



Evaluation of the Hunger Safety Net Programme Phase 2

Assessment of the National Safety Net Programme Harmonised Targeting Methodology Pilot in Turkana



Oxford Policy Management

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Executive summary

INTRODUCTION

The Government of Kenya's (GoK's) National Safety Net Programme (NSNP) brings together under one umbrella all social protection programmes in Kenya, including the Cash Transfer for Orphans and Vulnerable Children Programme (CT-OVC); the Older Person Cash Transfer Programme (OP-CT); the Cash Transfer Programme for People with Severe Disability (CT-PWSD); and the Hunger Safety Net Programme (HSNP). (A new programme covering all Kenyans of 70 years and older is now also being introduced).

Previously, although the four NSNP cash transfer programmes all adopted a targeting approach that included a community-based targeting (CBT) element and a proxy means testing (PMT) element, they each used differing definitions of the CBT and PMT elements (with the exception of OP-CT and CT-PSWD, which used the same targeting approach to target different categories of beneficiaries). In an effort to unify the definition of poverty applied by each programme, in 2015 a new harmonised targeting methodology (HTM) was developed for the NSNP.

A pilot of the HTM was implemented between May 2016 and January 2017 in Turkana. The present study assesses the effectiveness of the HTM pilot in reaching the poorest households. As the study was carried out as part of Oxford Policy Management's evaluation of the HSNP 2, it also assesses the effect of using the HTM on the targeting effectiveness of the HSNP specifically. The analysis additionally attempts to assess the HTM's performance in relation to other dimensions of vulnerability, captured via the notion of multidimensional poverty.

The results of this assessment will be of use in upcoming reviews of the NSNP harmonisation agenda, to improve the targeting performance and cost-effectiveness of the NSNP programmes.

FINDINGS REGARDING THE HTM'S TARGETING OF DIFFERENT INDICATORS OF POVERTY

Monetary poverty

The results of our analysis suggest that the NSNP's HTM, as applied in the pilot in Turkana, targets poor and non-poor individuals in roughly equal proportions: the proportion of poor individuals is similar among NSNP beneficiaries and non-beneficiaries. However, the NSNP is more likely to select food-poor individuals (those falling below the national food poverty line) and individuals in the bottom 29.9% of the distribution. These results are framed by our hypothetical worst-case scenario of purely random targeting, which presents highly similar poverty rates ratios to the actual targeting performance of the NSNP along different poverty lines (for example, 1.024 for random targeting vs. 1.072 for actual targeting for the bottom 58.7% of the distribution). Such a finding raises important questions as to the cost-effectiveness of the NSNP targeting mechanism.

Similar results are observed for the HSNP: the proportion of poor individuals is similar among HSNP beneficiaries and non-beneficiaries, and the HSNP is more likely to select food-poor individuals and individuals in the bottom 29.9% of the distribution, while being effectively neutral in selecting individuals in the bottom 58.7% of the distribution. Again, the actual targeting for the HSNP at most poverty lines appears to perform similarly to purely random targeting.

Multidimensional poverty

Nutrition

Regarding the HTM's targeting performance in relation to relevant nutritional outcome indicators, the proportion of individuals with low dietary diversity is significantly higher among NSNP beneficiaries than non-beneficiaries. However, for other self-reported indicators of food security (reduction in number of meals, meal size, frequency, etc.), the NSNP targeting appears to be effectively neutral in detecting food insecure individuals. These results point to a targeting

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performance in terms of nutritional indicators that seems to be similar to the performance in terms of poverty targeting, but that remains relatively weak and statistically indistinguishable from neutral targeting for most indicators.

Health

Regarding the HTM's targeting performance in relation to health indicators, of the various health indicators selected for our analysis, only doctor consultation appears to be totally invariant in terms of the NSNP and HSNP targeting mechanisms. When looking at child immunisation and walking distance to health facility, we find that both NSNP and HSNP beneficiaries tend to have worse well-being outcomes than non-beneficiaries. This is particularly acute in the case of walking distance to health facility, where the ratio of percentage of households for whom walking distance is greater than four hours is almost 1.7 between NSNP beneficiaries and non-beneficiaries.

Education

Regarding the HTM's targeting performance in relation to education indicators, except for adults who have not completed primary school, the NSNP targeting is able to identify households with education deprivation: NSNP beneficiary households are more likely to have non-literate adults (a ratio of 1.082), children of school age not attending school (1.412), and children who have never attended school (1.806).

Housing

Regarding the HTM's targeting performance in relation to housing indicators, almost all housing indicators are positively associated with beneficiary selection into the NSNP programme. Indeed, all housing indicators except for sanitation have a ratio of beneficiary/non-beneficiary deprivation rates that is superior to one. This value is particularly high for the case of inadequate walls (1.462) and inadequate access to water (1.334). In the case of the HSNP, only the latter ratios appear to be statistically significant.

Child protection

Regarding the HTM's targeting performance in relation to child protection indicators, namely child labour (children aged 5–17 who are working) and children lacking a birth certificate, working children tend to be considerably over-represented among NSNP beneficiaries as compared to non-beneficiaries. Such a situation does not seem to occur when focusing only on the HSNP targeting mechanism.

MPI

Regarding the HTM's ability to target households that are multidimensionally poor, as expressed by the multidimensional poverty index (MPI), which combines the foregoing dimensions (nutrition, health, education, housing, child protection), the targeting analysis shows that NSNP beneficiaries tend to have, on average, slightly more forms of deprivation than non-beneficiaries. Importantly, the progressiveness of the programme appears to improve for more vulnerable individuals, at least up to a point: the ratio increases from 1.162 for individuals with deprivation in two or more dimensions to 1.604 for individuals with deprivation in three or more dimensions. However, the HTM does not seem to be able to identify those individuals with deprivation in four or more dimensions.

HSNP beneficiaries are also slightly worse off than non-beneficiaries in terms of number of areas of deprivation. Moreover, HSNP targeting seems to only be able to identify those individuals with deprivation in three or more dimensions.

Regarding exclusion and inclusion errors in relation to the MPI, these are of similar magnitudes to those achieved for monetary poverty: the targeting in relation to the MPI is almost indistinguishable from a random targeting mechanism, in which no eligibility criteria are applied at all – the current HTM misses 36% of the most deprived individuals (exclusion error), whereas 44% of those included are not among the most deprived (inclusion error). By comparison, a random targeting would have generated exclusion and inclusion errors of 42%. This is similar to the HTM's performance in terms of including and excluding the monetary poor, and again raises serious questions about the value of the applied targeting protocol and criteria.

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Overall findings

The assessment of the HTM pilot finds that:

- the targeting performance of both the NSNP as a whole and the HSNP specifically, using the HTM, is better than random, but not by much;
- there are still significant inclusion and exclusion errors;
- despite efforts to improve implementation there are still issues with the quality of some of the registration data collected; and
- there are issues with the choice of methodology and the design of the specific tool used to identify the poor.

CONCLUSIONS

Assessment of the HTM's performance in other contexts is required

Turkana, where the HTM was piloted, is only one particular context; it remains to be seen how the HTM performs in other contexts. The HTM is now being piloted in two other sites, Nairobi and Kilifi, and it will be important to identify how well it performs in these contexts, where the welfare distribution and poverty profile are markedly different.

Use could be made of a national social registry to increase the effectiveness of social protection programmes

A national social registry could potentially be used to coordinate the delivery of social protection and other programmes, and thereby increase the efficiency and effectiveness of those programmes. The HSNP has built a social registry of (nominally) the whole population of the HSNP counties in order to be able to implement its scaleable component in response to drought. It is important to understand the feasibility of successfully implementing such a social registry nationally, and of using it to identify the poor and vulnerable in different contexts throughout the country.

Strategic questions should be asked about matching targeting methods with programme and policy objectives

At the strategic level, the challenges associated with poverty targeting, as identified in this report, highlight the need to match targeting methods with programme and policy objectives. If the NSNP is not supporting poor or 'vulnerable' households, what is it doing? If vulnerability is not defined in terms of monetary poverty, how is it defined – and why is cash the best form of support for such non-monetary vulnerability?

Quotas contradict the social protection policy objective of equal treatment for all Kenyans

The use and setting of quotas for the allocation of the NSNP social assistance programmes fundamentally contradicts the overarching objective of the sector, which is to ensure that all Kenyans have the same rights in relation to social protection services. A more consistent approach would require setting eligibility based on a globally-defined welfare score, resulting in an eligibility threshold for all households irrespective of where they live. A PMT based on a regression technique might be more appropriate in this regard than the current method based on principle component analysis (PCA). If quotas are to be imposed, it would be more sensible to devise regional PMT models.

Eligibility criteria for CT-OVC and CT-PWSD are not clearly specified

The findings from this study also raise the need to better specify the eligibility criteria for both the CT-OVC and CT-PWSD.

Multiple categorical eligibility may not be the most relevant characteristic

Finally, the results of this study suggest there is a need to revisit the assumption that multiple categorical eligibility characteristics correlate with poverty or 'vulnerability', as defined by the MPI. In the pilot area, the reverse appears to be the case, with households presenting multiple categorical eligibility criteria shown to be less poor and vulnerable than households with single or no categorical eligibility. Thus, if the aim is to target the poor and vulnerable, multiple categorical eligibility is not the most relevant characteristic.

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Implications for policy:

- There is a need to discuss and agree the long-term future of the poverty targeting of the NSNP, based on robust evidence of what works where and what factors influence the programme's ability to implement such targeting.
- There is a need to clearly articulate the aims and objectives of the various programmes within the NSNP, to define appropriate targeting criteria aligned to those aims, and to update the relevant policies accordingly.
- There is a need to discuss and refine the use and setting of quotas for NSNP programmes, and, if necessary, the most appropriate tool for identifying the poor.
- There is a need to precisely specify the eligibility criteria for each programme.

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List of abbreviations

CBS	Community-based screening
CBT	Community-based targeting
CBV	Community-based verification
CPI	Consumer Price Index
CRA	County Resource Allocation
CT-OVC	Cash Transfer for Orphans and Vulnerable Children Programme
CT-PWSD	Cash Transfer Programme for People with Severe Disability
DFID	UK Department for International Development
GoK	Government of Kenya
HLCS	Household Living Conditions Survey
HTM	Harmonised targeting method
KES	Kenyan Shillings
KIHBS	Kenya Integrated Budget Household Survey
LCS	Living Conditions Score
MDP	Ministry of Devolution and Planning
MEACL&SP	Ministry of East African Community, Labour and Social Protection
MISs	Monitoring information systems
MLSSS	Ministry of Labour, Social Security and Services
MPI	Multidimensional poverty index
NDMA	National Drought Management Authority
NGO	Non-governmental organisation
NSNP	National Safety Net Programme
OP-CT	Older Person Cash Transfer Programme
OPM	Oxford Policy Management
PAE	Per Adult Equivalent
PILU	Programme Implementation and Learning Unit
PMT	Proxy means testing
RF1	Registration form 1
RF2	Registration form 2
SAU	Social Assistance Unit

1 Introduction

1.1 THE HSNP

The HSNP is an unconditional cash transfer programme that targets people living in extreme poverty in the four northernmost counties of Kenya: Marsabit, Mandera, Turkana, and Wajir. These are part of a region of the country known as the arid and semi-arid lands, which have experienced severe or extreme droughts over many years. As a result of these droughts, the level of food insecurity is high and the principal livelihood activity, livestock production, has been negatively affected. Local prices are also volatile, which can exacerbate the problems faced by households. When rains do come, floods can damage infrastructure and temporarily cut off areas. Furthermore, lack of adequate rangelands for livestock grazing can also trigger conflict between communities. The HSNP provides households with regular cash transfers in the expectation that they will reduce their levels of extreme hunger and vulnerability by smoothing their consumption and avoiding negative coping strategies, such as the sale of productive assets.

The first phase of the HSNP ran from 2009 to 2013. The HSNP is now in its second phase, which runs from July 2013 to March 2018. HSNP 2 aims to provide the poorest 100,000 households ('routine' beneficiaries) with regular cash payments, and to reach up to an additional 180,000 households ('emergency' beneficiaries) with periodic emergency payments to help mitigate the effects of shocks (383,235 households have been registered so far).

The regular transfer is currently worth 2,700 Kenya shillings (KES) per month (approximately £22/\$27) and is made directly into the routine beneficiaries' bank accounts every two months. Emergency beneficiaries receive a single month's transfer (i.e. KES 2,700) if their area is deemed to be in severe or extreme drought in any given month. To date, some of the nominal emergency beneficiaries have received one or more emergency payments, while others have received no payments.

The programme is targeted to households using a combination of a proxy means test (PMT)¹ and community-based wealth ranking². A modified version of the County Resource Allocation (CRA) formula³ was used to allocate routine beneficiary county quotas. Of the 100,000 quota of routine beneficiary households, Turkana was allocated 39.9%, Mandera 22.2%, Wajir 19.2%, and Marsabit 18.7%.

Within the Government of Kenya (GoK), the NDMA is responsible for leading the HSNP 2. A Programme Implementation and Learning Unit (PILU) has been created to manage and monitor HSNP 2, to provide oversight of a rights and grievances mechanism for the programme, and also to oversee the independent evaluation of the programme. The PILU reports to the NDMA and comprises a mixture of NDMA civil servants and external counterparts with technical expertise that is hoped will be imparted to the NDMA over the lifetime of the PILU. The HSNP 2 is delivered in partnership with implementing partners: HelpAge International manages the programme rights component, and Equity Bank (managed by Financial Sector Deepening Trust) manages the payments component.

¹ A PMT is a statistical method by which household consumption is estimated in terms of known predictors of wealth and poverty, such as ownership of assets, demographic characteristics, and location of residence.

² The community-based wealth ranking is comprised of four wealth groups, 1 being the poorest and 4 being the wealthiest. These wealth groups are not split evenly within each sub-location, but may be distributed so that, for example, 40% of households are in wealth Group 1 (very poor), 34% in wealth Group 2 (poor), 18% in wealth Group 3 (middle), and 8% in wealth Group 4 (better off).

³ The CRA formula is a parliamentary-approved formula for allocating funds from central government to the counties on the following bases: 45% population, 25% equal share, 20% poverty, 8% land area, and 2% fiscal responsibility. The CRA formula was modified for the purposes of allocating the HSNP by removing land area and fiscal responsibility and increasing the weight of the poverty count to 30%, resulting in the following weighting: 25% equal share, 30% poverty, and 45% population.

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1.2 THE NATIONAL SAFETY NET PROGRAMME

The HSNP 2 is part of the GoK's National Safety Net Programme (NSNP), which brings together all the social protection programmes in Kenya under one umbrella. At the time of this study, there were four main cash transfer programmes in Kenya (now there are five), which are implemented by two ministries: the Ministry of East African Community, Labour and Social Protection (MEACL&SP), and the Ministry of Devolution and Planning (MDP). The programmes housed in the MEACL&SP are: the Cash Transfer for Orphans and Vulnerable Children Programme (CT-OVC); the Older Person Cash Transfer Programme (OP-CT); and the Cash Transfer Programme for People with Severe Disability (CT-PWSD). A fourth programme covering all Kenyans of or over the age of 70 years recently began. These programmes are all managed by the Social Assistance Unit (SAU). The HSNP sits in the NDMA within the MDP.

The four cash transfer programmes under the MEACL&SP currently operate in 47 counties across Kenya, including the four HSNP counties. Within these four counties, prior to 2015 there was not much overlap between the HSNP and the other programmes, but since the expansion plans of the latter began to be implemented in 2015/16 to 2017/18 that situation has changed.

Following the Kenya National Social Protection Strategy (2011), the GoK established the NSNP. The aim is to create a framework around which the four main cash transfer programmes (CT-OVC, OP-CT, CT-PWSD, and HSNP) will be increasingly coordinated and harmonised. The NSNP has three objectives that aim to improve the efficiency and effectiveness of safety net support to poor and vulnerable populations in Kenya:

- 1) create robust and transparent systems for targeting, registration, payments, case management and monitoring, and strengthen the overall governance of the programmes;
- 2) harmonise the cash transfer programmes to improve the coherence of the sector; and
- 3) expand the coverage of the programmes in a coordinated manner to progressively realise the right to safety net support.

The NSNP is thus the first step in a long-term reform agenda that aims to establish a national safety net system as part of an integrated approach to delivering social protection services nationally. The Social Protection Secretariat, a body created by the National Social Protection Policy, provides sector-wide oversight and coordination. The NSNP is supported by the World Bank's Programme for Results.

1.2.1 The new targeting methodology

Prior to consolidation under the newly created SAU in 2015, each of the four NSNP cash transfer programmes then extant had adopted a targeting approach that included a community-based targeting (CBT) element and a PMT element. However, the definitions of the PMT and of the CBT elements were different for each programme, with the exception of OP-CT and CT-PSWD, which used the same targeting approach to target different categories of beneficiaries (see Table 1).

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TABLE 1: TARGETING CRITERIA BY NSNP CASH TRANSFER PROGRAMMES

PROGRAMME	PROGRAMME OBJECTIVE	TARGETING
CT-OVC	To provide regular cash transfers to families living with OVC to encourage fostering and retention of children and to promote their human capital development.	The identification of priority locations is followed by a two-stage survey to identify beneficiaries. During the first survey local community members identify poor households with OVC. The second survey is used to gain information from households so that potential beneficiaries can be subjected to a PMT.
OP-CT	To strengthen the capacities of older people and improve their livelihood while alleviating integrated poverty through sustainable social protection mechanisms.	Extremely poor households with a member 65 years of age and above, who is not enrolled in another cash transfer programme, not a recipient of a pension, has resided in a particular location for more than a year, and must be Kenyan citizen. Similar to the CT-OVC, the OP-CT combines community selection with PMT.
CT-PSWD	To support persons with severe disability who require permanent care and are otherwise dependent on parents, care givers and well-wishers.	Categorical targeting based on the definition of a person with severe disability (requiring 24-hour care) in every constituency. Community targeting is used at household level. The community prepares a list of potential beneficiaries that can apply for the programme. Public drives inform potential beneficiaries to register. The programme uses a Poverty Score Card based on a PMT model, to determine which of the registered households best fit the programme definition of 'extremely poor and vulnerable'. Only those households with a score that puts them in the extremely poor category are eligible for the programme.
HSNP 2	To deliver unconditional cash transfers aimed at reducing poverty, food insecurity, and malnutrition, and to promote asset retention and accumulation.	County quotas allocation is determined by a modified version of the CRA formula. The initial registration requires all households to take part in a wealth ranking exercise (CBT). Beneficiary selection is carried out using the information collected during registration analysed using a hybrid PMT/CBT model.

Source: Ministry of Labour, Social Security and Services (MLSS) (2015) 'Draft Harmonised Targeting Methodology for the NSNP', December 2015.

In an effort to unify the definition of poverty applied by each programme from the CBT to the PMT, a new harmonised targeting methodology (HMT) was developed. The main objective of the proposed targeting integration of the four cash transfer programmes is the generation of synergies that will make the NSNP more efficient and effective at combating poverty using the same criterion for all beneficiary households.

The new harmonisation strategy aims to address each stage of the targeting process, building on five main activities:

- 1) harmonised community awareness and sensitisation;
- 2) joint registration of households;
- 3) identification of poor households through community-based screening (CBS) using a common set of characteristics of household poverty⁴;

⁴ The Draft Harmonised Targeting Methodology for the NSNP (December 2015) envisages that local committees should at least consider the following characteristics of household poverty in identifying the poor among them: i. struggles to survive; ii. adopts negative coping mechanisms (such as eating wild foods, begging for food from neighbours, neglecting own fields in favour of piecework, neglecting children, etc.); iii. has less than two meals a day; iv. has no house or lives in indecent shelter; v. has poor sanitary conditions; vi. wears tattered clothing; vii. limited access to education and health; viii. has no livestock (or has lost livestock due to disease, drought or floods); ix. has many older people and children; and x. has only irregular and insufficient support.

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- 4) creation of a new PMT not based on the direct prediction of household consumption, but on the generation of a selection score, the Living Conditions Score (LCS), which denotes the living conditions of all households consistent with the CBS stage of the targeting process. To generate a new PMT for the NSNP, a new PMT questionnaire has been defined (the Household Living Conditions Survey (HLCS)) and a new PMT formula developed (based on the information captured by the HLCS); and
- 5) community validation and appeals relying on common guidelines.

Due to the different requirements of the NSNP in HSNP areas, where the HSNP is designed to scale up in response to droughts to provide transfers to other members of the population beyond those covered by the routine transfers, there is a difference in the harmonised NSNP targeting protocol to be administered in HSNP and non-HSNP areas.

In non-HSNP areas, the NSNP proposes to develop common communication and sensitisation strategies. Following awareness creation and sensitisation, the programme teams are to facilitate a community meeting to generate lists of people considered poor and vulnerable. The list should then be disseminated and validated multiple times before going through formal CBS. As a next step, CBS should take place through local committees based on a list of well-defined poverty criteria. Following the CBS, a new common questionnaire – the HLCS – is to be administered. The information collected is intended allow the calculation of a PMT score based on a newly estimated PMT model that will lead to the identification of proposed beneficiaries according to both categorical and poverty eligibility criteria. As a final step in the targeting process the lists of potential beneficiaries for the various programmes should be made available to community members for at least two weeks to provide an opportunity for validation and modifications’ suggestions. This part of the process is known as community-based verification (CBV).

In HSNP areas, the CBS process is skipped, and instead the entire population is registered. The HLCS is administered to all households in a door-to-door census operation and beneficiaries are then assigned to the four programmes in the same way as in non-HSNP areas, according to both categorical and poverty eligibility criteria.

1.2.2 The harmonised NSNP registration pilot in Turkana

The HTM was first piloted between May 2016 and January 2017 in three locations in Turkana: Lodwar, Lomeyan, and Kataboi.

As indicated above, the presence of the HSNP in Turkana meant that the pilot activity there operated according to a slightly different protocol than envisaged for the HTM outside HSNP counties. The HSNP only operates in four counties, whereas the other three NSNP programmes operate nationwide. The HSNP also incorporates an emergency-response scale-up facility, implementation of which requires registration of the entire population. The HSNP also has considerably higher levels of donor funding resourcing its implementation. For these reasons CBS was not implemented in the Turkana pilot, but instead a census data collection activity took place. The purpose was to provide sufficient data for the whole population such that they could be targeted for all four programmes, including the emergency drought scalable component of the HSNP (which targets up to 75% of the population in severe or extreme drought-affected areas that are not covered by the routine transfers).

After the population data were collected, lists of potential beneficiaries for all four programmes were produced according to the given targeting protocol, including potential recipients of the HSNP emergency drought scale-up payments, and submitted to the community for verification (CBV). A more detailed description of the Turkana harmonised registration pilot can be found in 0.

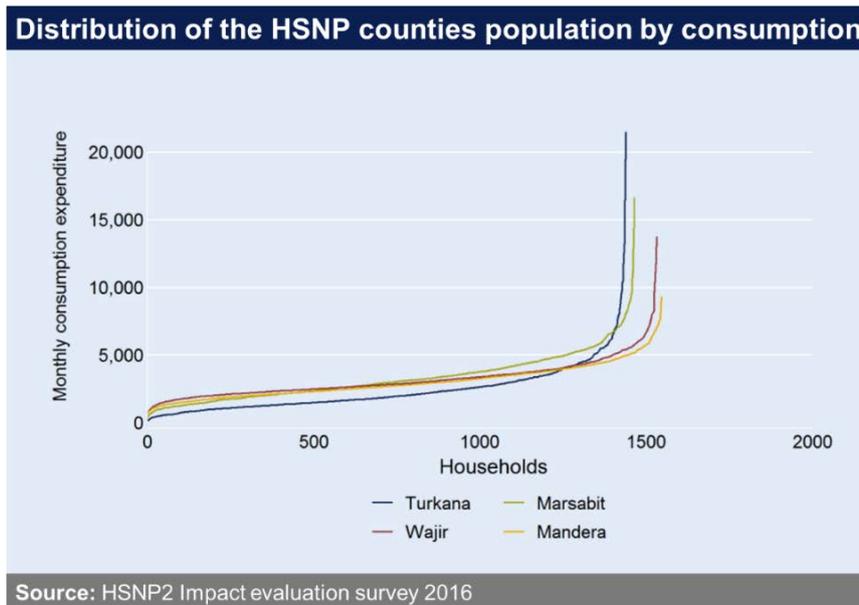
1.3 RATIONALE FOR THE ASSESSMENT OF THE HARMONISED NSNP REGISTRATION PILOT

In 2016, as part of the independent evaluation of the HSNP 2, OPM undertook an assessment of the HSNP 2 programme targeting of beneficiary households. We found that a number of factors influenced the performance of the programme

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targeting in terms of reaching the poorest using a combination of PMT and CBT mechanisms. Crucially, amongst these was the need to reallocate beneficiary quotas between the four HSNP counties in a politically acceptable manner, which meant that Turkana, the poorest of the four counties, received a significantly reduced allocation. Another important factor was the extent and uniformity of poverty in areas targeted by the HSNP 2 (see Figure 1). This context made it very difficult for the programme to accurately identify the poorest households. Exclusion and inclusion errors in the HSNP 2 were found to be very high – roughly similar to what would have been achieved if a random targeting rule were used – and targeted beneficiaries were not considerably worse off than non-beneficiaries in terms of monetary poverty (Silva-Leander and Merttens, 2016)⁵.

Figure 1: Distribution of the population in HSNP counties by per adult equivalent consumption expenditure



The performance of HSNP Phase 2 targeting was the result of a combination of both design errors (pertaining to the ability of the tools and targeting methods to accurately identify poor households) and implementation errors (pertaining to the way in which the targeting protocol was administered), with a process review of the Phase 2 targeting finding that the implementation suffered from a variety of problems and challenges, including lack of understanding of the protocol and tools to be administered by both implementing agents and the population being registered; lack of consistency in the implementation of the tools and protocols; technical problems with the registration equipment; no quality assurance; and a lack of attention to political implications till late in the process (Fitzgibbon, 2014).

Lessons from these studies informed the development of the HTM used by the NSNP, and, more specifically, the protocol that was deployed for the Turkana pilot of the NSNP HTM.

⁵ An assessment of HSNP targeting was also conducted as part of the Phase 1 evaluation. The HSNP Phase 1 had a significantly different design to Phase 2 because it was piloting three separate targeting mechanisms. These were: social pension; dependency ratio; and CBT. For this reason we do not include a detailed discussion of this study in this report. However, the summary findings were that HSNP Phase 1 targeting was mildly pro-poor on aggregate, with HSNP beneficiaries 13 percentage points more likely to fall into the bottom 51% of the consumption distribution (the programme coverage rate in evaluation areas). Of the three targeting mechanisms being piloted, CBT was the most pro-poor (with beneficiaries 17 percentage points more likely to fall into the bottom 51%) but the performance of CBT was dependent on context; in some places CBT was regressive. Given these and the other findings of the study we recommended that in future phases the HSNP should: devise a system of sub-location quotas to ensure variations in poverty were reflected in beneficiary quotas; deliver better communications around and about the registration and targeting process to ensure better understanding and participation by the population (more advance warning; better grievance procedures etc.); and either: (a) monitor CBT implementation to ensure consistency and prevent capture by local elites; or (b) complement CBT with a simple PMT-type mechanism to screen out relatively better-off households and thereby reduce inclusion errors. See OPM and IDS (2011) 'Kenya Hunger Safety Net Programme Monitoring and Evaluation Component HSNP Targeting Effectiveness Evaluation Report', December 2011.

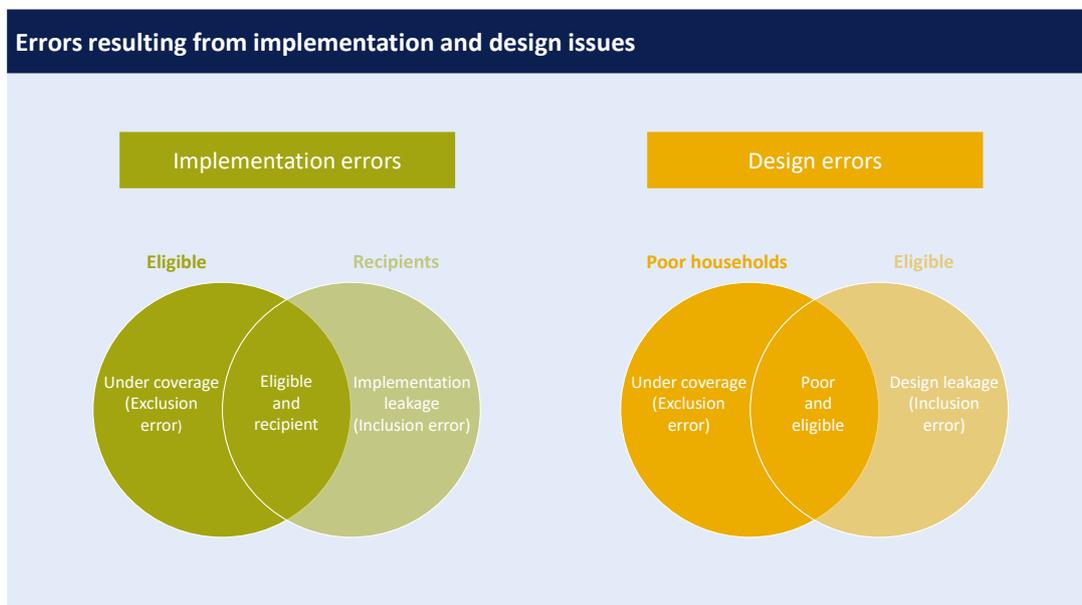
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This study thus aims to provide evidence on the effectiveness of the NSNP’s new HTM in reaching the poorest households. It will also assess the effect of using this HTM on the targeting effectiveness of the HSNP specifically. Because poverty rates are so high and uniform, the analysis also attempts to assess the performance of the new targeting methodology in relation to other dimensions of vulnerability, captured via the notion of multidimensional poverty (see Section 2.3 and Section 5).

As described in Section 1.2.1 above, the harmonised NSNP methodology uses a combination of PMT and CBV to target beneficiaries. The new PMT model⁶ consists of generating a selection score, the LCS, which denotes the living conditions of each household. As briefly alluded to above, there are two main sources of errors that can hamper the efficacy of such a PMT-based targeting scheme:

- 1) design errors resulting from a misspecification of the PMT model; and
- 2) implementation errors resulting from the way in which the PMT is applied by programme implementers to select beneficiaries.

Figure 2: Two types of targeting errors



The former may result, for instance, from the incorporation of outdated or poor-quality data within the PMT calculation. The latter may result, for instance, when beneficiaries are able to under-report their assets in order to appear poorer than they are, and thus increase the likelihood that they will be selected for the programme. Alternately, poor-quality data collected by programme implementers may misrepresent the actual characteristics of households, meaning that some of them are either wrongly included or excluded. More broadly, there are also always complications associated with collecting some types of information (definitional issues, the manner in which information must be probed, etc.), which mean PMTs are prone to be implemented with relatively higher errors.

Both types of error are likely to occur in this case, due to the fact that: i) the PMT model incorporates geographical data obtained from the 2009 census (e.g. population, birth rates, labour force, etc.), which is now eight years old; and ii) it is impossible to achieve 100% perfect implementation. Thus, despite the increased effort made to improve the implementation of the HTM for the Turkana pilot, as compared to the HSNP Phase 2 mass registration exercise, including incorporating some quality assurance mechanisms, data quality checks carried out on the Turkana pilot

⁶ It is important to note that the LCS is not calculated by regressing consumption expenditure against household characteristics, as often used in so called PMT models. Rather, the LCS is constructed using a methodology known as PCA. PCA works not by a linear regression that correlates household characteristics with household consumption, but by modelling the relation between household characteristics.

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registration data show some irregularities in terms of the quality of the data collected, pointing to possible misreporting or measurement error for some indicators (see 0).

It is important to highlight that each household's LCS was combined with information on categorical eligibility criteria⁷ (presence of orphans, elders, and/or people with severe disability within the household) in order to identify the proposed beneficiaries for each one of the programmes (a detailed description of the protocol used for the assignment of beneficiary households to the different programmes is presented in 0). Furthermore, the rules applied to undertake this assignment varied across locations and were ambiguous regarding how to proceed in certain circumstances. This makes the assignment process more likely to incur design errors.

Finally, it should also be noted that predefined quotas for numbers of beneficiaries for each programme were given in each location. These quotas have a significant impact on the targeting performance, in terms of reaching the poorest households.

The analysis undertaken below thus comprises an assessment of the performance of the HTM as it was implemented, including the effect of all these various factors that contribute to determining that performance. For this reason, we include a separate discussion of the performance of the PMT instrument itself (which produces the LCS) in its own section (Section 6).

It is hoped that the results of this analysis can be used in upcoming reviews of the NSNP harmonisation agenda to improve the targeting performance and cost-effectiveness of the HSNP and other NSNP programmes in the future.

1.4 STRUCTURE OF THE REPORT

The remainder of this report is structured as follows. Section 2 describes the methodology used to conduct the analysis. Section 3 gives a brief overview of the characteristics of the relevant populations under consideration. Section 4 presents the results of the NSNP's targeting performance in relation to reaching the poorest households based on a monetary definition of poverty. Section 5 presents the findings on programme performance in relation to targeting different dimensions of poverty, including nutrition, health, education, housing, child protection, and a composite multidimensional poverty index. Section 6 discusses and assesses the construction of the LCS. Section 7 concludes. The annexes provide supplementary technical detail.

⁷ Also referred to as 'categorical vulnerabilities' in this report.

2 Methodology

2.1 SAMPLING AND DATA COLLECTION

The registration data of the NSNP pilot in Turkana do not contain consumption expenditure data, which are the data by which poverty status is measured. Such data are required for a targeting analysis that assesses the average pre-intervention consumption expenditure and poverty status among those selected to be programme beneficiaries, compared to those not selected (non-beneficiaries).

To overcome this issue, OPM undertook its own data collection exercise (including of consumption data) between June and August of 2017 for a random sample of the households in the registration pilot in Turkana. The sampling design for this household survey entailed a single-stage stratified systematic random selection of the households registered for the pilot. The design used explicit stratification across the three groups of respondents: (i) households proposed as potential HSNP beneficiaries, (ii) potential beneficiaries of other NSNP programmes, and (iii) potential non-beneficiaries. Geographical identifiers were used as implicit strata, with households sorted within sub-locations and locations.

Even though the sample design did not include multi-stage sampling, sample size calculations did assume some degree of clustering effects due to naturally clustered target population. The expected clustering effects were assumed to be at 5% of intra-cluster correlation. Sample size calculations yielded an intended sample size for each explicit stratum of 500 households. Table 2 below summarises the intended and achieved sample sizes for this independent data collection exercise.

TABLE 2: INTENDED AND ACHIEVED SAMPLE SIZES FOR THE QUANTITATIVE HOUSEHOLD SURVEY

SAMPLE GROUP	INTENDED SAMPLE SIZE	ACHIEVED SAMPLE SIZE	ATTRITION RATE
HSNP beneficiary households	500	469	6%
Other NSNP cash transfer beneficiaries	500	458	8%
Non-beneficiary households	500	454	9%
Total	1,500	1,381	8%

The achieved sample was within the bounds of acceptable levels of attrition. In particular, a calculation based on the precision of a two-group comparison (500 vs 500; pair-wise comparisons represent the smallest possible analytical samples) shows that to detect an acceptably low 0.18 standardised effect size, a loss of up to 10% of the original sample is tolerable. Hence, the final loss of 8% of the sample still provides sufficient precision on the basis of the confidence intervals of our point estimates.

During the design phase for the survey a number of issues were identified with the HTM registration instrument that were liable to produce data quality problems. These included variable definitions, the structure and flow of the instrument, and in-built data checks. A list of proposed changes were shared and discussed with the programme, during which the broader issue of eligibility criteria definition was raised.

2.2 MEASURING MONETARY POVERTY

In order to measure targeting performance in terms of how well the NSNP HTM targets the monetary poor we need a measure of monetary poverty. For this study, monetary poverty was estimated in the conventional manner, building on the measurement of standardised consumption aggregates, taking into account food and non-food consumption, self-production, and durable goods. It should be noted that, for consistency purposes, the consumption module used for this

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study is the same one as was used for the evaluation of the HSNP 2. It is also key to highlight that the sampling strategy followed for this study was not designed to be statistically representative of the geographic areas in which it was carried out. Consequently, the poverty estimates presented here should not be taken as representing official poverty rates for the areas covered by this data collection exercise.

Two poverty rates were calculated for this study:

- 1) a poverty rate for the three pilot locations, which updates the HSNP 2 poverty line using an ‘inter-survey’ inflation rate computed between previous HSNP 2 surveys and the survey undertaken by OPM for this study (KES 3,478.3); and
- 2) a food poverty rate for the Turkana pilot locations, using the lower poverty rate representing the minimum consumption basket to cover basic food needs (KES 2,905.7). This poverty line was also adjusted using the same ‘inter-survey’ inflation rate mentioned above.

A detailed explanation of how these poverty lines were adjusted for inflation can be found in 0. Again, they are approximations and should not be considered official poverty lines for the Turkana locations, since they do not take into account the particular consumption patterns of poor households in the areas surveyed.

2.3 MULTIDIMENSIONAL POVERTY

Monetary poverty is not the only possible form of poverty that households may be subject to. In line with the targeting assessment of the HSNP 2 conducted by Silva-Leander and Merttens (2016), we therefore also construct a multidimensional poverty index (MPI) that takes into account non-monetary aspects of well-being. One advantage of assessing targeting accuracy in terms of multidimensional poverty in addition to monetary poverty (beyond providing an insight into other dimensions of well-being) is that it provides an additional angle of analysis and thus a way to confirm or challenge the results obtained using monetary poverty.

When assessing targeting performance in terms of monetary poverty we usually find that PMTs perform better than other targeting mechanisms (even if not remarkably well themselves). This is a property of the way that PMTs are normally constructed to mimic monetary consumption. Yet monetary poverty is only one indicator of vulnerability, and may in some cases be less salient than other dimensions, such as nutritional or health outcomes, depending on the specific objectives of the programme and the nature of the challenges faced by beneficiaries.

We therefore look at a number of dimensions of vulnerability separately, such as food security, health, education, and housing, as well as at the overlap of these deprivations among potential NSNP beneficiaries to identify individuals that suffer from multiple deprivations simultaneously. The rationale for this is that an individual suffering from multiple deprivations will be more vulnerable to shocks and less able to respond than one suffering only from one deprivation.

The MPI used here applies the Alkire-Foster method for counting indices (Alkire and Foster, 2011). The index comprises the following dimensions and indicators:

1. **Nutrition:** an individual is considered to be nutritionally deprived if s/he lives in a household that has a Dietary Diversity Score (DDS) of four or less.
2. **Education:**
 - a) A child aged 6–17 years is considered to be educationally deprived if s/he has never been enrolled in school.
 - b) An adult is considered to be educationally deprived if s/he has not completed primary school.
3. **Health:**
 - a) An individual who is chronically ill.
 - b) An individual who has been sick in the past two weeks but has not visited a doctor.
4. **Housing:**
 - a) Inadequate walls: walls not made of stone/brick/block/cement/mud/dung.

- b) Inadequate floors: floor not made of cement.
- c) Inadequate sanitation: toilet is an uncovered pit latrine, bucket or pan, or in the bush.
- d) Inadequate water: water source is dam/pan/river/lake/rainwater catch.
- e) No electricity: those households where electricity is not stated as being the cooking or lighting fuel.

5. Child protection:

- a) Child labour: child aged 5–17 who is currently working.
- b) Birth certificate: child aged 0–18 who does not have a birth certificate.

All deprivations are defined at the household level, so that a household is considered deprived if at least one household member presents the stated deprivation.

We use a nested weighting system, whereby each of the five dimensions receives equal weight (1/5), as does each of the indicators within the dimensions.

The Alkire-Foster class of multidimensional poverty indices have the particularity that they require the researcher to set two different sets of poverty/deprivation cut-offs. First, a threshold has to be defined in each dimension to determine who is considered deprived in each dimension, as described above. Secondly, an overall poverty cut-off has to be set for MPI, determining how many deprivations an individual must suffer in order to be considered multidimensionally poor. The MPI for individual i is then defined as:

$$MPI_i = A_i \times H_i$$

Where A_i describes the weighted number of deprivations suffered by individual i (normalised between 0 and 1, with 1 = deprived in all four dimensions, and 0 = not deprived in any dimension), and H_i is a poverty headcount indicator, taking the value 1 if the individual suffers more deprivations than the minimum required to be considered poor, and 0 otherwise. Here, we report poverty levels for various different cut-offs, including two dimensions equivalent or more, 2.5 or more, three or more. These can be a variety of deprivations in different dimensions adding up to the equivalent of two, 2.5 or three full dimensions of deprivations.

2.4 ASSESSING TARGETING PERFORMANCE

For the purposes of our analysis, we define the bottom 58.7% of the consumption distribution in the Turkana pilot as 'eligible' for any of the NSNP cash transfer programmes. This threshold is based on the potential coverage rate of all NSNP programmes in the pilot locations (see Table 15 and Table 19 for available programme quotas and total population registered, respectively), and the assumption that the NSNP programmes (particularly the HSNP) aim to target the poorest households. We thus look at how well the poorest households (according to the consumption data) have been included in or excluded from the NSNP programmes.

In the same manner, we define a stricter threshold for eligibility for the HSNP: the bottom 29.9% of the consumption distribution in Turkana. This is based on the potential coverage rate of the HSNP in the pilot locations (see Step 3 in 0), and the assumption that the HSNP aims to target the poorest of the poor. We then replicate the aforementioned analysis and check whether the poorest households (according to the consumption data) have been included in or excluded from the HSNP programmes.

The other method we use to assess targeting performance is to look at the ratio of poverty rates and other indicators of well-being between NSNP potential beneficiary households and non-beneficiaries. A ratio above one means that the poverty rate (or other welfare index) is higher among proposed beneficiaries than non-beneficiaries, thus implying that the NSNP programmes are relatively well targeted at poorer (or more vulnerable by other measures of welfare) households. A ratio of one means that the programme is effectively random in terms of targeting – it reaches the poor and non-poor with equal probability. Significance tests show whether the ratio is statistically different from one.

2.5 LIMITATIONS

The above methodology contains two main limitations. These are as follows:

- 1) It assumes that the poverty status of the households in our sample (i.e. whether they are in the bottom 58.7% or 29.9% of the distribution) has not changed in the time between registration and the independent data collection exercise conducted by OPM.
- 2) We cannot distinguish between design errors and implementation errors, which our estimates of targeting performance combine.

With regard to the first limitation, we can say that, while it is true that the poverty status for poor households tends to be relatively stable over time, and it is therefore unlikely that many of these households will have radically altered their welfare status, this is nevertheless a strong assumption, especially because our sample is likely to contain beneficiaries of any of the NSNP programmes and who are therefore in receipt of cash transfers that are likely to modify their poverty status over time.

With regard to the second limitation, we acknowledge that part of the explanation of any poor performance of the PMT instrument in identifying the poor undoubtedly comes from implementation errors. The nature of data collection and the type of data to be collected mean that implementing a PMT-style tool like the one used for the NSNP HTM pilot in Turkana is challenging and will inevitably result in some minimal degree of implementation error. Even if the implementation errors suffered by the Turkana registration pilot were categorically shown to be especially high, and though they may be significantly improved with a more robust approach to targeting implementation (fieldwork model, improved PMT tool etc.), it would never be possible to eliminate them completely.

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3 Household characteristics

3.1 CHARACTERISTICS OF NSNP BENEFICIARIES AND NON-BENEFICIARIES

Table 3 below presents some key characteristics of NSNP beneficiaries and compares them against those of non-beneficiary households. Overall, NSNP beneficiaries appear to be relatively 'worse off' compared to non-beneficiary households. They present considerably lower monthly consumption levels and, consequently, the percentage of households under the poverty and food poverty lines is significantly higher in the beneficiary groups than in non-beneficiary groups (7.6 and 9.2 percentage points higher, respectively). The same pattern is observed when exclusively comparing HSNP beneficiaries against non-beneficiaries (in this case, the percentages of households living under the poverty line and food poverty lines are 7.2 and 9.8 percentage points higher, respectively, than in the non-beneficiary group (Table 3)).

TABLE 3: DIFFERENCES IN HOUSEHOLD CHARACTERISTICS ACROSS BENEFICIARY GROUPS

INDICATOR	BENS VS. NON-BENS	HSNP VS. NON-BENS	SAU VS. NON-BENS	HSNP VS. SAU BENS
Monthly consumption expenditure (Per Adult Equivalent (PAE), adj. for regional price diff, excl. rent)	-326***	-339***	-312***	-27
Monthly food consumption expenditure (PAE, adj. for regional price diff)	-168**	-193***	-143*	-49
% households below poverty line	7.6***	7.2***	8.0***	-0.8
% households below food poverty line	9.2***	9.7***	8.7***	1.0
Multidimensional poverty index	18.7***	14.5**	23.1***	-8.5
Size of the household	0.0	0.1	-0.1	0.2
Dependency ratio	0.15**	0.2**	0.1	0.1
Proportion of children under six	-3***	-1.2	-4.8***	3.6***
Average number of working age adults	-0.1	0.0	-0.3	0.3*
Age of the household head	3.4***	1.6	5.3***	-3.6***
% households with female head	3.1	1.2	5.0	-3.8
% households with head that has attended school	-11.6***	-8.7***	-14.6***	6.0*
% households with at least one orphan under 18 years	0.3	-0.1	0.8	-0.9
% households with at least one disabled member	2.3	-0.6	5.2*	-5.8**
% households with at least one chronically ill member	0.9	0.2	1.6	-1.3
% households with at least one member above 65	6.7***	2.4	11.0***	-8.6***

Notes: * Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

HSNP beneficiary households do not statistically differ from the SAU programme beneficiary households in terms of monthly consumption or MPI. There is not a big difference between SAU and HSNP beneficiaries in terms of poverty or general demographic characteristics, beyond the categorical eligibility criteria, which is consistent with the HTM and application of the eligibility criteria determining the assignment of households to each programme. The fact that there

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are not significant differences between SAU and HSNP beneficiaries in terms of the percentage of households with at least one orphan, or chronically ill member, is very likely explained by the fact that those two characteristics are not well defined by the given eligibility criteria. None of the NSNP programmes appear to be targeting children particularly. These latter two issues are discussed further in the conclusions section.

3.2 CHARACTERISTICS OF NSNP BENEFICIARIES ACROSS 'CATEGORICAL VULNERABILITY' STATUS

The Turkana pilot HTM protocol specified that households with eligibility for multiple categories of the SAU programmes (CT-OVC, OP-CT, CT-PWSD) were to be privileged for targeting by the NSNP programmes on the assumption that such households were more likely to be poor and vulnerable. We thus analyse this assumption below.

Table 4 presents some key characteristics of NSNP beneficiaries across different categorical 'vulnerability' statuses, defined as the presence of one or more categorical eligibilities within the household. It shows that, overall, no statistically significant differences can be found in terms of monthly consumption and poverty rates between beneficiary households with single or multiple eligibilities for the three different categorical vulnerability criteria used by the SAU programmes.

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TABLE 4: DIFFERENCES ACROSS 'CATEGORICAL VULNERABILITY' STATUS WITHIN NSNP BENEFICIARY HOUSEHOLDS

INDICATOR	MULTI. VS SINGLE VULN.	MULTI. VS. NO VULN.	SINGLE VS. NO VULN.	VULN. VS. NOT VULN.
Monthly consumption expenditure (PAE, adj. for regional price diff, excl. rent)	106	157	51	92
Monthly food consumption expenditure (PAE, adj. for regional price diff)	86	122	36	69
% households below poverty line	-1.7	0.1	1.8	1.2
% households below food poverty line	-3.7	-2.6	1.1	-0.3
Multidimensional poverty index	-17.5**	-20.3***	-2.7	-9.5
Size of the household	-0.2	-0.2	0.0	-0.1
Dependency ratio	0.0	0.0	0.0	0.0
Proportion of children under six	-3.6**	-6.2***	-2.6*	-4.0***
Average number of working age adults	-0.2	-0.2	0.0	0.0
Age of the household head	3.2**	5.5***	2.3*	3.6***
% households with female head	-3.7	0.9	4.6	3.1
% households with head that has attended school	-0.3	2.4	2.7	2.6
% households with at least one orphan under 18 years	-4.1	1.7	5.7	4.2
% households with at least one disabled member	0.4	8.0**	7.6**	7.8***
% households with at least one chronically ill member	6.3*	6.2*	-0.1	2.3
% households with at least one member above 65	6.0*	11.9***	5.9**	8.2***

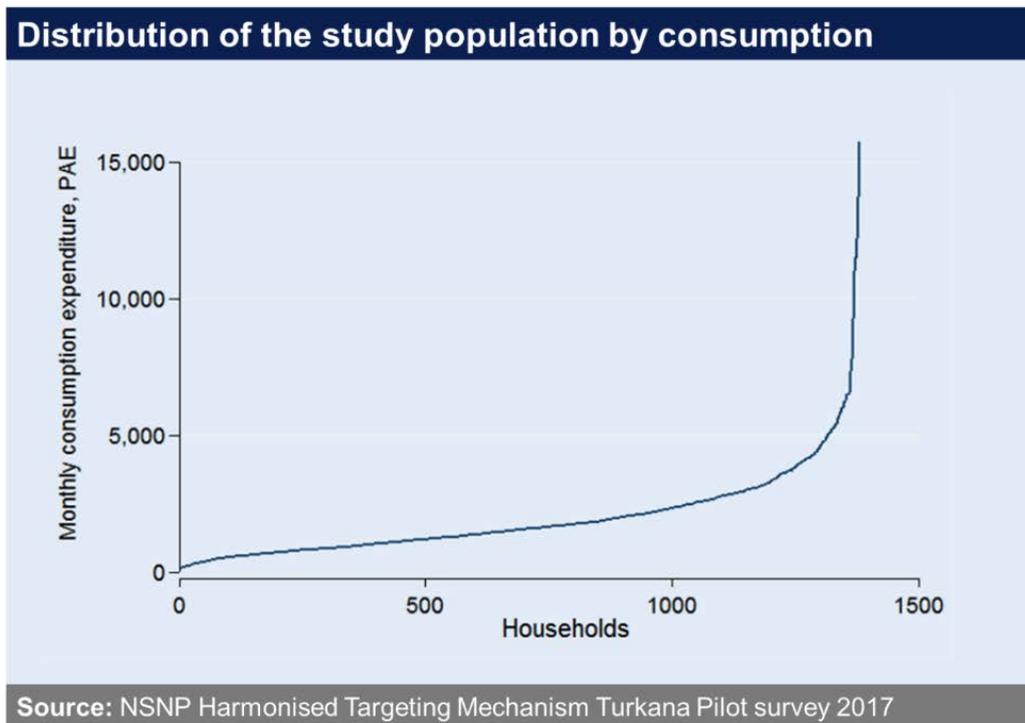
Notes: * Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

In terms of MPI, however, households with multiple categorical vulnerabilities appear to be significantly *less* worse off than households with either a single categorical vulnerability or no categorical vulnerabilities (who are therefore proposed to be covered by the HSNP), as these present, on average, lower MPI scores than households with single or no categorical vulnerabilities.

4 Targeting performance in terms of monetary poverty

As shown by Silva-Leander and Merttens (2016), the targeting of poor households in the areas covered by the HSNP is particularly challenging given the overall extremely high and uniform rates of poverty. This was again (unsurprisingly) shown to be the case by the data gathered specifically for this study (see Figure 3). In particular, in the sample used for this study, 89.6% of individuals are assessed to live in households that have a total household consumption level that falls below the poverty line calculated for the pilot region. The proportion of individuals living in food-poor households (unable to meet the expenditures required to satisfy the minimum caloric intake per capita) is also severely high, at 84.7%.

Figure 3: Distribution of the population in the NSNP HTM Turkana pilot locations by per adult equivalent consumption expenditure



The results presented in Table 5 below suggest that the programme targets poor and non-poor individuals in roughly equal proportions, as measured by the different poverty lines. The proportion of poor individuals is similar among NSNP beneficiaries and non-beneficiaries (the ratio of poverty rates between beneficiaries and non-beneficiaries, although statistically different, is almost equal to one: 1.075). The NSNP is more likely to select food-poor individuals (those falling below the national food poverty line) and individuals in the bottom 29.9% of the distribution. Indeed, the ratio of poverty rates between beneficiaries and non-beneficiaries slightly improves as one moves the poverty line downward from poor to food-poor, and from food-poor to the bottom 29.9% of the consumption distribution. The only exception appears when focusing on the bottom 58.7% of the distribution, where poverty rates are statistically the same between NSNP beneficiaries and non-beneficiaries (the poverty rate ratio is not statistically different from 1).

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TABLE 5: POVERTY RATES RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
% population in poor households	89.57	1.075***	1.009	1.066**	1.001
% population in food-poor households	84.70	1.098***	1.011	1.104***	1.000
% population in sample bottom 58.7% households	63.07	1.072	1.024	1.092	0.967
% population in sample bottom 29.9% households	33.15	1.264**	1.075	1.207*	1.010
% of poor excluded	n/a	31.34	40.44	43.95	69.82
% of non-poor included	n/a	35.51	36.33	66.00	66.61

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%.

These results are framed by our hypothetical worst-case scenario of purely random targeting, which presents highly similar poverty rates ratios to the actual targeting performance of the NSNP along different poverty lines (for example, 1.024 for random targeting vs. 1.072 for actual targeting for the bottom 58.7% of the distribution). Such a finding raises important questions as to the cost-effectiveness of the NSNP targeting mechanism.

Similar results are observed for the case of the HSNP programme. The proportion of poor individuals is similar among HSNP beneficiaries and non-beneficiaries, and the HSNP is more likely to select food-poor individuals and individuals in the bottom 29.9% of the distribution, while being effectively neutral in selecting individuals in the bottom 58.7% of the distribution. Finally, again, purely random targeting appears to perform similarly to actual targeting for the HSNP at most poverty lines.

The challenge of the programme to reach the poorest households in this context is also reflected in the high inclusion and exclusion errors reported in Table 5. The analysis shows that 31.3% of eligible NSNP beneficiaries (i.e. those living in the poorest 58.7% of households) are wrongly excluded from the programme, while 35.5% of NSNP beneficiaries were not from the poorest 58.7% of households (inclusion error).

Again, it is interesting to note that our worst-case scenario of purely random targeting is surprisingly similar to the actual targeting performance of the NSNP, with an exclusion rate of 40.4% and an inclusion rate of 36.3%. In the case of the HSNP programme, 44% of eligible HSNP beneficiaries (i.e. those living in the poorest 29.9% of households) are wrongly excluded from the programme, while 66% of HSNP beneficiaries were not from the poorest 29.9% of households⁸.

⁸ It is important to note that the inclusion and exclusion errors are not comparable across NSNP and HSNP targeting due to the fact that the size of the groups of selected beneficiaries differs across targeting mechanisms.

5 Multidimensional poverty

Below we analyse the results of programme targeting performance for each of the various dimensions included in the MPI individually, before considering the programmes' targeting performance in terms of the MPI itself.

5.1 NUTRITION

Table 6 provides an overview of beneficiary/non-beneficiary ratios for a number of relevant nutritional outcome indicators. It shows that, overall, 22.6% of respondents consumed fewer than four different food types, and the proportion of individuals with low dietary diversity is significantly higher among NSNP beneficiaries than non-beneficiaries. For the case of the other self-reported indicators of food security (reduction in number of meals, meal size, frequency, etc.), however, the NSNP targeting appears to be effectively neutral in detecting food insecure individuals. This is not surprising since these are subjective and relative measures and prone to difficulties of reporting and interpretation (how big a meal is considered to be, what it consists of, etc.).

These results point to a targeting performance in terms of nutritional indicators that seems to be similar to the performance in terms of poverty targeting, but that remains relatively weak and statistically indistinguishable from neutral targeting for most indicators.

TABLE 6: NUTRITION INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
DDS<=4	22.54	1.261**	0.981	1.126	0.921
Reduced number of meals 2–3 times per week	66.73	0.970	0.992	0.988	1.006
Reduced size meals 2–3 times per week	65.27	1.021	0.976	1.064	0.987
Skipped meals 2–3 times per week	38.02	1.141	1.085	1.243**	1.065

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

5.2 HEALTH

Table 7 presents the results from the comparative targeting analysis using health outcome indicators. Poor health outcomes tend to be highly correlated with poverty, as adverse health shocks can be a cause of impoverishment, as well as often being the result of chronic malnutrition and neglect. Furthermore, health is an important dimension of well-being in its own right, which should be taken into account when considering beneficiaries' vulnerability.

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Of the various indicators selected for our analysis, only doctor consultation appears to be totally invariant in terms of the NSNP and HSNP targeting mechanisms. When looking at child immunisation and walking distance to health facility, however, we find that both NSNP and HSNP beneficiaries tend to have worse well-being outcomes than non-beneficiaries. This is particularly acute in the case of walking distance to health facility, where the ratio of percentage of households where walking distance is greater than four hours is almost 1.7 between NSNP beneficiaries and non-beneficiaries.

TABLE 7: HEALTH INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
		Not consulted doctor if sick	18.11	1.159	0.992
Children immunisation	97.54	0.983**	0.993	0.979**	1.008
More than four hours to health facility	9.7	1.698***	0.967	1.517*	1.100

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

5.3 EDUCATION

Table 8 shows the comparative targeting performance of the various targeting mechanisms as assessed by their ability to identify households with education deprivation. The results show that, except for adults who have not completed primary school, NSNP targeting is able to identify those households with education deprivation. NSNP beneficiary households are more likely to have non-literate adults (a ratio of 1.082), children of school age not attending school (1.412), and children who have never attended school (1.806).

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TABLE 8: EDUCATION INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
		Adult not completed primary	87.04	1.027	1.012
Illiterate adult	78.57	1.082**	1.009	1.04	0.951
Child 6–17 not attending school	32.6	1.412***	0.948	1.271**	0.959
Child never attended	23.1	1.806***	0.98	1.597***	1.032

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

5.4 HOUSING

Table 9 presents the results of the targeting analysis for various indicators of housing quality. The results show that almost all housing indicators are positively associated with beneficiary selection into the NSNP programme. Indeed, all housing indicators except for sanitation have a ratio of beneficiary/non-beneficiary deprivation rates that is superior to one. This value is particularly high for the case of inadequate walls (1.462) and inadequate access to water (1.334). In the case of the HSNP, only the latter ratios appear to be statistically significant.

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TABLE 9: HOUSING INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
		Inadequate walls	39.54	1.462***	1.050
Inadequate roof	62.93	1.128***	1.061	1.049	1.059
Inadequate floor	83.49	1.053*	1.024	1.002	1.008
Inadequate water	42.87	1.334***	1.066	1.254***	1.034
Inadequate sanitation	72.77	1.034	1.053	0.977	1.017
No electricity	85.52	1.069***	1.007	1.038	1.006

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

5.5 CHILD PROTECTION

Table 10 shows the targeting performance of the various targeting mechanisms in terms of child protection indicators, namely child labour (children aged 5–17 who are working) and children lacking a birth certificate. The analysis shows that working children tend to be considerably over-represented among NSNP beneficiaries as compared to non-beneficiaries. Such a situation does not seem to occur when only focusing on the HSNP targeting mechanism. This could be explained by the fact that households covered by the SAU programmes tend to have fewer working age adults, on average, as shown in Table 3.

TABLE 10: CHILD PROTECTION INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
		Children 5–17 working	10.36	1.888***	0.905
No birth certificate	82.29	1.021	0.99	1.003	0.989

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

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5.6 MPI

This section presents an analysis of programme targeting with respect to its ability to reach households that are multidimensional poor, as expressed by the MPI. The indicators used in the computation of our MPI index are selected from the various indicators of vulnerability presented above. As such, the analysis below should provide results that are broadly consistent with the results presented thus far. The advantage of looking at the MPI as a separate item is that it allows us to consider the overlap between the various areas of deprivation considered in our analysis. The rationale is that being deprived in, say, education is more serious if it is compounded by deprivation in other areas – for instance, in health and nutrition.

The targeting analysis shows that NSNP beneficiaries tend to have, on average, slightly more forms of deprivation than non-beneficiaries. Importantly, the progressiveness of the programme appears to improve for more vulnerable individuals, at least up to a point. Indeed, the ratio increases from 1.162 for individuals with deprivation in two or more dimensions to 1.604 for individuals with deprivation in three or more dimensions. The programme, however, does not seem to be able to identify those individuals with deprivation in four or more dimensions.

HSNP beneficiaries are also slightly worse off than non-beneficiaries in terms of number of areas of deprivation. Moreover, HSNP targeting seems to only be able to identify those individuals with deprivation in three or more dimensions.

TABLE 11: MPI INDICATORS RATIOS ACROSS TARGETING MECHANISMS

INDICATOR	POINT ESTIMATE IN SAMPLE	ALL NSNP (RATIO BEN./NON-BEN.) [1]		ONLY HSNP (RATIO BEN./NON-BEN.) [2]	
		Harmonised targeting	Random targeting [3]	Harmonised targeting	Random targeting [4]
		Number of areas of deprivation	2.15	1.099***	1.020
Two or more dimensions with equivalent deprivation	55.40	1.162***	1.080	1.083	0.967
Three or more dimensions with equivalent deprivation	21.63	1.604***	1.121	1.497***	0.963
Four or more dimensions with equivalent deprivation	3.70	1.621	0.610	1.420	0.917

[1] Proposed beneficiaries for any NSNP programme.

[2] Proposed beneficiaries for HSNP only.

[3] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[4] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

The targeting performance still remains relatively weak when assessed in terms of MPI exclusion and inclusion errors, which are of similar magnitudes to those achieved for monetary poverty.

Table 12 shows that the programme missed 36% of MPI poor individuals, compared to 31% of monetary poor (see Table 5 above). Inclusion errors were slightly larger, at 44% for the MPI, compared to 36% for monetary poverty.

Importantly, in terms of inclusion and exclusion errors, we find that for the NSNP beneficiaries, the targeting in relation to the MPI is almost indistinguishable from the random targeting mechanism, in which no eligibility criteria are applied

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at all. Concretely, the current programme misses 36% of the most deprived individuals (exclusion error), whereas 44% of those included are not among the most deprived (inclusion error). By comparison, a random targeting would have generated exclusion and inclusion errors of 42%. This was a very similar situation to that relating to the performance of the programme in terms of including and excluding the monetary poor, and thus, again, raises serious questions about the value of the applied targeting protocol and criteria in this context.

TABLE 12: INCLUSION AND EXCLUSION ERRORS ACROSS TARGETING MECHANISMS

INDICATOR	ALL NSNP		ONLY HSNP	
	Harmonised targeting	Random targeting [1]	Harmonised targeting	Random targeting [2]
% of MPI poor population EXCLUDED	36.06	41.79	50.00	71.47
% of MPI non-poor population INCLUDED	43.90	42.02	69.28	72.04

[1] Assumes bottom 58.7% of households (in terms of consumption) should be covered by NSNP.

[2] Assumes bottom 29.9% of households (in terms of consumption) should be covered by HSNP.

* Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

6 Discussion of LCS estimation

The programme targeting performance assessed above is the result of a mixed approach: the use of quotas for different locations covered by the pilot and the LCS. This section attempts a general assessment of the estimation methodology used to identify households' eligibility according to the poverty-targeting element of the various NSNP programmes.

The measurement of a LCS using a national PMT formula potentially provides a way to rank households' welfare status in a comparable way. Whenever the score for one household is lower than another household ($LCS1 < LCS2$), we assume that the household with the lower score has poorer living conditions than the other household.

If the broad aim of the NSNP is redistribution and protection of the most vulnerable in society⁹, the LCS should, theoretically, suffice to first identify households potentially eligible for assistance, which could (or should) then be checked by the community.

However, the introduction of quotas at the locality or county level potentially (and actually) distorts such assessment and ultimately compromises the final beneficiaries' identification. To put this another way, the introduction of quotas introduces discriminatory elements whose objectives need be explicitly identified.

With the exception of the HSNP, all other NSNP programmes define quotas using small-area poverty estimates and thereby implicitly reinforce the idea that priority should be given to the relatively poor within the country. The HSNP also reinforces this message by explicitly targeting the four poorest counties in the country. However, this mechanism of establishing quotas appears to be redundant and counterproductive. Quotas are (presumably) derived starting from a fixed budget and an overall total number of beneficiaries, and are then set proportional to needs, defined in terms of poverty levels (from the small-area estimates) and established in absolute terms in relation to the population of each location. In this way, localities with higher poverty rates receive higher quotas and thus higher numbers of beneficiaries as a percentage of their population. If there are more households meeting the categorical requirements than the allowed quota, selection is based on the LCS: those with the lowest scores in their location receive support.

In the case of the HSNP quotas appear to have been set differently for the HTM pilot exercise than they were for the HSNP 2. In the HSNP 2, quotas were defined at the county level based on the adjusted CRA formula, and then at the sub-county level based on the distribution of the poorest, as defined by the combined PMT and CBT score¹⁰. However, for the HTM pilot in Turkana, allocations of HSNP beneficiary quotas across locations were computed based on the aggregate coverage rate for the county (which is just under 30%), which was then applied to the proportion of the population in absolute poverty in each sub-county, as determined by the constituency poverty rate (derived from the small-area estimations).

These various methodologies are partially contradictory in their objective.

On the one hand, the determination of living conditions is performed at the national level, implying that anyone who falls below a certain ('global' or national) welfare cut-off would be entitled to support since they have comparable welfare levels. However, on the other hand, this national assessment is then used in each locality as a separate and independent ranking tool, which by default allows unequal treatment in respect to the LCS. This results in a situation whereby an eligible household in one location with an LCS that falls below the national welfare cut-off might be denied support, while an eligible household in another location with an LCS above the national welfare cut-off is provided with

⁹ According to the Kenya National Social Protection Policy, alongside various other national policy documents (such as Vision 2030) and the constitutional commitments and international conventions to which Kenya is signatory⁹, every citizen has a right to maintain a decent standard of living, including 'income security provided through household and child benefits that facilitate access to nutrition, education, and healthcare, income security through social assistance for older persons, people with disabilities, and those in active age groups who are unable to earn sufficient incomes in the labour market'. National Social Protection Policy, p.iii.

¹⁰ See Section 1.2.1 and Silva-Leander and Mertens (2015) for more detail on the way HSNP 2 beneficiaries were distributed at different levels.

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support. This constitutes a fundamental contradiction of the NSNP's implied objectives and thus a significant flaw in the rationale for the mechanism underpinning the system. To put this in a slightly different way, the imposition of location quotas introduces an inconsistency between the rationale of the overarching policy framework, which is effectively rights-based, and the implementation of the policy, which allows for differential treatment of individuals.

In the case of the approach used for the HSNP in the recent HTM pilot, every location gets the same quota proportional to the population of absolute poor, so that whenever there are disparities in poverty rates across localities we will have households with the same score and the same living conditions that are treated differently: some of them receive support while others do not. This undermines the principle enshrined in the Kenyan constitution and policy framework regarding all people having the same right to social protection services: some get to exercise that right while others do not.

This issue is made clear for the other NSNP programmes whenever the population meeting the categorical requirement has a poverty distribution different from that of the total population. In these cases there will be significant mistreatment. For example, if in a locality with high poverty rates there are few households with orphans and vulnerable children, all of them, irrespective of their LCS, will receive support. By contrast, it is possible to imagine another locality with relatively low poverty rates but many poor households with orphans and vulnerable children, some of whom will thereby not receive support even though they have a low LCS.

A more consistent approach would require setting eligibility based on a globally-defined welfare score, resulting in an eligibility threshold for all households irrespective of where they live.

If quotas are to be imposed, it would be more sensible to devise regional PMT models. It does not make sense to have a harmonised model to identify the poor while determining coverage on a relative basis, as the two approaches contradict one another. A regional PMT model could still be embedded within a broader harmonised targeting protocol.

In what follows we concentrate primarily on the welfare measure provided by the current LCS, as used by the HTM, but the issue of the way quotas are used and set is separate and constitutes a fundamental policy question. This issue deserves attention, since it can drastically compromise the fairness of the identification of households that are eligible to receive assistance, regardless of how well the estimation methodology measures living conditions.

6.1 THEORETICAL ASSESSMENT OF PCA ESTIMATION APPROACH

The harmonised targeting strategy represents a positive step forward in terms of standardising the approach to measure households' living conditions. In particular, it also represents an opportunity to establish clearer and more rigorous rules and procedures for conducting the PMT assessment, the CBS, and the way the two interact.

Here we want to focus on the specific approach used in the PMT, by explaining the difference between it and the previous approach, and how the proposed methodology has both strengths and weaknesses.

While the HSNP, CT-OVC, and OPTC/CT-PWSD previously implemented a PMT using regression analysis of a welfare indicator (consumption expenditure), the new approach uses PCA¹¹, which essentially looks at how a number of selected variables are linked together. This involves a different estimation technique, and also allows the use of different data to conduct the analysis, namely the 2009 census (rather than the 2005–06 Kenya Integrated Budget Household Survey (KIHBS)).

¹¹ More specifically, the approach used in Kenya is PCA which performs better than traditional PCA whenever we are using categorical variables See Kolenikov and Angeles (2009) 'Socioeconomic status measurement with discrete proxy variables: is principal component analysis a reliable answer?', *The Review of Income and Wealth*.

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It is important to look in detail both at what is involved in the different estimation techniques and the use of different data, in order to determine what consequences these differences have for policy in relation to the NSNP.

6.1.1 Estimation technique: regression vs PCA

There is a substantial body of literature suggesting that in developing countries consumption expenditure aggregates represent adequate and reliable welfare indicators (see, for example, Deaton and Zaidi (2002)). Nevertheless, for the consumption expenditure to be a reliable indicator certain criteria must be followed (the aggregate must be as comprehensive as possible, include both purchases and consumption from own production, adjust for household composition and price differences, and so forth). Moreover, data collection must be performed following certain protocols to ensure data quality. The above should not be taken for granted and instead must be verified based on how the consumption aggregate variable has been constructed and how data collection was performed. While there are still relatively few experimental studies, some research does provide guidance on how consumption expenditure can be better measured, while also recognising that some contexts pose remarkable challenges that should not be underestimated¹².

In many African countries there are often significant challenges in determining price indexes and estimating consumption from own production. Doubts about the quality and consistency of the consumption aggregate measure (price adjustment and adult equivalence scales) could well be a reason for looking at different estimation approaches.

Nevertheless, for all the NSNP programmes the estimation approach has previously considered consumption expenditure as a good welfare indicator and a multivariate regression was used to establish the relationship between consumption and potential explanatory variables, so as to best predict the consumption expenditure value.

The methodology involves trying to identify a reasonably small and robust set of variables, the selection of the necessary variables among the pool of available ones, and then the estimation of a coefficient associated with each variable.

An important feature of this approach is that, within the analysed data, it is clear both 1) what the variables predict, and 2) how well (or poorly) they predict it.

Moreover, since the consumption expenditure variable is expressed in real monetary values, these can be compared across different domains – for instance, between urban and rural areas. As a result, the predicted values of different models can also be compared across domains and different models.

Nevertheless, the predicted consumption value could still be expressed and transformed into a relative score, providing household national predicted ranking, rather than an estimated level of consumption expenditure (this is because, usually, the best estimation results are obtained by transforming consumption expenditure in logarithmic terms).

PCA uses a very different approach. It considers a group of variables believed to be highly correlated to household living standards and *assumes* that the main dimension that links all these variables together is indeed the household living condition. This assumption is critical because it may be that household living standards are not, in fact, the dimension defining the relation between the variables. Therefore, for PCA it is critical to select variables that are known to be related to poverty and living standards, so that the methodology can identify a measure of living standards embedded in the data.

From a mathematical point of view, PCA expresses the space provided by the observed combinations of a given set of variables and observations in a number of components (a vector of coefficients multiplied by the variables' observations), each capturing a different/unrelated dimension linking the variables under analysis. The first component,

¹² See for example the recent issue of *Food Policy*, Vol. 72, 2017, and the issue of the *Journal of Development Economics*, Vol. 98, 2012.

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which is used to calculate the LCS, is the component that explains most of the variation observed in the data, and so interprets the main characteristics and direction of the data under analysis.

For example, consider three variables containing information on whether the household has a car, a motorbike, and/or a bicycle. The main component linking these variables could be the household living conditions, but it could also be simply the 'ability of the household to move', which might not always determine whether the household is poor.

Ambiguity regarding the main component that links the data is generally overcome by considering a set of variables capturing different dimensions of living standards: household human resources (education), housing conditions, assets, household composition, etc. However, there is always a degree of uncertainty regarding the identified 'component'. Usually different models with more or less variables are tested, to ensure that coefficients associated with each variable get the expected sign (in relation to living standards – for example, increasingly higher positive coefficients associated with higher education). Another way to overcome such uncertainty is to verify the correlation between the score of the main component and the consumption welfare indicator.

The document describing the HTM claims that PCA provides an approach that can be more easily compared with the community assessment because it is based on variables that are also 'observed' by the community, whereas the consumption expenditure measure (used by the previous PMT models) results from a number of manipulations and imputations, which are not available to the community. While it is true that the community does not have direct information on the consumption expenditure measure, it is believed to be an appropriate measure of well-being, which in general should also be correlated and match people's perceptions. Indeed, this is often found in surveys that combine the possibility to compute consumption expenditure and households' own perceptions of their well-being. Moreover, in other countries it is generally found that there is a high correlation between enumerators' well-being assessments and PMT scores based on consumption expenditures. Future research could test to what extent this is also true in the case of Kenya, and especially in the HSNP areas.

Furthermore, even assuming that the PCA methodology uses variables that are also known to the community, claiming that the PCA approach is consistent with the CBS approach is debateable. More specifically, it is highly unlikely that the mathematical process used in the estimation of the LCS is at all similar to the approach involved in the community assessment. When communities are asked to consider the same variables used by the PMT, we increase the chance of some convergence, but this is not the result of the estimation methodology used by the PMT.

More importantly, while the HTM presents the absence of a constant in the PCA methodology as an advantage, we believe that the opposite is true whenever there is use of more than one model or set of coefficients to estimate the LCS in different parts of the country. In fact, the PCA methodology generates scores for the first component that do not have intrinsic meaning, but only a relational meaning. We can say that the score in household 1 is bigger than that in household 2, but cannot say anything about what the scores represent. What this means is that if X are the scores computed for urban areas and Y are the scores for rural areas, we cannot compare the scores of X and Y. Based on the values of the LCS in these two locations we cannot say whether X1 is higher or lower than Y1.

Thus, the only solution in the above scenario is to rely on external sources/decisions to tell us how to compare scores in different locations. For example, we might need to rely on the KIHBS to inform us about the percentage of poor in urban and rural areas, then use this information to identify the scores in urban and rural areas that respectively identify the desired percentage of the population falling under those scores, and thereby determine whether X1 and Y1 can be defined as poor based on their position within their respective distributions of scores.

This characteristic of the PCA methodology accounts for the confusion of the programme implementers, who conducted the registration exercise for the Turkana NSNP HTM pilot, when they found lower scores in Lodwar, which is urban and the county capital, as compared to Lomeyang and Kataboi, which are both rural. Though this result appeared to be counter-intuitive, the issue to be grasped is that the two sets of scores are not comparable. While the Lodwar scores are lower than those of the other two locations, this does not imply that households in Lodwar are poorer. This has

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implications for the setting of programme coverage rates across locations. Rather than being able to assign coverage rates based on the total distribution of welfare scores, as was done using the regression-based PMT methodology for HSNP Phase 2, thresholds for each estimation domain (Nairobi, urban and rural) will need to be established using external sources/measures (for example using small-area poverty estimates from national consumption data, as the three SAU programmes do currently).

The testing of the PCA approach in the KIHBS provides some confidence that the main component identified by PCA is actually correlated to the consumption aggregate, but the fact that PCA provides better results than the regression is highly questionable, and ultimately depends on how the regression results are elaborated (for example, whether consumption values are transformed in logarithmic terms). Indeed, Villa (2016)¹³ shows that in his simulations regression estimated ranking of per adult equivalent consumption performs better than PCA. However, the problem is whether the adult equivalence scales are appropriately transforming household-level consumption into person level well-being.

6.1.2 Data sources (KIHBS vs census) and model variables

The greatest advantage of the PCA approach is that it can be used in relation to the census data, which have (theoretically) a full national coverage, with the possibility of using descriptive statistics at a low geographical level, and the fact that the census has a huge number of observations. Moreover, since consumption data are not required, surveys such as Multiple Indicator Cluster Surveys or Demographic Health Surveys could also potentially be used.

Nevertheless, we have some doubts about the validity of some variables used in the final model. In particular, it is arguable whether geographic variables at sub-location level in 2009 are still relevant today. Variables such as mean-precipitation are likely to be highly variable, and population variables (population, death and birth rate) related to sub-locations might have changed significantly, not only in absolute terms, but more importantly in relative terms (one sub-location compared to another)¹⁴. Moreover, the coefficient associated with these variables is not always intuitive in relation to the household living standards: with many demographic variables (proportion of male members, age of household head, age of spouse, dependency ratio, and proportion of children under six) their coefficient's sign changes (values are either positive or negative) in the different domains of estimation. For example, why do higher dependency ratios contribute to higher living standards in Nairobi, and to lower living standards in the rest of the country? It is perfectly possible that this has specific explanations in relation to the combinations with other variables, but there is also the risk that the association for these particular variables is capturing something different and therefore it might be preferable to exclude them.

Finally, it is useful to be aware that, while census data do not have sampling errors, they could contain significant non-sampling errors. However, in the case of Kenya, the 2009 census data appear to be of sufficient quality (enumeration is reported to have followed best practice and strictly adhered to the UN principles and recommendations)¹⁵.

Finally, for future model estimation we should also consider the trade-off between the use of a superior source, such as the census, and the most recent source of information. While currently the census is not only the superior source of information, but also the most recent, this is likely to change in the future since KIHBS 2014/15 data should soon be available and KIHBS should anyway (ideally/theoretically) be conducted more frequently. If this were the situation, KIHBS data would be better suited in relation to updating the model more frequently.

¹³ Villa (2016) 'A harmonised proxy means test for Kenya's National safety Net programme', GDI Working paper 2016-003. Manchester: University of Manchester.

¹⁴ In fact, this was shown to be the case by the experience of the Turkana HTM pilot, in which the total population for each location registered was found to be markedly changed from that recorded both in the 2009 Census and the last major Census registration exercise carried out by the HSNP in 2013 for the Phase 2 registration. The reason for these changes, as identified by local key informants, was migration towards Lodwar and other urban centres.

¹⁵ Nevertheless, for the north east (Mandera in particular) figures for the total population have been heavily contested.

6.1.3 Policy and implementation implications related to the different estimation approaches

The main policy-relevant implication stemming from the above discussions and linked to the PMT estimation methodology concerns the way beneficiaries across different estimation domains are identified. Unfortunately, the HTM is silent on this aspect.

In practice, while the regression analysis results in a score that is comparable across estimation domains, the same is not true for PCA, whereby it is necessary to use some external source of information to determine eligibility. While the regression method allows one to use the same criteria and treatment across domains, the same is not true for PCA, where there is more than one domain of estimation. Consistency of approach is potentially a very important feature of the tool.

In other words, for regression analysis one could set eligibility as determined by a single threshold: the score below which people are eligible for social assistance. Such thresholds and the scores received by households/people in different parts of the country will automatically decide the percentage of population to be covered in urban areas, rural areas, or other estimation domains.

The same is not true for PCA, where external criteria are needed to determine different thresholds and coverage levels in different estimation domains. This could open the door to manipulation.

However, as explained at the beginning of this section, it should also be acknowledged that all programmes are already mixing LCS measures and quotas set using different criteria, generating some inconsistent treatment.

6.2 EMPIRICAL ASSESSMENT FROM THE SMALL-SCALE STUDY

The survey data collected in the summer of 2017 in Turkana for the study whose results are given in this report offer the possibility of independently assessing the correlation between LCS and consumption-based welfare measures, as well as between LCS and MPI measures. This is done irrespective of any quota or categorical variables.

According to the KIHBS 2005–06, 22.3% of the population in rural areas was found to be 'hardcore poor' and 11% in urban areas (excepting Nairobi). Using the LCS national distributions (Figure 4 of the HTM paper), similar percentages are expected to fall under a threshold of 62 in rural areas and 12 in urban areas. In our sample areas all rural households fall below 62, and in urban areas in 80% of population also falls below the score of 12. This implies that Turkana's locations are all extremely poor. According to the KIHBS 2005–06, Turkana district, as it then was, had an absolute poverty rate of 94% and hardcore poverty rate of 83%.

When we look separately in urban and rural areas at the correlation between the LCS and consumption welfare measure, and the LCS and MPI, we do find a positive correlation, but a relatively small one, in rural areas: 0.1 and 0.3 respectively; the correlation is stronger in urban areas, where it reaches 0.2 for consumption and almost 0.4 for the MPI.

One potential problem in the implementation of the LCS calculation could thus come from the determination of urban and rural areas in the census. It is not clear whether this follows an administrative boundary or whether it involves a level of discretionary assessment by the census enumerator, which in turn could determine a very different formula and assessment.

To summarise, the LCS identifies a very high percentage of extremely poor households in line with the findings of the KIHBS 2005–06, but, overall, there is a low correlation between LCS and consumption poverty and LCS and MPI. The correlation is a bit higher for urban areas and for the MPI.

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6.3 SUMMARY OF STRENGTHS AND WEAKNESSES OF PCA VS REGRESSION TO OBTAIN LCS MEASURES

Table 13 summarises the main differences in terms of strengths and weaknesses of the two different estimation methodologies.

PCA is superior whenever there are significant doubts about the ability to measure and capture well-being through consumption expenditure. This includes both the measure of consumption expenditure at the household level and then the ability to express household consumption at an individual level. Especially in northern Kenya, consumption expenditure does pose significant measurement challenges and this should be carefully assessed. It could also be possible to conduct specific research to determine to what extent consumption measures do correlate with self-assessment criteria for well-being.

However, PCA also has significant weaknesses because it only measures living conditions indirectly, producing internally consistent rankings. However, when estimations are performed in different domains, PCA needs to rely on external inputs to make comparisons across domains.

TABLE 13: STRENGTHS AND WEAKNESSES OF DIFFERENT ESTIMATION APPROACHES

QUALITY	CHARACTERISTIC	REGRESSION	PCA
Strengths	Direct assessment of what is measured and the quality of the estimation	✓	
	Comparability and consistency of measure across estimation domains	✓	
	Valid approach whenever there are serious doubts about the quality of the consumption aggregate and the individual welfare measure		✓
	Can use different data sources: census, KIHBS, Multiple Indicator Cluster Surveys, Demographic Health Surveys, etc.		✓
Weaknesses	Indirect assessment of living standards, no certainty about what is measured and how well it is measured		✓
	Requires external data to determine comparisons across estimation domains		✓
	Requires good and reliable household-level welfare estimates	✓	

6.4 IMPLICATIONS FOR TARGETING SOCIAL ASSISTANCE PROGRAMMES IN KENYA

The above discussions have highlighted a number of key issues that pertain to the basic design of, and fundamental principles underpinning, the existing social assistance programmes in Kenya.

- 1) The use and setting of quotas for the allocation of all four NSNP social assistance programmes considered in this report fundamentally contradicts the overarching objective of the sector to ensure that the rights of all Kenyans, in relation to social protection services, are the same. A more consistent approach would require setting eligibility based on a nationally-defined welfare score, resulting in an eligibility threshold for all households irrespective of where they live. If quotas are to be imposed, it would be more sensible to devise regional PMT models.
- 2) In Kenya the use of regression techniques needs to be justified by a careful assessment of the quality of the national consumption aggregates. If these are of sufficient quality, and if the aim of the policy is to try, as far as possible, to identify the consumption poor, then a PMT founded on regression techniques would be a more

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sensible option than one founded on PCA. A new regression-based PMT could be developed using the KIHBS 2014–15 data, as soon as those become available. However, it will also be important to understand the frequency with which the Central Bureau of Statistics intends to collect such type of data.

- 3) The current HTM tool, as founded on the PCA methodology, did not produce LCS that correlated well with either consumption expenditure or the MPI in the locations included in the Turkana HTM pilot. It remains to be seen how well the PCA-based LCS is correlated with consumption expenditure or the MPI in other parts of the country, such as the two other HTM pilot sites of Kilifi and Nairobi.

7 Conclusions

7.1 SUMMARY CONCLUSIONS

The targeting performance of the HSNP has been rigorously evaluated over two phases of the programme. In relation to reaching the poorest households, each time it has been found to perform only marginally better than if a random targeting mechanism was used. This is the result of a combination of factors:

- the high and uniform rates of poverty in HSNP counties;
- the challenges associated with implementing registration and targeting; and
- the need to distribute beneficiaries between and within counties in a politically acceptable manner – meaning that beneficiaries are more or less evenly distributed, with geographic poverty rates not being the sole determiner of beneficiary allocations.

The NSNP developed a HTM in a bid to improve the efficiency of programme registration and targeting, as well as targeting performance in terms of the ability to identify the poorest households. The pilot of the NSNP HTM in Turkana has also been rigorously evaluated, with the results of that assessment being presented in this study. The study finds that, again:

- the targeting performance of both the NSNP as a whole and the HSNP specifically is better than random, but not by much;
- there are still significant inclusion and exclusion errors;
- despite efforts to improve implementation there are still issues with the quality of some of the registration data collected; and
- there are issues with the choice of methodology and the design of the specific tool used to identify the poor.

It should be noted that Turkana is a particular context and it remains to be seen how the HTM performs in other contexts. The HTM is being piloted in two other sites, Nairobi and Kilifi, so there is potential to assess how well it performs in contexts where the welfare distribution and poverty profile are markedly different. Should such a study be conducted, it would constitute a comprehensive evidence base upon which to make decisions about the ultimate viability of poverty targeting at the national level.

Related to these considerations is the agenda of building a national social registry. Whether it contains information on the welfare status of households or not, such a registry could potentially be used to coordinate the delivery of social protection and other programmes, and thereby increase the efficiency and effectiveness of those programmes. A social registry can also support other agendas in and around social protection and other social sectors, such as the adaptive or shock-responsive programming agendas. The HSNP has built a social registry of (nominally) the whole population of the HSNP counties in order to be able to implement its scaleable component in response to drought. However, this and the other targeting assessments carried out under the two HSNP evaluations, as well as other studies conducted as part of the HSNP 2 evaluation¹⁶, indicate that the goal of building and maintaining a social registry, especially at the national scale, is not without challenges. Ensuring and maintaining data quality and designing and sustaining an appropriate institutional architecture for coordination are two major such challenges that must be grappled with if such an agenda is to be successful. Moreover, such a registry relies upon a functioning national registrations system, which, at this point in time, is not fully established. Again, for these reasons, it is important to understand the feasibility of successfully implementing a national social registry, and of using that to identify the poor and vulnerable in different contexts throughout the country.

¹⁶ See Sandford, J., Merttens, F., Pearson, R., Riungu, C. and Sabates-Wheeler, R., (2016) and Gardner et al. (2017).

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Also, at the strategic level, the challenges associated with poverty targeting highlight the need to match targeting methods with programme and policy objectives. If the NSNP is not supporting poor or 'vulnerable' households, what is it doing? If it is not defined in terms of monetary poverty, how is vulnerability defined, and why is cash the best form of support for such non-monetary vulnerability?

The use and setting of quotas for the allocation of all four NSNP social assistance programmes considered in this report fundamentally contradicts the overarching objective of the sector, to ensure that the rights of all Kenyans, in relation to social protection services, are the same. A more consistent approach would require setting eligibility based on a globally-defined welfare score, resulting in an eligibility threshold for all households irrespective of where they live. A PMT based on a regression technique might be more appropriate in this regard. If quotas are to be imposed, it would be more sensible to devise regional PMT models.

Beyond the challenges around the implementation and communication of NSNP registration, targeting, and enrolment processes highlighted by previous studies, at the operational level the findings from this study raise the need to better specify the eligibility criteria for both the CT-OVC and CT-PWSD. With regard to the latter, internationally recognised and implementable criteria for defining disability are available via the Centers for Disease Control Atlanta definitions¹⁷. With regard to the former, there is a need to establish a non-ambiguous definition of an 'orphan or vulnerable child' that can be administered by programme systems and staff during registration, targeting, and enrolment.

Finally, the results of this study suggest there is a need to revisit the assumption that multiple categorical eligibility characteristics correlate with poverty or 'vulnerability', as defined by the MPI. In fact, in the context of this study population, the reverse appears to be the case, with households presenting multiple categorical eligibility criteria shown to be less poor and vulnerable than households with single or no categorical eligibility. Thus, if the aim is to target the poor and vulnerable, multiple categorical eligibility is not the most relevant characteristic.

7.2 IMPLICATIONS FOR POLICY

There is a need to discuss and agree the long-term future of the poverty targeting of the NSNP in the country based on robust evidence of what works where and what factors influence the programme's ability to implement such targeting.

There is a need to clearly articulate the aims and objectives of the various programmes within the NSNP, define appropriate targeting criteria aligned to those aims, and update the relevant policies accordingly.

There is a need to discuss and refine the use and setting of quotas for NSNP programmes, and, if necessary, the most appropriate tool for identifying the poor.

There is a need to precisely specify the eligibility criteria for each programme.

There is a need to carefully consider the viability of a social registry and the complementary investments required to support and underpin such a registry at national scale.

¹⁷ www.cdc.gov/ncbddd/disabilityandhealth/datasets.html.

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Annex A Turkana harmonised NSNP registration pilot process

STEP	PROCESS		DESCRIPTION FOR EXPANDED PILOT
1	Re-formation of pilot targeting team		<p>HSNP to lead, with support from three MEACL&SP departments. Proposed phasing of expanded registration: Lodwar, Lomeyan, and Kataboi.</p> <p>Sensitisation and training on process for all members of team.</p> <p>Sensitisation of all key stakeholders at county level.</p>
2	Quota generation		<p>Quotas generated for all four NSNP cash transfer programmes for all three locations.</p> <p>Calculation based on NSNP expansion plan and revised HSNP methodology.</p>
3a	Recruit and train enumeration teams	Takes place concurrently	<p>Selection of appropriately qualified local candidates (re-hire best of previous teams).</p>
3b	Pre-registration planning		<p>Sensitisation meeting with all chiefs and elders.</p> <p>Agree dates for registration and routes through villages.</p> <p>Clarify with chiefs the boundaries, numbers, and estimated populations of locations, and all villages and sub-locations in them.</p>
4	Register all remaining households in pilot locations		<p>Pre-registration community <i>barazas</i> in all villages to:</p> <ul style="list-style-type: none"> sensitise communities on whole process; clarify village and boundaries; identify different types of cash transfer and eligibility definitions of each; ask communities to identify /elect a community representative responsible for list validation process in each village. <p>Census style house by house registration. GIS cross-checking location of all households registered.</p> <p>Data entry supervision and quality control.</p>
6	List generation		<p>After registration, data cleaning – generate five beneficiary lists: multiple vulnerability; PWSD-CT; OVC-CT; OP-CT; and HSNP-CT.</p> <p>Finally, list six non-beneficiary households also generated.</p>
7	List posting and CBV		<p>Lists printed out by sub-location and by village.</p> <p>Sub-location lists printed in assistant chief offices and village lists in key locations in the relevant village.</p> <p>Village lists also given to elected village representative (Rights Committee member), with responsibility to review lists with communities and gain feedback. Village-level <i>barazas</i> in each location to discuss lists.</p> <p>List posted for minimum of one week.</p> <p>At end of posting period all chiefs and village representatives convene in a validation meeting to discuss all recommended changes. Based on quotas available revised lists are generated.</p>
8	List finalisation		<p>Revised lists printed and signed off by chiefs, elders, and village representatives.</p> <p>List taken back to sub-location and villages.</p>

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9 Complaints and grievances

Outstanding grievances should be taken to the following to be addressed:

Assistant chief.

Relevant departmental staff.

Constituency Social Assistance Committee (CSACS)

Source: HSNP (2016) 'NSNP Harmonized Registration and Selection Methodology. Turkana Pilot – Update to TWG', June 2016.

Annex B Identification of proposed beneficiary households

The subsequent paragraphs summarise the process followed to identify potentially beneficiary households for each one of the NSNP programmes (HSNP, 2017).

STEP 1: LCS CALCULATION

Household data collected during the registration phase were used to apply the new PMT tool. The tool was used to generate an LCS (between 0 and 100) for each registered household. This score was rounded down to nine decimal places and was used to rank household from poorest (lower LCS) to wealthiest (higher LCS).

STEP 2: IDENTIFICATION OF CATEGORICAL VULNERABILITIES

This exercise was done manually using Excel, since the database into which registration data were entered was not designed to facilitate the identification of categorical vulnerabilities. Based on the presence of categorical vulnerabilities, and taking into account the calculated LCS, registered households were classified into six different lists. Table 14 enumerates the six lists, and maps them against their eligibility status for benefiting from the different programmes.

TABLE 14: DESCRIPTION OF LISTS AND ELIGIBILITY FOR NSNP PROGRAMMES

LIST	HOUSEHOLD DESCRIPTION	PROGRAMME ELIGIBILITY (WHEN QUOTA AVAILABLE)			
		PWSD-CT	OP-CT	OVC-CT	HSNP
List 1	Presence of three or more categorical vulnerabilities	●	●	●	●
	Presence of two categorical vulnerabilities: people with severe disability and older persons	●	●		●
	Presence of two categorical vulnerabilities: people with severe disability and orphans or vulnerable children	●		●	●
	Presence of two categorical vulnerabilities: older persons and orphan and vulnerable children		●	●	●
List 2	Presence of people with severe disability only	●			●
List 3	Presence of older persons only		●		●
List 4	Presence of orphans or vulnerable children only			●	●
List 5	Poor household, with no categorical vulnerabilities				●
List 6	All other households registered				

Source: HSNP (2017) 'Draft NSNP Harmonised Registration and Targeting Exercise Report Turkana Pilot', March 2017.

STEP 3: QUOTA ALLOCATION TO PROGRAMMES

Once all households' LCS had been calculated and categorical vulnerabilities identified, the resulting lists of eligible households had to be allocated to the NSNP programmes, using the quotas available for each one of them.

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Available programme quotas were calculated differently for the NSNP programmes housed in the MEACL&SP and HSNP. For the former, location-based quotas were already established and taken from the NSNP Multi-Year Expansion Plan 2014–17 (see Table 15 below). In the case of the HSNP, quotas at the location level were generated using a different methodology to that used in HSNP 2. Specifically:

- 1) County level quotas were assumed to be unchanged from HSNP 2¹⁸. This means that a quota of 39,873 households was allocated to Turkana.
- 2) The county quota (39,873) was redistributed to provide an equal coverage rate (i.e. 29.9%) across locations. Given that the HSNP MIS data were out of date, it was decided to base HSNP quotas on the actual number of households registered in the NSNP registration pilot. Therefore, HSNP location-level quotas for the pilot exercise were calculated as follows:
 - calculate total eligible population per location = *number of households registered in the NSNP Turkana pilot* x *location poverty rate* (as defined by the KIHBS and 2009 census data and used in NSNP expansion plans); and
 - calculate location quota = *total eligible population in location* x 29.9%.

The final distribution of HSNP quotas across locations is shown in Table 15 below.

TABLE 15: AVAILABLE LOCATION-BASED QUOTAS FOR PWSD-CT, OP-CT, OVC-CT, AND HSNP

LOCATION	PWSD-CT	OP-CT	OVC-CT	HSNP	TOTAL
Lodwar	285	806	1,680	3,140	5,911
Lomeyan	87	518	631	663	1,899
Kataboi	31	267	355	593	1,246
TOTAL	403	1,591	2,666	4,396	9,056

Source: HSNP (2017) 'Draft NSNP Harmonised Registration and Targeting Exercise Report Turkana Pilot', March 2017.

The number of households in each of the five cash transfer lists (List 1 – List 5) then had to be allocated to the relevant cash transfer programmes up to the quotas available. The allocation process in all areas followed the following principles:

1. Priority was given to households with multiple categorical disabilities (List 1), and quotas from the applicable MEACL&SP programmes (those for which households were eligible) were allocated to these households first.
2. The allocation process was applied slightly differently in the rural and peri-urban locations of Kataboi and Lomeyan to the way in which it was applied in the urban location of Lodwar:
 - 2.1. In **Lomeyan and Kataboi** – MEACL&SP quotas were allocated first to households with multiple vulnerabilities and then used to cover as many single categorical vulnerabilities as possible. When, and if, MEACL&SP quotas were exhausted, HSNP quotas were used to ensure all households with even a single categorical vulnerability were covered. The remaining HSNP quotas were then allocated to the poorest households (according to their LCS) in the location but not identified as having any categorical vulnerability.
 - 2.2. In **Lodwar** – the MEACL&SP quotas were proportionately much smaller as the population registered emerged as far larger than the census data indicates. Consequently, a very high proportion of households were identified as having one or more categorical vulnerabilities. By applying the same rules in Kataboi and

¹⁸ The overall HSNP quota was split between counties using a variation of CRA formula in the following manner: equal share (25%); population (45%); and poverty rate (30%).

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Lomeyan whereby Lists 1–4 were all ‘topped up’ from the HSNP quota, this quota would be totally exhausted. This would have left no HSNP quotas left for households in List 5 (i.e. poor but without a categorical vulnerability). Therefore, quota allocation in Lodwar was done slightly differently:

- Households with multiple vulnerabilities (List 1) were prioritised for MEACL&SP quotas.
- The remaining MEACL&SP quotas were allocated to households based on their categorical vulnerability and their LCS. When the MEACL&SP quota for that group was exhausted, the remaining households were topped up by the HSNP quota only if they were among the poorest households. This cut-off represented the total cash transfer quota available to the whole location and was used to set a cut-off LCS (in this case 9.854) under which all households were prioritised for whichever quota they were eligible. Consequently, Lodwar was the only location where households were identified with categorical vulnerabilities but not allocated a cash transfer slot.

It is key to highlight here that the allocation of programme quotas across households with the same eligibility status (within lists) was done in an *ad hoc* basis, and without following a clearly defined set of rules. For example, in Lodwar, out of the 312 households identified as having three or more vulnerabilities, 145 were assigned to PWSD-CT, 147 to OP-CT, and 20 to OVC-CT. No specific criteria were determined to identify which households within that list would be assigned to each programme (see Table 16). Table 16, Table 17, and Table 18 summarise the number of households per eligibility status and their cash transfer allocation, for each pilot location.

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TABLE 16: QUOTA ALLOCATION PER ELIGIBILITY STATUS FOR LODWAR

LIST	HOUSEHOLD DESCRIPTION	NUMBER OF ELIGIBLE HOUSEHOLDS	QUOTAS (AVAILABLE AND ALLOCATED)				
			285	806	1,680	3,140	5,911
			PWSD-CT	OP-CT	OVC-CT	HSNP	Total allocated
	Presence of three or more categorical vulnerabilities	312	145	147	20		312
	Presence of two categorical vulnerabilities: people with severe disability and older persons	153	140	13			153
List 1	Presence of two categorical vulnerabilities: people with severe disability and orphans and vulnerable children	919			919		919
	Presence of two categorical vulnerabilities: older persons and orphans and vulnerable children	411		200	211		411
List 2	Presence of people with severe disability only	327				143	143
List 3	Presence of older person only	1,399		446			446
List 4	Presence of orphans and vulnerable children only	4,811			530	954	1,484
List 5	Poor households, with no categorical vulnerabilities	N/A				2,043	2,043
TOTAL			285	806	1680	3140	5911

Source: Interview with Catherine Fitzgibbon.

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TABLE 17: QUOTA ALLOCATION PER ELIGIBILITY STATUS FOR LOMEYAN

LIST	HOUSEHOLD DESCRIPTION	NUMBER OF ELIGIBLE HOUSEHOLDS	QUOTAS (AVAILABLE AND ALLOCATED)				Total allocated
			PWSD-CT	OP-CT	OVC-CT	HSNP	
	Presence of three or more categorical vulnerabilities	77		77			77
	Presence of two categorical vulnerabilities: people with severe disability and older persons	42	35	7			42
List 1	Presence of two categorical vulnerabilities: people with severe disability and orphans and vulnerable children	110	1		109		110
	Presence of two categorical vulnerabilities: older persons and orphans and vulnerable children	84		84			84
List 2	Presence of people with severe disability only	51	51				51
List 3	Presence of older persons only	232		232			232
List 4	Presence of orphans and vulnerable children only	522			522		522
List 5	Poor households, with no categorical vulnerabilities	N/A				663	663
TOTAL			87	400	631	663	1,781

Source: Interview with Catherine Fitzgibbon.

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TABLE 18: QUOTA ALLOCATION PER ELIGIBILITY STATUS FOR KATABOI

LIST	HOUSEHOLD DESCRIPTION	NUMBER OF ELIGIBLE HOUSEHOLDS	QUOTAS (AVAILABLE AND ALLOCATED)				
			31	267	355	593	1,246
			PWSD-CT	OP-CT	OVC-CT	HSNP	Total allocated
	Presence of three or more categorical vulnerabilities	43		43			43
	Presence of two categorical vulnerabilities: people with severe disability and older persons	22		22			22
List 1	Presence of two categorical vulnerabilities: people with severe disability and orphans and vulnerable children	92				92	92
	Presence of two categorical vulnerabilities: older persons and orphans and vulnerable children	81		9		72	81
List 2	Presence of people with severe disability only	36	31			5	36
List 3	Presence of older people only	193		193			193
List 4	Presence of orphans and vulnerable children only	374			355	19	374
List 5	Poor households, with no categorical vulnerabilities	N/A				405	405
TOTAL			31	267	355	593	1,246

Source: Interview with Catherine Fitzgibbon.

Annex C Data quality assessment of the harmonised NSNP registration pilot in Turkana

C.1 REGISTRATION IMPLEMENTATION

Data collection for the harmonised NSNP registration pilot in Turkana took place in two separate phases: between February and May 2016, and between December 2016 and February 2017. The first phase of the household registration exercise began in February 2016 in three pilot sub-locations in Turkana County. However, analysis of the registration data showed that the geographical boundaries of sub-locations were unclear on the ground, and some households from adjacent sub-locations had also been enumerated. Consequently, in July 2016 the NSNP Targeting Sub-Committee approved an expanded pilot to extend registration to all households within the wider three locations of Lodwar Town, Lomeyan, and Kataboi. This occurred between December 2016 and February 2017, which led to an additional 6,000 households registered.

Besides regular HSNP enumeration staff, additional enumeration teams were hired to undertake the household registration in Turkana so that ongoing HSNP operations would not be affected. The enumerating staff were required to be Turkana-speaking and to have an educational degree, strong computer skills, and a minimum of one year of relevant working experience. Recruitment took place following the GoK's official processes, although a private firm named Matrix Development Consultants undertook the eventual hiring.

An initial five-day training workshop was organised in Nairobi in March 2016. The training covered a comprehensive summary of the theoretical background of the NSNP programme, as well as other technical knowledge required for the task: enumerators were trained in surveying techniques, the usage of equipment and computer-assisted personal interviewing (CAPI) software, and monitoring information systems (MISs). Prior to registration, enumerators and supervisors were given additional refresher training in Turkana. For this refresher training a new group of enumerators and a supervisor joined the team. It is unclear whether the new team also received the initial more extensive five-day training workshop.

To improve the quality of data collection, several measures were taken during the registration process. First, registration began with a stakeholder meeting at the county level. The aim of this meeting was to sensitise communities about the registration process and clarify where the assistance of the community might be required. The meeting included the County Commissioner, Deputy Commissioner, Assistant Commissioners, chiefs, assistant chiefs, and NSNP staff. Further stakeholder 'sensitisation' meetings occurred in each pilot location (initially sub-locations), followed by a series of community *barazas* (meetings) in each sub-location, or in some cases villages (generally several grouped together). This was done to clarify the role and responsibilities of each stakeholder, and to make the communities aware of the registration process, including information on the type of questions enumerators would ask and what could be expected of each household. Additional meetings were conducted in those villages that had been part of the original pilot sub-locations, but that were then revisited as part of the expanded pilot registration exercise at the end of 2016. These meetings aimed to explain the reason for the change and why additional data were being collected from a larger number of households.

Besides 'sensitisation' meetings, other measures were taken in order to increase data quality and minimise data entry errors. For example, village chiefs and elders were advised in advance to instruct residents to retain copies of their ID cards, and enumerators were instructed to copy information directly from those ID cards. Furthermore, key fields in the survey software were required to be entered twice by each enumerator. Registration data were uploaded at least every 48 hours by each enumerator, which resulted in no losses of data. Data were checked daily by Nairobi-based staff when enumerators had access to the internet. The MIS server in Nairobi ran checks based on the ID numbers for all the individual members of the registered households, using the Integrated Population Registration System. The results were

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returned to the enumeration supervisors, allowing rejected forms to be red-completed before enumeration teams left the area.

To maximise the comprehensiveness of the data collected, registration occurred on the doorstep of each household. This method proved to be more successful than fixed-point registration, since it allowed enumerators to verify certain answers and to ensure that only households within the appropriate geographical boundaries were registered. To further ensure that all households in a village were visited, enumerators were required to mark the structure of each household with a permanent marker after completion of the survey. Furthermore, survey progress was monitored almost in real-time through geo-tagging.

Enumerators were also closely managed by their supervisors: each supervisor shadowed one enumerator per day, and field teams had a daily evaluation at the end of the day to discuss difficulties encountered during fieldwork.

Despite the efforts made in maximising data quality, the registration process encountered several drawbacks: first, although enumerators were given an indicative target of 40 minutes for each survey, no correction mechanism was put into place for cases in which enumerators were significantly over or under this threshold; secondly, project officers had been instructed to re-enumerate 10 randomly selected households already interviewed by 10 different enumerators seven to 10 days a month – however, such a back-check did not take place.

C.2 DATA MANAGEMENT

Registration data were provided to OPM in two separated Excel files (.xls). Each file contained data at two different levels of analysis: household-level data and household member information. OPM merged both datasets together, which resulted in a unique final dataset containing information on 1,542 households. *Stata* software (version 14.0) was used to undertake this merging process, as well as all data checks described in Section 0 below.

C.3 CHARACTERISTICS OF THE REGISTRATION DATA

In order to gain a clearer understanding of the quality of the harmonised NSNP Turkana registration pilot data, OPM conducted several basic checks on the aforementioned final registration dataset.

The checks conducted were as follows: First, we checked the total number of households in the registration data. We compared these numbers to those of other registration exercises, in order to identify any potential under-coverage issues in the registration process. We also checked the registration data against the registration form which was used for data collection, and highlighted any discrepancies encountered. Third, we looked at the rate of non-response and missing answers for key variables in the dataset, focusing in particular on those variables whose values were used to construct each household's LCS. We also studied the distribution of these key variables, looking for the observations that were above 3 standard deviations from the mean in order to assess whether a particularly high prevalence of outliers could be observed. Finally, we checked whether routing was correctly implemented, i.e. we checked for skip errors.

Comprehensiveness of the registration data

By design, the household registration process was meant to be entirely comprehensive, i.e. it should have collected information from all households and respective household members in the three locations in which the pilot took place. Despite the efforts undertaken to reduce the likelihood of under-coverage during registration (see Section 0), it is not possible to ascertain the degree to which complete coverage was successful, given the unavailability of appropriate benchmarks against which the numbers can be compared.

Table 19 below compares the total number of households registered during the Turkana pilot against the numbers registered at the start of the HSNP 2 (2012) and the estimated household population taken from census data (2009). Although the table shows a significant variation in the household population in each area, it is particularly hard to

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disentangle where these differences come from. Note that four (seven) years passed between the start of the HSNP 2 (the census) and the Turkana pilot, and that locations such as Lomeyan underwent significant boundary changes since then.

TABLE 19: NUMBER OF HOUSEHOLDS PER LOCATION, ACCORDING TO DIFFERENT SOURCES

DATA SOURCE	LOMEYAN	KATABOI	LODWAR	TOTAL
Census – 2009 (1)	2,990	1,470	6,640	11,100
HSNP 2 – 2012 (1)	4,099	1,504	9,253	14,856
Harmonised NSNP Turkana registration pilot	2,273	2,026	11,133	15,432

Notes: (1) HSNP (2017) 'Draft NSNP Harmonised Registration and Targeting Exercise Report Turkana Pilot', March 2017

Notwithstanding the time difference and the boundary changes, CBV exercises found that this registration process was more comprehensive than the 2012 effort, though they still identified many households that had been 'missed' during registration. For example, there were claims that an entire village had been missed in Kataboi, and many families were away herding animals because of the drought. The list of missed households was particularly extensive in Lodwar Town (HSNP, 2017).

Registration data vs. registration instrument

Despite the existence of two different versions of the NSNP registration form (see 0), OPM was informed that data collection for the harmonised NSNP registration pilot in Turkana was entirely based on Version 2 of the instrument (RF2). Nevertheless, a considerable number of inconsistencies have been identified between the registration data and the respective form, which leads OPM to conclude that different versions of the registration instrument were used during the different stages of the Turkana pilot.

The two versions of the registration instrument differ in several ways. First, certain questions included in registration form 1 (RF1) are not included in registration form 2 (RF2), and vice versa. Second, some other questions appear in both instrument versions, but have differing answer options in each of them (see 0 for a summary of discrepancies across versions of the NSNP registration form).

For analysis purposes (e.g. replication of the construction of the LCS), it is vital to be able to identify which version of the registration form was used to collect data for each data observation. However, such an identification is not feasible with the information currently available to OPM.

As mentioned in Section 0, registration data were provided to OPM in two separate Excel files. The first file exclusively contains data on the sub-locations of Kapus, Kataboi, and Lodwar Township. The second file, on the other hand, contains data on the sub-locations of Katiko, Lomekwi, Lomeyan, Nachura, Nakwamekwi, and Napetet (see Table 20). Such a difference in geographical coverage indicates that the first file contains data on households which belong to those sub-locations that were part of the original pilot, while the second file refers to households from sub-locations that were part of the expanded pilot exercise. This is confirmed by the data entry dates in each file: those range from March to May 2016 for the first Excel file, and from December 2016 to February 2017 for the second one.

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TABLE 20: NUMBER OF HOUSEHOLDS PER LOCATION, SUB-LOCATION, AND DATA FILE

LOCATION	SUB-LOCATION	NUMBER OF HOUSEHOLDS IN FILE 1	NUMBER OF HOUSEHOLDS IN FILE 2
Lomeyan	Kapus	702	0
	Lomeyan	0	870
	Nachuro	0	701
Kataboi	Kataboi	970	0
	Katiko	0	503
	Lomekwi	0	553
Lodwar	Lodwar Township	3,436	0
	Nakwamekwi	0	4,522
	Napetet	0	3,175
TOTAL		5,108	10,324

Despite the fact that each file contains data collected during a specific stage of the registration pilot, it is impossible for OPM to conclude that a correspondence exists between pilot phases and the use of a particular version of the registration form. In order to exemplify this problem, we use the variable *'main fuel used for cooking'* as a starting point. Data on this variable are collected by question 27 in RF1, and by question 2.09 in RF2. However, the number of answer options differs across both versions of the registration form: RF1 provides 11 answer options, while RF2 only provides eight (see 0). From the registration dataset we observe that answer options 9, 10, and 11 only appear for households that were registered during the initial registration pilot. The same is true for other variables, such as *'main source of drinking water'*. This type of evidence could lead us to conclude that RF1 was used to collect data during the original registration pilot, while RF2 was used for the expanded registration pilot. Nevertheless, data on other variables contradict this initial deduction. For example, the variable *'ownership of car'* is collected by question 2.15 in RF2, but does not appear in RF1. Nevertheless, all households in our dataset (from both pilot phases) contain data for this variable.

Missing values

Additionally, we inspect the number of missing values for some key variables in the dataset. To do so, we compare the total number of households (or household members) in the dataset to the number of data entries for each question, allowing us to determine the number of missing observations.

At the household level, three variables present a large number of missing values (exactly 5,108): *'number of chickens owned'*, *'number of pigs owned'*, and *'ownership of mobile phone'*. This is due to the fact that data on these three variables were only collected for those households registered during the expanded pilot. Interestingly, the first two of these variables do not correspond to any question in either RF1 or RF2, and the third one exclusively appears in RF1 rather than RF2.

At the member level, the variable *'monthly earnings'* presents 46,588 missing values. This is explained by the fact that this information was only collected for households during the original pilot. Furthermore, data referring to household members' age is considerably problematic in the case of households that were registered during the expanded phase of the pilot. Although the variable *'age of household member in years'* only presents 26 missing or implausible values, this number increases to 466 for the variable *'age of household member in months'*. Moreover, the content and format of this variable is not consistent within the dataset and seems to be reporting three different types of information depending on the case: i) number of months of age, ii) year of birth, or iii) complete date of birth.

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Outliers and distribution

We also conduct data quality checks on the distribution of some key non-categorical variables. For each variable we collect the number of observations, mean, standard deviation, as well as the number and proportion of observations that lie above two and three standard deviations from the mean. This gives us an idea of the distribution of the variables and how many extreme values and potential outliers we can find.

As can be seen in Table 21 the proportion of observations outside the three standard deviations varies across variables. Generally, most of the variables have under 1 percent of the observations outside three standard deviations. This is consistent with the fact that we would usually not expect variables to have a large proportion of values outside of three standard deviations of the mean, if the data were normally distributed.

However, data on the number of goats owned per household presents over 3 percent of observations above or below three standard deviations from the mean. For member level data, the amount of monthly earnings shows over 1 percent of observations above or below one standard deviation (SD) from the mean.

TABLE 21: OUTLIERS AND DISTRIBUTION

VARIABLE	N	MEAN	ST. DEV	OUTLIERS TWO SD	OUTLIERS THREE SD	PROPORTION OF OUTLIERS THREE SD
Household-level data						
Number of zebu owned	15432	0.02	0.45	57	44	0.29%
Number of exotic owned	15432	0.01	0.76	29	21	0.14%
Number of shoats owned	15432	1.19	17.65	28	3	0.02%
Number of camels owned	15432	0.07	0.94	280	126	0.82%
Number of donkeys owned	15432	0.05	0.89	151	65	0.42%
Number of goats owned	15432	2.62	5.62	787	467	3.03%
Number of pigs owned	10324	0	0.16	9	9	0.09%
Number of chicken owned	10324	0.21	2.18	129	54	0.52%
Amount of other benefits	15432	1068.692	2317.94	191	33	0.21%
Member-level data						
Monthly earnings	21449	431.0391	2301.49	491	323	1.51%

Skip patterns

The final data quality check we conduct is looking at the skip patterns and whether they were correctly followed. In particular, we look at two skip patterns within the registration form: i) identification of caregiver for non-adult members, ii) and identification of spouses living in the household.

For the first skip pattern, data show that out of all members aged under 18, 3.4% present missing values for the identification of a caregiver. This percentage is reduced to 1.2% when accounting for at least one caregiver having been identified per household.

The second skip pattern between spouse living in household and spouse ID shows less coherent results. In 55% of the cases where someone married reports having a spouse living within the household, identification of such a spouse is missing. The reverse mistake is also prevalent: in 15.7% of the cases where a spouse ID was filled in, the spouse was identified as not living in the household.

In relation to marital status and spouse identification, further discrepancies can be detected in the dataset. For instance, in 111 cases a spouse is identified whilst the household member's marital status is '*not married*'. Moreover, there are

122 people who are identified as being 'monogamously' married, whilst multiple members in their households report being married to them. Third, out of those cases where multiple household members report being married to the household head (197), the relationship to the household head is identified as 'spouse' only 81 times. In other cases, such a relationship is identified as child, grandchild, or non-relative. This demonstrates that some confusion may have existed with regard to what it means to be married in the first place.

Skip patterns between household members' age and school status, and between members' age and work status, cannot be properly evaluated given that data collection was undertaken using different registration forms (with different skip pattern rules).

C.4 CONCLUSION

It has been reported that the comprehensiveness of the registration data has improved with respect to the latest registration exercise undertaken by HNSP 2 in 2012. The full extent of such coverage cannot, however, be verified, given the unavailability of appropriate benchmarks against which registration numbers can be compared.

The main caveat regarding the registration data derives from the use of different registration tools during the pilot, and the impossibility of identifying which registration form was used in each case. We find that the majority of the variables do not have many missing values, and when they exist, it is due to the use of different registration forms. Analysis of the distribution of the non-categorical variables does not raise significant issues: only two variables present over 1 percent of observations outside the three standard deviation cut-off for each observation. Finally, the skip pattern relative to marital status and spouse identification seems to not have been applied systematically.

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Annex D NSNP Turkana pilot registration forms

RF1

Household members

No.	Household member characteristics For all persons in the household											Orphans For all younger than 18		Education For all 5 years and older			Recent activity For all 5 years and	Health For all persons in the household			Therapeutic feeding All <60 mths.(5yrs)	School Meals For all between 5 & 18
	1	2	3	4	5	6	7	8	9	10	11	#	#	#	15	16						
	What is the full name of all the members of the household?	What is the relationship of THIS PERSON to the main provider?	SEX	Does THIS PERSON HAVE A Birth Certificate?	Age: If 6 or older, years only. If less than 6, give years & months. 97 years & over = 97 Age not known= 98 Not stated =99	Is the biological father of this person alive?	Is the biological mother of this person alive?	Has this person ever attended school or currently attending ?	Highest grade completed	Why did NAME stop or never attend school?	What was NAME mainly doing in the past 7 days?	Does THIS PERSON suffer from a chronic illness?	How long has NAME suffered from this illness (these illnesses)?	Is NAME physically or mentally handicapped in any way which limits or prevents activities or	Is this INFANT currently receiving F100 or Plumpy'nut as part of a therapeutic feeding	Does this day-school going child receive any meal at school?						
	MAKE A COMPLETE LIST OF ALL INDIVIDUALS WHO NORMALLY LIVE TOGETHER IN THIS HOUSEHOLD, STARTING WITH THE Main Provider/Head of household	Main provider/ HH head 1 Spouse..... 2 Son..... 3 Daughter..... 4 Father/Mother 5 Sister / Brother 6 Grandchild 7 Other relative 8 Servant (live-in)..... 9 Foster Child 10 Co-wife 11 Other non-relative 12	Male 1 Female 2	No 0 Yes 1	Events Calendar Mandera Marsabit - Isiolo Marsabit-Samburu Turkana Wajir	No 0 Yes 1 Doesn't know 2 Skip 3	No 0 Yes 1 Doesn't know 2 Skip 3	Never 1 →Q10 Yes, but not now →Q9→Q10 Currently attending →Q9→Q11	See code list in comment	See code list in comment	See code list in comment	No 0 Yes 1 →Q14	Don't know ...98 Not-stated....99	No 0 Yes 1	No 0 Yes 1	No 0 Yes 1						
	First Name Middle Name Surname				Years Months							Years Months										
1																						
2																						
3																						
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NSNP HARMONISED TARGETING METHODOLOGY PILOT

Household questions, dwelling characteristics, and assets

<p>17 Are there any ADULTS from this household that are currently registered to a Cash-for-Work or Food-for-Work Programme? <input type="checkbox"/> No 0 Yes 1</p>	<p>26 What is the household's main source of LIGHTING fuel?</p> <p>Collected firewood 1 <input type="checkbox"/></p> <p>Purchased firewood 2</p> <p>Grass 3</p> <p>Paraffin/kerosene 4</p> <p>Electricity 5</p> <p>Solar 6</p> <p>Gas 7</p> <p>Torch (dry cells)..... 8</p> <p>Candles 9</p> <p>Biogas 10</p> <p>Other 11</p>	<p>34 Describe MAIN PROVIDER employed occupation if worked in the last 7 days. If MAIN PROVIDER did not work during the last 7 days but worked during last 12 months give main occupation during last 12 months. NOTE: Coding = KIHBS 2005-06+1</p> <p>MAIN PROVIDER occupation not defined 1</p> <p>(Herding livestock) Poultry, dairy & livestock producers 2</p> <p>Crop & animal producers (relative large scale) 3</p> <p>Street vendors & related 4</p> <p>Other sales & service & manufacturing (no livestock) 5</p> <p>Field crop, vegetable and horticultural 6</p> <p>Armed Forces, police, customs 7</p> <p>Primary teachers, secondary & technical inst. teachers, other teaching profs 8</p> <p>Government administrators, local authority officials, other administrators & managers 9</p> <p>Medical-clinical, associate medical, nursing, health profs, midwives, aux. nurses 10</p> <p>Subsistence agriculture (small scale crop+livestock in), burning/selling charcoal, fisheries, forestry workers, agriculture labour, construction polls, thatching 11</p> <p>Shop assistants, food vendors, sales & services, cashiers, bartenders 12</p> <p>Food, brewers, catering, baking, butchers, fishmonger, dairy products 13</p> <p>Domestic workers, caretakers, messengers, watchman, housekeepers, casual unskilled labour 14</p> <p>Construction, maintenance, mining 15</p> <p>Drivers, transport and freight workers 16</p> <p>Handicraft workers 17</p> <p>Other jobs 18</p>
<p>18 How many spouses does HEAD of Household have who are residing outside of this household? <input type="checkbox"/></p>	<p>27 What is the household's main source of COOKING fuel?</p> <p>Collected firewood 1 <input type="checkbox"/></p> <p>Purchased firewood 2</p> <p>Grass 3</p> <p>Paraffin/kerosene 4</p> <p>Electricity 5</p> <p>Gas/LPG 6</p> <p>Own production of charcoal..... 7</p> <p>Purchase of Charcoal 8</p> <p>Biomass residue 9</p> <p>Biogas 10</p> <p>Other 11</p>	
<p>19 Ask HH head or any HH responsible member: How many children aged under 15 years who are either children of an adult in this household and live outside household, or children of a co-wife of the HH head and are supported by this household but not living in this household? <input type="checkbox"/></p>	<p>28 Does your household own any [ITEM]? <input type="checkbox"/> No 0 Yes 1</p> <p>Sofa set <input type="checkbox"/></p> <p>Bed <input type="checkbox"/></p> <p>Refrigerator <input type="checkbox"/></p> <p>Jiko-charcoal <input type="checkbox"/></p> <p>Kerosene stove <input type="checkbox"/></p> <p>Electric iron <input type="checkbox"/></p> <p>Charcoal iron <input type="checkbox"/></p> <p>Paraffin lamp <input type="checkbox"/></p> <p>Frying pan <input type="checkbox"/></p> <p>Mattress <input type="checkbox"/></p> <p>Towels <input type="checkbox"/></p> <p>Mosquito net <input type="checkbox"/></p> <p>Cellular handset <input type="checkbox"/></p> <p>Animal cart <input type="checkbox"/></p> <p>Motorcycle <input type="checkbox"/></p> <p>Bicycle <input type="checkbox"/></p> <p>Radio/radio in music center <input type="checkbox"/></p> <p>TV <input type="checkbox"/></p>	
<p>20 How many habitable rooms does this HH occupy? (Do NOT count bathrooms, toilets, storerooms, or garage) <input type="checkbox"/></p>	<p>29 What is the total area of land (acres, hectares, taaps or basins) cultivated during the last 12 months</p> <p><input type="checkbox"/> Acres to at least 1 dp Width Length</p> <p><input type="checkbox"/> Ha. to at least 1 d.p Basin/Tapp/Plot #1 m m</p> <p> Basin/Tapp/Plot #2 m m</p> <p> Basin/Tapp/Plot #3 m m</p>	
<p>21 What is the major construction material of the WALLS?</p> <p>Stone 1 <input type="checkbox"/></p> <p>Brick/block/cement 2</p> <p>Mud/wood 3</p> <p>Mud/cement 4</p> <p>Wood only 5</p> <p>Corrugated iron sheet 6</p> <p>Grass/sticks/dasse /makuti..... 7</p> <p>Tin 8</p> <p>Other 9</p>	<p>30 How many [...] does household own at present?</p> <p>Traditional Zebu cattle- beef, milk & calves <input type="checkbox"/></p> <p>Exotic cattle-beef, dairy & calves <input type="checkbox"/></p> <p>Shoats (wool, hair, dairy, meat & immature) <input type="checkbox"/></p> <p>Camels-adult & immature <input type="checkbox"/></p> <p>Donkeys-adult & immature <input type="checkbox"/></p>	
<p>22 What is the major construction material of the ROOF?</p> <p>Corrugated iron sheet 1 <input type="checkbox"/></p> <p>Tiles..... 2</p> <p>Concrete 3</p> <p>Asbestos sheets..... 4</p> <p>Grass/dasse 5</p> <p>Makuti 6</p> <p>Tin..... 7</p> <p>Other 8</p>	<p>31 Which best describes the household members residency status? <input type="checkbox"/></p> <p>All household members live in this location throughout the year 1</p> <p>Some household members live in this location throughout the year while others migrate 2</p> <p>All household members migrate together -fully mobile 3</p>	
<p>23 What is the major construction material of the FLOOR?</p> <p>Cement..... 1 <input type="checkbox"/></p> <p>Tiles..... 2</p> <p>Wood..... 3</p> <p>Earth..... 4</p> <p>Other 5</p>	<p>32 Is this household currently registered and receiving a general food distribution? <input type="checkbox"/> No 0 Yes 1</p> <p>Is household currently receiving money from any cash transfer schemes? HSNP <input type="checkbox"/> No 0 Yes 1</p> <p> OVC-CT <input type="checkbox"/> No 0 Yes 1</p> <p> PWSD-CT <input type="checkbox"/> No 0 Yes 1</p> <p> OP-CT <input type="checkbox"/> No 0 Yes 1</p>	
<p>24 What type of TOILET does this household have?</p> <p>Flush toilet..... 1 <input type="checkbox"/></p> <p>VIP latrine..... 2</p> <p>Uncovered pit latrine..... 3</p> <p>Covered pit latrine..... 4</p> <p>Bucket/pan..... 5</p> <p>Bush- None..... 6</p> <p>Other 7</p>	<p>33 How many of these fishing items do you have for your household? Skipped unless is fishing livelihood zone.</p> <p>Boats/ Rafts <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> >=2</p> <p>Nets <input type="checkbox"/> 0 <input type="checkbox"/> 0-1 <input type="checkbox"/> 2-4 <input type="checkbox"/> 5-20 <input type="checkbox"/> 20+</p> <p>Lines <input type="checkbox"/> 0 <input type="checkbox"/> 2-14 <input type="checkbox"/> 15-200 <input type="checkbox"/> 200+</p> <p>Hooks <input type="checkbox"/> 0 <input type="checkbox"/> 1-40 <input type="checkbox"/> 41-1000 <input type="checkbox"/> 1000+</p>	
<p>25 What is household's main source water over the past year?</p> <p>Piped water inside dwelling 1 <input type="checkbox"/></p> <p>Piped water into plot/yard..... 2</p> <p>Public tap..... 3</p> <p>Tube well/borehole with pump... 4</p> <p>Protected dug well 5</p> <p>Protected spring 6</p> <p>Rainwater collection 7</p> <p>Unprotected dug well/springs 8</p> <p>River, lake, pond or similar 9</p> <p>Water truck / vendor 10</p> <p>Bottled water 11</p> <p>Other 12</p>		

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Health module

Q1. Was NAME sick or injured in the last 4 weeks, other than a pre-existing chronic sickness or injury?	Q2. What kind of health provider did NAME visit?	Q3. What was the main reason nobody was consulted for this illness or injury?	
No 0	Did not visit health provider	0 No need-Illness not severe enough	0
Yes 1	→ Q3	Too expensive	1
No → next Section	Community health worker	1 Low treatment quality	2
Yes → Q2	Government hospital	2 Long waiting time	3
	Government health centre	3 No medicine available	4
	Government dispensary	4 No Dr available	5
	Private doctor/ nurse	5 Staff not helpful/friendly before	6
	Private hospital/clinic	6 No female health staff available	7
	NGO/FBO health facility	7 No time/too busy	8
	Traditional healer	8 Facility too far away	9
	Pharmacist	9 No transportation	10
	Priest/sheikh	10 No-one to accompany	11
	Other	11 No-one to do home duties	12
	1-11 → next Section	Self treated	13
		Cultural reasons	14
		Other	15

Dietary diversity

During the last 7 days, how many days did your household members consume?			
(Consider foods eaten by any member of the household)			
Meat (chicken, beef, goat, pork)		Wheat (bread), rice, ugali or porridge	
Fish (fresh/dried/canned) & other		Cassava, sweet potato & other roots/tubers	
Eggs		Oils and fats	
Beans/Legume or nuts		Vegetables	
Maziwa, maziwa lala		Fruits	

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RF2

REPUBLIC OF KENYA - NATIONAL SOCIAL SAFETY NET PROGRAMME																																																																																																																																																																																																																																																																																																																																																																																																																																													
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(1.01) COUNTY: _____					(1.02) SUB-COUNTY: _____					(1.03) WARD: _____																																																																																																																																																																																																																																																																																																																																																																																																																																			
(1.04) CONSTITUENCY: _____					(1.05) LOCATION: _____					(1.06) SUB-LOCATION: _____																																																																																																																																																																																																																																																																																																																																																																																																																																			
(1.07) VILLAGE: _____					(1.08) PHYSICAL ADDRESS: _____					(1.09) DURATION OF RESIDENCE IN THIS PLACE: _____ YEARS and _____ MONTHS																																																																																																																																																																																																																																																																																																																																																																																																																																			
(1.10) NEAREST CHURCH/MOSQUE: _____					(1.11) NEAREST SCHOOL: _____					(1.12) AREA TYPE: <input type="checkbox"/> URBAN <input type="checkbox"/> RURAL <input type="checkbox"/> NAROB																																																																																																																																																																																																																																																																																																																																																																																																																																			
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(2.01) How many habitable ROOMS does this dwelling unit contain? <input type="checkbox"/>			(2.02) Main source of WATER <input type="checkbox"/>			(2.10) Main type of LIGHTING FUEL: <input type="checkbox"/>			(Questions 2.22-2.30 to be asked of the head or any other responsible person)																																																																																																																																																																																																																																																																																																																																																																																																																																				
(2.05) TENURE status of the dwelling unit <input type="checkbox"/>			(2.08) Main mode of HUMAN WASTE DISPOSAL: <input type="checkbox"/>			Does the household OWN any of the following items?			(2.22) How many LIVE BIRTHS occurred in this household in the last 12 months? <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																				
(2.03) ROOF <input type="checkbox"/>			(2.09) Main type of COOKING FUEL: <input type="checkbox"/>			(2.11) Television <input type="checkbox"/>			(2.14) Exotic cattle <input type="checkbox"/>			(2.23) How many DEATHS occurred in this household in the last 12 months? <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																	
(2.04) WALL <input type="checkbox"/>			(2.12) Motorcycle <input type="checkbox"/>			(2.15) Car <input type="checkbox"/>			(2.17) Indigenous cattle <input type="checkbox"/>			(2.24) Currently, the CONDITIONS of your household are: <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																	
(2.06) FLOOR <input type="checkbox"/>			(2.13) Tub-Tuk <input type="checkbox"/>			(2.16) Sheep <input type="checkbox"/>			(2.18) Sheep <input type="checkbox"/>			(2.25) In the past 7 days, did anyone in this household cut the size of the meals or skip meals because of the lack of enough money? <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																	
(2.07) RISK of <input type="checkbox"/>			(2.14) Goat <input type="checkbox"/>			(2.17) Donkeys <input type="checkbox"/>			(2.19) Goat <input type="checkbox"/>			(2.26) How MUCH was the benefit in the last receipt? <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																	
												(2.27) Name of the PROGRAMME: _____																																																																																																																																																																																																																																																																																																																																																																																																																																	
												(2.28) What type of BENEFIT do you receive? <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																																																																																																																																	
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NSNP HARMONISED TARGETING METHODOLOGY PILOT

Annex E Supplementary data tables

TABLE 22: DIFFERENCES IN HOUSEHOLD CHARACTERISTICS ACROSS BENEFICIARY GROUPS

INDICATOR	BENEFICIAR IES VS. NON-BENS.	HSNP VS. NON- BENS.	SAU VS. NON- BENS.	HSNP VS. SAU BENS
Mean age of the household	1.6**	-0.1	3.2***	-3.3***
Proportion of females in the household	-0.8	-1.4	-0.2	-1.2
Proportion of live births in the household	-0.5	-0.3	-0.7	0.4
Proportion of deaths in the household	-1.2	-1.8*	-0.6	-1.1
% households with no working age adult	0.01	-0.01	0.02	0.03*
% households with literate head	-9.7***	-7.9**	-11.5***	3.6
% households with working head	-2.3	-3.8	-0.8	-3.0
% households with improved water source	-11.4***	-8.5***	-14.3***	5.9*
% households with improved toilet facility	-2.5	1.4	-6.6**	8.0***
Number of rooms per person	0.0	0.0	0.0	0.0
Food share of monthly consumption expenditure	2.7***	2.5***	3.0***	-0.5

Notes: * Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

TABLE 23: DIFFERENCES ACROSS 'CATEGORICAL VULNERABILITY' STATUS WITHIN NSNP BENEFICIARY HOUSEHOLDS

INDICATOR	MULTI. VS SINGLE VULN.	MULTI. VS. NO VULN.	SINGLE VS. NO VULN.	VULN. VS. NO VULN.
Mean age of the household	2.3**	4.4***	2.1***	3.0***
Proportion of females in the household	-2.2	-0.1	2.0	1.2
Proportion of live births in the household	-0.1	-0.9	-0.8	-0.8
Proportion of deaths in the household	2.1*	1.7	-0.3	0.5
% household with no working age adult	0.02	0.04*	0.02	0.03
% household with literate head	-0.3	1.6	1.9	1.8
% household with working head	1.7	2.8	1.1	1.8
% household with improved water source	10.2**	4.8	-5.5	-1.5
% household with improved toilet facility	9.0**	2.8	-6.2*	-2.8
Number of rooms per person	0.0	0.0	0.0	0.0
Food share of monthly consumption expenditure	-0.9	-0.7	0.2	-0.1

Notes: * Statistically significant at 10%; ** Statistically significant at 5%; *** Statistically significant at 1%

Annex F Inflation adjustment of poverty lines

The poverty lines used in this study were constructed using poverty lines from existing data, updated to account for inflation. At the time of analysis, the 2015/16 KIHBS data were not yet available, so we made a choice between three alternative approaches to construct poverty lines:

- updating the 2005 KIHBS poverty line for Consumer Price Index (CPI) inflation;
- updating the poverty line calculated for the 2016 survey of the HSNP counties for CPI inflation; and
- updating the HSNP 2 poverty lines using an inter-survey inflation rate computed between the previous HSNP 2 survey and the new data.

Adjusting previous poverty lines using CPI inflation has the disadvantage that the inflation rates are national and may not accurately represent price trends in Turkana. We therefore chose to update poverty lines based on the estimated inter-survey inflation rate between the HSNP2 independent evaluation survey data and the Turkana registration pilot data.

The calculation of this inflation rate involved the following steps:

- We used the HSNP baseline data to calculate food basket shares for households. The reason for using the baseline data rather than the HSNP 2 impact evaluation data or the current Turkana pilot data is that only the baseline data can be considered representative of Turkana.
- We updated food prices using price data from the current Turkana pilot, and applied the new prices to the estimated food basket shares to determine inflation.
- For the non-food segment of the poverty line, we updated HSNP 2 impact evaluation non-food prices with national non-food inflation rates.¹⁹

The resulting inflation rates emerge as being relatively high. We also found that there relatively high prices of milk (fresh and sour) reported in the Turkana pilot data compared with the HSNP 2 impact evaluation data. Since milk forms a relatively small part of the overall household consumption basket in the new data, we cannot establish for certain whether these apparent increases in the price of milk are reliable (and potentially related to the protracted and severe drought in the period leading up to data collection for the Turkana pilot study), or not. We thus calculated one version of the poverty lines in which we assumed that the price of fresh and sour milk had increased in line with national inflation and another version where we maintained the estimated inflation rate calculated within the data. Comparing the two versions we found only minimal differences in the resulting poverty rates after making this adjustment, so chose to use the unadjusted data for our analysis.

¹⁹ We could not calculate an inter-survey inflation rate for non-food items since the survey data did not include quantities for non-food items.

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TABLE 24: POVERTY LINES WITH AND WITHOUT ADJUSTMENT FOR MILK PRICES

	UNADJUSTED		ADJUSTED FOR MILK PRICES	
	Poverty line	Food pov. line	Poverty line	Food pov. line
Value of HSNP 2 impact evaluation poverty line (KES)	2,317.6	1,779.3	2,317.6	1,779.3
% below poverty line in HSNP 2 impact evaluation	61.8%	62.0%	61.8%	62.0%
Current poverty lines based on HSNP 2 impact evaluation poverty lines				
Non-food inflation				106.36%
Food inflation		-		117.26%
New values poverty line	3,478.3	2,905.7	3,295.3	2,722.7
% of households below poverty line in current data	87.7%	82.0%	86.7%	78.9%