Examining linkages between multiple sustainable development outcomes is key for understanding transitions to sustainability. Yet rigorous evidence using large-N data on multiple social and environmental outcomes of sustainable development policies remains scarce. We conduct a comprehensive, national-level analysis of Brazil’s flagship social protection programme, Zero Hunger, which aims to improve food security and alleviate poverty. Using econometric techniques that control for potential bias and allow causal inference we quantify how Zero Hunger investment impacts three sets of outcomes that relate to divergent but inter-linked sustainable development goals (SDGs), i.e. ‘no poverty’ (SDG 1), ‘zero hunger’ (SDG 2) and ‘health and well-being’ (SDG 3). We check for potential perverse outcomes arising from increased clearance of natural vegetation that would adversely impact SDG 15 ‘life on land’. Despite increasing per capita protein and calorie availability, investment in Zero Hunger did not alleviate child malnutrition or infant mortality and had negligible impact on poverty. Investment also increased the loss of natural vegetation in some biomes, especially the Pampa, but increased natural vegetation in other regions – probably due to regionally contrasting effects on agricultural intensification and expansion. Effects varied across programme components with the conditional cash-advance Bolsa Familia associated with non-beneficial impacts, and the agricultural-supportive PRONAF associated with increased food production, reduction in poverty and changes in natural vegetation. Our results inform development of policies to meet multiple SDGs by highlighting successful elements of Brazil’s Zero Hunger programme, variable outcomes across divergent food security dimensions, and linkages and trade-offs between competing sustainable development goals, especially environmental protection.