Estimating CO_2 emissions from land use change in the Silang-Santa Rosa subwatershed (2014-2025)

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Emissions from LU change

- Land use change leads to corresponding changes in Carbon storage in vegetation
  - Conversion from forest/agro-forest to built-up land/agriculture reduces terrestrial C storage, resulting in CO_2 emissions.
- "Philippines has a total emissions mitigation potential of ~38,540,000 tons CO_2 from 2011-2030" (Philippines National REDD-plus Strategy, 2012).

Carbon storage by vegetation type in the Philippines

Table 4. Above-ground biomass of major land cover categories in the Philippines

Land cover	Carbon (tons of carbon)
Total	3,611,978,558
Forestlands	1,725,681,529
Other wooded land	299,733,041
Other land	1,508,960,507
Inland water	29,842,915

Source: FRA, 2005

Table 5. Mean above-ground carbon density of forest land cover in the Philippines[32]

Land Cover	Carbon (tons of carbon/hectare)
A. Protection Forest	
1. Old growth	165 – 260
2. Mossy	183.8
3. Pine	90.1
4. Mangrove	176.5
B. Secondary Forest	207.9
C. Brushlands	29.0
D. Tree Plantation	59.0
E. Agroforestry	45.4
F. Grasslands	12.3

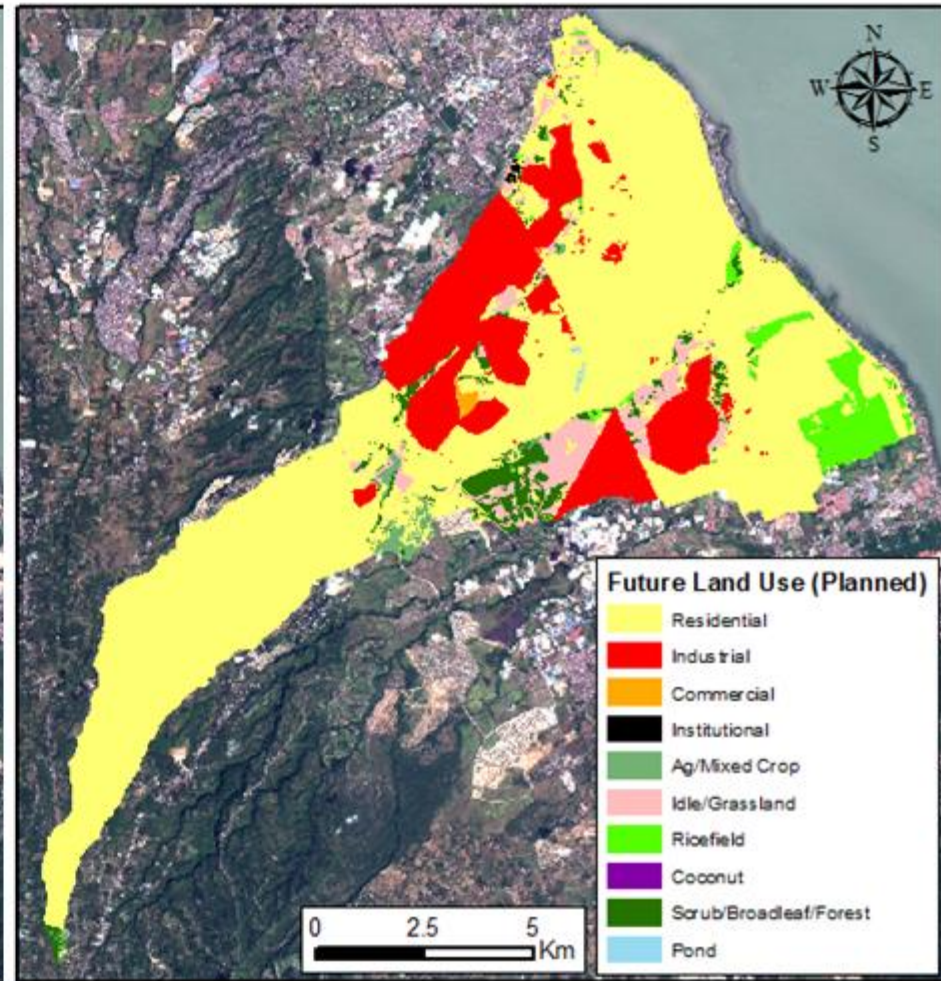Sources: Data compiled in Lasco and Pulhin, 2003

-Land cover types with significant C storage in Silang-Santa Rosa subwatershed
-Forests in subwatershed conservatively classified as Tree Plantation
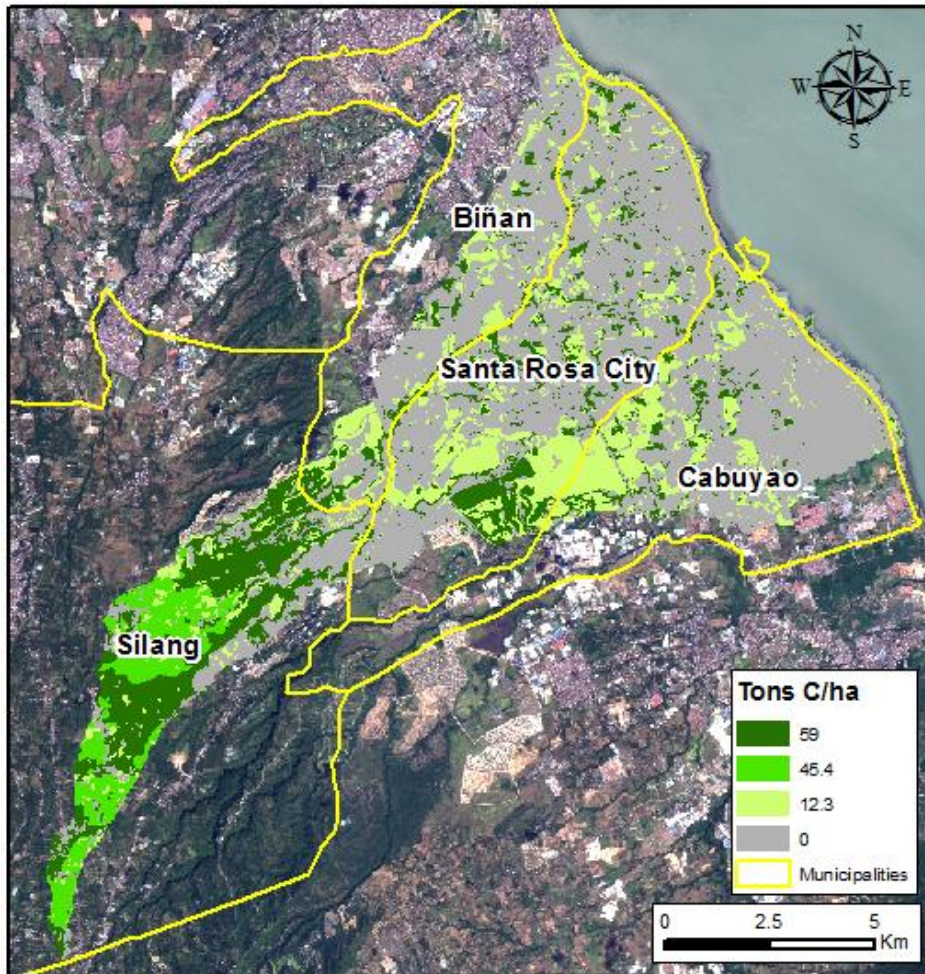
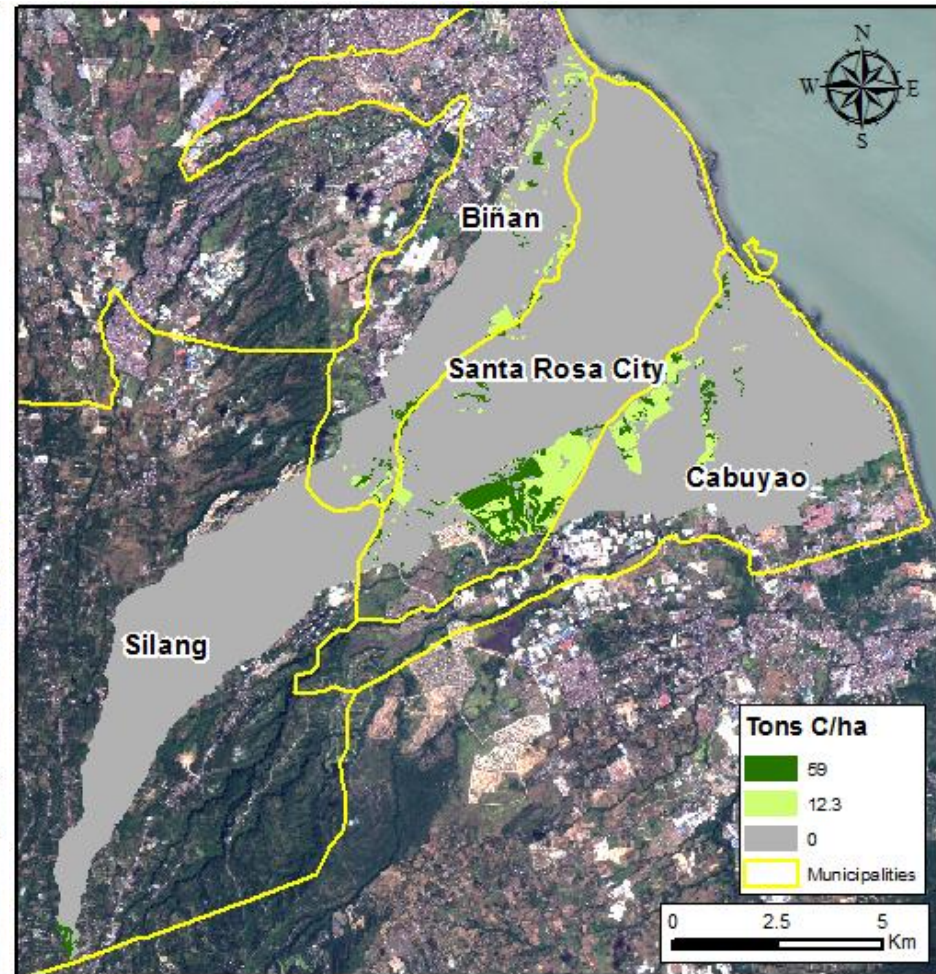# Projected land-use change: 2014-2025
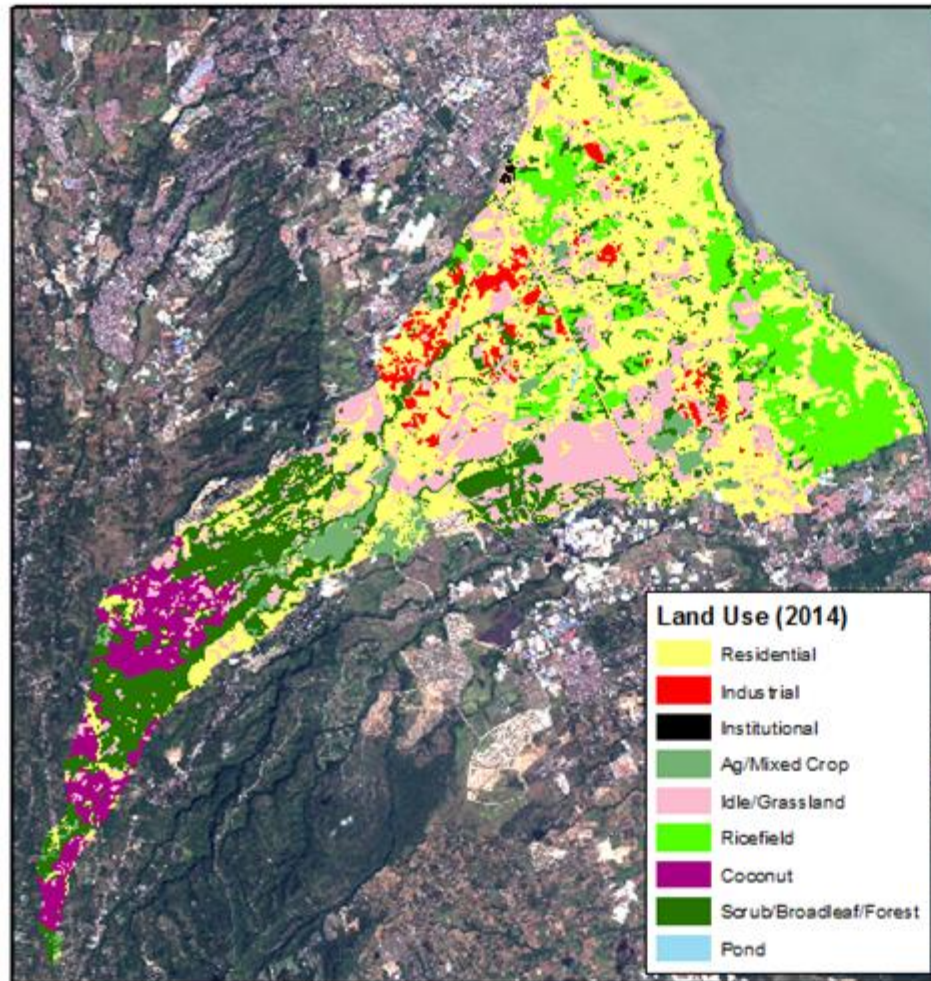
Change in C storage: 2014-2025

2014 Above-ground Biomass

2025 Above-ground Biomass

CO2 emissions from LU change in Silang-Santa Rosa subwatershed

- **Above-ground biomass (2014)** = 173,189 tons C
- **Above-ground biomass (2025)** = 29,281 tons C
- **Change 2014 to 2025** = -143,908 tons C [-83%]
- **CO_2 emissions** = 143,908 x 3.67 = 528,142 tons CO_2

Reducing CO2 emissions from LU change

Possible activities

- Reforestation along riverbanks
- Maintaining existing vegetation in new developments
- Preserving existing forest/agro-forest lands with high C storage

- **Next step:** Calculate CO_2 emissions for alternative land use development scenarios (i.e. with adaptation/mitigation actions taken).