New technologies for improving old public security challenges in Nairobi

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Photo: Leigh Rowan

This Strategic Note maps out the digital environment shaping public security in selected informal settlements of Nairobi. It considers the diverse ways in which information communication technologies (ICTs) are being adopted by Kenyan police in informal settlements and by the community in Mathare, one of Nairobi's most violent informal settlements (or slum). It highlights the views and attitudes of police working in different informal settlements and identifies opportunities and challenges for the introduction of new smart policing tools in the Nairobi context. The use of digital technologies can potentially enhance accountability within the police while simultaneously providing a layer of protection for patrolling officers and improved community safety. The report was prepared as part of the Smart Policing project coordinated by the Igarapé Institute in cooperation with Google Ideas and partners in Cape Town, Nairobi and Rio de Janeiro. The initiative is intended to employ a technology-driven approach to improving the accountability, responsiveness and effectiveness of city-based policing strategies and public security promotion. The research in Nairobi was conducted by the Danish Demining Group (DDG) and Spatial Collective

DANISH DEMINING GROUP

SPATIAL COLLECTIVE

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Mads Frilander, Jamie Lundine, David Kutalek and Luchetu Likaka[1]

INTRODUCTION

Over the past 5-10 years Nairobi has experienced rapid advancement in the use of mobile technology and is today considered a leading hub for ICT innovation in Africa. Open source software such as Ushahidi (a crowd sourcing online mapping system set up in days to document incidents of violence following the 2007 national election), M-Pesa (a mobile money transfer system) and M-Farm (a SMS-based tool used by Kenyan farmers to access market price information, buy farm inputs and find buyers for their produce) have put Nairobi on the global map as a place where tech savvy youth from across Kenya, and around the world, come together to develop innovative solutions to a wide range of social, economic and security challenges.

Following the large-scale violence triggered by the December 2007 general election,[2] Kenya has also embarked on a reform process aimed at addressing long-standing social grievances. Along with constitutional and land reforms police reforms are also underway aimed at making the National Police Service more accountable, professional, better-equipped and resourced in order to better serve the public. These two simultaneous developments provide some interesting possibilities for improving public security in Kenya.

This Strategic Note aims to identify possibilities and potential obstacles to introducing new technologies for use by the National Police Service in Nairobi. It does so by exploring how ICTs are currently used to reduce violence and crime in poor and insecure areas of Nairobi. It accounts for the use of ICTs by the National Police Service - particularly at the community level, with a special focus on police officers working in Nairobi's crime-prone slums as well as use by community members within Mathare informal settlement. The Note is based on information gathered through interviews with police officers, community members, local civil society actors and researchers.

The key findings include the following:

- Mobile phone ownership among the police and wider slum population is virtually universal and there is stable network coverage throughout the city. Mobile phones are increasingly internet-enabled (more than half of the surveyed population reported having this function). Smartphone ownership is not yet common in low-income neighbourhoods and among the lower-ranking officers in the National Police Service but this is likely to change over the coming few years.

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1 Special thanks are also due to Robert Muggah for editorial support and the Spatial Collective team for research assistance.

2 The post-election violence of 2007-8 was triggered by disputed election results. Inter-tribal conflict and clashes between the police and demonstrators caused the death of an estimated 1300 people and the displacement of over 600,000 (SRIC, 2012).

Mathare, a Nairobi slum. Despite the lack of basic services here, more than half of residents own mobile phones.

Photo: Rick Roxburgh

- While ICT adoption by Kenyan society has been quick and Nairobi is an emerging hub for technological innovation in Africa, the Kenyan police have not systematically incorporated ICTs into their operations and tend to rely on face-to-face communication and, in some instances, radio. However, important steps have been taken with the introduction of call centres and online crime reporting options. Furthermore, individual public security providers such as Chief Kariuki and the Inspector General of the Police are using social media as an integrated part of their in their daily engagement with the public.[3]

- The process of police reform has made important progress in recent years but key challenges remain including in relation to police accountability and effective service provision in informal settlements. The importance of expanding ICT use as part of these reforms was acknowledged from the beginning in 2009 but other issues have been prioritised and resources have been limited.

- As in many other contexts the introduction of new technologies is likely to experience resistance from within the National Police Service due to concerns about how ICTs could be used (and misused) against police officers. Commitment from the Kenyan Government and police leadership will be critical to ensure effective adaptation of new technologies, especially those that will contribute to improved oversight and promote accountability.

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3 Twitter: @ChiefKariuki and @IGkimaiyo and Facebook: Inspector General of Police, Kenya.

CONTEXT

Nairobi is a sprawling city featuring considerable spatial, social and digital divides (UNEP, 2009:146). While in recent years the city of three million has experienced rapid economic growth[4], the dividends have not been evenly shared (UNDP, 2013, UNEP 2009, 146).[5] Indeed, the gap between the wealthy elite and the poor majority is widening as the city's poor population continues to expand (UN-habitat, 2013:142).[6] It is estimated that approximately half of Nairobi's population lives in informal settlements,[7] which constitute approximately 5% of the city's land mass (Ruteere et. al., 2013:8). The city is also young. The majority of the population in the informal settlements is under 22 years of age (Kabiru et. al., 2013).

It is worth emphasizing that Nairobi is also a comparatively violent city. However, residents are exposed to different forms and levels of victimization. Residents of informal settlements such as Kibera, Mathare, Mukuru, and Korogocho experience much higher rates of insecurity and crime than middle to high-income areas of the city. In a 2011 study, Korogocho was identified as the settlement with the highest level of crime victimization (58.3%) followed by Mukuru (47.9%), Mathare (44.7%) and Kibera (34.1%) (Ndikaru, 2011:282). There are many factors that shape patterns of crime and violence in Nairobi. These include, inter alia, youth unemployment, poverty, inequality, poor city planning, rapid population growth, presence of organised gangs and the proliferation of illicit firearms and ammunition (Teresia, 2011; Masese, 2007; Sana & Okombo, 2012; Omenya & Lubaale, 2012).

Nairobi residents also have highly differentiated access to public services. For example, those living in informal settlements have comparatively limited access to state law enforcement and justice, when compared to other segments of the population.[8] Residents of informal settlements also view the police as corrupt, slow, and unresponsive. They are also believed to collaborate with criminals and have poor track record with criminal investigation.[9] Slum dwellers, especially young men, view police brutality and harassment as among their biggest concerns (Kabiru, C. et.al., 2013:86; Muthahi, 2001:11). Low public confidence in the police has led to the emergence of vigilante groups and gangs in some slums (Mutahi, 2011; Muggah, 2012:40).[10] There are clear gaps in police capability, particularly in relation to policing low-income neighbourhoods. Police working in informal settlements are confronted with challenges such as limited access to transport (they generally move on foot), poor equipment and lack of reliable back-up when faced with criminal gangs and hostile residents (SRIC, 2012:12). Due to these conditions, together with limited political engagement by high-level authorities with slums, there is a marked reluctance to undertake more proactive policing. Indeed, some officers view deployment to slums as a kind of punishment and those who work there often display low levels of motivation (SRIC, 2012:2).

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4 The World Bank estimates a growth rate of 5.7% in 2013 and 6% in 2014.

5 Some 43.4% of Kenyans live under the poverty line of 1.24 USD per day. Kenya currently ranks 145 on the UN's Human Development Index (UNDP, 2013).

6 Nairobi has a Gini coefficient of 0.59. The richest 10% in the city account for 45.2% of income while the poorest 10% account for just 1.6% (UN-Habitat, 2013:143).

7 Other estimations are that three quarters of Nairobi's population live in informal settlements which occupy one eighth of the county's physical land space (Sana and Okombo, 2012, p.2).

8 E.g. the police to civilian ratio in Kenya is 1:900 against the UN recommended 1:400 (GoK 2011).

9 See, for example, Ransley, 2009; Mutahi, 2011; Transparency International, 2012; Muggah, 2012:41; SRIC, 2013:21; Kabiru et. al., 2013; Teresia, 2011.

10 These groups provide protection and a sense of security but with little reference to laws and rights and at a fee that local communities have no option but to accept.

NAIROBI IS A SPRAWLING CITY FEATURING CONSIDERABLE SPATIAL, SOCIAL AND DIGITAL DIVIDES

Over 3 million people currently live in Nairobi. The city has experienced rapid economic growth.

More than half of the population lives in informal settlements.
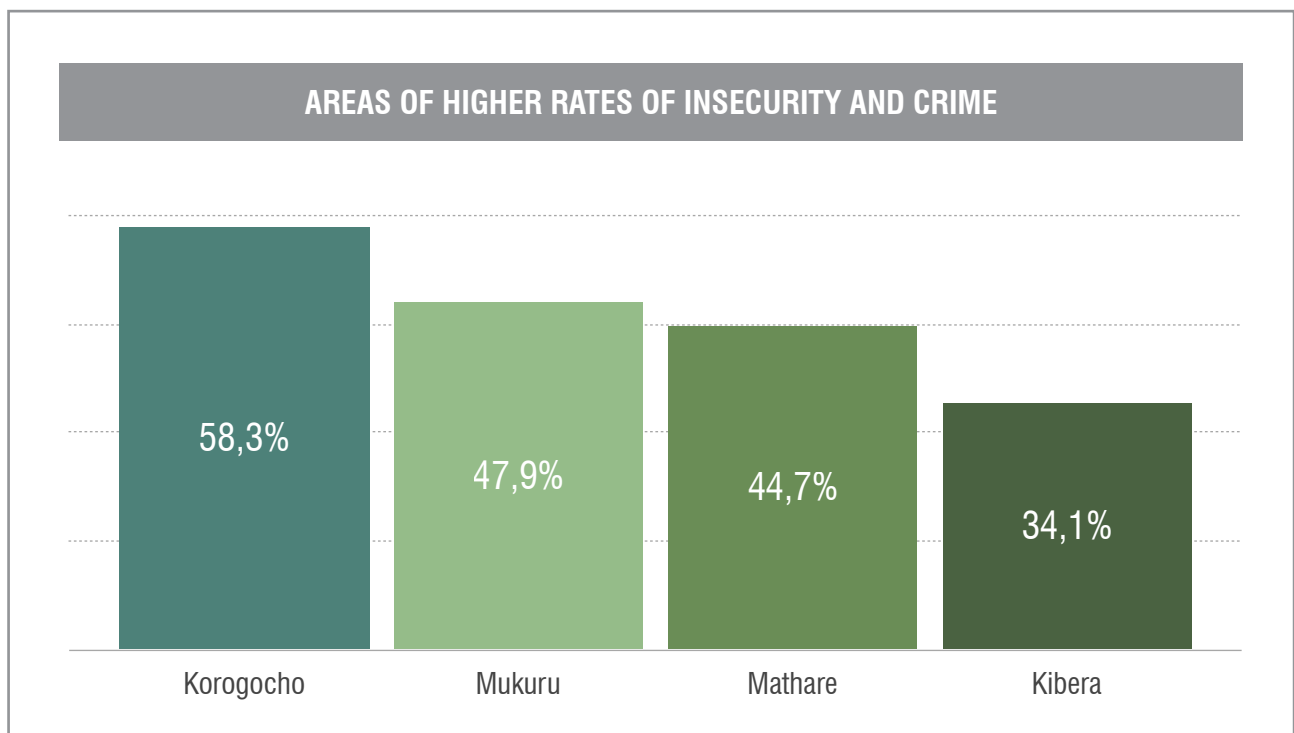
22 years is the average age of Nairobi residents who live in these informal settlements.

The Kenyan Government and police are acutely aware of their institutional deficits. Indeed, transport constraints and the failure to adopt new technologies were singled out by a report by the National Task Force on Police Reforms (the so-called Ransley report) in 2009. It noted that

> ...the [Kenyan] police services lack basic ICT knowledge and skills, equipment and infrastructure" and that "the lack of an effective electronic network and communication system which connects police stations undermines the ability of the police to use simple and cheap communication systems for policing purposes. The police are further not able to key in and preserve crucial information and data that would ordinarily help them not only track criminals but also to inform them on crime patterns or trends as well as assisting in case management" (Ransley, 2009:162).

The Ransley report's recommendations were endorsed by the police and laid the basis for the subsequent police reform process, with key recommendations featured in the new constitution promulgated on 27 August 2010 (Chapter 14) as well as in the National Police Service Act of 2011.

The current police reform process is intended to produce a more professional, accountable, and better-equipped service that is better able to interact with the public. Under the programme, a combined National Police Service with an internal affairs unit was recently created. An Independent Police Oversight Authority and a National Police Service Commission addressing human resources, capacity development and public complaints were also established. Notwithstanding these advances, critics have not ed that the process is incremental and that there is limited evidence of improved safety on the ground to date (Usalama Forum, 2012; HRW, 2012; Amnesty International, 2013; KNCHR, 2013).

AREAS OF HIGHER RATES OF INSECURITY AND CRIME

Korogocho	Mukuru	Mathare	Kibera
58,3%	47,9%	44,7%	34,1%

NAIROBI´S TECH ENVIRONMENT

Nairobi is in the midst of a technological revolution. There has been substantial growth among non-profit and for-profit businesses in the ICT sector in Nairobi - driven by demand from the public and from donor and non-governmental community for new mobile and web-based applications. Many of these start-ups are founded by recent university graduates, who see opportunities in the digital environment in Kenya. There are currently more than five technology "hubs" and incubators in the city: the iHub - a technology co-working space founded by a crisis mapping software organization; Ushahidi; NaiLab - a business incubator supporting start-up technology companies; iLab - Strathmore University's ICT research centre, supporting business and innovation in Kenya; FabLab - a workshop at University of Nairobi that allows students to "build almost anything" using computer-powered machines; 88mph - a technology accelerator programme and workspace.

Nairobi is fast becoming the technological hub for all of East and Central Africa. The creation of the Information Communication Technology Board (ICT Board) in 2007 demonstrated the former government's commitment to

improving the ICT sector in Kenya, and Nairobi in particular. The ICT Board paved the way for the introduction of The East African Marine System (TEAMS), an initiative of the Government of Kenya to establish a globally competitive off-shore, fibre optic internet cable which set Kenya up to be a globally recognized technology hub.

In the first quarter of 2013, the Communications Commission of Kenya (CCK) reported a mobile penetration rate of 75.8%, which equated to approximately 29.8 million mobile phone users (CCK, 2013). This is a dramatic increase from 2002, when the penetration rate was only 3.61 %, or just over a million users.[11] Mobile costs in Kenya have fallen consistently across all major networks. Safaricom is the most popular mobile service provider at 65% of active subscriptions, with Bahati Airtel second at 17% (CCK 2013). The costs of calls within one service provider's network are relatively low. In 2010, the cost of an SMS dropped from 3 Kenyan Shillings (3.75 USD cents) within networks to 1 Kenya shilling - (1.25 cents - per message; and 6 KSH across networks to 3 KSH across networks (iHub Research, 2011). The drop was the result of a CCK study that revealed interconnection costs - costs of calling from one mobile network to another - were too high. New regulations, referred to as the Kenya Information and Communications Regulations, were introduced on July 1st, 2010. These required a reduction in the interconnection costs (also known as termination rate) by 50% (CCK, 2010). Bahati Airtel responded by reducing their tariffs considerably, which sparked the so-called mobile price wars.

MOBILE PHONES ARE CONSIDERED TO BE AN INTEGRAL PART OF KENYAN LIFE

2002 > the mobile penetration rate was 3.61 %

2007 > the Information Communication Technology Board (ICT Board) was created

2010 > CCK introduced the Kenya Information and Communications Regulations, which resulted in a a dramatic reduction in the price of mobile services

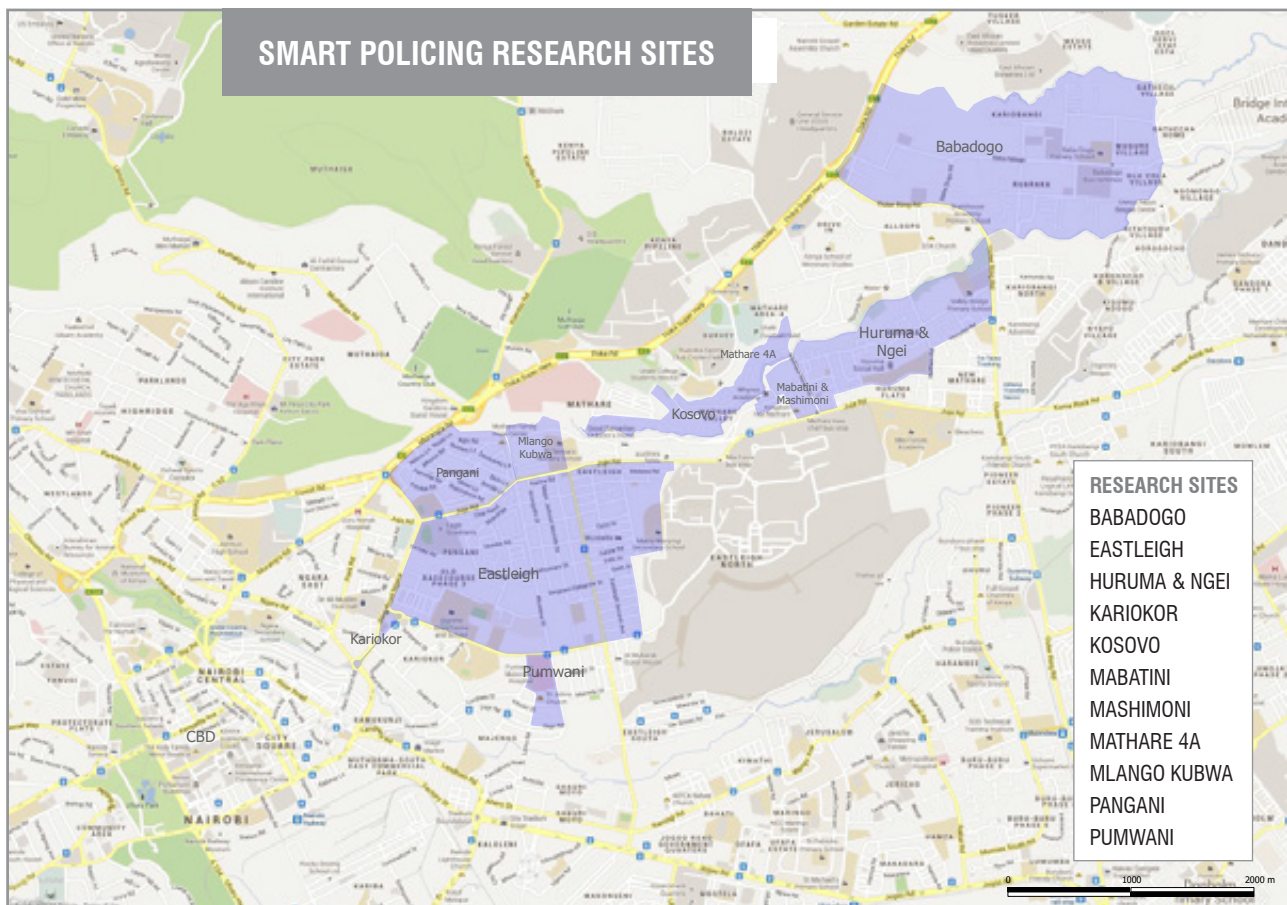**2013** > the mobile penetration rate was 75.8%

Despite the fact that SMS cost across networks remains high, the dramatic reduction in prices in 2010 made mobile phone use even more affordable to Kenyans. Mobile phones are today considered to be an integral part of Kenyan life. A 2012 study of 800 mobile phone users in six locations across Kenya established that people living on less than 2.50 USD per day were willing to skip a meal or opt to walk rather than take public transport in order to purchase mobile phone credit (iHub Research & Research Solutions Africa 2012). Some 20% of the respondents reported making sacrifices to keep their mobile phone charged with airtime (ibid).

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11 In the same quarter, approximately 9.5 million mobile internet connections were in use. iHub Research. Mobile Technology in East Africa, subscribers and penetration. (April 2011) http://ihub.co.ke/downloads/ea_infographic.png

FIELD RESEARCH METHODS

In order to better understand how the Nairobi police use ICTs, DDG consultant Luchetu Likaka conducted semi-structured interviews with police officers and civil society actors working in the following crime-prone low income areas of Nairobi; Mathare, Pangani, Pumwani, Eastleigh and Huruma, as well as in Nairobi's central police station. Some 40 people were interviewed over a period of two weeks in August 2013. A total of 30 respondents consisted of police officers, including corporals (17), sergeants (4), superintendents (3) and 6 junior officers working at the police's call centre in Nairobi. Another four people working with the Usalama Reforms Forum and one local businessman in Pangani were also consulted.[12] An additional three unstructured interviews were administered with Kenyan civil society organisations and researchers working on police reform issues.

In order to appraise the digital environment in Nairobi's informal settlements, a team of eight field workers carried out a survey in Mathare informal settlement.[13] The field work provided a rapid assessment of the digital environment, as well as community police interactions. Mathare has similar characteristics to other informal settlements in Nairobi: high population density, low-incomes, geographic vulnerability and poor quality infrastructure such as water and sanitation. While there are variations between different informal settlements in Nairobi, data gathered from the Kenyan Census of 2009 on the characteristics mentioned above, indicate that Mathare can be considered a demonstrative example for the purpose of this study (Kenya National Bureau of Statistics, 2009).

SMART POLICING RESEARCH SITES

RESEARCH SITES
BABADOGO
EASTLEIGH
HURUMA & NGEI
KARIOKOR
KOSOVO
MABATINI
MASHIMONI
MATHARE 4A
MLANGO KUBWA
PANGANI
PUMWANI

12 Most of the interviews were carried out one-on-one but a consultant also carried out one focus group discussion with six police officers and spent four hours accompanying police officers on patrol in Pangani and Mlangu Kubwa areas of Nairobi.

13 It is important to note that the survey conducted for this study was limited in scope and scale. This is due to several time and budgetary constraints. The team was unable to conduct a random sample for the interview group and thus the results should not be considered a representative sample.

There were several security concerns taken into consideration while conducting the survey. The topic of community-police interaction is highly sensitive in slums. As discussed below, residents of Nairobi's informal settlements generally have unpleasant experiences with, and limited trust in, the Kenyan police. These persistent anxieties generated significant challenges for interviewers. Furthermore, ongoing gang violence in these slums meant that the team opted to avoid asking direct questions about gangs and/or vigilante groups formed to protect neighbourhoods. Gang violence in Nairobi's informal settlements has been explored in other studies,[14] however was not explored for this Strategic Mote.

The research team selected several target groups for interviews. These groups were selected for the relative senior position in the community and likelihood that they would have interacted with police. The groups are not necessarily representative of the population as a whole, but rather purposefully selected in order to give an indication of existing behaviours within groups that have high connectivity and extensive social networks, access to ICT and routine engagement with the police. The groups included:

1. matatu[15] drivers - local public transport drivers who often have run-ins with the police;
2. community leaders - who often act on behalf of local residents in relation to issues of crime or insecurity;
3. local residents - who live in Mathare area, and
4. each of the research team members - themselves residents of Mathare. A total of 43 interviews were conducted (42 who are residents of Mathare and 1 resident of Baba Dogo - a nearby informal settlement - who works in Mathare during the day), including 29 men and 14 women.[16] Some 23% of respondents were between the ages of 18-25, 42% were between the ages of 26-35, 27% fell into the age bracket 36-50, and 7% were over 50. Of the respondents, the researchers spoke to 9 matatu drivers (all male), 8 community leaders (2 female and 6 male), 18 local residents (10 female and 8 male) and 8 community researchers (2 female and 6 male).

It is worth stressing that the findings related to community-police interaction are likely less reliable than the results related to mobile phone usage. Several questions were used to cross-check answers of previous questions and revealed discrepancies in respondent answers. The research team noted that the majority of respondents were hesitant to answer questions related to police interaction. Interview data was stored securely in an encrypted database, and results were kept anonymous, however community members were still fearful that answers could potentially be used against them in the future. Those respondents who had witnessed a crime in the previous day were especially suspicious of the research team, some being worried they had been targeted for the interview because of the event they had witnessed. The interview team sought to address these fears, but these concerns may have influenced responses.

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14 See, for example, http://www.issafrica.org/uploads/CQ37Mutahi.pdf.

15 A matatu is one of the most popular forms of public transport in Kenya. In actuality, matatus are privately owned min-buses that drive particular routes and pick up passengers. They generally have 15 seats and are staffed by one driver and one conductor who collects fare from passengers (leaving 13 seats for passengers).

16 The respondents were residents of a number of villages across the Mathare area (Mlango Kubwa, Kosovo, Mabatini, Mashimoni, Ngei 1, Ngei 2, Kiamaiko, Huruma, Mathare 4a) and one respondent was from Baba Dogo. The gender discrepancy is partly due to interviewing a number of matatu drivers and community leaders who are predominantly male.

KENYAN POLICE ENGAGEMENT WITH TECHNOLOGY

There is comparatively limited formal engagement with ICTs among large segments of the National Police Service. Interviews with police officers in several of Nairobi´s informal settlements and at the city's central police station revealed that the incorporation of new technologies is limited and sporadic. This finding is consistent with the assessment of Kenyan academics and practitioners interviewed during this research. Street level patrols are not issued with mobile phones or airtime for work. Some officers are issued with a VHF radio, although they are frequently in poor condition and seldom used. Kenyan police officers at all levels have personal mobile phones however, though most police respondents claimed they were for personal use and rarely used for official purposes.[17] When prompted, the majority of interviewed police officers said they sometimes use their phones to communicate with colleagues and some said that they had shared their numbers with local business people. Furthermore, 12% of the community members that participated in the survey indicated that they communicate with police officers via mobile phone.

Most low ranking police officers have cheap and early generation mobile phones[18] that they primarily use for calls and SMSs. From the interviews conducted it appears that few street-level police officers use their mobile phones for accessing the internet or using email and those who do are primarily younger officers who use the mobile phones for social media, especially Facebook and Twitter. A minority of younger police officers also appear to have smartphones and use them for accessing social media for entertainment and socialising with friends. Only one of the police officers interviewed mentioned the use of Google maps to identify locations and routes for work purposes. Of the senior police officers interviewed many of them own high-end smart phones but do not necessarily use them for work purposes in a systematic manner. Indeed, in Kenya as many other settings, smartphones are a symbol of social status and often only minimally used by their owners.

There are examples of innovative use of ICTs by individual security providers. Chief Francis Kariuki, the administrative chief of Lanet Umoja in Western Kenya, is using Twitter (@Chiefkariuki) for collaborating with the public in order to reduce crime in his constituency. He has more than 29,600 followers on Twitter and it is reported that by communicating with his constituents about everything from the disappearances of animals to household burglaries. He has been able to solve a wide range of problems as well as it is claimed, reduce the crime rate in Lanet Umoja.[19] The low cost and simplicity of his approach means that it could be useful for the police if adopted more widely. It could even help improve relations between the police and communities, by increasing the confidence of community members in government officials and security personnel. The IGP is also using Twitter (@IGkimaiyo) and Facebook (Inspector General of Police, Kenya) to communicate with the public about issues related to public security several times daily.

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17 While it is possible that some of the police officers interviewed exaggerated this point in order to communicate their dissatisfaction with the lack of mobile phone and airtime provision in the service, the claim that the phones are mainly used for personal purposes corresponds with the authors personal observations during the four hours that police units on patrol were accompanied.

18 In some cases street patrols were noted to own expensive high-end smartphones, but the consultant considered it too sensitive an issue to investigate further, as the ownership of such expensive equipment by a police officer being paid a as little as USD 240 per month begged the question of where he/she obtained the money to purchase such an expensive piece of technology.

19 See The Telegraph, 20 February 2012; Daily News, 15 February 2012.

Not surprisingly, most police rely on face-to-face communication with community members and with other police. Many respondents also claimed that the public prefer face-to-face interaction to telephone and internet communication. There appear to be several reasons for this. Firstly, community members seems to think that face-to-face engagement with the police increases the likelihood of the police responding to a crime. Secondly, community concerns about police corruption and the possibility of close relationships with criminals leads residents to be hesitant about reporting crimes to police officers with whom they do not have a personal relationship. Fears that the criminals will become aware that the police have been informed and seek retribution persist. Thirdly, mistrust within the police service was also mentioned as an important factor. As police officers often do not trust each other, especially if they are from different ethnic communities, many officers are hesitant to talk over the phone if they do not know whether the person at the end of the line has other people listening in.

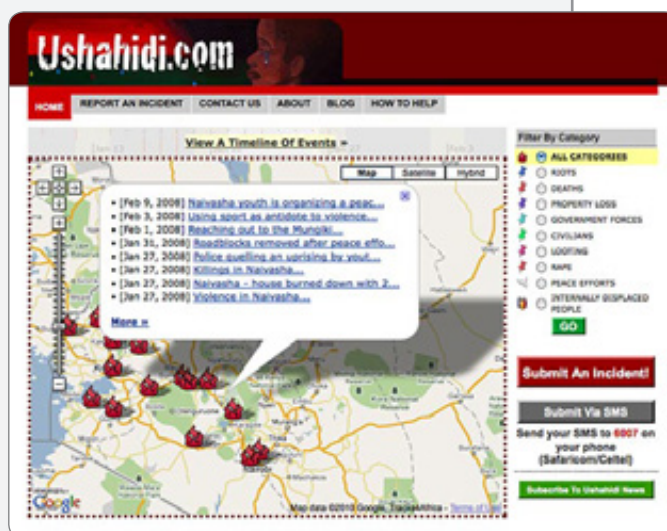*Two Kenyan police officers at Magadi police station.*

Photo: Jim Fruchterman

Police records and reports are not yet digitized. As in many low and medium-income settings, public reporting of a crime has to take place in a police station where an officer on duty records the verbal report by hand into an 'occurrence book'. As was pointed out by a veteran observer of policing in Kenya, this manual system allows police officers of different ranks with opportunities to manipulate statistics to disguise poor performance and potentially undertake corrupt acts, including seeking bribes or extortion. While reporting a crime through a 999 telephone hotline is theoretically possible, the system appears to have been non-functioning for many years (BBC, 2 August 2013). In addition, the hotline system is not popular with the police who complain that they receive irrelevant calls from the public (ibid). Furthermore, as the survey indicates, the hotline is also not well known due to years of neglect. There are examples of the Kenyan police using ICTs to fight crime. In cases of kidnappings or carjackings (a regular occurrence in Nairobi) the police have been collaborating with mobile network providers such as Safaricom, Orange and Airtel in order to identify subscribers of mobile phones and track the locations of the criminals.

Other branches of government focused on security related issues, including the National Intelligence Service (NIS) and the National Steering Committee on Peacebuilding and Conflict Management (NSC), have started introducing modern ICTs. The NSC has established an early warning mechanism in order to facilitate rapid response to potential conflicts within the country. The mechanism has been built around a Geographic Information Systems (GIS) technology, enabling crowd sourcing of information from the public through the use of Short Message Service (SMS). Such tools have been developed in collaboration with non-governmental organisations, such as Ushahidi (see box below).

Ushahidi is an online mapping tool for crowdsourcing crisis information. The software was developed as a response to the media black-out in Kenya's disputed 2007/08 Presidential elections. The tool helped citizens tell their story through SMS and social media, relating that information back to the geographic location where the story or incident took place.

The software, and organization with the same name have grown quickly and the tool is used for various purposes by organizations all around the world. In 2010 and 2013, Ushahidi partnered with HIVOS, SODNET, CRECO and other organizations to deploy two projects related to Kenyan votes. The first project monitored the Kenyan Referendum of 2010 and the second project, the 2013 General Elections. Uchaguzi Kenya 2013 was a short-term deployment of the crisis-mapping platform to act as an early warning and response system during the elections.

Another example of initiatives to use ICTs to improve public security is Sisi Ni Amani - Kenya use of SMS and mobile technology for communication and violence interruption (see box below). While such a tool could potentially help police keep law and order through faster incidence response and smarter police patrolling patterns, the police do not appear to have used this technology systematically, except perhaps around the general election in March 2013.

COMMUNITY USE OF TECHNOLOGY IN MATHARE

Owing to time and resource constraints, data collection on the use of ICTs among community members in crime- and violence-prone areas of Nairobi was limited to Mathare slum. Mathare is one of the oldest informal settlements in the city, dating back to the 1920s, when Asian landlords leased the land to their workers. Mathare is particularly infamous, as it was reportedly a hideout for Mau Mau freedom fighters during the struggle for independence in the 1950s and was settled by a group of former fighters in about 1963 (Amnesty International, 2009). Violence and insecurity are ingrained in Mathare's geography. Illegal brewing (of a drink known as chang'aa) and drug dealing are rampant in a village of Mathare known locally as Nigeria.[20] Kosovo, another Mathare village, is so named because of a spate of violence that occurred in the area in 1998, during the time of the Kosovo war.[21] Many of Nairobi's informal settlements have a similar history of settlement and modern-day violence and insecurity.

During the research carried out in Mathare, all but one respondent interviewed owned a personal mobile phone. The one person who did not own a mobile phone reported using a friend's or relative's phone at least once a week. The

20 Interview with Simon Kokoyo, long-term Mathare resident and Spatial Collective employee, August 2013, Nairobi, Kenya.

21 Ibid.

most common uses for these mobile phones across all respondents were making calls, sending messages and using mobile money (specifically Safaricom's M-pesa service). Just under half the respondents use their phone for accessing the Internet (Facebook especially) and listening to the radio. This high level of Internet usage is limited to the Nairobi context and to a sample that included more highly connected individuals (matatu drivers, community researchers). In another study of six locations in Kenya, a reported 16% used mobile internet (iHub Research & Research Solutions Africa, 2012).

Figure 1. Use of mobile phone applications (n= 43 respondents)

Use of Mobile Phone	Number of Respondents	Mangueira
Make Calls	43	100%
Send Text Messages	41	95%
Use M-Pesa Mobile Money	41	95%
Use the Internet	19	44%
Use Facebook	18	42%
Listen to the radio	18	42%

USE OF TECHNOLOGY TO ENHANCE POLICE-COMMUNITY INTERACTION

The survey asked a number of questions about how the community interacts with the police. Overall, some two thirds (67.5%) of respondents said that they do interact with the police, while the remainder (32.5%) claimed they did not. When asked how often they interact with the police, 35% said they interact with the police daily while another 19% said weekly. The respondents who interact with the police daily are matatu drivers and community leaders. 32% of the respondents said they have monthly interaction with the police and another 14% said yearly. Overall, 19% of respondents said they never interacted with the police, suggesting a discrepancy between the frequency of interaction and the yes or no question of whether respondents interact with the police (32% vs. 19%). As mentioned above, consistency in answers was a challenge during the field interviews as respondents were hesitant to answer questions about interaction with the police. There are several distinct police departments within the National Police Service.

When asked about what type of police they interact with, the responses from respondents were varied. Administration police, traffic police, and "any police officer in Mathare" were the most common answers. Only four respondents (one community member, one local researcher and two community leaders) reported interacting with a specific police officer (with whom they may have an established relationship). Six of the eight community leaders interviewed stated that they interact with the police to report a crime. This is consistent with the finding that community leaders (and the local administration) often intervene to provide support to community members when crime takes place. They sometimes report these incidents to the police (see Figure 2).

Figure 2. Types of interaction with police (n= 43 respondents)

What do you interact with Police about?	Number of People	Percentage
To give a bribe	15	35%
To pay a fine[22]	12	28%
To be provided with security	14	33%
To report a crime	13	30%
Don't interact	14	33%

To generate slightly more concrete results, the survey asked a few questions about the last crime that people had seen or experienced. Respondents were asked when the crime was experienced to see if (as suspected by the research team) crime is severely underreported to the police or by the police (see Figures 3 and 4).

Figure 3. Periodicity of crime experienced by residents (n= 43respondents)

When was the last crime you experienced?	Number of People	Percentage
Within the last day	2	5%
Within the last week	14	33%
Within the last month	16	37%
Within the last 3 months	6	14%
Within the last year	4	9%
Never	1	2%

The fact that over a third of respondents have experienced a crime in the last week, and another third in the last month, suggests that crime is a regular occurrence in the informal settlements. This is similar to the findings of the victimization study that found that within the last year 44.7% of Mathare residents had experienced a crime (Ndikaru, 2011:282). When asked whether each person had reported the last crime that they had seen or experienced, about 50% (22 people) said that they had. However, not all respondents reported the crime to the police. In fact, only 10 of the 22 people that had seen or experienced a crime had reported it to the police. The other 28% reported to a village elder, chief, or other community-based authority. The survey sought to determine how people reported when they did contact police. Of the sample, 7% called the police station; 9% of respondents visited the police station in person, and

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22 Paying a fine can often be equated with actually paying a bribe. Although official fines do exist for various infractions or offences, bribes are often given instead of paying the fine.

in 7% of cases a police officer patrolling on the street was approached. It is also interesting to note that not a single person called the police hotline (999).

Since it was apparent that relatively few crimes were reported to the police, the question of why this was so became important. Respondents were asked why they did not report an incident to the police (see Figure 4).

Figure 4. Reasons for not reporting crime to the police (n= 43 respondents)

Why didn't you report the last crime that you saw to the police?	Number of People	Percentage
Out of fear of the consequences	12	28%
No proof or don't trust the police to do anything	10	23%
It wasn't relevant to me	3	7%
No answer because I did report	13	30%
Reported to someone else	5	12%

Figure 4 shows that people are either afraid that the police cannot protect them, or they are afraid of the police themselves. This finding is consistent with 2011 research in Kibera and Mathare that demonstrated that one reason why crimes, and in particular petty crimes such as theft, are not reported to the police is that residents do not believe the police will solve the crime and recover the goods (Mutahi, 2011:16). Mutahi's research revealed that community members sometimes rely on gangs (or vigilantes), who are seen as solving problems more quickly and efficiently than the police (ibid). The final question, besides asking for suggestions on how to improve the interaction between police and the community, was whether people knew that there was a police hotline to call (999). 58% knew that there was an active hotline they could call in case of an emergency.

The researchers asked respondents to give suggestions on ways to improve community - police interactions - the responses varied. One suggested: *"People should know their rights and avoid being afraid of police [and] from there crime will be reduced"*;

and another stated *"Police should stop taking bribes because many criminals get away with it [crime] because they give bribes to them [the police] which is very risky to the complainer [the person reporting a crime], police should do their job well in order for the community to trust them"*.

Finally, one person suggested *"it depends on the case whether it can be handled by the police, or village elder, and the people have to be [able to speak] free[ly] with administration so that they can report any incident with the community"*;

and another said *"policemen should provide their contacts to the community just in case of emergency they can be contacted."*

OPPORTUNITIES AND CHALLENGES FOR DEPLOYING ICTS TO PREVENT VIOLENCE

This Strategic Note reveals a number of opportunities and challenges for establishing smarter policing in Nairobi. The ongoing police reform process provides an important enabling environment. It is an expression both of the very strong public demand for better security provision and of the political leadership's recognition that comprehensive reforms are necessary. It represents a clear commitment in principle by the Kenyan state to making the National Police Service more effective, efficient and accountable. The police reform process is complex, difficult and costly. It includes the introduction of new institutions, systems and approaches that takes time and in some cases confront significant internal resistance. Among the vast array of priorities confronting the IGP - not least improving salaries, enhancing work conditions, strengthening transportation capabilities - it is not yet clear to what extent Kenya´s police see new technologies as a signal priority. However, the process provides an opportunity to identify and test new approaches and technologies.

Kenya's vibrant ICT sector has emerged as a promising source of innovation in addressing all kinds of challenges, from market access and money transfer, to health care and response to security challenges. While ICT adaptation in the Kenyan society has been quick and transformative, there have been few systematic steps to introduce new technologies within the police to date. Nevertheless, individuals within the police and the Kenyan administration have successfully demonstrated the potential of using ICTs such as social media to improve the engagement with the public. The reform process could benefit from learning from these experiences and examples.

An important deliberation as Kenya´s police considers adopting new technologies is their appropriateness. It is important that the selection of any tools builds on existing capabilities as well as forward-looking developments. For example, SMS-based communication systems could improve communication between the police and between the police and communities at low cost. As smart phones and mobile data cost reduce further, the urban population, including police officers, will increasingly exchange their mobile phones for low-end smart phones and additional possibilities will arise.

Some of the police officers interviewed saw clear advantages of adapting new technologies, especially if they could assist the police in the following ways:

- enhance communication and coordination between officers on patrol and with superior officers in the police stations without fear of their information being diverted or misused,

- identify locations and routes more easily and identify the best and/or closest resource to an incident,

- enable police officers patrolling in dangerous areas to more easily request and get reinforcement,

- introduce digital records, which would be more efficient than the current "pen and paper" system, especially if police files could be accessed remotely by officers on patrol.

However, most of the police officers interviewed were wary about tools that could monitor their activities. They expressed concern that information obtained could be used against them and expose them to unfair punishment. Some also raised concerns over the potential loss of digitalised information, that information could be hacked and

used by criminals or whistleblowers for example to target police officers. These concerns point to the importance of ensuring strong management of information and emphasise the need for checks and balances to guard against misuse. An additional factor likely to cause resistance to the introduction of new ICTs, especially ones that would enable increased oversight of officers on patrol, is the widespread problem of police corruption and other forms of misconduct. Unsurprisingly, officers who have benefited from a lack of oversight and accountability have a vested interest in avoiding the introduction of systems and technologies that enable stronger oversight and more effective investigation of public complaints. Introducing such new technologies would therefore require strong commitment and support from the police leadership.

CONCLUSION

There are considerable opportunities to expand ICT use among Kenya´s police. Notwithstanding the comparatively low level of ICT absorption in the Kenyan police to date, the potential clearly exists for improving effectiveness, efficiency and accountability through the introduction of ICTs. Simple steps like supplying police officers with airtime and setting up an ICT-enabled system for communication between police officers on patrol and their colleagues at different police stations would likely improve performance and outcomes. The introduction of technologies such as the 'Mogi'[23] smart phone application developed as part of the Smart Policing project could contribute towards providing solutions to communication and coordination challenges, backup and protection needs for police officers on patrol in dangerous areas and enable increased oversight over police officers on patrol. There is no doubt that efforts to improve technology-use in Kenya´s National Police Service will encounter challenges. The potential benefits in terms of improved effectiveness, efficiency and increased accountability of the police however, make it relevant to experiment with new technologies to assess their effectiveness and value for money.

23 The 'Mogi' app has been developed and is being tested by the Igarapé Institute. It is an android application that allows for automatic capture of visual and audio data through existing camera and microphone devices. The app collect and store up to 10-12 hours of video and audio data a day using existing mid-range smart phones. Information is stored in a cloud and encrypted. Only a selection of commanding officers will have access to "real time" feeds. The process by which data is managed , accessed and processed will vary from police context to police context.

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