Despite the increasing slum population, the problem of infrastructure and service delivery remains largely unresolved in Kianda village, Kibera slums. This has led to increased human and environmental health risks. This research therefore sought to assess the opportunities and challenges of infrastructure development, basic service delivery and aesthetic enhancement in Kianda, focusing on several variables namely: housing, education, energy, playgrounds and roads, water, sanitation and waste management and health care facilities. Both quantitative and qualitative data were collected using questionnaires, Interview schedules, Focused Group Discussions, field checklists and content analysis of secondary data. Descriptive and inferential statistics were used for data analysis. Pearson correlation coefficient was used in determining the emerging relationships between selected key variables. Results obtained showed that while households desired improved infrastructural development and service provision, they had poor housing structures, inadequate health care, education and water facilities, poor communication networks, low quality energy sources and inappropriate waste management systems. As a result, there were low levels of education attainment and high rates of school dropouts, water, air and soil pollution and consequently the impact of water borne diseases. Barriers to improved service delivery included poverty and lack of negotiating skills, poor slum policies and absentee landlords, corruption and unresponsive governing authorities. Households were noted to engage in survival mechanisms hazardous to human health such as disposing wastewater directly outside their houses (83%) and use of flying toilets (8%). Household practices hazardous to the environment included among others use of firewood and charcoal for cooking (81%), disposing wastewater in channels draining into Mutoine River (83%), and use of flying toilets (8%). Educated households engaged less in hazardous practices than in uneducated households. Likewise, higher income households engaged more in less hazardous practices than lower income households particularly the use of own latrines and ablution blocks. Both local and international organizations were providing several services in Kianda in the absence of the City Council, though none was involved in road network provision. There were few health care facilities in Kianda mostly private clinics. This, compounded with risk factors like unsafe water, poor sanitation and hygiene had contributed to the burden of water borne diseases. Reported cases of ill health included Malaria (39%), Typhoid (26%) and diarrhoea (35%). Therefore, for service provision to improve in Kianda, awareness on the dangers of the households' survival mechanisms must be created. This had greatly been caused by the high poverty levels in the slum, which urgently calls for more focused urban poverty reduction policies. There is also the undisputed need to actualise tenure rights in the slum so as to give the households an incentive to negotiate for services from concerned urban authorities. A participatory slum-upgrading programme should also be emphasized, given the inclination of the global world towards participatory development.