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Rural Crime in Developing Countries:
Theoretical Framework, Empirical Findings,
Research Needs



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Ulrike Grote and Frank Neubacher

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Abstract

Anecdotal evidence and selected information from the International Crime Victims Survey suggest that crime is higher in developing countries than in developed countries and that there are regionally big differences. Explanations and solutions to the persistence and prevalence of rural crime in many developing countries are needed as rural crime undermines sustainable development to a large extent and may even affect social cohesiveness in rural communities. This discussion paper therefore calls for research which helps to shed light on this phenomenon in support of improved policies. For this, representative and good-quality data is needed. It is suggested to disentangle the complex research topic and allow for a more systematic approach by focusing on a certain type of crime. Research on most of these types is very selective and scarce. As mentioned, data is almost non-existent and evidence on individual types is largely missing. The routine activity approach is suggested as a conceptual framework for further analysis. The paper concludes that research and policy design should focus on how to reduce opportunities to commit a crime in rural areas in developing countries in order to reduce environmental and social costs of crime, promote sustainable development and improve rural livelihoods of the often deprived and poor in rural areas in developing countries.

Keywords: Rural crime, developing countries, victimization, routine activity approach, sustainable development

JEL classification: K14, Q01, Q12, Q5, R11

1 Introduction

Crime is a major concern in many developing countries (van Kesteren, van Dijk and Mayhew 2014). Overall, crime including corruption is much more pronounced in developing countries than in industrialized countries (Ksevic 2008; Zvekić and Alvazzi del Frate 1995). This is the result from the International Crime Victims Survey (ICVS) supported by the United Nations. Similarly, the Corruption Perception Index from Transparency International shows that developing countries are mostly the ones being represented at the bottom of the list indicating high levels of corruption. Property crime is the most frequent type of crime exceeding sometimes even the 50% level. Within the developing world, Sub Saharan Africa (SSA) is the most affected by crime, while Asia is least affected (Zvekić and Alvazzi del Frate 1995).

Rural areas in developing countries are often characterized by high rates of poverty and food insecurity. Around 50% of all people worldwide live in rural areas; in developing countries even 55% or 3.1 billion people (IFAD 2011, FAO 2009). In addition, the rural areas are characterized by a high concentration of poverty: 70% of the extremely poor people live in rural areas (IFAD 2011). Most of the rural people depend in income and employment on farming. While there is a lot of research on sustainability of livelihoods and farming in rural areas, hardly any research has considered the barriers to development in rural areas. One such barrier is related to rural crime in developing countries. Thus, crime may hamper development of rural areas in a serious way. Fafchamps and Minten (2004) find for Madagascar that crime and insecurity result in a significant reduction in income and access to public infrastructure such as health care centers and schools. Ceccato (2016, p.8) points out that “crime and safety are important dimensions of sustainable rural development”. Also Gerasimova (2008, p.231) notes that corruption alone “is a serious obstacle in the development process of developing countries”. In other words, persisting crime in rural areas is likely to result in unsustainable development, depriving even more people of their livelihoods and promoting outmigration of often younger household members to urban centers. This can have serious implications for food security in some developing countries: while the availability of workforce in rural areas decreases, and the environment gets deteriorated by criminal acts, more food needs to be produced to feed the urban population.

Thus, there are high direct and indirect costs involved if crime exists. Estimates of cost of corruption alone amount to several billions of US Dollars per year in certain sectors in some developing countries (Gerasimova 2008). Also Skaperdas, Soares, Willman and Miller (2009) state that violence results in high costs on global development, and that it directly reduces economic growth. Indirect costs occur in the presence of crime if for example business and trade are diverted, investment and savings are reduced, resources are wasted, or investments in private security increase (Fafchamps and Moser 2003). Also at the micro level, crime can result in high costs. Burglary and theft, respectively, affect households not only by loss in property and in work time, but it also creates an indirect psychic cost making people feel suspicious and unsafe at home (Barclay et al. 2001; Ceccato 2016). In case of property crime, farming households are deprived of their livelihood income if livestock, field crops, or equipment and tools are stolen of their homesteads or fields. Environmental and wildlife crime may not only harm the environment but also threaten the sustainability of rural people’s livelihoods if the environment and natural resources including water and land surrounding the villages are degraded based on criminal acts.

Despite the urgency to contribute to sustainable development in rural areas, crime in developing countries is a neglected and underresearched topic (van Kesteren et al. 2014; van Dijk 2008). This is true not only in development research, but also in criminology. With respect to the latter, only since the recent rise of green criminology, environmental issues which are inherently related to rural areas have gained some recognition (Donnermeyer, Scott, Barclay 2013). In addition, crime has been mainly discussed so far in the urban context but hardly with respect to rural areas. Crime in rural areas is considered as being less important and environmental and wildlife crimes regularly lack an

individual victim. Part of the problem is the lack of reliable data from developing countries (Ceccato 2016). As van Kesteren et al. (2014, p.18) stated “statistics of recorded crimes are of poor quality, if they exist at all”. The ICVS is selective on certain developing countries and it does not differentiate between rural and urban areas. Nevertheless, some little evidence is available which helps to justify the focus on rural areas.

Ceccato (2016) points out that in developed countries such as Sweden, the UK and the USA, rural areas tend to generally have lower levels of crime than urban areas. She finds that this is true for all types of crime (see also Marshall and Johnson 2005 for the UK). Ceccato (2016) also finds that in Sweden, three of ten farmers have been targeted by some sort of theft in the previous two years, and half of those have been targeted two or more times. Fuel, machinery, equipment, and other farm property are common targets of what is stolen on farms in the developed country context. One in four farmers is worried that their properties or their family will become victimized in the future. Barclay (2001) reviewed the literature and found that farm crime in rural areas is widespread and costly to farmers. For developing countries, Clinard and Abbott (1973, p.208) find from their interviews with young male offenders in Kampala, Uganda in as early as 1968 that most residents of a village have some experiences with theft, suggesting that “theft may be more common in rural areas than is generally acknowledged”. They confirm based on their limited survey results that this observation can be found across many rural areas. Using data from Madagascar, Fafchamps and Moser (2003) find that the incidence of certain types of crime is higher in isolated areas, providing some evidence that crime is a major rural phenomenon.

Why has research on rural crime in developing countries been neglected so far? One of the reasons is that the importance of crime for sustainable development of rural areas might have been underestimated so far. Thus, only since the beginning of the 1990s, corruption – as a type of crime has received some attention with the launch of “Transparency International” a Non Governmental Organization (NGO) aiming at combatting worldwide corruption. Before that, corruption had been a taboo topic, also in the development context. Another reason is the relatively high costs of running a survey – this is even more so if the surveys take place in remote rural areas. Finally, getting data on crime is a very sensitive issue people might be hesitant to report about. Underreporting or refusing to answer might be serious problems when running a representative survey in the field. Against this background it is even more important to collect and summarize evidence on what we have so far on rural crime in the development context.

The overall aim of this discussion paper is thus to report on the state of the art of crime research in the development context in order to identify some further research needs. In more detail, the research has the following three objectives:

- (1) to review the evidence of different types of rural crime in developing countries,
- (2) to describe the theoretical and empirical evidence to explore rural crime, and
- (3) to identify the importance of rural crime for developing countries.

The focus is on rural areas which can be defined by the population size, density and geographical location including remoteness (Hogg and Carrington 1998). Similarly, rural communities are defined as “places with small population sizes/densities, areas where people are more likely to know each other’s business and come into regular contact with each other” (Websdale and Johnson 1998, p.102).

There are some opportunities for crime which are only present in rural areas. Theft of livestock or crops but also environmental and wildlife crimes have been mentioned as examples for crime on property. But at the same time, rural areas are often characterized by low population densities and the remoteness of fields and forests or fishing grounds so that poor surveillance and the absence of people increase opportunities for crimes.

This paper does not want to give a complete and detailed picture about patterns of crime in developing countries but rather focuses on a set of core issues of relevance in rural areas. Identifying the risk-enhancing and risk-reducing determinants of crime in rural areas will help to develop preventive measures to reduce the opportunities for crime. Increasing the awareness about crime in rural areas in developing countries can contribute to increase the sustainability of rural development, it can help to protect and conserve the environment, making rural areas a more attractive place to live in and thus eventually prevent the outmigration of the productive workforce into urban areas to sustain food security in the longer run.

The paper is structured as follows: Section two provides an overview of different types of crimes in the rural context in developing countries. In section three the conceptual framework along with the empirical evidence on selected determinants of rural crimes are described. Section four elaborates on the importance of doing research on rural crime. This comprises a description of the effects of rural crime and an analysis of selected future trends impacting on rural crime in developing countries. Section five concludes by pointing at some further research needs.

2 Types of crimes in the rural context

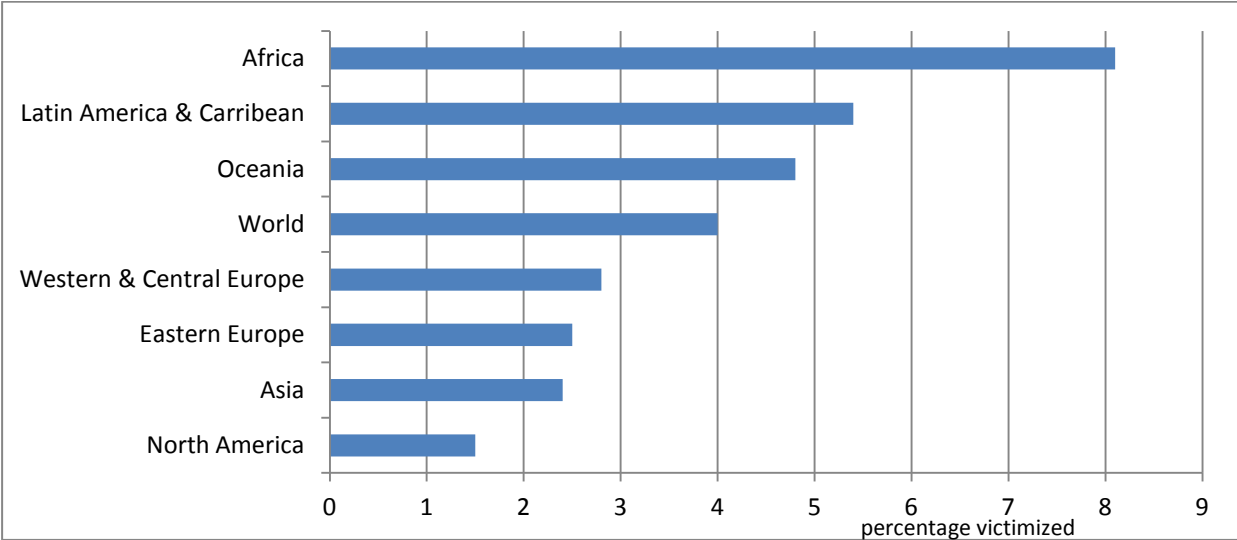
There is some evidence from the literature about different types of crimes that are occurring in rural areas. These can be differentiated into farm crimes, environmental and wildlife crimes, violent crimes, corruption, and other crimes. An overview of the different types of crimes is provided in the Appendix, Table 1.

2.1 Farm crimes

Ceccato (2016) points out that farm crime is a relatively neglected research topic although it happens frequently. Most papers which exist focus on developed countries including Australia, the United Kingdom, the United States and Sweden. Developing countries are more or less excluded so far. Nevertheless, the given literature provides definitions of the term “farm crime” which is also of relevance to developing countries. Donnermeyer (2014) differentiates between two types of crime on farms: (i) ordinary crimes such as theft of livestock, machinery and farm supplies, burglary, vandalism, or damage from trespassers and hunters, and (ii) extraordinary crimes such as organized drug production of cannabis or other drugs on farmland. Barclay and Donnermeyer (2007) suggest that crime on farms also includes theft of water and timber, and arson. In the developing country context, also the theft of all kinds of crops and plants from the field is suggested to be an important part of ordinary farm crimes.

Based on the ICVS data, Figure 2-1 presents the victimization rates related to burglary in the urban context. In Africa, the rate is by far the highest, while in Asia it is comparatively low.

Figure 2-1: Victimization Rates for Burglary (one year prevalence), by World Region



Source: van Dijk (2008, p.56), based on ICVS, 1996-2005.

The evidence of the extent of farm crimes in rural areas is still limited. In developed countries, such as Australia, Barclay et al. (2001) find that around 70% of 1,100 farmers in one rural region had been victimized in the preceding two years. In Sweden, a postal survey of 1000 farmers of whom 527 responded showed that almost half of the respondents knew somebody who had been victimized over a two year period (Ceccato 2016). Most farm crimes which occur in developed countries are property-related and include theft of tools and equipment, even tractors and spare parts of machines, but also farm inputs (e.g. fuels, pesticides, and fertilizer) or farm produce (such as fruits and vegetables, maize or wheat, and livestock). Also cases of destruction of property (i.e. vandalism)

have been reported. (Anderson and McCall 2005; Donnermeyer and Barclay 2005; Jones 2008; Mears et al. 2007).

In developing countries, the evidence is much scarcer but farm crime seems to be even more present. Bunei et al. (2013) find from a representative survey of 200 farm households in rural Kenya in 2012, that almost all (99%) had been victim of farm theft or vandalism over a five year period. 85% of the farmers had experienced tool and equipment theft, 81% grain theft, and almost half livestock theft and vandalism. Fuel and machinery theft occurred less frequently.

There are studies which focus on certain types of farm crime. Sidebottom (2013) thus looks specifically at livestock theft which is very common in many parts of SSA such as Malawi. The Parliamentary Monitoring Group (PMG), an NGO in South Africa, reports about intensified livestock theft since the 1990s especially in cross-border regions of South Africa. They point out that it has developed from petty theft to organized crime (PMG, undated).

Information on extraordinary crimes, namely on drug production, is even more difficult to obtain at the household level. The World Drug Report of the UN indicates that drug production is a major problem in selected developing countries such as Afghanistan, Lao PDR and Myanmar but information at the micro level is not available.

2.2 Environmental and wildlife crimes

Environmental and wildlife crimes include garbage dumping, excessive soil, water, or air pollution, deforestation, slash and burn cultivation, illegal clearing of native land, and destruction of rivers on the one hand, and illegal hunting, poaching, or other illegal acts that harm species or the environment on the other hand. Environmental and wildlife crimes also involve trade in endangered species – animals and plants – alive or dead (Ceccato 2016).

Often, environmental and wildlife crimes are committed purely to make profits but environmental and wildlife crimes can also result from poor education and a lack of knowledge i.e. when dealing with waste products or managing natural resources. Since it is often difficult to identify a specific victim, environmental and wildlife crimes are often not reported and prosecuted.

Specific numbers on environmental and wildlife crimes in general exist only for selected developed countries. For example, in Sweden 5,000 environmental and wildlife crimes are being reported per year to the police. These include mainly the dumping of oil or other chemicals on land or in water bodies, illegal hunting and fishing, air pollution, deforestation, and some petty crimes such as noise from sawmills and littering (Ceccato 2016). For developing countries, such detailed information on environmental and wildlife crimes in rural areas is not available.

However, there are statistics and plenty of literature from developing countries on drivers and effects of above mentioned crimes such as deforestation, slash and burn cultivation, or illegal clearing of native land. Thus, already two decades ago Kaimowitz and Angelsen (1998) reviewed 150 economic models on deforestation which have been used to identify why, where, when and how much forest is being converted. These models draw on household data but also on macro data.

At the macro level, the United Nations Office on Drugs and Crime (UNODC website 2016) explicitly deals with "wildlife and forest crime" which they define as "taking, trading (supplying, selling or trafficking), importing, exporting, processing, possessing, obtaining and consumption of wild fauna and flora, including timber and other forest products, in contravention of national or international law." According to UNODC (2016), wildlife and forest crime is often linked to trans-border organized crime. High profit margins make the illegal wildlife trade one of the most profitable industries in the world (Pires, Schneider and Herrera 2015). Also the United Nations Environmental Program reports that global syndicates are responsible for the poaching of animals, the illegal shipping of toxic waste,

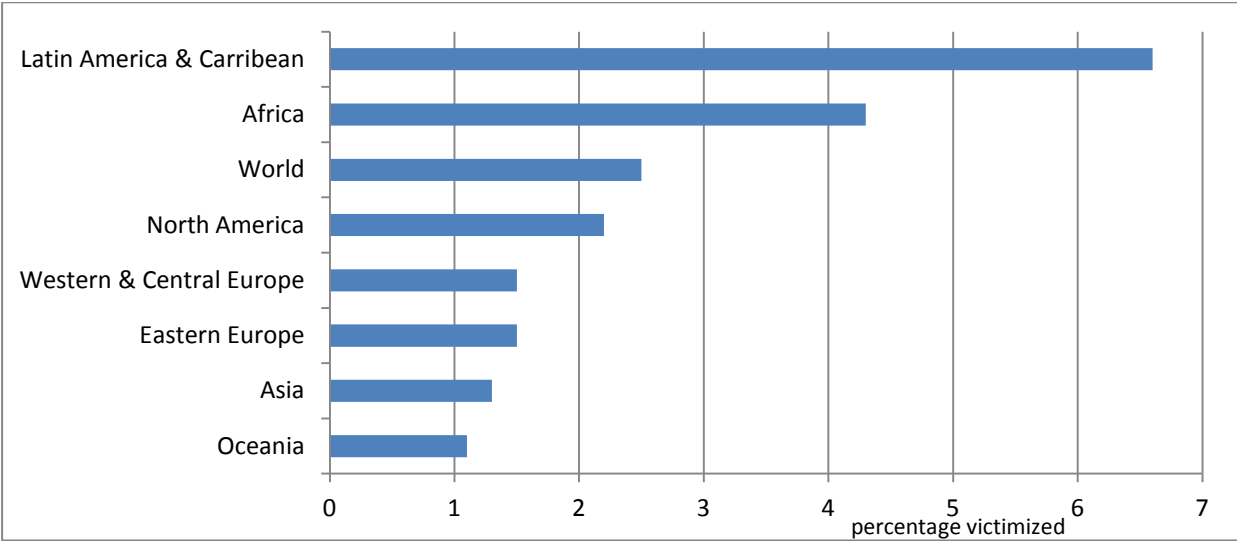
and deforestation. In total, the damages of these crimes have been estimated to annually amount to tens of billions of dollars for communities around the world (News24, 2013).

There are also plenty of studies available on single threatened animal and plant species linked to developing countries which are rich in wildlife, biodiversity and endangered species. Pires (2015) conducted a study on parrots, one of the most threatened bird species, in Peru and Bolivia to better understand the determinants of the illicit sales market for parrots. Pires et al. (2015) also conducted interviews with parrot poachers, middlemen, other sellers and experts in Bolivia and Peru. They reveal that the trade in this case is not governed by formal organized groups but rather by single freelance operators.

2.3 Violent crimes

Violent crimes include assaults, threats, robbery, and sexual incidents, or even homicide. With respect to sexual incidents, victimization rates are generally seldom reported, but in comparison with police statistics, the ICVS provides some good insights showing that they are highest in Africa and lowest in Asia (Figure 2-1). However, this data refers to urban areas and there are large differences within the continents. Thus, while the victimization rates are lowest in Asia, India belongs to the five countries with the highest rates. There, rape is one of the most common crimes against women (Ramaswamy 2013), and it has one of the highest mortality rates of girls up to the age of 5 worldwide (Solotaroff and Pande 2014). In Africa, there are six countries (Nigeria, Swaziland, Lesotho, Zambia, Botswana and Namibia) among the 15 countries with the highest rates (van Dijk 2008). About half of all sexual assaults happen at home or close to home (Alvazzi Del Frate 1998).

Figure 2-2: Victimization Rates for Robbery (one year prevalence), by World Region



Source: van Dijk (2008, p.64), based on ICVS, 1996-2005.

Data on violent crimes in rural areas are even more difficult to find. The WHO published results in 2005 of an international survey on violence against women which included physical violence and sexual abuse at the provincial level in several developing countries. Lifetime prevalence rates for partner violence ranged in most cases between 29% and 62%. The greatest amount of violence was reported by women living in rural settings in Bangladesh, Ethiopia, Peru, and Tanzania. These figures were higher than those from Brazil, Samoa or Thailand (WHO 2005).

In addition to the statistics, there is evidence that especially in South Asia, violence in the context of dowry and bride price, domestic violence, sexual abuse and mating of children are widespread problems. In Bangladesh, more than 40% of all girls up to an age of 15 years are married (Solotaroff

and Pande 2014). The causes are often rooted in the poor education, the low social status of women and corresponding role models (see also Mohamad and Wieringa 2013; Alvazzi Del Frate and Patrignani 1995). Worth mentioning is also in this context the role of human trafficking with children which are offered or sold as servants, workers, beggars or prostitutes (Phongpaichit, Piriyaangsan and Treerat 1998).

Violence against people might also happen in the context of farm crimes or environmental and wildlife crimes. Kumwenda (2012) points out that in South Africa, violent crimes racially motivated happen on farms. Clinard and Abbott (1973) observed that in developing countries few people deposit their savings in banks. Instead, in some cultures, people wear them openly in form of jewelry. This then often leads to violence, if these people become victim of theft or robbery. Violent crimes in rural areas may also happen if there are disputes in or between villages; this may likely happen in connection with alcohol and drug consumption and/or over the possession of a piece of land or other scarce natural resources, as pointed out by Clinard and Abbott (1973).

2.4 Corruption

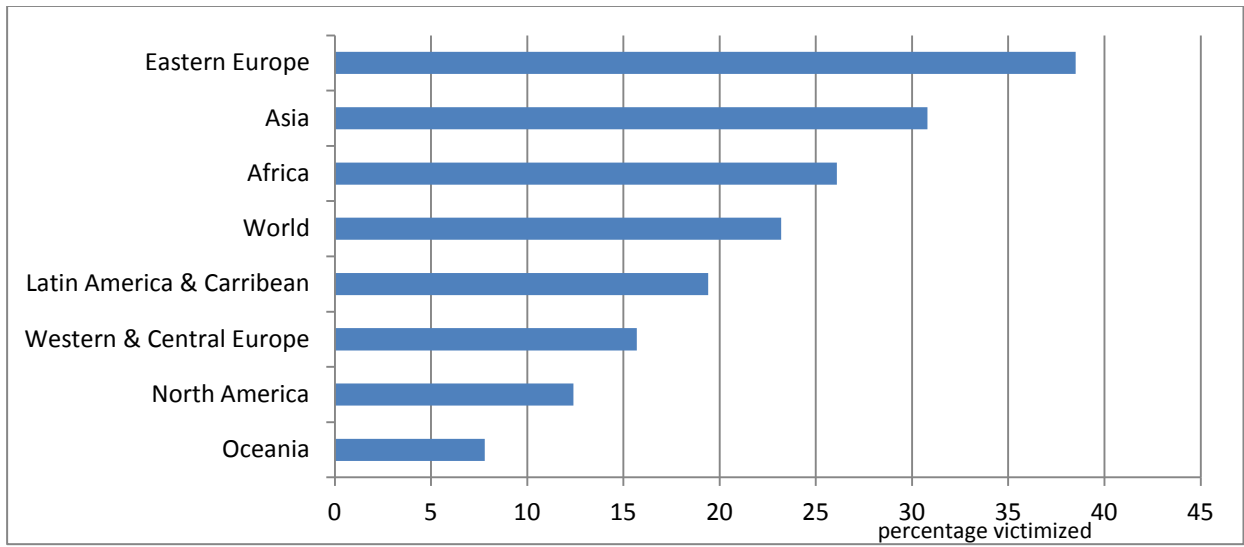
Corruption in developing countries is widespread, as evidenced by different indices such as the Transparency International Corruption Perception Index or the World Bank Governance Indicators. Thus, it is well known that corruption occurs especially in service sectors including health, education, electricity, banking, police and law enforcement, land administration, or local governments and NGOs. This is explained by the simple fact that civil servants, doctors and nurses, teachers or police officers are poorly paid so that they are inclined to accept money, often in exchange for special treatment such as good exam marks (Clinard and Abbott 1973; Gerasimova 2008). This is also true for rural areas, although the service sectors are often limited to schools, health care centers, or selected local offices. However, there are additionally high-value natural resources such as timber, fish or wildlife which are prone to corruption.

Many studies about corruption relate to the macro level where data is more readily available from organizations such as Transparency International, the World Economic Forum or the World Bank. Evidence from the micro level is sparse. This is even more so for rural areas in developing countries. An exception is the study by Anik, Manjunatha and Bauer (2013) who made an attempt to analyze the impact of farm-level corruption on households' food security.

2.5 Other crimes

There are a number of other crimes which exist in the rural context. Illegal gambling and cock and/or dog fighting belong to such crimes especially in rural areas. Similarly, there is some evidence that witchcraft and Satanism may relate to murder and other violent crimes worldwide. It can be assumed that these rituals are more widespread in rural areas with much stronger religious practices and the absence of law enforcement and schooling. But also consumer fraud is a type of crime which is very important and should not be ignored. Figure 2-3 provides a snapshot about the victimization related to consumer fraud in the urban context in different parts of the world. Next to Eastern Europe, in Asia and in Africa, consumer fraud is highly present.

Figure 2-3: Victimization Rates for Consumer Fraud (one year prevalence), by World Region



Source: van Dijk (2008, p.345), based on ICVS, 1996-2005.

3 Theoretical and empirical evidence to explore rural crime

3.1 Theories and approaches

Theories of crime have been well established over the last few decades. Robert K. Merton (1938) developed his theory on deviance from the societal perspective. He looked at the relationship between social structure, its underlying cultural norms and goals, and the lack of capacity and inadequate opportunities of individuals to conform to them. One response may be “innovation”, meaning that members of the society look for new, illegitimate ways of achieving cultural goals such as material success. Agnew (1992, 2006) further refined this theory by pointing at different categories of strains, i.e. negative stimuli in terms of victimization, loss of job or environmental disasters.

Becker (1968) was one of the first using the economic approach as an optimal resource allocation framework to identify costs and benefits of committing a crime and optimal policies to combat crimes. He recognized that criminal behavior responds to economic incentives and that some human beings are predisposed to criminal acts. However, also the reverse is true, namely that criminal behavior negatively affects economic incentives or better economic outcomes, as evidenced by Fafchamps and Minten (2004). According to Becker (1968), an analysis of crime would be incomplete if the role of law enforcement would be not considered, which is generally determined by the presence and intervention of the police.

Becker’s rational choice model of crime was then further developed and empirically tested by Ehrlich (1973, 1996) and Ehrlich and Brower (1987). By combining Becker’s model with the general theory of occupational choices, it was possible to predict both the direction and relative magnitude of the response of specific offenders to changes in different observable opportunities.

Cohen and Felson (1979) developed the routine activities approach as a line of thought linked to the rational choice theory. This approach has been increasingly used in criminology to analyze the likelihood of certain crimes in rural areas. It assumes that criminal acts are directly related to daily routines of both victims and offenders resulting in crime opportunities. For a crime to be committed, a motivated offender must be given, along with the absence of a capable guardian, and the existence of a suitable target or victim (Cohen and Felson 1979). If these three elements exist, then there is a criminal opportunity. Pesch und Neubacher (2011) explicitly stress that it is the interaction between these different factors, or the circumstance in which a criminal act happens, rather than the characteristics of the offenders or victims.

Figure 3-1: The Routine Activity Approach



Source: Based on Cohen and Felson (1979).

More in detail, a motivated offender is defined simply as somebody who is inclined to commit a crime. In theory, he or she is assumed to make a rational decision based on the characteristics of the target. Clarke (1999) defined the choice of a target in property crime to depend on whether it is “CRAVED” (Concealable, Removable, Available, Valuable, Enjoyable, and Disposable). However, it should be noted that committing a crime is not necessarily a rational decision of the offender who conducts a cost-benefit analysis before committing a crime. It may rather involve emotions and the lack of rational thinking as suggested by Bouffard et al. (2000). They analyzed the role of emotions within the rational choice theory and stressed the importance of emotions in the context of making rational choices. They also pointed out that emotions can turn up as benefits (“thrills”) of committing a crime.

The guardian determines whether the offender will commit the crime (Cohen and Felson 1979). Bursik and Grasmick (1993) define guardianship as being both, human (human presence or physical guardianship e.g. through neighbors, friends, relatives, passersby) and/or non-human (e.g. locks, alarms, cameras). Important is in this context that guardianship acts as an obstacle to offenders (Clarke and Felson, 1993). However, as mentioned before, since the offender does not necessarily decide rationally, more punitive punishments have been found not to prevent offenders from committing crimes.

Another theoretical sub-area of interest in the context of rural crime is the environmental criminology approach which was suggested in the 1980s by Brantingham and Brantingham (1981). This approach focuses on environmental and wildlife crime, however, can be also applied to other types of rural crime. Next to the three elements offender, guardian and victim (or target) of the routine activity approach, space (or geography) and time are more strongly stressed as two important dimensions of a criminal opportunity. Thus, land use patterns, wildlife portfolios, infrastructure such as street designs and maps, or remoteness of places are especially important in this context.

3.2 Empirical evidence and determinants

Empirical studies have focused on the three components of the routine activity approach to predict crime in rural areas but mainly from developed countries. To what extent this evidence also applies

to situations in developing countries has not been fully explored¹. However, it is obvious that the nature of farms and rural areas determines the level and type of rural crime although the causes of crime differ across societies and countries (Meera and Jayakumar 1995).

In general, farms are perceived to be more vulnerable to victimization because they are often more isolated, located in remote areas and thus lacking guardianship. Donnermeyer et al. (2011) suggest that theft of equipment and machinery more likely occurs in isolated and remote locations as criminals are able to steal with little chance of being detected. In some developing countries, the fields of even small-scale farmers are sometimes spread in different locations over longer distances far away from the main homestead. It could be the case that these farmers are thus more affected by theft of crops or of other farm tools left behind on the remote fields. Anderson and McCall (2005) also stress the importance of both, isolation and the proximity to urban centers as two major predictors for farm crime. They point out that isolation refers to the distance from one farm to another with direct implications for guardianship, while proximity to urban centers implies that there might be many people including potential offenders passing by from urban centers, thus providing opportunities for crime. Barclay and Donnermeyer (2002) suggest that farms located in mountainous areas are more often affected by poaching and livestock theft. Accessibility to a place also makes illegal garbage and waste dumping more likely, but at the same time it is also easier to detect this (Ceccato and Uittenbogaard 2013).

Infrastructure plays a large role along with access to roads and markets. Donnermeyer et al. (2011) point out that farms located close to main roads and to urban centers and markets are more likely exposed to criminal acts. It is easier for offenders to take the stolen items such as livestock to the close-by markets for sale. Thus, Omiti et al. (2007) found in Kenya that farm theft is associated with high integration and availability of markets where the stolen items can be sold. Fafchamps and Moser (2003) investigated agricultural crime in relation to isolation of rural areas in Madagascar. They find the opposite, namely that crime increased with the isolation of rural areas. This has been explained by the fact that gangs operate in rural areas which are protected by long distance and remoteness from the reach of any police.

Barclay and Donnermeyer (2002) also observe that the visibility of property from a road by other people increases the opportunity for criminal acts. This goes along with the observation that large farms tend to experience more victimization than smaller ones (McCall 2003; Mears et al. 2007). Although the meaning of the term "large farm" differs to a large extent across countries, this observation has been also confirmed by Bunei et al. (2013) for Kenya. They find the larger the farm, the more temporary and seasonal workers are often employed. The ability to control and guard these employees decreases and crime rates go up (Barclay 2001).

Visibility and guardianship also depend on the time of the day and seasons. Thus, it has been found that thefts, especially of heavy, valuable and less concealable items including livestock mainly occur at night so that darkness decreases the visibility, and additionally, the victims are asleep (Bunei et al. 2013; Clinard and Abbott 1973). In developing countries, the criminal opportunities are expected to be even higher as areas are often poorly lightened. Farm crimes also depend on the seasons. In developed countries, such as the UK, farm crimes go up during lambing time (from January through May), since farmers tend to be away from their homestead to take care of their livestock. Other hotspots for crimes in rural areas are times when certain shows or events take place which farmers generally attend for a few days (Jones 2008). In Kenya thefts more likely occur in the period April to September when crops are ready to be sold on markets and when workers have used up their own food stocks (Bunei et al. 2013). Furthermore, theft might also occur during harvesting periods in December and January. Obviously these seasons differ across countries, depending on dry and rainy seasons and the specific climate zones.

¹ Table 2 (Appendix) provides an overview of the evidence on rural crime in developing countries.

Mears et al. (2007) find for the United States that highly attractive, portable, and high value farm properties are stolen more likely. Sidebottom (2013) investigated self-reported theft data for seven species of livestock from 11,280 households in Malawi to see whether livestock theft patterns reflect the “CRAVED” characteristics. He finds that higher availability and disposability of livestock is significantly related to higher levels of theft. Livestock with more CRAVED characteristics are also stolen in greater numbers. He concludes with some caveat that livestock theft in Malawi is largely opportunistic. Pires (2015) also applied the CRAVED analysis when studying the illicit trade with parrots in Peru and Bolivia. He finds that species being more concealable, available, abundant, and disposable are poached more often. The aspects enjoyable, removable, and valuable are not significantly related with poaching.

As mentioned above, opportunities for rural crime also depend on non-human guardianship such as the protection measures. Clinard and Abbott (1973) argue that opportunities for theft are much greater in common households in developing countries, because their dwellings may have neither doors nor locks and are poorly constructed so that theft requires little skills.

Rural crime is not only linked to physical and geographical factors, but also to specific social and cultural factors of farming communities in rural areas. Thus, unemployment and drug abuse of potential offenders are mentioned by Barclay et al. (2001) as the most prevalent social problems related to farm crime. This can be also supplemented by the consumption of alcohol, and the possession of weapons and vehicles which can be so-called crime facilitators (Felson and Boba 2010; Pesch and Neubacher 2011). Alcohol consumption is also known to be related to violent crime (van Dijk 2008). However, it needs to be pointed out – in the context of the routine activity approach – that these factors are not characteristics of the motivated offenders per se, but rather influence the situation in which a crime may take place, such as meeting with other influential people in case of unemployment. Barclay et al. (2001, p.155) stress that property-related farm crime is “highly situational”, meaning that certain specific factors depend on certain types of farm crime.

Other social factors describing the risk of victimization relate to individual characteristics such as age, gender, marital status or education and income, but also the lifestyle of the target (van Kesteren et al. 2014). Meera (1993) sees crime as a by-product of development as societies become more materialistic. These micro-level factors have been identified to be much more important than macro-level factors such as democracy level, modernization, world system status and inequality (Uludag et al. 2009).

However, poverty and inequality are often related to the occurrence of crime (Bourguignon 2000; Fajnzylber, Lederman and [Loayza](#) 2002). They are even considered by many as being among the best predictors of crime (Agnew 2006; Pratt and Cullen 2005; Smith and Ashiabi 2007). Van Dijk (2008) mentions about the importance of inequality as a cause for violent crime. Clinard and Abbott (1973) point out that most property offenses are committed in developing countries by the poor against the poor. However, at the same time they also suggest that poverty is not strictly linked to criminality. They point out that this relation would be far too simplistic; and if there would be some truth in it, then development should lead to decreasing crime rates. As a counterexample, they refer to white collar crimes which relate more to higher-income groups; Neubacher (2014) refers to “crimes of the powerful” in this context. Donnermeyer et al. (2013) also used this phrase to describe the illegal behaviors of farmers displacing small-scale farmers from the land or exploiting the environment and/or their laborers. Furthermore, it is suggested that opportunities of crime decrease with increasing poverty as the targets become less attractive. Also the loss of livelihood may result in people spending more time at home, thus increasing guardianship on the one hand (Agnew 2012). On the other hand, guardianship may also decrease as poverty reduces the likelihood that parents will effectively supervise their children (Agnew 2005, 2006, 2009). Poverty may also result in secondary stressors such as family conflicts, school drop outs, or exposure to aggressive peers and neighbors (Agnew 2009; Currie 1997; Smith and Ashiabi 2007), or it is even a key root of human trafficking (Ceccato 2016).

The majority of offenders commit a crime at places close to where they live (Ceccato 2016). Also the proximity between target and offender has been found to correlate with high farm crime rates. Thus, own workers on a farm become offenders and commit a crime, or they pass information to criminals for a fee (Mears et al. 2007; Barclay 2001). Bunei et al. (2013) observe increasing theft crimes committed by own farm workers in Kenya when they are not paid in time or paid less than they were promised because of decreasing market prices obtained by the farm owner. Donnermeyer, Barclay and Mears (2011) report that farmers are vulnerable to victimization also from other sources such as neighboring farms, unknown people passing by or even organized groups. However, it has been noted in the literature that farmers themselves can be also offenders by violating environmental regulations, exploiting workers, or by other illegal activities (Donnermeyer et al. 2013). Swanson et al. (2000) add that farmers themselves support farm theft in a way because they “may readily purchase stolen commodities at a bargain price”.

Livestock can be used as a good example to highlight other social and cultural factors which determine or may influence rural crime. Thus, for South Africa, cross-border livestock theft is known to have developed since the 1990s from a petty crime to organized crime by syndicates (PMG undated). Smith, Barrett and Box (2001) investigated the causes of cattle theft among semi-nomadic pastoralists in Kenya and Ethiopia finding that cultural definitions of masculinity and inter-ethnic tensions play an important role.

Other cultural factors relate to the perceived higher safety in rural areas as compared to urban areas in developed countries (Ceccato 2016). Accordingly, farmers use less crime prevention measures and are reluctant to report crimes to the police (Jones, 2008). Donnermeyer (2006) points out that rural people (in Australia) have distinctive sets of attitudes, beliefs, values, and behaviors that contribute to informal social control. In the Australian context, victims are pushed to not accuse anybody in the community of theft. If they nevertheless report, then they face the danger of being excluded from the community. Thus, farmers even trade off their losses in produces and livestock against peace and recognition in the rural community (Barclay et al. 2001).

Not much is known about the role of police and crime prevention measures in developing countries. Hills (2000) notes that the police in developing countries are often based in urban centers and that police officers are generally underfunded. People are generally not inclined to cooperate with the police in developing countries. The ICVS suggests that on average, only 40% of all conventional crimes are reported to the police (van Dijk 2008). These rates are much lower in developing countries than in developed countries, and they are lowest in Latin America, followed by Asia and Africa. Instead, crimes, especially of juveniles, are often regulated informally by village chiefs, priests or elderly persons in rural areas and are thus not registered by the police (Shytov and Na Pomphet 2007). Fafchamps and Moser (2003) find that the police have no deterrent effect on crime. Their data from Madagascar suggest that, in some parts of the country at least, offenders who are caught do not spend any time in jail because of inefficient courts and lax prison rules.

Typical for rural areas seems in general that victims may refrain from reporting any crimes, either because (i) there is no trust in the police, (ii) they consider their employees and neighbors as potential offenders but are reluctant to report this (Mears et al. 2007), or (iii) simply because the police are not available in rural areas. Meera and Jayakumar (1995) state that costs of crime are perceived to be higher in developing countries. Van Kesteren et al. (2014) find based on the ICVS data that in developing countries, victims of property crimes tend to be more dissatisfied with the support from the police than victims of contact crimes. This dissatisfaction springs from the fact that the police did not manage to recover their stolen items. Interestingly, in all developing countries, the theft of a car is perceived as just as serious as a sexual assault. This can be explained by the fact that the loss of a car hits especially low-income households in a major way; and even more so as only few car owners are insured. The high reporting rates in case of car theft thus derive from the hope to recover the stolen car (Alvazzi Del Frate 1998; Zvekic and Alvazzi Del Frate 1995).

To prevent livestock theft, legislation has been developed. For example in South Africa, the Animal Identification Act sets the stage for the compulsory marking of cattle, sheep, pigs and goats and their registration to allow for traceability of the livestock. A similar system exists in Botswana. However, the implementation of these systems is hampered by registration costs for which the farmers have to pay. Furthermore, farmers are hesitant in registering their livestock since there might be damage costs in case of an accident caused by their livestock (PMG undated). In Peru, privately organized patrolling has been taken as a measure in a village to prevent livestock theft (Sierck 1997).

4 The importance of doing research on rural crime

4.1 The effects of rural crime

Crime has been found to hamper development of rural areas in a serious way. Gerasimova (2008, p.231) notes that corruption alone “is a serious obstacle in the development process of developing countries”. Ceccato (2016, p.8) points out that “crime and safety are important dimensions of sustainable rural development”. In other words, persisting crime in rural areas is likely to result in unsustainable development, depriving people of their livelihoods and promoting the outmigration of often younger household members to urban centers. This can have serious implications for food security in some developing countries: while the availability of workforce in rural areas decreases, and the environment gets deteriorated by criminal acts, more food needs to be produced to feed the urban population.

Anik, Manjunatha and Bauer (2013) made an attempt to analyze the impact of farm-level corruption on households’ food security. To quantify corruption, they interviewed 210 Bangladeshi rice farmers about the prices they paid for services and compared these with the actual prices. The differences between actual and paid prices were taken as proxies for bribes. Their results confirm that the cost of corruption adversely affects households’ food consumption. They also find that low-expenditure rice farming households are relatively more affected than high-expenditure ones. This is explained by the fact that high expenditure households have more flexibility in terms of adjusting their expenditures and hence, are able to pay for the bribes without affecting their food consumption. Fafchamps and Minten (2004) find for Madagascar that crime and insecurity result in a significant reduction in income and in access to public infrastructure such as health care centers and schools.

Skaperdas et al. (2009) state that violence results in high costs on global development, and that it directly reduces economic growth. Fafchamps and Moser (2003) point at indirect costs which occur if for example business and trade are diverted, investment and savings are reduced, or resources are wasted in the presence of crime. Indirect costs also occur as psychic cost and loss in work time if people affected by burglary or theft feel suspicious and unsafe at home (Barclay et al. 2001; Ceccato 2016). Furthermore, in case of property crime, farming households are deprived of their livelihood income if livestock, field crops, or equipment and tools are stolen of their homesteads or fields. Environmental and wildlife crime may not only harm the environment but also threaten the sustainability of rural people’s livelihoods if the environment and natural resources including water and land surrounding the villages are degraded based on criminal acts. In fact a large part of rural people’s income depends on the environment which would be impaired from environmental destruction and wildlife loss (Nguyen et al. 2015). Violent crime can be accompanied by property crime or can result from social conflicts over land or other resources. But crime also covers corruption and bribery, often related to the infringement of rules and laws. Thus, illegal logging or fishing is often done based on bribing of officials in charge of controlling the access to these resources. Deforestation and overfishing are often the outcomes.

In certain cases, crimes can also undermine the cohesiveness of rural communities creating some social cost. Although the number of crimes is generally lower in rural than in urban areas, Ceccato (2016) points out that in developed countries, one selected case of crime may have a much greater impact on the perception of safety in a village as compared to several incidences of crime in an urban setting. Furthermore, she finds that crime also has an indirect cost as it negatively impacts on the image of a village.

4.2 Future challenges ahead

There are a number of future challenges ahead which are likely to impact on rural crime, especially in developing countries. The urgent need to develop a systematic research agenda on rural crime thus also derives from these pressures.

Disasters and climate change

Rural areas in developing countries, especially in SSA, are expected to be most affected by extreme weather events and natural disasters such as floods and droughts in the context of climate change in the future (Grote 2014). If agricultural productivity declines, the livelihoods of many rural households will be threatened, increasing rural poverty and promoting crime as a potential coping strategy. This is especially likely to happen among those who lack conventional coping skills and financial resources, receive little support in terms of food, water, and shelter, are low in social control, or are in situations where the benefits of crime are high and the costs are low (Agnew 2006). If people have lost their livelihoods, they believe that they have little to lose when being caught after having committed a crime. Furthermore, while disasters may reduce the number of attractive targets for crime, they may also result in increasing poverty, and change views of offender about what constitutes an attractive target. For example, basic items such as food and water may become more attractive, offsetting the decline in other attractive targets (Agnew 2012).

But crime sometimes also increases after extreme weather events if there is a situation of disorder, often combined with blackouts. Then the opportunities for offenders rise, since the guardianship is reduced and the risk of getting caught is lower (Agnew 2012). The same may be true for the risk of getting convicted in case the work of the criminal justice authorities is affected by disorder. Guardianship is also expected to decrease, if temperature increases and if people opt for more outdoor activities leaving their homes unprotected (Rotton and Cohn 2004). Agnew (2012) also suggests that crime rates are generally higher in warmer regions and warmer seasons as people become more aggressive if the temperatures rise.

Conflicts over scarce resources

Water scarcity has grown in developing and also many transition countries with currently about a third of the world population living in water scarce regions. Also agricultural land will be further limited in the future due to land degradation, urban expansion and conversion of cropland for non-food production (Grote 2014). Water and land are only two examples of limited resources which are expected to lead to further pressure on rural livelihoods and to social conflicts in the future. In the face of these stressors, opportunities for crime are expected to grow. This is likely to be very pronounced in rural areas in developing countries in the light of missing efficient judicial systems and law enforcement. However, little research exists on this so far. There is only some anecdotal evidence that riots have increased in many developing countries after food prices increased (Collier 2010). Agnew (2012) points out that investigating the effects of resource shortages on crime has a high priority.

Rural areas in transformation and migration

Rural areas are undergoing constant and rapid changes – not only as a result of natural disasters and environmental degradation – but also as urbanization increases, structural changes in agriculture take place and people migrate (Grote 2014; Grote and Warner 2010). Bunei et al. (2013) point out for the case of Kenya that targets for farm crime significantly increased over time due to technological and economic changes in the operation of agricultural enterprises and the development of infrastructure. Barclay and Donnermeyer (2011) note that improvements in roads, and the increasing cost of farm inputs such as machinery, chemicals and fertilizers have increased the accessibility and attractiveness of farm crimes. In addition, formerly rural and remote areas become more visible and accessible due to urbanization over time resulting in a higher likelihood of becoming the target of rural crime.

Structural changes in agriculture also lead to migration and changes in population composition including ethnicity, age groups and gender ratios of rural communities over time. More seasonal workers are employed on the farms which might increase the number of potential motivated offenders but there is no evidence on this. Outmigration of the working aged household members may result in disrupted family ties, socioeconomic instability, and thus increasing risk of becoming victim of a crime in the place of origin. Empirical evidence on the relationship between migration and crime is mixed (Moehling and Piehl 2009, Stowell and Martinez 2007, Varano et al. 2010). Stowell and Martinez (2007) argue that any effort to predict the relationship between migration and crime must consider the context in which migration occurs. Thus, migration seems more likely to lead to crime when the migrants move involuntarily, are economically deprived and greatly stressed without receiving any social support, suffer from physical and mental health problems, or include a high percentage of young males. Crime also seems more likely in the place of destination when the receiving areas are unprepared for and hostile towards migrants, and little integration takes place.

5 Summary and conclusion

This discussion paper provides a comprehensive and up-to-date overview of the current status of research on rural crime in developing countries in order to identify possible research gaps. It draws on literature from different disciplines and shows how multi-faceted this field of research is. However, evidence from developing countries is scarce so far. As van Kesteren et al. (2014) pointed out, this is a neglected and underresearched topic. Thus, there is a call for research on rural crime in developing countries.

The first objective of this discussion paper was to review the evidence of different types of rural crime in developing countries. It was found that rural crime can be differentiated into farm crimes, environmental and wildlife crimes, violent crimes, corruption and other crimes. Surprisingly, anecdotal evidence and selected information from the ICVS suggest that rural crime rates are much higher in developing countries than in developed countries. Furthermore, some types of crime such as environmental and wildlife crimes but also some farm crimes have expanded across borders as has been shown for the case of livestock theft. Overall, the risk of crime in rural areas seems widespread, although the evidence from developing countries is still scarce, mainly due to the lack of data.

The second objective aimed at describing the theoretical and empirical evidence to explore rural crime. It has been found that theories of crime have been well established over the last few decades mainly starting from the rational choice model of crime or – to a lesser extent – drawing from strain theories (Agnew 2006, Agnew 2012). As a sub-area, the routine activities approach was developed from Cohen and Felson (1979). This approach distinguishes between a motivated offender, a suitable target and the absence of a guardian. Not mainly the characteristics of the offender or the victim determine whether a criminal act occurs but rather the interaction between the offender, the target and the absence of the guardian define the opportunities for crime. Identifying the major risk-enhancing and risk-reducing determinants helps to find preventive measures to reduce the opportunities for crimes. However, there are some ambiguous results on the determinants of crime at the micro level which have been identified so far mostly based on data from developed countries. At the macro level, poverty and inequality are one of the most important determinants of crime, two aspects which are particularly of relevance to developing countries.

The third objective of this paper was to identify the importance of rural crime for developing countries. It was found that rural crime can hamper sustainable development of rural areas in a serious way. It can negatively affect households' food security and income or their access to public services. If crime exists, it also results in high direct and indirect costs; the indirect costs derive from psychic costs making people feel unsafe and diverting their investments from e.g. high-return business activities to private security measures.

It is noted that future research should take into account challenges such as (i) structural changes and transformation processes in rural areas closely related to migration, or the modernization of the farming sector in some rural areas; (ii) the importance of shocks such as sudden and extreme natural disasters on the one hand and slowly occurring processes due to climate change on the other hand; and (iii) the scarcity of natural resources related to water and land which are likely to result in social conflicts and crime or even war. Representative and good-quality data is needed which allows for systematic research on such an important topic. It will be essential for producing sound evidence from developing countries and to suggest a model which helps to identify paths of reducing the opportunities of crime. This will reduce environmental and social costs, and allow for sustainable development and improved livelihoods in developing countries.

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Appendix

Table 1: Types of rural crimes in developing countries

Farm crimes	Environmental & wildlife crimes	Corruption	Violent crimes & other crimes
<p><u>Ordinary farm crimes:</u></p> <p>theft of</p> <ul style="list-style-type: none"> - equipment, machinery - inputs (fuel, pesticides, fertilizer) - farm produce (crops, livestock, fruits & vegetables). - natural resources (water and timber, land) - vandalism and arson <p><u>Extraordinary farm crimes:</u></p> <p>drug production</p>	<p><u>Environmental crimes:</u></p> <ul style="list-style-type: none"> - garbage & waste dumping - excessive soil/water/air pollution - deforestation - slash and burn cultivation - illegal clearing of native land - destruction of rivers - illegal fishing <p><u>Wildlife crimes:</u></p> <ul style="list-style-type: none"> - poaching - other illegal acts that harm species or the environment - trade in endangered species 	<p><u>Bribing in service sectors:</u></p> <ul style="list-style-type: none"> - health - education - electricity - banking - police and law enforcement - land administration - local governments - non-governmental agencies <p><u>Bribing related to illegal activities:</u></p> <ul style="list-style-type: none"> - illegal fishing, hunting, - illegal timber cutting and trade 	<p><u>Violent crimes:</u></p> <ul style="list-style-type: none"> - assaults - threats - sexual incidents - homicide <p><u>Other crimes:</u></p> <ul style="list-style-type: none"> - witchcraft-related - illegal gambling - cock / dog fighting

Source: Own compilation.

Table 2: Evidence on the routine activity approach

Component	Developing Countries of evidence	References
Lack of guardianship		
Space and geography: <ul style="list-style-type: none"> - Isolation and remoteness (distance from other farms, visibility of property, mountainous areas) - Proximity and access (from urban centers, integration and availability of markets where the stolen items can be sold) 	Kenya Madagascar	Omiti et al. (2007) Fafchamps and Moser (2003)
Time: <ul style="list-style-type: none"> - Time of the day - Season/climate - Festivities 	Developing countries	Clinard and Abbott (1973)
Human presence or physical guardianship: <ul style="list-style-type: none"> - through neighbors, friends, relatives, passersby - Proximity between target and offender 		
Non-human guardianship: <ul style="list-style-type: none"> - locks, alarms, cameras 		
Law enforcement: <ul style="list-style-type: none"> - Availability/access to police - trust in police - (non-)reporting to police 	Developing countries Thailand	van Dijk (2008) Shytov and Na Pomphet (2007)
Informal social control: <ul style="list-style-type: none"> - peace and recognition in the rural community - fear of exclusion 		
Motivated offender		
<ul style="list-style-type: none"> - income, poverty (unpaid workers) - unemployment and drug abuse, consumption of alcohol, possession of weapons and vehicles - access to information (workers have information on targets) - masculinity and inter-ethnic tensions (in case of cattle theft) 	Developing countries Kenya, Ethiopia	Clinard and Abbott (1973) Smith, Barrett and Box (2001)
Target / Victim		
“CRAVED” (Concealable, Removable, Available, Valuable, Enjoyable, and Disposable)	Malawi Peru, Bolivia	Sidebottom (2013) Pires (2015)
Age, gender, marital status or education and income, but also the lifestyle	Developing countries	Clinard and Abbott (1973)
Size of farm	Kenya	Bunei et al. (2013)

Source: Own compilation.

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