

Science-informed policy on agriculture and land for climate and biodiversity

6th Sino-European Expert
Dialogue on Long-Term
Development, Beijing-Brussels,
23 September 2020

气候和生物多样性： 以科学为指导的农业 和土地政策

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and land for climate
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Climate change and the biodiversity crisis are interdependent. The daunting complexity of their interaction for agriculture and land highlights the urgent need for intensified research and policies. Engaged in similar efforts to address these challenges, both the EU and China pledge to achieve climate neutrality and conserve biodiversity. September 2020 represented a major milestone in these commitments, marked by the Communication "Stepping up Europe's 2030 climate ambition" by the European Commission, and by President Xi Jinping's announcement of aiming for climate neutrality before 2060 at the 75th United Nations General Assembly. Agriculture, Land use and land use change, and forestry (AFOLU) will play an increasingly important role in achieving these goals on biodiversity and climate change, and it is critical to ensure adaptation, mitigation and biodiversity benefits are incorporated into activities in the AFOLU sector.

The mobilisation of China and the EU for climate and biodiversity notably involves bilateral relationships devoted to cross-fertilising views on actions, to sharing knowledge and good practices, and to strengthening mutual understanding. In this perspective, the Directorate-General for Climate Action (DG CLIMA) of the European Commission, with assistance of Renmin University of China, organized a virtual Sino-European expert dialogue about science-informed policy on agriculture and land for climate and biodiversity.

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Summary of the workshop

The 6th China-EU Expert Dialogue on Long-term Development was successfully held online on the 23rd of September 2020 with experts from two sides having exchanged views on science-informed policy on agriculture and land for climate and biodiversity. China-EU expert dialogue was productive and specific. All the participants agreed to enhance synergies between climate change mitigation, adaptation and biodiversity actions on agriculture, forestry and other land use types. One of the important themes discussed at the meeting was the synergy between climate action and biodiversity conservation.

The dialogue was structured along the three following questions:

- What are the main challenges and options for enhancing climate and biodiversity actions based on agriculture, forestry and other land uses?
- How to document and enhance synergies between mitigation, adaptation and biodiversity actions on agriculture, forestry and other land uses?
- What are the gaps in knowledge on agriculture and land for biodiversity and climate and how can they be filled through cooperation?

During the meeting, experts reflected on:

- the potential of legumes cultivation to increase EU's and China's protein self-sufficiency, and its climate and biodiversity benefits;
- the multiple roles of forests in the face of climate change, and the relevance of climate-smart forestry;
- a new report by the European Environmental Agency on nature-based Solutions and ecosystem-based approaches for climate change adaptation and disaster risk reduction;
- the important role of biodiversity conservation and ecosystem restoration for climate change mitigation;
- the multiple benefits delivered through the implementation of nature-based solutions;
- the world importance of peatlands for climate change and biodiversity, and the stakes for EU and China;
- the road to COP15 and the post 2020 Global Biodiversity Framework: state of play and opportunities to increase synergies between climate and biodiversity governance;
- the advances, issues and strategies of policy for nature-based solutions in China;
- the governance challenges of nature-based solution in China;
- the relevance of Sino-European collaboration on modelling biodiversity and climate cross-impacts;
- the barriers to nature-based solutions, and the potential of nature mapping for policy actions;
- the role of forests and trees in the urban landscape for climate and biodiversity;

Representatives of the incoming co-presidency of COP 26 underlined that the EU, China, and the UK were now united by common objectives of climate neutrality and biodiversity protection. Some of the Presidency's main objectives include the just rural transition, the preservation of nature and the increase of finance flows for nature-based solutions, as well as the sustainability of supply chains in trade.

In short, climate change mitigation, carbon storage and biodiversity conservation are closely interlinked, and a better understanding of their congruence would help to maximize the gains and address the climate change and biodiversity loss.

Current status of work in China and Europe

Agriculture and land, a source of nature-based solutions for climate and biodiversity

With its critical role for climate change and biodiversity, while at the same time suffering greatly from the consequences of climatic and nature disruptions, agriculture, land-use change and forestry are also the sources of many solutions to address the climate and biodiversity crisis. Most of these solutions generate strong synergies contributing to adaptation, mitigation and biodiversity conservation, which is at the inception of nature-based solutions, a concept which is very high on domestic and international agendas of both China and the EU. The dialogue highlighted that a wide variety of nature-based solutions are applicable worldwide, both on areas managed for production and on protected areas.

First, on agricultural lands, the sustainability of food production can be improved through many practices and technologies such as no-tillage, straw returning, balanced fertilization, forage and grain legumes cultivation, varieties selection, agroforestry, etc. By conserving carbon stocks and increasing removals of CO₂ from the atmosphere by preserving soil fertility, and by optimising nutrient flows, these practices and technologies allow at the same time to reduce CO₂, N₂O and CH₄ emissions, to reach acceptable yields and resilience regardless of varying local conditions; and diversify habitats and maintain ecosystem services. These triple benefits in mitigation, adaptation and biodiversity conservation and ecosystem restoration, while maintaining production services of food, feed, fibres, reinforce the interest and realism of nature-based solutions applied to Chinese and European agricultural systems.

Wetlands, in particular peatlands and including organic soils, are ecosystems which, despite their small surface area, pose daunting mitigation challenges, represent massive assets. The carbon stocks contained in these ecosystems are truly enormous, twice the world's total forest biomass. They are also extremely effective regulators of hydrological events. The stakes are particularly high in Europe and China, respectively the 2nd and 4th regions in the world in terms of the importance of peat bogs. The restoration and the rewetting of peatlands and wetlands cultivation are highly synergistic activities for climate and biodiversity. From a socio-economic point of view, these ecosystems can also be the subject of sustainable productions of food, such as rice paddy cultivation, feed and fibres.

Forests-based options for climate change mitigation involve carbon sequestration in forest trees and soils, and in long-lived wood products as well as the substitution of fossil materials and fuel. Trade-offs exist between these options, each with its temporal dynamics of emissions. Optimal forest management has to be tailored to each situation. Mature forests with low productivity or at risk of disturbance can easily be harvested, while high carbon-stock densities in old and biodiversity-rich forests have to be preserved. Tree species have to be changed to address vulnerability to climate change, while fire-prone forests have to be protected. Afforestation in degraded areas, or forest restoration can generate significant mitigation, adaptation and biodiversity benefits.

Settlement and urban areas are also areas where biodiversity actions and climate actions can be combined. Urban trees and forests, green roofs and walls reduce urban heat island effect, remove CO₂ and avoid GHG emissions, while ensuring ecological connectivity with rural areas, preserving soils functions and providing other cobenefits for urban populations. Green and blue infrastructures are strategically planned networks of natural and semi-natural areas that are able to deliver multiple ecosystems services.

Protected areas are also key areas for synergies between biodiversity and climate action. In China, Europe and around the world, strong correlations can be observed between biodiversity-rich and carbon-rich areas, so that conservation measures contribute to climate action, while the preservation and enhancement of carbon stocks contribute to biodiversity action. Some studies have found that carbon storage in above- and belowground forest vegetation and in the soil plays a crucial role in the terrestrial greenhouse gas balance. Climate change, deforestation, carbon storage in biomass and biodiversity are closely interlinked at both local and global level. Regulatory services have a positive spatial correlation with biodiversity, while production services have a negative spatial correlation with biodiversity. Others highlights that the inclusion of ecosystem services in conservation planning has a great potential to provide opportunities for biodiversity conservation. However, strategies of conservation based only on specific ecosystem services may be detrimental to the biodiversity and may cause other environmental problems. Systematic conservation planning procedures based on site complementarity would increase the efficiency of both biodiversity and climate change mitigation.

Multi-issues monitoring methods and tools

For both mitigation, adaptation and biodiversity, a wide range of information needs to be monitored, from estimating emissions and removals, measuring impacts and assessing vulnerabilities to climate change, to monitoring species abundance and the state of habitats and ecosystems.

The implementation and development of nature-based solutions involves using monitoring methods and tools capable of providing data and information simultaneously on all these different issues. These tools and methods not only make it possible to collect the data needed to develop the solutions themselves, but are also the basis of the information systems needed to plan and organise the various solutions. Implementing appropriate monitoring methods and tools are necessary, both to investigate the synergies between climate and biodiversity conservation and to quantify the evidence for co-benefits at local and global level.

All evidence on nature-based solutions highlighted in the workshop was based on the regular acquisition of monitoring data. These data may come from field inventories and surveys, or remote sensing systems. In most cases, these data, either qualitative or quantitative, are aggregated into multi-layered mapping tools allowing for geographically explicit and regular monitoring of land-based solutions over time. These tools allow to identify areas where climate and biodiversity issues come together, and thus to draw up typologies of nature solutions for areas identified as priorities, if necessary by inventing new ad-hoc metrics.

Integrated and collaborative governance

The success of nature-based solutions depends largely on the associated governance. At least three issues can be distinguished in terms of governance: (i) crossing different themes, particularly climate and biodiversity, both in expertise and in decision-making; (ii) improving interactions between different levels of decision-making and (iii) accompanying land managers in the adoption of new practices and technologies.

The success of nature-based solutions depends on recognising the interdependence and improving synergies between climate and biodiversity policies, two areas of expertise that were politically highly differentiated. To ensure that both biodiversity and climate issues are properly covered, these two areas of expertise must be combined. Appropriate governance will therefore involve building dialogue and enriching reciprocal knowledge between biodiversity and climate experts. At the decision-making level, this involves bringing together competences that are currently scattered among several services or institutions.

Institutional arrangements in favour of biodiversity and climate synergies have to closely involve different levels of decision-making, from the international level - where multilateral impulses on climate and biodiversity are engaged - to the local level, where subnational authorities are on the frontline against climate impacts and biodiversity loss, land-use conflicts and their consequences. Their appropriate consultation is proving to be an excellent means of ensuring good cohesion between international commitments and local implementations.

Governance of nature-based solutions also implies enhancing the links between theory and practice and scaling up implementation. Multiple policies are available, including incentive instruments on fiscal policy and market policy, or instruments to encourage voluntary participation. Initial policy systems for nature-based solutions were based on command and control policy, focusing on the guidance of incentive policy and gradually improving the potential of voluntary participation. At present, the main source of funding comes from central and national financing programmes, while local finance only shows a slow upward trend. Furthermore, the role of market mechanisms has been preliminarily explored, including enhanced financial support, forest carbon sink trading and the absorption of social funds. Public participation to nature-based solutions has to be encouraged in order to promote the integration of such solutions in their management and their choices. Tools dedicated to the dissemination of knowledge, such as innovation platforms or data laboratories, are also key to empowering land managers in climate and biodiversity.

Knowledge gaps and policy gaps

Assessment of cross impacts

A full understanding of impacts and potentials of AFOLU sector with regard to climate change mitigation, adaptation, and biodiversity, is critical to achieve synergies and avoid conflicts of different objectives. A prompt and effective monitoring, reporting and verification (MRV) system needs to consider the diverse nature of the AFOLU sector, rely on good inventory and modelling, and must be based on well-defined indicators. The EU has developed several MRV systems for the AFOLU sector, but China still lacks systematic assessments of mitigation, adaptation, biodiversity, as well as their co-benefits and trade-offs in the sector. This calls for further development of a reliable MRV system, modelling, and user-friendly tools. It is also of strategic importance to align the AFOLU MRV system with the national climate change MRV system. Monitoring the cross-impacts of climate change and biodiversity involve elaborating appropriate scientific protocols and making the necessary institutional arrangements to cross-reference existing databases and acquire missing information.

Design of synergistic solutions

There are still gaps in knowledge and in policies on the design of synergistic solutions for mitigation, adaptation and biodiversity conservation in the AFOLU sector, including nature-based solutions. Policymakers strive for practical, cost-effective, ecosystem based, and community-based solutions for climate change mitigation, adaptation and biodiversity conservation. However, this is compromised by insufficient information about the effectiveness of a myriad of possible solutions for emissions reductions, such as the role of protected areas in increasing carbon storage, and the trade-offs and co-benefits of different practices remain poorly understood. The potential of global biodiversity conservation efforts to also deliver critical benefits, such as carbon storage and other ecosystem services, is still undervalued. The potential, effectiveness, and operability of nature-based solutions, including their resilience to the different stresses related to climate change, biodiversity loss or other disturbances also require further research efforts, including in terms of modelling.

Adoption of innovative solutions

Although the concept of nature-based solutions has been applied in the field of climate change for more than ten years, it has not been embedded in the minds of policymakers, and actions in various sectors have not been actively linked to addressing climate change and biodiversity loss. There is a considerable accumulation of practical experience, such as decreasing non-CO₂ greenhouse gases emissions from various agricultural activities, increasing carbon sinks and system adaptation, but this knowledge is still in its infancy, and remains poorly accessible and little known to land managers and decision-makers. In China and the EU, as well as at the international level, initiatives are multiplying to facilitate access to this information, through dedicated platforms or reports for decision-makers. Technical support and capacity-building policies are mainly focused on command-and-control policies, and efforts to disseminate knowledge are still needed so that all land managers can become familiar with viable solutions, including nature-based solutions. Showing cases and specific training programmes could also facilitate the adoption of these solutions.

Enabling collaboration and policies

Stemming in particular from the multi-stakeholder forums on climate and biodiversity, solutions for mitigation, adaptation and biodiversity conservation suffer from gaps in knowledge and policy at the local level. The training of local authorities, their empowerment and their consultation in decision-making are areas for further improvement, especially for the interfaces between science and policy.

The EU and China have not yet formed a systematic policy system for mitigation, adaptation, and biodiversity conservation, and the relevant policies are scattered in different functional departments at present. The European Green Deal is an attempt to tackle this. The same scattering is observed for investments in nature-based solutions, including financial inputs. There is no diversified investment mechanism with wide participation of all parties in society. Technical support and capacity building policies are mainly focused on command and control policies, and their policy actions are scattered and difficult to form a whole system.

Gaps also occur on the international cooperation to design a model to support the whole cycle of nature-based solutions implementation, despite numerous tools developed in different cooperation areas including water management, disaster risk reduction and ecosystem-based adaptation. In particular, international cooperation between government agencies involved in projects of land management would allow to strengthen technical, policy and governance experiences and to take advantage of the respective differences observed in each one's implementations of nature-based solutions.

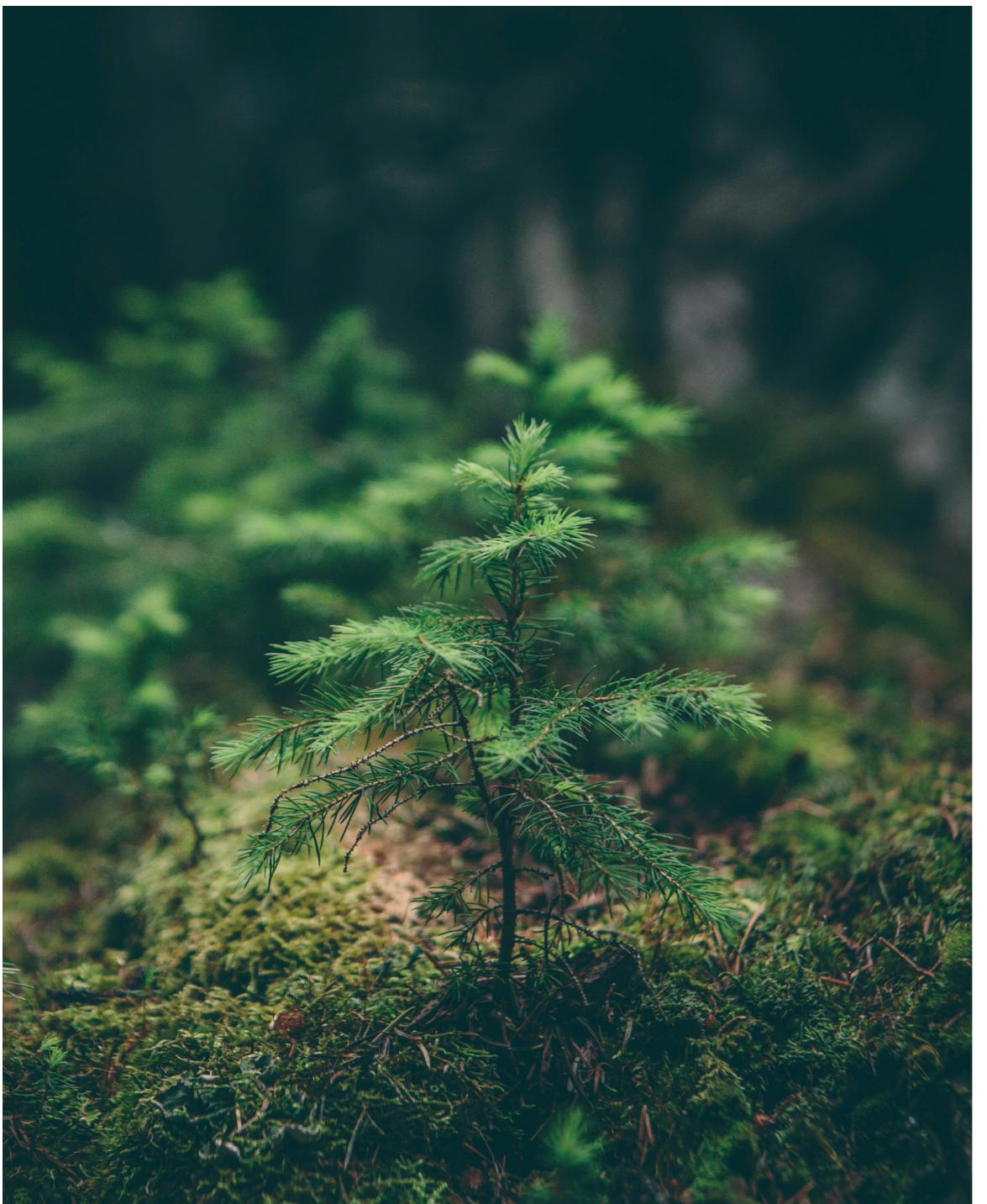
Next steps

For action in the coming months

Multiply dialogues between climate change and biodiversity conservation experts (dissemination events)

These dialogues could take place during joint side-events, in particular at COP 15 of the UNCBD and COP 26 of the UNFCCC. Themes should focus on specific topics related to the identified gaps that need to be addressed soon. Possible topics include the following:

- How to better reflect the value of biodiversity conservation in climate change mitigation and adaptation strategies;
- How to monitor cross-impacts of biodiversity and climate actions at local and national level;
- How to encourage the adoption of nature-based solutions by farmers and land managers.



Disseminate more good practices and lessons learned for a broader application of nature-based solutions (policy brief)

China and Europe can jointly find some case studies to explore some measures and practice on nature-based solutions to tackle both climate change and increase carbon sinks, while reducing biodiversity loss. Both sides should also reinforce coordination around global targets convergence at the international level, and the role of subnational governments to enhance synergies and minimize trade-offs between climate change and biodiversity.

Improve joint modelling between climate action and biodiversity conservation (dialogue meeting)

In the future, both sides should jointly work together and organise dialogue activities to establish mapping, monitoring and modelling methodologies to carry out improved assessment of cross-cutting impacts of climate and biodiversity policies, including the roles of protected area in climate change mitigation and adaptation. These methodologies could rely on improving existing carbon sink and biodiversity monitoring and could include reciprocal sharing of data from field inventories, remote sensing observations and land-use modelling.

Medium-term actions (in the next 1-3 years)

Further strengthen the scientific research and development cooperation of climate change and biodiversity between China and Europe

Improving existing cooperation between China and Europe and, where appropriate, developing new channels to help scientists achieve key scientific and technological breakthroughs in the field of climate change and biodiversity conservation, such as collaboration on modelling greenhouse gases emission and carbon sink, potentials of AFOLU sector in achieving carbon neutrality, ecosystem services and biodiversity, the use of nature-based solutions for climate change adaptation and mitigation, systematic planning, disaster risk reduction, and so on.

Develop multi-objective collaborative pilots on climate action and conservation planning

In the future, climate actions and biodiversity conservation can be incorporated into land use and systematic conservation planning to develop win-win strategies, including on agriculture, so as to better contribute to National Determined Contributions (NDC), long-term national climate strategy, and National Biodiversity Strategies and Action Plans (NBSAPs).

Recommendation for policy makers

Strengthen user-friendly methodologies, tools and systems for MRV on climate action and biodiversity in the AFOLU sector.

With the adoption of new technologies, such as remote sensing, complex model, and big data, a prompt and effective monitoring, reporting and evaluation (MRV) system needs to be developed for the AFOLU sector with reliable data and modelling systems, and well-defined indicators. This MRV system needs to align with the national climate system.

Promote the application of nature-based solutions in reducing greenhouse gas emissions and combating biodiversity loss.

Both sides should promote nature-based solutions in the field of climate change and biodiversity conservation, and take these solutions as one of the key pathways to climate change in relevant sectors. Possible collaborative mechanisms should be explored in environmental, socio economic and other areas. Nature-based solutions, as one of the important tools to strengthen the response to climate change and biodiversity loss, should be incorporated into the associated strategic documents.

Encourage economic actors to integrate biodiversity and climate into their business plans.

Exchanges between the EU and China should continue in order to best support economic actors in their awareness of biodiversity and climate change. For farmers and land managers, economic incentives should make reducing GHG emissions, increasing carbon sinks, preserving biodiversity and restoring degraded land, some of the most profitable ways to value their land. Banks should also have at their disposal dedicated information and instruments to disinvest practices harmful to climate and biodiversity, and invest instead in nature-based solutions. Stakeholders involved in trade are also key players to be supported in order to better integrate biodiversity and climate issues into supply chains and to encourage sustainable production and consumption patterns.

Conclusion

The EU and China are motivated by the same ambitious goals of reaching climate neutrality and reversing biodiversity loss. To hope to meet these challenges, action is needed now to reorient agricultural and land management practices to unleash the synergies between biodiversity and climate. Faced with these major urgent challenges at both domestic and international level, the EU and China should continue exchanging good practices, align funding along these converging points of view, and strengthen their cooperation.

Annex – Detailed summary of the workshop

Ms Olivia GIPPNER (DG CLIMA) and Ms CHEN Minpeng (Renmin University of China) introduced the context of the workshop, highlighting its timeliness after the EC Communication "Stepping up Europe's 2030 climate ambition", and President Xi Jinping's announcement at the 75th UNGA that China would aim for a peak in emissions before 2030 and carbon neutrality in 2060.

1. What are the main challenges and options for enhancing climate and biodiversity actions based on agriculture, forestry and other land uses?

Mr ZHANG Weifeng (China Agricultural University) presented the stakes for reaching sustainable agriculture in the world. His team developed the theoretical framework and metrics to assess sustainable agriculture at the regional level by incorporating multi-level dimensional indicators, such as yields, profits and lower GHG emissions. His presentation also identified challenges of international coordination, technology adoption and smallholder farmers empowerment across China.

Ms Bernadette JULIER (French National Research Institute for Agriculture, Food and Environment, INRAE) presented the EUCLEG H2020 project on breeding forage and grain legumes to increase EU's and China's protein self-sufficiency and detailed the multiple benefits of legumes cultivation for mitigation, adaptation and biodiversity.

Mr Giacomo GRASSI (Joint Research Center, JRC) focused his intervention on the importance of forests regarding climate change as either a part of the problem (e.g. emissions associated to deforestation), a part of the victim (e.g. increased impacts of climate change), a part of the solution (e.g. carbon removals and climate-smart forestry), but not a one-fits-all solution (i.e all sectors have to decrease their emissions).

Mr Sergio CASTELLARI (European Environmental Agency, EEEA) presented the process and substance of a forthcoming EU report for decision-makers dedicated to nature-based solutions and ecosystem-based approaches for climate change adaptation and disaster risk reduction. The report will also specify the lessons learned from different case studies such as green and blue infrastructures, natural water retention measures and sustainable management of ecosystems, water, forests and natural resources.

2. How to document and enhance synergies between mitigation, adaptation and biodiversity actions on agriculture, forestry and other land uses?

Mr LI Renqiang (Chinese Academy of Sciences) made a presentation on co-benefits between biodiversity conservation and climate change mitigation and, with the case of giant panda conservation areas, highlighted the spatial correlations between protected areas and high biomass carbon density. He concluded that future nature conservation planning should be multi-objective collaborative planning. This was supported in studies on other protected species.

Mr Hans JOOSTEN (Greifswald University) emphasized the acute importance of peatlands for climate change and biodiversity. World peatlands contain, on 3% of global land, twice the amount of carbon contained in the world's total tropical forests. Relative to the surface, one hectare of 15 cm thick peat contained as much carbon as one hectare of tropical rainforest. Indonesia, the EU, Russia and China are the most important countries for peatlands. In particular, Indonesia has rewetted between 2017 and 2019 four times more peatland than Europe has rewetted in its entire history.

Ms Juliette LANDRY (Institute of Sustainable Development and International Relations, IDDRI) presented the state of play and the opportunities for strengthening climate and biodiversity synergies, on the road to UNCBD COP 15 and the post-2020 global biodiversity framework. She detailed the role of subnational governments to enhance synergies and minimize trade-offs between climate change and biodiversity. Agriculture and land-use changes being the first driver of terrestrial biodiversity loss, they are at the heart of several goals and action-oriented targets of this future framework. Institutional arrangements, including dialogues between climate and biodiversity experts, and bridges between UNFCCC and UNCBD, would contribute to making climate and biodiversity actions consistent for these sectors.

Ms TAN Xianchun (Chinese Academy of Sciences) detailed the issues of governance of nature-based solutions in China, including the need to improve coordination among government services. She also highlighted the need to move from command and control measures to voluntary bottom up investments. She raised the perspective of a win-win situation for climate change mitigation and adaptation governance, including a real 'mitigation and adaptation collaborative governance' that could be cover three dimensions: climate finance synergies, science and technology synergies, and governance system synergies. She concluded on the opportunity for future Sino-European climate cooperation.

3. What are the gaps in knowledge on agriculture and land for biodiversity and climate and how can they be filled through cooperation?

Mr XU Ming (Chinese Academy of Sciences) suggested future cooperation to address questions on cross-impacts of biodiversity and mitigation policies, the reconciliation of nature-based solutions with the real world and other solutions, and the Sino-European collaboration on modelling ecosystem services.

Mr Rik DE VREESE (European Forest Institute, EFI) presented the Clearing House H2020 project about urban trees and forests, and the associated benefits on climate action, on biodiversity and the stakes of capacity-building, and gaps in knowledge, regarding for example the choice of species, tree numbers and configurations, location, or the impacts on soils, water and ecological connectivity.

Ms Val KAPOS (United Nations Environment Program World Conservation Monitoring Centre, UNEP-WCMC) focused her presentation on the barriers to nature-based solutions and how overcoming them. She also detailed the Nature Map Initiative, from the United Nations Biodiversity Laboratory, and presented some key gaps in knowledge regarding ecosystem services, policy coherence and the resilience of nature-based solutions.

On behalf of the United Kingdom COP 26 incoming co-presidency, Mr Simon SHARPE and Mr Neil SCOTLAND welcomed that the EU, China, and the United Kingdom were agreeing to the common objectives of climate neutrality and biodiversity protection. They detailed some of the main objectives of their COP presidency including the just rural transition, the preservation of nature and the increase of finance flows for nature-based solutions, the sustainability of supply chains in trade. For this latter theme, they invited China and the European Commission to participate to the regional dialogues that they are about to launch in Southeast Asia, Latin America and Central Africa.

Mr Octavian STAMATE (Beijing EU delegation) and Ms CHEN Minpeng (Renmin University of China) concluded the dialogue by insisting on the importance of continuing the scientific dialogue and collaboration between the EU and China in order to improve mutual understanding and to facilitate the implementation of climate actions and biodiversity policies domestically and internationally.



气候变化和生物多样性危机息息相关。二者之间的相互作用对农业和土地的影响十分复杂，因此，国际社会迫切需要加强相关领域的研究及政策的制定。为应对这些共同的挑战，欧盟和中国都承诺致力于实现碳中和并保护生物多样性。2020年9月，欧盟和中国分别作出里程碑式的承诺：欧洲委员会发布《提升欧洲2030年气候雄心》，中国国家主席习近平在第75届联合国大会期间宣布中国力争在2060年前实现碳中和。在实现生物多样性和气候目标方面，农业、林业及其他土地利用（AFOLU）将发挥越来越重要的作用。更关键的是，这将确保适应与减缓气候变化及发挥生物多样性的效益纳入农林及其他土地利用部门的活动。

显然，在动员中国和欧盟为实现气候和生物多样性目标开展的工作过程中，需要双方进行双边关系建设，致力于在行动方面开展创新性交流，分享相关知识和良好实践经验，并强化共识。为此，欧洲委员会气候行动总司（DG CLIMA）在中国人民大学的协助下，在气候和生物多样性领域就以科学为指导的农业和土地政策主题组织了一场中欧专家的线上对话。



研讨会总结

2020年9月23日，第六次中欧专家长期发展对话在线上成功举行，在气候和生物多样性领域，双方专家针对以科学为指导的农业和土地政策进行了交流。这次中欧专家对话取得了丰硕而明确的成果。所有与会者均同意应强化AFOLU部门减缓和适应气候变化与保护生物多样性行动之间的协同效应，这也是会议讨论的重要议题之一。

对话围绕下列三个议题展开：

- 基于农业、林业及其他土地利用（AFOLU），强化气候和生物多样性行动面临的主要挑战和选择有哪些？
- 如何记录和提高在AFOLU部门减缓和适应气候变化与保护生物多样性行动之间的协同效应？
- 在农业和土地对气候和生物多样性的作用方面，目前存在哪些知识缺口？将如何通过合作弥补这些知识缺口？

在对话中，与会专家考虑了以下事项：

- 提高豆类种植在中欧双方满足蛋白质自给方面的潜力及其在气候和生物多样性方面的效益；
- 森林在气候变化背景下扮演的多重角色及气候智慧型林业的重要性；
- 欧洲环境署适应气候变化和减少灾害风险的基于自然的解决方案和基于生态系统方法的新报告；
- 保护生物多样性和修复生态系统对于减缓气候变化的重要性；
- 实施基于自然的解决方案所带来的多重效益；
- 泥炭地对气候变化和生物多样性的世界性影响及中欧双方在这一领域面临的利害；
- 《生物多样性公约》第十五次缔约方大会（即COP15大会）的筹备及“2020年后全球生物多样性框架”：当前现状及提气候和生物多样性治理之间协同效应的机遇；
- 基于自然的解决方案相关政策在中国的进展、问题和策略；
- 基于自然的解决方案在中国面临的治理挑战；
- 中欧双方在生物多样性和气候相互影响模型开发与应用方面进行协作的重要性；
- 基于自然的解决方案面临的障碍及自然测绘手段在支持政策行动中的潜
- 城市景观中的森林和树木在气候和生物多样性内容等领域扮演的角色。

即将召开的《联合国气候变化框架公约》第26次缔约方会议（COP26）联合主席国代表强调，为了碳中和与生物多样性保护等共同目标，欧盟、中国和英国如今走到了一起。主席国的主要目标包括促进公正乡村转型、保护自然、增加基于自然的解决方案的融资、提高贸易领域供应链的可持续性等。

简而言之，减缓气候变化、碳存储和生物多样性保护三者相互联系，不可分割，加深对三者一致性的理解有助于效益最大化并解决气候变化和生物多样性丧失问题。

中欧双方当前工作现状

农业和土地——气候和生物多样性领域基于自然的解决方案的源头

农业、土地利用变化及森林对气候变化和生物多样性影响重大，而同时，气候和自然破坏也导致农林和土地资源遭受重大损失，因此，农业、土地利用变化及森林成为众多应对气候和生物多样性危机的解决方案的关键。这些解决方案大多数都能产生强大的协同效应，从而助力减缓和适应气候变化以及保护生物多样性，由此孕育了基于自然的解决方案的产生。基于自然的解决方案这一理念在中国和欧盟的国际、国内议程中都占据着很高的位置。这次对话凸显了一个事实，即众多基于自然的解决方案适用于全球，既适用于生产性区域，也适用于保护区。

首先，对于农业用地，粮食生产的可持续性可通过免耕、秸秆还田、均衡施肥、饲料和食用豆类栽培、品种选择、混农林业等众多实践和技术得到提高。通过保持土壤肥力来保存碳库并从大气中移除更多的二氧化碳，同时优化养分流动，这些实践和技术可减少二氧化碳、氧化亚氮和甲烷的排放量，从而无论在任何当地条件下均可实现可接受的产量并保持土壤韧性，进一步提高动植物栖息地的多样性并维持生态系统的服务功能。这样，在减缓和适应气候变化以及生物多样性保护和生态系统修复方面取得三重效益的同时，可维持粮食、饲料和纤维生产服务的能力，从而提高人们将基于自然的解决方案用于中欧双方农业体系的兴趣和现实性。

作为一种生态系统，湿地（特别是泥炭地包括有机土壤）的面积虽然很小，但其对减缓气候变化带来了重要挑战。对减缓和适应气候变化及生物多样性的保护而言，湿地又是一笔大规模的财富。这类生态系统蕴含的碳库是巨大的，几乎是全球森林生物质总量的两倍。此外，湿地还可以对水文灾害起到非常有效的调节。如根据泥炭沼泽的重要性进行排名，欧洲和中国在全球范围内可分别排在第二位和第四位。因此，泥炭沼泽对中欧双方都关系重大。就气候和生物多样性而言，泥炭地的修复和恢复与湿地耕作是具有高度协同效应的活动。从社会经济学的角度看，湿地生态系统也可用以可持续粮食生产，如水稻种植、饲料和纤维生产。

为减缓气候变化，基于森林的解决方案包括森林树木和土壤固碳以及通过可长期使用的木制品进行固碳，还可以利用林木替代化石能源和材料。无论选择何种方式，各自的碳排放都是一个动态变化的过程，因此，需要在不同的方式之间进行取舍，必须根据不同情形专门制订最优的森林管理方案：对于生产力低下或具有扰动风险的成熟森林，大可进行采伐；而对于碳存储密度较高、年代久远且生物多样性较丰富的森林，则必须加以保护。为改善森林在气候变化面前的脆弱性，必须对树木品种作出相应的改变，而火灾风险较大的森林则要予以保护。退化区域的植树造林或森林修复可带来显著的减缓和适应气候变化以及生物多样性效益。

人类集中居住的区域和城市也可以将提高生物多样性与改善气候的行动结合起来。城市树木和森林、绿色屋顶和墙壁可减轻城市热岛效应，移除二氧化碳并避免温室气体排放，同时可确保与农村地区的生态联系，保留土壤功能并为城市人口提供其他协同效益。绿色和蓝色基础设施是具有战略规划性质的自然和半自然区域网络，能够提供多重生态系统服务。

保护区也是生物多样性和气候行动产生协同效应的关键区域。在中国、欧洲乃至全世界，生物多样性丰富区域与富碳区域之间都存在着强关联。可以说，生物多样性保护措施推动了气候行动的实施，而碳库的保护和强化则推动了生物多样性相关行动的实施。一些研究表明，地上和地下森林植被及土壤中储存的碳在地球温室气体的平衡中发挥了关键作用。无论在全球还是地方层面，气候变化、森林退化、生物质碳存储和生物多样性之间都是相互紧密联系的。管控类服务与生物多样性之间在空间上呈现出较高的正相关性，而生产类服务则与生物多样性呈负相关性。其他研究则强调，将生态系统服务纳入保护规划对于生物多样性保护潜力巨大。但是，仅基于特定生态系统实施的保护策略可能会危害生物多样性，还可能会造成其他环境问题。而基于区域互补的系统性保护规划程序将同时提高保护生物多样性和减缓气候变化的效率。

减缓和适应气候变化与保护生物多样性都需要对一系列信息进行监测。这些信息涉及范围非常广泛，从排放量和移除量估算、影响评估以及相对于气候变化脆弱性的评价，到物种丰富度及栖息地和生态系统现状的监测等等，不一而足。

制订和实施基于自然的解决方案需要运用相应的监测方法和工具，要求能够就所有上述问题提供同步数据和信息。这些方法和工具不仅有可能促成相关人员收集到制订方案所需要的数据，而且还是在时空维度规划和组织实施各种解决方案所需要的信息系统的基础。运用恰当的监测方法和工具对于调查气候与生物多样性保护之间的协同效应和量化全球和地方层面的协同效益而言都是必要的。

在研讨会上强调的所有基于自然的解决方案的证据都是以定期获得的监测数据为依据的。这些数据可能来自现场报表和调查，也可能来自遥感系统。在大多数情况下，这些定性或定量数据都被汇总成了多层次的测绘工具，以支持对土地解决方案进行地点明确的定期监测。通过这些工具，人们能够找出那些气候和生物多样性问题的交集，然后对被确定的重点区域拟定自然解决方案的类型，必要时还可发明新的特定指标。

综合协同治理

基于自然的解决方案能否成功在很大程度上取决于实施的相关治理。在治理方面，我们至少应注意三个问题：（1）在专业技术和决策层面跨越不同议题，特别是气候和生物多样性议题；（2）增强各决策层的互动；（3）在新实践和新技术的采用过程中为土地管理者提供协助。

基于自然的解决方案成功与否取决于我们能否认识到气候政策与生物多样性政策具有相互依赖性以及能否提高两者之间的协同效应。通常，这是两个在政治上具有高度差异的技术领域。为确保将生物多样性和气候问题均妥善纳入议程，必须将这两个领域的技术力量进行整合。因此，在适当治理方面，应促进生物多样性专家与气候专家之间的对话，并增进双方的知识互动。在决策层面，需要将目前分散在不同服务领域或机构中的各种力量集中起来。

在制度安排方面，提高生物多样性与气候间的协同效应，需要不同层级决策者之间开展密切配合。国际层面需依靠多边进程推动气候和生物多样性的协同，而地方政府则处在对抗气候变化影响和生物多样性丧失、处理土地利用冲突及其后果工作的一线。国际层面决策者与地方层面决策者之间的适当的磋商越来越显示出优越性，有利于确保国际承诺与地方落实之间保持较高的一致性。

基于自然的解决方案的治理还意味着强化理论与实践之间的联系，加速方案的实施并扩大规模。在这方面，有多种政策可供选择，包括财政政策和市场政策的相关激励机制和鼓励自愿参与的机制等等。基于自然的解决方案起初的政策体系以命令控制型政策为基础，重点发挥激励性政策的指导作用，然后逐步提高自愿参与度。目前，主要资金来源是财政投入，特别是中央财政的投入，地方财政投入也呈缓慢增长趋势。此外，市场机制的作用也得到了初步的探索，包括加强金融支持、森林碳汇交易和吸纳社会资金等。同时，要鼓励公众参与基于自然的解决方案，促进公众在管理和相关选择中纳入基于自然的解决方案。另外，知识传播工具（如创新平台、数据实验室等）对于赋能气候和生物多样性领域的土地管理者也起到关键作用。

知识和政策缺口

交叉影响评估

充分理解AFOLU部门对减缓和适应气候变化及生物多样性的影响和潜力，对于实现不同目标之间的协同效应并避免其相互冲突至关重要。建立迅速有效的监测、报告和核查（MRV）体系需要考虑AFOLU部门部门的多样性，依赖于可靠的数据清单和模型，并以定义明确的指标为基础。欧盟已为AFOLU部门开发若干监测、报告和核查体系，但中国仍缺乏对减缓和适应气候变化及生物多样性以及它们与AFOLU部门部门协同效益和取舍问题的系统性评估体系。这就要求我们进一步开发可靠的监测、报告和核查体系及模型和用户友好型工具。此外，将AFOLU部门的监测、报告和核查体系与国家气候变化监测、报告和核查体系相结合也具有战略意义。开展气候变化与生物多样性的交叉影响的监测工作，需要细化相应的科学规范，并就现有数据库交叉引用和缺失信息获取问题做出必要的制度安排。

设计具有协同效应的解决方案

在为AFOLU部门部门设计减缓和适应气候变化与保护生物多样性协同解决方案（包括基于自然的解决方案）方面，目前仍存在知识和政策缺口。政策制定者们正努力就减缓和适应气候变化以及保护生物多样性制定实用、成本效益高、基于生态系统和社区的解决方案。但是，众多潜在减排方案在有效性方面信息不足。例如，对保护区在增加碳存储方面的作用、不同做法的取舍以及协同效益等方面的理解仍停留在浅层，致使这些工作的开展大大受挫。而且，全球保护生物多样性工作所产生的重大效益（如碳存储及其他生态系统服务）的潜力仍遭到低估。基于自然的解决方案的潜力、效果和可操作性（包括它们在承受气候变化、生物多样性丧失或其他扰动相关压力的韧性）以及相关模型开发尚需进一步研究。

采用创新型解决方案

尽管基于自然的解决方案这一理念在气候变化领域的运用已经超过10年，但其仍未真正成为决策者的考虑重点，各个部门的行动也仍未与应对气候变化和生物多样性丧失问题建立积极联系。目前，实践经验的积累已相当可观，如在减少各项农业活动中非二氧化碳温室气体的排放、增加碳汇、提高系统适应能力等方面有经验积累，但其相关的知识仍处于初级阶段，并且土地管理者和决策者对相关知识的了解仍然很少。尽管如此，在中国、欧盟乃至整个国际社会，各种倡议数量激增，通过专门的平台或以报告的方式协助决策者了解这些信息。技术支持和能力建设方面的政策主要为命令控制型，为使所有土地管理者熟悉可行解决方案（包括基于自然的解决方案），还需要大力开展知识推广工作。此外，进行案例展示和开展具体培训项目也有助于促进相关方面采用这些解决方案。

推动协作和政策

特别是在由多元利益相关方参与讨论气候和生物多样性问题的论坛上，减缓和适应气候变化与保护生物多样性的解决方案在地方层面面临知识和政策的缺口。在决策方面对地方政府开展培训、进行赋能和磋商，这些都是有待改善的方面，特别是在科学与政策之间的衔接上。

欧盟和中国均尚未形成政策体系以减缓和适应气候变化与保护生物多样性，相关政策目前仍分散于不同职能部门。《欧洲绿色新政》旨在解决该问题。基于自然的解决方案资金来源相对单一，目前仍以财政投入为主，尚缺乏社会各界普遍参与的多元化投资机制。此外，技术支持和能力建设政策仍以命令控制型为主，政策行动分散，难以形成完整体系。

在国际合作领域，尽管在包括水资源管理、减少灾害风险和基于生态系统的适应等方面已开展多项合作并开发出诸多工具，但是，在设计模式以支持全周期基于自然的解决方案方面仍然存在缺口。特别是政府机构在土地管理项目上开展国际合作，需要考虑强化技术、政策和治理经验，并充分利用各方在实施基于自然的解决方案过程中产生的经验上的差异。

后续步骤

未来数月行动

大幅度增加气候变化专家与生物多样性保护专家之间的对话（传播活动）

这些对话可在多边活动（如《生物多样性公约》第15次缔约方大会和《联合国气候变化框架公约》第26次缔约方大会）期间进行。对话议题应重点关注已经明确且亟待解决的具体议题。潜在的议题包括：

- 如何更好地反映生物多样性保护在气候变化减缓和适应策略中的价值；
- 如何监测生物多样性和气候行动在国家和地方层面的相互影响；
- 如何鼓励农民和土地管理者采纳基于自然的解决方案。

加大宣传实践经验和教训，以扩大基于自然的解决方案的运用范围（政策报告）

中欧双方可联合开展案例研究，探索基于自然的解决方案的相关措施和实践，以应对气候变化、增加碳汇，并同时减少生物多样性的丧失。双方还应在国际层面强化全球目标趋同方面的协作，同时增强国家次级政府的角色，以增进气候变化与生物多样性之间的协同效应并将二者之间的冲突与取舍降到最小。

改善气候行动与生物多样性保护的联合建模（对话会议）

未来，双方应联合组织对话活动，以确立测绘、监测和建模方法，从而改善对气候和生物多样性政策交叉影响的评估，包括对保护区在减缓和适应气候变化方面作用的评估。这些方法可建立在改善现有碳汇和生物多样性监测的基础之上，并可包括实地清单、遥感观测和土地利用建模所获得的数据共享

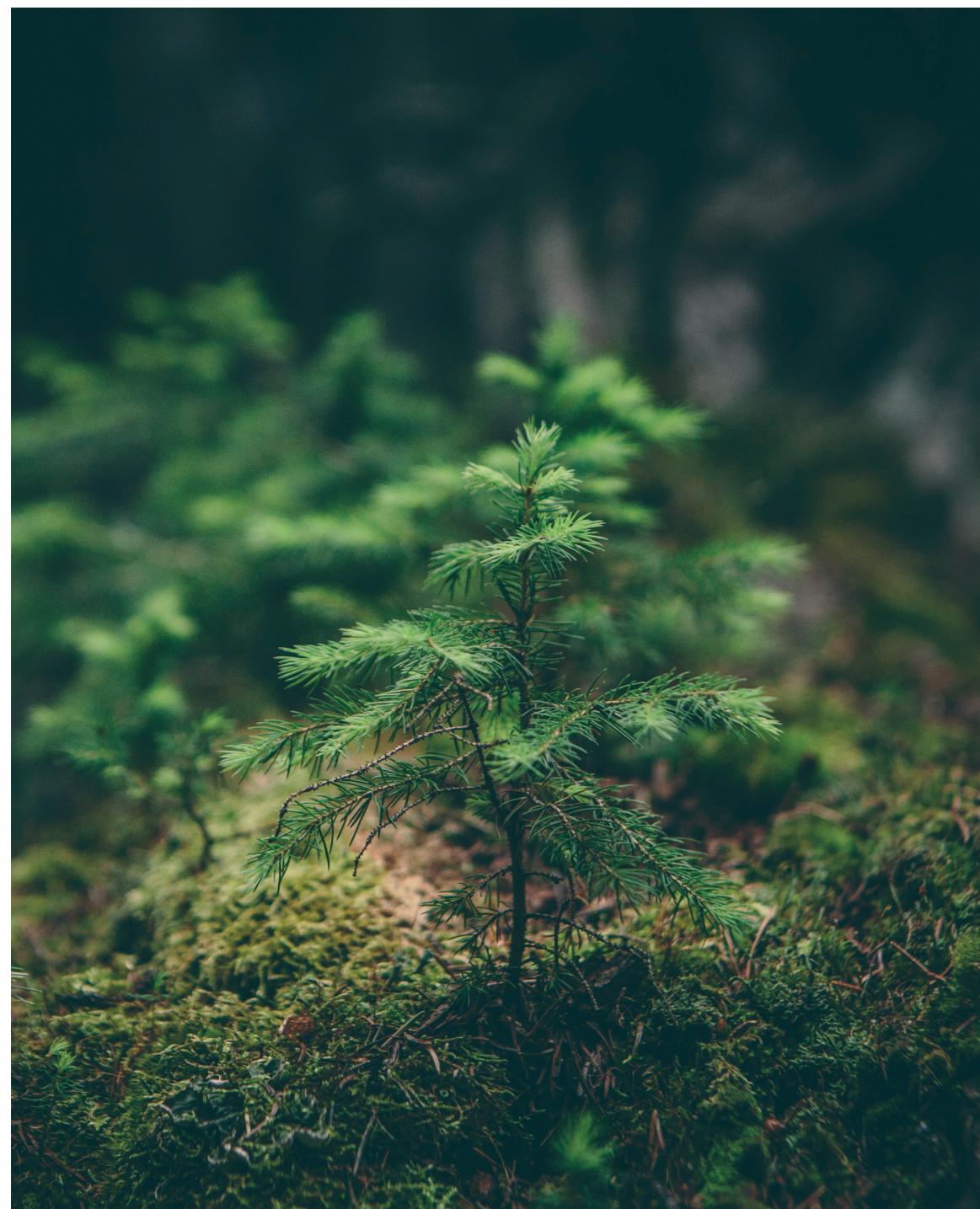
中期（未来1-3年）行动

进一步加强中欧双方在气候变化和生物多样性领域的科研合作

加强中欧现有合作，并在适当情况下开发新渠道，协助科学家在气候变化和生物多样性保护领域实现重大科技突破，例如在以下方面开展协作：温室气体排放和碳汇建模，发挥AFOLU部门在实现碳中和、生态系统服务和生物多样性方面的潜力，以及将基于自然的解决方案运用于减缓和适应气候变化、系统规划、降低灾害风险等方面。

开发协作式多目标气候行动和保护规划试点项目

未来，气候行动和生物多样性保护可纳入土地利用和系统保护规划，目的是制定双赢策略（包括农业策略），从而对国家自主贡献（NDC）、国家气候长期战略及国家生物多样性战略与行动计划（NBSAP）做出更多贡献。



面向政策制定者的建议

强化在AFOLU部门开发和建设用户友好型气候行动和生物多样性监测、报告和核查（MRV）方法、工具和体系

随着遥感、复合模型和大数据等新技术的运用，AFOLU部门应开发迅速有效的监测、报告和核查体系。该体系应拥有可靠的数据和建模系统，以及定义明确的指标。此外，该体系还应与国家气候体系相匹配。

促进基于自然的解决方案在减少温室气体排放和防止生物多样性丧失方面的运用

双方均应促进基于自然的解决方案在气候变化和生物多样性保护领域的运用，并将这些解决方案作为相关部门应对气候变化的主要路径之一。还应在环境、社会经济等其他领域探索潜在协作机制。作为强化气候变化和生物多样性丧失应对措施的重要工具之一，基于自然的解决方案应被纳入相关战略文件。

鼓励私营部门将生物多样性和气候议题纳入其商业计划

欧盟和中国应继续开展交流，以便支持私营部门提高对生物多样性和气候变化问题的意识。对于农民和土地管理者而言，应通过经济激励方式使减少温室气体排放、增加碳汇、保护生物多样性并修复退化土地成为土地估价中重要的价值因素。银行应当自行开发专门的信息和工具，停止对气候和生物多样性有害的行为的投资，并增加对基于自然的解决方案的投资。为了将生物多样性和气候议题更好地纳入供应链并鼓励可持续生产和消费模式，贸易领域的利益相关方也是应予以支持的关键主体。

结论

欧盟和中国在实现碳中和与扭转生物多样性丧失方面拥有同样宏伟的目标。为实现这些目标并应对由此产生的挑战，双方需要立即采取行动，重新规划农业和土地管理实践的方向，以提升气候与生物多样性之间的协同效应。面对这些重大且急迫的国内外挑战，欧盟和中国需要交换良好实践经验，围绕这些共同点给予资金支持并加强双方之间的合作。

2. 如何记录和提高在AFOLU部门减缓和适应气候变化与保护生物多样性行动之间的协同效应？

李仁强先生（中国科学院）介绍了生物多样性保护与气候变化减缓之间的协同效益，并以大熊猫保护区为例，强调了保护区与高生物量碳密度之间的空间关系。他总结说，未来的自然保护规划应为多目标协同规划。这一发现得到了其他受保护物种相关研究的支持。

Hans JOOSTEN先生（Greifswald大学）强调了泥炭地对气候变化和生物多样性的高度重要性。在全球范围内，泥炭地仅占全球陆地面积的3%，但其固碳量却是全球热带森林的两倍。以地表面积论，1公顷15厘米厚的泥炭地固碳量相当于一公顷热带雨林的固碳量。印度尼西亚、欧盟、俄罗斯和中国是全球最为重要的泥炭地所在国。2017-2019年间，印度尼西亚实现修复的泥炭地面积是欧洲整个历史上修复面积的4倍。

Juliette LANDRY女士（法国可持续发展和国际关系研究所，IDDRI）介绍了《联合国生物多样性公约》第15次缔约方召开以及“2020年后全球生物多样性框架”确立前夕，全球生物多样性现状和强化气候与生物多样性之间协同效应的机遇。她详细介绍了次国家政府在提高协同效应和最大限度减少气候变化与生物多样性之间取舍方面的作用。农业和土地利用变化是地球生物多样性丧失的第一推手；因此，它们是上述框架若干目标和以行动为导向指标的核心所在。制度安排，包括气候专家与生物多样性专家之间的对话、连接协调《联合国气候变化框架公约》与《联合国生物多样性公约》，将有助于确保这些部门气候与生物多样性行动之间的一致性。

谭显春女士（中国科学院）详细介绍了中国基于自然的解决方案的治理问题，包括改善政府服务协调能力的必要性。此外，她还强调了从命令控制型措施转变为自下而上自愿投资的必要性。她提出了气候变化减缓治理与气候变化适应治理之间实现双赢的问题，包括由气候融资协同效益、科学技术协同效应和治理体系协同效应这三个维度组成的、真正的“减缓和适应协同治理”。最后，她就未来中欧气候合作机遇进行了总结。

附件：研讨会详细总结

Olivia GIPPNER女士（欧洲委员会气候行动总司）和陈敏鹏女士（中国人民大学）介绍了研讨会的背景并强调这次会议召开得非常及时，欧洲委员会刚刚发布《提升欧洲2030年气候雄心》的政策文件，而且中国国家主席习近平在第75届联合国大会上提出了中国力争在2030年前达到排放峰值并在2060年前实现碳中和。

1. 在AFOLU部门，强化气候和生物多样性行动面临的主要挑战和选择有哪些？

张卫峰先生（中国农业大学）介绍了全球在实现可持续农业领域面临的风险。他的团队开发了一个理论框架及相应指标，以评估区域层面的可持续农业发展。该框架纳入了多维度指标，如产量、利润和温室气体减排等。此外，他的报告还明确了中国在国际协调、技术采用和小农赋能等方面面临的挑战。

Bernadette JULIER女士（法国国家农业、食品和环境研究院，INRAE）介绍了关于提高饲料和食用豆类种植来满足欧盟和中国蛋白质自给的EUCLEG H2020项目，同时还详述了豆类栽培对减缓和适应气候变化及保护生物多样性的多重效益。

Giacomo GRASSI先生（欧洲委员会联合研究中心，JRC）重点介绍了森林作为一种干预手段对于气候变化的重要性。具体而言，森林既是气候变化问题的一部分（如毁林相关的排放），又是气候变化的受害者（如在气候变化影响加强的情况下，森林受影响加大），还是气候变化解决方案的一部分（如碳清除和气候智慧型林业），但不是一刀切的解决方案（即所有部门都要减少排放）。

Sergio CASTELLARI先生（欧洲环境署，EEEA）介绍了欧盟即将发布的一份报告的撰写过程和内容。该报告以决策者为对象，专门介绍了适应气候变化和减少灾害的基于自然的解决方案和基于生态系统的方法。该报告还阐述了不同案例研究得出的经验教训，如发展绿色和蓝色基础设施、实施自然水土保持措施及生态系统、水资源、森林和自然资源的可持续管理等。

3. 在农业和土地对气候和生物多样性的作用方面， 目前存在哪些知识缺口？这些缺口如何通过合作进行弥补？

徐明先生（中国科学院）建议中欧未来进行合作，以解决生物多样性政策与气候变化减缓政策交叉影响、基于自然的解决方案与现实世界及其他解决方案之间的协调、中欧在生态系统服务模型开发领域进行协作等问题。

Rik DE VREESE先生（欧洲森林研究所，EFI）介绍了关于城市树木和森林的清洁房屋H2020（Clearing House H2020）项目及其对气候行动和生物多样性的效益问题。此外，他还介绍了能力建设的重要性，树种选择、树木种植数量和布局、种植地点、树木对土壤和水资源以及生态连通性的影响等方面的知识缺口。

Val KAPOS女士（联合国环境规划署世界保护监测中心，UNEP-WCMC）的报告以基于自然的解决方案面临的障碍及其解决方法为重点。她还详细介绍了联合国生物多样性实验室提出的“自然地图倡议（Nature Map Initiative）”，并介绍了生态系统服务、政策连贯性和基于自然的解决方案的韧性等方面的主要知识缺口。

Simon SHARPE和Neil SCOTLAND先生代表即将成为COP26会议联合主席国的英国，对欧盟、中国和英国就气候中和及生物多样性保护共同目标达成共识表示欢迎。他们详细介绍了英国担任COP主席国期间将致力于实现的一些主要工作目标，包括促进公平乡村转型、推动自然保护、增加基于自然的解决方案的融资、提高贸易领域供应链可持续性等问题。对于后一议题，他们邀请中国和欧洲委员会参与英国即将在东南亚、拉丁美洲和中非等地发起的区域对话。

Octavian STAMATE先生（欧盟驻华代表团）和陈敏鹏女士（中国人民大学）就对话进行了总结。他们再次强调了中欧双方继续开展科学对话和合作、以增进相互了解并推动国内和国际气候行动和生物多样性政策实施的重要性。