



## FROM THE DESK OF RATTAN LAL Viewpoint 6.2018

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### The Urbanization Challenge

Fellow Soil Scientists,

The 21<sup>st</sup> Century is the era of urbanization. The 2018 report of the U.N., the *World Urbanization Prospects*, indicates that the percentage of the world population living in cities increased from 50% in 2008 to 55% in 2018 and will be 68% in 2050. The global urban population increased from 751 million in 1950 to 4.2 billion in 2018 and will be 6.7 billion by 2050. As much as 90% of the projected increase of 2.5 billion in urban population by 2050 will take place in Asia and Africa. The number of megacities (>10 million population) increased from 2 in 1950 to 29 in 2015, and will be 43 by 2030. A megacity of 10 million people requires 6000 Mg of food per day, and urban population of 1 million needs 40,000 ha of land for accommodation and development of infrastructure. Thus, the global annual increase of the world population by 75 million encroaches upon 3 million hectare (Mha) of land under other uses (e.g., agriculture). The urban land area, 400 Mha in 2018, may expand by another 150 Mha by 2100. The rapid process of urbanization affects soil resources through: (1) conversion of agricultural to urban land and surface sealing, (2) disturbance, often drastic, by soil removal, mixing, and contamination through organic and inorganic pollutants, (3) depletion of the terrestrial carbon stock (soil and vegetation), (4) alterations in biogeophysical and biogeochemical cycles of water, nitrogen, phosphorus and other elements, (5) changes in the energy budget etc. Therefore, a judicious management of urban lands (green space, roof tops) is a high priority for: (1) recarbonization of soil and vegetation, (2) remediation of polluted and contaminated soils, (3) restoration of the hydrological/energy balance and of the elemental cycling, (4) improving the above and below-ground biodiversity, and (5) strengthening ecosystem services (e.g., food, water quality). Properly implemented, urban agriculture is an important tool to advancing Sustainable Development Goals of the U.N., especially #1 (no poverty), #2 (no hunger), #6 (clean water), #11 (sustainable cities), #13 (climate action), and #15 (life on land). Even without realizing that total population of Delhi, India will increase from 0.7 million in 1941 to 36.1 million by 2030, Mahatma Gandhi stated that “urbanization in India is a slow but sure death for her villages and villagers.” **While the best strategy to address the unprecedented urban growth and its adverse environmental ramification is controlling the growth of human population, the next best option is “sustainable management of soils under cities for improving the environment and strengthening of ecosystem services.”**

Sincerely,

Rattan Lal,  
President, International Union of Soil Sciences

