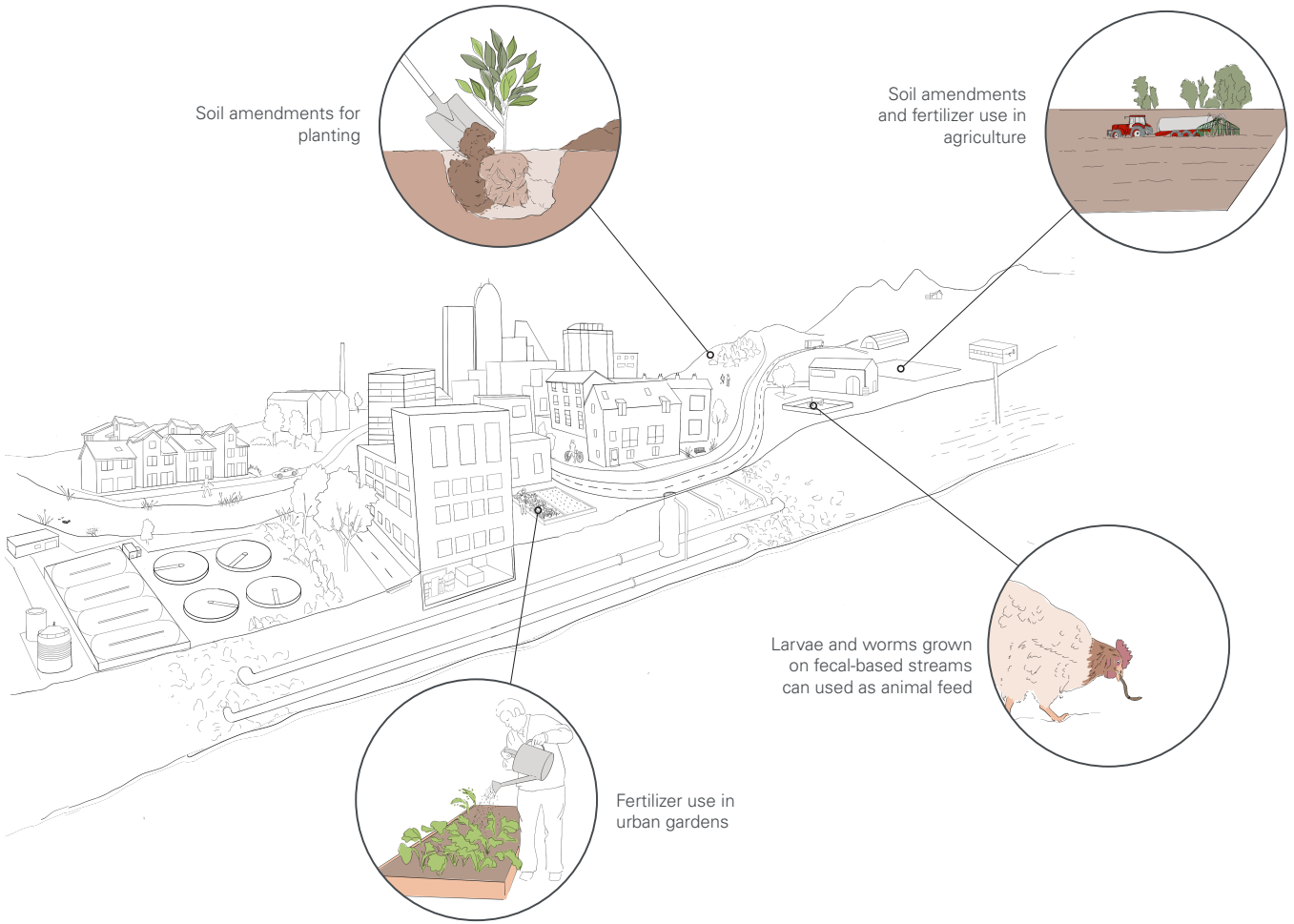
RECOVER NUTRIENTS & ORGANIC MATTER

GOAL

Current linear nutrient flows are characterized by: 1) cheap and resource-intensive fertilizer production that relies on fossil fuels, and finite, spatially-concentrated ore reserves, 2) food and farming systems that contribute to soil nutrient imbalances and soil organic matter depletion, and 3) and human excreta management practices that result in irretrievable losses of nutrients and organic matter to air, water, and landfills. Nutrients discharged to surface waters can cause eutrophication (algal blooms, dead zones, and fish kills). Recovering nutrients and organic matter from streams containing human excreta diverts nutrients from existing infrastructure, reduces losses, and allows for the production of renewable fertilizers and soil amendments.



PRODUCE FERTILIZER

Separate wastewater streams containing urine and/or feces at the source to facilitate the treatment and targeted extraction of nutrients as fertilizers, minimizing pollution and losses. Recovery can target specific nutrients (often one macronutrient) or several nutrients (macro- and micronutrients). The recovered products can be reused as fertilizer in agriculture, horticulture, plant nurseries, and on sport fields.

PRODUCE SOIL AMENDMENT

Separate fecal streams at the source, or after solid-liquid separation of mixed wastewater, to aid nutrient and organic matter recovery. Treatment and recovery processes of the fecal streams, potentially combined with kitchen and/or garden waste, produce soil amendments that increase soil health and supply nutrients. Source separation also lowers pollutants, like heavy metals, compared to sludge from centralized treatment plants.

PRODUCE BIOMASS

Use streams containing urine and/or feces to grow or produce algal biomass, worms or insects (e.g., black soldier fly larvae). While algae is often grown on nutrient-rich liquids, such as urine, larvae and worms can be grown on fecal biomass and/or kitchen waste. The products can be used as, or in, animal feed, or used as soil amendments/fertilizer (e.g., algae)