NBS Good Practices from Chinese government

May 2019

Pilot Case of Carbon-neutral Tea Production in China

1. Context

Tea is an important economic crop in many developing countries including China. Its production is sensitive to changes of climatic conditions. Frequent extreme climatic events have posed a heavy stroke to tea production and quality in China. The risk of climate change can be reduced by enhancing the adaptability of tea plantation. Current adaptation and mitigation measures were summarized, and life cycle assessment (LCA) methodology is employed for accounting the cradle-to-retail greenhouse gas emissions of tea production in China, in order to provide the scientific basis for adopting feasible offset measures to achieve carbon neutrality for certification.

2. Implementation Duration

2017-2023

3. Implementation Phase

1. Scoping (2017-2018): identifying pilot tea gardens, pioneering work on data collection and GHGs accounting methodology
2. Implementation (2019-2021): completing the data archiving system and accounting methodology, verifying offset measures for carbon neutral tea production and certification
3. Dissemination (2022-2023): formulating carbon neutral tea industry development policies, application on carbon-neutral tea methodology, and labeling carbon-neutral tea products.

4. Implementor

Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences

5. Beneficiary

Tea farmers, tea merchants, the public consumers

6. Total investment and capital composition

Scoping stage: $0.15 million from FAO
Implementation stage: $2.0 million from FAO South-South Cooperation Fund

7. Supporting funds and capital composition

Scoping stage: 0.5 million CYN from government of Songyang county, Zhejiang province
Implementation stage: $2.3 million from GIZ, $1.0 million from Kenya government

8. Implementation level

Local: Dabu, Guangdong province; Longquan & Songyang, Zhejiang province

9. Impacts of climate change mitigation and adaption

1. Mitigation: Increasing carbon storage and carbon sink, reducing greenhouse gas emissions, improving ecosystem services of tea plantations, and improving energy efficiency.
2. Adaptation: Selection of stress-resistant tea varieties, lowering down climate disaster losses with intensive field management measures, establishing early warning system and disaster risk transfer mechanism.

10. Social, economic and environmental impacts

1. The case study provides an effective scientific basis for public participation in low-carbon actions, guidelines for carbon-neutral tea as reference for other agricultural sectors' low-carbon actions, and promote the expansion of agricultural actions to cope with climate change.
2. The development of carbon-neutral tea can promote social and economic development, facilitate the dissemination of carbon-neutral concept to mitigate climate change, promote institutional and technological innovation, eco-tourism and certification of carbon-neutral tea products, establishment of carbon-neutral tea demonstration gardens.
3. Low-carbon tea production can achieve carbon sequestration of atmospheric CO2 and reduce greenhouse gas emissions at the beginning of the tea industry value chain.

11. Photos and graphs

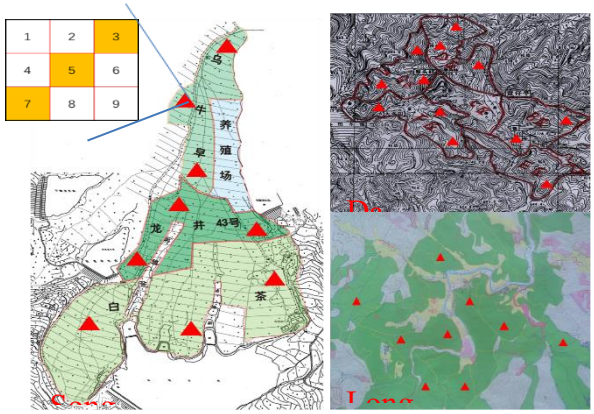

Fig. 1 The distribution of field sampling for tea growth

20m×20 m sampling plot

Soil sampling

Plant height measurement

Ground diameter

Fig 2 Tea plant sampling

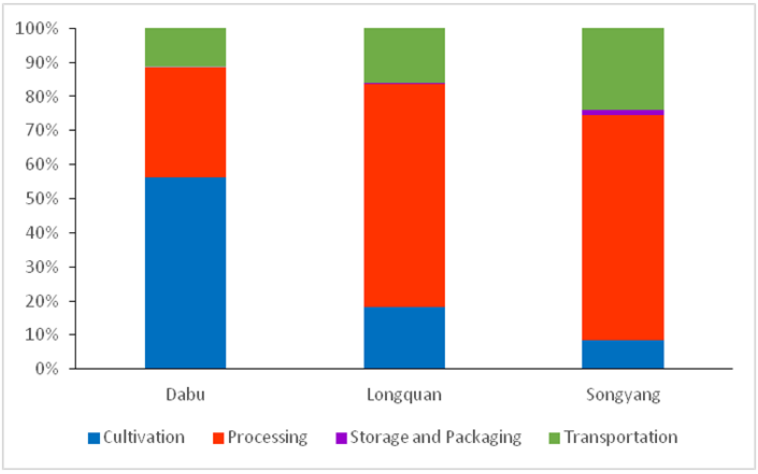

Fig. 3 Percentage of carbon emissions for different production stages in 3 pilot tea gardens

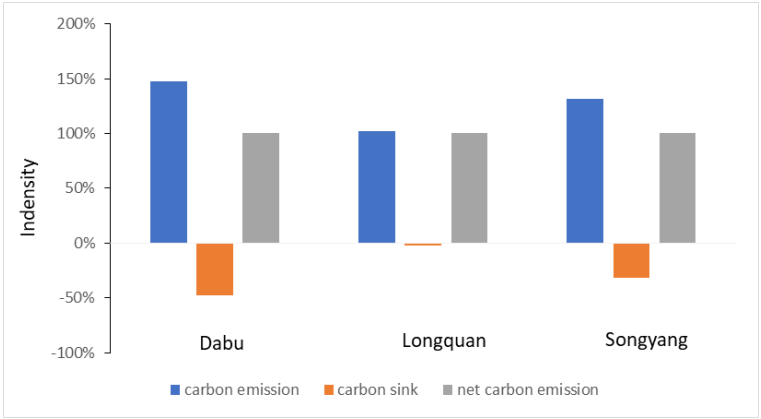

Fig. 4 The intensity of GHGs emissions, carbon sink and net emission in the three pilot tea gardens