Life Cycle Assessment (LCA) of traditional charcoal production in Madagascar
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Context: charcoal production in Madagascar
- Biomass provides 84.9% of total energy consumption of Madagascar in 2008
- Increase in charcoal production: from 0.65 to 1.03 Mt of charcoal from 2000 to 2008

Source: UNSD, 2011

Objective of the study
- To assess the environmental impacts of traditional charcoal production by earth mound kilns
- To compare the results with those of an industrial kiln with a smoke incineration system

Case study: charcoal production for Mahajanga supply

Scenario description: charcoal production and supply

Earth mound kiln chain:
- Remote charcoal production in forests ●
- Intermediary storage of charcoal in Marovoay ●

Industrial kiln chain:
- Same origin for wood collection ●
- Centralized industrial site near Marovoay ●

Main results

Impacts on climate change

Key findings

- Carbonization process is the main contributor in most impacts
- The integration of a smoke incineration system:
  - Highly reduces emissions of organic compounds and particulate matter (positive effects on climate change / toxicity / ecotoxicity)
  - Increases NOx emissions (negative effects on acidification / eutrophication)