Expanding Private Capital Investment in Universities to Biodiversity Conservation

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ABSTRACT: Biodiversity is essential for human well-being, and serves as the green engine for education, science, technology and health. China's prosperous private entrepreneurs have established hundreds of private colleges and universities with several newcomers positioned as world-class research universities. Unfortunately, biodiversity conservation education and researches appear overlooked in these institutions. Universities, particularly the top-tier universities, serve as critical hubs where talent, knowledge, and technology concentrate. Private capital's flexible management framework and rapid response to emerging academic disciplines enable universities, enterprises, and markets to collaborate effectively in developing tools and equipment for biodiversity assessment and monitoring. Expanding huge private capital investment in universities to biodiversity conservation could spur broader investment in ecological products in the future, while would also offer an opportunity for the universities to achieve their ambitions.

Keywords: Biodiversity conservation; Education; Colleges and universities; Private capital; Investment

Biodiversity is essential for human well-being and plays an indispensable role in the United Nations Sustainable Development Goals (SDGs) [1]. Unfortunately, the rate of global biodiversity loss remains high [2], while the courses to understand and assess biodiversity are declining in universities [3].

With economic development, China's prosperous private entrepreneurs have started to build private colleges and universities. In 2023, there were 789 private colleges and universities in China, accounting for 25.67% of colleges and universities in the country. Additionally, 9.9 million students were enrolled in private colleges and universities, accounting for 26.34% of the total number of students enrolled [4]. Currently, most private colleges and universities are local-level institutions, primarily offering undergraduate and associate degrees. However, the following recent examples differ significantly.

Two typical cases are found in this respect. Mr. Yu Renrong has donated 30 billion RMB to establish Eastern Institute of Technology, Ningbo, Zhejiang province. Mr. Cao Dewang has invested 10 billion RMB to build Fuyao University of Science and Technology in Fujian province [5,6]. The two institutions are positioned as world-class research universities. The generosity of Mr. Yu and Mr. Cao deserves high praise, particularly given the global

slowdown in investment [7]. However, biodiversity conservation education and researches appear overlooked in the specialties of these new institutions. In this case, we argue that the courses and degree programs (e.g., Bachelor's, Master's or Ph.D.) in biodiversity conservation should be developed in the universities, with aim to train the next generation of specialists through empirical schooling combined with advanced technologies such as digital tools, camera traps, environmental-DNA analysis, and artificial intelligence [3,8].

Globally, the funding gap for conservation is immense. A key focus of the COP 16 resumed session (25–27 February 2025 in Rome, Italy) is aimed to mobilize various financial mechanisms and instruments to cover this gap [9]. The Kunming-Montreal Global Biodiversity Framework addresses the role of enterprise in conservation and encourages private-sector investment in biodiversity programs through diverse pathways [10]. It is a critical step to invest in biodiversity education, which could spur broader investment in ecological products in the future.

Following President Xi's concept highlighting lucid waters and lush mountains as invaluable assets, the values of ecological products prove to be increasingly perceptible. The appreciation of the potentially enormous economic value of ecological products (e.g., carbon sink, eco-tourism, health food and medication) regarding biodiversity conservation is increasing while facilitating the establishment of an effective mechanism for the sustainable exploitation of ecological product value. As Inger Andersen, executive director of UNEP, said, "nature is the green engine that drives our economies" [11]. Nature, including millions types of plants, animals and fungi, is widely considered an invaluable asset and serves as the green engine for education, science, technology and health. For instance, biodiversity contributes to the development of life-saving drugs like Taxol, an anti-cancer compound [12]. There are approximately nine million types of plants, animals, protists, and fungi [13], with various morphological, visual, odor, or audio characteristics. Artificial intelligence (AI) successfully trained on large taxonomic data sets can be used to aid species identification by recognizing such vast data [3]. The major challenges in biodiversity research and application offer an opportunity for the two universities to achieve their ambitions in the field of AI.

The science communities, particularly in top-tier universities, serve as critical hubs where talent, knowledge, and technology concentrate. Private capital can leverage the communities to bridge universities, enterprises, and diverse markets (including those arising from government purchasing demand) in developing tools and equipment for biodiversity assessment and monitoring. In this respect, big Data and AI models, phytoplankton & zooplankton and animal audio analysis instruments, together with species-identifying unmanned aerial vehicles, and training programs, would play critical roles. Robust policy framework and management incentives—including tax reductions, low-carbon/green certifications, and specialized Master's or PhD programs—should be established to incentivize private-sector contributions, while strengthening the technology-driven leadership of universities and university-enterprise consortia in advancing biodiversity conservation. Private capital's flexible management framework and rapid response to emerging academic disciplines would underscore their distinct advantages for investing in such areas and projects.

To reverse biodiversity loss, greater private and public resources should be invested in this field. Such investment would contribute to other SDGs simultaneously, and the whole economy and global communities.

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