

Improved Sanitation, Hygiene, and Poverty

Improved sanitation and handwashing are among the most influential factors in reducing morbidity and mortality from diarrheal diseases (WSSCC and WHO, 2005). However, promoting sanitation and hygiene is challenging. Households must make appropriate choices in an arena which is intensely private. Catalyzing such choices requires that all institutional stakeholders collaborate effectively (WSSCC and WHO, 2005).

As mentioned in the introduction, the Uganda government has acknowledged the direct impacts of sanitation and basic hygiene on health, education, and poverty reduction in the Poverty Eradication Action Plan (MFPED, 2004). To boost improved sanitation coverage and hygiene behavior, the government has established national PEAP targets. It has also established an inter-sectoral National Sanitation Working Group to coordinate all sanitation and hygiene promotion efforts, reviewed budget mechanisms and funding flows, and discussed establishing a new national budget line for sanitation and hygiene promotion (MFPED, 2004; MoH, 2004; Arebahona, 2007).

While these efforts have raised the profile of these issues, implementation so far has lagged behind the improvements achieved for safe drinking water coverage (MWE, 2007; MWE, 2008). Reasons for this underperformance include past marginalization in resource allocation and low prioritization given to sanitation and basic hygiene by local governments. Another factor is insufficient time for fundamental changes to take place at the household level—where behavioral changes require long-term and sustained efforts—and at the institutional level, where action is required by multiple actors within and outside government and at local and national scales.

Adding to these challenges is the desire to incorporate broader goals relating to poverty, equity, and efficiency into sanitation and hygiene interventions (MoH, 2004). Allocation of the proposed new earmarked sanitation and hygiene funding under discussion, for example, could target those parts of the country with higher levels of poverty to meet the poverty reduction objective. Or it could support those areas with currently low sanitation coverage to address equity issues, or could target those areas with the greatest potential for improving performance to address concerns about public sector efficiency.

Maps showing location-specific indicators of sanitation coverage and poverty can help guide such allocation discussions. The following chapter—organized into three sections—demonstrates how poverty maps can support planning and targeting of interventions to promote improved sanitation and basic hygiene behavior.

The first section introduces the institutional framework for sanitation and hygiene behavior efforts in Uganda and highlights challenges to improving this behavior. It includes a national map showing the status of improved sanitation coverage in the country.

The second section looks at the relationship between improved sanitation coverage and poverty by first comparing poverty indicators and coverage rates for Uganda's subcounties. It then identifies the rural subcounties that did not achieve the country's target for improved sanitation in Uganda's first Health Sector Strategic Plan (HSSP I).⁴ These subcounties will require special attention to reach Uganda's 2015 target for improved sanitation. The final two maps examine these subcounties that have not achieved HSSP I and highlight the geographic distribution of poverty densities and poverty rates. Taking these geographic factors into consideration when designing and funding sanitation and hygiene programs could result in greater benefits for vulnerable populations in these subcounties.

The third section consists of Box 8, which illustrates how data from the census can be combined to link information on sanitation, drinking water sources, and affordability of soap (the latter a general indicator of poverty, measuring the affordability of basic necessities). This serves as a reminder that data and evidence need to be compiled to design more coordinated interventions that improve water supply, sanitation infrastructure, and hygiene behavior. Together these have greater impact than stand-alone interventions.

4. Uganda has formulated two five-year strategic plans: HSSP I covering 2000/2001 to 2004/2005 and HSSP II covering 2005/06 to 2009/2010. The 2002 improved sanitation map in this publication is compared to the interim target established in HSSP I because of its proximity to the data collection year.

IMPROVED SANITATION: DEFINITION, ISSUES, AND COVERAGE RATES

The main responsibilities for sanitation-related activities in Uganda are shared among the Ministry of Water and Environment (MWE), Ministry of Health (MoH), and the Ministry of Education and Sports (MES). MWE is responsible for planning sewerage services and public sanitation facilities in towns and rural growth centers as well as promoting sanitation around new water points. MoH is responsible for coordinating household hygiene and sanitation efforts and acts as the secretariat to the National Sanitation Working Group. MES has the mandate to construct school latrines and promote hygiene education in schools.

Such an institutional set up requires significant coordination and contributions from all stakeholders to achieve results. In addition to intersectoral collaboration, these three ministries need to collaborate with institutions from national to subcounty level to allocate resources, implement plans, and monitor progress. Past efforts to raise the profile of sanitation and implement a national action plan have had limited impacts (e.g., the National Sanitation Forum in 1997 that produced the Kampala Declaration on Sanitation). However, the new sector-wide approach to planning, in both the health and the water and sanitation sectors, provides an opportunity to scale up sanitation and hygiene efforts by addressing two fundamental barriers: fragmented and limited funding through multiple institutions, and uncoordinated water, sanitation, and hygiene interventions.

In the past, each agency has tended to undertake water and sanitation programs in isolation from the others and has not fully integrated its hygiene promotion campaigns with each other. An international review of best practices in this area (WSSCC and WHO, 2005) found that hygiene improvements and health benefits are most quickly and lastingly achieved when the following conditions are present:

- A program of hygiene promotion, including communication, social mobilization, community participation, social marketing, and advocacy;
- Improved access to the “hardware” for water supply, sanitation, and hygiene, such as water supply systems, improved sanitation facilities, household technologies, and materials such as soap, safe drinking water containers, and effective water treatment; and
- An enabling environment that includes policy improvement, institutional strengthening, community organization, financing and cost recovery, and cross-sectoral and private-public partnerships.

The National Environmental Health Policy (MoH, 2005a) is addressing some of these challenges by emphasizing such government actions as:

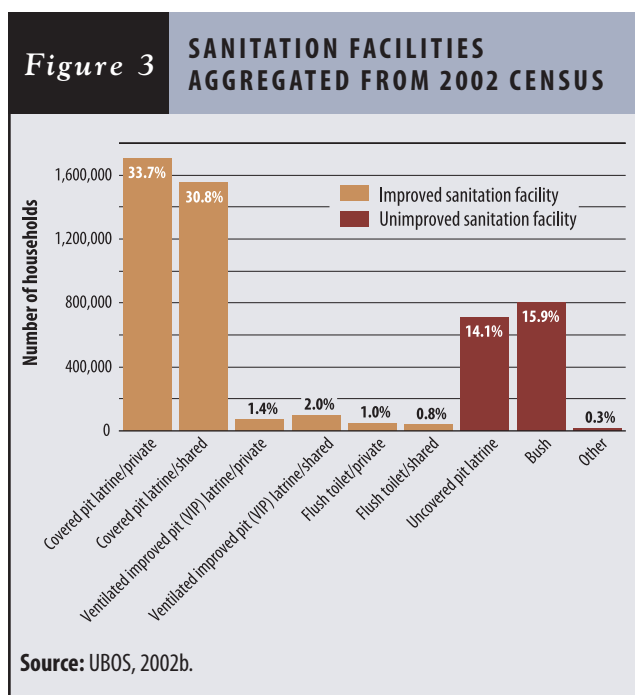
- Adopting a national sanitation and hygiene promotion strategy with clear goals, budgets, and institutional responsibilities;
- Establishing District Water and Sanitation Coordinating Committees that integrate and coordinate existing resources and implement integrated hygiene promotion and sanitation plans; and
- Establishing a dedicated national sanitation team (within MoH) to support the national strategy and provide technical support to towns and districts.

Based on the latest Water and Sanitation Sector Performance Report (MWE, 2008), 62 percent of rural and 74 percent of urban households in Uganda used improved sanitation facilities in 2007/2008. This puts Uganda’s rural average of safe sanitation below the country’s intermediate target of 64 percent for 2007/2008. This means that rural areas have not passed an important milestone to stay on the trajectory for Uganda’s 2015 target of 77 percent safe sanitation coverage. In contrast, urban households have achieved their interim target of 74 percent for 2007/2008 (MWE, 2008).

To produce detailed maps of improved sanitation (and compare them with the 2005 poverty maps), the analysis presented here relies on data from Uganda’s 2002 Population and Housing Census, the only national source of readily available sanitation data at subcounty level.⁵ The Census applies a less stringent definition for safe sanitation facilities than the Ministry of Health (see detailed description in Box 7). Based on these Census data, about 70 percent of all households (urban and rural) had access to improved sanitation facilities in 2002. Approximately 30 percent of the households had to rely on unsafe sanitation (see Figure 3) which included uncovered pit latrines (14.1 percent) and use of the bush (15.9 percent). Many households owned private covered pit latrines (33.7 percent) and an almost equal number of households (30.8 percent) shared covered pit latrines.

Map 7 shows the spatial distribution of the improved sanitation coverage data by subcounty. Rates of improved sanitation are typically higher in urban areas and the

5. The latest Water and Sanitation Sector Performance Report provides some national data on other sanitation indicators (MWE, 2008). According to these data, 21 percent of all Ugandan households (based on a limited study) have access to (and use) handwashing facilities. Data on school sanitation show that 41 percent of all schools have handwashing facilities (2006/2007), with a pupil to latrine/toilet stance ratio of 47:1 in 2007/2008 (compared to the 2015 target of 40:1). The Performance Report also highlights new data collection efforts in Mbarara District that resulted in improved sanitation coverage statistics for its 16 subcounties.



towns of Kampala, Jinja, Kabale, Kitgum, Gulu, Lira, Apac, and Hoima Districts, with the exception of Ssembabule, Katakwi, Moroto, and Nakapiripirit Districts. This could be due to generally improved housing and building regulations that require safe sanitation facilities before any structures are erected in these areas.

There is a distinct northeast-southwest division in the rates of improved sanitation facilities. The map shows low improved sanitation coverage rates in dark and light brown, which almost exclusively occupy the north and northeast, including the districts of Kitgum, Pader, Gulu, Kaberamaido, Amuria, Soroti, Katakwi, Kumi, Moroto, and Nakapiripirit. This may be explained by the settlement patterns in the north, characterized by internally displaced persons camps with inadequate sanitation facilities (UBOS, 2004). In addition, in the northeast (Moroto and Nakapiripirit Districts), the nomadic nature of the population does not encourage latrine construction or use. In contrast, high improved sanitation coverage rates (displayed in shades of turquoise) are more prevalent in central and southwestern Uganda, including Wakiso, Masaka, Mbarara, Ntungamo, Kabale, Bushenyi, Rukungiri, and Kanungu Districts.

Planners can use Map 7 to identify areas of progress as well as underachieving locations. Map 7 can also help to locate areas where the coverage rate of improved sanitation is just below 75 percent, which research indicates may be a sanitation threshold. Areas near this threshold may have the potential for significant improvement in health outcomes with additional sanitation investments. Achieving health impacts such as a reduction in diarrheal disease requires that a high proportion of the people in a community consistently use safe sanitation facilities. Studies show

that this proportion is roughly 75 percent of households⁶. This is due to the fact that unsafe disposal of human waste not only affects the household members directly involved, but can also impact the whole community. If improved sanitation coverage rates fall below 75 percent, such community impacts undermine the benefits that individual households gain from upgrading their sanitation facilities and improving their hygiene practices (Shordt, 2006). Thus, changing behavior at the household level and achieving an adequate sanitation coverage rate at the community level are both needed to maximize the health benefits of sanitation investments.

If a 75 percent improved sanitation coverage rate is applied as a rule of thumb threshold to Map 7, subcounties with coverage rates between 40–60 percent (shown in yellow) would warrant closer examination as potential priority areas for future sanitation and hygiene interventions. However, before this rule is applied indiscriminately, more specific epidemiologic data for Uganda are needed that may suggest a different threshold or a different scale (such as a parish) for such a prioritization effort.

IMPROVED SANITATION AND POVERTY PATTERNS

In the following analysis, Map 7, which shows the proportion of households with improved sanitation facilities, is combined with poverty maps to gain insights into the links between poverty and improved sanitation and to identify geographic clusters of subcounties with similar poverty and sanitation profiles. The analysis focuses on rural subcounties.

This section addresses the following policy-relevant questions, which can be used to design and execute more pro-poor sanitation interventions:

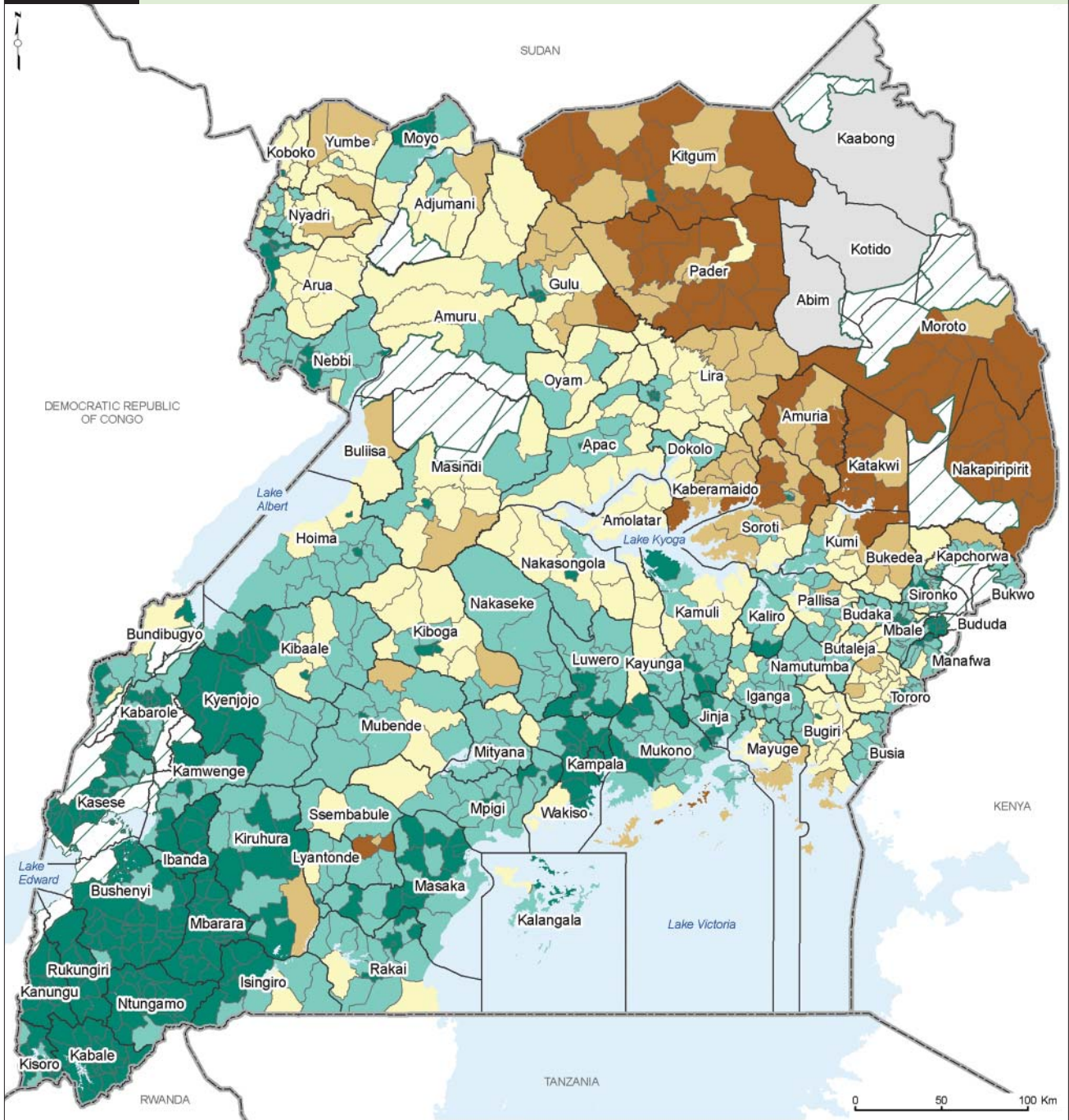
- How can planners target sanitation interventions (e.g., funding for sanitation education and leveraging resources for improved sanitation facilities) to result in greater pro-poor benefits?

This can be addressed by examining the relationship between poverty and improved sanitation at the sub-county level. A high correlation between, for example, low levels of improved sanitation coverage and high levels of poverty could simplify targeting of sanitation efforts, because prioritizing areas with low sanitation coverage would also result in greater pro-poor benefits.

6. This is shown in studies that demonstrate that stunting of children occurred in communities with safe sanitation levels below 75 percent (but less so above that threshold), whether the individual child lived in a home with a latrine or not (Bateman and Smith, 1991; Esrey 1996).

Map 7

PROPORTION OF HOUSEHOLDS WITH IMPROVED SANITATION FACILITIES, 2002



IMPROVED SANITATION FACILITIES
(percent of households with improved sanitation facilities)

- <= 20
- 20 - 40
- 40 - 60
- 60 - 80
- > 80
- No data

OTHER FEATURES

- District boundaries
- Subcounty boundaries
- Major National Parks and Wildlife Reserves (over 50,000 ha)
- Water bodies

Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), and subcounty share of households with improved sanitation facilities (UBOS, 2002b).

Box 7

DEFINITIONS OF IMPROVED SANITATION FACILITIES

The 2002 Uganda Population and Housing Census defines improved sanitation coverage only by the type of latrine or toilet facility installed. For the census, a government representative will ask citizens what type of facility they use, but will not personally check the validity of the household's answer. The options available for the citizen are the following three categories of improved sanitation facilities: covered pit latrine, ventilated improved pit (VIP) latrine, and flush toilet. Unsafe sanitation facilities include uncovered pit latrine, bush, and other.

The Ministry of Health (MoH) collects its data differently by inspecting the sanitation facility. While the MoH applies the same definitions as the census, the MoH also includes other criteria to define a safe sanitation facility: latrine pits are required to be at least 15 feet deep; waste has to be three feet below the latrine hole; and adequate privacy has to be provided. Without sufficient privacy, people will be inclined to seek the privacy found in bushes or elsewhere, exacerbating poor sanitation.

District health inspectors compile the MoH data for improved sanitation facilities in an annual exercise called the Health Inspectors Annual Sanitation Survey. The data are obtained from a sample of households (more than 50 percent of the households in a district) and are not readily available at subcounty level (MoH, 2008b). Therefore, this publication uses the 2002 Census data at subcounty level to carry out exploratory overlay analyses with poverty rates and poverty densities, recognizing that the results may overestimate use of improved sanitation facilities relative to 2002 MoH data and underestimate use for selected areas because of sanitation investments since 2002. District level maps of improved sanitation coverage for 2007/2008, however, still show a similar relative picture in coverage rates among northern, central, and southern parts of the country (MoH, 2008a).

■ *How equitable has progress been to date on improved sanitation?*

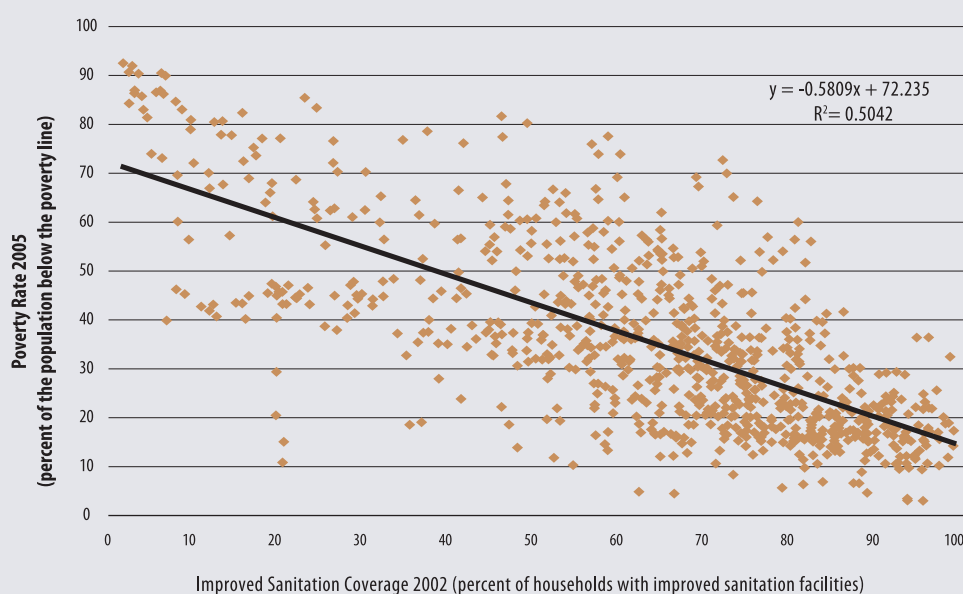
Comparing the performance of subcounties to national progress is of relevance from an equity perspective (that is, the belief that all areas and groups should share equally in the benefits of improved sanitation). Underperforming areas will require increased attention in the future to catch up with their peers. The first Health Sector Strategic Plan (HSSP I) established a national target of 60 percent safe sanitation coverage for 2004/2005 (and a rural target of 58 percent). This is

an important milestone to reach Uganda's 2015 target for safe sanitation.

■ *How should geographically focused sanitation interventions be prioritized?*

By mapping the demographic and poverty characteristics of rural subcounties that have fallen behind the HSSP I target and determining the spatial pattern of poverty rates, poverty densities, and sanitation coverage rates in these subcounties, one can derive the foundation for geographically focused sanitation interventions.

Figure 4 POVERTY RATE VERSUS IMPROVED SANITATION COVERAGE BY RURAL SUBCOUNTY



Sources: UBOS and ILRI (2008), and UBOS (2002b).

A comparison of poverty rates and improved sanitation coverage rates reveals that the two variables are negatively correlated; that is, in broad terms, subcounties with high poverty rates also have low levels of improved sanitation (see Figure 4). The trend line supports the argument that poorer households lack the resources to invest in improved sanitation, which is also a reflection of government policy to provide no public funds toward the cost of household sanitation facilities (MoH 2005).

However, Figure 4 shows a large variation of values from the trend line (r squared⁷ of 0.504). Some better-off subcounties have low sanitation coverage rates, and some subcounties with high poverty rates have high sanitation coverage rates. This suggests that the relationship between poverty rate and sanitation coverage rate is not straightforward. Other factors beside poverty rate determine whether households invest in safe sanitation, such as hygiene awareness, culture, or geological obstacles to construct latrines. Recent household surveys indicate a general lack of interest and demand for improved household sanitation and reveal that more affluent households often lack improved sanitation facilities even though they could afford to install them (MFPED, 2003). They also show that during the 1990s, households spent their increasing household incomes on other parts of their dwelling (roofs, floor, and walls) and not on improved sanitation (MFPED, 2002b; MFPED, 2003).

Mapping Subcounties that have Underperformed

Beyond the general insights of Figure 4, decision-makers need more specific information, especially on how well subcounties have performed in relationship to national targets and where underperforming areas are located. Map 8 highlights the rural subcounties that had not attained the interim national rural target of 58 percent of improved sanitation coverage (HSSP I) in 2002, the year

the sanitation data were collected. Areas in white had achieved the target.

Map 8 indicates that generally the northern region of the country and parts of eastern Uganda are underperforming in sanitation improvements. Almost all subcounties in these areas, apart from several subcounties in Apac, Lira, Moyo, and Nebbi Districts, had not attained the 58 percent target. Conversely, most subcounties in central, south, and southwestern Uganda had attained the HSSP I target.

The clear implication of Map 8 for decision-making and resource allocation is that priority should be given to the north and northeastern areas for programs to promote hygiene behavior and construction of improved sanitation facilities. This is especially appropriate given that most internally displaced persons from the IDP camps are returning to their villages. One possible requirement could be to have an improved sanitation facility—constructed with government support—at each homestead, where possible, especially in high-poverty areas. In the south and southwestern region, districts should work toward 100 percent coverage. This can be achieved partly through consistent health education, combined with enforcement of the 1964 Public Health Act and systematic implementation of the National Environmental Health Policy.

Creating a Demographic and Poverty Profile

Sanitation coverage data for the 831 rural subcounties can be combined with maps of poverty and population distribution to create a demographic and poverty profile for the subcounties that have not achieved the HSSP I target and for those that have already surpassed the target. Table 4 provides such a profile.

Table 4 reveals noteworthy differences between the subcounties that are ahead of or lag behind the HSSP I target. Approximately one third of Uganda's rural subcounties (278), representing almost a third of the rural population (6.2 million people), had not reached the rural HSSP I target by 2002. In comparison, almost twice as many (559) rural subcounties, with a population of 14.4 million, had

7. In statistical analysis, r squared measures how well the “line of best fit” approximates the various data points. If the line perfectly fits each data point, then r squared will equal 1.

Table 4

DEMOGRAPHIC AND POVERTY PROFILE FOR RURAL SUBCOUNTIES WITH DIFFERENT IMPROVED SANITATION COVERAGE RATES

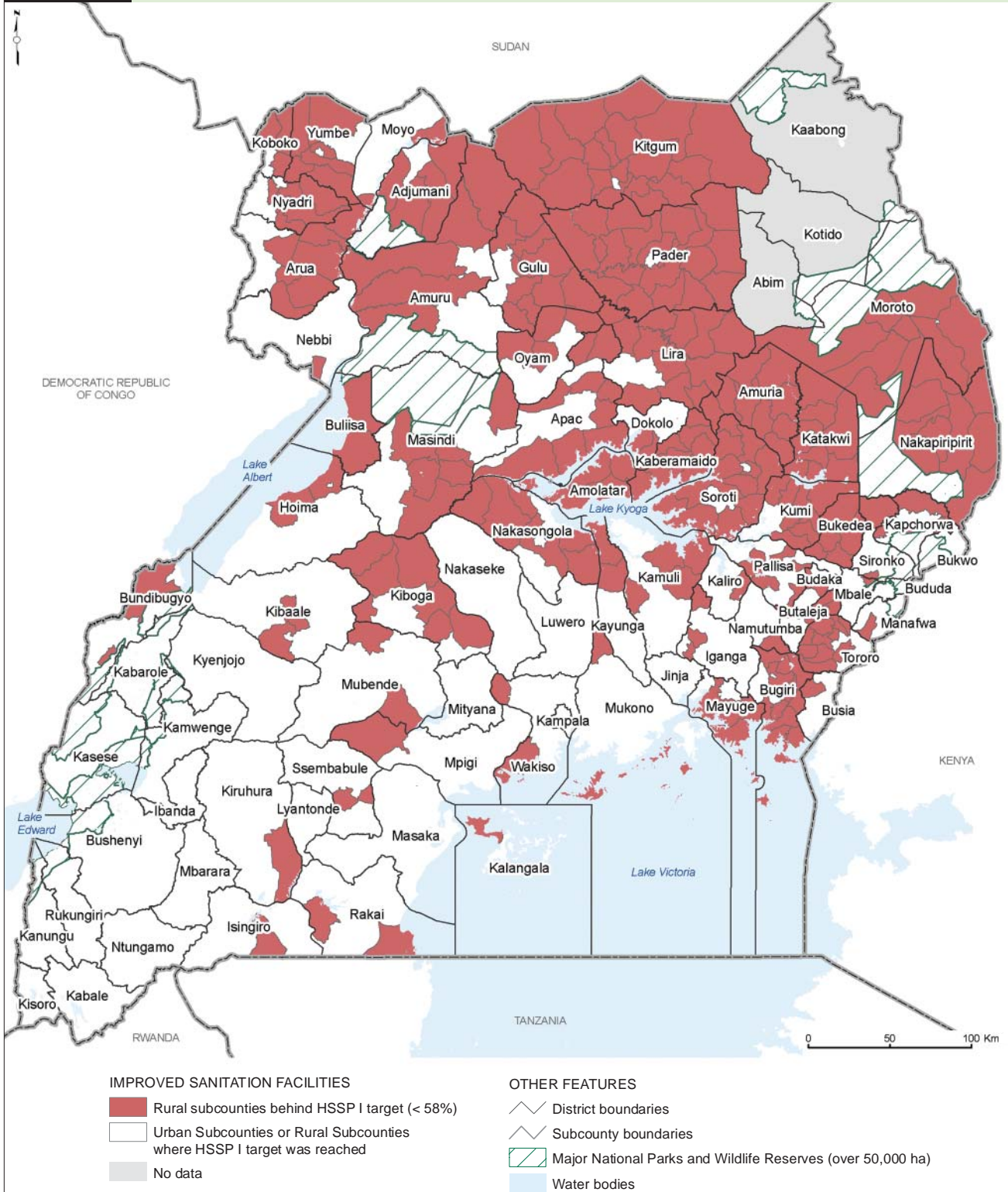
2002 Improved Sanitation Coverage (percent)	Number of Rural Subcounties	Total Settled Area for All Rural Subcounties (square km)	2005 Total Population in All Rural Subcounties (million)	2005 Average Population Density (number of persons per square km)	2005 Average Poverty Rate for All Rural Subcounties (percent)	2005 Total Number of Poor in All Rural Subcounties (million)	2005 Average Poverty Density for All Rural Subcounties (number of poor per square km)
Behind HSSP I ($x < 58$)	278	86,213	6.2	72	50	3.1	36
Ahead of HSSP I ($x \geq 58$)	553	88,090	14.4	163	27	3.9	44
TOTAL	831	174,304	20.5	118	34	7.0	40

Note: Only 831 rural subcounties had both poverty and improved sanitation coverage data.

Sources: Authors' calculation based on UBOS (2002b), and UBOS and ILRI (2008).

Map 8

LAGGING BEHIND: RURAL SUBCOUNTIES THAT FAILED TO REACH HSSP I TARGET FOR IMPROVED SANITATION FACILITIES IN 2002



Note: HSSP I is Uganda's first Health Sector Strategic Plan covering 2000/2001 to 2004/2005.

Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), and subcounties with share of improved sanitation facilities below 58 percent of the population (UBOS, 2002b).

passed that target. About 3.1 million poor live in subcounties that did not achieve HSSP I, and the average poverty rate in these areas is 23 percentage points higher than in subcounties that had passed the target. Rural subcounties that had attained the HSSP I target had a higher average population density (163 versus 72 people per square kilometer) and a higher average poverty density (44 versus 36 persons per square kilometer) than subcounties that had not attained the target.

In conclusion, more densely settled and better-off rural subcounties (reflecting to some degree the positive correlation between higher population density and better agricultural endowment) were the first to achieve the HSSP I target and generally have higher average coverage rates of improved sanitation. Focusing future sanitation and hygiene interventions on subcounties that have fallen behind HSSP I will provide two benefits: it will reduce inequities in access to improved sanitation and contribute to Uganda's poverty reduction goal.

Identifying Geographic Similarities

One question that would be useful for planners of hygiene and sanitation interventions to answer is whether poverty patterns occur uniformly throughout the 278 rural subcounties that have fallen behind HSSP I. If so, planners can use such patterns to identify specific subcounties for more pro-poor targeting. Maps 9 and 10 display the poverty rate and poverty density for subcounties that had not achieved the HSSP I target in 2002.

The brown areas in Map 9 show higher poverty rates, while the green areas represent low poverty rates. The majority of subcounties behind on the HSSP I target have poverty rates above 40 percent with a large number having rates greater than 60 percent.

The majority of subcounties not reaching the 2002 target, as highlighted in Map 10, have low poverty densities (out of 278 subcounties, 58 have less than 20 poor persons per square kilometer and 107 have 20-50 poor persons per square kilometer). This is largely related to the lower population densities of northern Uganda. However, a number of subcounties in southeastern Uganda—in Mayuge, Bugiri, Tororo, and Pallisa Districts—have high numbers of poor per square kilometer.

Information from Map 9 and Map 10 can be combined and compared with data on improved sanitation coverage (Map 7) to identify geographic clusters of subcounties that are similar in their poverty and sanitation patterns. Pro-poor sanitation interventions can then be targeted at these types of subcounties.

Common Poverty and Poor Sanitation Profiles

The following three profiles of subcounties across Maps 7, 9, and 10 are the most common:

- *High poverty rate, low poverty density, and low improved sanitation coverage.* Subcounties in Adjumani District, and parts of Gulu, Kitgum, Pader, Moroto, Nakapiripirit, and Katakwi Districts all have high poverty rates and low poverty densities. These areas also have some of the lowest sanitation coverage rates in Uganda, with the majority of subcounties ranging between 20–40 percent and a large number of subcounties with rates below 20 percent.

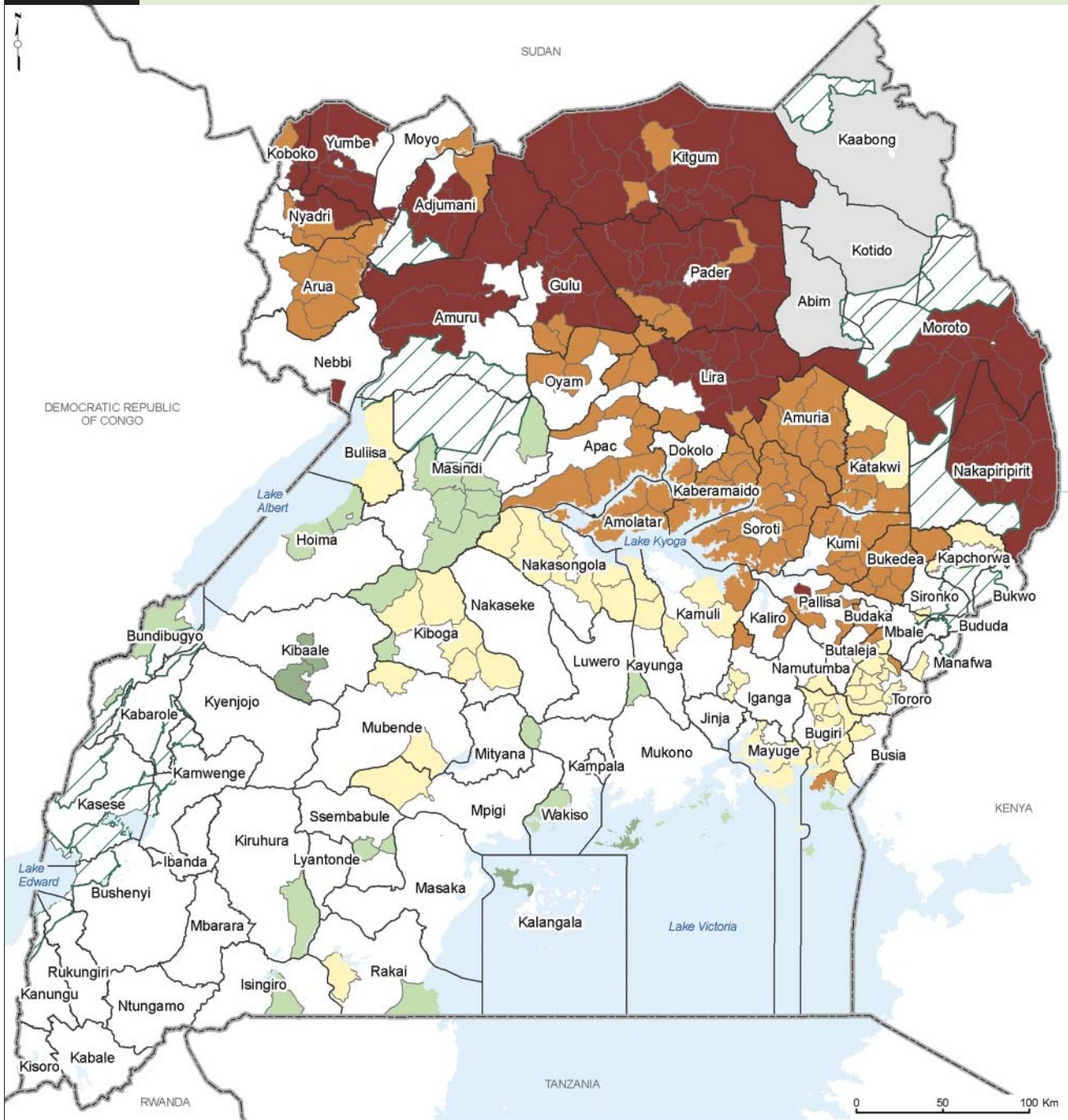
In these areas, future sanitation and hygiene interventions have to overcome low demand for improved sanitation coverage, which will require multiple-year education efforts to encourage changes in behavior at the household level. At the same time, high poverty levels make leveraging contributions for investment in improved sanitation hardware from communities and households a challenge. Promotion of low-cost sanitation technologies and precisely targeted subsidies could help these disadvantaged communities. Efforts that go hand in hand with resettling internally displaced persons and (re)establishing communities could provide the opening for well-targeted hygiene and sanitation interventions.

- *High poverty rate, high poverty density, and medium improved sanitation coverage.* The majority of subcounties with this profile are located in the southeast including Bugiri, Tororo, Pallisa, and Kumi Districts. A number of subcounties with these characteristics are also in northwestern Uganda, for example in Yumbe, Nyadri, and Koboko Districts. Most of these subcounties are more densely settled, resulting in higher poverty densities. Improved sanitation coverage rates range between 40–60 percent.

Leveraging resources from households and communities in these areas will encounter the same challenges as the subcounties with high poverty rates and low poverty densities shown above. What is different, however, is that households are spatially concentrated and current demand for improved sanitation facilities is closer to a critical threshold that could bring more widespread health benefits at the community level. Geographically targeted campaigns that try to 'back fill' underperforming subcounties in these areas could boost coverage rates to 75 percent or higher. Pallisa District, in which the majority of subcounties have surpassed the HSSP I target with coverage rates between 60 to 80 percent, appears to be a prime candidate for such an approach.

Map 9

POVERTY RATE IN RURAL SUBCOUNTIES THAT FAILED HSSP I TARGET FOR IMPROVED SANITATION FACILITIES



POVERTY RATE
(percent of the population below the poverty line)

 ≤ 15	 40 - 60
 15 - 30	 > 60
 30 - 40	 No data
 Urban Subcounties or Rural Subcounties where HSSP I target was reached	

OTHER FEATURES

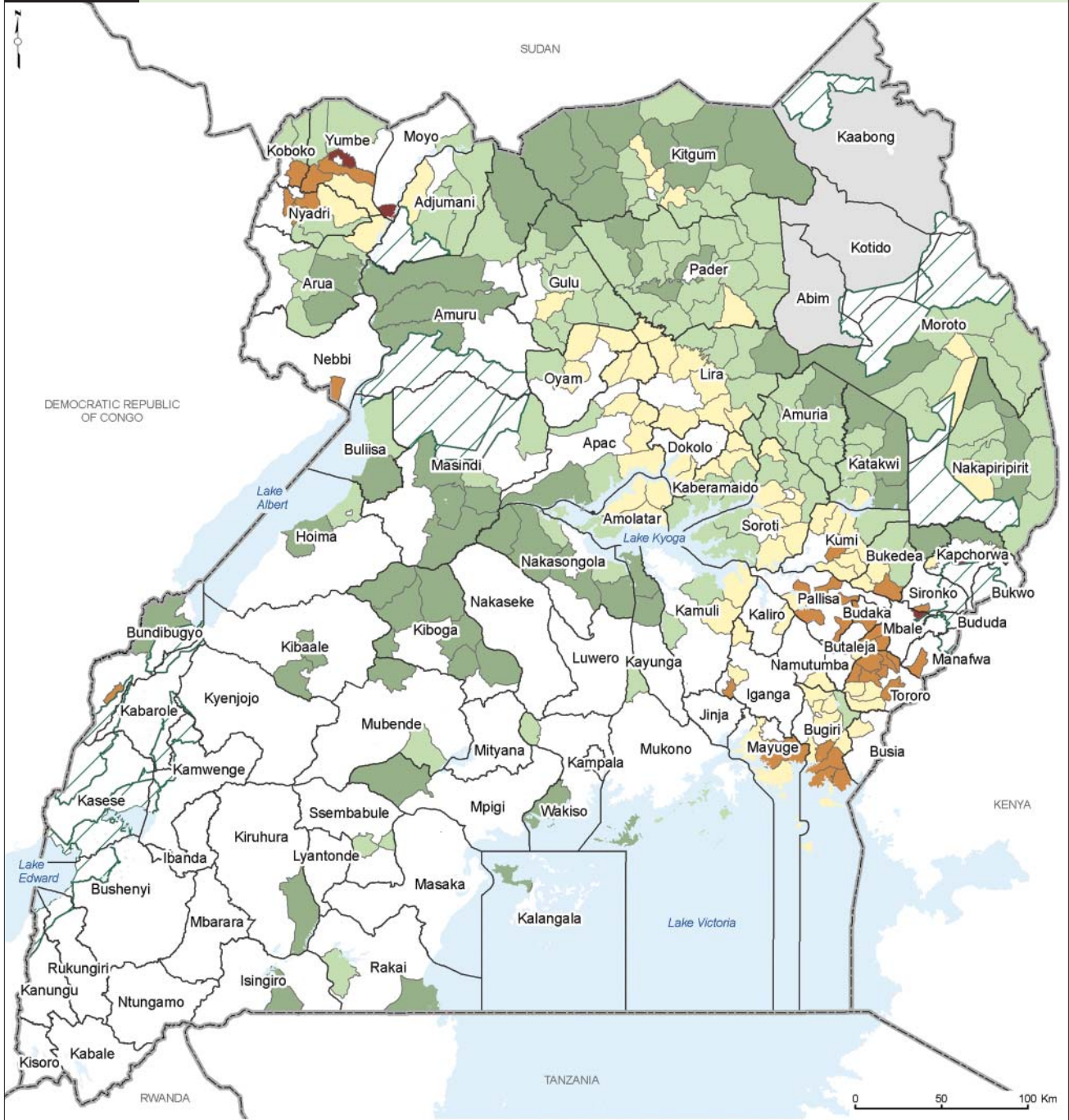
- District boundaries
- Subcounty boundaries
- Major National Parks and Wildlife Reserves (over 50,000 ha)
- Water bodies

Note: HSSP I is Uganda's first Health Sector Strategic Plan covering 2000/2001 to 2004/2005.

Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), households with improved sanitation facilities (UBOS, 2002b), and rural poverty rate (UBOS and ILRI, 2008).

Map 10

POVERTY DENSITY IN RURAL SUBCOUNTIES THAT FAILED HSSP I TARGET FOR IMPROVED SANITATION FACILITIES



POVERTY DENSITY
(number of poor people per square km)

 <= 20	 100 - 200
 20 - 50	 > 200
 50 - 100	 No data
 Urban Subcounties or Rural Subcounties where HSSP I target was reached	

OTHER FEATURES

- District boundaries
- Subcounty boundaries
- Major National Parks and Wildlife Reserves (over 50,000 ha)
- Water bodies

Note: HSSP I is Uganda's first Health Sector Strategic Plan covering 2000/2001 to 2004/2005.

Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), households with improved sanitation facilities (UBOS, 2002b), and rural poverty density (UBOS and ILRI, 2008).

- *Low poverty rate, low poverty density, and medium improved sanitation coverage.* The districts of Nakason-gola, Masindi, and Kiboga have the greatest number of subcounties with this profile. Poverty rates are between 15–40 percent, and the number of people and poor persons per square kilometer is relatively low. Improved sanitation coverage rates range between 40–60 percent.

Promotion of hygiene and improved sanitation can build on an established demand by a critical share of households with safe sanitation facilities. These subcounties have greater potential to leverage household and community resources for upgrading sanitation facilities.

Other types of poverty and sanitation profiles can be derived from overlays between Maps 7, 9, and 10. However, these profiles are less common and are only relevant for a dozen subcounties.

The above examples demonstrate that distinct geographic patterns of poverty rate, poverty density, and sanitation coverage can provide guidance on designing more pro-poor hygiene and sanitation interventions. The planning and targeting of sanitation and hygiene efforts could be further enhanced with additional information. Analysts could locate areas with rocky ground, sandy soils, or a high water table, for example—all factors that make it difficult to build and maintain latrines. Other useful maps could show the level of hygiene awareness or handwashing practices if these data were regularly collected and incorporated in the District Health Monitoring Systems (MoH, 2005). Based on the analysis of these maps, planners could then decide on the right mix and level of interventions, whether these be stimulating the demand for improved sanitation and hygiene or using carefully targeted subsidies to construct sanitation facilities. The pros and cons of the latter are widely debated by sanitation and hygiene experts, especially regarding how to support more disadvantaged and marginalized areas and groups (see for example Shordt, 2006; WSP, 2004; WSSCC and WHO, 2005; MoH, 2005).

Box 8

MAPPING CASE STUDY: USING CENSUS DATA TO GUIDE HYGIENE BEHAVIOR INTERVENTIONS

The 2002 Population and Housing Census data can be used to identify areas at greater risk of waterborne diseases and to help plan handwashing campaigns. To illustrate, three variables are presented in three separate maps:

- The density of households in an area without improved sanitation (Map 11).
- The percentage of households relying on open sources of drinking water, such as lakes, streams, etc. (Map 12).
- The percentage of households that cannot afford to use soap (Map 13), a measure from the census showing the lack of basic necessities.

Map 11 shows the densities of households without access to improved sanitation in each subcounty. The more darkly shaded areas have the highest density of households without adequate sanitation, and are therefore at higher risk of disease. The pattern displayed largely follows the patterns of population density (arc around Lake Victoria, near Mount Elgon, north of Lake Kyoga, and around Arua, Nebbi, and Bundibugyo Districts). The southwestern subcounties, which also

have high population densities, are an exception to this pattern.

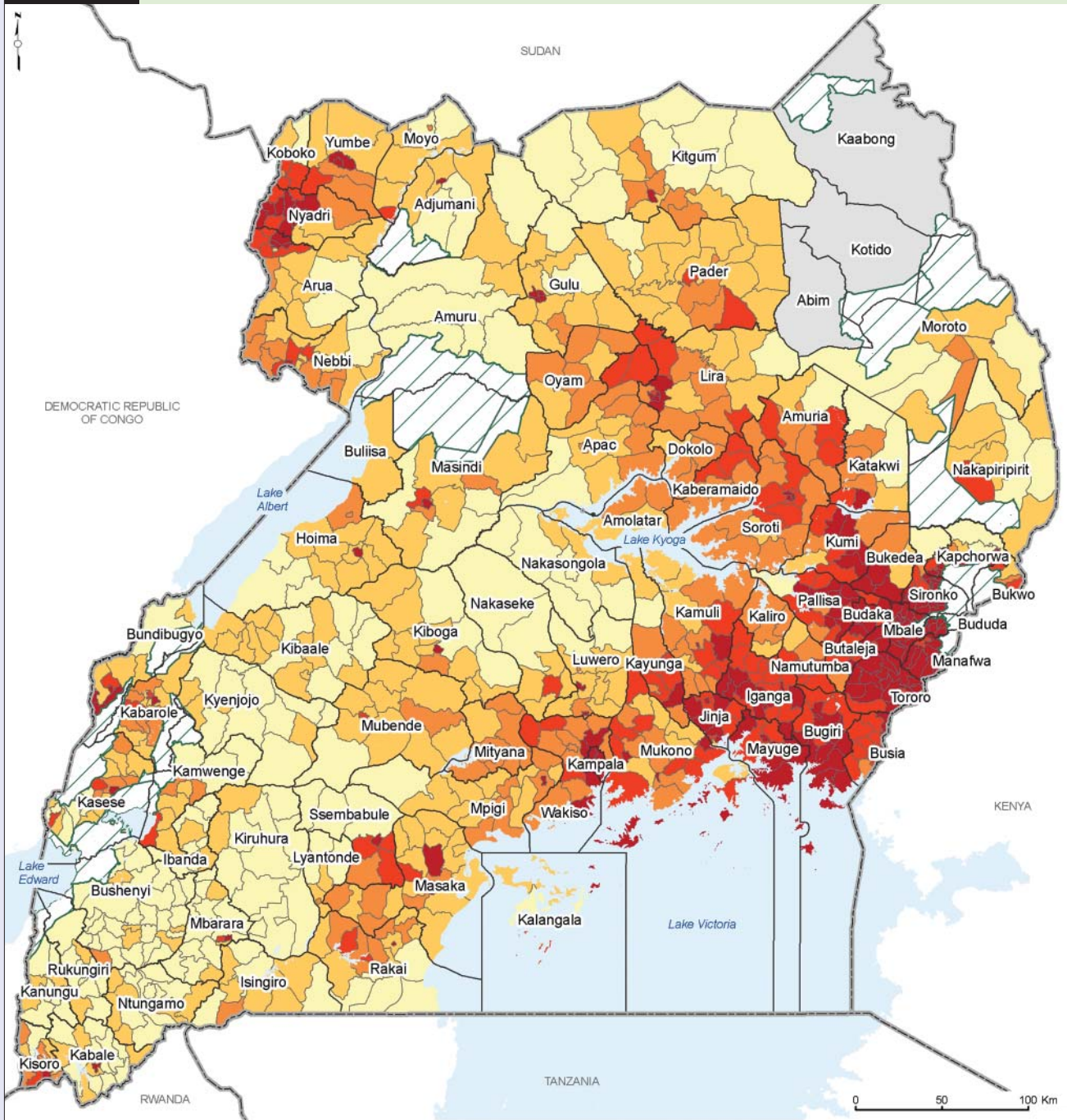
Map 12 displays percentages of households relying on open sources for drinking water and therefore at risk of waterborne diseases attributed to unsafe sources. The pattern here differs from Map 11 in that it is now the subcounties in the districts of Mubende, Kyenjojo, Kiruhura, Ssembabule, and Rakai, and in the northern region that have the highest risk.

Map 13, which presents the spatial distribution of households that cannot afford soap, closely resembles the earlier map of improved sanitation coverage (Map 7), with higher rates found in the northern subcounties. Households which are too poor to obtain soap will benefit less from hygiene awareness efforts, such as the government-sponsored Sanitation Awareness Week (MoH, 2007). In addition to education, households will need help to obtain soap on a regular basis, either through free distribution of soap bars or other subsidies.

Maps 11, 12, and 13 can be combined into a single map to create an index of risk for waterborne diseases. Areas at highest risk for example

would have a high density of households per square kilometer without improved sanitation, a high proportion of the community relying on open sources of drinking water, and high percentage of households not being able to afford soap. Other variables from the census or the poverty maps could be incorporated in this index, such as poverty rate (often associated with outbreaks of cholera) or the number of livestock per square kilometer (which may be associated with higher loads of waterborne pathogens). Maps could also be developed with indicators for sanitation and hygiene promotion, such as the percentage of households with access to (and using) handwashing facilities with water and soap (or soap substitutes), and the percentage of households maintaining a safe drinking water chain (MoH, 2005).

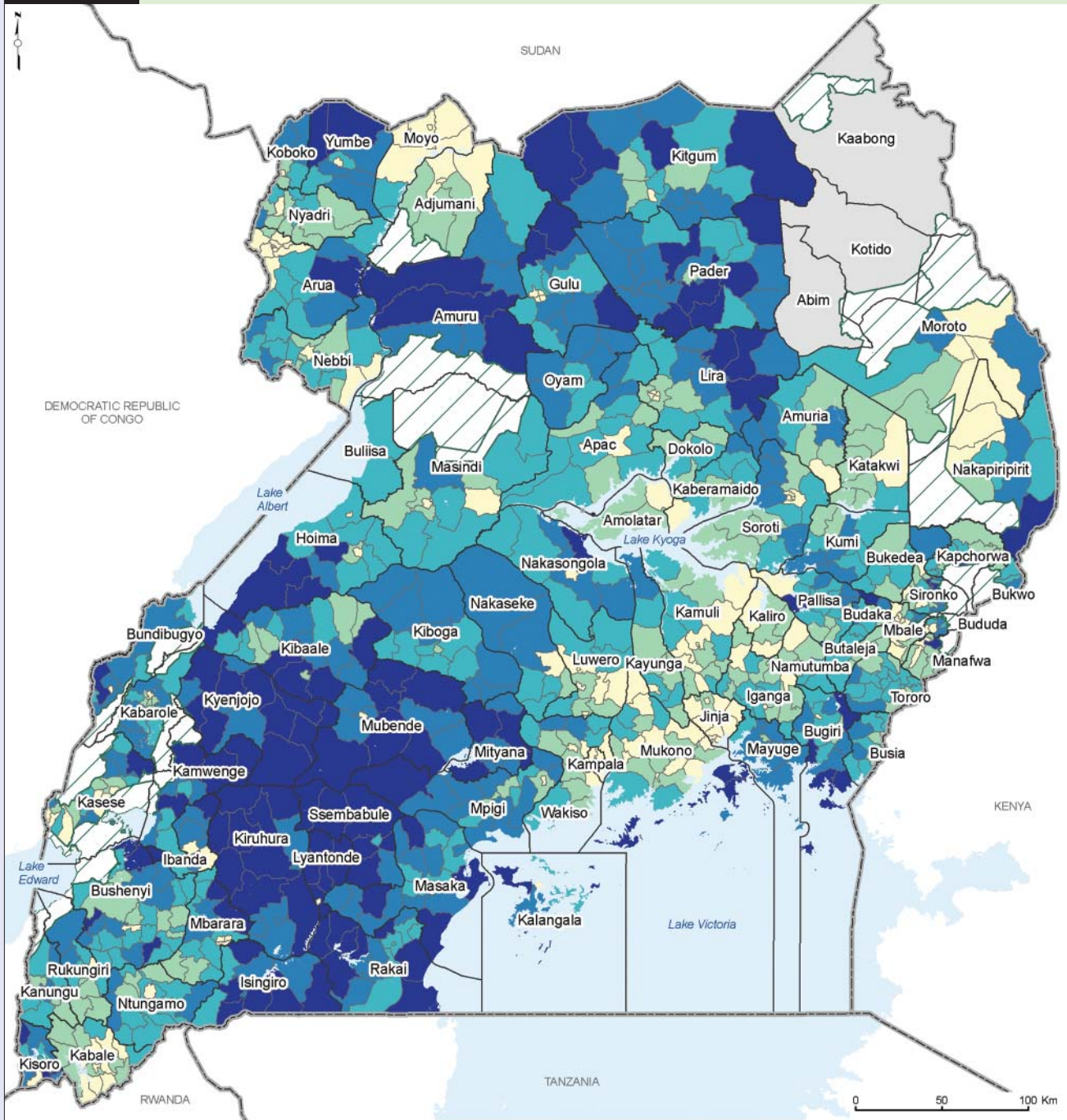
Even though this type of study can be performed with information from the Population and Housing Census, future analyses could be significantly improved by relying on more precise sanitation data from the Ministry of Health, ideally aggregated at the parish level.



Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), and households without improved sanitation facilities (UBOS, 2002b).

Map 12

PERCENTAGE OF HOUSEHOLDS RELYING ON OPEN SOURCES OF DRINKING WATER, 2002



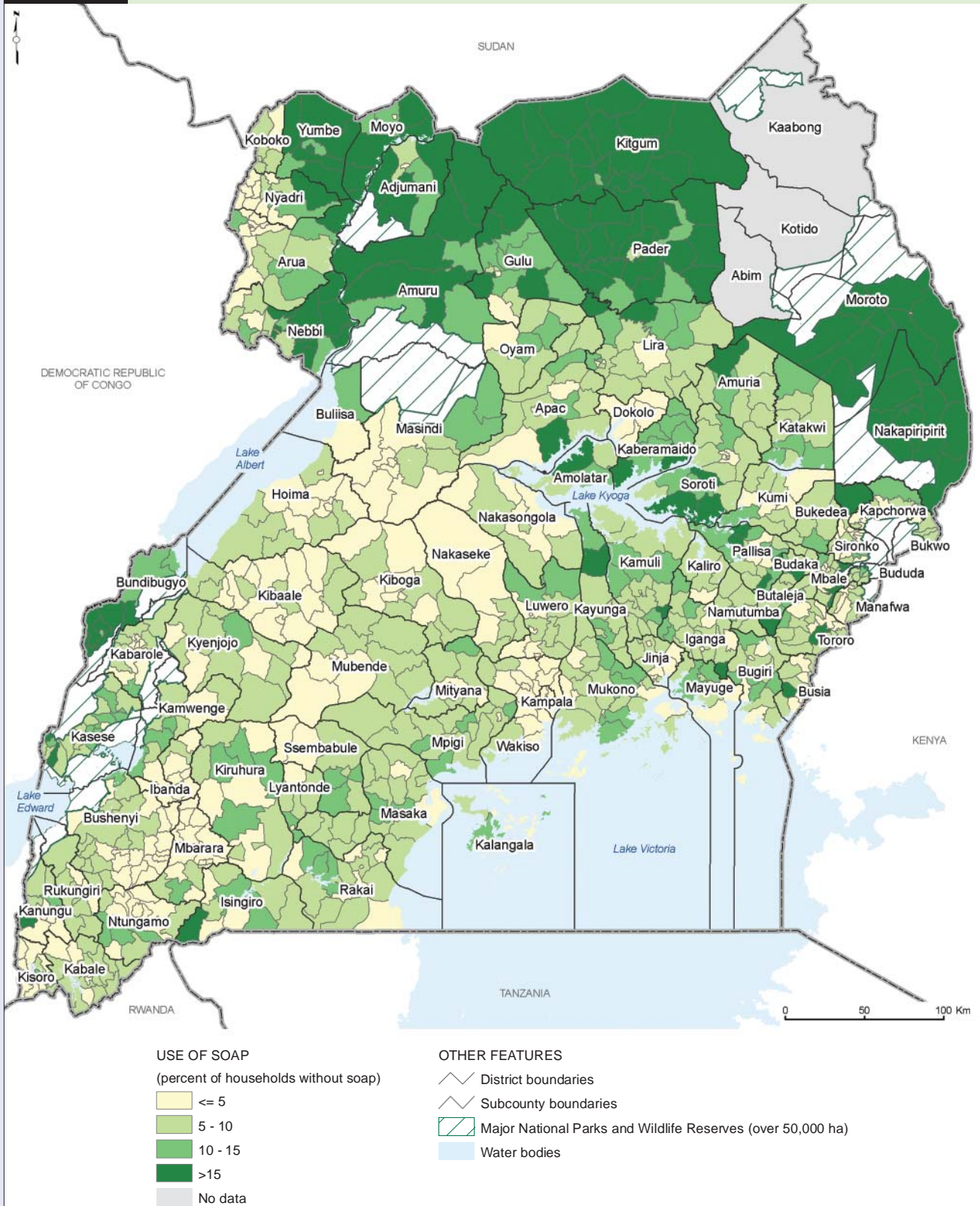
SOURCE OF DRINKING WATER
(percent of households relying on open sources for drinking water)

Lightest yellow	<= 15
Light green	15 - 30
Medium green	30 - 50
Dark green	50 - 70
Dark blue	> 70
Grey	No data

OTHER FEATURES

Thin black line	District boundaries
Thick black line	Subcounty boundaries
Green hatched area	Major National Parks and Wildlife Reserves (over 50,000 ha)
Blue area	Water bodies

Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), and percentage of households relying on open sources of drinking water (UBOS, 2002b).



Sources: International boundaries (NIMA, 1997), district administrative boundaries (UBOS, 2006b), subcounty administrative boundaries (UBOS, 2002a), water bodies (NFA, 1996; NIMA, 1997; Brakenridge et al., 2006), and percentage of households that cannot afford soap (UBOS, 2002b).