

蓝博士环喜论坛献策：雪域高原依托科技创新、发展低碳产业大有前途

新中科促会简讯 SCAAST NEWS

2025年6月27日——在西藏林芝举行的第五届“环喜马拉雅”企业家国际会议上，新加坡科技研究局 (A*STAR)卓越访问科学家、英国皇家化学学会会士、新加坡工程师协会会士、**新加坡-中国科学技术交流促进协会** 会长蓝伟光博士作为绿色科技领域的权威代表，与尼泊尔驻华大使克里希纳·普拉萨德·奥利、巴基斯坦驻成都总领馆总领事坦维尔·艾哈迈德·巴蒂、中国旅游协会秘书长葛磊、林芝市副市长刘春祥、西藏奇正藏药创始人雷菊芳、林芝墨脱茶叶总经理德吉卓嘎同台对话。





围绕会议主题“凝聚环喜力量 释放发展动能”，蓝博士巧妙结合自身在绿色科技领域的深厚实践与西藏独特的生态资源优势，为环喜地区（环喜马拉雅地区）如何实现经济与生态协同发展、激活绿色 **新质生产力** 贡献了极具前瞻性的“新加坡经验”与本土化路径。





经验移植与本地创新：构建环喜特色发展引擎

面对“如何借鉴中新合作成功模式（如苏州工业园、天津生态城）服务环喜地区”的提问，蓝博士开宗明义，指出关键在于提炼“规划引领、市场运作、产业融合”三大核心精髓，并与环喜的生态文化基因深度融合。他强调，环喜地区的发展必须跳出传统工业区思维，将生态价值转化为经济动能，这正是发展**绿色新质生产力**的核心内涵。

蓝博士建议，可效仿新中联合规划模式，建立多边平台，统筹生态保护红线与特色产业发展，优先发展清洁能源、生态旅游和生物医药。在运作层面，需创新机制，引入PPP模式和亚投行、丝路基金等跨国资本，打造“环喜绿色投资平台”，推动低碳跨境基建和智慧生态管理。





产业选择上，蓝博士强调深度融合本地特色：打造跨国文旅IP并配套低碳营地；联合开发水电太阳能，结合中国先进光伏技术建设零碳园区；利用高原特有药材资源建立藏药研发中心；设立跨境文化保护基金赋能传统村落可持续开发。通过小型试点（如中尼边境生态村）积累经验，利用多边协议降低风险，坚守“开发避让保护区”原则，确保发展与保护的动态平衡。



蓝博士总结道，这种“中新经验移植+环喜本地化创新”的模式，是释放区域“绿色增长”新动能、增强国家间互信的有效途径。



破壁融合：打造高原产学研闭环，激活创新新质生产力

针对环喜地区高校、科研机构及企业资源丰富但成果转化率低的现状，蓝博士指出，加速科技成果从实验室走向市场，是释放发展动能、培育新质生产力的关键驱动力。他提出的解决方案聚焦于构建深度融合的创新生态体系。

蓝博士指出，可整合西藏大学、加德满都大学、中科院青藏所及新能源、生物医药企业，形成联合体，共同攻关高原生态修复、清洁能源存储等区域核心问题。同时，借鉴中新天津生态城经验，在拉萨、加德满都等地设立“跨境技术转移中心”，提供技术评估、知识产权交易等服务，破除转化壁垒。在平台建设上，他建议聚焦藏药现代化、高原农业、可再生能源和口岸附近的产业孵化加速器，共享资源，助力技术中试验证。





蓝博士特别强调了金融赋能和政策激励的重要性。唯有以需求牵引、跨境协同、金融赋能为核心，通过制度创新和平台共享降低转化成本，才能真正形成“**技术-产业-市场**”的良性循环，让科技创新成为高质量发展的核心引擎。

绿色技术赋能：打造全球高山可持续发展标杆

结合新中科促会在新能源、碳中和及环保技术（尤其是膜技术）的丰富实践，蓝博士为环喜地区如何深化绿色技术应用、实现发展与保护双赢给出一点建议。他重申，环喜作为生态敏感区与增长带的结合体，绿色发展是其新质生产力的天然底色和必然选择。

蓝博士提出要“因地制宜推广成熟绿色技术”：应用膜技术处理旅游区污水，推广可降解地膜减少污染，可借鉴新加坡“滨海湾新生水厂”模式建立示范项目。





为推动技术落地，他建议构建“环喜绿色技术转移中心”，整合中新经验，建立技术库、专家网络和跨境绿色认证体系；搭建企业-社区对接机制，鼓励中国领先企业为当地提供技术培训。

蓝博士总结道，环喜的绿色发展需以技术为纽带、跨境合作为支撑、金融创新为杠杆，凝聚政府-企业-社区三方力量，实现生态价值向经济动能的转化，为全球高山地区提供可持续发展范例。





最后，蓝博士阐述了科技创新和产业创新的逻辑关系。

“**科技创新是基础，产业创新是目标，二者深度融合才能应用新质生产力，实现高质量发展**。”蓝博士这一论断深刻揭示了现代经济发展的底层逻辑——科技创新为产业变革提供不竭的动力源泉，而产业创新则为科技成果转化搭建广阔的应用场景。二者相辅相成，共同构筑起“创新供给—需求响应—价值实现”的完整闭环，最终催生代表先进生产力的**新质生产力**，并推动整个发展范式的根本性转型。

科技创新构成了新质生产力的底层支撑，它是突破传统生产要素（土地、劳动力、资本）约束的核心驱动力。通过持续的知识创造与技术迭代，科技创新为产业结构的优化升级和价值链的攀升提供不可或缺的“硬核”支撑。与此同时，产业创新则是新质生产力价值实现的必经之路，它扮演着将实验室科技成果转化为现实生产力的关键“转换器”角色。通过商业模式、产业业态和组织形态的深刻变革，产业创新让前沿技术的潜在价值得以在市场端落地生根、开花结果。





然而，科技创新与产业创新的“割裂”是发展的巨大障碍，其结果往往是技术沦为难以应用的“孤岛化”存在，或者产业陷入缺乏核心竞争力的“低端锁定”困境。唯有实现二者的深度融合，才是新质生产力得以真正生成的核心机制。这种融合要求构建有效的机制，确保科技之水精准灌溉产业之田。

二者融合的终极价值，在于突破传统发展模式中难以调和的“效率—公平—生态”悖论。通过科技赋能提升效率，通过产业创新创造包容性增长机会（公平），并始终坚守生态优先原则（生态），三者协同方能实现发展质量的本质跃升，最终指向高质量、可持续的包容性未来。这正是科技创新与产业创新深度融合所追求的核心目标。





展望：从“生态高地”到“创新高原”

蓝博士在环喜论坛的前瞻洞见，不仅为这片雪域高原点燃了 **绿色新质生产力** 的强劲引擎，也为新中两国深化合作奠定了更坚实基础。他坚信，通过将融合科技创新和产业创新的新质生产力理念深植环喜沃土，持续完善跨境合作平台，推动新技术深度融合，环喜地区必将加速从壮美的“生态高地”跃升为充满活力的“创新高原”，为全球呈现一幅人与自然和谐共生、经济与生态协同并进的中国式现代化标杆图景。新中科促会将继续在推动绿色科技创新、加强跨境合作、促进绿色金融等领域发挥关键作用，助力环喜地区释放磅礴的 **可持续发展** 动能。





以下内容为蓝博士在会议上的英文原文问答展示

Q1: Building on the successful models of China-Singapore cooperation—such as the Suzhou Industrial Park and Tianjin Eco-City—how can these experiences be adapted to the unique ecological and cultural characteristics of the Trans-Himalaya region? What innovative cooperation mechanisms can be employed to attract high-quality resources, pool regional strengths, and drive coordinated economic and environmental development?



Dr Lan : The China-Singapore Suzhou Industrial Park and Tianjin Eco-City offer valuable experiences through their emphasis on *planning-led development*, *market-driven operations*, and *industry integration*. To unlock the Trans-Himalaya region's potential, these principles must be adapted in ways that respect local ecology, culture, and geopolitical context.

Strategic Planning and Multilateral Coordination

Inspired by the long-term, joint planning approach of China-Singapore projects, the Trans-Himalaya region could establish a multilateral coordination body—such as a “Trans-Himalaya Sustainable Development Committee”—to align cross-border priorities. This would include delineating ecological red lines and identifying strategic industries like clean energy (hydropower, solar), eco-tourism, and biomedicine rooted in local strengths.

Market Mechanisms and Cross-border Resource Integration

Echoing the China-Singapore model of “enterprise-led, government-supported” development (for instance, Temasek’s role), Trans-Himalaya can adopt public-private partnership (PPP) models and attract transnational investment through platforms like the AIIB or Silk Road Fund. A proposed “Trans-Himalaya Green Investment Platform” could support infrastructure projects such as the China-Nepal low-carbon railway and implement smart ecological management systems (for instance, digital twin monitoring for glaciers and rivers). A regional carbon sink trading mechanism would further incentivize downstream countries to support upstream ecological protection.

Localized Industry Positioning

While Suzhou focused on advanced manufacturing and Tianjin on green technology, Trans-Himalaya’s development should align with its unique assets:

- **Eco-tourism** : Co-develop low-carbon, transnational tourism routes like a “Himalayan Hiking Corridor,” featuring sustainable campsites and cultural immersion.
- **Clean energy** : Collaboratively develop hydropower and solar energy (notably in Nepal and Bhutan) and build zero-carbon industrial parks using Chinese photovoltaic technology.



- **Biomedicine** : Establish cross-border research hubs leveraging high-altitude medicinal resources (for instance, Tibetan medicine).
- **Cultural conservation** : Launch a cross-border cultural heritage fund to support the sustainable preservation of traditional villages and intangible heritage.

Risk Management and Scalable Pilots

Pilot initiatives—such as China-Nepal eco-villages—can serve as testing grounds for cross-border governance and innovation, reducing political and operational risks. Adhering to the principle of “no development within protected zones” ensures environmental safeguards are upheld.

Conclusion

To realize the Trans-Himalaya region’s green growth potential, it is essential to move beyond traditional development zone models and adopt a new paradigm that transforms ecological value into economic vitality. By integrating China-Singapore experiences with localized innovations—such as cross-border ecological compensation and cultural empowerment—the region can build trust, strengthen cooperation, and release a new wave of coordinated, sustainable development.

Q2: The Trans-Himalaya region boasts abundant universities, research institutions, and innovative enterprises. How can the region foster a deeper integration of industry, academia, and research to pool resources, accelerate the translation of scientific achievements into market applications, and ensure technological innovation becomes a true driving force for development?

Dr Lan : While the Trans-Himalaya region benefits from rich resources in universities, research institutions, and enterprises, the conversion rate of scientific and technological achievements remains low. To address this challenge, breakthroughs are needed in four key areas: collaborative mechanisms, platform development, financial support, and policy incentives.



1. Establish Cross-Regional Industry-Academia-Research Collaboration Mechanisms

Create the “Trans-Himalaya Science and Technology Innovation Alliance” to integrate key institutions like Tibet University, Kathmandu University, the Institute of Tibetan Plateau Research (Chinese Academy of Sciences), and enterprises in new energy and biomedicine. This alliance would form an innovation consortium focused on regional challenges such as plateau ecological restoration and clean energy storage.

Establish cross-border technology transfer centers in strategic locations (for instance, Lhasa, Kathmandu), based on successful models like the “China-Singapore Tianjin Eco-City.” These centers would offer technical evaluation, intellectual property trading, and commercialization consulting to reduce the barriers to cross-border technology transfer.

2. Build Shared Scientific Research and Pilot-Scale Platforms

Construct the “Trans-Himalaya Plateau Science and Technology Laboratory” to focus on specialized fields such as Tibetan medicine modernization, plateau agriculture, and renewable energy. The lab would be a collaborative space where the government, enterprises, and universities co-build open laboratories, enabling shared use of equipment and data.

Establish industrial incubation accelerators and pilot-scale bases at key cross-border locations (for instance, Gyirong, Zhangmu) to facilitate small-scale trial production. These facilities would support enterprises in testing the technical feasibility of innovative products, such as plateau-adaptive building materials or solar microgrids.

3. Strengthen Financial Support and Market Integration

Create the “Trans-Himalaya Science and Technology Innovation Fund” to attract investments from entities such as the AIIB and Silk Road Fund to support early-stage projects. The fund would also reward successful cases of technology commercialization.

Encourage “order-based R&D,” where enterprises define specific demands (for instance, glacier monitoring equipment), research institutions tackle these challenges, and the government subsidizes part of the cost. This approach would shorten the time required to bring innovations to market.



4. Policy Incentives and Talent Development

Develop cross-border intellectual property protection mechanisms to standardize patent recognition and prevent legal disputes in technology transfer processes. Implement a dual-employment system for “scientists + entrepreneurs” to foster interdisciplinary talent with the skills to bridge research and business. Offer tax incentives, land support, and preferential policies to attract technology companies to establish operations in the region.

Demonstration Case: Plateau Biomedicine Chain

- **R&D** : Tibet University partners with Indian institutions to use AI for screening active components in Tibetan medicine.
- **Pilot-scale** : GMP-certified workshops are established in Lhasa to validate the process feasibility of identified compounds.
- **Market** : The final products enter Southeast Asian markets through the Yunnan Free Trade Zone.

Conclusion

By focusing on demand-driven, cross-border collaboration and leveraging financial empowerment, the Trans-Himalaya region can break down barriers between industry, academia, and research. This integration will enable technological innovation to drive regional green development. Success will depend on reducing transformation costs through institutional innovations (for instance, cross-border IP protection) and platform-sharing (for instance, open laboratories), creating a closed loop that connects “technology—industry—market.”

Q3: Drawing from the association's past successes in new energy, carbon neutrality, environmental protection, and membrane technology applications, how can these green technologies be further promoted and integrated in the Trans-



Himalaya region? How can we pool green development forces to achieve a win-win situation for both economic growth and ecological protection, and drive sustainable development momentum?

Dr Lan : As an ecologically sensitive area and a new economic growth belt, the Trans-Himalaya region urgently requires green technological innovation to achieve a harmonious balance between development and protection. Based on the China-Singapore Association for Science and Technology Promotion's past experience in new energy, carbon neutrality, and environmental protection, the following strategies can be adopted:

1. Promote Mature Green Technologies Adapted to Local Conditions

· New Energy :

- o Introduce modular small hydropower technology in hydropower-rich regions like Nepal and Bhutan. Combine this with "photovoltaic-hydropower complementary" microgrids to address power supply challenges in remote areas.
- o In the Tibetan Plateau, promote low-temperature-resistant photovoltaic and wind power energy storage systems to stabilize renewable energy generation.

· Environmental Protection Technologies :

- o Utilize membrane technology to treat wastewater in tourist areas, and introduce biodegradable mulch films to reduce white pollution.
- o Establish sewage treatment demonstration projects inspired by Singapore's "Marina Bay New Water Plant" model.

2. Build Cross-border Green Technology Cooperation Platforms

- Create a **Trans-Himalaya Green Technology Transfer Center** to integrate successful experiences from China and Singapore in carbon neutrality and environmental protection technologies. This center would develop a technology database, expert network, and provide customized solutions.



- Set up **cross-border green certification systems** to ensure mutual recognition of technical standards across borders.
- Build **enterprise-community collaboration mechanisms** where Chinese companies (for instance, CATL, BES Water) offer technical training in areas like solar maintenance and wastewater treatment.

3. Innovate Green Finance and Business Models

- Establish a **special green fund** with partners like the AIIB and Temasek to provide financing for green technology projects.
- Promote the **“ecological payment” model**, utilizing blockchain technology for transparent and traceable transactions.
- Develop **green cultural tourism IP**, such as "zero-carbon tourism," and introduce a **carbon offset mechanism** to enhance sustainable tourism.

4. Policy Coordination and Capacity Building

- Encourage multiple countries to sign the **“Trans-Himalaya Green Technology Cooperation Memorandum”** to streamline approval processes for cross-border equipment and technology transfer.
- Establish the **“Trans-Himalaya Carbon Neutrality Research Institute”** to train local technical talent and develop adaptive technologies (for instance, plateau carbon capture).
- Pilot an **“ecological GDP”** assessment system that integrates environmental protection effectiveness into local government performance metrics.

Demonstration Project Concepts

- Develop the **China-Nepal Green Corridor Zero-Carbon Trade Zone**, combining China's photovoltaic technology, Singapore's smart grid, and Nepal's hydropower to create a regional green infrastructure benchmark.
- Create a **Himalayan Carbon Sink Park** that integrates afforestation, restoration, and carbon trading to attract international investment and support community-driven



sustainable development.

Implementation Key Strategies

- Focus on **mature technologies** as entry points for large-scale implementation.
- Establish **multi-stakeholder cooperation mechanisms** to align the efforts of government, enterprises, and communities.
- Innovate **business models** to leverage emerging financial and environmental technologies.
- Strengthen **policy support** to enable smooth execution of green projects.

Conclusion

The green development of the Trans-Himalaya region requires technology as a unifying force, cross-border cooperation as a foundation, and financial innovation as a catalyst. By promoting proven green technologies, creating collaborative platforms, and developing new business models, the region can pool resources from governments, enterprises, and communities. This will enable the transformation of ecological value into economic momentum and set a sustainable development model for alpine regions globally.

Dr Lan : *Finally, I would like to explain the logical relationship between technological innovation and industrial innovation.*

"Technological innovation is the foundation, and industrial innovation is the goal. Only through their deep integration can develop New quality productive forces to achieve high-quality development."

This statement reflects the fundamental logic of modern economic development: technology drives industrial transformation, while industry creates the practical scenarios for technology's application. Together, they form a closed loop of



"innovation supply — demand response — value realization," which fosters new quality productive forces and drives the transformation of development paradigms.

Technological Innovation: The Foundation of New Quality Productive Forces

Technological innovation serves as the core driver that overcomes the limitations of traditional production factors. By creating new knowledge and advancing technology, it provides the essential "hardcore" support for industrial upgrading and growth.

Industrial Innovation: The Realization of Technological Value

Industrial innovation acts as the "converter" that transforms scientific and technological advancements into real productive forces. Through reforms in business models, organizational structures, and industrial formats, it ensures that technological value is successfully embedded in the market and generates tangible benefits.

Deep Integration: The Mechanism for Generating New Productive Forces

When technological and industrial innovation are isolated, it can lead to "technological islandization" or "industrial low-end locking," hindering progress. Only through deep integration can new productive forces be nurtured and fully realized, creating synergies that accelerate growth and innovation.

Ultimate Goal: Achieving High-Quality, Sustainable Development

The ultimate value of integrating technological and industrial innovation lies in overcoming the traditional paradox of **"efficiency — equity — ecology."** This integration enables a leap forward in development quality, fostering a more balanced and sustainable approach to progress.

END



