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## Improving Peri-Urban Soils with Recycled Waste from the Municipality of Patancheru: An Indian Case Study

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### Abstract

Cities have been centres of rapid development. But, urbanisation not only results in benefits, it often leads to environmental and social problems due to lack of appropriate environmental sanitation services and food insecurity. Rapid changes in peri-urban land use puts agriculture under pressure and leads to land fragmentation and increased production costs. However, peri-urban agriculture could play an important role in supplying fresh, perishable fruits and vegetables to city markets, while contributing to solving environmental and social challenges.

This study describes a framework for participatory processes that was used to develop a public-private partnership between the Greater Hyderabad Municipal Cooperation (GHMC) and socially inclusive groups as well as a method for converting the organic component of the city waste to compost (pilot study), that has the potential to revitalize the peri-urban soils of Hyderabad. A participatory institutional analysis revealed that the GHMC Sanitation and the Community Urban Development wings, were important partners. Meetings with farmers, waste pickers, self-help groups (women) and rickshaw pullers enabled the selection of a socially inclusive group to develop entrepreneur skills.

Garbage generation in the city of Patancheru is  $26'357 \text{ kg d}^{-1}$  ( $0.57 \text{ kg cap}^{-1} \text{ d}^{-1}$ ). The organic fraction is estimated at  $14'286 \text{ kg d}^{-1}$  ( $0.31 \text{ kg cap}^{-1} \text{ d}^{-1}$ ). Assuming a reduction of volume of 75 % and a nutrient content of 1 % N, 0.3 % P and 0.9 % K, it would be possible to recycle about 36 kg N, 11 kg P and 32 kg K  $\text{d}^{-1}$ . Annual production would amount to 13,035 kg N, 3,911 kg P and 11,732 kg K. Business ideas jointly developed with stakeholders revealed that the organic fraction from the vegetable markets and organic city waste can effectively be collected. But, the moist and nitrogen rich material has to be composted with rather sparse carbon rich material from farms and other industries.

Preliminary findings will be verified by more in-depth studies of the pilot project and an on-farm fertiliser comparison trial. These follow up studies will also determine if the establishment of composting units generate sufficient income, and if farmers are willing to use the compost.

**Keywords:** Compost, municipal solid waste, Patancheru, peri-urban agriculture