Making Nature's Values Visible, Promoting Agro-food Transformation | The Tengchong, Yunnan Pilot

The loss of the Earth's biodiversity and the degradation of its ecosystems pose a great risk to human survival and development. In order to protect the only earth, it is crucial to halt the trend of biodiversity loss and restore natural ecosystems.

The development of modern agriculture has contributed greatly to food security and poverty eradication, but the negative impacts on biodiversity and ecosystems from factors such as changes in land use and the use of chemical fertilizers and pesticides are also considerable. The United Nations Environment Programme report *Measuring What Matters in Agriculture and Food Systems (2019)* states that one of the underlying causes of increased ecosystem vulnerability is the difficulty for humans to fully understand the dependence and impact of agriculture and food systems on nature.

Assessing important externalities along the value chain of agri-food systems and making nature's values visible can help people make decisions that are both economically rewarding and environmentally and socially sustainable. This coincides with Xi Jinping's signature statement of ecological civilization "green is gold", and both aim to promote a profound shift in the concept and model of development.

The Economics of Ecosystems and Biodiversity (TEEB) global initiative is working with the Ministry of Ecology and Environment of China and the Chinese Academy of Sciences to model the costs and benefits to nature, economy and society of different agricultural development pathways, to support the development of sustainable agricultural policies, conservation of biodiversity and restoration of degraded landscapes. Tengchong City, Yunnan Province, a national "Green is Gold" practice innovation base, is the pilot area for this collaboration.

Video
https://drive.google.com/file/d/1bcQlsfoYJxEFwguNWk1YWeDkpex0Y1-8/view?usp=sharing

Tengchong is rich in ecosystems: they include forests, grasslands and farmlands, and provide critical ecological functions such as biodiversity conservation and water provisioning. Tengchong's unique biological resources promote the cultivation of a variety of specialty crops and strengthen a growing beef cattle industry, while nurturing 90 leading agricultural industrialized enterprises and a local population of 642,500. With the opportunity brought by Yunnan's "Green Food Brand" programme, Tengchong is trying to promote the transformation of agriculture and food systems.

A study is currently being conducted to simulate and forecast the full costs and benefits on nature, economy and society of different agricultural pathways in Tengchong, toward the year 2025, 2035 and 2050, It considers combinations of different agricultural policies, such as chemicals use reduction, under-canopy plantation, combined planting-breeding, and greenhouse gas emissions reduction and control, taking into account both visible and invisible costs and benefits, and the interests of the present and future generations. This reflects the concepts of sustainable development and "green is gold".

The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative to mainstream the values of biodiversity and ecosystem services into decision-making at all levels. It is hosted by the United Nations Environment Programme, and its work covers more than a dozen countries around the world.

The pilot project on agri-food systems is carried out in seven countries - Brazil, China, India, Indonesia, Malaysia, Mexico, and Thailand. It is funded by the European Union (EU) and supports the EU's Farm to Fork Strategy and Circular Economy Action Plan. The work in China is coordinated by UNEP-International Ecosystem Management Partnership (UNEP-IEMP) and implemented by the Chinese Research Academy of Environmental Sciences and the Institute of Geographic Sciences and Natural Resources Research, CAS with relevant teams in the country.