4th World Congress on Agroforestry

20-22 May 2019
Montpellier, France

Book of Abstracts

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Mr Emmanuel MACRON
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RESEARCH PROGRAM ON
Forests, Trees and Agroforestry

CGIAR

Landscape approaches to tackle climate change, and achieve sustainable development and food security

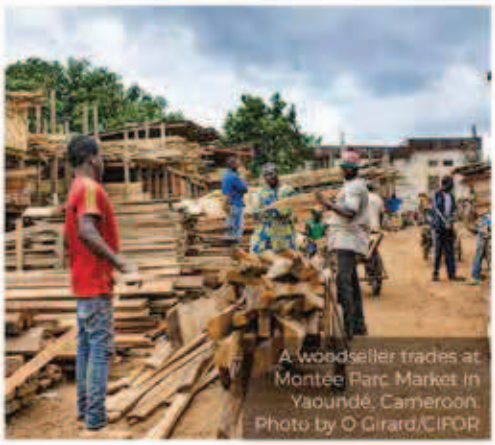
Aerial view of the landscape around Halimun Salak National Park, West Java, Indonesia. Photo by Kate Evans/CIFOR

What is FTA?

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with Bioversity International, CATIE, CIRAD, INBAR, Tropenbos International and the World Agroforestry Centre. FTA's research contributes to 14 of the SDGs.

What do we work on?

- Tree genetic resources
- Forests, trees and agroforestry for smallholder livelihoods
- Sustainable value chains and investments
- Landscape dynamics, productivity and resilience
- Climate change adaptation and mitigation
- Gender, evaluation and impact assessment



A woodseller trades at Montee Parc Market in Yaoundé, Cameroon. Photo by O Girard/CIFOR

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FTA IS LED BY CIFOR

IN PARTNERSHIP WITH Bioversity International, CATIE, cirad, INBAR, Tropenbos International, World Agroforestry

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New agroforestry on European ecosystem service deficit farmland can compensate up to 43% of agricultural GHG emissions

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Landscapes with a high share of agroforestry provide more regulating ecosystem services than landscapes dominated by conventional agriculture (Kay et al. 2018). Yet, which type of agroforestry to recommend depends on local and regional conditions and there may be regions where there is a higher need for agroforestry than others.
We identified European farmlands where several ecosystem service (ES) deficits occur at the same time (soil erosion, low soil organic carbon and biodiversity, nitrate surplus, irrigation, low pest control and pollination potential). Almost ten percent of arable and grassland had more than five and four stacked deficits, respectively (Figure 1). In those areas, the introduction of agroforestry can help to reduce ES deficits. We propose 64 candidate agroforestry systems, which are locally adapted and attractive for farmers. They range from lines of trees around arable plots to relatively densely planted silvo-arable and silvo-pastoral systems.
As an example for the reduction of ES deficits, we modelled the potential carbon sequestration of each candidate agroforestry system. The conversion of the 140,000 sqkm of priority farmland to agroforestry would sequester - depending mainly on the tree species and density - between 2 and 64 10^6 t of carbon per year in above and below ground biomass. This would correspond to up to 43 percent of the European greenhouse gas emissions attributed to the agricultural sector.

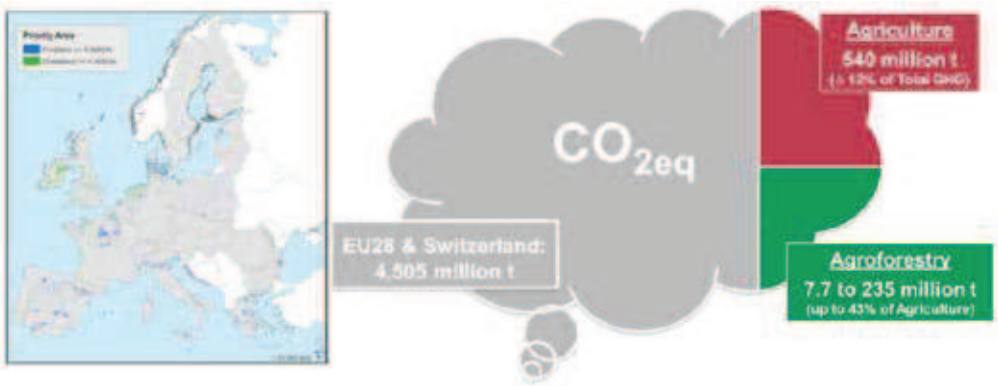

Figure 1. Implementing agroforestry on the 8.9 percent of European farmland with the highest deficit in ecosystem services would compensate up to 43 percent of European agricultural GHG emissions.

Keywords: Carbon mitigation, Greenhouse gas, Arable farmland, European grassland.

References:

1. Kay S., 2018, Agroforestry Systems 92(4), 1075-1089