

Innovative International Cooperation for Climate

Reconciling urgent action and transformational change

AGRICULTURE, FORESTRY AND OTHER LAND USE (AFOLU)



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THE TRANSFORMATION OF AGRICULTURE, FORESTRY AND LAND USE MUST MEET OBJECTIVES ON MITIGATION, ADAPTATION, BIODIVERSITY, FOOD SECURITY AND RURAL LIVELIHOODS

The stakes are high for the transition of the agriculture, forestry and other land use (AFOLU) in a world facing climate and biodiversity crises conjointly with increasing food insecurity and income inequalities.

- The land use sector (AFOLU) is the source of 22% (13GtCO₂eq.) of global annual greenhouse gases (GHGs). The main sources of CO₂ emissions derive from the conversion of forests, peatlands, and other carbon-rich ecosystems to agriculture; from the methane emissions of livestock production and rice cultivation; and from N₂O emissions related to fertilizer use (IPCC, 2022(a)). If all emissions from other sectors associated with the functioning of the global food system are included (i.e. upstream emissions to produce inputs such as fertilizers and machinery, and downstream emissions associated with the transport and retail of food and other products), the share of global GHG emissions amounts to 34% (Crippa et. al., 2021). Furthermore, terrestrial ecosystems also bind carbon from the atmosphere in biomass and soils, thereby acting as a carbon sink.
- Terrestrial ecosystems are vulnerable to climate change, and agricultural yields have been negatively impacted by climate change over the last decades, reducing food and water security (IPCC, 2022(b)). Future risks include the reduced capacity of these ecosystems to bind carbon, the loss or degradation of much of the world's forests (due to climate and non-climate drivers), further losses to agriculture yields, intensive agricultural expansion that reduces the resilience of ecosystems, the loss of productive land due to desertification and increasing sea levels, reduced water availability, and the emergence of new forest- and crop pests and diseases (IPCC, 2022(b)).

- Conversions of natural biodiversity-rich ecosystems into managed landscapes and agricultural land, especially under extensive management, are the main drivers of biodiversity loss globally. Other causes, also related to land use, include the exploitation of wildlife and chemical pollution (IPBES, 2019).
- The agrifood system provides employment to 1.23 billion people, and contributes to the livelihoods of 3.83 billion people worldwide (Davis et. al., 2023). Agriculture, and primary production in particular, is the predominant employer especially in low-income countries (Davis et. al., 2023). Furthermore, poor communities with limited access to basic services are more vulnerable to climate change than others (IPCC, 2022).
- Agriculture and forests play a vital role in ensuring food security worldwide. However, global food insecurity is increasing, with 9.2% of the current world population classed as undernourished. Furthermore, global agrifood and land use systems are failing to provide affordable and healthy food for all, with 42% of the world's population unable to afford a healthy diet (FAO, IFAD, UNICEF, WFP and WHO, 2023).

The transformation of the AFOLU sector must therefore meet objectives on climate mitigation, adaptation and resilience, biodiversity conservation, rural livelihoods, and food security. This requires systemic transformations of the sector, including increasing ecosystem preservation and restoration, a transformation of agricultural practices, reducing food loss and waste, and further demand-side action on diets (Svensson et. al., 2021). The national pathways and policies best suited to achieving these aims depend on eco-climatic and geophysical conditions, as well as national political, socio-eco-

conomic and institutional circumstances and priorities.

Globally, progress toward objectives on mitigation, adaptation, biodiversity, food security and rural livelihoods is currently insufficient. Consequently, there must be an increase in long-term ambition, while short and medium-term policies and plans must accelerate action to meet global targets (IPCC, 2022(a); IPCC, 2022(b); IPBES,

2019; IPCC, 2019). By considering the situations in Brazil, Colombia, India, Indonesia and Senegal, this chapter focuses on the main areas of international cooperation required to transform the land use sector to meet these objectives.

NATIONAL PATHWAYS AND POLICY MIXES THAT MEET TARGETS BASED ON NATIONAL CIRCUMSTANCES

BRAZIL

Land use, land use change and forestry (LULUCF) emissions account for 38% of Brazil's GHG emissions, and reducing deforestation is key for Brazil to meet its net zero emission target, and to halt the loss of biodiversity-rich and resilient rainforest and savannah ecosystems. The main driver of deforestation is agriculture, and hence reducing deforestation requires the transformation of not only forest management and governance, but also of the agricultural sector.

To reduce deforestation, Brazil's agriculture must continue its transition from highly land-extensive practices to more advanced, scientifically-driven, and innovative approaches. Recent research shows a potential for increasing agricultural output in monetary values (by 84% 2020-2050) while limiting agricultural land expansion (in the same scenario, agricultural land surface increases by 8% until 2050). The achievement of these results relies on many agricultural and forestry transformations, including the increase of livestock stocking rates and productivity, and the sustainable restoration of degraded pastureland for renewed agricultural use, which should reduce the pressure for the conversion of new land.

Furthermore, improved monitoring and governance of agricultural supply chains and forests may play an important role in reducing deforestation. Improving the tracking of livestock

products will help establish deforestation-free value chains for cattle and other products. These solutions could build on ongoing initiatives, especially for livestock (e.g. the SISBOV certification system). It will also be important to reinforce the implementation of Brazil's forest code and the protection of conservation areas via strengthened command and control policies, including monitoring and the presence of authorities, the seizure of assets and equipment used in illegal exploitation, and the imposition of fines.

These transformations will rely on increased financial support and access to credit for farmers, particularly smallholders. To this end, the diversification of finance sources, particularly by attracting more private investment, is important. Furthermore, the provision of support must be accompanied by strengthened sustainability conditions, for example, agricultural loans should be granted in line with the Low-Carbon Agriculture plan that was implemented in 2021, a national policy to reduce the negative environmental impacts of agriculture. In a step in the right direction, the Brazilian Central Bank introduced new climate and socio-environmental criteria for rural credit in 2021.

COLOMBIA

Given that the AFOLU sector contributed 59% of gross CO₂eq emissions in 2018, according to the Colombian Biannual Update Report (BUR), it is clear that the sector will play a key role in attaining the goal of zero net emissions by 2050. Between 1990 and 2018, deforestation represented 33% of total emissions while enteric fermentation accounted for 14%. The Colombian Long-Term Strategy (LTS) indicates the need to prevent and rapidly reduce deforestation and ecosystem degradation, as well as the need to increase CO₂ absorption through ecosystem restoration, enhancing agroforestry and silvo-pastoral systems, and increasing commercial forestry. Increasing agricultural productivity via sustainable practices is necessary to guarantee adequate food provision for an increasing population, and for reducing an unsustainable increase in demand for land at the expense of forests and other carbon sinks. Livestock activities are particularly important in this respect as they significantly contribute to both gross emissions and deleterious land use change.

Rapid action is necessary to ensure long term decarbonization, and the updated nationally determined contribution (NDC) targets a 51% reduction in emissions by 2030. Meeting this target implies reducing deforestation from an average of over 200,000 ha/year to 37,500 ha/year, with an acceleration in this decrease at the start of this process and an increasing restoration effort. It also implies the transformation of 5 million hectares of traditional livestock production, about 20% of the total livestock area, into silvopastoral systems. Although there are no clear-cut goals in terms of increasing crop productivity, it is expected that a

70% increase in average productivity is required to supply the domestic demand in 2050 without encroaching into forest areas.

For deforestation control and conservation, the government issued the Comprehensive Strategy for Deforestation Control and Forest Management, which has recently been adjusted to maintain control over major deforesters, while collaboration and trust building efforts are being made with local communities to prevent deforestation. Building on these measures, the NDC sets a target of reducing deforestation to 50,000 ha/year for 2030 – which is likely to be insufficient in terms of supporting the NDC's emission reduction target. Regarding the transformation of livestock activities, there is an ongoing project to mainstream sustainable cattle ranching, which has provided the base for Resolution 126 of 2022 from the Ministry of Agriculture, officially issuing the Guidelines for Sustainable Bovine Cattle Ranching as the main tool for focusing governmental activity in this area. The guidelines emphasize the importance of a substantial adoption of silvopasture. The NDC sets a target on converting 3.5 million hectares of traditional pastures to sustainable livestock production, including silvopasture, by 2030 – which is short of the 5 million hectares considered as necessary according to recent estimates. Lastly, a set of sub-sectoral programmes focus on crop production (for sugar cane molasses, cocoa, rice, coffee, and commercial forests), some of which are quite ambitious, but there is a need for a comprehensive plan for a sustainable increase in agricultural productivity that is appropriately aligned with the goal of net zero emissions for 2050.

INDIA

The AFOLU sector accounted for 17% of India's GHG emissions in 2016, the primary sources being CH₄ and N₂O emissions from livestock, fertilizer applications, and rice cultivation. With almost 70% of India's population dependent on agricultural income and the sector char-

acterized by small and marginal farmers, the transformation of agricultural systems must reduce non-CO₂ GHG emissions while ensuring improved livelihoods for the country's farmers. Additionally, India's AFOLU sector is must rapidly become more resilient.

Some of the key transitions within the land-use sector need to come from changes to rice cultivation practices (e.g. alternate aeration of continuously flooded paddy fields), improvements to livestock feed, and anaerobic digestors for manure management. These manure management policies would have the double benefits of gas capture, reducing methane emissions, as well as making organic fertilizers available for soil application. Furthermore, reducing nitrogen fertilizer use by improving the nutrient uptake efficiency of plants (e.g. through inhibitors, neem-coated urea fertilizers and nano-fertilizers) will reduce N₂O emissions, and other negative environmental impacts of excessive fertiliser application.

India's NDC aims to increase the LULUCF sector carbon sink by 2.5 to 3 billion tonnes of CO₂ equivalent through the expansion of additional forest and tree cover by 2030. Increasing on-farm tree cover could also play an important role for providing additional revenues to farmers and reducing risks as they diversify their production, and supporting biodiverse and resilient agricultural ecosystems.

The structure of the Indian agricultural sector, which comprises many smallholdings and marginal livestock farms, presents a challenge to the implementation of the above transformations. The Government of India is nonetheless endeavouring to stimulate these changes by undertaking extensive studies and mapping strategies towards doubling farmer income. The National Mission for Sustainable Agriculture (NMSA) is aimed at enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation. In 2014 the Government of India launched a national agro-forestry policy with targets for farmer income, mitigation, and resilience. In addition, a biogas programme has been implemented to enhance manure management for harvesting energy and reducing emissions. Dairy co-operatives in India are active stakeholders in this programme who investigate the appropriate types of animal feeds and provision.

INDONESIA

The loss of peatlands and forests in Indonesia constitutes the country's main source of GHG emissions and biodiversity loss. Emissions from LULUCF accounted for 26% of national emissions in 2020, with high interannual variability due to the peaks and troughs in emissions from peat fires. Significant reductions in LULUCF emissions will be central for achieving the country's long-term strategy. Agricultural expansion is the main driver causing the decline in natural ecosystems, which means that to reduce deforestation and the loss and degradation of peatland, a transformation of land use and agriculture is necessary. To reduce the pressure for land conversion, important national-level actions have been identified, including boosting crop productivity via yield increases and cropping intensity, and optimizing the use of unproductive and marginal land for agricultural expansion. The former will require improvements to water and nutrient management (precision fertilizer, biofertilizer),

crop rotation and diversification, as well as accelerating the restoration of water catchment areas to ensure a sustainable water supply; while the latter will require improvements to soil fertility and overall national, regional, and local land use planning. Improving the soil fertility of marginal lands is critical, and this will require innovative technologies to be made available to farmers, and public support to accelerate the adoption of new technologies and practices. In parallel to the restoration of degraded ecosystems for agricultural use, it is important that there is an acceleration in the restoration and rehabilitation of degraded forests, peatlands and mangroves. In a context where 42% of the population is rural, of which many live in poverty, it is vital that climate and biodiversity objectives are aligned with rural livelihoods. Therefore, enabling local communities to use forests sustainably is a central tenet of Indonesia's land use transition strategy. Social forestry

is a key policy aiming to achieve this goal, facilitating local communities to practice polyculture in forest ecosystems and to utilize non-timber forest products. As part of this policy, the government provides support to these communities in different forms (access to finance, extension services, technologies, markets), giving advice on how to carry out these activities without harming ecosystems. This also includes promoting the expansion of paludiculture – a type of farming carried out on peatland that does not degrade the peat. This requires issues around land tenures to be addressed, such as improving the lack of clarity

in the land registry around ownership of certain land, and expanding government training and rural investment programmes to give farmers the necessary knowledge and initial investments to adopt more sustainable practices. Currently, 12 million hectares of forests are allocated to social forestry.

Additionally, research shows that demand side action to reduce food loss in national agrifood supply chains, and to limit the increase in meat consumption as the Indonesian population gets richer, will be important to contain agricultural expansion in Indonesia.

SENEGAL

In Senegal, five transformations will be central to a transition of agriculture, forests and land use:

- First, improving access to land and promoting the restoration of degraded ecosystems through improved land-use planning (including mapping of ecosystems and the changes they are undergoing in terms of salinisation, soil erosion, etc.), sustainable land management, and the promotion of agroforestry and agro-ecological practices in agricultural systems. Such transformations will require trainings for farmers and land managers based on local restoration practices, the management of local forests and public support to the development of agricultural entrepreneurship among young people and women.
- Second, the development of the integration of value chains in the agricultural, livestock and fisheries sectors is key to support the livelihoods of farmers. This requires interventions by various players in administrative authorities, local authorities and producer organisations as well as in technical support services. Furthermore, the development of integrated production centres for agriculture, livestock and fisheries (including improving access to inputs and water accessibility and use, and to animal health services). These centres should also promote integrated crop-livestock production systems.
- Third, gradual and sustainable intensification of farming systems, by promoting agroecology and resilient, low-carbon technologies is important, given low current land- and labour productivity. This transformation will build on low-carbon mechanisation, the control of water resources, the integration of zero carbon energy production into agriculture (biogas, solar, etc.). The integrated, low-carbon and resilient development of sub-sectors (including beekeeping, animal fattening, etc.) via for instance the introduction of new breeds with high genetic potential will also be important. This increase in the productivity of agriculture must be accompanied with an improvement in the competitiveness of domestic agri-food processing units, to ensure that it feeds a process of national industrialisation.
- Fourth, improved access to, and rational management of, resources for more resilient agriculture through improved governance of land and the promotion of management tools and information systems will prepare agricultural production for a changing climate. This includes action on the mobilisation of surface water and groundwater, improved management of wastewater, and energy. Ensuring hydro-agricultural rehabilitation and development via anti-salt and water retention dykes, and retention basins is also key in this trans-

formation. Strengthening of inter-zone water transfers will further help to mitigate impacts of regional weather events.

- Fifth, reducing agricultural production losses (pre- and post-harvest) will have benefits to the full range of objectives identified. Important strategies to do so including choosing resistant

crop varieties; improving production, harvesting and conservation practices that minimises waste, for instance by to ensure that grains are harvested at the right stage of maturity; and facilitating farmers access to appropriate storage and conservation units and equipment.

COMMON TRANSFORMATIONS

The analyses of Brazil, Colombia, India, Indonesia and Senegal show that different strategies will be appropriate in different countries. Nevertheless, these studies also highlight some common transformations which must be implemented to achieve a resilient and biodiverse land use system that can reduce emissions while also supporting food security and rural livelihoods. These common elements include increasing crop and livestock productivity with agroecological and/

or otherwise sustainable practices; improved governance of the use and ownership of land; the restoration of degraded land for agriculture or forests; increasing multipurpose land use; and improving the governance and efficiency of agricultural supply chains. **Table 1** provides further details on these transformations.

Table 1: Common systemic transformations in agriculture and forestry

Key elements of systemic transformation	Conditions for success / implementation	Countries where this transformation is cited
Increasing crop and livestock productivity with agroecological and/or otherwise sustainable practices	<ul style="list-style-type: none"> • access to improved technology and farming practices, e.g. light machinery and new crop production practices • improved financial support to farmers for changing practices 	Colombia Brazil Indonesia Senegal India
Improve governance of the use and ownership of land	<ul style="list-style-type: none"> • land registry reform • increase state presence in/near forests for surveillance 	Colombia Brazil Indonesia Senegal
Restore degraded land for agriculture or forests	<ul style="list-style-type: none"> • improved financial support to farmers for changing practices 	Brazil Indonesia Colombia India Senegal
Increase multipurpose land-use, such as agroforestry	<ul style="list-style-type: none"> • access to knowledge about new production methods • improved financial support to farmers for changing practices 	India Colombia Brazil Indonesia Senegal
Improve agricultural supply chain governance to reduce food losses and illegal activities	<ul style="list-style-type: none"> • infrastructure investments and investments in on-farm storage facilities • coordination among supply chain actors around sustainability norms 	Brazil Indonesia Senegal

DIRECTIONS FOR INTERNATIONAL COOPERATION TO ACCELERATE NATIONAL ACTION IN THE AFOLU SECTOR

Implementing the transformations discussed above requires a package of coherent national policies and national political leadership, and on international conditions, including in terms of finance, trade and knowledge-sharing.

Innovative, well-targeted international cooperation designed with a bottom-up and needs-based approach can ensure that these conditions are in place. Many international initiatives already exist, especially around forestry-related questions. However, existing cooperation is poorly orchestrated and does not respond to the needs identified by countries in its current forms, and therefore leaves an international governance gap (Vidal, et. al., 2022). Hence, strengthening the coordination of international cooperation on AFOLU, and better aligning it with country needs is necessary to support ambitious national agriculture and forestry transformations. To avoid complicating the governance of AFOLU, it is worth noting that possible solutions may be found by reforming existing initiatives and institutions, and not necessarily through the creation of new ones.

Table 2 details how each international cooperation area could support the four identified transformations.

Finance can be an important area of international cooperation to support accelerated national action on AFOLU. Of particular significance is the support given to farmers and foresters to change their management practices – which requires investment by land managers (see **Table 2**). International finance has a major role in complementing domestic finance in emerging and developing countries (Songwe, Stern and Bhattacharya, 2022) and many initiatives already exist for financing forestry conservation and agricultural development. However, the AFOLU sector faces the greatest funding gap of all sectors in terms of achieving its global mitigation potential, which highlights an issue around the magnitude

of finance available to support sectoral transformations (IPCC, 2022(a)). Recent research indicates that the AFOLU sector received 28.5 billion USD in 2019-2020, including 11.9 billion USD for agriculture and 11.7 USD billion for forestry (CPI, 2023a). The finance provided remain siloed within different objectives (food security, mitigation, adaptation, resilience, biodiversity, and agricultural development) (CPI, 2023a; FAO, UNDP, UNEP, 2021; CIDSE, 2020). This points to a need to reorganize the international financial architecture to better streamline these different objectives, and to organize financing around systemic sectoral transformations in the AFOLU sector. Furthermore, given the economic structure of agriculture and forestry, with many smallholders, there is a challenge to ensure that finance actually reaches these actors (as opposed to downstream actors in agrifood value chains) (Global Alliance for the Future of Food, 2023; Buto, 2021). Finance available to smallholders come predominantly from public sources (CPI, 2023b). Hence, questions around the sources (public versus private) and types of finance (for instance concessional loans versus grants) are central to ensure that international cooperation on finance meets the needs of countries.

Trade also has an important role in helping to reduce deforestation, the loss of other natural ecosystems, and to support sustainable agriculture transformations, including by setting internationally agreed standards on sustainability and deforestation-free products (see **Table 2**). Trade regulations and trade agreements increasingly consider environmental and development objectives (OECD, 2023). Environmental questions are also increasingly addressed via unilateral trade regulations and by setting standards, such as the EU's Deforestation Regulation (EUDR), functioning as an import ban on six commodities and their associated products from recently deforested land. However, such trade regulations

Table 2: international cooperation to support systemic transformations in AFOLU

Key elements of systemic transformation	Finance needs	Trade regulations required	Issues where experience-sharing and knowledge building would be beneficial
Increasing crop and livestock productivity with agroecological and/or otherwise sustainable practices	<ul style="list-style-type: none"> • support for national financial actors to finance farmers and foresters, including small-holders, to help them change practices • improve access to finance for other agricultural actors, including agritech firms in developing countries, to support the emergence of a national industry 	<ul style="list-style-type: none"> • collective processes to define sustainability criteria (including for deforestation free products) for agricultural products in bilateral, regional and multilateral trade agreements • ensure that multilateral and regional trade rules do not counteract sustainable agricultural practices by blocking the differentiation of products based on their environmental impact 	<ul style="list-style-type: none"> • practices and policies for agroecological / sustainable intensification that align with environmental and socio-economic objectives, among countries that are eco-climatically and socio-economically similar • barriers to the implementation of these practices and policies • establishing and reinforcing international research cooperation on these topics
Improve governance of the use and ownership of land	<ul style="list-style-type: none"> • support for national capacity building for monitoring and controlling forest areas • support for the reform of land use registries and tenures 	<ul style="list-style-type: none"> • banning products from recently deforested land in trade agreements to incentivise improved land governance 	<ul style="list-style-type: none"> • how to build and reform land use registries • how to establish effective land protection
Restore degraded land for use in agriculture and for rewilding	<ul style="list-style-type: none"> • support for national financial actors to provide finance to farmers and foresters, including smallholders, to help them change practices 	<ul style="list-style-type: none"> • ensure that multilateral and regional trade rules support the protection and restoration of ecosystems 	<ul style="list-style-type: none"> • practices and policies for restoring and rewilding that align environmental and socio-economic objectives, among countries that are eco-climatically and socio-economically similar • barriers to the implementation of these practices and policies
Increase multipurpose land use	<ul style="list-style-type: none"> • support for national financial actors to provide finance to farmers and foresters, to help them change practices 	<ul style="list-style-type: none"> • favour products from multipurpose land use via trade agreements, for instance by including such practices as sustainable in trade agreements and collectively developing international agroforestry and/or agroecological certifications 	<ul style="list-style-type: none"> • practices and policies that encourage multipurpose land use and align environmental and socio-economic objectives, among eco-climatically and socio-economically similar countries • the barriers to the implementation of these practices and policies
Improve agricultural supply chains to reduce losses and illegal activities	<ul style="list-style-type: none"> • support for national financial institutions and direct support to storage facilities, transport infrastructure, and platforms for supply chain actors to coordinate 	<ul style="list-style-type: none"> • differentiating agricultural and forestry products in trade agreements and trade regulations based on their links to illegal activities, including illegal deforestation 	<ul style="list-style-type: none"> • supply chain organization among countries facing similar challenges • dietary reform
Cross-cutting international cooperation that would favour all transformations cited	<ul style="list-style-type: none"> • international financial initiatives to adopt a sectoral financing approach instead of siloing investments along different objectives of subsectors (agriculture and forestry) 	<ul style="list-style-type: none"> • develop trade and sustainability partnerships that include greater cooperation on sectoral transformations, alongside trade provisions 	<ul style="list-style-type: none"> • address the implementation barriers that hinder best-practice policies • reinforce links between knowledge-sharing fora and international cooperation mechanisms, including on trade and finance

are often not developed in collaboration with exporter countries. Furthermore, for these trade regulations to propel lasting change they must also address systemic transformations of the land use sector, which in the case of the EUDR means linking international cooperation to support investments in the transformation of agriculture to the trade regulation. In this vein, integrating both trade and sustainability into agreements intended to function as cooperative mechanisms that address trade in the context of sustainable development is a promising approach. The Agreement on Climate Change, Trade and Sustainability, first announced in 2019 and currently including New Zealand, Costa Rica, Fiji, Iceland, Norway and Switzerland, is an interesting example of such cooperation (Voituriez, 2023). An effective exchange of information around successful policies and practices in agriculture and forestry that align the different environmental and socio-economic objectives of the sectoral transformation, including on the barriers to implement these policies and practices,

can play an important role in accelerating the five identified transformations (see **Table 2**). Some existing initiatives for such knowledge-sharing already exist, including the six workshops organized on different agricultural topics under the Koronivia Joint Work Programme on Agriculture, under the UNFCCC's Subsidiary Body for Scientific and Technical Advice (SBSTA) and SBI (Subsidiary Body for Implementation), and the FACT Dialogues on forest, agriculture and commodity trade launched at COP26 in Glasgow and hosted by the COP26 secretariat, the Beef Round Tables, etc. Such knowledge-sharing forums are constructive, but to be truly effective the dialogues and knowledge-sharing must not only address questions around best practices, but also around how barriers to implement best practices can be overcome. Clear links to other areas of international cooperation (such as international trade and finance) are also positive, to ensure that conducive enabling environments to the implementation of identified best practices are established at the international level.

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The Deep Decarbonization Pathways initiative helps global and national decision-makers take actions towards a deeply decarbonized world with drastically reduced inequalities. It is an international collaboration of experts, who share common scientific methods to elaborate robust analyses and engage with stakeholders. The DDP is an initiative of IDDRI.

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