

UNA HAKIKA!

MAPPING AND COUNTERING THE FLOW OF MISINFORMATION IN KENYA'S TANA DELTA

FINAL REPORT DECEMBER 2015



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UNA HAKIKA: MAPPING AND COUNTERING THE FLOW OF MISINFORMATION IN KENYA'S TANA DELTA DECEMBER 2015

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AMANI HUANZA NA UKWELI
PEACE BEGINS WITH THE TRUTH

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EXECUTIVE SUMMARY

In 2012 and 2013, a series of interethnic massacres between the Orma and Pokomo ethnic groups in Kenya's Tana Delta threw the local community into chaos. In order to understand why and how the violence happened, the Sentinel Project deployed a team to investigate and propose direct assistance measures to reduce the risk of further violence. It soon became clear that a major contributor to the conflict was the proliferation of rumours in the area, many of them false, some seemingly deliberately propagated by certain actors with malicious purposes, and others transmitted by local residents in a sincere effort to make sense of their information-starved situation. This uncertainty helped to create the atmosphere of fear, distrust, and hatred that enabled the violence. Compounding this situation was a lack of local media and communications infrastructure that otherwise might have enabled the timely investigation and broadcast of accurate information so a local culture developed within this information deficit which relied heavily on word of mouth to transmit news of local events.

The Sentinel Project team realized that addressing this information deficit could produce tangible improvements in stability, security, and inter-communal tensions so the organization proposed a mobile phone-based misinformation management system for the Tana Delta. This initiative also presented an opportunity to research the role of misinformation and its impact on conflict so that a broader understanding of the subject and a corresponding set of tools could be developed for use in contexts outside of the Tana Delta. With funding provided by the International Development Research Centre (IDRC) and in partnership with Nairobi-based iHub Research, the Sentinel Project launched Una Hakika (Swahili for "Are you sure?") in October 2013. The system integrates telecommunications and traditional human networks so that Tana Delta residents can anonymously report unverified information to Una Hakika and receive accurate information in response once local program staff have investigated and verified it.

The first step in building Una Hakika were to create a combined Canadian and Kenyan team of researchers who conducted community consultations in the Tana Delta. A preliminary field survey gathered baseline data from twelve villages which would guide implementation and act as a reference dataset for later evaluations of Una Hakika's effectiveness. Introductions to the community were made through traditional means of village meetings called barazas, where residents could learn about the initiative, express their thoughts or concerns, contribute suggestions for improvement, and volunteer to participate. These meetings were well received and similarly strong support was found within the local government, security forces, community and religious leaders, and civil society organizations operating in the Tana Delta. The motto of Una Hakika is that "peace begins with the truth" and this resonated with residents, who saw peace as central to development and economic growth.

Since its inception, Una Hakika has received a steady stream of reports as the Kenyan members of the team have worked hard to fully integrate into the communities they serve. This provided the project with an opportunity to ensure that community members were receiving accurate information while being able to analyze the nature, scope, and impact of this data. This dataset indicates the degree to which misinformation can be used by some actors in both offensive and defensive roles, conversely focusing the attention of government security forces on rival communities and guaranteeing the deployment of such forces close to communities feeling vulnerable to attack. The data also demonstrates that detailed study of geographical features, physical infrastructure, demographics, and community relations can yield an understanding of how information flows within a region, thereby increasing the ability of misinformation management systems to intervene in the spread of malicious misinformation. Additionally, factors such as agricultural seasons, gender differences, and the growing prevalence of regional militant groups dramatically shaped information flows and the dissemination of misinformation within the area. During this time, the Una Hakika team has developed workflows, best practices, and software which are applicable in other contexts where misinformation poses a challenge worldwide.

Una Hakika's efficacy was evaluated by comparing final survey data with the initial field survey dataset and an interim user survey conducted with subscribers through SMS. This evaluation found that the information deficit identified at the project outset was significantly decreased, both in terms of how well informed residents reported being as well as the delays they experienced in receiving information. Women of all ages, who were initially over-represented in the group of respondents reporting low access to information, benefited the most from Una Hakika

as the nature of the input and output mechanisms circumvented barriers such as literacy or social structures which previously hindered their ability to gather information. Lastly, respondents reported feeling that Una Hakika had decreased intercommunal tensions, prepared them for future crises, and served them honestly and fairly. As a result, Una Hakika was rated as one of the most trustworthy sources of information for residents of the Tana Delta, ranked behind only radio and television.

The Sentinel Project has concluded that Phase 1 of the Una Hakika initiative was both a research and an impact success, citing the tremendous amount of data and research gathered during the pilot phase along with the practical impacts made on the communities of the Tana Delta. Misinformation management is a nascent field which requires further research and refinement of tools within new contexts. Through these developments, the value of such practices can be demonstrated not only within the Tana Delta or cases of intercommunal conflict but internationally and in other fields which struggle to deal with misinformation, from public health to disaster response. It is with this potential in mind that the Sentinel Project has begun to deploy the Una Hakika model in new regions such as Burma (Myanmar) while aiming to launch a second phase of the Tana Delta initiative and expand widely the program within Kenya.

INTRODUCTION



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INTRODUCTION

HISTORY, GEOGRAPHY AND DEMOGRAPHICS

During February and March 2013, the Sentinel Project deployed a team to Kenya which acted as election observers for the general election which took place on March 4. This deployment included a field visit to Tana Delta Sub-County (hereafter referred to as the Tana Delta),¹ where a series of intercommunal massacres took place between the Orma and Pokomo ethnic groups between August 2012 and January 2013, killing an estimated 170 people. This violence was linked partially to the long campaign period before the March 2013 election and included the largest interethnic massacre in Kenya since the 2007-2008 post-election violence. It was only mitigated and eventually stopped when the national government deployed a large security force to the area. Information gathered during the Sentinel Project field survey combined with the peaceful outcome of the election supported a shift in the Sentinel Project's focus from monitoring Kenya as a whole to a more targeted mandate focused on the Tana Delta and eventually expanding to cover other more localized conflicts.

Tana River County is located in eastern Kenya and formed part of the former Coast Province, which was dissolved by the adoption in 2010 of a new constitution which devolved previously centralized government control down to the county level in an ongoing process. The county covers 38,436 square kilometres² and is divided into the constituencies of Bura, Galole, and Garsen.³ It takes its name from the Tana River, which is the dominant landmark in the area and Kenya's longest river, supplying a large portion of Kenya's electricity needs and ultimately flowing into the Indian Ocean, where it forms the Tana Delta geographical feature (as distinct from the administrative area of the same name).⁴ The landscape is predominantly lowland, with few major changes in elevation, but is ecologically diverse, including semi-arid bush, grasslands, wetlands, and forests.⁵ It is also predominantly rural with little infrastructure aside from a few paved main roads. There are few urban centres with most of the population living in small village settlements. The Tana River climate is very hot and levels of vegetation vary significantly throughout the year depending on the seasons, which generally cause two periods of flooding. The majority of the population subsists on either farming or cattle herding so the climate and other natural factors such as flooding and drought can significantly impact both the local economy and intercommunal relations, especially when disputes arise over land use and access to water.

The population of Tana River County stood at slightly more than 240,000 as of the 2009 census, with a large majority of these people living in rural areas and making their livelihoods directly from agriculture or cattle herding, with only 15 percent of the district's population living in urban centres, a rate which is less than half the Kenyan average.⁶ On average, 6.7 people live in each household, a rate which appears to be consistent across all three constituencies. The population is also extremely youthful, with approximately 75 per cent being under the age of 30 and a large cohort – 60 percent of the total population – under the age of 20. Combined with high rates of poverty and unemployment as well as low rates of education, such a youthful population presents a significant challenge to those working for peace and stability since youths have been implicated in much of the violence to date.

1. The terms "Tana River County" and "Tana Delta" are used to refer to different political and geographical entities as appropriate. Tana River County signifies the administrative area with boundaries mandated by the Kenyan government while the Tana Delta refers specifically to the geographical area associated with the river where most of the violence-affected population lives.

2. <http://www.crakenya.org/county/tana-river>

3. <https://opendata.go.ke/facet/counties/Tana+River>

4. <http://cmsdata.iucn.org/downloads/casestudy06tana.pdf>

5. <http://www.tanariverdelta.org/tana/about.html>

6. <https://opendata.go.ke/facet/counties/Tana+River?tags=population&utf8=%E2%9C%93>

Tana River County's population is divided into several ethnic and religious groups with the two main ethnic communities being the Pokomo, with 95,000 members,⁷ and the Orma, with 66,000 members,⁸ according to 2009 census data. In terms of religion, the Pokomo are predominantly (though not exclusively) Christian and the Orma are Muslim. Other prominent ethnic groups in the area are Somalis and the Wardei, who share an ethnic affinity with the Orma. A growing portion of the population includes more recent arrivals from other parts of Kenya as people settle in urban centres and set up businesses to take advantage of Tana River County's economic potential. This influx has created a new form of tension between "locals" and "outsiders" which builds on top of ethnic divisions and further destabilizes the area.

PASTORALISTS AND FARMERS IN CONFLICT

Historically, the Tana Delta area of Tana River County has experienced conflicts since the nineteenth century but this violence has intensified in recent decades due to increasingly easier access to weapons, continued poverty, the pressure of limited resources, and political interference. The most recent 2012-13 violence has often been simplified in both the Kenyan and international media as being the result of longstanding land use disputes between the agriculturalist Pokomo and the pastoralist Orma. There is certainly truth to this interpretation but the violence is complicated by many additional factors. The Sentinel Project assessed that there is significant potential for the conflict to escalate into a mass atrocity situation and lasting peace will only be achieved when preventive measures are implemented to address the drivers of violence. This requires a more in-depth and nuanced understanding of the Tana Delta situation than what is generally presented in the media and must look at not only ethnic and resource factors but also the religious, economic, geographical, political, and informational factors in the area. Gaining such understanding has been an essential part of the Sentinel Project's work in the area.

7. <http://www.ethnologue.com/language/pkb>

8. <http://www.ethnologue.com/language/orc>

PROJECT NARRATIVE



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PROJECT NARRATIVE

IMPLEMENTATION

Over the past two years, the Una Hakika (Swahili for “Are you sure?”) pilot project has demonstrated the potential for using networked technologies (especially mobile phones) to monitor and counter the spread of misinformation. Following the interethnic massacres that killed 170 Tana Delta residents between August 2012 and January 2013, a Sentinel Project team was sent to the area to work with local partners to identify problem factors which the organization could address. The team discovered that misinformation (incendiary “organic” rumours and deliberately-spread disinformation) had driven the fear, distrust, and hatred that enabled violence between the Orma and Pokomo ethnic groups. The impact was felt not only in lives lost but also in tens of thousands of people displaced from their homes and serious disruption to the already fragile local economy. This realization led directly to the Sentinel Project creating Una Hakika, which took the form of a mobile phone-based information service which enables Tana Delta residents to participate in the misinformation management process. This project was implemented in collaboration with iHub Research and the financial support of the International Development Research Centre.

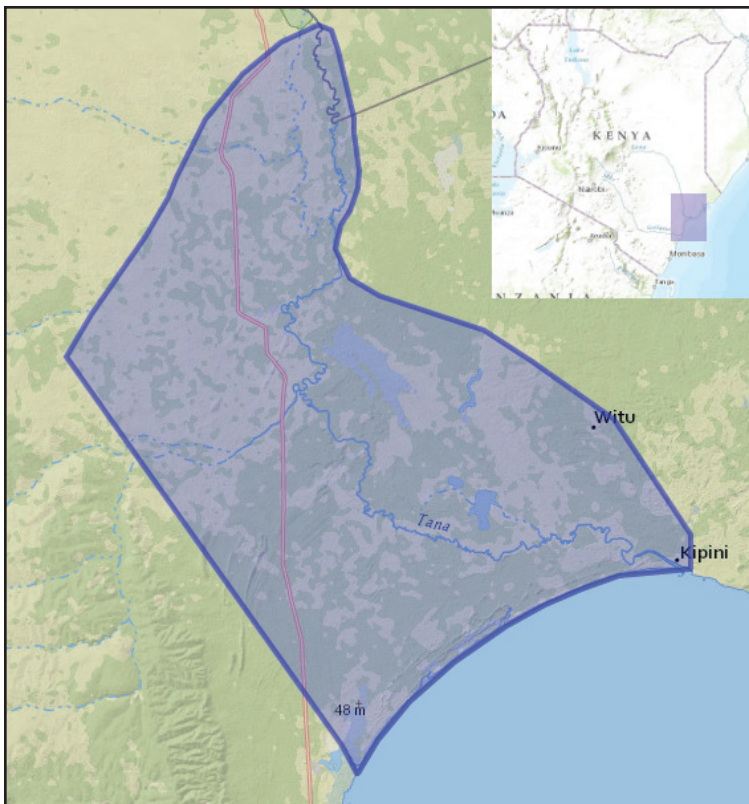


Figure 1 - Una Hakika Area of Operations for Pilot Phase (2013-2015)

The two-year pilot phase of Una Hakika that began in October 2013 validated the concept of using networked technologies such as mobile phones (particularly SMS / text messaging) and social media for managing misinformation and the project team also made several valuable observations. These have helped to answer research questions about how rumours originate, spread, and are perceived by local residents, as well as how the presence of networked technologies influences this process. The rumours tracked and countered during this time range from reports of small-scale individual crimes to large-scale interethnic conflict and impending terrorist attacks. The variety and widespread reporting of such rumours has facilitated an understanding of how misinformation flows according to its subject matter, severity, and both human and physical geography. Furthermore, this project has enabled the development, testing, and refinement of tools and techniques for countering misinformation, especially in an insecure developing country context. This early success has been well received by other researchers, practitioners, and

potential funders in various fields including peacebuilding, security, and international development. Interest in replicating Una Hakika has come from countries as varied as Argentina, South Sudan, South Africa, and Pakistan.

KEY STATISTICS

369

Unique investigations and community intervention over 24 months



1,591

Direct subscribers



200

Community ambassadors (volunteers trained in misinformation management with a good ethnic, age, and gender balance; this is a good example of community capacity building)

8,710

Direct beneficiary calculated by household size

71%

Percentage of surveyed residents who believed that misinformation contributed to violence in the Tana Delta

1 IN 15

Adult mobile phone users within the Tana Delta took part in the project



45,000

Optimal beneficiary calculation based on rate of data proliferation



30

Average number of people with whom our subscribers share updates from Una Hakika



1200%

Percentage of improvement for women reporting better access to information over male respondents, indicating that women lacked information more than men and also benefited most from Una Hakika

USER SATISFACTION SURVEY

The project team conducted an SMS survey in April 2015 to understand user perceptions of Una Hakika and to gauge the perceived value of the system by reaching out directly to the nearly one thousand people who subscribed to the service at that time. The survey showed high levels of satisfaction across the board with an average rating across all quantitative questions being 8 out of a possible 10, thus indicating that the users find value in Una Hakika. The highest individual question rating [8.53 out of 10] is in response to the question “How much has Una Hakika helped prevent the spread of rumours?” This is a promising endorsement for the project and its objectives. The lowest individual question rating [7.43 out of 10] relates to the neutrality and impartiality of Una Hakika and its staff. While this is still a high rating, it indicates an area for improvement since community trust is an essential facet to the program’s success. Building on this point, the average user response for each question series follow the same pattern through the voting scale. A low baseline from 1 to 9 followed by a significant rise for the highest rating of 10 where the vast majority of votes were cast, indicating that many respondents rated Una Hakika very highly. One relevant facet to this trend is found in relation in the lowest rating [1 out of 10] in which each question displays a small increase in this rating before immediately decreasing at the next rating level. This trend may indicate a slight polarity of opinions about Una Hakika and its staff on the ground. Given the unique nature of the program and the volatile nature of the scenario it aims to address, a low-intensity polarity can be anticipated. This statistical feature does not appear to present any major challenge to our continued work provided that efforts are made to address this issue in a forthcoming manner.

Part of the reason for conducting this survey was also to test the use of SMS for quickly gathering such data from large numbers of dispersed people in the Tana Delta. The overall participation rate of 27.9% of 968 potential participants is promising, even before factoring in network reliability issues which are a common obstacle to telecommunications in the area. Such a high response rate given these technical challenges indicates that SMS surveys are a viable data collection method for use in the future. Comments and complaints about the survey process were not very common, likely due to the back-and-forth nature of the process, which allowed individuals to complete the survey at their own convenience.

The two lowest scores relate to the impartiality of Una Hakika staff and the ability of Una Hakika to prepare participants for future crises. While the latter can be seen as a matter of opinion, the former is a clear and essential element to the success of Una Hakika. Renewed efforts must be made to reach out to communities which are underserved by Una Hakika while training and interaction procedures will be reviewed to ensure that every individual participant receives the same quality of service.

On the matter of preparing participants for future crises, much can still be done to improve this element of Una Hakika programming. Providing clearer instructions for action ahead of potential crises, working harder to become a reliable and trustworthy source of information, and positioning Una Hakika as an emergency information provider when crises occur will help to increase this rating and better serve the population.

The promising outcome of the user satisfaction survey combined with regular user participation and feedback for Una Hakika provides a community mandate to continue the program. The data collected through these intake means demonstrates that Una Hakika has a tangible effect on reducing the prevalence and spread of misinformation, provides a neutral and reliable source of information to users who may otherwise lack such means to stay informed, and has made a noticeable impact on both the instability and related community tensions which threaten the area.

LESSONS LEARNED

Misinformation management systems cannot be imposed from above. Instead, they must be implemented by entering into communities using culturally relevant introduction processes followed by cooperative efforts.

OPERATIONAL



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SYSTEM FUNCTION

Una Hakika operations follow a workflow supported by information management software developed by the Sentinel Project which is called WikiRumours. The WikiRumours system is distributed and hosted software (i.e. a global instance of the software is accessible to everyone, while the open source version can be downloaded and used by anyone for niche purposes, much like Wikipedia / MediaWiki). The workflow used for Una Hakika is a three-step process encompassing data intake, moderation, and intervention stages:

(1) Intake - There are four primary inputs into the WikiRumours system - voice, SMS, email, and web (desktop or mobile). Some input mechanisms interact directly with the WikiRumours database (email or web input), while others require a human interface (voice input) or third-party software (SMS input). At the heart of WikiRumours is a database which contains and manages unique rumours and subsequent "sightings" or reports showing how widespread they are. These rumours and reports may be attributed to particular users or remain anonymous depending on the logistical, ethical, privacy, and security considerations in a given deployment. Each rumour is also assigned metadata which facilitate triage and analysis (e.g. geotagging, categorization, validation status).

(2) Moderation & Intervention - Assigned moderators monitor the intake queue and assess new rumours in order to triage and assign them to intervention personnel (e.g. community leaders, government representatives, local NGOs, Sentinel Project staff, and local volunteers trained for this purpose). Moderators and intervention personnel play a critical role in recognizing rumours, assessing their likely impact and geographical spread, and updating their status in the WikiRumours database.

(3) Aggregate Analysis - In parallel with situational use of the WikiRumours system, research analysts download real-time data from the system and use this data to create better intervention strategies and early-warning protocols. In keeping with the Sentinel Project's open data mandate, all information in the WikiRumours system is visible at all times to members of participant communities and the dataset is available through an open application program interface (API) for other researchers to use.

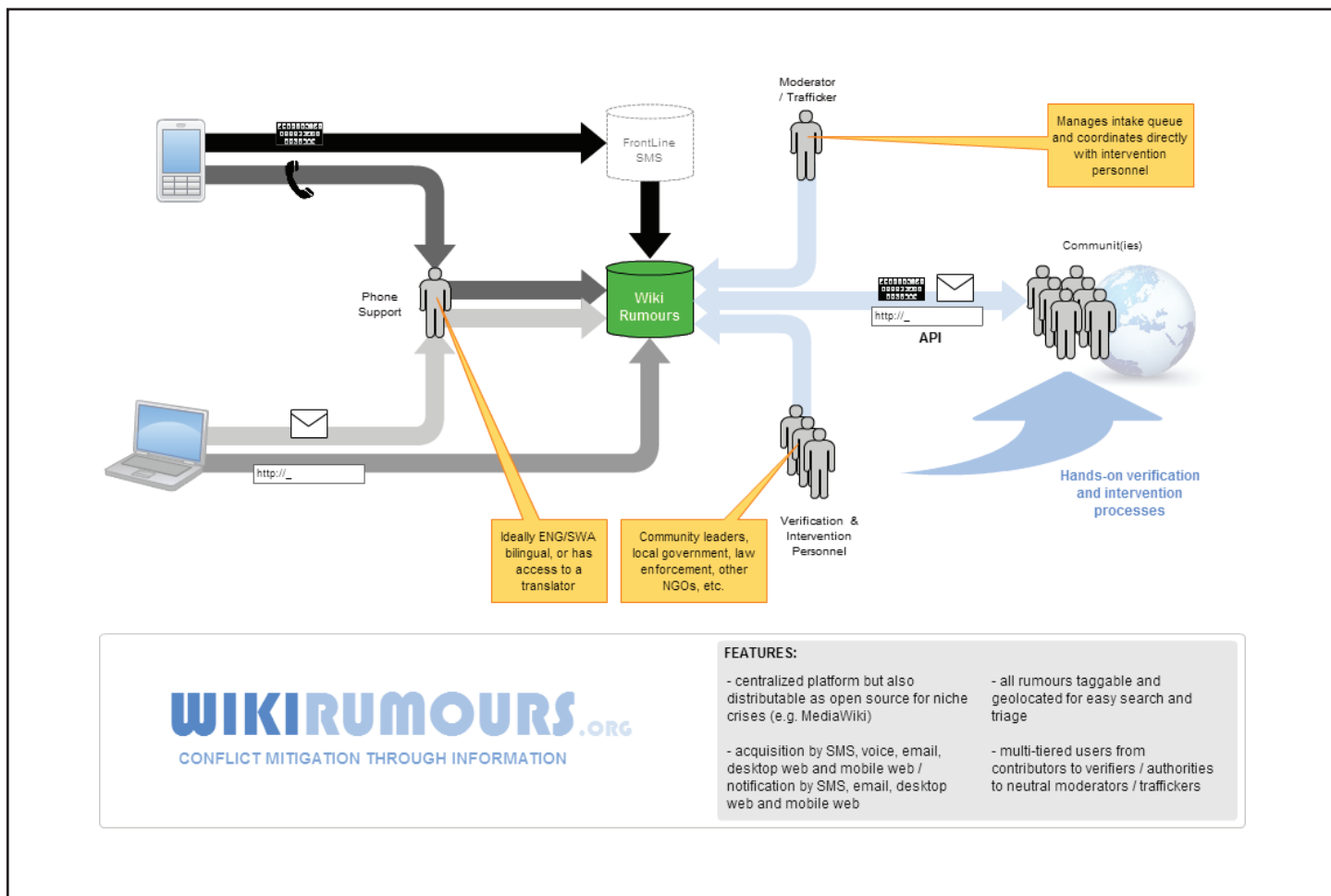


Figure 2 - WikiRumours System Diagram

TECHNOLOGICAL TOOLS

Various technological tools were used to carry out this project, including a number of existing products and services which were available for little or no cost as well as some new tools which had to be developed, most notably the WikiRumours software. Key components of the Una Hakika system are as follows:

Data intake - Una Hakika has various mechanisms for receiving and managing crowdsourced submissions of information from project participants, though it has mostly focused on SMS and voice as the primary media thus far. In the case of SMS, the software tool TextIt has proven to be the best option since it enables not only manual but also automated communication with subscribers, thus facilitating more ambitious scaling up as the subscriber base and volume of submissions grow. Preliminary research indicates that this approach can be largely replicated in Burma (Myanmar), where Una Hakika Phase 2 will have a presence. A new focus area during Phase 2 will be on data intake through social media, which will require new tools and approaches to both human user engagement as well as automated monitoring of online rumour circulation.

Data storage - All data gathered by Una Hakika is anonymized and stored in a structured format within a database created by the Sentinel Project for this purpose and hosted on an offshore (US-based) server. This limits the ability of host country actors to gain unauthorized access to the data, thus contributing to the security of the project and its participants. Keeping the data secure and centralized this way along with backup protocols ensures that the Una Hakika team has maximum control over it and can then export it to other tools for visualization, analysis, and reporting as needed.

Data visualization and mapping - During the pilot phase of Una Hakika in the Tana Delta, most existing tools proved to be inadequate for visualizing and mapping of misinformation. In order to help fill this gap, the team enhanced the WikiRumours software by adding appropriate visualization capabilities which will continue to be improved over time. One of the goals of visualization and mapping is to better understand how different types of rumours spread through a population in relation to geographical, demographic, and other factors. Ultimately, such research may inform predictive analysis enabling misinformation managers to anticipate and proactively counter the spread of misinformation.

Broadcast / dissemination - The portion of Una Hakika which is focused specifically on countering misinformation relies on the ability to broadcast messages to large numbers of subscribers throughout the Tana Delta, including the ability to target subsets of the overall subscriber base. The most appropriate tool for this function has been TextIt, a commercially available SMS management tool connected to a short code (effectively an SMS hotline). Additional appropriate tools will be identified in cases where voice-based and web-based communication are more effective. The choice of which communication type to use is generally influenced by factors such as literacy rates, cost factors, and the types of technologies available to (and preferred by) the beneficiary population.

SMS has played a key role in the Una Hakika project since it enables the project to absorb interaction costs, thus helping to overcome the high rates of poverty in the Tana Delta which may discourage people from subscribing if they had to bear even a small cost. However, high rates of illiteracy also present obstacles to SMS and other text-based forms of communication for some portions of the Tana Delta population so voice-based communications have been incorporated, along with building a human link through trained volunteers called community ambassadors. Voice-based communications will be further systematized during Una Hakika Phase 2 by exploring ways of automating this interaction with large numbers of subscribers.

Understanding the relationship between technological access and the demographic profile of a beneficiary population is essential for the success of any misinformation management system. For example, in the case of the Tana Delta, surveys conducted as part of Una Hakika Phase 1 found that a substantial number of local residents do use smartphones and computers but these tend to be members of the younger generation. Therefore, while some Tana Delta residents do use web-based channels (especially social media, with Facebook being popular), most person-to-person electronic communication takes place through SMS and voice calls. As a result, these methods of communication were prioritized as the lowest common denominators that granted access to the largest and most representative portion of the population.

Una Hakika Phase 1 has also highlighted the growing popularity of instant messaging applications, such as WhatsApp, Viber, and Kik, even in low-income countries. Since these rely upon data connections and use very little bandwidth, they generally appeal to users by being reliable and cost effective (compared to SMS and voice messaging) even when engaging in large volumes of messaging. For this reason, such tools will be incorporated into Una Hakika Phase 2 as additional communication channels as appropriate.

The Una Hakika team has found it advantageous to always adopt the simplest possible technological tools since these are likely to be the most accessible and usable for subscribers. These also enable the research team to focus on conducting extensive public information work, which was an essential activity during Phase 1 for ensuring broad participation in the project by local residents. This approach has proven itself to be successful in the Tana Delta and so based on this experience it is clear that a small team using relatively simple tools and working with the assistance of local partners and knowledge can build up a solid and dedicated subscriber base in a relatively short period of time. The same approach will be used during Phase 2 in the Tana Delta, elsewhere in Kenya, and in Burma.

LESSONS LEARNED

Misinformation management efforts should not try to replace existing communication practices in a new environment but rather adapt to the variety of high tech and low tech methods already used in the area. Una Hakika anticipated obstacles which could prevent participation and devised solutions to maximize inclusiveness.

PROCESSES

Generally speaking, a relatively simple approach of responsively providing accurate information to an affected population has proven to be quite effective in the Tana Delta, both for minimizing the spread of individual rumours on a day-to-day basis as well as encouraging positive long-term behavioral change in how people react to rumours. The process follows three basic steps:

(1) Rumour reporting - Community members (whether general subscribers or trained volunteers) can report rumours they hear through a variety of channels including SMS, voice calls, social media, and the project website. Rumour monitoring during Una Hakika Phase 1 has relied largely on proactive reporting by subscribers but will likely incorporate more automated monitoring of online sources during Phase 2.

(2) Verification - The Una Hakika team prioritizes each individual rumour as it is reported based on standardized criteria such as how relevant it is to actual or possibly impending violence. The project team then investigates each individual rumour using a variety of techniques and information sources managed through WikiRumours. Verification sources are selected based on their credibility and access to relevant information. For example, police may be the best source for security-related information while another civil society organization operating in a certain area might have the most current information on the situation there. Subscribers and volunteers are also often used for information gathering and multiple sources are used whenever possible in order to mitigate bias and inaccurate reporting.

(3) Counter-messaging - In order to discourage the creation and spreading of misinformation, the Una Hakika team engages in counter-messaging focused on reporting the results of the verification process and providing neutral, accurate, verified information back to the communities from which a given rumour was reported as quickly as possible. This counter-messaging is typically disseminated using the same channels through which the rumour was reported (e.g. SMS or voice calls) but other channels may be employed under certain circumstances, such as if a particularly incendiary rumour requires the involvement of community or religious leaders in dispelling it.

This technique has involved identifying local information sources and community influencers who can help to reduce the social acceptability - and therefore spread and impact - of a given rumour.⁹ There are two time frames in which the Una Hakika misinformation management process has a positive impact:

- **Short-term rumour containment** - The presence of Una Hakika has been found to reduce the incentive for Tana Delta residents to engage in rumour spreading behaviour. On a day-to-day basis, Una Hakika provides people with a means to quickly learn the truth about rumours they hear in their communities. This means that they no longer need to rely on speculation about situations that they cannot directly observe or the veracity of rumours that they hear, thus making it less likely that they will react hastily to new rumours, spreading them further by word of mouth, and possibly distorting information even further. With a reliable source of information such as Una Hakika available, subscribers have reason to pause for thought when they hear a new rumour.
- **Long-term behavioral change** - Una Hakika's ultimate goal is not only to manage individual rumours on a day-to-day basis but also to encourage positive change in beneficiary attitudes towards rumours such that they are encouraged to think more critically and to proactively investigate rumours themselves rather than accepting them with little thought, as has sometimes been the case in the past for certain population segments. The name Una Hakika means "Are you sure?" in Swahili and is exactly the question that Tana Delta residents have been encouraged to ask both of themselves and others whenever they hear a rumour. Periodic surveys indicate early success in this regard during Una Hakika Phase 1, though the inherently gradual and long-term nature of such attitudinal change means that further measurement is required during Phase 2.

9. Singh, Anurag and Yatindra Nath Singh. "Rumor Spreading and Inoculation of Nodes in Complex Networks," First International Workshop on Social Web for Disaster Management (SWDM), 17 April 2012.

through various channels which are selected according to availability, audience reach, the nature of a given situation, the nature of the rumour in question, and the most influential means for a given audience. In addition to SMS messages, voice calls, messaging applications, and social media, these can also include more conventional and human-based forms of public communication including public postings, gatherings called by community leaders, and outreach by trained volunteer community ambassadors.

Nuanced approaches to countermessaging are especially necessary when the subject of a rumour is particularly sensitive. For example, Una Hakika is committed to transparency and reporting the truth back to subscribers but there are cases where an inflammatory rumour (e.g. of a violent incident) is verified and found to be true, a situation which may actually contribute to conflict. Such situations must be treated with sensitivity and so the Una Hakika team has developed several tactics for dealing with such situations:

- **Time delays** - Subscribers reporting rumours are always given a time frame within which to expect a verified response but inflammatory cases may require the inclusion of a small delay in the verification and counter-messaging turnaround time in order to allow for tensions to slightly subside, project staff to gather additional information, and to consult with relevant stakeholders on how best to approach the situation.
- **Contextualization** - An important aspect of the Una Hakika approach is for the counter-messaging which is ultimately sent to report back to subscribers not only verified factual information but also contextual details and possibly instructions for relevant stakeholders on how to de-escalate tensions. For example, violence may have actually occurred in a particular village but was of a small-scale interpersonal nature. A common pattern is that by the time rumours of such incidents reach more distant locations the size of the conflict and its impact may have grown into a battle with several casualties with its nature distorted into an intercommunal conflict.
- **Geographical containment** - It is important for Una Hakika to minimize the risk of inadvertently spreading rumours in the process of trying to contain and dispel them. For this reason, potentially incendiary verified information is only sent back to areas from where a given rumour was initially reported. For example, if there are three villages near each other and residents of village A report rumours that village B has been attacked, the relevant counter-messaging will only be sent to Una Hakika subscribers in village A since subscribers in village C may not have heard the rumour and so there is a risk that some of them could pay attention only to the portion of a counter-message that reports a new rumour while ignoring the part that dispels.

With the above tactics and examples in mind, Una Hakika countermeasures are designed to always have the following characteristics. They are:

- **Responsive** - Una Hakika provides information primarily in response to what subscribers are reporting and requesting, thus reacting to community needs rather than simply pushing out information in a one-way flow as a traditional information service might.
- **Targeted** - By only sending counter-messaging back to specific locations where rumours have been reported Una Hakika minimizes unintentional spread while also ensuring responsiveness.
- **Sensitive** - Una Hakika takes into account local dynamics and engages relevant stakeholders and appropriate communication channels at all stages of its process but especially during verification and counter-messaging.
- **Timely** - The Una Hakika team prioritizes and verifies rumours as quickly as possible (except for in cases where intentional delays may be introduced) since information can travel quickly through the project area, especially with the aid of information and communications technologies.

This approach has been successful thus far during Una Hakika Phase 1 in the Tana Delta and demonstrates a great deal of potential for further refinement during Phase 2 as well as application to other communication channels (e.g. social media), additional testing in other geographic contexts such as Burma, and also applications in other use-case contexts such as public health, governance, and disaster management, all of which are often hindered by misinformation.

FIELD SURVEYS AND FINDINGS



FIELD SURVEYS AND FINDINGS

During Una Hakika Phase 1 the project team undertook three major data collection efforts focused specifically on gauging the attitudes of Una Hakika subscribers and other Tana Delta residents. These were a baseline survey conducted in January 2014, the abovementioned mid-project user satisfaction survey, and a final survey in September 2015.

The baseline survey conducted during January 2014 had two purposes. First, the data collected was used to inform project implementation since it provided a picture of Tana Delta demographics, information availability, and technology usage that was not available elsewhere. Second, the survey was also a fundamental first step in the future evaluation of Una Hakika's effectiveness since it gauged respondent attitudes towards information and rumours as well as how they receive, think about, and transmit them. The survey was conducted in 12 villages mostly selected from areas that were adversely affected during the 2012-13 violence plus some major population centres and villages which were relatively untouched by the violence but had other important characteristics such as location or ethnic composition. A mixed method design was used to collect the data, including a population-based household survey, key informant interviews, and community meetings. The final field survey conducted in September 2015 served the purpose of capturing a comparison dataset which could identify changes in attitudes since the baseline survey. The same methodology was used to collect data from the same 12 villages, though a larger sample size was obtained thanks to the popularity of Una Hakika.

METHODOLOGY

Canadian members of the Una Hakika team drafted a survey based on standard principles for this type of research and Kenyan members reviewed it closely to ensure that it was culturally appropriate. The survey collected demographic information such as age, gender, ethnicity, religion, level of education, occupation, and income. After this, most survey questions focussed on understanding:

- The communication technologies that respondents used
- The sources of information upon which they relied and trusted
- Their means and likelihood of passing on information to others

The survey team usually gained access to each village through community leaders such as chiefs and elders working from a list provided by the government administrator for the area. Typically, the leader for each village would call a community meeting called a baraza at which the Una Hakika project and purpose of the survey were explained to community members, who were then given the opportunity to ask questions and provide feedback. Individual interviews were then conducted with willing respondents, using interpreters as needed. Each interview took 30-40 minutes and began with an individual introduction to Una Hakika, private opportunity to ask question, and a briefing on ethics and privacy before the survey itself was conducted. The survey process also served as an opportunity to recruit early subscribers for the Una Hakika both through the barazas and individual interviews. Some survey respondents also volunteered to later serve as community ambassadors for Una Hakika.

One challenge during the survey was that true random sampling was not possible in some villages since chiefs and village elders would

LESSONS LEARNED

Trust is one of the most important but also most difficult components to establish and maintain for a misinformation management project. A project that is not transparent, honest, and fair will immediately lose the majority of its value to the community and to the pursuit of peace. This requires maintaining clearly stated and dutifully followed objectives, actively working to include a diverse community of participants, and being aware of how the actions of the project or its staff might impact perceptions of neutrality.

organize a community meeting from which respondents would volunteer, which risked creating a sampling error. This was beyond the control of the team due to the cultural norms of the community which required them to speak to the chiefs first as well as occasional reluctance by potential participants. Every effort was made to randomize the selection of respondents when possible and door-to-door recruitment of respondents.

Two nearly identical surveys were conducted, first at the outset of the project in January-February 2015 and again near to the end of Phase 1 in September 2015. The purpose of this plan was to compare the two datasets and identify relevant changes during later analysis which would indicate any impact made by Una Hakika, particularly on measures of attitudes towards rumours and likelihood of respondents passing on or investigating them. The authors of this report caution readers that the changes, trends, and correlations identified here do not imply well understood causal relationships. The data solely reflects the research conducted during Una Hakika Phase 1 which, while being one of the most comprehensive studies on misinformation and its relationship with conflict, requires additional research in differing contexts in order to fully develop working theories.

KEY OBJECTIVES

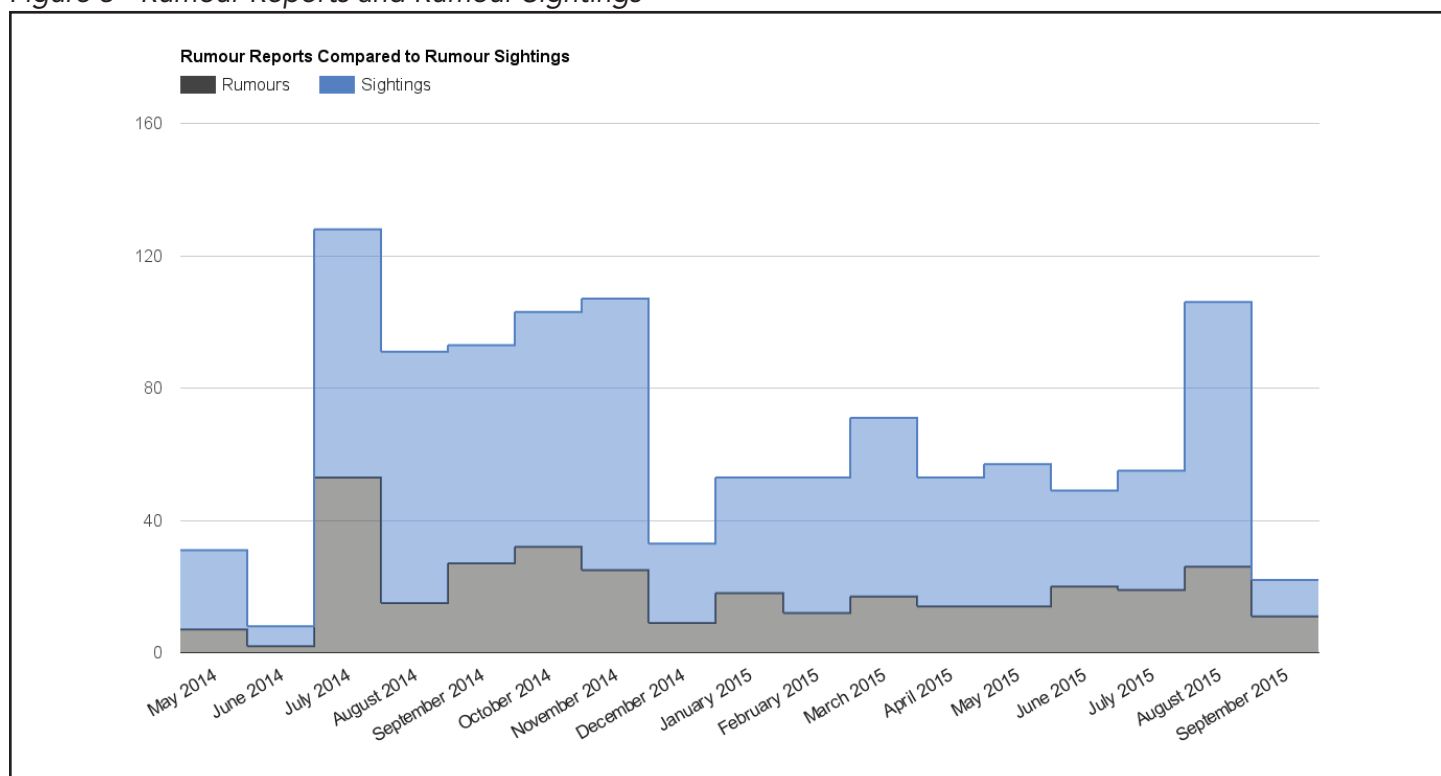
While aiming overall to ensure that Una Hakika becomes a viable information service for Tana Delta residents, the specific objectives of the field surveys were to:

- Gather statistics on mobile phone and internet usage levels in the Tana Delta
- Gain insight into how Tana Delta residents acquire, think about, and transmit information
- Understand how misinformation is transmitted and whether it is treated differently from true information
- Identify and analyse the best communication channel(s) for each village in the Tana Delta
- Identify stakeholders in the peacebuilding process and cultivate volunteer community ambassadors for Una Hakika
- Acquire data that will serve as a reference point for the evaluation of Una Hakika's effectiveness

FOUNDATIONS OF ANALYSIS

Una Hakika, its related software, and workflows revolve around two core concepts used to quantify data flowing through the system. The first concept is that of a rumour, which is a unique idea that is circulated with insufficient evidence to establish its veracity. Rumours are not inherently correct or incorrect but they are by nature not verified in any meaningful way. Una Hakika takes in rumour reports through a variety of methods (SMS, voice calls, internet, in person or via an authorized proxy) which act as the basis for further action within the workflow. The second core concept is that of a sighting, which is an instance in which a previous rumour has been reported again. This data can provide insight into the dissemination, depth and variation of each particular rumour. Some rumours have few sightings (i.e. they are reported few times) while other rumours have many sightings. Various factors appear to influence the number of sightings for a given rumour, which will be discussed below.

Figure 3 - Rumour Reports and Rumour Sightings



MISINFORMATION BEHAVIOUR



UNA
HAKIKA?

MISINFORMATION BEHAVIOUR

Various factors appear to influence the origination and spread of misinformation, including geography, demographics, technological availability, and media coverage. During Una Hakika Phase 1 the research team has observed various patterns in how rumours have spread throughout the Tana Delta. These field observations have informed the development of a preliminary theoretical framework to guide future research and misinformation management efforts (see Framework Development). The following subsections discuss in detail the various factors which appear to have influenced misinformation transmission in the Tana Delta during Una Hakika Phase 1.

GEOGRAPHICAL

TELECOMMUNICATIONS INFRASTRUCTURE

Mobile devices have proliferated rapidly around the world but it is in rural and low-income regions where this development shows the greatest contrast between modern technology and otherwise low levels of development. Although many residents of the Tana Delta live in thatched mud huts and other basic structure, mobile phones are not out of place as people with few other attributes of physical wealth are increasingly connected through their mobile phones, many of which are internet enabled. However, while this might at first appear to be another example of new technology displacing older cultures, something far more interesting is happening.

These contrasting elements interact in a surprisingly complex way. Mobile communications have not replaced existing social mechanisms for information sharing and many communities still hold public meetings (barazas), their residents still have casual conversations, or learn of events and news from truck and motorcycle drivers passing through their area. The Una Hakika team's observations indicate that mobile communications actually graft onto these existing social mechanisms more often than replacing them. Social information relays are complemented by the rise of mobile networks, increasing the range of information made available through traditional methods and expediting its proliferation.

However, it is important not to see mobile communications as a monolithic infrastructure. There are technical limitations which make some areas of the Tana Delta nearly devoid of any network service, or areas of such weak service that SMS is the only semi-reliable mobile communication method. Aside from these technical limitations, there are also facets of any population that telecommunications cannot "see." This is where rumour and misinformation fit in. Mobile phones allow the rapid transmission of data over large areas, but because of inherent gaps in what can be known, sparse network connectivity, and even slight influences in the mode of telecommunication, such networks do not inherently excel at sending either correct or incorrect information; instead, they merely tend to expedite the rapid transmission of both over long distances.

LAND USE

Conflict over land rights and ownership plays a central role in the ongoing conflict between pastoralist and farming communities and as such it shapes misinformation behaviour and flow. A large percentage of rumours (12.8%) and sightings (19.9%) relate to land use conflicts alone. However, this number is deceptively small since conflicts between ethnic groups as well as the emerging terrorist and interreligious threats are frequently framed within the context of land theft or the loss of land ownership through abused legal mechanisms.

LESSONS LEARNED

Anticipate suspicion or hostility from some community members. Una Hakika delves into a volatile issue and so it will not always be appreciated by everyone in a given community. People who are involved in spreading misinformation may be particularly suspicious and uncooperative.

ROAD NETWORKS

The underdeveloped, poorly maintained, and sparse road network in the Tana Delta has shaped the way in which misinformation travels. Served primarily by the north-south B8 highway and the east-west C112 highway, 13.2% of all report activity was recorded in the population centres in the vicinity of where these two roads intersect, including the town of Garsen which acts as a sub-regional capital.¹⁰ This is in line with observations made by Una Hakika staff that in addition to being essential for commerce, the transportation network contributes to information flow as individuals transit through the area and bring information with them. Some individual rumours have appeared to spread in consistent patterns overlapping with the road network and major crossroads settlements. A secondary level of road infrastructure in the Tana Delta is a network of unpaved roads connecting many of the smaller population centres together. These roads seem to be under-represented within rumour reports except for sparse instances of banditry. Lastly, the remainder of the Tana Delta is served by informal footpaths, motorcycle linkages, and clearings which are semi-passable by larger vehicles. Intertwined with all of these systems is a vast and uncharted lattice of herding and farming paths.

TERRAIN FEATURES

The rivers, forests, and brushlands of the Tana Delta also have a role to play in the conflict, with each physical feature carrying its own significance, frequently being mentioned in specific rumours, and influencing the flow of information and misinformation as well as the feasibility of verifying some rumours. The Tana River itself is one of the central components to the ethnic conflict which reached its peak in 2012. Entering the river delta from the north, the Tana arcs to the east and reaches the Indian Ocean near the fishing village of Kipini. As the river sustains much of the agricultural activity in the Tana Delta, it is accessed by farmers whose fertile fields are generally close to the riverbanks and pastoralists who use the river and its tributary streams as a water source for their animals. One of the most volatile sections of the river is at a crossing which serves the communities of Kipao and Ngao.¹¹ Because of the hostility between communities, which erupted in the deaths of 39 people in Kipao, the river acts as a border and physical barrier.

While heavily vegetated riverine forests are common closer to the coast, brushlands cover much of the delta region further inland and contain endless wild animal paths along with agricultural grazing and footpaths, which is where rival communities may unexpectedly meet and reports of incidents within the bush are common. These areas also pose a challenge to rumour verification since they are often physically remote with poor cell network coverage so reporting may be slow and little investigation is possible since there may be no physical evidence left behind to determine whether or not a rumoured incident actually occurred.

One major observation during Una Hakika Phase 1 has been that violence - either actual or falsely rumoured - often occurred close to a water source or forest. While the river as a source of conflict was well understood at the beginning of Phase 1, the role of forests and the types of reports being received by Una Hakika relating to forests was intrinsically different. A notable undercurrent which emerged indicated that rumours related to intercommunal conflict most often reporting incidents occurring near rivers, whereas rumours related to terrorism or armed militia groups were observed more often within or in close proximity to forests.

The role of terrain features as either a barrier or conduit in relation to information flows should also be mentioned. In the case of the Tana River, it generally acts similarly to roads, as mentioned above, in that it serves as a transportation network for people and goods, thus facilitating the sharing of news by word-of-mouth between relatively distant communities that may not otherwise be regular contact. This appears to be especially true in the river delta near the coast, where the river plays the biggest role as a means of transport. In other locations, the river can act as either a physical or symbolic barrier between different communities, thus hindering the flow of information and misinformation. These factors are also seasonally dependent in many locations since the width and depth of the river can change dramatically between wet and dry climatic conditions, therefore playing different roles at different times of the year. Understanding these roles for the river and how they change in different locations at different times is an essential factor for understanding and anticipating the spread of information throughout the Tana Delta. Forests tend to be

10. Garsen itself represents 8.57% of all activity recorded by Una Hakika.

11. These two population centres account for 19.55% of all recorded activity through Una Hakika.

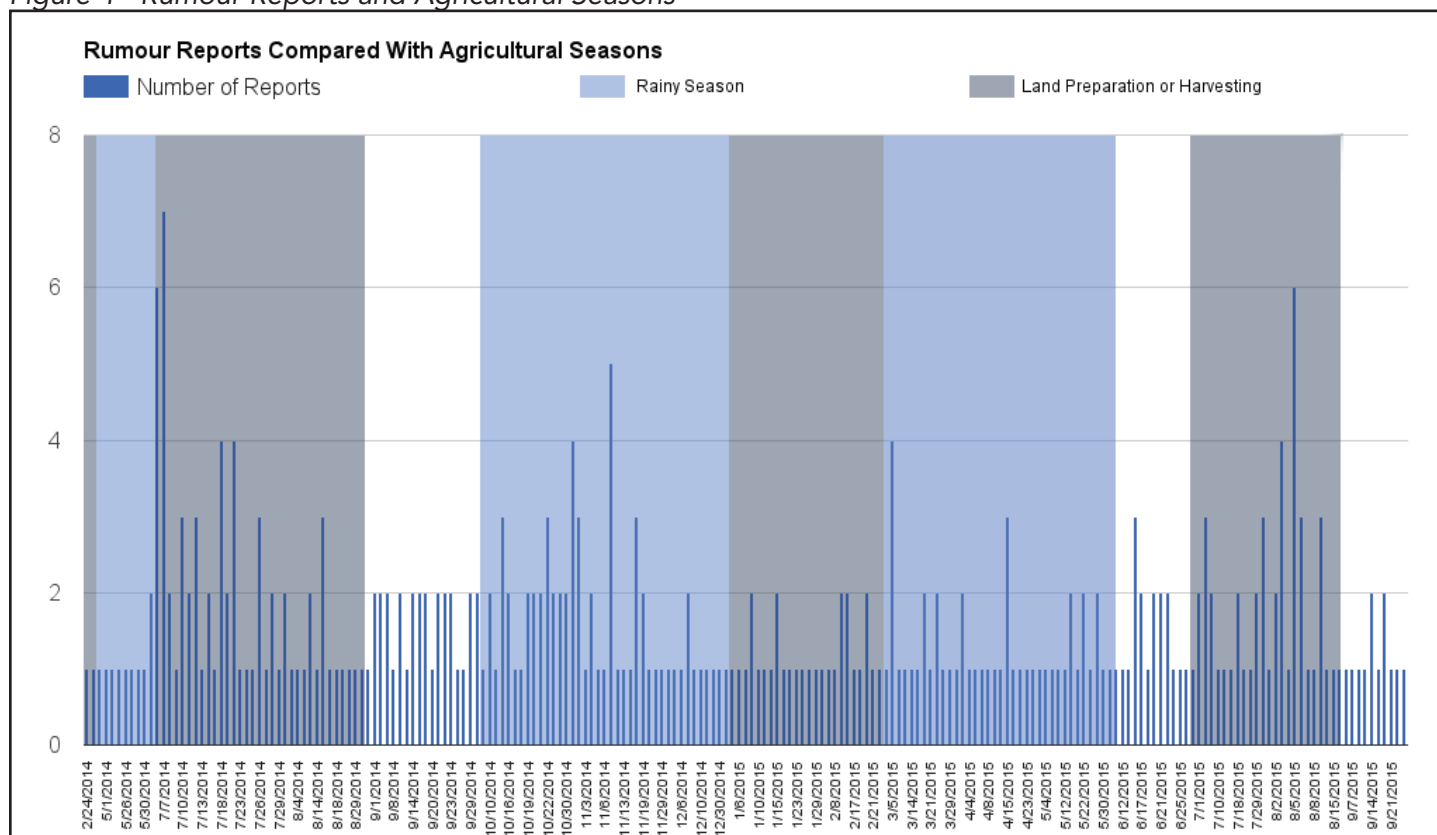
less seasonably variable in their influence, generally acting as barriers to information flow and locations for incidents (actual or alleged) all year round. Similar terrain features will be significant in most rural environments and should be mapped and understood as soon as possible during any misinformation management initiative. Una Hakika Phase 2 will also begin to examine how urban terrain features influence the origination and flow of misinformation.

CLIMATE AND AGRICULTURE

As mentioned above, climatic and seasonal factors influence not only the nature of conflict in the Tana Delta but also the types of rumours that arise along with their frequency and prevalence. The Tana Delta experiences two wet seasons each year, the first from approximately March until May and the second from October to December. The rains bring with them flooding, impassable roads, and intermittent disruptions to the still vulnerable telecommunications and electrical power infrastructure of the area. The dry seasons mark land preparation and harvest times for the many small and large scale farms throughout the Tana Delta, so land preparation in January and February precedes the first rainy season with the harvesting of crops in July and August. A second period of land preparation occurs between August and October before the arrival of the rain.

Conflicts arise more commonly during the dry seasons as nomadic pastoralists move from the hinterland (sometimes as far north as Garissa) in search of water, while farmers set out to tend to their fields. Under these circumstances, the two communities which maintain an uneasy co-existence are forced closer together and must share dwindling water resources. Generally, farmers accuse pastoralists of grazing their cattle on fertile farmlands and subsequently destroying crops while pastoralists claim ancestral or legal land rights or accuse farmers of cattle theft and destruction of their herds.

Figure 4 - Rumour Reports and Agricultural Seasons



In addition to its effects on the occurrence or rumouring of actual violent conflict, the seasons also influence the frequency of rumours and the general transmission of information. For example, the wet seasons impose limitations on movement as high water levels along the Tana River make it difficult to cross and may also wash out roads and paths. These environmental aspects have the potential to discourage actual violence but also hinder the word-of-mouth transmission of information between distant locations since people stay closer to home. Another very significant influence upon rumour origination and transmission is the fact that during land preparation and harvest

times the majority of people are generally busier working long days and do not have the spare time or energy to create or share the speculative information that becomes rumours. Quite simply, as one elder living in the Tana Delta explained to the Una Hakika team, "People are too busy and tired to gossip." This means that while very alarming news of severe events (e.g. conflict or terrorist attacks) will still inspire rumours, less dramatic topics are generally ignored and less reported at such time.

Another notable observation from the dataset was the apparent increase of alternate inquiries, made during the periods where farmlands were largely idle. Alternate inquiries are defined within this project as reports made to Una Hakika which do not involve matters closely related to the local conflict, are of an administrative or governmental nature, or are otherwise miscellaneous in nature. Examples of alternate inquiries received by Una Hakika include questions about the death of the President Uhuru Kenyatta, Kenyan Defence Force hiring improprieties, violence in other countries, and information on the 2015 Mecca crane disaster. During the months of June and September, the rate of alternate inquiries rose from the baseline of 5% to 6% seen in the rainy and dry seasons to an average of 27.6% during these short periods.

DEMOGRAPHICS

POPULATION DISTRIBUTIONS

Attaining a firm grasp of the population dynamics of the Tana Delta is a challenging task since it is a remote and sparsely populated region for which government census and cartographic data is often unavailable, inaccurate, or unclear. Population numbers are only loosely known and vary depending on numerous seasonal, environmental, political, and socioeconomic factors. The vast majority of large and small population centres appear near the banks of the Tana River and its tributaries or along the two main highways that transect the region. Population centres tend to be either ethnically homogenous or very diverse but only a few villages fall within the middle of this spectrum and the majority of smaller settlements are home to only single ethnic groups. Population centres which are ethnically homogenous have consistently been the target or origin of violence, especially where different homogenous communities are in close proximity, though ethnically mixed centres have generally been more tolerant and peaceful.¹²

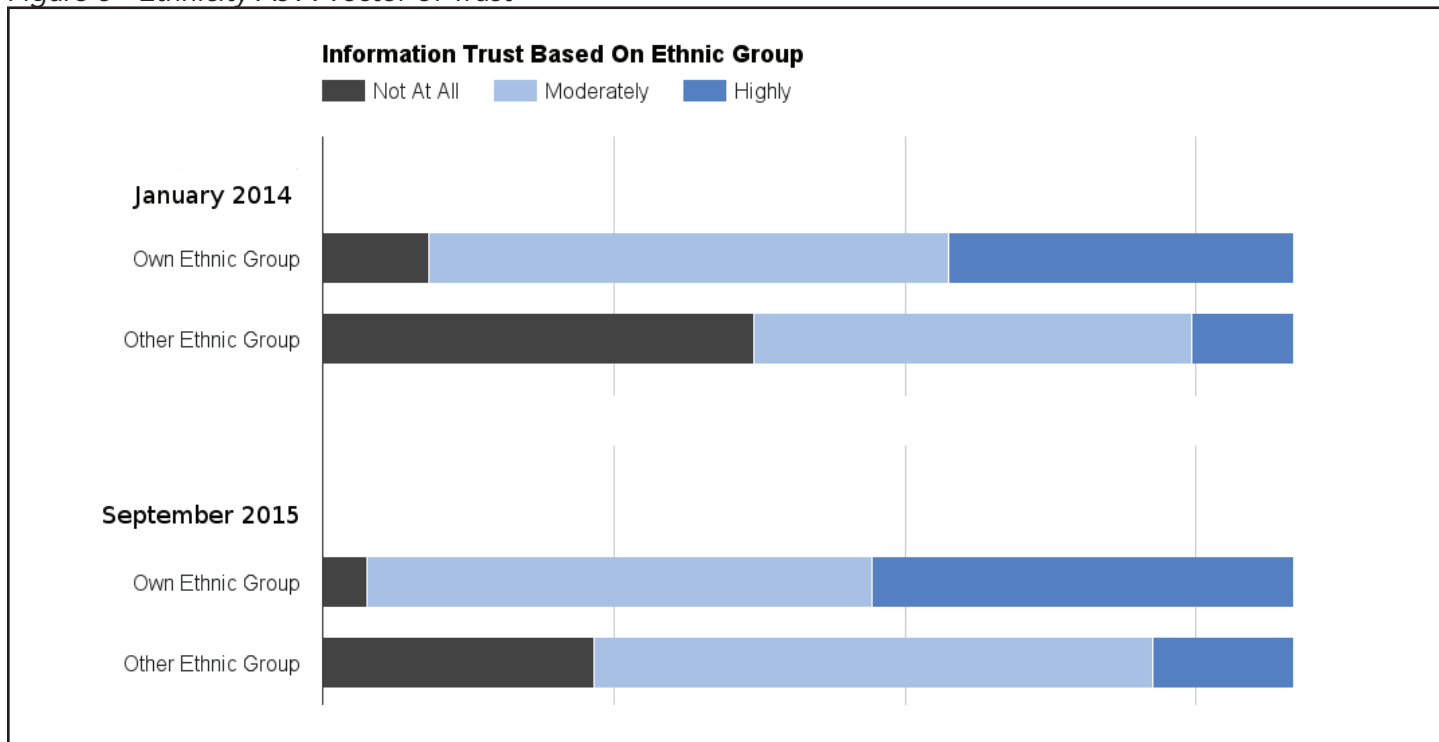
CULTURAL FACTORS

The Tana Delta, like much of Kenya, is negatively impacted by interethnic conflicts which threaten to interfere with long-term peace and community development initiatives. This was partially quantified during the baseline field survey which logged a statistically significant disparity in how much that respondents reported trusting information depending on the ethnicity of the person from whom they receive it. No specific ethnic group was distrusted more than another yet the majority of respondents cited less trust in ethnic groups which were not their own. This result was considered as the Una Hakika project deployed and concerted efforts were made to bridge gaps between ethnic communities through a variety of means:

- Integration of participants from all ethnic groups, including local minorities beyond the Orma and Pokomo
- Conducting training and outreach sessions with mixed participants from multiple ethnic groups held in neutral areas
- Inter-ethnic cooperation initiatives

12. The Pokomo village of Ngao and the Orma village of Kipao are a typical example of this dichotomy. A running feud over resource access has resulted in many incidents, most notably the 2012 deaths of 39 people in Kipao, where 31 Orma men, women, and children were massacred and 8 Pokomo attackers from Ngao were killed by the village's defenders.

Figure 5 - Ethnicity As A Vector of Trust



By the time that that final field survey was completed in September 2015, the results indicated a shift in the level of trust between ethnic groups in the Tana Delta. Ratings of moderate and high trust of information gained from members other ethnic groups increased while those who indicated that they did not trust other ethnic groups at all decreased significantly.¹³ The most plausible explanation for this shift appears to be a combination of increased efforts by local government, NGOs, and Una Hakika along with a general trend of increasing stability, particularly as more time passes since the mass killings of 2012-13.

GENDER ANALYSIS

At the outset of the Una Hakika project in early 2014, the initial field survey documented that women were, on average, 8.7% less likely than men to report feeling well informed about events at the local, county, and national levels. By the time of the final field survey in September 2015, there had been notable improvements in the self-reported levels of information access across both male and female respondents and the gap between the genders had also been reduced drastically. Most significantly for indicating the positive impact of Una Hakika, the rate of change in information levels was not equal between men and women since the final field survey found women reporting improvements in the categories of having access to no information or moderate information at rates twelve (12) and six (6) times greater, respectively, than the improvements shown for men.

During the initial field survey in early 2014 women responded that they were not aware of information relating to events in their own communities, Tana River County, or Kenya overall 16.6% more often than men. By the time of the final field survey in September 2015 this disparity was reduced by nearly two-thirds to only a 5.4% informational advantage for men. Similarly, during the first survey women reported being moderately aware of information related to events in their communities 5.7% less often than men and this disparity was more

LESSONS LEARNED

The main beneficiaries of projects like Una Hakika are the most disadvantaged members of a population. Women, youth, and marginalized communities have the most to gain from a system which can circumvent many of the social, cultural, and structural barriers that prevent them from accessing reliable information.

13. These results were not easily obtained. Though infrequent, there were instances where tension between certain communities was too high to guarantee the safety of participants or where introducing members of another ethnic group to a particular community was deemed too disruptive to be beneficial.

than halved to 2.5% by the time of the final field survey. In the category of feeling well informed about events, both genders improved significantly and equally over the course of the pilot phase, with the disparity remaining nearly unchanged from the initial field survey to the final survey. One major conclusion that can be drawn from the data is that in addition to increased access to information across demographic spectrum, women were the largest beneficiaries due to their over-representation in the low-information demographic at the project outset.

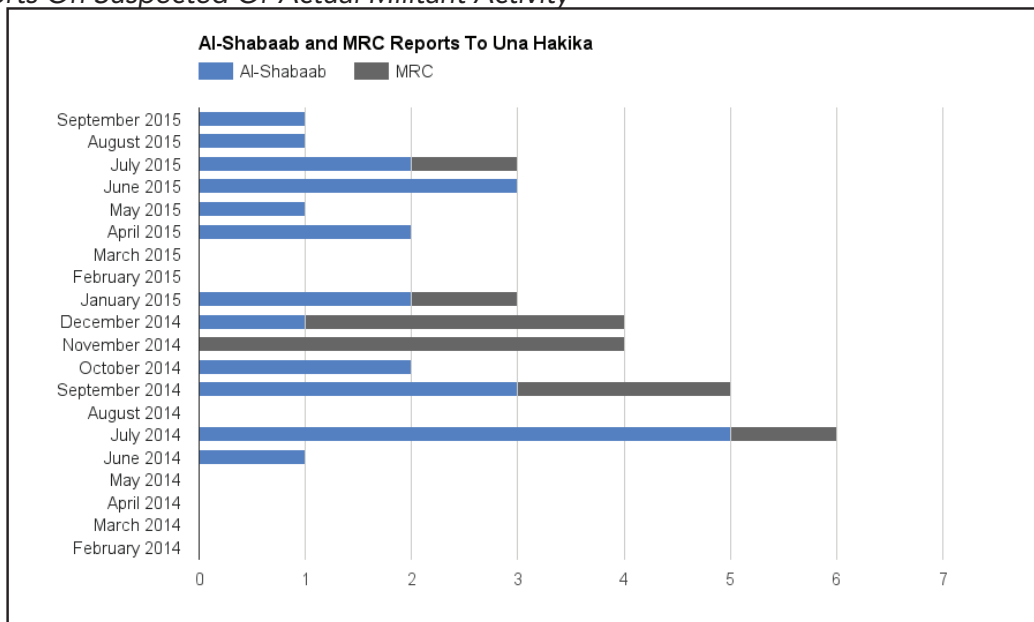
THEMATIC SHIFT FROM ETHNIC VIOLENCE TO AL-SHABAAB

Two significant factors to consider moving forward include the possibility of conflict leading up to the 2017 general election and the increasing role of organized non-state armed groups. Specifically, these are al-Shabaab, an Islamic militant group based in Somalia, and the Mombasa Republican Council (MRC), which advocates separatism for Kenya's Coast region. Both organizations have become influential in the Tana Delta with al-Shabaab launching several deadly attacks within Tana or in neighbouring areas and the MRC allegedly making inroads with some Tana communities. Since Una Hakika's inception there has been a noticeable thematic shift as rumours relating to both al-Shabaab and the MRC have become increasingly prevalent, as opposed to the previous dominance of rumours related to the local intercommunal conflict.

There are two general types of indicators for this thematic shift. The first is a growing sentiment among Tana Delta residents which places suspicion upon rival communities who are believed to sympathize with al-Shabaab or the MRC. Reports submitted from Pokomo communities tend to suggest that Orma villages support or facilitate al-Shabaab, such as by allegedly allowing them to recruit or train in their territory as well as by providing safe passage. Conversely, reports from Orma communities tend to imply that Pokomo residents similarly support the MRC. Such allegations introduce the risk of increasing distrust not only between the Orma and Pokomo but also have the potential to drive a wedge between Muslims and Christians more broadly in the Tana Delta.

The second set of indicators for this thematic shift are quantitative. The trend in both Una Hakika reports and actual incidents involving terrorist activity or violence has grown in proportion to strictly intercommunal conflicts such as cattle theft or land disputes. Such increases in reports tend to be correlated with actual incidents even if the reported rumours are mostly false. For example, al-Shabaab reports peaked in the Tana Delta during July 2014 following attacks by the group on the Gamba police station, which killed several people, and in neighbouring Lamu county, which left many more dead. MRC reports peaked in November and December of 2014 after reports spread of Tana Delta residents taking part in an attack on a military barracks near Mombasa.¹⁴

Figure 6 - Reports On Suspected Or Actual Militant Activity



14. <http://www.reuters.com/article/2014/11/02/us-kenya-security-idUSKBN0IM0B520141102>

This development complicates the situation in the Tana Delta as both local and external actors may try to integrate the localized intercommunal conflicts centering around land disputes into the larger political and religious motivations of extremist groups. For example, al-Shabaab has on several occasions disseminated messages which encourage Muslim residents of the Coast to be hostile to both Christians and people who originated in other parts of Kenya. Such messaging encourages rumours reported to Una Hakika which indicate increasing fears of sympathies for extremist groups. Uncertainty is a major contributing factor for the formation of rumours and the actions of the government and security forces sometimes contribute to this situation, particularly when they issue unclear or contradictory statements about the actors responsible for various attacks. The exact reason for this situation is unclear but possibilities range from ineffective investigation and intelligence to politically-motivated blaming.

TECHNOLOGICAL FACTORS

MOBILE COMMUNICATIONS

The majority of mobile phones found in the Tana Delta are basic feature phones due to three main factors: low cost, long battery life, and good reception. Although smartphones can be found they are uncommon and usually owned by those with higher incomes than the average resident of the Tana Delta. Nonetheless, mobile phone ownership overall is very common and growing year over year. Total mobile phone ownership as of September 2015 was 84.6%, up 2.1% since February 2014.

Mobile Phone Ownership

84.6% +2.1%

Internet Enabled Mobile Phone Ownership

60.4% +5.8%

INTERNET ACCESS

Internet access is limited by the existing communications infrastructure, meaning that the majority of internet usage is conducted on mobile phones connected to the cell network wherever data coverage is available. The internet is also available through various cyber cafés though this is a far less common point of access. A very small number of people access the internet through computers at home, school, or their places of work.

Though technological factors certainly influence the uptake of internet usage, other factors play a far larger role. For example, the most recent survey results indicate that 60.4% of respondents owned mobile phones capable of accessing the internet but only 36.3% indicated actually using it. When asked about this, respondents gave a variety of explanations such as saying that the internet did not interest them, was not worth the expense, that they did not know how to connect to it, that there were literacy obstacles, or that they had not enabled the function on their mobile handset. This indicates a variety of sociocultural and economic reasons for the reduced internet uptake. Interestingly, while only two thirds of users with internet-enabled phones accessed the internet, approximately 83% of internet users reported using Facebook, thus indicating that social media is likely to be a viable information channel for Una Hakika to both gather and disseminate information in the future.

Internet Use

36.3% +6.4%

Facebook Use

30.1% +3.4%

CONVENTIONAL MEDIA

Conventional media is still immensely popular in the Tana Delta with radio and television, when available, being the most accessed and trusted sources of information for residents of the area. Newspapers are not widely available but can be found in shops in larger population centres, which is also where literacy levels tend to be higher. However, all of these media sources are external to the Tana Delta since there is no local radio station or media of any other type. The radio and television programming that people do receive are from national broadcasters and newspapers are from metropolitan areas such as Nairobi or Mombasa. This separation from the daily life and politics of the Tana Delta are what lead people to have high levels of trust in these sources since they are seen as being of high journalistic standards, liable to legal penalty for false reporting, and not entangled in political elements and corruption found within the Tana Delta. This strength is also a weakness in the information flow within the since these sources rarely report on local events unless they relate to renewed violence. Consequently, many Tana Delta residents report feeling well informed about national-level events but are left almost totally uninformed about events in their own county and even more local areas such as neighbouring villages. This serious local media and information gap is reflected in the “Information Deficit” section below and it supports analysis concluding that the gap may also contribute to the prevalence of rumours since Tana Delta residents must rely on sparse information and speculation in order to understand the world around them when more formal information sources are absent. Una Hakika was created partially in order to fill the media gap in the Tana Delta and, in comparison with conventional media, the September 2015 survey shows that Una Hakika has become the third most trusted source of information overall in the Tana Delta but is ranked as the most trusted source based within the area itself.¹⁵

ACCESS TO INFORMATION

INFORMATION DEFICIT

An important component identified by Una Hakika staff at the outset of the project as a potential driver of conflict was an apparent information deficit which starved communities of accurate and timely information, allowed misinformation to fill the void that was left, and subsequently did not stimulate a sufficient degree of inquiry among the population. Indeed, information flow was so fractured as a result of interethnic isolation that even the residents of some villages that were within visual range of each other often reported knowing very little about their neighbours. Residents also generally lacked information about events within neighbouring villages and at the county level, with information about intra-county events arriving only after significant delay. Within this context, the most viable forms of timely information became firsthand accounts and rumours of uncertain veracity.

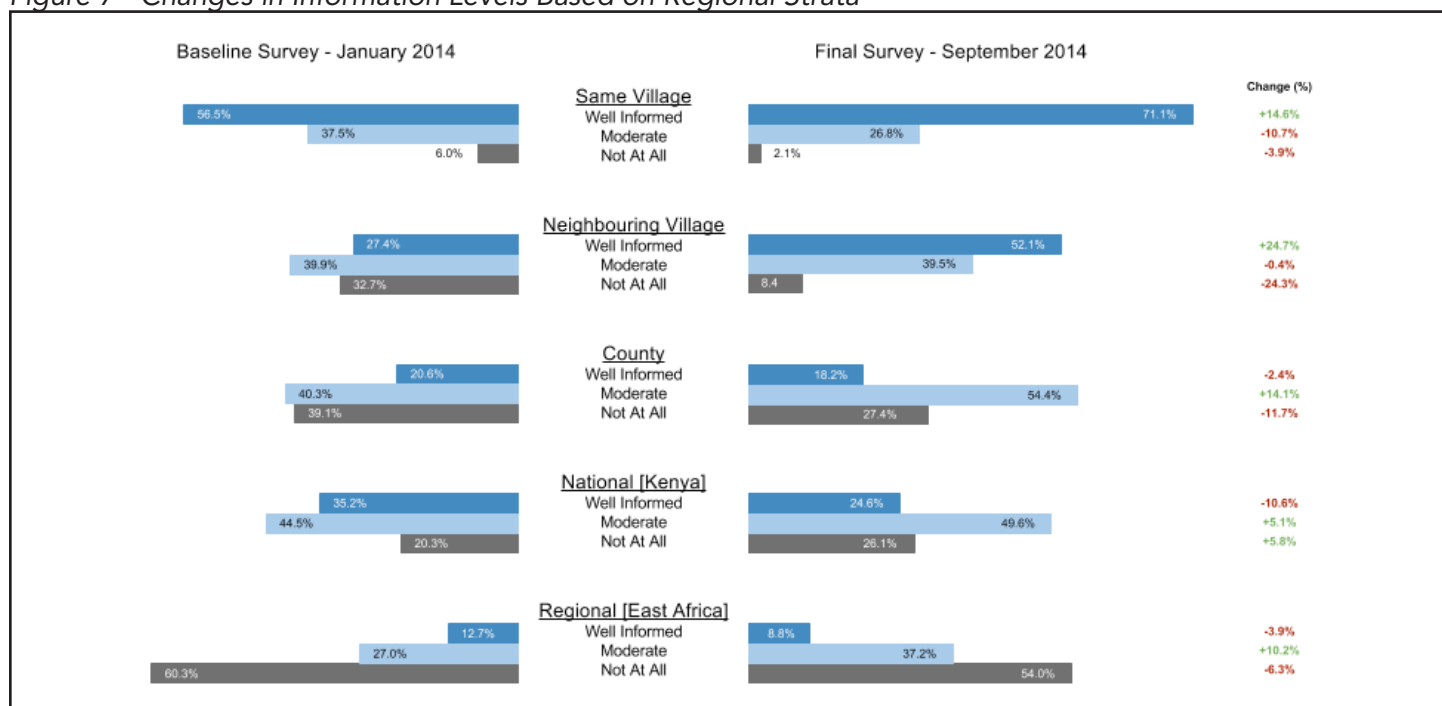
Local Una Hakika staff based permanently on the ground in the Tana Delta concluded that the most salient task for the project was to improve the information access levels at the neighbouring village and county levels since misinformation within these geographic confines were the most likely to prompt conflict or violence. Una Hakika is exceptionally well suited for this purpose since its successful community integration and crowdsourcing approach combined with a very localized focus enable a level of more granular and responsive programming than is possible for higher echelon platforms based purely on conventional media and social media. Additionally, by combining social media, traditional communication networks, and workflow software designed by the Sentinel Project with its SMS communication system, Una Hakika is capable of broad reach while maintaining firm roots in each community.

LESSONS LEARNED

Rumours may also arise about the staff and the project itself, especially when new to a given area. Do not ignore these suspicions as they provide valuable insight into community perceptions. Address them in a direct, concise, and transparent manner.

15. In less than two years Una Hakika earned the trust of the local community. 10.2% of respondents said they trusted Una Hakika more than any other source of information, trailing only radio (31.3%) and television (12.4%) while surpassing community barazas (village meetings) at 9.6%

Figure 7 - Changes in Information Levels Based on Regional Strata



The above table illustrates the serious local and county-level information deficit in the Tana Delta and how this appears to have improved between the two Una Hakika surveys conducted in January 2014 and September 2015. The following narrative explains this in greater detail:

Same village - There has been a decrease in responses indicating only moderate or minimal information levels while a significant increase has been seen in responses indicating high levels of access to information.

Neighbouring village - Responses indicating minimal information levels about villages neighbouring those of respondents have dropped by 24.7%, moderate information level responses have remained largely unchanged, and there has been a significant increase in high information levels equal to the decrease in minimal information levels.

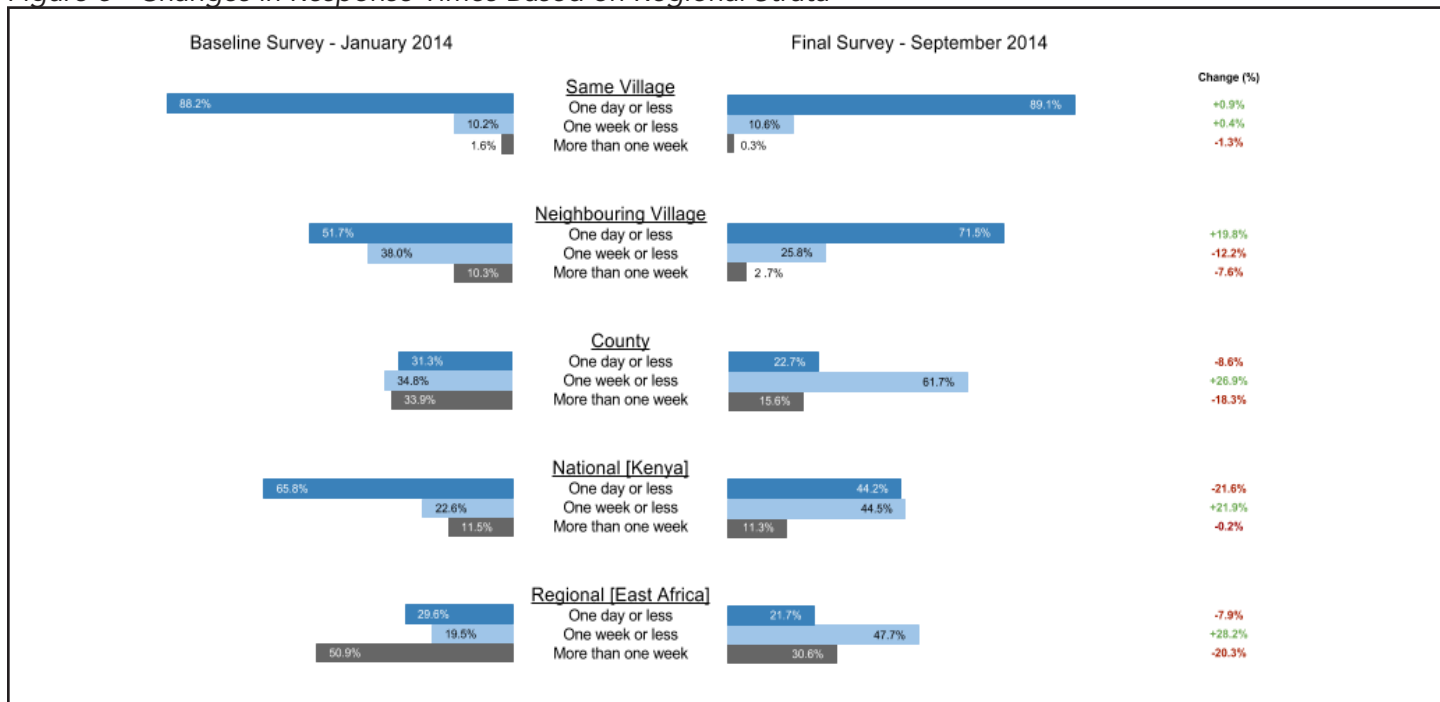
County - There was a large reduction in responses indicating minimal information levels and a small but statistically relevant reduction (2.4%) in high information level responses, with the majority of growth occurring in the number of people reporting that they enjoy moderate levels of information about Tana River County overall. Although there is still a net gain in these information levels, more research is necessary to determine why responses moved towards the centre of the information spectrum.

National - There was a notable reduction between the two surveys in the number of respondents indicating that they have high levels of information about Kenya (i.e. national-level affairs and events in others parts of the country), which coincides with an equal amount of growth in responses indicating both moderate and minimal information levels.

Regional - There have been notable reductions in both high and minimal level responses about the information that Tana Delta residents have regarding East Africa as a region, which correspond growth in moderate information level responses. The reason for this change is not clear.

Responses about information levels alone did not change, so too did responses about the delay length of information based on location. The baseline and final surveys reveal noticeable changes in how quickly respondents received information about the village, local, and county levels. The most significant changes came at the local and county levels, where respondents indicated that by the end of Una Hakika Phase 1 they were receiving information about events in neighbouring villages and within the county approximately 3-4 days faster than they were in January 2014.

Figure 8 - Changes in Response Times Based on Regional Strata

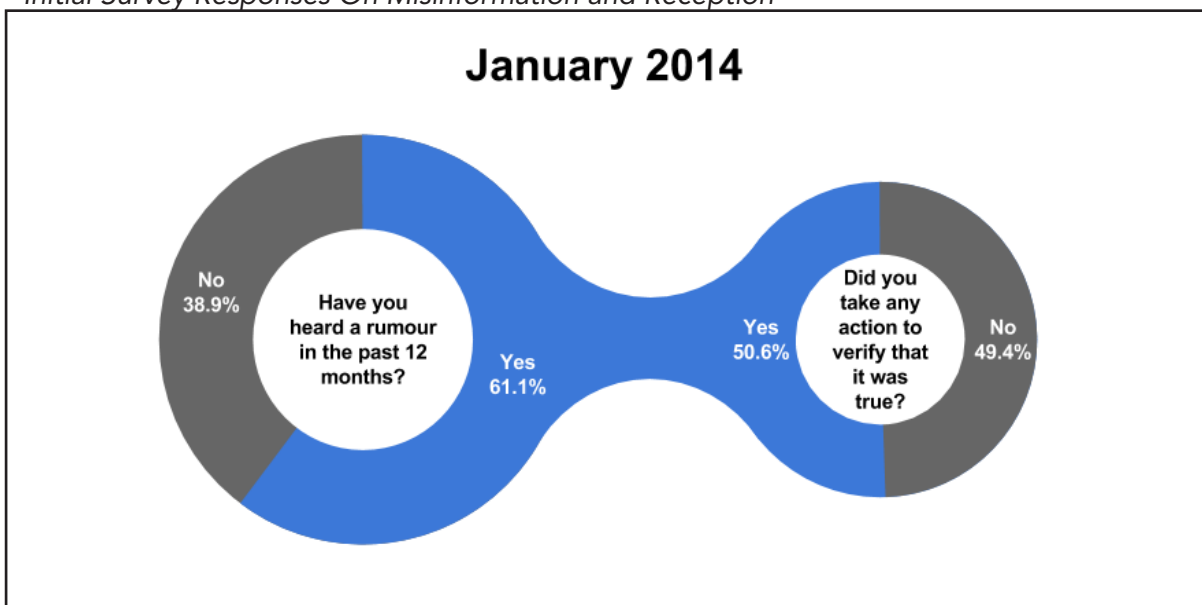


Considering the stated objectives and activities of Una Hakika and the subsequent positive changes in information levels and communications delays over the 19 months between the surveys, there is a strong correlation between these improvements and the work of this project. Going forward with Una Hakika Phase 2, such metrics will continue to be measured periodically in order to test the relationship between project activities and improvements in the local information situation.

RECEPTION AND REACTION

One interesting and highly relevant facet of the Tana Delta's information deficit was the tendency of residents to infrequently question unverified information. At the outset of Una Hakika 61.1% of survey respondents indicated that they had heard what they felt was not completely true in the past 12 months. However, only about half who responded in the affirmative took any action to verify whether that information was accurate.

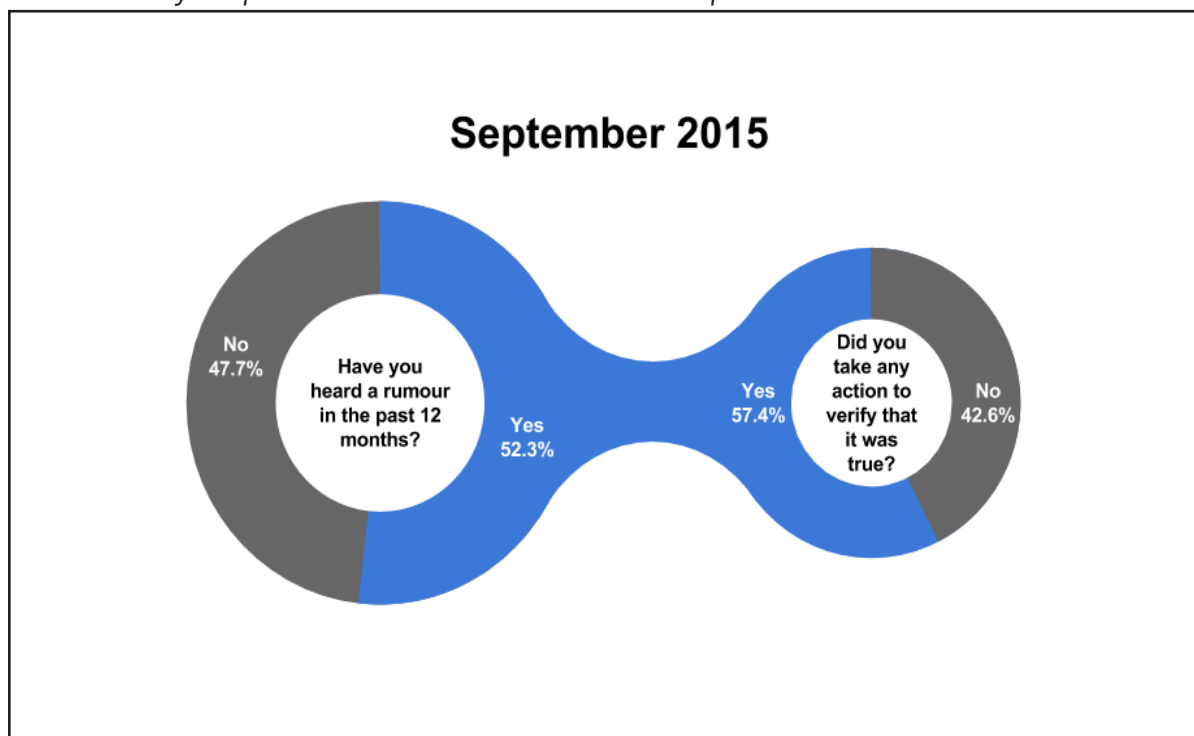
Figure 9 - Initial Survey Responses On Misinformation and Reception



Strong narrative data collected during the first field survey in January 2014 as well as during subsequent community interactions (e.g. barazas and focus groups) suggests that this low level of questioning attitudes towards word-

of-mouth information resulted from a general lack of access to reliable information, rendering genuine inquiry difficult or fruitless. In short, at the beginning of Una Hakika, Tana Delta residents did not take action to investigate questionable information because they lacked the means to do so. However, by the time of the final field survey in September 2015 noticeable changes had taken place in this regard. Results from that survey show an 8.8% decrease in respondents reporting that they had heard questionable information in the previous 12 months while there was a 6.8% increase in respondents who took actions to verify the accuracy of information that they received. Both of these indicators point to positive developments made in resolving the information deficit which has played a role in facilitating the proliferation of misinformation and associated conflict in the Tana Delta.

Figure 10 - Final Survey Responses On Misinformation and Reception



DELIBERATE USE OF DISINFORMATION

An important component of misinformation proliferation identified by Una Hakika is the deliberate use of false information as a means to elicit a response from official government or security bodies. Since this type of misinformation is deliberately created or disseminated in order to achieve an objective by its propagator, it can be referred to as disinformation or tactical misinformation, which are different from "organic" rumours that arise purely from speculation. The use of disinformation in order to elicit responses from the government or rival communities differs slightly from the idle rumours which fuel much of the tension and animosity between Tana Delta communities. Whereas the latter often result from casual observations and suspicions or from calm, idle periods which stimulate boredom, disinformation or "tactical misinformation" can serve both offensive and defensive objectives for the propagator.

OFFENSIVE

Offensive tactical misinformation is generated with the intent of supporting other action against a rival community or individuals. In the Tana Delta, this frequently takes the form of casting suspicion upon neighbouring villages of a different ethnic, religious, or economic composition. Here, the intent appears to be encouraging increased surveillance or security measures to be imposed upon those communities by the government, either in response to genuinely suspected illicit activity or as a harassing tactic. In this way, offensive tactical misinformation can be understood as an outgrowth of the mutual distrust and intercommunal tensions in a focused form.

Example: June 2014 - A report from the village of Ngao indicated that unknown vehicle tracks were those of trucks shipping arms to the rival village of Kipao. As vehicles regularly operate in this area and the vehicles which made the tracks were not observed, the suspicion cast upon the vehicles and the speculation that they were responsible for arming a rival ethnic group were unfounded.

DEFENSIVE

Defensive tactical misinformation is promulgated in response to fears of violence or some other violation of the propagator's rights. Such cases are sometimes incited by frequent idle rumours rather than specifically created misinformation but it then reaches a point where community members or a community as a whole decide that action is required but do not feel that the authorities have taken their concerns seriously. The intent of defensive misinformation tends to be to trigger the deployment of security forces, often in the form of the paramilitary General Service Unit (GSU) or other National Police Service (NPS) camps close to a suspect community or between rival communities in order to act as a buffer or deterrent against perceived threats.

Example: Late March 2015 - Reports that unknown individuals were conducting reconnaissance and planting bombs near the Pokomo village of Ngao in order to upset Easter celebrations resulted in the establishment of a nearby police camp. Subsequently, a report was received from the rival Orma village of Kipao, where residents often complain of preferential treatment for the Pokomo community, that the government was collaborating with Ngao residents.

INTERPRETATION AND RESPONSE

Observers must be cautious in dismissing such acts too easily since they are bellwethers of community perceptions as well as indicators of potential shortcomings in peacebuilding, cooperation, and security efforts. There is additional necessity for vigilance in addressing such reports as the events they purport to highlight must be thoroughly investigated and the information verified before a determination can be made about its veracity. Dismissing reports which appear to contain components of tactical misinformation too quickly and easily risks ignoring the potential truth contained within. There is, also, always the possibility that such reports can be indicators of impending actual violence, even if it appears unlikely, which is why misinformation management systems such as Una Hakika can also serve the additional role of an early warning system. To this end, Una Hakika has found itself occupying a valuable niche within the Tana Delta, since when staff from the project are seen to be investigating reports of all types this has tended to calm fears of conflict and ease fatigue on the limited number of security personnel who are expected to dedicate resources to such issues.

RUMOUR FLOW CASE STUDY

The data collected by Una Hakika's pilot phase has enabled the project team to map the distribution of misinformation as it propagates throughout the Tana Delta. Although not representing the totality of information flow, the dataset provides significant insights when paired with the analytical components discussed previously. Observing how misinformation flows and analyzing how this appears to be influenced by the geographical, demographic, and other factors discussed above will help to inform future predictive analysis and anticipatory counter-messaging. The following case study presents a mapped information flow as news of a specific event spread through communities within the Tana Delta. The event concerned the disappearance and suspected murder of a fisherman and the subsequent datapoints cover a five-day period in August 2015.

Figure 11 - Geographic and Chronological Distribution of Una Hakika Reports



Day One (Red) - The first report of this rumour was submitted during the evening of the first day from the village of Nduru and detailed fears regarding a missing fisherman.

Day Two (Orange) - Reports indicated a proliferation of the rumour eastward to the nearby villages of Semikaro and Chara, which are accessible from Nduru by a basic road which is intermittently serviced by couriers and motorcycle taxis, as well as to more distant Ozi. The rapid nature of this proliferation to relatively remote areas, especially Ozi, suggests that the method of transmission was through mobile phones using either SMS or voice calls and possibly internet messaging.

Day Three (Yellow) - Reports of the rumour were reported further eastward as it appeared to travel across the Tana River from Ozi to the village of Kilelengwani while simultaneously traveling westward from Nduru through a corridor defined by the villages of Oda and Tarasaa and onward to Ngao. The three western locations are situated along a series of secondary roads which see a substantial amount of foot and vehicle traffic between them. Trade and communication are rapid along this corridor and so the area is one of several areas in the Tana Delta where the proliferation of rumours is likely to be rapid, especially if they are alarming in nature.

Day Four (Green) - Reports of the rumours came from Kipao later than other villages in the area, likely due in part to the additional travel and sometimes difficult river crossings required to reach the settlement. Note that the assessed route of information flow is from Oda to Kipao since rivalries between Ngao and Kipao limit the exchange of information between these settlements. Therefore, Oda, which has a larger Orma population, is a more common relay point for Kipao.

Day Five (Blue) - The final reports of this rumour came from Kibusu, likely having reached there from Ngao. At this point, the body of the fisherman had been found and the local government and security forces had taken measures to address community concerns about the situation, utilizing Una Hakika to disseminate accurate information about the events and calling for calm.

This case was selected for demonstration not because it is perfectly typical of most information flows within the Tana Delta but rather because many of its components reflect the insights learned about information flows throughout Una Hakika Phase 1. In particular, this case reflects how information flow is shaped by, and to a certain degree can be anticipated through, standing community conflicts as well as the geographical, demographic, economic, political, social, and infrastructural lenses.

Several high-intensity corridors have been identified in the Tana Delta, including the Garsen-Minjila terminal,

the Tarasaa economic hub, and Witu junction, the latter technically being in Lamu County but acting as a major transit point between Garsen and Kipini, both of which are in Tana River County. These corridors act as conduits for information which can attract a higher frequency of reports owing to their population size, physical location, or economic and political relevance. Additionally, these corridors are also able to propagate information more rapidly through behavioral contagion.¹⁶ As such, high intensity corridors can be targeted for monitoring to anticipate misinformation flows as well as counter-messaging in an effort to proactively mitigate the distribution of misinformation.

Similarly, information desistance - the ability of physical and artificial barriers to stem the flow of information - can also be ascertained and anticipated within certain parameters. Information deficits, as discussed above, are gulfs of information between communities as a result of natural or artificial barriers. These can range from community rivalries, challenges imposed by physical terrain, or shortfalls in telecommunications infrastructure. In this case study, information desistance can be seen between the villages of Ngao and Kipao, which are located very close to each other but for which physical barriers and a simmering resource conflict and well as cultural and religious differences all contribute to preventing their populations from exchanging timely information. As such, Kipao reports were submitted a day later than Ngao, thus indicating that the rumour reached Kipao more slowly than even more distant locations, and that they were relayed to the village through a different channel.

Valuable knowledge gained from Una Hakika Phase 1 can also be applied in situations where only a singular or small number of reports are received. Misinformation managers can respond rapidly to reports in high-intensity corridors in order to prevent the issue in question from propagating, counter-messaging can be prepared and deployed if necessary, and staff on the ground can “jump ahead” of anticipated information flow trajectories in order to minimize the impact of misinformation which may appear on those locations.

16. The unconscious transmission of actions or ideas from one individual to another through a community.

SUCCESSSES AND FAILURES



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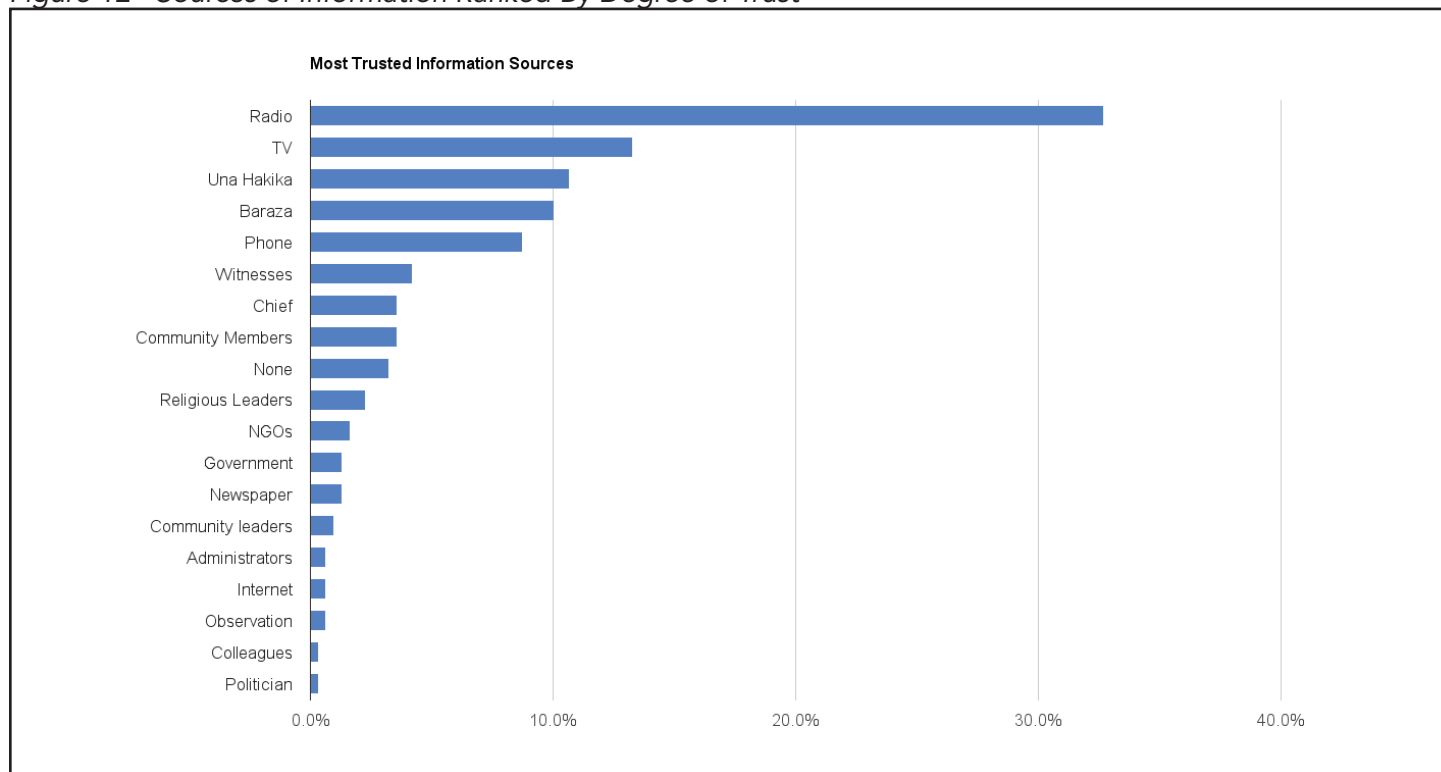
SUCCESSSES AND FAILURES

As with any project, the value of Una Hakika must be measured by both its successes and its failures, each contributing to a better understanding and outcome for future work. The following examples examine areas of progress and challenges along with analysis of their constituent elements.

HIGH USER UPTAKE AND TRUST

One area of unqualified success is in the levels of user uptake and trust that Tana Delta residents appear to place in the Una Hakika system.¹⁷ Since its establishment in late 2013, Una Hakika has become one of the most trusted sources of information for Tana Delta residents. The graph below represents data collected during the final field survey in September 2015 and indicates that after radio and television, Una Hakika is trusted above all other sources. This is particularly notable since radio and television programming do not currently originate within any part of Tana River County, which means that Una Hakika ranks as the most trusted source of information that is based within the region itself.

Figure 12 - Sources of Information Ranked By Degree of Trust



The explanation for this success can likely be found in the results of the user satisfaction survey discussed above, which indicates a perception among Una Hakika subscribers that the project is effective at preventing the spread of misinformation, that this works to decrease incidents of violence, and that the project staff are committed to serving the community fairly.

It is also important to note that some civil and governmental institutions in the Tana Delta enjoy very low levels of trust owing to the highly charged political environment and continued popular disappointment in local, regional,

17. The 1,591 subscribers represent 1 in 15 adult mobile phone users in the Tana Delta.

and national politicians. This divisiveness causes Tana Delta residents to distrust structures which are meant to serve citizens and creates a credibility gap which will be challenging for authorities to overcome.

EFFECTIVE INFORMATION GATHERING DURING EMERGENCIES

On the night of 5-6 July 2014, suspected al-Shabaab militants attacked the Gamba police station near Una Hakika's base of operations in Garsen, killing 11 people including police officers and inmates at the jail. Almost immediately, people began submitting many reports to Una Hakika since the gunfire was heard far away and the project staff on the ground worked to ensure that people in the surrounding areas remained calm, avoided the area, and only acted on reliable information from Una Hakika or the authorities. Una Hakika staff also immediately alerted the local government and security forces since people reported the incident to Una Hakika several hours before they reported it to the authorities. This demonstrates two important things. First is Una Hakika's ability to rapidly gather situational information because of the level of trust that community members have in the project (often exceeding their trust in the authorities). Second is Una Hakika's ability to quickly provide accurate information to population members, enabling them to navigate crises more effectively. This function was especially important as people in more distant villages quickly began to hear inaccurate rumours of the Gamba attack due to the lack of reliable local information sources.

CONTINUED VIOLENCE

While great strides have been made by civil institutions, NGOs, government initiatives, and Tana Delta residents themselves, violence and tensions have continued at a very low level in the area. The greatest decrease has been seen with intercommunal violence, primarily between the pastoralist Orma and agriculturalist Pokomo communities. Indeed, this was the issue that Una Hakika was created to address and has made modest advances in this regard. However, the burgeoning extremist threat posed by al-Shabaab and, to a lesser extent, the MRC now dominates any violence which occurs in the area. In July 2014 an al-Shabaab attack on the Gamba police station which killed 11 people represented one of the highest losses of life since the ethnic violence of 2012-13. Other attacks on the Tana Delta's periphery, most notably massacres in Lamu County as well as the Garissa University attack in April 2015, have shaken the region and raised tensions among the community, especially between Muslims and Christians.

The marked decrease in ethnic violence has not been without its setbacks. In the late summer of 2015, minor conflicts escalated into reprisal attacks and sporadic murders in the area of Hurara after tensions rose over land use. It is worth noting that the Una Hakika staff identified this southern corridor into the Tana Delta Sub-County as a location at high risk of violence by when surveying the area for a possible Una Hakika expansion in November 2014.

Additionally, even in places where tensions have decreased they remain sensitive to inflammation, such simple incidents as intoxicated, disgruntled, or mentally ill individuals making unspecified or direct threats have led to bouts of increased misinformation reports. Although under normal circumstances these actions would be disregarded and responsibility properly assigned to the individuals responsible, during times of heightened tensions the fear of further violence creates a tendency for them to be taken more seriously in certain communities.

CONCLUSION AND RECOMMENDATIONS



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CONCLUSION AND RECOMMENDATIONS

UNA HAKIKA DEVELOPMENT PLANS

Una Hakika Phase 2 will build upon the results of Phase 1 and further validate its findings by gathering further data and testing tools and techniques in new and sharply contrasting contexts. This ambitious scaling up involves local partners in Kenya as well as the implementation of an Una Hakika pilot in Mandalay, a major city in Burma (Myanmar). In the case of Kenya, potential funders are being engaged to build upon the foundational support of the International Development Research Centre (IDRC), thus enabling expansion beyond the Tana Delta in order to cover more of the country ahead of the 2017 general election. In the case of Burma, the city of Mandalay has been chosen as the research area since it has been the site of recent violence targeting the Muslim minority, often with a strong element of misinformation involved, while its drastically different cultural, technological, and urban context will present a useful research environment.

Una Hakika will further support investing in knowledge and innovation for large-scale positive change beyond conflict situations since the issue of misinformation has been identified as a pervasive worldwide problem affecting many sectors in societies at all levels of development. By refining the misinformation management tools and techniques developed during the pilot phase with a focus on scalability and sustainability, this project will ensure that other actors can replicate Una Hakika for their own needs while the project team simultaneously works to promote the project for use elsewhere. Una Hakika will also contribute to building leaders in the atrocity prevention, peacebuilding, and misinformation management fields by furthering the development of its staff and collaborators, all of whom are capable young international development professionals with promising futures. During the two-year pilot phase of Una Hakika the project has attracted significant attention from mainstream media, specialist publications, the international development community, researchers, potential partners, and funding organizations. All of these have come to associate IDRC and the Sentinel Project with Una Hakika's innovative success and this momentum is likely to continue growing as the project does. Una Hakika will therefore continue to establish both IDRC and the Sentinel Project as partners of choice for greater impact as an increasing number of other actors are expected to recognize the potential for misinformation management mechanisms to support international development efforts.

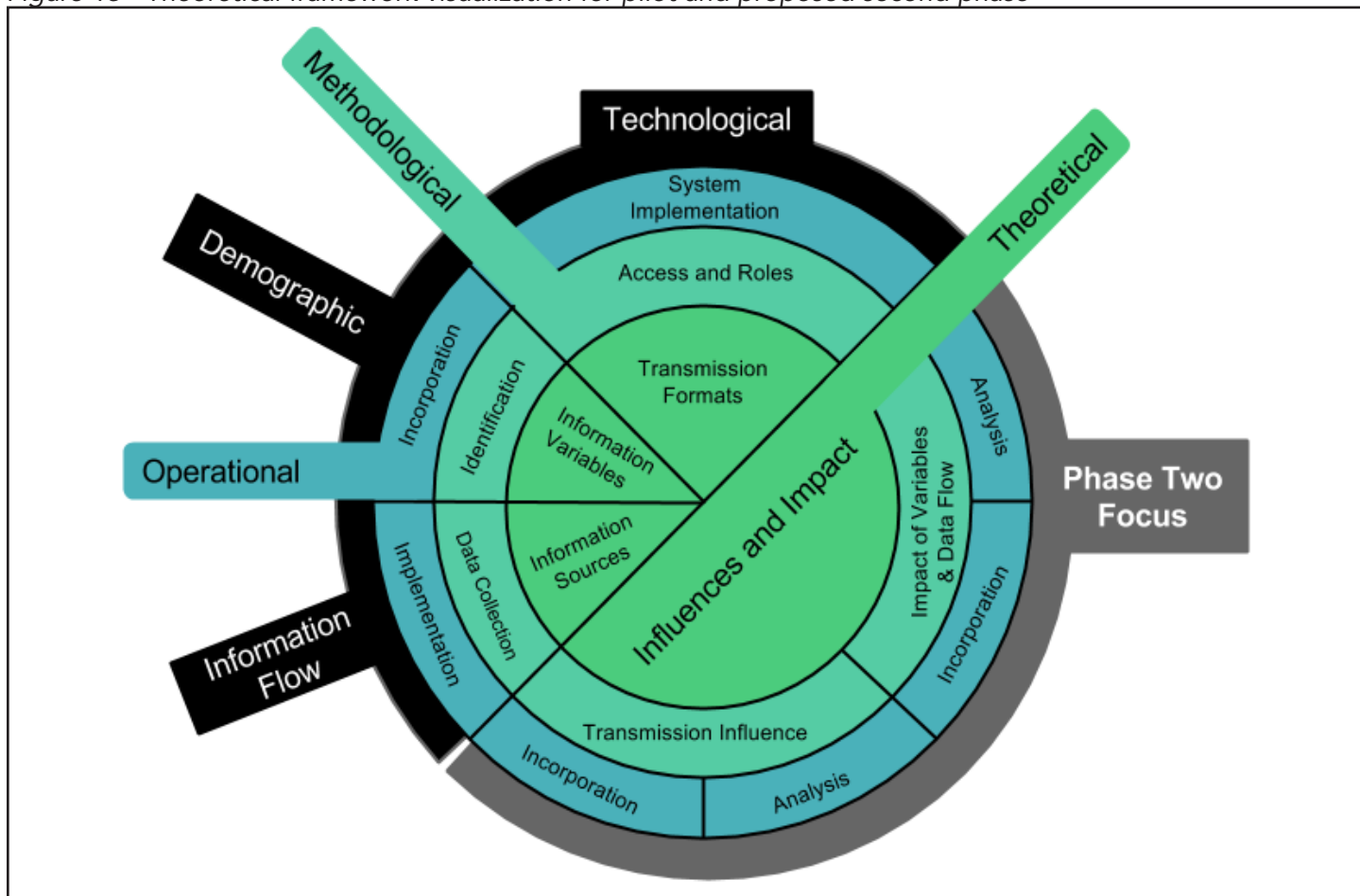
FRAMEWORK DEVELOPMENT

Based upon lessons learned during Una Hakika Phase 1 the project team has been able to develop a preliminary framework (see Figure 13) which takes a holistic approach to misinformation management and will guide future work in both research and impact-oriented efforts. The working hypothesis for this framework posits that social networks - whether traditional or technologically based - in conflict (and other crisis) zones amplify misinformation, thus contributing to the risk of violence and hindering response and development efforts.¹⁸ Increasingly, digital technologies such as mobile phones and the internet augment this process by accelerating the spread of misinformation and outpacing traditional methods of verification such as community meetings, conventional media, flyers, and speeches. Countermeasures implemented using tools and techniques derived from this research project can effectively manage misinformation not by suppression or censorship of speech but rather by ensuring citizen access to verifiable information provided in response to public needs as well as encouraging behavioural change by fostering community attitudes which prioritize verification over proliferation. Central to these countermeasures is the utilization of information and communications technologies integrated with human networks.¹⁹

18. M. Mäkinen and M. Kuiru. "Social Media and PostElection Crisis in Kenya," *The International Journal of Press/Politics* (July 2008) vol. 13 no. 3

19. C. Budak, D. Agrawal and A. El Abbadi. "Limiting the Spread of Misinformation in Social Networks," *Proceedings of the 20th International Conference on World Wide Web* (April 2011).

Figure 13 - Theoretical framework visualization for pilot and proposed second phase



Phase 1 research has identified several powerful factors which influence the origination and proliferation of misinformation, such as geographical, demographic, technological, and environmental characteristics. After identifying these, their role was examined within the context of the Tana Delta while also identifying gaps in this knowledge. Consequently, the framework is diametrically divided between the established information from Phase 1 (upper left half) and the Phase 2 focus (lower right half), which seeks to further learn about the influence and impact of these factors. Assessing the influence and impact of these components will involve evaluating Phase 1 findings with the further data gathered during Phase 2. Demographic variables such as cultural, economic, or political components will be of particular interest and receive a full examination. Information sources ranging from individuals to institutions will also be of great interest in Phase 2 since these not only originate information but also influence its proliferation. Technological transmission formats cover a broad spectrum ranging from interpersonal communication to social media to more traditional formats such as newspapers, television, and radio, and will also be of great interest during Phase 2.

Additional deployments during Phase 2 in new areas of Kenya, Burma, and beyond will also validate Phase 1 findings about information verification and dissemination processes. Such work will be accomplished by comparing data gathered from the Tana Delta with that from the new contexts, thus identifying more generally applicable findings and the development of a stable, universally-applicable framework and misinformation management tool set. This is reflected in the figure above by the demographic segment, which accounts for unique situational variables in any potential future use cases.

Much of the theoretical foundation for Una Hakika has been contributed by Professor Nicholas DiFonzo of the Rochester Institute of Technology, an advisor on this project.²⁰ Specializing in the psychology of rumours, Professor DiFonzo's work forms the basis of three key elements of the Una Hakika theoretical framework:

20. DiFonzo, Nicholas. *The Watercooler Effect: A Psychologist Explores the Extraordinary Power of Rumors*. New York: Avery (2008).

- Recognition of rumours as originating in organic “sensemaking” efforts (e.g. misinformation) as well as rumours serving political, cultural, or socio-economic purposes (e.g. disinformation or tactical misinformation) is a facet that has been incorporated into the Una Hakika verification process.
- The concepts of levelling and sharpening, the twin processes whereby rumours lose details deemed to be unnecessary or nuanced while amplifying key points which resonate more with their human transmitters. These concepts, identified which clearly played a role in the dynamics observed during Una Hakika Phase 1, will be continually tested and analyzed to contextualize their occurrence in order to create a methodology for approaching and responding to them.
- Group norms about acceptable standards of evidence heavily influence both the environment in which misinformation proliferates and are often connected with a lack of reliable information. Una Hakika attempts to address this issue by demonstrating the impact of a trusted information service being introduced into a region experiencing an information deficit. By monitoring usage, uptake, and changes over time and location such practices can be demonstrated to have significantly beneficial impacts.

GREATER ROLE FOR MISINFORMATION MANAGEMENT

The knowledge generated thus far and the tools developed and tested using it can be employed by organizations involved in peacebuilding efforts in the Tana Delta, other parts of Kenya, Burma, and other areas worldwide. Indeed, beyond the regions of Kenya and Burma that will be incorporated into Una Hakika Phase 2, several other areas around the world have been identified as requiring services such as that provided by Una Hakika, including some where stakeholders from foreign governments and large NGOs have expressed an interest in replicating Una Hakika. Thus, a continuing longer-term goal of this project is to contribute to violence risk reduction efforts not only in the program areas of Kenya and Burma but also to address the challenge of misinformation worldwide, including in other sectors such as disaster management and infectious disease outbreak scenarios. The results of both Phases 1 and 2 of Una Hakika will also contribute to building the misinformation management field not only by generating new knowledge through research but also by continuing to develop a concrete set of tools, processes, and measures which development, peacebuilding, public health, and governance practitioners can use to address misinformation worldwide. Furthermore, relationships are constantly being built with other researchers and practitioners such that a community of practice related to misinformation management using ICTs is being built.

REFINEMENT OF TOOLS FOR REPLICATION

Una Hakika’s planned Phase 2 will provide an excellent opportunity to meet these strategic objectives while further testing Una Hakika’s initial findings and concepts in two dramatically contrasting contexts (in terms of culture, politics, geography, and technology). It also provides an opportunity to incorporate new tools which play a much more influential role in Mandalay than they do in the Tana Delta, especially social media and other web-based communication services. These new conditions will help to test concepts relating to the scalability and sustainability of misinformation management systems such that the Una Hakika model can benefit the largest possible number of people while also being increasingly rooted in the communities that it serves. The potential benefits of such research will impact how governments respond to violence prompted by misinformation, assist emergency response and humanitarian missions in addressing pernicious rumours arising in chaotic settings, and create open channels between development agencies and their beneficiaries in order to facilitate more effective communication at all times but especially during crises.

DEVELOPMENT PARTNERS

A long-term goal of Una Hakika is to contribute further to violence reduction efforts in the Tana Delta, the entirety of Kenya’s Coast region, and other violence-prone areas of the country. Based on the data collected during Una Hakika Phase 1 and consultations with various organizations globally, there is a definite need for misinformation management programs in a multitude of settings. Additionally, election cycles such as that which will take place in Kenya leading up to the next election in 2017 are a particularly sensitive time for misinformation and government

action in this regard will greatly assist in not only countering malicious rumours but also ensuring that residents receive correct civic or governmental information.

RECOMMENDATIONS

The Una Hakika Phase can make several recommendations based on lessons learned during Phase 1. Firstly, this work has established the value of establishing misinformation management systems for mitigating the harmful impact of unchecked rumours, whether in the form of misinformation or deliberate disinformation. Citizens, NGOs, government bodies, and the media can all benefit from the clarified information environment created by such systems and so they should be widely integrated into development efforts and government programming. Secondly, information and communications technologies create efficiencies that enable misinformation management systems to operate more efficiently than otherwise possible. The first steps in this direction were taken with the creation of the Una Hakika SMS reporting service and the implementation of the WikiRumours software which streamlined workflows so that a small number of staff were able to conduct work that would normally require a much larger team. Thirdly, systems such as Una Hakika can be made sustainable in several ways ranging from encouraging attitudinal and behavioural shifts to setting up self-sustaining, community-funded mechanisms. At the most basic level, the Una Hakika model can impart lasting changes in how communities address unverified information and knowledge of the damaging effects of misinformation on community security, personal safety, and economic stability.

APPENDICES



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APPENDICES

TIMELINE OF VIOLENCE (2012-13)

- **22 August 2012** - Pokomo attack on Riketa (Orma village) - This killed 52 people including women, children, and unarmed men of all ages.
- **7 September 2012** - Ormas attacked the Pokomo village of Chamwanamuma, killing 12 people and burning down several homes.
- **10 September 2012** - Pokomos attacked the Orma village of Kilelengwani, killing 38 people (31 civilians, 7 police officers).
- **11 September 2012** - Ormas attacked the villages of Semikaro, Laini, Nduru, and Shirikisho villages, killing 3 Pokomos and destroying several homes and other structures.
- **13 September 2012** - The Kenyan government deployed security forces deployed to the Tana Delta.
- **17 September 2012** - Unknown attackers burned down 67 homes in Ozi.
- **21 December 2012** - Pokomos attacked the Orma village of Kipao, killing 31 Kipao residents including women, children, and unarmed men. The attackers - 8 of whom were killed during the attack - are suspected to have come primarily from the neighbouring village of Ngao.
- **9 January 2012** - Pokomos attacked the Orma village of Nduru, killing 6 Ormas while 5 of the attackers were also killed.
- **10 January 2013** - Ormas attacked the Pokomo village of Kibusu, killing 11 people including women, children, and unarmed men.

PROJECT TIMELINE (2013-2015)

Project Milestones and Relevant Incidents

- **28 January - 20 February, 2014** - First Una Hakika field visit; baseline survey conducted in twelve (12) Tana Delta villages
- **23 May, 2014** - Second Una Hakika field visit initiated
- **6 July 2014** - Gamba police station attacked by alleged al-Shabaab militia; several inmates and police officers killed in gun battle or executed after capture
- **28 July 2014** - Conflict erupts in Hurara between pastoralists and farmers; tensions arose after a member of the pastoralist community was charged in relation to the competition over resources and other pastoralists grazed their cattle on farmland in protest; several injured.
- **7 September 2014** - Delta Youth for Change group fled the Orma village of Kipao ahead of a performance out of fear for their safety; the group included members of the Pokomo community and this resulted in resistance by residents of Kipao.
- **31 October 2014** - Outbreak of violence in Boramoyo village among pastoralists of Somali origin and farmers; one (1) dead and five (5) injured
- **16 November 2014** - Third Tana Delta field visit initiated
- **10-13 December 2014** - Peace Training in partnership with Hekima Institute of Peace
- **8 March 2015** - Attack on an Orma herder when he grazed his cattle on a Pokomo farm; herder suffered machete cuts to the head; heightened tensions in the area
- **16 March, 2015** - Fourth Tana Delta field visit initiated
- **19 March 2015** - First Una Hakika community ambassador forum in Garsen
- **14 April 2015** - Una Hakika stakeholders forum in Nairobi
- **13 May 2015** - Una Hakika stakeholders forum in Garsen
- **16 May 2015** - Second Una Hakika community ambassador forum in Garsen
- **12 June 2015** - One (1) person from Shauri Moyo missing and is alleged to have been taken by Al shabab militia
- **2 July 2015** - Outbreak of violence between farmers and pastoralists in Miticharaka, Katsangani, and Kurawa sublocation; one (1) farmer injured
- **30 July 2015** - A Pokomo fisherman disappeared in the Orma village of Mwanja village at approximately 8.00pm. He was later found dead with signs of a violent death.
- **3 August 2015** - Escalation in conflict in Katsangani between farmers and herders; several injured and dead
- **5 August 2015** - Several houses and shops belonging to the Giriama community of Katsangani set on fire.
- **11 August 2015** - Six (6) bodies found in the bush believed to be connected to the earlier conflict between farmers and pastoralists in Miticharaka.
- **31 August 2015** - Fifth Tana Delta field visit; final survey conducted in twelve (12) Tana Delta villages

BREAKDOWN OF REPORTS AND SIGHTINGS BY SUBJECT

Report Subject	Percentage of Total Reports	Percentage of Total Sightings
Armed Groups (e.g. al-Shabaab, MRC)	27.5%	25.7%
Inter-communal Conflict	22.5%	20.2%
Government / Security	13.0%	13.3%
Land Disputes	12.8%	19.9%
Miscellaneous Crime	9.4%	8.3%
Unspecified Attacks	3.9%	2.6%
Weapons	3.3%	2.9%
Religious Incidents	2.2%	1.2%
All other reports	2.1%	4.3%
Unspecified Suspicions	1.9%	0.9%
Una Hakika / Sentinel Project	1.4%	0.7%