

Paper 6

Title: Linking human capabilities with livelihood strategies to speed poverty reduction: Evidence from Rwanda.

Abstract:

Acute land scarcity in Rwanda limits poor people's ability to accumulate and move out of poverty. Options for livelihood diversification are restricted by the absence of a vibrant and job-rich non-farm rural economy, and by high rural-urban inequality which makes the urban economy somewhat inaccessible, particularly given the regulated nature of the urban informal sector, limiting opportunities for migration. Competition for employment is made more challenging by low capabilities, which place high-return jobs beyond reach for many poor people. This paper relies on mixed methods research to explore a land-education-jobs nexus and identify the linked human capital and livelihood determinants of poverty escapes to understand the factors slowing poverty reduction in Rwanda. The quantitative analysis uses three waves of nationally representative panel data between 2010/11 and 2016/17 to investigate correlates of poverty trajectories. The qualitative analysis uses content analysis to explore life histories, focus group discussions and key informant interviews from 14 study sites to explore factors driving change in livelihoods and well-being.

Our findings show that the triple challenges of acute land scarcity, low capabilities and a sluggish non-farm economy lock together to form a nexus which limits sustained poverty escapes. In the regression analysis, households headed by primary school graduates are half as likely to be poor as those headed by a primary school dropouts while secondary completion or higher virtually eliminates the risk of poverty. Despite demand, secondary school completion in the fieldwork is beyond the reach of most children from poor households, limiting their later options for livelihood diversification. Near landlessness constrains accumulation and Rwanda's thin rural non-farm economy provides few jobs or opportunities for self-employment.

Rebooting poverty reduction in Rwanda particularly following the Covid-19 pandemic will require finding ways to sustain poverty escapes through fuelling job-rich 'growth from below' by generating

additional demand in the rural economy, continuing to boost agricultural productivity and including even the poorest peasant farmers in that, creating a more conducive business environment for small enterprises and continuing to stimulate investment in job-rich enterprise. Underpinning these strategies should be strengthened efforts to enhance capabilities, education quality, and progression into secondary education.

Key Words [Up to 6 key words]

Poverty dynamics, education, land scarcity, non-farm employment

Highlights

- The absence of a vibrant and job-rich non-farm rural economy limits livelihood options, particularly for low-capability households
- Secondary school completion is beyond the reach of most poor rural children, leaving them with few high-return livelihood options
- Land scarcity, low capabilities and the sluggish non-farm economy lock together to form a nexus limiting sustained escapes from poverty in rural Rwanda
- A high-risk environment, coupled with an as yet ineffective enabling environment, constrains diversification and investment in rural enterprise

1. Introduction

Rwanda saw rapid poverty reduction during the 2000s, with poverty rates falling dramatically from 60.3% in 2000 to 38.2% in 2016/17 (using the national poverty line) (NISR, 2018). Poverty reduction was largely driven by labour market participation, especially in non-farm employment (Bizoza et al., 2018). Improvement in non-income indicators (health, education, assets, housing) was rapid between 2000 and 2010 and progress was largely evenly distributed between richer and poorer quintiles (McKay and Verpoorten, 2016). More recently, however, poverty reduction has stalled, with the most recent Enquête Intégrale sur les Conditions de Vie (EICV) survey by the National Institute of Statistics Rwanda (NISR) in 2016/17 showing a statistically non-significant poverty reduction from 39.1% to 38.2% between 2013/14 and 2016/17.

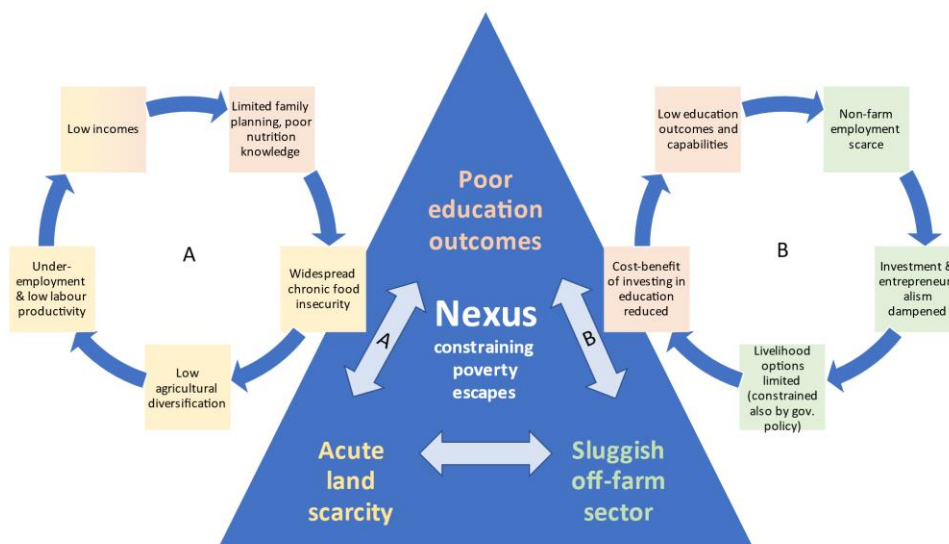
A large literature studies the determinants of poverty dynamics in many different contexts (Bigsten et al. 2003, Woolard and Klasen 2005, Krishna et al. 2006, Kassie et al. 2011, Thorat et al 2017). While the early literature focused strongly on factors affecting agricultural productivity, as severe poverty was viewed as being predominantly a rural phenomenon, it has gradually moved towards the study of complementary factors such as non-farm employment, education and health (Rigg, 2005;) as greater recognition was given to the multiple drivers of poverty (Thorbecke, 2013; Alkire and Santos, 2014; Vijaya et al., 2014) and convincing evidence of urban poverty was amassed (Amis, 1995; Ravallion et al., 2007; Mitlin and Satterthwaite, 2012).

This paper contributes to a wider literature on poverty dynamics, including in this special issue (Diwakar and Shepherd, 2020), and advances earlier findings on poverty dynamics in Rwanda by conducting a mixed-method analysis (see Davis and Baulch, 2011) of different factors and their interactions in order to determine possible drivers of the recent stall in poverty reduction. Our qualitative analysis initially led to the identification of a nexus of issues locking together low human capabilities with limited non-farm rural employment opportunities and acute land scarcity, which was seen to be making poverty escapes extraordinarily difficult to achieve and even more difficult to

sustain. We verified the consistency of these findings with an econometric analysis of three waves of household panel data (EICV) focusing on how those three factors interacted together in the dynamics of poverty. Our analysis expands on explorations of poverty nexus (Duraiappah, 1998; Osabohien *et al.*, 2020; Okon and Monday, 2017).

Figure 1 presents a graphical representation of this land-education-jobs nexus. This paper focuses on (i) the relationship “A” of Figure 1 linking acute land scarcity and poor education outcomes and (ii) the relationship “B” between poor education outcomes and a sluggish off-farm economy. The third linkage is simplified to a vicious cycle of a sluggish off-farm economy putting pressure on agriculture, hence amplifying land scarcity. In turn, land scarcity limits the capacity of households to generate farming revenue, making it difficult to invest and develop enterprises, as well as limiting local demand for goods and services. Clearly, there are other bi-directional pathways that operate alongside those noted in the diagram, but this web of relationships was necessarily simplified for this paper, which focuses strongly on the pathways linked to education.

Figure 1: Nexus of issues constraining poverty escapes in Rwanda



We build on earlier literature analysing the movements into and out of poverty in general, as well as

in Rwanda. In particular, a cross-country analysis from eight mixed methods studies identified factors central to not only escaping poverty rather than experiencing impoverishment but to achieving sustained rather than temporary escapes from extreme poverty (ibid.).

Building an income and asset base was found to be important to poverty escapes and key strategies could be summarised as: (1) increasing the value of agricultural output, made possible by improved access to extension services or rural infrastructure; (2) diversifying livelihoods to include non-farm activities, enabling risk spreading, and (3) moving out of agriculture altogether. Strategy 2 was found to be more common than strategy 1 and only a minority adopted strategy 3.

Household investment in assets was found to be as important as livelihood strategies and enhanced income, as it is through asset accumulation that households were found to build resilience and sustain poverty escapes (Diwakar and Shepherd, 2018: 16). Land and livestock were important to rural households across countries, but their ability to support a sustained escape from poverty was found to depend on policy context, extension services and the resultant ability of households to convert land into effective livelihoods (ibid.: 17). Land was also important in buffering the impact of shocks, including health shocks (Diwakar and Shepherd, 2018: 22). Interestingly, in land scarce contexts, while land acted as an important safety net, source of rental income or resource for intensive market-oriented agriculture, it could act as a risk factor for declines back into poverty for those who had achieved transitory escapes (ibid.: 17).

Education was found to improve the ability of households to secure decent work, build resilience and sustain poverty escapes. Secondary education was almost always associated with a reduced risk of transitory poverty escapes (Uganda), chronic poverty (rural Bangladesh and the Philippines) and impoverishment (Cambodia and Tanzania), all relative to sustained poverty escapes (Diwakar and Shepherd, 2018: 18). However, weak links between education and labour markets limited the benefits of education and completion of primary education by household heads was found to be often not enough to support a sustained escape from poverty, as labour markets have become more

competitive (ibid.: 18).

Turning now to findings on factors influencing poverty dynamics in Rwanda, an earlier study of poverty dynamics in Rwanda found chronically poor households to have distinct characteristics in comparison to the wider population of poor households (Howe and McKay, 2007). The mixed methods study on which this paper is based identified a diversity of factors associated with poverty dynamics (Table 1, below), with a range of household (e.g., high dependency ratios, low education of household head), institutional (new government regulations and policies, cost of complying with villagization), livelihood (loss of non-farm employment) and natural resource factors (land scarcity and fragmentation, environmental hazard) driving poverty (Da Corta, 2019; Bird et al., 2019). This analysis provides important insights into the factors influencing poverty dynamics. But none of the studies explored combinations of factors, which is what we propose to do here.

We present the conceptual framework guiding the study in Section 2, and describe the methods used in analyzing Rwanda's EICV panel, and collecting and analyzing the in-depth qualitative data in Section 3. We then present our findings in Section 3, while Section 4 offers concluding thoughts.

Table 1: Factors explaining poverty dynamics in Rwanda

	Maintaining chronic poverty	Driving impoverishment	Interrupting poverty/ enabling sustained escapes
Household factors	<ul style="list-style-type: none"> • High dependency ratios • Female household head • Household with disabled and/or elderly household members • Heads with only primary education • Un and under employment 	<ul style="list-style-type: none"> • Increased household size and dependency ratios • Disabled household members • Head with below average education levels 	<ul style="list-style-type: none"> • Health insurance • Access to education • Household head with secondary education or higher • Spousal harmony
Financial and productive assets		<ul style="list-style-type: none"> • Indebtedness – harvest or enterprise failure, cost of school fees, cost of medical care and funerals 	<ul style="list-style-type: none"> • Widespread Tontines (savings and loans clubs) • Regular savings and the accumulation of savings • Access to micro-loans
Institutional/ policy	<ul style="list-style-type: none"> • Cost of accessing basic services (education, health insurance) • New regulations and tax policies dampening the non-farm economy • Targeting errors - exclusion from health insurance waivers, free school meals etc. 	<ul style="list-style-type: none"> • Drop out from health insurance scheme • School fees driving indebtedness and asset sale • Cost of complying with villagization • Government control of cropping decisions • New regulations and tax policies dampening the non-farm economy • Imprisonment and fines (post-genocide) • Exclusion from cooperative membership) • Male abandonment of wife and children 	<ul style="list-style-type: none"> • Health insurance fee waivers for the poorest • Livestock accumulation, including through the Girinka program and linked insemination and veterinary services • Improved water and sanitation provision • Free school meals for the poorest children • Legal support to gender equity in land ownership and inheritance • Local governments enforcing child support
Livelihoods	<ul style="list-style-type: none"> • Becoming a casual labourer 	<ul style="list-style-type: none"> • Reduced involvement in the labour market • Becoming a casual agricultural labourer • Loss of employment in non-farm enterprise 	<ul style="list-style-type: none"> • Accumulation of productive assets – especially land and livestock • Improved agricultural productivity • Livelihood diversification to include both agriculture and non-farm employment • Non-farm employment or self-employment • Non-farm enterprise • Higher paid non-farm casual work enabling savings and investment • Livestock borrowing • Receipt of remittances
Natural resources	<ul style="list-style-type: none"> • Worsening land scarcity and fragmentation • Environmental hazards • Long run impact of genocide 	<ul style="list-style-type: none"> • Environmental hazards • Land scarcity and fragmentation • Long run impact of genocide 	<ul style="list-style-type: none"> • Land rental • Land accumulation using agricultural surpluses

Source: Da Corta (2019), Bird et al., (2019), Shepherd et al., (2020).

2. Framing the land-education-jobs nexus in Rwanda

Rwanda is not alone in facing land constraints, job scarcity or low capabilities. However, it is the degree to which these challenges are faced in Rwanda which makes this nexus of issues particularly important in driving and maintaining poverty.

Rwanda has the second highest population density in Africa, behind Mauritius (McKay and Verpoorten, 2016). It stood at 498.66 per km² in 2018, up from 236.58 per km² in 1995. This compares with 63.58 per km² in Tanzania and 76.23 per km² in Uganda in 2018 (based on FAO and World Bank estimates¹). Rwanda is, nevertheless, heavily reliant on agriculture, creating the conditions for acute land scarcity (McKay and Verpoorten, 2016). Despite land titling reform, a process of ongoing land fragmentation and consolidation is creating a rural proletariat (Bizoza, 2021). This has reached a tipping point in the last decade, with many holdings now so small and fragmented that they cannot even be relied on to deliver subsistence to maintain food security year-round (Bird et al., 2019).

As land scarcity makes it ever harder to save, accumulate and move out of poverty on the basis of agriculture, the structure of the non-farm rural economy with its thin and fragmented markets fails to provide sufficient compensatory employment or self-employment opportunities. Work opportunities are extremely scarce and often limited to seasonal casual agricultural labour paid at less than a dollar a day (commonly only 700-850 Rwandan Francs or US\$0.78-0.84 per day) (Bird et al., 2019). This is particularly true given the processes set in motion by government policies, which seek to improve environmental management, taxation and regulation. The policy measures include preventing artisanal brickmaking in wetlands, artisanal alcohol production and petty trade outside designated market places. This 'unique regulatory framework' discourages informality (World Bank, 2019), has a dampening effect on non-farm employment and the unintended consequence of blocking growth from below¹ (Shepherd et al., 2019a). This challenge is compounded by high rural-urban inequality

¹ Growth from Below is small scale, often household based investment and usually informal organisation; compared to Growth from Above, which is medium-large scale and formal investments (Shepherd et al, 2019a)

which makes the urban economy somewhat inaccessible, particularly given the regulated nature of the urban informal sector which limits petty trading and construction opportunities and so opportunities for rural migrants.

Low capabilities and poor education outcomes further limit access to employment opportunities, with poor education quality and low completion rates amongst children from poor families. Rwanda is a low human development country and its children have low average years of schooling (3.7 years for girls; 4.7 years for boys) (UNDP, 2018), despite a net primary enrolment ratio of 95% (World Bank data for 2018)ⁱⁱ. This is partially explained by challenges with school retention, high repetition rates and only just over half of children completing primary school (54% nationally and 51% in rural areas, UNICEF database using DHS 2014–15 data)ⁱⁱⁱ. Secondary enrolment rates are lower than neighboring countries, with enrolment and completion rates dropping off rapidly with the transfer to secondary school. Income based inequality means that while 42.6% of children from the richest quintile attend secondary school this drops to only 8.8% of children from the poorest quintile (NISR, 2018). Drop-out means a national average of just 25% completing lower secondary (23% in rural areas) and 17% complete upper secondary school (11% in rural areas, and only 4% from the poorest quintile nationally) (UNICEF data)^{iv}. These low completion rates mean that only 12.6% of women and 17% of men aged 25 years or older have some secondary school education (UNDP, 2018) and learning outcomes are mediocre.

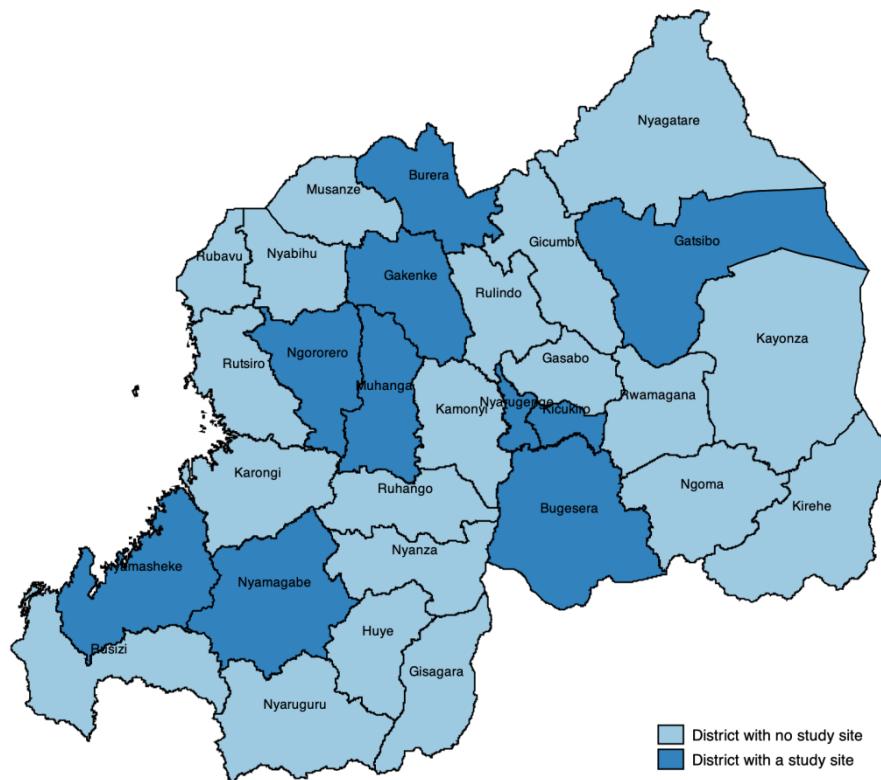
3. Methodology

This paper is based on a mixed methods approach which sequenced and triangulated panel data analysis and in-depth qualitative research (see Davis and Baulch, 2011, and Kanbur and Schaffer, 2007f on mixed methods and Q-squared approaches and Dawson, 2015, for such approaches applied to poverty research in Rwanda). The quantitative component employed three waves (2010/11; 2013/14; 2016/17) of nationally representative household survey data from the EICV collected by the NISR and identified the poverty trajectories followed by panel households (Never Poor, Impoverished,

Sustained Escapers, Other Escapers and Chronically Poor). It used panel logistic regressions to estimate how the probability of being poor and experiencing particular poverty trajectories correlates with household characteristics, capabilities, and adopted livelihoods. Each element of the land-education-jobs nexus was first analyzed in isolation and then in interaction with each other. For more details on the methods employed, refer to Annex 1.

The qualitative analysis draws on life histories, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs) at the village and district level, in a third of Rwanda's 30 districts (see Figure 2, below). These covered a mix of urban, peri-urban and rural districts and all Provinces, ensuring that the data captured a mix of poverty performance, environmental and economic context and livelihood strategies. Research design ensured that emerging findings were robustly triangulated (Bird et al., 2019). Respondents were selected by stratified random sample from each of the poverty trajectories and the qualitative data was analysed using content analysis of key themes and relationships, with the life histories being coded and analysed in NVivo and the other qualitative data being analysed manually (see Annex 3 for NVivo Coding Frame). For more details on the qualitative methods, refer to Annex 1.

Figure 2: Map of Rwanda showing district locations of fieldwork study sites



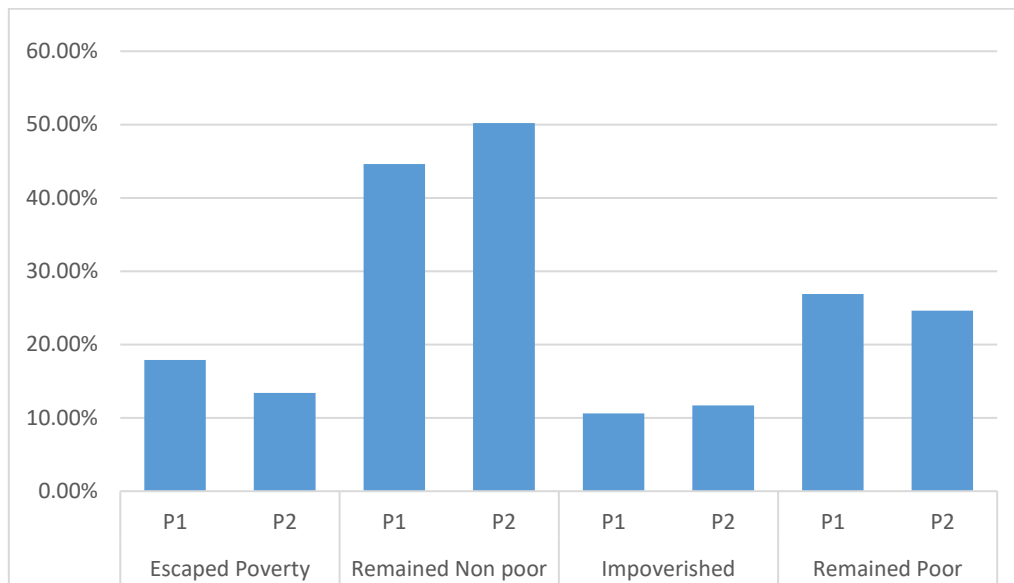
4. Results

4.1. Key characteristics of poverty dynamics in Rwanda

Table A1 (in Annex 2) indicates that 43% of the households surveyed have never dropped into poverty, while close to 16% have remained chronically poor. About 30% who started poor in the first wave of the panel (2010/11) subsequently escaped from poverty. Of these, a little less than 40% remained non-poor over the course of the two successive waves amounting to a little over 11% of the total population – these were ‘sustained escapers’. The rest (about 18% of the population) initially started non-poor but later experienced at least one episode of poverty.

The poverty transition matrix of the panel data (Figure 3) shows that the slow-down in poverty reduction was mainly due to fewer poverty escapes in the more recent period (13.4% over the period 2013/14 – 2016/17) compared to the previous period (17.9% over the period 2010/11 – 2013/14). This effect was compounded by a slightly higher proportion of households experiencing downward mobility into poverty in the second period (11.7%) than in the first period (10.6%).

Figure 3: Poverty Transition Matrix



Note: P1 is period 2010/11- 2013/14 and P2 is period 2013/14-2016/17

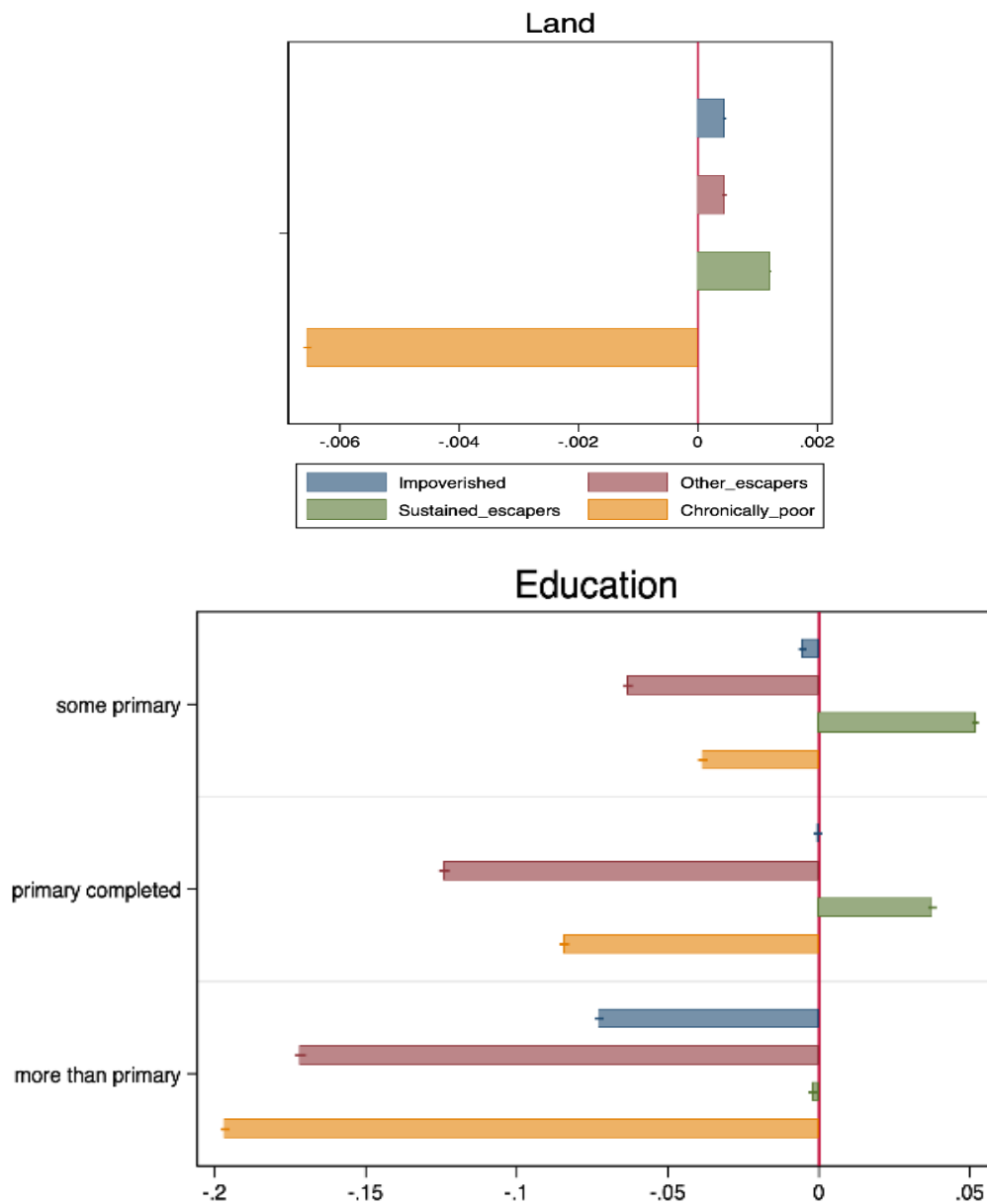
Examining household trajectories across this period will shed further light on the reduced rate of poverty reduction. There are sharp differences across poverty trajectories in terms of rural or urban residence, household size and whether the household has split (Table 1). Never poor households are substantially more urban, smaller (about 1 fewer member than in chronically poor households) and split less often than impoverished or sustained escaper households. Sustained escapers, on average, are less urban than the never poor, but more urban than impoverished and chronically poor. Impoverished and sustained escaper households tend to have split at a much higher frequency than other trajectories. Household splits most commonly occur when young adult men inherit land on marriage, leading to land subdivision and the emergence of two (or more) households with marginal land holdings. This increases vulnerability and leaves the parental generation with lower agricultural earnings just when their age makes earning through casual agricultural laboring less likely.

Our analysis also suggests that poverty escapes are more difficult to achieve and sustain in rural areas and we argue that this is because of the structural challenges created by the land-education-jobs nexus.

4.2. Education, land, jobs, and sustained poverty escapes

We next look at the general factors influencing poverty dynamics using a multinomial logit model (Equation (1)) and results of our qualitative analysis. We focus on factors influencing poverty trajectories including: education, occupation and land. Figure 4 presents the multinomial regression results discussed below. It presents the association between a variable and the change in the probability of being in each poverty trajectory,^v which is further detailed in the sub-sections below alongside the qualitative findings.

Figure 4: Multinomial Logit regressions – marginal effect on the probability of experiencing different poverty trajectories (baseline: never poor)

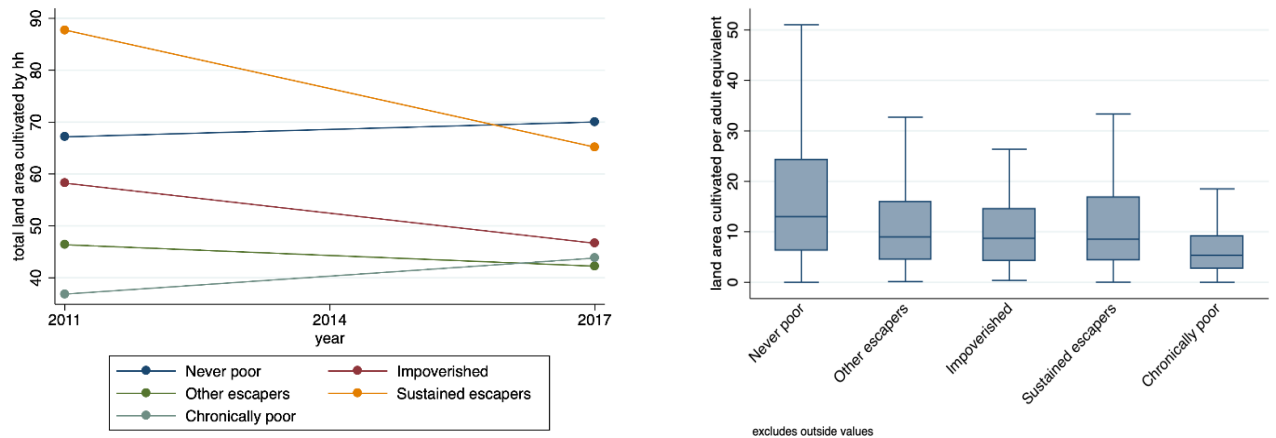




4.2.1 Land scarcity

Mixed methods results point to acute land scarcity, an asset which forms the first element of the land-education-jobs nexus. Figure 5, left panel, shows the evolution over time of the total size of cultivated land per household by poverty trajectory. Several features are worth noting: first, sustained escaper and never poor households cultivate on average about 80 ares (0.8ha), far more than all other categories, which cultivate around 50 ares (0.5ha), on average. Second, the total area cultivated by sustained and other escapers, as well as impoverished households^{vi} tends to decrease over time, with some strategically choosing to reduce their engagement in agriculture, while others are constrained to. This suggests that a number of processes (demographic, livelihood change) are acting on land scarcity, making sustained poverty escapes ever more difficult and we find that poor households, with few alternative livelihood options, face particular pressure due to land scarcity. It indicates further that the land freed up by escapers and impoverished households allows wealthier households to consolidate their holdings but is not enough to pull more vulnerable households out of poverty.

Figure 5: Land area cultivated by poverty trajectory and for 2010/11 – 2016/17 (left panel, No data for 2013/14) - distribution of 2010/11 land holdings per adult equivalent by poverty trajectory when household head cultivates or owns land (right panel) (in ares)



The right panel of Figure 5 shows the distribution of land area per adult equivalent cultivated in 2017, by poverty trajectory, for households whose heads declare working on their own farm. Around 50% of never poor households hold between 8 and 25 ares per adult equivalent, while another 25% hold over 25 ares per adult equivalent. In contrast, 75% of the chronic poor hold less than 10. All other groups' landholding distributions lie in between those two extremes. All of them however have a long right tail, the top 25% holding between 15 and 30 ares, while the top 25% of the chronic poor hold between 10 and 20. Land scarcity therefore seems to be an acute problem for many households in poverty and in particular a key factor for chronically poor households.

We also include the amount of land cultivated by the household, per adult equivalent (in ares) in a regression to explore the relationship between land and poverty trajectories in more detail. There is a clear-cut negative association between land holdings and chronic poverty (Figure 4). All other associations are positive, but of a much smaller magnitude. Having or acquiring ten (10) more ares of land per adult equivalent correspond to a 6 percentage point (pp) decrease in the probability of being chronically poor. This suggests a structural differentiation in land ownership by a household's initial poverty status. It is also worth noting that land value per household decreased over the two periods

of the panel data, suggesting intensification in land fragmentation, which could help explain the stalled poverty reduction.

Findings from qualitative research affirm that land scarcity is acute in Rwanda. Sub-marginal land holdings and fragmentation were identified as key constraints to agricultural growth and poverty exits at all study sites. While very few households owned no land at all^{vi}, many have landholdings so small that they only provide food for the family for a month following harvest (Bird et al., 2019). Land scarcity is so severe that it drives food insecurity, including child malnutrition and prevents the generation of a marketable surplus and hampers household saving, investment and accumulation (ibid.). Net consuming households are highly exposed to market price volatility, and price rises in agricultural commodities can drive an increase in the number of households living below the extreme poverty line (Ivanic et al., 2012).

In this context, land rental can provide an escape from land scarcity for some households, increasing the quantity of food a household can harvest, and even creating a small marketable surplus. Land rental is widespread in Rwanda, with 48% of farm households participating in land rental markets (38% as tenant; 10% as landlords) (Ali et al., 2017). We found renting in land to be most common amongst chronically poor, impoverished and transitory escaper households.

We don't have a piece of land of our own to cultivate, so we rent small land to cultivate. My husband bought a [piece of] land, but we used it to build a house, and it has helped us to have a permanent address because renting a house is also expensive. (Shimwa, Nyamagabe, 36, Female Chronically Poor)

However, renting in land is a high-risk strategy for chronically poor households, as it relies on an upfront payment at the start of the season, the value of which could be wiped away by harvest failure. Even where yields are good, the value of the produce must be off-set against the cost of rent, value of labour and other inputs, and the produce is likely to be largely for home consumption rather than sale and so should be valued as 'purchases from the market avoided'. Given these risks and intensifying

land scarcity in Rwanda, productivity would need to be further enhanced, for example, through risk reducing irrigation investments; and more sources of non-farm employment are needed. Access to high return non-farm employment depends on education and capabilities, which we turn to next.

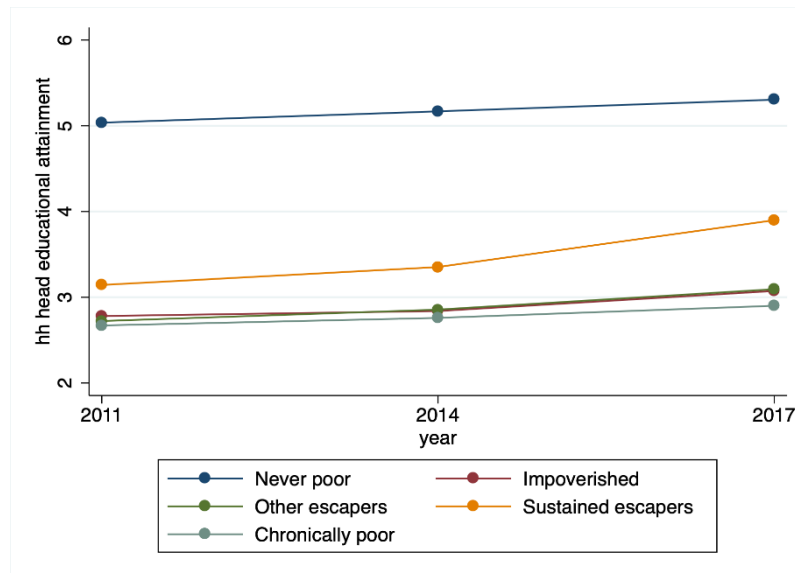
4.2.2 Education

The second element of the land-education-jobs nexus focuses on low levels of education, an intangible but transportable asset, acquired through institutions offering sometimes only poor quality education, and with limited transitions into secondary schooling. We mainly analyse the role played by the level of education of the household head for poverty trajectories but also elaborate on a possible intergenerational transmission mechanism by examining the cost of education, and investment in the education of offspring.

According to the panel data, the share of household heads who had never completed primary school reduced sharply from 71 to 66% in the first period, while the decrease slowed down to 64% in the most recent wave. This trend could also help explain the recent stalling of poverty reduction. Household heads in the never poor category have an average of more than 5 years formal education, which is about 2 years more than other trajectories, with the exception of sustained escapers (Figure 5). In contrast, having limited formal education is very strongly associated with chronic poverty, as previously highlighted in Figure 4. Employing our baseline model, we also focus on the association between the level of education completion of the household head and the poverty trajectory. There is a very strong negative correlation between more education and being either chronically poor or a transitory (non-sustained) escaper. In particular, having studied beyond primary education is associated with a drop in the probability of being chronically poor of about 20 pp. Regarding impoverishment instead, an increase in secondary education of the head is associated with a lower probability of impoverishment. Finally, the probability of being a sustained escaper is positively associated with primary education, while we do not find any association with secondary education.

This may be on account of the small numbers of household heads who had completed secondary education in the past.

Figure 5: Mean years of education of household heads by poverty



The analysis moreover indicates an association between the lack of improvements in education of household heads over the last period and more limited poverty reduction. This suggests that decreased investment in education two to three decades ago, is limiting poverty reduction today.

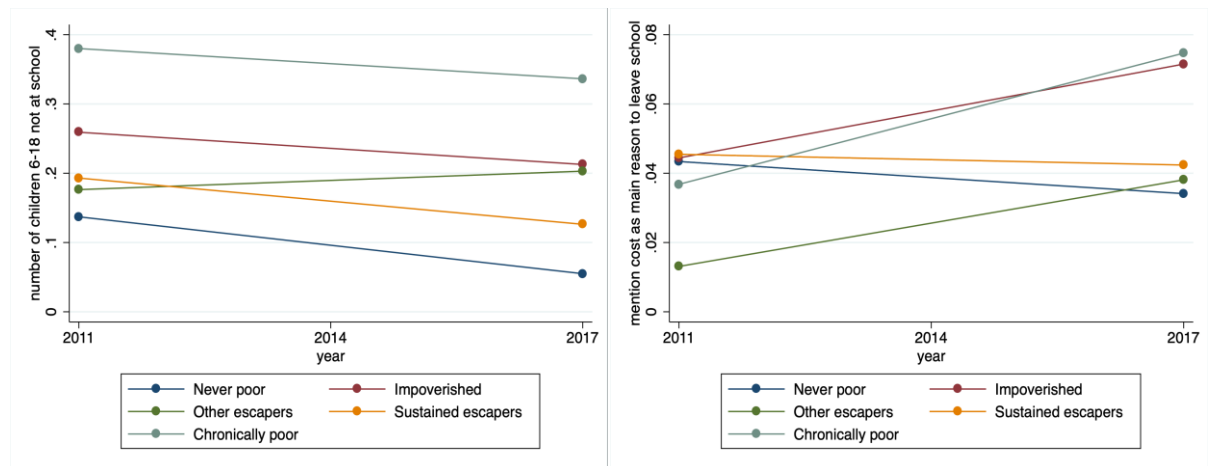
Digging deeper, we also analyse how the hidden costs of “free education” for the present generation of children are (i) causing school dropout, hindering access to opportunities for younger people, and (ii) forcing trade-offs between expenditures, sometimes preventing other productive investments by households. We discuss these in turn.

Drop out

Figure 6, left panel, shows the evolution of the average number of children per household aged 6 to 18 who have not attended school in the past 12 months. It ranges from as high as 0.4^{viii} for those from chronically poor households to a low 0.15 for those from never poor households. Sustained and other escapers initially start at just below 0.2, but the number sharply declines to just above 0.1 for the former, while it remains roughly constant for the latter. Drop out is possibly the result of the

opportunity cost of education plus the constraints experienced by poor rural households, in particular, in accessing education. It also could reflect the persistence of poverty and its ^{ix}impact on education and conversely the impact of low capabilities on the persistence of poverty.

Figure 6: Number of children age 6-18 not at school by year and poverty trajectory and number mentioning cost as a reason for leaving school



In the right panel of Figure 6, we observe that overall education cost is mentioned to be the cause of drop-out for about 0.04 children per household, representing about 20% of children having dropped out from school. This proportion rose sharply to over 0.07 for chronic poor and impoverished households, representing about 25% of drop out children in these households. Other frequent reasons for dropping out of school are the student’s lack of interest and a lack of family support.

Further analysis of the panel data provides a breakdown of household expenditures in 2010/11 by poverty trajectories (Chabé-Ferret and Simons, 2019). This shows that never-poor households spent about 10 times more on each type of expenditure than chronically poor households. School related expenditure varies considerably across poverty trajectories. Interestingly, comparing the (future) sustained escapers to people who start off non-poor and then become and stay impoverished shows that the long-term impoverished spent more (both relatively and absolutely) on food, health and housing in 2010/11 (when they were still non-poor) than the (future) sustained escapers, but much less on education (both relatively and absolutely). This suggests that the differential investments in

human capital and subsequent differential poverty outcomes are underpinned by differences in risk aversion and personal discount rates for long-term investments in human capital formation. These are strongly informed by a household's initial poverty status as well as the capabilities of the households' adult decision-makers.

Sustained escapes from poverty could partially be explained by these households being willing and able to invest both a larger proportion of their income and more in absolute terms on education, even though they were poor^x (Shepherd et al., 2019b). Indeed, those investments may translate into better outcomes at the household level with children either transitioning out of the household more successfully or participating more effectively into the income generation process. In both cases, offspring would no longer be financially dependent on their parents when they leave school.

Relatively low levels of sustained escapes from poverty in Rwanda may be partially explained by not many households being able to afford the expenditures that are now required to see children through to a high enough level in the education system, as well as other investments. So, households are facing investment choices between their children's future prosperity and current enterprise investment and prosperity and other necessary expenditures – on health insurance, or housing (Shepherd et al., 2019b, Bebbington 1999).

In line with the quantitative analysis, our qualitative data shows that school completion rates are low, although access to education has improved over time. Life history interviewees' parents rarely had any education, whereas having some primary school education (at least the early grades) is the norm amongst the interviewees' generation (Bird et al., 2019). As we move to the next generation, completing primary school and attempting to attend secondary school are widespread amongst the interviewees' children. This suggests a changing propensity of parents to educate their children, supported by improving access to education.

However, drop-out during primary education is still common amongst the poorest children and even more so at the transition to secondary school. Attending secondary school is unusual enough to be treated as a privilege by poor rural households.

Qualitative analysis of the drivers of school drop-out show a diversity of causes: (1) poverty – children from poor families are more likely to drop out than those from richer families; (2) late start – 20% of children starting in Primary 1 are over the age of 7, and late starters are at an educational disadvantage and are more likely to drop out; (3) children who re-enter school being more likely to drop out again than children who have not previously dropped out, with re-entry rates falling as children get older; (4) repeating grades – by P6, 85% of children have repeated one or more grades, and children who have repeated during their first three years of schooling are more likely to drop out after their eighth year of schooling; and (5) a wide educational divide between urban and rural areas (MINEDUC and UNICEF, 2017). This first driver is likely to be partially related to the cost of uniforms, scholastic materials, ‘small fees’ and school feeding. Other factors may include (6) distance to schools (particularly for secondary education); (7) education quality, inadequate tailoring of curriculum and poor learning outcomes; (8) inadequate toilet provision (which is particularly important for adolescent girls); (9) poorly functioning local and national labour markets, making the cost-benefit analysis of keeping children in school less straightforward; (10) child care and domestic obligations, particularly for girls and in poor households; and (11) livestock tending obligations, which are particularly onerous under Rwanda’s zero-grazing regime (Bird et al., 2019).

Costs of education as a factor of drop-out and impoverishment

Indeed, the costs of education (even ‘free’ primary education) is an important driver of school drop-out, as they can be impoverishing. This was observed time and again in the qualitative data. Covering the costs of education can drive already poor families more deeply into poverty, where the costs of ‘small’ school fees are added to other demands on the household budget, such as health insurance premia^{xi}, water fees and electricity charges^{xii}. This can contribute to livelihood fragility by pushing poor families to sell land, further polarising land ownership and limiting the asset base from which to

promote investments in human capital in a vicious cycle^{xiii}. Lower-income households do not have budgetary space for discretionary expenditure and struggle to afford school meals and the ‘small fees’ associated with ‘free’ primary education (which may include ‘chair fees’, ‘water fees’, ‘construction fees’ and so on). These combine with the costs of school uniforms, books and pens and are exclusionary.

Parents are also expected to make financial contributions of differing sizes through the Parent Teacher’s Association contributions, with primary schools commonly requesting 200 to 300 RwF per term (roughly a third of a day’s wages for a casual agricultural labourer) as a ‘teachers’ bonus’ or ‘incentive’ (Williams et al., 2014: 940). In addition, parents are expected to contribute their labour to the school management and for classroom construction (Williams et al., 2014: 936).

Some parents were able to avoid paying some of these ‘small fees’, but their children were then treated as second-class students and were not given school meals, for example, or their annual report cards for monitoring their progress. For parents who were unable to afford to pay for ‘school feeding’, their primary school children would return hungry to a home which may be empty of food. Other costs are unavoidable, such as uniforms and materials or paying secondary school fees (Bird et al., 2019).

Where parents are seeking to manage precarious household budgets, the seemingly insignificant ‘small’ fees required by primary schools can act as a very real barrier, triggering children to drop-out of school. This is particularly the case where the child’s educational progress has been poor and the benefits of struggling to keep them in school seem weak.

“The oldest two of my seven children have dropped out of school because of my limited ability to cover the costs. I had to pay for school feeding for their 9/12 years’ basic education, but I couldn’t afford it. They have been unemployed since they dropped out of school, apart from when someone asks them to cut grass for their cows and they get paid 200 RwF.” (Perezida Yoweri, male chronically poor life history respondent, age 38, Burera).

Financing education

Despite the challenges, many parents, even very poor parents, were observed to prioritise their children's education over all other expenditure. Some parents adopt forms of adverse coping that include drawing down on their productive assets and compromising food intake, with long-term implications for household well-being (Bird et al., 2019). Some also make the difficult calculation to prioritise educating their children (a long-run investment with an uncertain return) over paying household health insurance premia^{xiv} (current protection from uncertain risk exposure), leading to drop-out from the insurance scheme or to sharply reduce investment in agriculture and enterprise (ibid.). Even having made such sacrifices, keeping children in school throughout their secondary education is beyond the abilities of most poor parents.

During the qualitative fieldwork, we found that the ability to afford their children's education dominated thinking about household budgeting amongst parents from all poverty trajectories.

"I also employ wage farmers who work in my fields because I depend on agriculture. I always want to produce enough crops to feed the family as well as producing a surplus to take to market so that we can afford other extra expenses such as paying for school materials for my children and for health insurance (Mutuelle de Sante)." (Non-poor respondent. Ngororero).

Our qualitative evidence confirmed that economic activities are indirectly linked to education progression, reinforcing the importance of the nexus of land scarcity, education and non-farm work in influencing poverty escapes. Indeed, many use their agricultural harvest to invest in their children's education.

"When I harvest, I deduct 5 kilograms of beans and 9kg of maize and 1,500 RwF to take to school for my child to study. I am not able to get all the school requirements especially during winter. At harvest time, I will give the child all those to take to school. The school is flexible, they understand us." (Impoverished respondent. Burera).

Frequently, non-poor and sustained escaper households explained that they had joined tontines so that they could cover the costs of their children's education through accumulated savings or borrowing.

"My husband has a job as a security guard. His income was able to provide us with money to get school fees and materials as our first born had to go to a boarding school for his 'A' levels. We also borrowed money from SACCO in order to get school fees (100k) and we repaid this loan in 6 months." (Non-poor LHI respondent. Nyamagabe).

"How did I manage to keep my children in school? Getting school fees is difficult. I cannot afford the best. I get money for books and then pay the fees from the CARE tontine but I cannot afford school feeding. I concentrate on the one child in P9. The others have been encouraged to stop, because a boy can manage on just one meal a day." (Sustained Escaper respondent. Ngororero).

Some parents were found to have extracted so much capital from their enterprises to cover education costs that the enterprises failed:

"We have lost our business for the sake of our children's school fees. I think that if we hadn't had the business when our children were younger, then maybe our children wouldn't have gone to school. We are now paying the school fees with the money we save and loans from the tontine or money from renting our houses." (Mugaragu, female Sustained Escaper, age 40. Kichukiro).

Others, typically non-poor households with a larger asset base, contemplated selling or mortgaging their land or other assets:

"I have a loan of 100,000 RwF that I took to pay for the family's health insurance in 2018. I have not yet finished repaying it and I do not know if I will manage by the end of the 2 year loan period because I also have a child who is studying in a boarding school and I have to pay

his school fees. I am struggling to get his school fees and I am planning to sell a piece of land so that I can pay it.” (Non-poor respondent. Burera).

For some households, borrowing or diverting enterprise revenue and investment capital into funding education can lead limit upward mobility or even result in downward mobility:

“I have not been able to achieve some of my goals because of the cost of paying to educate my 7 children. Even though we have all of the assets, the cost of the children’s education has increased and we seemed to decline in well-being because of many children.” (Non-poor respondent. Burera).

The slowdown in the increase in education of household heads coupled with non-negligible education expenditures and a persistent number of children dropping out of school has impacted on the current and future capacity of households to engage in different livelihoods. Those without secondary education are unlikely to gain formal sector employment, and so are trapped in low-return, drudgery intensive livelihoods, largely in agriculture, a finding confirmed by other studies of education and poverty dynamics (Diwakar and Eichsteller, 2020). Diversifying livelihood sources is crucial for sustained poverty escapes, particularly in the context of acute land scarcity, and this is the subject of the next subsection.

4.2.3 Livelihoods

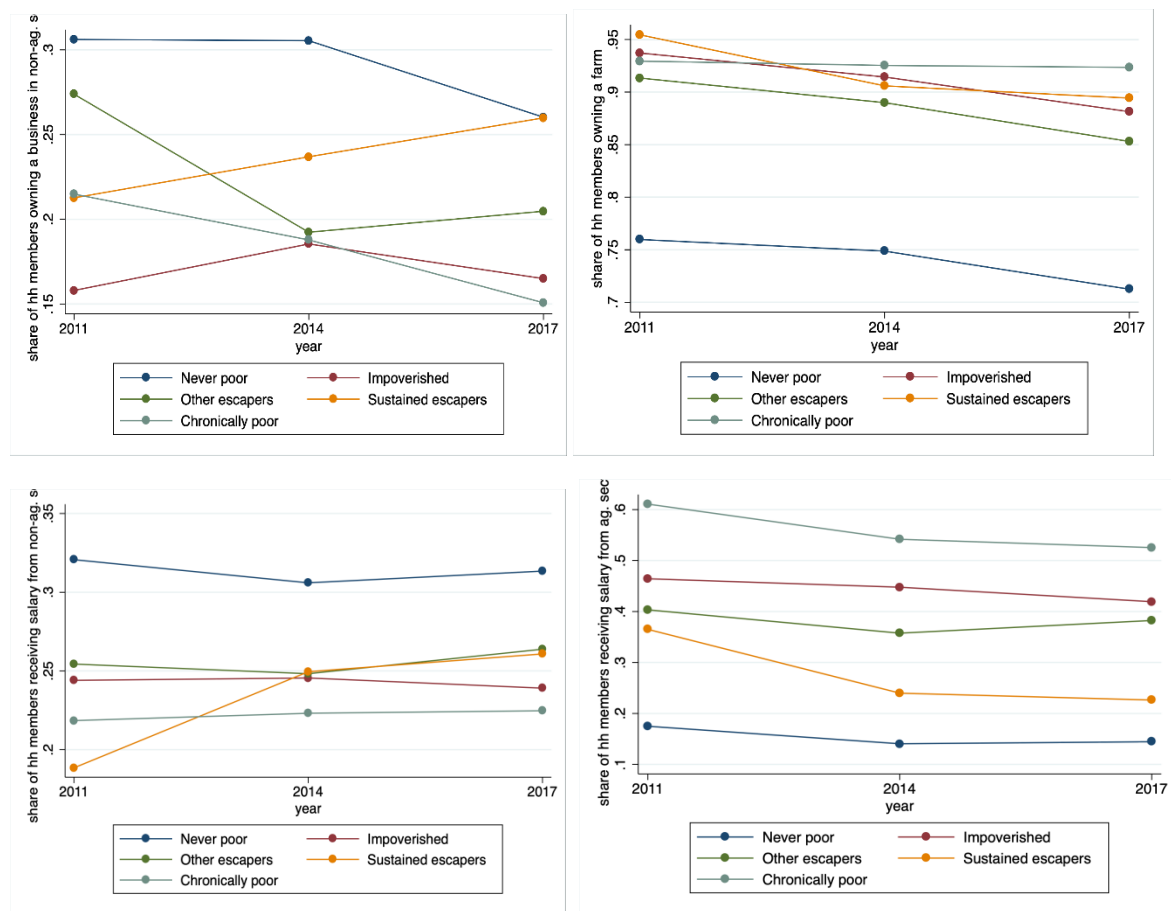
The third and final component of the land-education-jobs nexus draws attention to production factors around livelihoods. It situates these livelihoods in a sluggish rural non-farm economy, paying attention to factors which limit sustained escapes and may contribute to impoverishment (Diwakar and Shepherd, 2020).

The rural non-farm economy

Decomposing economic activity (Figure 7), we look at the share of household members owning their own business (top panels), versus working for a wage (bottom panels), across non-agricultural (left panels) and agricultural (right panels) sectors. The top right panel shows that, in all groups except the

never poor, the share of household members cultivating their own farm always remains above 85%, including for the sustained escapers. This share tends to decline over time for all of these groups except the chronically poor, reflecting these groups' attempts to escape poverty by moving out of agriculture. For the never poor, the proportion falls to 75%, reflecting the proportion of the never poor with an urban location and/or a nonfarm enterprise.

Figure 7: Decomposition of economic activity in the household by poverty trajectory and year



When we analyse in the bottom left panel the share of household members working for a wage in the agricultural sector (casual agricultural laborers), a clear gradation appears from about 15% in the never poor category to well above 50% among the Chronically Poor. The Impoverished hover around 45%, Other Escapers around 40%, while this share for sustained escapers declines sharply from over 35% (in 2010/11) to just over 20% (in 2016/17).

More members of never poor households own a business or receive a salary (about 30%), compared to between 15 and 25% of other groups, as shown in the left panels of Figure 7. Interestingly enough,

the proportion of household members owning a business or receiving a salary from the non-agricultural sector increased sharply for sustained escapers between 2010/11 and 2016/17. In summary, sustained escapers seemed to be those households which, while maintaining a substantial agricultural enterprise on their own farm, reduced the amount of casual agricultural laboring they did (agricultural wage labor) in favor of successful non-agricultural activities. The large swings in the share of business owners in the non-agricultural sector among impoverished and other escapers may reflect failed attempts to move out of agriculture, because they were either too premature or compromised too much of the initial agricultural activity. More generally, livelihood diversification into non-farm activities slowed over the last panel wave, suggesting a lack of opportunities, which constrained poverty reduction. This finding was confirmed by the life history evidence, which showed limited diversification amongst current livelihood portfolios, although we could not find any explicit examples of failed attempts to exit agriculture altogether.

In the regression analysis, moreover, a striking element is the strong association between the household head receiving a salary^{xv} from the agricultural sector and chronic poverty (>15pp), as well as impoverishment (>5pp). Conversely it is negatively associated with the probability of being a sustained escaper, while the association is negative but small in magnitude for other escapers. The rest of the associations are much smaller in magnitude, even though owning a farm is quite substantially associated with a lower probability of being in chronic poverty. Additionally, the share of household members working off farm is negatively associated to chronic poverty, impoverishment and to a lesser extent other escapes. However, it is positively associated to sustained escapes. The reduced numbers of non-farm enterprises and increase reliance on casual labor noted above suggest that the impact of the land-education-jobs nexus is worsening, which could also help explain the recent stalling of poverty reduction.

Analysis of the qualitative evidence confirms that rural livelihoods widely incorporate casual labouring, with 105 households (of 229) reporting casual agricultural (47) or wage labour (58) as a key

activity. Combining these two streams of casual work, we see that the majority of such workers come from chronically poor (35 of 73 CP households) or impoverished households (8 of 26 IM households) but a number of sustained escaper households (20 of 46 SE households), transitory escaper households (11 of 22 TE households) and even never poor households (28 of 46 NP households) are also involved. More women than men work as casual agricultural labourers (60 women, 45 men), despite being paid less. Men, particularly those from chronically poor households, seek casual agricultural work, too, but are more likely than women to work casually in construction, mining and brick or tile making with women finding work in other occupations.

Casual labour was seldom described favourably by interviewees in the qualitative research, as it is poorly paid (commonly less than US\$1.00 or 800-850 RwF per day for men in rural areas, less for women) and seen as having lower status than self-employment in enterprise or farming. Many see casual labour as a livelihood activity of last resort and will seek casual work when driven to by a shock. However, land scarcity and limited capabilities, with very few from poor households having completed secondary school, has seen casual labouring become a widely adopted adaptive strategy. Given the competition for the scarce non-farm jobs and limited opportunities for establishing successful microenterprises, people with limited education face a real challenge in escaping low return agriculture and drudgery intense casual labour, with little hope of escaping poverty.

Our qualitative analysis showed formal employment to be rare, with only 9 rural households in the whole qualitative dataset (229 life history interviews) having an adult member with formal sector employment, illustrating the degree of reliance on agriculture and informal sector jobs. There was less evidence of either specialisation within farming or livelihood diversification (with one household risk spreading and income maximising by pursuing several livelihood activities) than Diwakar and Shepherd (2018) found in other low-income developing countries. Households across all poverty trajectories relied on staple crop production to meet the majority of their food needs, rarely producing a marketable surplus.

Livelihood shocks

Rural livelihoods are extremely vulnerable to shocks. Understanding this risk environment is important if we are to correctly identify the constraints to diversification experienced by rural households. For the purposes of this analysis we focus on land, employment and enterprise-related livelihood shocks, as they are most strongly related to the land-education-jobs nexus (see Table 2 for a wider range of shocks, by poverty trajectory). Analysis of the EICV5 survey (2016/17) shows that 43% of poor, and 34% of non-poor households reported facing a shock over the previous year (NISR, 2018). It found that for poor households, over 70 per cent of the shocks were agricultural (ibid.). Environmental shocks are relatedly widespread as Rwanda is highly exposed to a range of natural disasters, particularly droughts, landslides and floods (MIDIMAR, 2015). Analysis of the panel data shows that environmental hazards increase the odds of being poor by 14%, although this effect goes down to 6% when controlling for all other factors (Chabe-Ferret and Simons, 2019).

Poor and non-poor households responded slightly differently, with the coping strategies of poor households centring on buying less food (35.8%), drawing on savings or borrowing (23.5%), selling assets (22.4%), begging or doing demeaning work (9.6%) or migrating (3.7%), while the coping strategies of non-poor households centred more strongly on buying less food (38.9%), drawing on savings or borrowing (30%) and selling assets (24.9%) with smaller numbers begging or doing demeaning work (5.7%) or migrating (1.9%) (NISR, 2018). Turning to the coping strategies of different poverty trajectories, we find that chronically poor and impoverished households are more likely to borrow from informal lenders, beg and sell assets, than those in other trajectories. They are also less likely to reduce food consumption, as their food consumption is already low and reductions cannot occur without real costs to well-being (See Table 3).

Our qualitative analysis found that key livelihood shocks included harvest failure, loss of livelihood, theft of livelihood assets, environmental shocks and policy shocks, with a differing emphasis in different study sites (Bird et al., 2019).

Harvest failure due to crop disease, pests, climate irregularities or landslides was found to be a widespread occasional driver of downward mobility.

When they have a poor harvest, that's when they borrow from the Tontine so, they can buy food from the market to feed their children. Some people also sell a calf or a goat/kid. They would sell livestock first, before getting a loan. They sometimes have to adjust what they eat and reduce to one meal a day. This happened last year and lasted for 5 months. (Assa, 43, Female, SE respondent. Ngororero).

In 2017, again, there was an outbreak of a disease affecting banana plantations. Every plant was affected, and the farmers had to clear every banana plantation from the garden and plant new ones. Now, when they want to have bananas, they have to buy them from the market and 1kg of it is at 150-200 RwF, which is a bit expensive for them. (Jyajya, 72, Female, CP respondent. Gatsibo)

Households with diversified livelihood streams were more resilient, but undiversified households with seasonal agricultural loans were heavily exposed and the impact on income and food security could be severe (Bird et al., 2019).

Loss of livelihoods was a widespread and an important poverty driver across study sites, especially for household heads with only limited education. This might be through changes in market conditions (e.g. reduced effective demand due to limited household spending), the unintended consequences of government policy (e.g. the expropriation of valley bottom land shutting down artisanal brick-making or the introduction of new regulations) or business failure following the over-withdrawal of capital to cover household expenses (e.g. health insurance or school fees) (Bird et al., 2019).

Regarding environmental shocks, the qualitative analysis found landslides to be a widespread problem at the Ngororero study site, and the district is one of those in Rwanda most prone to landslides (MIDIMAR, 2015). Land scarcity means that farmers are often forced to cultivate steep slopes and this is particularly the case in the west, south and north of the country, making farmers highly vulnerable

to the effects of climate events and landslips. Droughts, floods and landslips were repeatedly cited by respondents in the qualitative research as driving downward mobility and impoverishment, with further investments needed in slope stabilisation (Bird et al., 2019).

Compared to ten years ago, our livelihoods have decreased. We didn't have any problem before because we didn't have to buy food. We ate what was directly harvested from our farms. But our livelihood has decreased - mainly because of climate change and the death of our cow. (Ishimwe Keyla, 22, Female, IM respondent. Nyamagabe).

In 2017, we were affected by drought and our crops did not grow so well - to the extent of not getting food at home. Our livelihood decreased during that period and we ended up selling 2 of our 5 goats. (Amizero, 36, Female, SE respondent. Ngororero).

In some cases, coping with an environmental shock led to a loss of productive assets and a further decline in well-being.

My roof was ruined, and I had to renovate it before it was destroyed. There were no other options rather than selling my forest and collecting the money that would help me renovate the roof. I had to buy many trees and pay the builders. Those activities took a lot of money that at my ability I could not easily afford without selling some assets. (Ndekwe Callixte, 61, Male, CP respondent. Muhanga).

The qualitative analysis also found policy shocks to be widespread. Across all study sites, the unintended consequences of government policy were found to act as significant livelihood and income shocks, with policy initiatives inhibiting the conversion of livelihoods and assets into sustained escapes from poverty, and also resulting in impoverishment. These included policies focused on formalisation, to protect infant industries, agricultural intensification, environmental and common property resource management and land expropriation, discussed below.

Formalisation policies, including zoning micro-trading and micro-enterprises, have sought to transform the structure of the Rwandan economy. They have seen vending next to national highways

(and other high footfall areas) banned, with traders and service providers limited to trading within a village or formal marketplace. Our qualitative research found that traders can face barriers to using these marketplaces (distance, childcare obligations keeping women traders close to home, reduced turnover due to low footfall, market fees or taxes), leading to both a loss of income and an increase in overheads. Poor women, in particular, were found to be involved in petty trade^{xvi}, suggesting that shocks affecting this sub-sector are likely to have a particularly negative impact on their well-being. The introduction of standards for the production of artisanal alcohol (e.g., banana 'beer') for sale have also disproportionately impacted poor women (three cases in the 2019 dataset), by closing off an important source of income through agro-processing and value addition. Queen, a woman from a sustained escaper household in Ngororero, helped her household escape poverty by brewing banana beer:

An improved banana plantation occupies a big share of my land (above eight acres) and is my household's main source of income. I grow bananas for food (Maatoke) and to make local beer. I sell between three and five stems of Maatoke per week (one stem costs 5,000 Rwf or more) and around six Jerry cans of beer (one can costs 6,000 Rwf). I hire three people to work on the farm for me. They work three times a week and I pay each worker 700 Rwf a day. (Queen, 42, female, SE respondent. Ngororero).

Another area in which government policy has had unintended consequences on poor people is the protection of infant industries through the tax regime. Taxes imposed on the import of second-hand clothes were intended to adjust the structure of the domestic clothes manufacturing sector but have set in train processes with negative consequences on second-hand clothes traders. The extract below is from a man who fell into long term debt and was impoverished as a result of the abrupt change in policy:

I got a 250,000 Rwf loan from a SACCO in order to start trading in second-hand clothes. I tried to pay it back and I now remain with little money to pay. The repayment of this loan was very

difficult, and I got into arrears, the bank fined me, and the principal balance grew until I had repaid 400,000 RwF. The outstanding amount is now only 30,000 RwF and that is why I believe that I will pay it off successfully. (Gatabazi Jean Marie Vianney, male, 37, IM respondent. Nyamagabe).

Environmental protection, regulation (e.g., around fisheries and to protect lake ecosystems), and agricultural intensification programmes have also generated some unintended consequences. New regulations to protect lake ecosystems have resulted in farmers being forbidden to cultivate their land within 50m of the lake margin, without compensation for lost access. Moreover, the expropriation of valley swamp land by government for use by rice (and other) agricultural cooperatives and private enterprises resulted in a major livelihood shock for those excluded from the land^{xvii}. People who had previously used the land to make tiles and bricks were displaced back into the low-return, surplus labour agricultural sector^{xviii}. They were not compensated and in one study site, people were so desperate to continue tile making in a swamp area that they risked arrest^{xix}. Further, because poor people can rarely afford to join cooperatives (qualitative finding), the distributional effects of this policy has been regressive.

We lost marshland and slipped back [deeper into poverty] because that land was near the lake, it used to give out a good production..... everyone who had land in the swamps lost it, the government took it all. (Rukumba, 40, female, CP respondent. Burera).

Land expropriation for infrastructure development has a differential impact. Some households receive adequate compensation while others either receive inadequate compensation or none at all, imposing a major shock on the household.

We lost the land we owned near the lake and another piece of land which got affected by road constructions. We didn't get any reimbursement for the land that got lost in road construction; we didn't have any contract with them, and they didn't even tell us that it was going to happen. (Rukoni, female, 39, IM respondent. Burera).

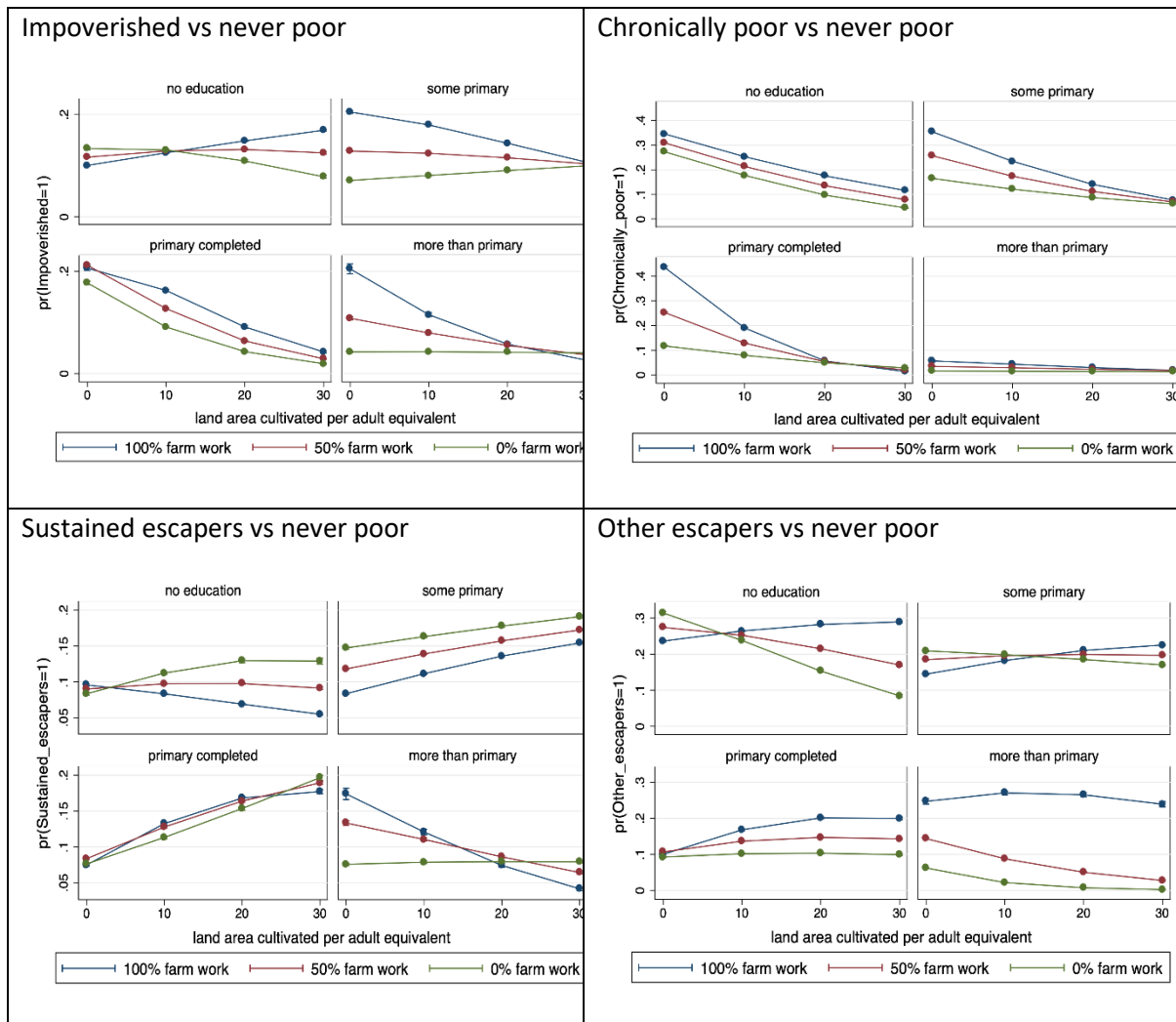
These shocks matter because of their impoverishing effect and because they dampen livelihood opportunities, investment and growth from below.

4.3 Summarizing the land-education-jobs nexus

In the analysis presented above, (a) acute land scarcity coupled with (b) low capabilities and poor education outcomes, and (c) limited non-farm livelihood opportunities have slowed down poverty reduction. Regression analysis further confirms the importance of these interactions in explaining poverty trajectories (Figure 8). In the analysis, we look at four levels of education (none, some primary, completed primary and more than primary), four levels of land holdings (0, 10, 20, 30 ares per adult equivalent) and three levels of farm work (100% of household members declare working on a farm, 50% and 0%).

The probability of impoverishment (top left panel a) is highest for people with some education but very little land and very few off farm opportunities. For chronic poverty instead (top right panel b), the probability is also highest for people with little land and few off-farm opportunities, but who also have less than primary education, demonstrating the importance of the interaction between education, land availability and job opportunities. It is especially striking to see how the probability of chronic poverty is very close to zero for those with more than primary education, no matter how much land they have and off-farm opportunities they have access to.

Figure 8: Multinomial Logit regressions with interaction effects – predicted probability of experiencing different poverty trajectories (baseline: never poor) by education, land holdings and off farm job opportunities



If we focus first on the probability of being a sustained escaper (bottom left panel c), we observe that this probability is highest for people with intermediate levels of education and a lot of land, irrespective of the share of household members working on- versus off- farm. For households where the head has no formal education, the probability of a sustained escape is the lowest especially at low levels of land ownership and tend to increase with the area cultivated, but almost exclusively for household having fewer members working on a farm (and consequently more members having off farm opportunities).

In the qualitative data, too, as discussed above, in an acutely land scarce environment, vulnerability may increase risk aversion and dampen diversification and the growth of the non-farm rural economy. Those with higher levels of education were found to have higher levels of risk tolerance, be more entrepreneurial and more able to invest in non-farm enterprises. This was partly because such individuals experienced a beneficial cycle in which their enhanced capabilities resulted in more successful farm-based enterprises as well as greater access to higher return employment and so higher earnings and savings, resulting in greater asset accumulation and so improved access to formal credit than those with more limited education. Yet more common, the qualitative data analysis indicates poor education, and thus a constrained ability to interact with economic and financial markets. This combines with low levels of entrepreneurial investment in rural areas and limited migration opportunities to limit routes for accumulation and poverty escape (Bird et al., 2019).

The education sector has innovated to improve the quality of teaching and learning and increase primary participation, but powerful structural barriers to primary-to-secondary transition remain and very few children from poor families complete their secondary education. The impact of this on poverty dynamics is multiplied by structural forces in the labour market, where burgeoning youth unemployment results in increasingly fevered competition for limited jobs, leading to inflation in qualification requirements for entry level formal sector jobs. The locking together of these factors hampers poverty escapes and increases vulnerability to impoverishment.

5. Conclusion

Sustained poverty escapes in Rwanda are highly constrained by the land-education-jobs nexus. Land scarcity hampers returns to agriculture. A thin and sluggish non-farm rural economy provides few non-farm jobs and limited localised agro-processing means that most off-farm work is restricted to low productivity, low wage, casual labour. Limited capabilities constrain opportunities for formal sector employment either locally or through migration and the costs of education, particularly secondary school, place it beyond the reach of the poorest households, creating a poverty trap that is hard to escape.

Reversing this situation will require sources of additional demand in the rural economy. The presence of a vibrant non-farm economy is necessary to reduce poverty in a context of acute land scarcity. However, this is largely absent in rural Rwanda and its presence would require an economic transformation made possible by a more effective enabling environment for the non-farm sector. While some elements of the enabling environment are in place (improved roads, telecoms and water infrastructure), others remain problematic (inadequate investments in human capabilities, heavy regulation of the informal sector) and our qualitative analysis found the rural non-farm economy to be thin, with few employment opportunities, particularly for unskilled and semi-skilled workers.

This might be stimulated by more cash in the rural economy, a more productive agricultural sector, more non-farm employment and a better access to quality education. While these have been identified (at least partly) in previous national development strategies such as the Vision 2020, the Economic Development and Poverty Reduction Strategy (EDPRS I and II) and more recently in the National strategy for Transformation (NST1), targets have not yet been achieved. We discuss these four components one by one.

1. We can see that expanded social protection programmes (such as the Vision Umurenge 2020 public works scheme, the Girinka one cow per poor family programme, the Minimum Graduation Package), with more recipients, more generous transfers and longer duration schemes (Devereux, 2017), could reduce the severe cash constraints found in rural Rwanda, increasing effective demand, stimulating local markets and potentially enabling greater investment in both enterprise and human capital formation. Similar programmes have been successful elsewhere (Haushofer and Shapiro, 2016; Haushofer et al., 2020, Hidrobo et al., 2018) and although these programmes were initiated more than ten years ago in Rwanda and were expected to be scaled up (see IMF, 2013), this process has not yet fully materialized (Chabé-Ferret and Simons, 2019).

2. Further boosting the agricultural sector could include increasing agricultural yields and livestock productivity through expanding investment in slope stabilisation and soil and water management. By learning the lessons of Green Revolution experiences in Rwanda and elsewhere in the world, an adjusted Crop Intensification Programme could also deliver improved access to fertiliser and high yielding seed varieties for even the poorest farmers, generating productivity gains and improved well-being (Franke et al., 2016; Cioffo et al., 2016; Ansoms et al. 2018; Dawson et al. 2016; Clay and King, 2019). These investments could be complemented by enhancing the enabling environment for agro-processing enterprises and the development of a cool chain linking even remote rural areas with the national and international market. This would potentially stimulate the market for high value crops and improve the communication of price signals, to encourage on-farm diversification.
3. An enabling environment for business which promotes entrepreneurialism, including micro-enterprises for self-employment could support labour absorption into a more vibrant non-farm sector. This would have the potential to absorb surplus rural labour into higher-return work. In this respect, the creation of urban clusters could act as a catalyst for off-farm growth. While this was a priority for the period 2013-2018 covered by this study (IMF, 2013) through the development of secondary cities, the urban development planning of these cities has been completed and only from now on should we be able to grasp their full impact. Benefits of implementation could be maximised by enabling value chains that link through to poor rural producers.
4. If rural Rwandans are to access education and to invest more in enterprise at the same time, they will need to have a greater discretionary income, requiring fewer demands on the household budget and they will need to face fewer risks. A reduction in payments for services (especially education) would be useful, as we anticipate these would result in higher savings and then investment in enterprise. A more vibrant enterprise sector will also require better education for basic business, technical and ICT skills. Rwanda has the opportunity to take

advantage of favourable dependency ratios and the growing young population.

Entrepreneurship initiative is expected to decrease competition within the off-farm job market and increase the rate of job creation in the non-farm economy.

In the longer run, enhancing human capabilities by ensuring improved learning outcomes and school completion by even the poorest children (free education through to S6, grants for school uniforms and exemptions for 'school feeding' and other 'small fees') and improving health outcomes (widening the targeting measures of fee exemptions for health insurance, improved diagnostic services at the local level and upwards referral in the health system) will ensure that even the poorest can grasp the opportunities created, enabling many more sustained poverty escapes and growth from below.

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Annex 1: Methodology

The National Institute of Statistics Rwanda (NISR) has collected data on a nationally representative sample of 1920 households that they have followed at three different points in time (2010/11; 2013/14; 2016/17), resulting after six years in 2427 households, including split households.^{xx} For each of these households and for each point in time (2010/11; 2013/14; 2016/17), NISR imputes a poverty

status (Poor (P) or Non poor (N)) using the national poverty line^{xxi}, which we use to determine poverty trajectories^{xxii} over the three waves as follows:

- Never Poor (Non poor in wave 1 (N); Non poor in wave 2 (N); Non poor in wave 3 (N) or N-N-N)
- Impoverished: started non-poor and went into poverty for either or both subsequent waves. This includes impoverished (N-P-P), late impoverished (N-N-P) and transient poor (N-P-N);
- Sustained Escapers: started poor and became non-poor for the following waves (P-N-N);
- Other Escapers: Late escapers from poverty in the last wave (P-P-N) and transitory escapers, who escaped and fell back (P-N-P) ;
- Chronically Poor: remained poor throughout (P-P-P).

The quantitative analysis uses the three-wave panel of this EICV household survey applying panel logistic regressions to estimate how the probability of being poor and experiencing particular poverty trajectories correlates with household characteristics, capabilities, and adopted livelihoods. Basic characteristics are explored alongside exposure to antipoverty policies and access to health insurance and financing mechanisms. We hence estimate the following multinomial Logit model:

$$Pr(Poverty_i = p) = f(\beta_0 + \beta_1 X_i + \beta_2 Y_i^s) \quad (1)$$

where:

- p are all the different poverty trajectories: never poor, impoverished, other escapers, sustained escapers and chronically poor;
- X is a vector of household (head) characteristics included in all specifications: age, age square, sex, province of residence, urban status, size of household;

- Ys is a set of vectors of household (head) characteristics included only in one specification aimed at focusing on one dimension: social programs, health, land holdings, occupations, finances and amenities.

For each specification, we estimate the marginal effect of the added variables and plot them for visual comfort. We also check the robustness of the findings by performing additional specifications, including random and fixed effects models as well as including covariates in lags or contemporaneous to the poverty status depending on whether it is an arguably fixed characteristics or a shock variable. Results are strongly comparable to the baseline.^{xxiii} We next also allow for interaction effects between the different mechanisms in order to investigate the existence of the nexus outlined in Section 2, and predict probabilities of the different outcomes for a set of conditions representative of our sample.

The qualitative analysis draws on 229 life histories from 115 households, 50 Focus Group Discussions (FGDs) (28 of them gender-disaggregated, 22 thematic), and 45 Key Informant Interviews (KIIs) at the village and district level. The qualitative fieldwork took place in 14 study sites^{xxiv} in 10 of the 30 districts in Rwanda (see Figure 2, above). These covered a mix of urban, peri-urban and rural districts and all Provinces, ensuring that the data captured a mix of poverty performance, environmental and economic context and livelihood strategies. Research design ensured that emerging findings were robustly triangulated (Bird et al., 2019).

Fieldwork respondents were selected from specific poverty trajectories. For the 2017 fieldwork round, poverty trajectories were identified through panel data analysis and the development of a transition matrix, which placed households into poverty trajectories, and respondents for Life History Interviews (LHIs), Focus Group Discussions with women and men (FGDW/M) and Thematic Focus Group Discussions (TFGDs) were proportionately selected from poverty trajectories using a stratified random sample (Bird et al., 2019). A second round of qualitative field work was undertaken in 2019, expanding the qualitative dataset and extending the study sites to new districts, to corroborate and extend the 2017 findings.

Panel identification codes were not made available to the research team for the 2019 qualitative data field work, so households at each study site were placed in poverty trajectories through use of a Participatory Dynamic Wealth Ranking (DWR) exercise. This required the listing of all households resident at the study site (village), scoring their well-being for each panel round year (2010/11, 2013/14 and 2016/17) according to a localised well-being schema (1, destitute; 2, working extreme poor; 3, poor; 4, vulnerable non-poor; 5, resilient; 6, wealthy)^{xv}. From this, each household was placed in a poverty trajectory (chronically poor (PPP), never poor (NNN), transitory escaper (PNP), transitory poor (NPN), sustained escaper (PNN) and impoverished (NPP, NNP)). This was used as the basis for identifying respondents, again using a stratified random sample.

In each study site, Key Informant Interviews with Knowledgeable Persons (KII-KPs) were used to provide a detailed overview of the local community. These interviews explored the history of the community, particularly focusing on the last 20 years and relating change over time to changes in community well-being. Local livelihoods, shocks and coping strategies were also explored, along with factors enabling poverty escape, local institutions, and what had changed over time. Change between the panel waves (2010/11, 2013/14 and 2016/17) was given particular attention to enhance data triangulation. The FGDs with women and men additionally identified key moments in the community's recent history and drivers of change in well-being, again focusing on the last 20 years and zeroing in on changes in well-being between panel waves (Bird et al., 2019).

Subsequent life history interviews (LHIs) were conducted with adults from 12-13 households per study site. Where the household was led by a male and female spouse, both spouses were interviewed. Where the head of household was widowed, separated or divorced or where their spouse had migrated for work, an adult of the opposite sex was selected from another household randomly identified to closely match the profile of the first household. This did not lead to the research team avoiding interviewing widows or women headed households but was an attempt to ensure that the data captured the gendered perspectives of both women and men (Bird et al., 2019). Thematic FGDs

and KIIs were conducted to explore emerging themes in greater depth and to ensure that emerging issues were fully triangulated (Bird et al., 2019).

Annex 2: Summary tables

Table A1: Characteristics of households by poverty trajectories

	Never poor	Impoverished	Other escapers	Sustained escapers	Chronically poor	Total
age of hh head	43.80	45.77	42.62	46.86	43.31	44.10
urban status	27.18	6.179	10.46	11.80	6.214	16.65
female hh head	25.82	26.68	22.67	29.93	26.66	25.97
hh size	4.616	5.059	4.517	5.132	5.525	4.854
split hh	26.13	40.32	25.66	52.60	24.00	30.45
Shock in past 12 months	24.87	35.44	35.32	31.10	42.38	31.44
share in total pop.	43.16	11.98	17.68	11.48	15.70	100.00

Table A2: Type of negative shock faced by poverty trajectories

	Never poor	Impoverished	Other escapers	Sustained escapers	Chronically poor	Total
Drought/irregular rains	37.0	56.8	48.5	46.6	50.4	45.9
Floods	1.6	0.0	2.2	0.5	0.0	1.0
Landslides & Mudslides	0.9	1.6	4.3	3.9	3.2	2.5
Unusually high level of crop pests	2.4	2.5	1.2	7.0	1.7	2.6
Unusually high level of Livestock disease	0.0	0.3	0.9	2.4	1.1	0.7
Unusually high level of human disease	8.9	4.2	7.2	7.2	2.3	6.4
Unusually high prices for food	5.6	1.3	3.0	4.7	5.1	4.3
Unusually high cost of agricultural inputs	0.2	0.0	0.0	0.0	0.0	0.1
Loss or reduced employment	2.2	0.4	1.1	3.3	1.0	1.6
Fires	0.0	1.3	0.6	0.0	0.0	0.3
Serious illness or accident of hh head	25.6	25.6	18.7	16.6	24.3	22.9

Death of hh head	2.8	1.1	1.8	0.0	1.9	1.9
Other	12.6	4.7	10.5	7.8	9.0	9.8
Observations	707					

Table A3: Type of coping strategy by poverty trajectories

	Never poor	Impov-erished	Other escapers	Sustained escapers	Chronically poor	Total
Sold household goods (radio, furniture)	0.9	0.0	2.1	0.8	0.0	0.8
Reduced expenditure on food	28.5	31.3	28.0	33.3	22.0	28.0
Reduced necessary expenditure on health	0.4	1.3	1.6	0.0	1.1	0.9
Sold productive assets or means of transportation	2.6	0.0	0.9	0.0	0.0	1.1
Used up savings	13.4	5.3	9.6	14.8	5.2	10.0
Borrowed from a bank	2.5	1.5	2.0	3.0	2.9	2.4
Borrowed from an informal money lender	4.6	5.3	7.1	9.9	13.8	7.7
Sold house or land	10.8	15.7	11.1	4.2	11.1	10.8
Withdrew a child from school	0.8	0.0	0.0	0.0	2.5	0.8
Sold more animals / non - productive things	7.3	6.5	6.7	7.6	5.7	6.8
Sold last female animals	13.6	15.0	13.7	20.2	13.8	14.6
Some hh members migrated to find a job	0.2	1.0	1.5	1.6	0.0	0.7
Entire hh migrated	0.0	0.0	0.0	0.0	2.0	0.4
Begging, or other degrading practices	3.1	6.0	3.3	0.6	7.6	4.2
Other	11.3	11.1	12.3	4.2	12.1	10.8
Observations	707					

Table A4: Multinomial Logistic regression results (Baseline is never poor)

Variables		Trajectories			
		Impoverished	Other escapers	Sustained escapers	Chronically poor
EDUCATION (1)	some primary	0.809*** (0.00518)	0.627*** (0.0035)	1.404*** (0.00971)	0.677*** (0.00404)
	primary completed	0.624*** (0.00478)	0.318*** (0.00224)	0.938*** (0.007820)	0.365*** (0.00258)
	more than primary	0.166*** (0.00195)	0.121*** (0.00114)	0.401*** (0.00437)	0.0304*** (0.000495)
OCCUPATION (2)	hh head receives salary from ag. sector	3.292*** (0.0189)	1.687*** (0.0089)	0.988 (0.00641)	7.504*** (0.043)
	hh head receives salary from non-ag. sector	1.304*** (0.00937)	0.985* (0.00603)	0.979** (0.007)	1.232*** (0.0083)
	hh head owns a business in non-ag. sector	0.734*** (0.00551)	0.737*** (0.00463)	1.011 (0.00719)	0.971*** (0.0068)
	hh head owns a farm	1.122*** (0.00961)	1.216*** (0.00847)	0.993 (0.00777)	0.689*** (0.00574)
	share of hh members working off farm	0.550*** (0.0053)	0.745*** (0.00606)	0.854*** (0.00793)	0.443*** (0.00419)
LAND (3)	land area cultivated per adult equivalent	0.989*** (0.000133)	0.988*** (0.000126)	0.997*** (0.0000613)	0.939*** (0.000279)
CONTROL (1) & (2) & (3)	Regional control	Yes	Yes	Yes	Yes
	Household head characteristics control	Yes	Yes	Yes	Yes

Exponentiated coefficients; Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Observations 2427 Households Results (1),(2) and (3) obtained from independent regressions

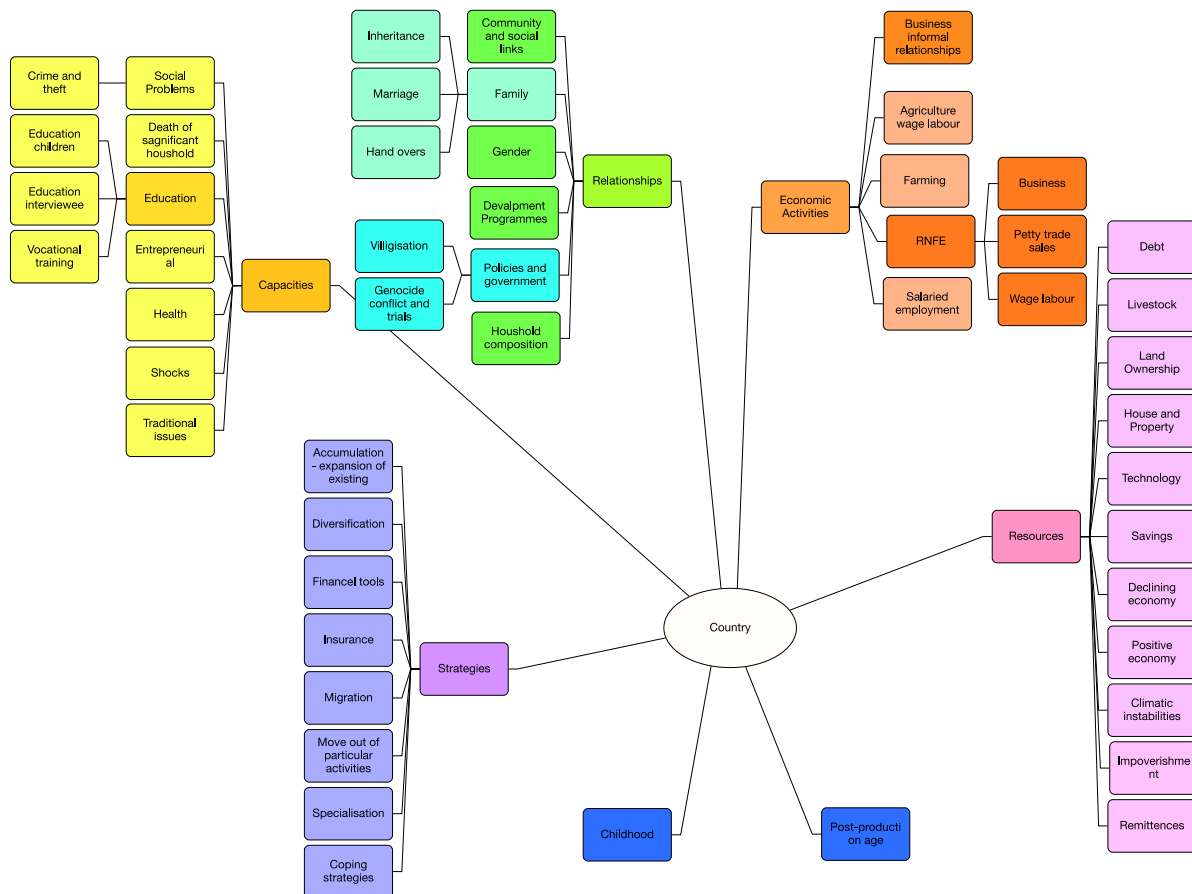
Annex 3: Nvivo Coding Frame, Rwanda (2019) qualitative data

Name	Description
Capacities	Events and individual characteristics of the individual or household contributing to the escape from poverty or impoverishment.
Death of breadwinner	Death of the main earner, usually husband or father.
Education	/aggregate code/
• Education children	Effort to educate the children, level of education and the comments regarding the education system.
• Education interviewee	The elements including the education achievements of the interviewee – including the reasons for stopping education as well as information on the education of siblings in the same households.
• Vocational training	The information on the vocational training provided by family members and wider community.
Entrepreneurial	The mentions of the business-related actions regardless of the outcome as well as mentions of hard work ethics.

Health	All mentions of health problems and shocks within the household as well as the description of the healthcare system.
Social Problems	All mentions of the alcohol and drugs related issues domestic violence.
• Crime and theft	All mentions of criminal behaviour – violence and theft.
Traditional issues	The mentions of traditional customs, such as witchery, traditional doctors and gender practices.
Shocks	Instances where the household is dealing with economic shocks for example recovery strategies, or alternative employment.
Childhood	This is a biographical code to allow sorting through the stages of biography (analytical code).
Economic Activities	/aggregate code/
Agriculture wage labour	The instances of employment on the sessional basis in the agricultural sector as well as comments regarding the condition of employment.
Business informal relationships	The irregularities and social links that enhance or hinder business opportunities, such as cheating, business fraud.
Farming	The economic activity associated with farming for consumption as well as the form of the business. Includes comments on the wider business relations between farmers-middle man and buyers.
RNFE	/aggregate code/
Business	The economic activities associated with running business: including larger-scale farm business, trade, crafts and services.
Petty trade sales	The account of small food processing business, such as food stand as well as the charcoal production, firewood collection and farming surplus for sale.
Wage labour	The accounts of manual labour for wage, irregular employment.
Salaried employment	The accounts of regular employment with the salary, usually with the local government or bigger organisations, such as church.
Post-production age	This is a biographical code to allow sorting through the stages of biography (analytical code).
Relationships	/aggregate code/
Community and social links	This code accounts for the motions of local social connections that contribute to escape from poverty.
Development Programmes	This code accounts for the instances where direct help from governmental and non-governmental organisation was mention as a factor contributing to poverty escapes.
Family	This code aggregates the mention of family links, including intergenerational and extended family links that contribute to escape from poverty.
Hand overs	The mentions of interviewers passing over the assets for dependents, such as business or properties (excluding education).
Inheritance	The mentions of inheritance, including bridal gifts, from parents to interviewee.
Marriage	This code relates to the marriage customs, but also the marriage practices and the instances of the divorce.
Gender	This is generic code for gender-related issues, including customs, power relationships between genders as well as the issues around health, education and work.
Household composition	This code relates to the household composition in childhood as well as in adulthood. It includes dependents, such as children and extended family members.
Policies and government	These codes keep track of the mentions of policies in practice, political involvements as well as wider political context.
Villagisation	This code represents the patters in which the building and planning regulations have been affecting the rural population in terms of housing often involving moving to the different part of the district.

Genocide conflict and trials	This code represents the accounts of the post-genocide relationships and reconciliation accounts.
Resources	/aggregate code/
Debt	This code keeps track of the debt practices – either paid or non-paid, that contribute to either poverty escapes or impoverishment trajectories.
Declining economy	The comments on the general perception of the economic decline – in terms of the markets for produce or general instabilities.
Food	This module takes an account of the food supplies in the times of environmental shocks and other border-line situations.
House and Property	This code collects the information about properties – houses for the habitation – as well as the commercial property for rent and business.
Impoverishment	The instances of impoverishment – the general aspects of decline.
Land Ownership	The code collects information on the land ownership – buying, inheriting and selling.
Livestock	The code collects information on the livestock ownership – buying, inheriting and selling.
Positive economy	The comments on the general perception of the economic prosperity – in terms of the markets for produce or general instabilities.
Remittances	The code includes all mentions of the resources gifted by the family members working outside of the households, mostly in terms of migration of spouse or children.
Savings	The code collects information on the savings and their contribution to accumulation of assets.
Shocks – environmental	The code collects information on the environmental shocks, including the disasters such as draughts, floods, and the disease outbreaks.
Technology	The code collects information about the technology – productive and for consumption, in terms of assimilation of assets as well as expansion of business.
Strategies	/aggregate code/
Accumulation - expansion of existing activities	This code accounts for the accumulation practices in leading business activities.
Diversification	This code accounts for the diversification of business practices in business activities.
Financial tools	The code keeps the track of the financial tool used for poverty escapes – bank credit, micro-finance institutions and community finance – SACCOs as well as merry-go-around.
Insurance	This code accounts for the insurance practices in leading business activities.
Migration	The code keeps track of the migration accounts – inner migration (rural-urban) and international migration patterns.
Move out of particular activities	This code accounts for the move out of the particular activities in the business context.
Specialisation	This code accounts for the specialisation of business practices in business activities.
Coping Strategies	This code includes the mentions of coping strategies that account for the shock recovery and sustained poverty escape according to the interviewees

Figure 9: Graphical representation of Nvivo coding frame, Rwanda (2019) qualitative data



ⁱ World Bank data: <https://data.worldbank.org/indicator/EN.POP.DNST?locations=RW>

ⁱⁱ World Bank data: <https://data.worldbank.org/indicator/SE.PRM.NENR>

ⁱⁱⁱ UNICEF global data base downloaded 18.10.19 from <https://data.unicef.org/topic/education/secondary-education/>

^{iv} UNICEF global data base downloaded 18.10.19 from <https://data.unicef.org/topic/education/secondary-education/>

^v Results of the regressions are provided in Annex (Table 4)

^{vi} Both NPP and NNP.

^{vii} 8 out of the 34 Chronically Poor households in the 2019 qualitative dataset, 4 rural and 1 urban

^{viii} We cannot talk in percentage terms here. It would be misleading, as fertility differs across poverty trajectories.

^{ix} No 2013/14 data is available for this indicator.

^x NPPs (note: not NNPs) spent RwF 1858 in year 1, when they were still non poor, while the PNN spend much more (RwF 2953) yet they were much poorer (total expenditure in year 1 of RwF 121,931 vs 233,630 for the NPP).

^{xi} Rwanda's health insurance scheme, *Mutuelle de Santé*, provides coverage for approximately two thirds of the Rwandan population. Registration levels have declined, with some households excluded from government subsidies (through targeting errors or being just above the threshold) finding themselves unable to pay the annual membership fees. Political economy analysis argues that the scheme's design cannot be fully explained by the objective "interests" or ideology of the Rwandan leadership (Chemouni, 2017), but that it has narrowed health inequalities (Raphael and Komakech, 2020).

^{xii} Despite rapid progress of the Rwandan Electricity Access Roll-Out Program (EARP), the quantity of consumed electricity and the uptake of appliances, remain low and there is only weak evidence of impact on income, health or education (Lenz et al., 2017). Many poor households simply cannot afford to pay for connection or regular power bills and therefore cannot gain the benefits.

^{xiii} This social process compounds the effects of post-genocide demography (resurgent fertility rates) and inheritance practices (equal sharing of land and other assets amongst sons) to contribute to the development of sub-marginal holdings.

^{xiv} Households in Ubudehe category 1 are fully subsidised for *Mutuelle de Santé*. However, targeting errors in Ubudehe categorization leads to poor households having to pay to get *Mutuelle de Santé*. See in Chabé- Ferret and Simons, 2019.

^{xv} The use of the term 'salary' should not be taken to mean a formal monthly salary but rather any income. This category includes casual agricultural labourers.

^{xvi} 21 out of 42 chronically poor women in the dataset, 12 cases from 2017 and 9 from 2019.

^{xvii} Seven cases in the 2019 dataset, from Burera and Kicukiro Districts.

^{xviii} Seven cases in the 2019 dataset, from Muhanga District.

^{xix} 110 men from the community went to prison for three months.

^{xx} For more about attrition and split households in the panel dataset, see NISR 2018.

^{xxi} The Rwandan poverty line is two tier. First, it determines the value of a food basket that provides about 2500 Kcal per day per adult equivalent (which is the extreme poverty line). And second, it adds a provision for non-food consumption. The poverty line hence adds up to 159,375 RwF per adult equivalent at January 2014 prices (See NISR, 2016).

^{xxii} We also disaggregate some of these trajectories in certain specifications where noted, for example separating out transitory escapers from 'others'.

^{xxiii} More detailed results are provided in Chabé- Ferret and Simons, 2019.

^{xxiv} 8 study sites were visited during the first round of qualitative fieldwork in 2017 and 6 in the second round in 2019.

^{xxv} We found the localised criteria for well-being categories 1-6 highly comparable across our rural study sites but non-comparable between the rural study sites and the Kigali study site. So, for instance a well-being category 4 in Kigali would have been considered extraordinarily wealthy in any of the rural sites. Conversely, a rural household placed in well-being category 4 would have been considered terribly poor in the Kigali study site. This could have distorted well-being related

urban-rural comparisons, if not factored in differences in by the research team. Likewise, perceptions of well-being are known to influence placing households into Ubudehe categories and therefore an urban/rural differentiation in receipt of targeted government support.