can grow inclusively while controlling greenhouse gas emissions, highlighting the synergies between economic development and climate action. This research theme answers to societal and economic challenges by demonstrating that sustainable development and climate mitigation are mutually reinforcing objectives.

References:

Dipti Gupta, Frédéric Gherzi, Saritha Vishwanathan, Amit Garg. Achieving sustainable development in India along low carbon pathways: Macroeconomic assessment. World Development, 2019, 123, pp.104623. (10.1016/j.worlddev.2019.104623). (hal-02512242)

Dipti Gupta, Frédéric Gherzi, Saritha Vishwanathan, Amit Garg. Macroeconomic assessment of India's development and mitigation pathways. Climate Policy, 2019, pp.1-21. (10.1080/14693062.2019.1648235). (hal-02512265)

William Wills, Emilio Lebre La Rovere, Carolina Grottera, Giovanna

Naspolini, Gaëlle Le Treut, et al.. Economic and social effectiveness of carbon pricing schemes to meet Brazilian NDC targets. 2020. (hal-03143038)

Addressing Uncertainties in Climate Change Mitigation

The exploration of uncertainties in emission inventories and their implications for climate policy represents a significant advancement in our understanding of how to navigate the complexities of climate change mitigation. Our research underscores the necessity of integrating uncertainty considerations into climate modeling and policy planning to ensure robust, flexible, and effective strategies.

References:

Y Quilcaille, G Gasser, P. Ciais, F. Lecocq, G. Janssens-Maenhout, et al.. Uncertainty in projected climate change arising from uncertain fossil-fuel emission factors. Environmental Research Letters, 2018, 13 (4), (10.1088/1748-9326/aab304). (hal-01806850)

Alexandre Köberle, Toon Vandyck, Céline Guivarch, Nick Macaluso, Valentina Bosetti, et al.. The cost of mitigation revisited. Nature Climate Change, 2021, 11 (12), pp.1035-1045. (10.1038/s41558-021-01203-6). (hal-03538539)

Miguel Riviere, F. Pimont, Philippe Delacote, Sylvain Cauria, J. Ruffault, et al.. A Bioeconomic Projection of Climate-Induced Wildfire Risk in the Forest Sector. Earth's Future, 2022, 10 (4), pp.e2021EF002433. (10.1029/2021EF002433). (hal-03655411)

In summary, our group's research themes collectively advance the scientific understanding and practical application of climate change mitigation, low-carbon development, and sustainable policy design within the international ambition of addressing climate, economic, and societal challenges. Through in-depth modeling, scenario analysis, and multidisciplinary collaboration, significant contributions have been made towards achieving a sustainable and low-carbon future.

3. Navigating Energy Transition and Sustainability: Insights from Vietnam



The research themes of this group are positioned at the intersection of environmental sustainability, energy transition, and socio-economic development. By focusing on a variety of contexts with a particular emphasis on Vietnam, our group has contributed valuable insights to the international conversation on how nations can navigate the challenges associated with the shift towards cleaner energy sources, addressing air quality issues, and fostering economic growth through green industries. Through our collective work, we have not only highlighted significant scientific advancements but also provided practical solutions to pressing challenges facing the global community today.

Mitigating Air Pollution through Agricultural Practices and Energy Production

One of our key research themes explored the impact of open field burning of rice straw, a common practice in Vietnam, on air quality. We demonstrated that co-firing—mixing rice straw with coal in power plants—could significantly reduce both local air pollutants and greenhouse gas emissions. This not only addresses a major environmental issue but also offers a sustainable alternative that aligns with the social and economic frameworks by showing potential health benefits worth millions of dollars annually. Our findings suggest that transitioning away from traditional agricultural practices and integrating biomass in energy production can make a substantial contribution to improving air quality.

References:

A. H. Truong, Minh Ha-Duong. *Impact of Co-firing Straw for Power Generation to Air Quality: A Case Study in Two Coal Power Plants in Vietnam*. IOP Conference Series: Earth and Environmental Science, 2018,

2018 4th International Conference on Environment and Renewable Energy (ICERE 2018) 25-27 February 2018, Da Nang, Vietnam, 159, pp.012034. (10.1088/1755-1315/159/1/012034). (hal-02352700)

an Ha Truong, Minh Ha-Duong, Hoang Anh Tran. Economics of co-firing rice straw in coal power plants in Vietnam. Renewable and Sustainable Energy Reviews, 2022, 154 (111742), pp.1-12. (10.1016/j.rser.2021.111742). (hal-03277278v2)

An Ha Truong, Minh Ha-Duong. Economics of co-firing rice straw with coal in old and new coal power plants in Vietnam. The 11th Vietnam Economists Annual Meeting (VEAM 2019), Dalat University, Jul 2019, Da Lat, Vietnam. (hal-04486785)

Economic Implications of Energy Transition

Our group also delved into the economic aspects of energy transition, analyzing Vietnam's shift in energy policy and the feasibility of expanding coal power in light of stranded asset risks. We investigated how pioneering domestic environmental regulation could foster new eco-industries, providing a competitive advantage in the global renewable energy market. Additionally, we explored the financial mechanisms to support Vietnam's rapid growth in electricity demand, suggesting that developing the green bond market and leveraging state-owned enterprise investments could be viable paths forward. The emphasis on financial innovation underscores the importance of economic considerations in the transition to renewable energy.

References:

Minh Ha-Duong, Trinh Hoang Anh Nguyen. Insights for Vietnam's Energy Transition in the Power Sector and international cooperation. Vietnam Sustainability Forum 2019, Jan 2019, Hanoi, Vietnam. (hal-04486762)

Minh Ha-Duong. Implementing a Just Energy Transition: How to spend \$15.5 billion in the next 4 years?. Fourteenth Vietnam Economist Annual Meeting (VEAM 2023), University of Economics, Danang, Jul 2023, Danang, Vietnam. (hal-04162361)

Minh Ha-Duong. International collaboration on the energy transition in Vietnam: Keynote address. Colloque ICISE "Questions environnementales: des réponses scientifiques et juridiques", XIXe Rencontres du Vietnam, Jul 2023, Quy Nhon, Vietnam. (hal-04155272)

Advancing Renewable Energy Technologies and Policies

Several studies within our group focused on enhancing renewable energy technologies and optimizing policy approaches. We examined the potential of utility-scale battery storage to support the adoption of solar PV and wind power in Vietnam, recognizing technological and financial barriers. Our contributions also include developing a new method for optimizing energy systems with a high proportion of variable renewable energy, facilitating

more accurate and efficient energy planning. Furthermore, we assessed the competitive advantage arising from renewable energy policies, highlighting the dynamic differences between the wind and solar PV industries.

References:

Minh Ha-Duong. VIET: why, who, what? Activities overview for year one. 2019. (hal-04486759)

Minh Ha-Duong, Xuan Truong Nguyen. Clean Energy and Sustainable Development in Vietnam. Solar and Energy Storage World Vietnam 2018, Nov 2018, Ho Chi Minh City, Vietnam. (hal-04486337)

Minh Ha-Duong, Trinh Hoang Anh Nguyen. Seven Insights for Vietnam's Energy Transition in the Power Sector. Vietnam Sustainability Forum 2019 - Academic conference, AVSE, Jan 2019, Hanoi, Vietnam. (hal-04486764)

Social Dimensions of Energy Access and Sustainability

Our research has shed light on the social and subjective dimensions of energy access, sustainability, and poverty. By using subjective indicators alongside traditional objective measures, we provided a more nuanced understanding of electricity poverty in Vietnam, emphasizing the importance of meeting the diverse needs of households. This approach offers valuable insights for international efforts to track and improve energy access, highlighting the role of subjective well-being in assessing development progress.

References:

Minh Ha-Duong, Nguyen Hoai Son. Subjective satisfaction and objective electricity poverty reduction in Vietnam, 2008-2018.. Fullbright Review of Economics and Policy, In press, (10.1108/FREP-03-2021-0022). (hal-03160911v3)

Minh Ha-Duong, Hoai Son Nguyen. Is electricity affordable and reliable for all in Vietnam?. 2018. (hal-01692453)

Hoai Son Nguyen, Minh Ha-Duong. Income and electricity poverty in Vietnam 2012-16. The 11th Vietnam Economists Annual Meeting (VEAM 2019), Dalat University, Jul 2019, Da Lat, Vietnam. (hal-04486771)

Exploring Novel Approaches and Historical Perspectives

The group also explored innovative approaches to wind power projects and examined historical perspectives on energy economics. By distinguishing nearshore wind projects from the traditional onshore/offshore dichotomy, we suggested an alternative policy direction focused on incremental expansion. Additionally, our historical analyses of energy in economic theory and the development of cooperative renewable energy projects provided context for contemporary energy transition strategies, emphasizing the need for organizational, cultural, and technological shifts.

References:

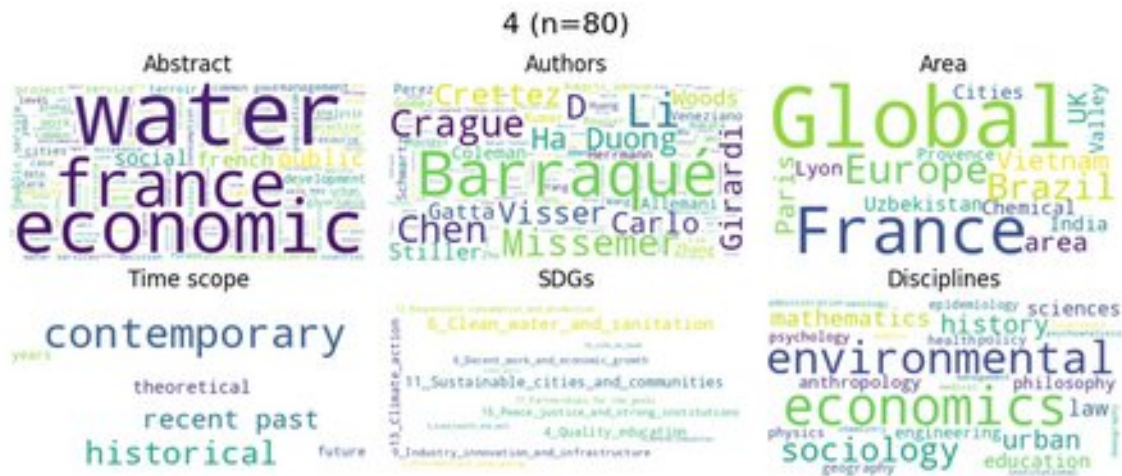
Minh Ha-Duong. *Technology costs for the first wave of wind farms in Vietnam: Paying extra for better wind nearshore. Energy for Sustainable Development, 2023, 74, pp.309-313. (10.1016/j.esd.2023.04.010). (hal-03127371v3)*

Alain Nadaï. *Mettre le vent en tension. Faire l'économie de l'environnement, pp.141-160, 2020. (halshs-03092117)*

Catherine Agnès, Laure Boemare. *Challenging the new blue deal by embedding interactions with the non-humans in the offshore renewable energy development. Frontiers in Marine Science, 2023, 9, (10.3389/fmars.2022.952593). (hal-04371288)*

In conclusion, our research themes collectively address significant scientific, technological, cultural, economic, and societal challenges related to energy transition, environmental sustainability, and socio-economic development. By offering both critical insights and practical solutions, our work contributes to the global effort to achieve a more sustainable and equitable future.

4. Environmental Sustainability and Governance



The research themes of this group are focused on a diverse array of topics that span from the institutionalization of water management as a common good to the exploration of economic dynamics, urban sprawl, climate justice, and the complexities of managing common pool resources. These themes not only place our research within the international context of sustainability and governance but also respond to the pressing scientific, technological, cultural, economic, and societal challenges of our time.

Institutionalization of Water Management

Our research delves into the evolution of water management practices in France and Brazil, showing how water charges and policies have

emboldened collective actions aligning with the principles of the commons. This comparison highlights the importance of international cooperation and knowledge exchange in fostering sustainable water management practices that can be adapted to different legal and cultural contexts.

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Climate Change and the Commons

Another significant theme is the critical examination of climate change's impact on water resources management. Through studies on the "mega reservoir" controversies and the reevaluation of water as a common good, our work contributes to reshaping the discourse around sustainable water management strategies in the face of climate change. It underscores the necessity for innovative approaches that integrate scientific knowledge with participatory democracy.

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Urban Sprawl and Economic Dynamics

Our group has also addressed the consequences of urban sprawl, emphasizing the inefficacy of current public policies and proposing new

governance frameworks to counteract its environmental impact. Alongside, the exploration of economic dynamics, including the revisitation of historic economic theories like Hotelling's rule and Ramsey's work on savings, shows our commitment to understanding long-term economic behaviors and their implications for resource management.

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Governance and Policy Innovations

Research on governance mechanisms, such as the OECD's 3 T's and the proposed 3 E's, suggests new directions for water services funding and governance, emphasizing sustainability and resource conservation. Similarly, studies on the complexities of managing common pool resources like water underscore the challenges and opportunities for policy innovation in resource management.

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Socio-Economic and Cultural Challenges

Our work also addresses the socio-economic and cultural aspects of environmental and economic challenges, including the controversies surrounding Lyme disease management in France, the historical legacy of economic thoughts, and the societal implications of entrepreneurial decisions during the COVID-19 crisis. These studies reflect the intersection of science, technology, culture, and society in addressing global challenges.

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Conclusion

Overall, our research contributes significantly to the international discourse on environmental sustainability, economic dynamics, and societal resilience. Through a multidisciplinary approach that combines historical analysis, economic theory, governance studies, and socio-cultural perspectives, we offer insights into navigating the complexities of contemporary challenges. Our work underscores the importance of innovative governance mechanisms, participatory democracy, and the reevaluation of resource management strategies to achieve sustainable and equitable outcomes.

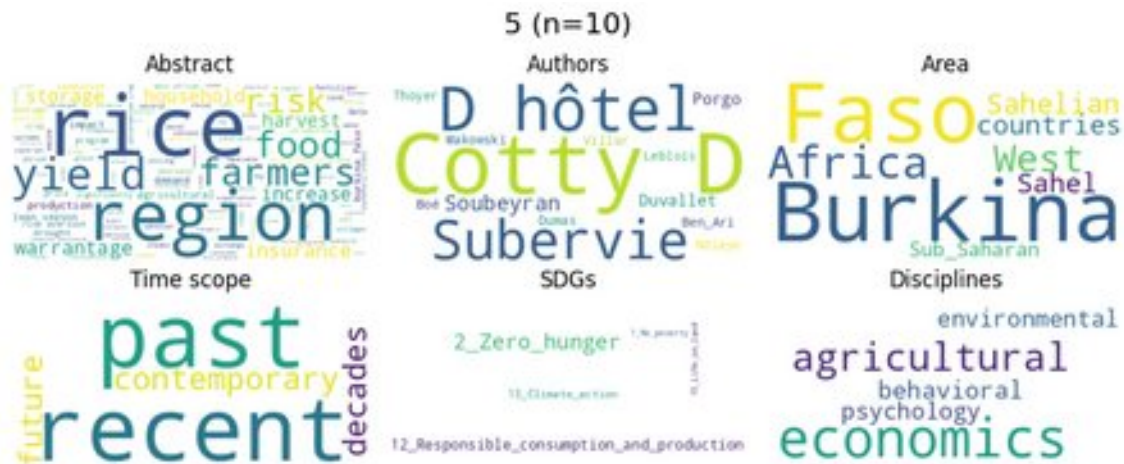
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5. Agricultural Challenges and Innovations in West Africa and the Sahel



The research themes of this group are focused on addressing critical issues influencing agricultural practices, food security, and risk management in developing countries, particularly in West Africa and the Sahel region. Through a combination of field experiments, model analysis, and impact assessment studies, our group has explored the dynamic interplay between climate risk, agricultural production stability, and innovative financial tools aimed at enhancing food security and agricultural development. Placed within the international context, our work contributes to the global efforts in tackling the multifaceted challenges of climate change, economic volatility, and social instability affecting vulnerable populations.

The Role of Drought in Index-Based Insurance Demand

Our research on the puzzling low uptake of non-subsidized index-based insurance in developing countries highlights a paradox: increased exposure to drought risk does not always lead to higher demand for insurance among farmers. Our investigation reveals that higher drought frequency can actually reduce demand for index insurance. Through an expected utility model and a field experiment in Burkina Faso involving 205 farmers, we discovered that the demand for insurance exhibits an inverted U-function in relation to drought frequency, and that downside basis risk decreases insurance demand under frequent drought conditions. This finding addresses the scientific and economic challenge of designing effective risk management tools for farmers facing climate variability.

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Stability of Rice Yields Versus Alternative Crops

In analyzing agricultural development pathways in West Africa, we identified the relative stability of rice yields compared to alternative crops such as sorghum, millet, and tubers. Given the significant role of rice in the West African diet and the region's push for rice self-sufficiency following the 2008 food price crisis, our work illustrates that rice yields are less stable, potentially exacerbating food security concerns. Our models, accounting for climate variability, reveal how yield variability differences between rice and alternative crops widen in regions with more variable monsoon precipitation. By highlighting the importance of yield stability in rice expansion scenarios, our research responds to the societal and economic challenges of ensuring food security in the face of climate change.

References:

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Impact of Inventory Credit on Food Security and Agricultural Investment

Our group has conducted extensive research on the implementation and impacts of inventory credit (warrantage) programs in the Sahel. By partnering with rural banks and farmer organizations in Burkina Faso, we evaluated the effects of warrantage on household livelihood, agricultural investment, and food security. Our findings demonstrate that inventory credit facilitates increased cultivated area, fertilizer use, and livestock and grain stock levels, while potentially improving dietary diversity and extending the self-subsistence period. This research addresses the

technological and cultural challenges of innovating financial services to enhance agricultural productivity and food security amidst economic and societal challenges, including the expansion of armed conflicts in the Sahel region.

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In sum, our research themes have identified significant challenges and opportunities within the agricultural sector in developing countries, focusing on risk management, crop yield stability, and innovative financial mechanisms. Each theme responds to pressing scientific, technological, cultural, economic, and societal challenges, contributing valuable insights and solutions to enhance food security and agricultural resilience in the face of growing uncertainties.

6. Climate Change and Energy Transition Research



The research themes of this group are deeply entrenched in addressing the multifaceted challenges associated with climate change, energy transition, and socio-economic disparity. Our endeavors are placed within the international context of sustainable development, where significant scientific advancements have been made in understanding and mitigating the impact of climate change on various aspects of human life and the environment.

Energy Transition and Environmental Policies

One of the group's primary research areas involves the study of energy transition policies, including the shift towards low-carbon sectors and the implications of large-scale renewable energy adoption. Notably, we have uncovered that while solar panels and weatherization policies in France create jobs, the idea that renewable energy boosts employment by reducing imports is challenged. Our research suggests that encouraging low-carbon and labor-intensive sectors can yield a double dividend, contributing significantly to the global conversation on green job creation and economic restructuring in the face of climate change.

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Subsidies and Economic Instruments for Energy Efficiency

Another significant theme is the critical assessment of subsidies for energy efficiency. Our work elucidates the intricacies and outcomes of various subsidy forms, highlighting the ad valorem and specific subsidies for their respective advantages and disadvantages. A landmark finding is that targeting subsidies towards low-income households not only augments energy savings but also improves economic efficiency and equity. This insight is pivotal in devising policies that reconcile climatic and social objectives, especially within the context of the need for equitable energy transition measures.

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Residential Energy Demand and Housing Policies

Our research also delves into policies aimed at reducing residential energy demand, a critical concern for climate policy. We provide valuable insights into the cost-effectiveness and distributional impacts of different policies, offering a comprehensive view that informs both French and broader European strategies for energy efficiency in the housing sector. For instance, our analysis of the French carbon tax and revenue recycling options furnishes evidence on the implementation of measures that can simultaneously address environmental goals and social equity.

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Technological and Behavioral Solutions to Climate Challenges

Exploring technological solutions and their interplay with human behavior comprises another cornerstone of our research. We investigate the role of households in climate policies, emphasizing the necessity of behavioral change alongside technological advancements to achieve significant emission reductions. Our studies on households highlight the potential for substantial carbon footprint reduction through modifications in mobility, diet, and home energy use, pointing towards the need for supportive regulatory frameworks.

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The Political Economy of Climate Policies

Lastly, we contribute to the discourse on the political economy of climate policies, particularly emphasizing the distributional consequences and public acceptability of such measures. Our work sheds light on the imperative for climate policies to be sensitive to their socio-economic impacts, advocating for approaches that ensure a fair transition towards low-carbon societies.

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In summary, our research addresses the intersection of scientific advancements with the broader societal challenges posed by climate change and energy transition. Through a multidisciplinary approach, we provide insights that respond to pressing technological, cultural, economic, and societal challenges, contributing to the global endeavor to mitigate climate change and foster sustainable development.

7. Exploring the Impacts of Agricultural Practices on Global Sustainability



The research themes of this group are diverse, addressing critical issues from environmental impacts of land use change and agricultural practices to socio-economic aspects of food security and policy. These themes are of significant importance in the international landscape, where challenges like biodiversity decline, climate change, agricultural sustainability, and food security are becoming increasingly prominent. By exploring analytical models, bioeconomic frameworks, agroecological practices, and the implications of nitrogen fertilizer use, among others, the group contributes valuable insights and potential solutions to multifaceted global problems.

Land Use and Environmental Impact

The investigation into land-use change dynamics due to agricultural demands highlights the environmental and socioeconomic impacts of these alterations. This research is critical as it provides a quantitative understanding of yield losses and gains, offering a foundation for policies aimed at mitigating the environmental consequences of agriculture. Similarly, studies on wildlife population dynamics and the effect of land rent theories on cropland allocation emphasize the intricate connection between agricultural practices and biodiversity. Significant advancements include developing precise models for monitoring wildlife populations and understanding regional differences in land use, which are essential for targeted conservation efforts.

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Agricultural Practices and Food Security

A core theme has been reconciling productive and environmental goals through agricultural policies, particularly under the looming shadow of climate change. By comparing impacts of different policy scenarios on bioeconomic indicators, the group's work sheds light on achieving sustainable agricultural practices that balance productivity with ecological considerations. This is echoed in studies exploring the potential of agroecology in places like India, where alternative agricultural practices may offer solutions to the agrarian and environmental crisis precipitated by conventional farming methods.

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Climate Change and Agricultural Sustainability

The research underscores the pressing challenge of adapting food systems to changing climate conditions and limited natural resources. Efforts like the Agrimonde-Terra foresight study, which explores future scenarios of land use and food security, exemplify the group's commitment to broadening the debate on sustainable agriculture. Moreover, the increased rate of greenhouse gas emissions, notably N₂O from agricultural practices, presents a clear signal of the need for robust mitigation strategies to combat climate change, underpinning much of the research conducted.

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Socio-Economic and Policy-Oriented Research

Through evaluations of policies on animal welfare and the integration of ecological models with economic analyses, the research additionally contributes to a nuanced understanding of the socioeconomic dimensions underpinning agricultural practices and environmental stewardship. This multidisciplinary approach is crucial in crafting policies that are both ecologically sound and socioeconomically viable.

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Technological and Methodological Advances

Developments in non-destructive, precise detection of crop status using UAV-based multispectral imagery, and advances in understanding the contribution of agroecology to food security, exemplify the technological and methodological strides made by the group. These advancements not only enhance agricultural productivity and ecological health but also offer scalable solutions to global challenges.

References:

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In conclusion, the group's research intersects critical scientific, technological, cultural, economic, and societal challenges. By advancing knowledge across these diverse but interconnected themes, the group contributes significantly to the global pursuit of sustainable agriculture, environmental conservation, and food security.