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Measuring Multidimensional Vulnerability in Afghanistan

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Measuring Multidimensional Vulnerability in Afghanistan[1]

1. Introduction

Post conflict environments are characterised by losses that result from the lack of available resources as well as the inability to convert these resources into well being. In Sen's terminology, manifested losses, which are achieved states of being, are defined as functionings. Available resources that households can control are defined as entitlements. The conversion process whereby entitlements lead to achieved functionings are defined as capabilities. The ability to convert entitlements into functionings is determined by appropriate procedures as well as adequate opportunities, emphasising access as well as the ability to utilise resources. Freedom of choice is integral to this conversion process and is determined by individual values, motivations and dynamics of society around them. Post conflict environments are commonly characterised by four types of functionings losses[2]. These are human security, exchange entitlements, social capital and access. This research identifies a broad gamut of of entitlements that contribute towards the achievement of these functionings.

The advantages of applying the concepts of entitlements, capabilities and functionings to understand vulnerability are three fold. First, breaking down vulnerability in these components highlights the root causes of the phenomenon, highlighting its relation to risks and shocks. Second, it allows for an in-depth analysis on multidimensional losses that cause vulnerability. Third, such a breakdown concretises otherwise vague concepts, making them quantifiable and measureable. Functionings are subjective, they vary across space and may also include intangible aspects of well being. Linking them to entitlements and capabilities helps identify those causal mechanisms that constitute vulnerability.

Using this context and for the purposes of this paper, vulnerability is defined as the combination of lack of entitlements and exposure to risks[3]. The occurrence of a shock has varying impact on well being: for some households, there is little or no fall in well being whereas for others, there is a high fall in well being, making households vulnerable. The occurrence of a conflict reduces household functionings, a loss that is caused by not only a fall in entitlements but also a breakdown in the process by which entitlements are converted into functionings. The former, lack of entitlements, leads to internal defencelessness and manifests itself in terms of reduced resilience. The latter, exposure to risk, results from external defencelessness, which manifests itself in terms of heightened fragility.

Many attempts have been made to define multidimensional vulnerability and poverty, partly due to the compelling works of Sen (1981, 1989), Chambers (1989) and Jodha (1988). In addition, data availability has improved in the recent past and it is possible to study a wide range of capabilities, representing both cardinal as well as ordinal data. The paper uses NRVA 2005 data to develop a profile of multidimensional vulnerability, emphasising both access to as well as ability to convert resources into well being.

[1] We would like to thank Chris de Neubourg, Henry Espinoza Pena and Semih Akcomak for valuable comments. We would like to thank Manzoor Ahmed Ahsan for editing the paper.
[2] For a detailed literature review, please see Ahmed, M. & Gassman, F. (2009). "Defining Vulnerability", MGSOG Working Paper No. MGSoG/2009/022, University of Maastricht
[3] For a detailed literature review, please see Ahmed, M. & Gassman, F. (2009). "Defining Vulnerability", MGSOG Working Paper No. MGSoG/2009/022, University of Maastricht

This paper seeks to contribute towards existing literature on vulnerability measurement in many ways. First, the paper analyses existing literature on measurement of vulnerability, briefly highlighting the advantages and disadvantages of current approaches being used. Second, using this literature review as well as the knowledge of post conflict environments, the paper identifies indicators that can be used to measure the different components of vulnerability. Using these indicators, the paper develops a profile of uni-dimensional deprivation in Afghanistan. In doing so, the paper outlines a context in which multidimensional vulnerability can be measured and analysed. In measuring multidimensional vulnerability, the paper computes intra-domain vulnerability to determine the levels of vulnerability within each domain. The paper combines intra-domain measurements into an index to represent inter-domain or overall vulnerability for Afghanistan. The paper also identifies, for the case of Afghanistan, which components contribute more towards vulnerability: whether it is lack of entitlements or exposure to risk or both that cause household deprivation. The paper highlights the differences between indexation and component-wise analysis. Finally the paper identifies the determinants of vulnerability in Afghanistan by analysing the incidence of vulnerability for different demographic characteristics. This paper is one of the first attempts towards assessing multidimensional vulnerability in post conflict environments, specifically Afghanistan. The post conflict situation in Afghanistan is nuanced, thus making the assessment of multidimensional vulnerability particular to the specific environment being considered. This makes comparisons with other post conflict environments difficult.

The paper is structured as follows. Section 2 summarises the existing literature on measuring vulnerability. Section 3 identifies the methodology that is used to identify the vulnerable households. The fourth section briefly describes the data used to measure vulnerability. Section 5 presents general trends of uni-dimensional deprivation in Afghanistan. Section 6 outlines the situation of multidimensional vulnerability in Afghanistan, emphasising both intra and inter domain vulnerability. Section 6 also shows which components of vulnerability contribute more towards the phenomenon. Section 7 concludes.

2. Putting Theory to Practice

Measuring vulnerability is a complex and challenging task. There are many different approaches towards defining and conceptualising vulnerability, which not only differ in terminology but also in the methods applied towards measurement.

Current efforts to measure vulnerability tend to be ex-ante, emphasising disaster risk reduction[4] and not ex-post management of risk and vulnerability. Ex-ante measures can be grouped around three initiatives. These include the Disaster Risk Index (DRI), the Hotspots project and the Americas project. The DRI (espoused by Peduzzi 2006) aims to identify human exposure to hazard types by calculating relative vulnerability. Relative vulnerability is calculated by dividing the number of people killed by the number of people exposed. This is a simple approach but does not explain why different countries have differing levels of vulnerability. To this end, the DRI also includes information on socio-economic variables that explain how context-specific development influences disaster risk and vulnerability. By combining relative vulnerability and socio-economic vulnerability, the DRI explains vulnerability through human exposure to hazard types.

[4] Details of the key approaches and indicators used in this field may be found in Annex A.

The DRI focuses on simple measures such as calculating loss of life. This type of approach is more relevant for a damage assessment but not for a vulnerability or impact assessment. It does not allow for an understanding of the dynamic nature of vulnerability. Nor does it capture the iterations that occur as the shock unfolds.

In order to measure ex post vulnerability, it is important to break it down into the components of the risk chain: the likelihood of risky events, the options for managing risk or the risk responses and the outcome in terms of welfare losses. Such decomposition shows that vulnerability is caused by exposure to risk that creates uncertainty. Households and individuals are vulnerable to suffering an undesirable outcome and how they respond to these outcomes influences their level of well being. This could lead to a possible downward shift in well being. The extent of "downwardness" is determined by the level of resilience households and individuals possess. Existing vulnerability studies do not undertake this kind of decomposition of the risk chain.

Profiling vulnerability is beset with two key problems. First, different models/organisations approach the issue of measurement in order to achieve their own specific objectives and targets. This not only makes replication difficult but also excludes the needs of the vulnerable populations. Second, as mentioned above, vulnerability is often substituted by poverty. In the absence of quality data, it is easier to measure poverty and use these measures as a proxy for vulnerability. Moreover, as Hejimans (2001) points out, it is mostly the poor who suffer from vulnerability but most strategies that seek to address it do not include the perceptions of people towards risks and shocks. Such strategies tend to think on behalf of the vulnerable poor without realising that their perceptions of vulnerability may differ.

As a starting point therefore, it is important to capture poverty at a *point in time* to assess household resilience against shocks. The practical usefulness is determined by the nature of poverty measures that are used. While there is no consensus on which measure is better than the other, there is consensus over the fact that different measures can be used in different situations to better represent poverty (Bedi et al (2007)). In the framework proposed by this research, poverty at a point in time is captured by the level of entitlements possessed by households at a point in time.

Existing vulnerability assessments, particularly those undertaken by the World Bank, end up capturing poverty at a point in time using uni-dimensional measures such as income or consumption. Such measures are a good indicator for poverty because they provide a way to capture income from different sources. In the recent past, many analysts (Sen 1981, Dreze and Sen 1991, Vogel and O'Brien 2004) have argued that money-metric indicators of poverty such as income and consumption do not capture the multi-dimensional aspects of poverty such as access to all those entitlements that are the basic minimum required to maintain a standard of well being. Measuring poverty in this way implies sketching a picture of household well being based on multiple indicators, which are then aggregated into a numerical scale (Cappellari and Jenkins 2006). These are binary indicators that reflect household access to various services. This approach was introduced by Townsend (1979) and was developed by many including Gordon et al (2000) and Roelen et al (2009).

Compilation of indices that capture the multifaceted loss of entitlements characteristic of post conflict environments is a daunting task. One key problem results from the nature of indicators used to compile such indices. Data that is collected particularly in the immediate aftermath of the conflict is not only scarce but also sketchy. Not only are comprehensive

entitlements difficult to define and measure it is also difficult to define a notion of well being that individuals and households seek to maintain. While this is a valid and relevant critique, particularly if the research on this topic has to be broadened, Sen (1984) (and with Jean Dreze (1989)) acknowledges that the entitlements required to achieve well being can be extensive or limited (Dreze and Sen 1989). They can be elementary such as food security to more sophisticated, such as being part of social networks (Pg. 12 Dreze and Sen 1989). Moreover, even-though there is no universal agreement on what acceptable capabilities should constitute, there is wide agreement that being well-nourished, adequately clothed, sheltered, having access to clean drinking water, health and education, form the necessary minimum (Kakwani 2006). While this minimalist manner of defining entitlements in terms of income and consumption may not be the way Sen had intended the approach to be used, it provides a framework to operationalise the notion of poverty and gain a sense about the prevalent conditions of vulnerability.

Even when multidimensional entitlement losses are acknowledged and recognised, the nature of post conflict environments increases fragility and uncertainty over time. These challenges make it difficult for households to convert their entitlements into functionings. In the framework of vulnerability proposed by this research, this uncertainty is captured by heightened exposure to risk. Such challenges hinder reconstruction and recovery efforts, specifically in terms of planning. Lack of administrative capacity makes needs assessment logistically difficult (Bodewig 2002, Cliffe et al 2003). Reliance on external implementing partners (international and non-governmental organisations) is high and this is not coupled with a workable exit strategy for them. Where conflicts have been the result of or have been exacerbated by ethnic tensions, such cleavages may hamper relief and reconstruction efforts. Moreover, lack of transparency in aid allocation can lead to a re-emergence of conflict. Cliffe et al (2003) find that scarcity of resources implies certain reconstruction activities will not be implemented, which may lead to further tensions. They also find that post conflict environments are usually characterised by a breakdown of institutions normally used to prevent localised conflicts from re-igniting. Further, informal economic activities are usually rampant and are not easy to reign in, making it difficult for the government (usually newly instated) to establish control (McKechnie 2003).

While there is no one way to define or measure vulnerability, Birkmann (2006) and Wisner (2003) highlight three main cautions that are necessary when measuring vulnerability. First, when developing mechanisms of measurement, it is important to ensure that they are relevant for the context; one-size-fits-all measurements may not reflect the idiosyncrasies of a particular situation. Where possible, a balance should be struck between various approaches. Second, when measuring vulnerability, its association with other variables should be clearly established so that the root causes on the one hand and impact on the other can be elaborated. Third, methods of vulnerability measurement should be realistic and in line with the capacity to use them in empirical research.

Recognising these constraints, it is possible to identify various indicators based on which patterns of deprivation can be discerned. Such an exercise would help translate a theoretical definition of vulnerability into a measureable concept. However, before the paper shifts towards the measurement of vulnerability, the next section briefly outlines the methodology used for analysis.

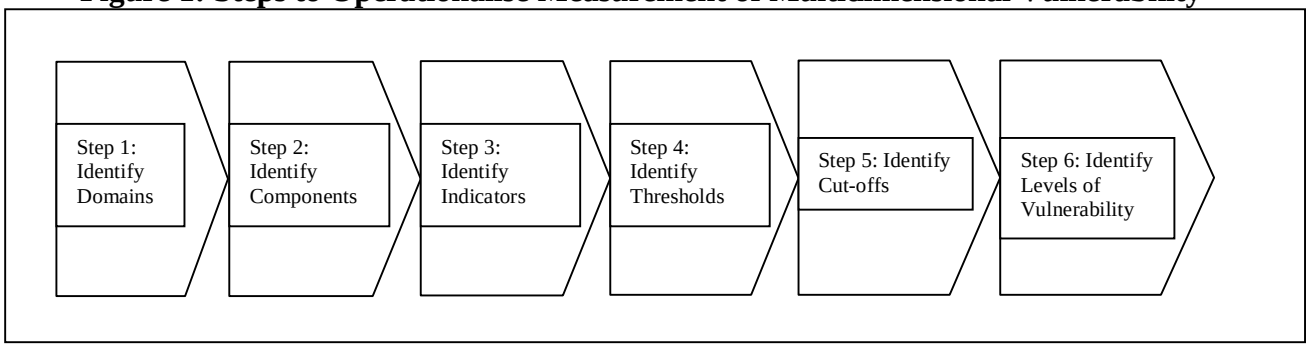
3. Methodology

The conceptual underpinnings for this paper are based on the approach presented by Chakravarty and Bourguignon (2003) for the measurement of multidimensional poverty[5]. The approach argues that while there is a recognition of poverty being multidimensional (resulting from losses across more than one indicator) rather than a mere loss of income or consumption, identifying these dimensions is not sufficient. It is equally important to include these dimensions into a workable definition of poverty. The existing attempts to do this focus on aggregating various dimensions into a single index based on arbitrary functions and formulating poverty lines and measures based on this index. Chakravarty and Bourguignon argue that while these efforts are more elaborate on the theoretical side, when it comes to measurement, these measures essentially remain uni-dimensional. As a way to address this limitation, they propose the use of multiple dimensions, each of which has a specific poverty line and to examine the interplay of these dimensions.

The analysis presented in this paper is distinct from other vulnerability assessments. It views vulnerability as the combination of two components: exposure to risk that results from external defencelessness; and, lack of entitlements that results from internal defencelessness. Vulnerability results when households are unable to convert their resources into achieved states of well being. It is therefore necessary to include indicators that capture the exposure to risk as well as lack of entitlements aspects of vulnerability.

Figure 1 provides a summary of how the multidimensional approach is applied to the measurement of post conflict vulnerability.

Figure 1: Steps to Operationalise Measurement of Multidimensional Vulnerability



Having established the relevance of the approach towards measuring multidimensional vulnerability, a number of steps have to be taken to operationalise it. First, the domains of functionings losses that cause vulnerability have to be identified. Based on the characteristics of post conflict environments, vulnerability is caused by deprivation across four key domains. These include human security, exchange freedom, social capital and access.

A second step, *specific to the measurement of vulnerability*, is the identification of components. Vulnerability has two main components: lack of entitlements as well as exposure to risk. The former reduces resilience over time while the latter makes it difficult for households to convert their resources into well-being. For each domain therefore, it is necessary to identify indicators that measure the 'lack of entitlements' aspect of vulnerability and the 'exposure to risk' aspect of vulnerability. Establishment of components based on this

[5] Many attempts have subsequently been made to apply this approach including Gordon et al (2003), Roelen et al (2008, 2009)

criterion is critical because it is this differentiation that distinguishes vulnerability measurement from poverty measurement.

Step three includes the identification of indicators[6] that are used to measure each component of vulnerability within each domain. From the outset, it should be acknowledged that identifying multidimensional deprivation, whether for poverty assessments or vulnerability assessments, is largely arbitrary. This issue is summarised by the question raised by Kakwani (2006): how many dimensions are enough? Is it preferable to analyse a universal list of indicators (Nussbaum 1992) or make the analysis more context-specific (Sen 1976, 1989)? In order to compile a comprehensive list of indicators that addresses this arbitrariness, this research relies on a review of secondary literature (on the general concept of well-being as well as the specific nature of well-being in post conflict environments). The final choice is based on how accurately and reliably they reflect the conceptual framework and goals of research (McLaren 1996). Consequently, the chosen indicators have a number of features. They are relevant for measuring both components of vulnerability. Identifying the right scope of the chosen indicators is crucial for measuring post conflict vulnerability. Vulnerability is a dynamic concept which merits measurement over time. However, in post conflict environments where data is scarce, such inter-temporal analysis is not possible. In the immediate aftermath of conflict when policies should be efficiently and effectively guided, perhaps an inter-temporal approach is not ideally suited for two main reasons. First, time series data is usually not available since collection of such data is difficult. Second, the emergency nature of needs requires quick action and policy makers are not able to wait for time series data to be collected. Rather, it is more important to measure multidimensional vulnerability using cross-sectional data so that appropriate policies can be designed that are efficient in addressing multiple deprivations in the immediate aftermath of the conflict. Another important characteristic of the indicators is that they are interpretable, not just to draw conclusions about vulnerability but also help guide conclusions about policy interventions. This relates to another aspect of indicators: the unit of analysis. It is important to acknowledge that even-though poverty and vulnerability assessments are based on the individual level the results presented in this paper are for the household levels. Since vulnerability measurements are based on entitlements that are owned at the household level, there is scope for economies of scale. Measurement at the household level allows the research to reflect this scope. Table 1 summarises the list of indicators chosen for each component within each domain. The table also summarises the literature that is used to identify the indicators as well as thresholds for vulnerability.

Two additional factors determine the choice of indicators for this research. First, those indicators for which either a large majority or too few face deprivation, are excluded. This implies that all households for which vulnerability rates are above 80 percent and below 10 percent are excluded. Second, those indicators that are applicable for only a sub-section of the population are also excluded. Examples of such indicators include benefit derived from land. Since this indicator is relevant only for those households that have access to land, using it for measurement of multidimensional vulnerability will make comparison difficult. It should be emphasised that indicators within each domain are not weighted because they are considered equally important in terms of their contributions towards vulnerability. This assumption is made because stated preferences are not available. Nevertheless, by not explicitly weighting indicators, there is implicit weighting in that each dimension is weighted equally.

[6] The dimensions are the same as indicators. This change is made to keep the terminology of this research the same as that adopted in other multidimensional poverty assessments.

Once the indicators are identified, step four tackles the issue of thresholds used to define the vulnerable households. When measuring multidimensional vulnerability, thresholds, like the dimensions, are both subjective and objective. For majority of the indicators used in this research, thresholds are derived from the literature that is used to identify indicators and consequently reflect absolute levels of deprivation. For some indicators however, the literature does not provide context specific thresholds that are effective and relevant to Afghanistan. For these indicators, relative thresholds are defined, which are derived from the data. A detailed list of thresholds used in this research is provided in Table 1.

Step 5 involves identifying cut-offs but before doing this it is important to establish their relevance. Cut-offs are distinct from thresholds. While thresholds determine, for each indicator, the level below which a household is considered vulnerable, cut-offs determine the number of indicators in which a household is vulnerable to be classified as experience multidimensional vulnerability. So far the methodology has identified the three essential constituents of vulnerability: domains, components and indicators that measure each component. Cut-offs combine these three by stipulating the number of indicators within each domain in which a household has to be deprived in order to be classified as experiencing multidimensional vulnerability. In this way, cut-offs allow for multiple layers of vulnerability to be established. The first layer consists of levels within domains and the second consists of levels 'aggregated' across domains. The second layer builds on the first layer in that for a particular household, overall inter-domain vulnerability is determined by the outcome of intra-domain vulnerability. Measuring multidimensional vulnerability based on this approach of within and across domains borrows from the dual cut-off approach proposed by Alkire and Foster (2007)[7]. It is distinct from other aggregation methods such as the union and intersection approaches proposed by Atkinson (2003). The former postulates that a household is vulnerable if it falls below a threshold in at least one indicator in a given domain. This approach is relevant when vulnerability can be defined as deprivation in a single domain. However, there is a risk that vulnerability is caused by more than one indicator. The intersection approach argues for the inclusion of all indicators: a household is vulnerable if deprived across all domains. The risk here is to be 'too' inclusive. By allowing the researcher to identify those indicators that cause vulnerability within a domain as well as those domains that contribute more towards overall vulnerability, the dual cut-off approach combines the virtues of both the union and intersection approaches.

When applying the dual cut-off approach to the present analysis, rates of intra-domain vulnerability are calculated for four levels (not vulnerable, less vulnerable, vulnerable and very vulnerable) within each domain. Aggregating across the four domains to calculate inter-domain or overall vulnerability requires all possible combinations of levels and domains to be considered. What this implies is that households that suffer severe deprivation in one domain are being compared to households that suffer less deprivation but across multiple domains. In order to address this problem when calculating inter-domain vulnerability, each household is assigned a rank, ranging between 0 and 10. This rank represents all those combinations that result from aggregating four levels across four domains. The calculation and assignment of these ranks is described in more detail in Section 6.3.

[7] The approach has been used to measure multidimensional child poverty in Vietnam by Roelen et al (2009) and multidimensional poverty in Congo by Notten (2008).

Step six involves establishing levels of vulnerability. For the intra-domain (within domain) analysis, a household is defined as less vulnerable if it suffers deprivation in two indicators, vulnerable if the household suffers deprivation across three indicators and very vulnerable if deprivation is experienced across four or more indicators. For the inter-domain (across domain) analysis, as mentioned above, households are assigned ranks. A household is defined as less vulnerable if it receives a rank of between 1 and 3, vulnerable if the rank falls between 4 and 7 and very vulnerable if it receives an overall rank ranging between 8 and 10.

From the outset, it is necessary to acknowledge that the domains are unbalanced as the number of indicators within each domain is not the same. Deprivation in the domain of human security is measured by five indicators whereas exchange freedom is measured by nine, social capital by four and access by two. Because of this imbalance, it appears that the domain of exchange freedom is over-emphasised compared to the other domains[8]. The loss of exchange freedom is defined by loss of productive, trade-based and labour entitlements. Such a definition makes this domain much broader than the others. This imbalance also has implications when identifying intra-domain levels. The domains of human security, exchange freedom and social capital each have at least four indicators. The domain of access has only two indicators and consequently only two levels of vulnerability: not vulnerable and less vulnerable. Ideally, it would be preferable to have a greater number of indicators to measure deprivation in the domain of access, particularly access to health and markets. However, data for these indicators is not availab ein the NRVA (2005) dataset. To address this constraint, a separate case-study analysis is present in subsequent research based on survey data collected in ten villages across five provinces in Afghanistan.

[8] For details please see "Defining Vulnerability" MGSOG Working Paper No. MGSoG/2009/022, University of Maastricht

Table 1: Indicators used to Measure Vulnerability - Domains/functionings-wise and Component-wise breakdown

Indicator	Description of Indicator	Threshold for Vulnerability	Literature
Functioning 1: Human Security			
Indictors for Lack of Entitlements			
Average annual income per capita	Average annual household income per capita	Annual income per capita less than US$ 456.25 based on PPP exchange rate: US$ 1= Afs 20.50	WDR 1990, Chen and Sangraula (2008)
Number of income sources	Measures diversity of income	Household income derived from less than two sources	Murdoch and Sharma (2001), Vatsa (2004), Dercon (2000)
Frequency of problems satisfying food needs	Sometimes measures problems satisfying food needs up to six times a year Often measures problems satisfying food needs frequently during a month	Sometimes and often	Human Development Report/Human Development Index
Access to shelter	Measures whether household has a dwelling or not	No access to dwelling	Moser (1998)
Indicators for Exposure to Risk			
Average frequency of income received	Measures the number of months income from the main source is received throughout the year	Income received for less than eight months	Murdoch (1995), Murdoch (1999)
Condition of house	Good quality includes all windows doors and non-leaking roof condition, temporary structures (good) and incomplete structures. Poor structures include leaking roof, open windows, doors or walls, traditional tents, relief tents and temporary structure (bad)	Poor condition of housing	Moser (1998)
Inability to make payments for housing	Measures outstanding debt that has accrued due to the acquisition of housing	Yes	Moser (1998)
Type of sanitation	Households with no toilet facilities use open fields and bushes. Unsafe toilet facilities include open area in compound but not pit, open pit and traditional covered latrines. Safe toilet facilities include improved and flush latrines.	Access to no or unsafe toilet facilities	Doyal and Gough (1991). The distinction between safe and unsafe water and sanitation has been compiled for this research based on WHO guidelines on water quality and sanitation and hygiene promotion (2005, 2009).
Source of water	Unsafe water includes shallow open wells (public), shallow open wells (in compound), public hand pumps, hand pumps located in compounds, unprotected spring, arhad, kariz, rivers, lakes, canals, kanada, nawar, dand dam, pool/hawz and drainage. Safe water includes bored wells (hand pump), bored wells (motorised), protected springs, piped schemes (gravity), piped schemes (motorised), piped water (municipal) and bowser/water tanker	Access to unsafe drinking water	
Reliability of source of fuel	Formal fuel includes electric heater, gas heater, charcoal and kerosene heater. Informal sources of fuel include firewood, stoves, burning straw and ping or manure	Informal	Human Development Report/Human Development Index
Functioning 2: Exchange Freedom			
Indicators to Measure Lack of Entitlements			
Proof of ownership	Measures whether households have registered deeds proving ownership of dwelling. Deeds can be registered in a court, in local official records or elsewhere	Households that have no proof of ownership of dwelling	Moser (1998)
Access to credit	Measures whether households have access to financial capital or not	No access to credit	Dercon (2000), Shoji (2008)
Access to Land	Measures whether households have access to productive land or not	No access to land	Moser (1998)
Educational attainment of household head	Measures the maximum education attained by household head	Household head has none or primary education	Human Development Report http://hdr.undp.org/en/statistics MDG Requirement
Reading ability	Measures the number household members who can read as a percentage of household members over six years of age	No member within household has reading abilities	Human Development Report http://hdr.undp.org/en/statistics
Number of people available to work	Measures the number of able bodied household members between 12 and 55 years of age. The threshold for this indicator is relative for Afghanistan, derived from the data itself	Less than 47 percent members per household. The number 47 is the median of the indicator and it better represents the total population.	Shoji (2008), Vatsa (2004)
Type of assets owned by household	This indicator measures those assets that do not generate trade potential. Household assets include watch, carpets, rugs, radios, televisions, video cassette recorders and generators. Income generating assets include sewing machines, rug weaving looms,	These are household assets.	Moser (1997), Woolard and Klasen (2005)

	carpentry equipment, hand carts, tractors, combine threshers and ploughs. Personal transport assets include bicycles, motorcycles and cars. Communication assets include computers, internet, telephones, cell phones and satellite phones.		
Access to livestock	Measures whether household has access to livestock or not	No	Moser (1998)
Indicators to Measure Exposure to Risk			
Source of credit	Informal sources include family/friends in Afghanistan, family/friends outside Afghanistan, shopkeepers/traders, local land owners and opium traders. Money lenders refer to the Hawala systems. Formal sources of credit are microfinance institutions and banks and mortgaged credit is accessed through the mortgage of land or dwelling	Source of credit includes informal, money lender or mortgaged capital	Shoji (2008)
Purpose of credit	Investment expenditure includes agricultural inputs, opium cultivation, construction other than house, business investment, land purchase, house purchase, or construction/home improvement. Consumption expenditures include emergency and informal expenditures. Emergency expenditures include food purchases and health emergencies. Informal expenditures include payment of bride price, weddings, funeral expenses or other uses	Credit is used for emergency or informal expenditures	
Number of children enrolled in and regularly attending primary school	Counts the number of children between the ages of 6 and 11 within a household that are enrolled in primary education	Households with no children enrolled	MDG
Number of able-bodied household members employed	Measures a dependency ratio: the number of able bodied household members between the ages of 12 and 55 engaged in income generating activities as a percentage of total household members between the ages of 12 and 55. The threshold for this indicator is relative for Afghanistan, derived from the data itself	Employed labour at household level is less than 50 percent. This represents the mean of able-bodied household members as a percentage of total available labour at household level. In this case the mean is chosen for the threshold because it better represents the situation in Afghanistan.	Vatsa (2004)
Functioning 3: Social Capital			
Indicators to Measure Lack of Entitlements			
Membership in community organisations	Measures the extent of social capital in local communities through membership in village-level organisations, including shura and CDCs	Household has membership in no community organisation	Murdoch and Sharma (2001), Narayan et al (2000).
Access to social networks	Measures whether or not a household receives help from other community members, family, friends, or any platform	No help received from fellow community members	Murdoch (1995), Murdoch (1999)
Indicators to Measure Exposure to Risk			
Main source of information	Informal sources of information include relatives, friends, neighbours, community bulletin board, local market, mullahs, groups or associations, business or work associates, political associates and community leaders. Formal sources include local newspaper, national newspaper, representative of the government, NGO, internet, radio and television	None or informal sources of information	Max-Neef (1989)
Frequency of help received through informal arrangements	Measures how often households receive support through informal sources or other community members	No support received throughout the year.	Max-Neef (1989)
Functioning 4: Access			
Indicators to Measure Lack of Entitlements			
Availability of physical infrastructure	Measures the type of infrastructure used to approach dwelling, including footpath, unpaved roads and paved roads	Dwelling accessed only by footpath	Bradhan (1995)
Indicators to Measure Exposure to Risk			
Access to education	Measures those households, where children are unable to enroll in schools because they are unable to access educational institutes	Distance to school is too long	Human Development Index

The methodology outlined above provides scope for a rich and exhaustive analysis on profiling vulnerability. First, the paper analyses patterns of deprivation. This is necessary to identify the causes of deprivation in Afghanistan. Second, the paper presents results on intra-domain vulnerability to identify which of the dimensions within each domain cause/contribute more towards vulnerability. Third, the paper presents inter-domain vulnerability that helps identify those domains which contribute more towards vulnerability. For intra and inter domain analysis, the paper also presents levels of vulnerability. A household is defined as less vulnerable if it experiences deprivation across two dimensions, vulnerable if it experiences deprivation across three and very vulnerable if it is subjected to deprivation across four or more dimensions. Fourth, the paper presents component-wise results, which identify whether it is exposure to risk that contributes more towards vulnerability or the lack of entitlements. Finally, the paper presents determinants of vulnerability. These are derived from the demographic profile and divide the vulnerable households based on demographic characteristics.

4. Data

The data being used for this exercise comes from the National Risk and Vulnerability Assessment (NRVA) exercise conducted across Afghanistan in 2005. The NRVA has been borne out of the World Food Programme's (WFP) Vulnerability Assessment and Mapping (VAM) exercise. The sample consists of 30,822 households with 227,070 individuals. A summary of the evolution of NRVA can be found in Annex B[9].

While the NRVA provides comprehensive information for households in Afghanistan, there are a number of limitations of the dataset. First, no census information was available when the data was collected. Nevertheless, the survey is as statistically representative as possible because population information for communities was gathered by district leaders and community heads. Second, with the emergence of unofficial districts, sampling becomes more difficult. This problem is compounded by the fact that usually the actual boundary does not correspond to the definitions maintained with the central administration. Third, because there are a number of stakeholders involved in the formulation of NRVA, the result is a mixed needs assessment methodology, which collects information on a number of sectors without explicitly emphasising any particular area of research. This is particularly true because there is a concern that the interests of all stakeholders may not be represented effectively and the resultant needs articulation by the respondents may not provide much information. On the other hand, this multi-stakeholder approach ensures that the final dataset is rich in information and provides comprehensive information for Afghan households. Fourth, despite all the efforts made to solicit information from women, in the more conservative areas, accessing women for interviews was difficult. It is noteworthy though that female representation in the 2005 dataset is higher than the data collected in 2003. Fifth, given the regional diversity amongst communities, it is possible that for some districts, indicators are not verifiable and therefore, when information is scaled up, it may not be representative. Sixth and most importantly, for a number of indicators, the data is based on recall and is susceptible to inaccuracies. In the analysis presented below, such inaccuracies have been addressed to the extent possible through data triangulation.

[9] For details on the 2005 Assessment and sampling, please refer to Ministry of Rural Rehabilitation and Development and the Central Statistics Office, Kabul Afghanistan (2007). "The National Risk and Vulnerability Assessment 2005: Afghanistan".

Before analysing the indicator-wise results or those on multidimensional vulnerability, it is useful to present a demographic profile for Afghanistan, which helps contextualise the discussion in subsequent sections.

4.1. Demographic Profile

Table 2: Demographic Data[10]

By Location	
Kuchi	5.74
Rural	76.55
Urban	17.72
By Demographics	
Sex	
Women	45.80
Men	54.20
Age	
0 to 6	15.77
6 to 11	19.54
11 to 21	26.12
21 to 30	13.75
30 to 50	18.23
50 +	6.58
Household Size	
1 to 5	14.37
6 to 8	43.60
9 to 11	27.61
12 +	14.42
Education of Household Head	
None	59.88
Primary	11.80
Secondary	8.47
High School	13.39
University/College	5.60
Post Graduate	0.86
By Income Generating Activities	
Agriculture	28.47
Livestock	9.67
Formal Employment	13.17
Income from Opium	2.28
Small Business	17.24
Agricultural Wage Labour	4.50
Other Wage Labour	17.07
Remittances	3.98
Other	3.62

Source: Author's own calculation using NRVA (2005)

[10] Since the data presented in Table 2 is for Afghanistan as a whole and is not representing household dynamics, it is weighted using population weights and not household weights.

Males comprise 54 percent of Afghan population while females comprise 46 percent. Such a large difference within the male and female population is not common and the causes for such a large difference should be explored. From the outset, one possible reason could be used to explain such differences is that many household heads (to which the questionnaires have been administered) do not consider it appropriate to report on the female members of their household. Consequently, the data on female populations may be under-reported. As expected, the Afghan population is very young, with a significant proportion of children up to 13 years old. Almost 75 percent of the population is less than 30 years of age. One possible reason to explain this, particularly for post conflict environments, is that many within the older age groups were killed or migrated during the war.

Most Afghans live in large households with average size around seven members. Level of education in Afghanistan is very low, with almost 60 percent of households being uneducated. Almost 70 percent of households rely on informal sources of income. A total of 81 percent of Afghans live in rural areas, 14 percent of Afghans live in urban areas while 5 percent are *kuchi* (nomads). Kuchi populations represent the nomads and account for almost 6 percent of the total population. The main source of income for kuchi households is livestock, primarily sheep and their average holdings of livestock are larger than settled populations (rural and urban). Because of their nomadic lifestyles, they do not tend to *own* land or dwellings; over 70 percent of the kuchi live in tents.

5. Results[11]

This section begins by highlighting key patterns of deprivation before measuring multidimensional vulnerability as well as identifying which components of vulnerability contribute more towards it. Finally, it presents results on multidimensional vulnerability.

5.1. Patterns of Deprivation

Table 1 summarises deprivation rates for indicators that measure vulnerability. As the table shows, both indicators that measure lack of entitlements, as well as, exposure to risk contribute towards vulnerability. The subsequent sections investigate the results for each functioning further.

Table 3: Indicators for Measurement (% households, NRVA 2005)

[11] All numbers presented here are weighted using household weights.

Indicator	Kuchi	Rural	Urban	Total
Functioning 1: Human Security				
Indicators to Measure Lack of Entitlements				
Average annual per capita income below US$ 456.25	55.91	60.95	38.15	56.37
Income derived from less than 2 activities	50.26	43.44	70.39	48.90
Problems satisfying food needs more than 6 times a year	66.74	71.48	43.83	66.00
No access to shelter	3.29	3.57	6.27	4.06
Indicators to Measure Exposure to Risk				
Income received less than 8 months in the year	24.90	47.26	8.81	38.76
Poor condition of dwelling	82.54	45.02	30.76	44.44
Debt accrued due to purchase of housing	1.96	8.77	9.12	8.46
Unsafe source of sanitation	96.71	94.69	72.03	90.53
Unsafe source of drinking water	89.97	91.69	76.54	88.74
Un-reliability of fuel	97.12	95.70	56.52	88.39
Functioning 2: Exchange Freedom				
Indicators to Measure Lack of Entitlements				
No proof of ownership	38.44	51.41	11.95	43.24
No access to credit	71.64	57.39	72.30	61.01
No access to land	87.90	43.14	92.60	54.98
Education level of household head up to or below primary	97.18	87.41	56.72	82.18
No reading ability within household	85.13	43.18	17.32	40.67
Less than 47 % members available for employment at household level	49.97	47.10	42.40	46.47
Only household assets owned	54.18	29.33	12.03	27.47
No access to livestock	10.61	27.47	86.43	37.63
Indicators to Measure Exposure to Risk				
Access only to informal sources of credit	82.02	85.97	80.51	84.72
Credit used only for consumption purposes	23.29	32.81	16.25	29.15
Percentage of children not attending school	94.12	73.63	71.23	74.33
Percentage of employable household members below 49.72 percent	31.87	36.24	52.95	39.14
Functioning 3: Social Capital				
Indicators to Measure Lack of Entitlements				
No membership in any community organisations	77.81	75.92	87.97	78.29
No help received through social networks	20.63	14.34	28.34	17.33
Indicators to Measure Exposure to Risk				
Access to none of informal sources of information	73.49	63.54	46.81	60.95
No support received through informal arrangements throughout the year	22.94	17.86	25.29	19.54
Functioning 4: Access				
Indicators to Measure Lack of Entitlements				
Poor availabiilty of physical infrastructure	52.16	51.85	24.93	46.79
Indicators to Measure Exposure to Risk				
Access to education denied because school is too far	76.02	57.28	12.33	49.86

Source: Author's own calculation using NRVA (2005)

5.1.1. Deprivation Across Strata

Table 1 shows the incidence of deprivation for the three main population strata in Afghanistan. For each of the indicators, relative to the urban populations, the kuchi and rural households are more deprived. Except for the domain of human security, the kuchi are worse off when compared to the urban and rural populations.

Some general observations can be made using the data in Table 1. Urban households have the relatively more stable incomes compared to rural and kuchi households; 33 percent derive income from formal employment and 36 percent from small businesses. Nevertheless, this does not mean they have high incomes as 38 percent of the households live below the poverty line. The condition of housing for urban households is better than rural households perhaps because urban households have purchased housing and consequently accrued more debt than the other populations. The quality of water, sanitation and fuel is slightly better for urban households but not significantly better as the majority of urban households also suffer from deprivation in these dimensions.

The incidence of deprivation in the domain of exchange freedom is highest. For most indicators, urban households are better-off compared to rural and kuchi households. Deprivation in a number of indicators is related to lifestyle choices. For example, kuchi and urban households do not have access to land because they are not engaged in farming. Likewise, access to livestock is highest for kuchi households who derive their income from livestock activities. Kuchi populations also do not own significantly high amounts of assets because of their nomadic lifestyle. Comparatively, urban households have lower access to livestock. The level of education is very low in all Afghanistan. However, low level of education is a severe problem for kuchi households, followed by rural and subsequently urban households for all three indicators related to education. For all three indicators, kuchi populations experience deprivation rates of over 80 percent. The most striking is the percentage of children not attending school; for all three strata, in over 70 percent of the households, children of school going age are not enrolled. For kuchi populations this percentage is 94 percent. This low enrolment rate can be explained by the unavailability of schools: 76 percent of kuchi households do not have access to schools. Availability of credit is poor for all strata of the population but particularly severe for the urban populations. Unlike rural and kuchi populations though, urban populations use credit for investment expenditures such as for business and home improvement.

For the domain of social capital, rural and kuchi households appear better off. Community affiliations appear to be strongest in rural areas; compared to urban households, more rural and kuchi are represented in community organisations. In terms of support received, rural households receive support from other community members more frequently than urban and kuchi households. In only one indicator, sources of information, urban households are better off: by virtue of being located in cities, they have access to more formal information.

The domain of access consists of only two indicators so a comprehensive analysis is not possible[12]. It is, nevertheless, possible to conclude that kuchi and rural populations have much lower availability of access than urban households. However, availability of access is not the only problem. Availability of services in rural parts of Afghanistan is poor: markets are fragmented, provision of health services is low and primarily undertaken by health centres and clinics, which are poorly stocked and staffed and schools are unavailable.

These patterns for the stratified population of Afghanistan reveal that comprehensive development in the rural parts of Afghanistan is low. Kuchi and rural households have low levels of entitlements, which reduces their resilience against shocks. Also, the environment

[12] A separate case-study analysis of mobility, access and infrastructure utilisation in Afghanistan will be presented in subsequent research using survey data from five provinces across Afghanistan.

surrounding these households is fragile and does not enable them to convert their entitlements into functionings. Kuchi and rural households are therefore particularly vulnerable.

5.1.2. Human Security

According to UNDP's Human Development Report, human security hinges upon economic, food, health, environment, personal, community and political security. In linking human security to the concept of vulnerability, it is important to elucidate that the concept of human security relates to the ability of a household to maintain a standard of living over time. Therefore, this research emphasises basic components of human security such as availability and amount of income earned by the household, availability and type of shelter and availability and type of water, sanitation facilities and fuel.

Prolonged conflict over more than thirty years has left the condition of human security severely crippled in Afghanistan. Majority of Afghans rely on agricultural activities or informal labour for income generation. The potential and scope of formal income generating activities is restricted because of poor infrastructure and economic opportunities (Table 3). This implies over half of Afghan households live below the international poverty line of US$ 1.25 per day and approximately half Afghan households receive income from less than one source. Income generation is not diversified and in the event of unforeseen shocks, if one income source is destabilised, these households have no recourse to protect livelihoods. Moreover, approximately 40 percent of households receive their income for less than eight months in the year – this particularly for activities related to agriculture (33 percent of total households rely on such activities). The low amount of income combined with insufficient possibilities to save makes it difficult for households to smooth consumption throughout the year[13].

A significant proportion of households face difficulties satisfying their food needs during the year with rural households being most prone to food insecurity. Rural households rely primarily on subsistence agriculture and agricultural production in the recent past has been low due to droughts and land infertility. Consequently, rural agricultural produce is insufficient to satisfy food needs. In addition, it is difficult for non-agricultural households to procure food items mainly because agricultural households are unable to generate marketable surpluses; 84.79 percent of households that produced wheat did not sell in the local market. Where markets exist, they are fragmented and thin: the types of consumption goods that are available are not sufficient to meet household consumption requirements. Food insecurity in Afghanistan is linked to worsening economic conditions: 62 percent of households that were food insecure also reported worse economic conditions compared to previous years. These households are especially vulnerable since they are unable to maintain consumption in the face of a fall in income.

Shelter, which is a key component of human security, is commonly available in Afghanistan. This is because approximately 70 percent of homesteads in Afghanistan are inherited. This also explains why only 9 percent households have difficulties making payments for housing. While this is positive, a little less than half of Afghan households have poor quality housing, which diminishes the value of shelter that is provided by homesteads.

[13] This information is derived from a paper presented at a conference on Rural Finance in Afghanistan: The Challenge of the Opium Economy. The key articles include a paper by Steve Rasmussen titled "The current Situation of Rural Finance in Afghanistan" and by Samuel Maimbo titled "Building on the Informal Sector".

Most households in Afghanistan do not have access to safe sanitation or drinking water. Safe sanitation and water facilities are mainly used by urban households (29 percent have access to safe sanitation while 22 percent have access to safe water). The quality of water does not depend upon its location: if safe water is available, it is located near the homestead. Only about 4 percent of households pay for drinking water, both unsafe and safe. Winter and summer fuel sources (for cooking and heating) are informal, implying their supply is erratic. With insecure supply of heating fuel, households are unable to sufficiently protect themselves against extreme weather. As with water and sanitation, formal fuel sources are used more by urban households. Approximately 24 percent of kuchi households have no access to heating fuel, making them particularly vulnerable to adverse weather. Payment for fuel does not reduce overall household entitlements significantly since this comprises only 0.08, 0.16 and 0.12 percent of household income for kuchi, rural and urban households respectively.

The discussion above shows that the condition of human security in Afghanistan is poor and pervasive across a broad gamut of sectors. Low and undiversified income makes it difficult for households to attain economic and food security. Standard of living is low: at a very basic level, households do not have access to good quality shelter. Security of health is threatened by poor condition of sanitation, unsafe drinking water and unavailability of fuel. The combination of these factors makes it difficult for households to attain long-term fulfilment – with the consequence that households and individuals find it hard to safeguard the vital core of human life (Alkire 2002). This impact on long-term fulfilment relates human security to vulnerability: households are exposed to risks that increase insecurity and they lack the necessary entitlements to fortify themselves against these risks.

5.1.3. Exchange Freedom

Exchange freedom measures the extent to which households are able to freely exchange and/or generate additional entitlements. Loosely put, exchange freedom measures the extent to which households are freely able to engage in economic activity and capture those endowments that households have at their disposal to build resilience against risks and shocks.

Entitlements are of three main types: productive that can be produced, trade-based that can be traded for others or labour-based that can be earned in return for labour resources. Households are able to generate productive entitlements if they have access to land and livestock. In addition, credit provides the necessary financial capital that can be invested to increase the existing stock of entitlements. Labour entitlements depend upon the nature and quality of human capital, availability of labour and employability of labour. Finally trade entitlements result from exchange of assets such as household assets and dwelling.

Financial capital is essential for households to build on their existing resources and assets. Combining financial capital with existing resources at the disposal of households allows them to produce additional entitlements. Such a combination enables households to capture economies of scale in their productive activities. When analysing the role of credit in enhancing productive entitlements, it is important to consider the source of credit as well as the purpose for which credit is utilised. From the outset, it is important to point out that over 60 percent of Afghan households are unable to generate financial capital because they do not have access to credit. These households are obviously restricted in the extent to which they can enhance their productive resources. Of those households that are able to access credit, the majority rely on informal sources, which mainly consist of family and friends (90 percent).

This reliance on informal credit results not only from a low supply of formal credit but also because family and friends do not require extensive collateral and are therefore 'willing donors'. The terms of informal credit are not well-defined and can change during the period of the loan. Because interest rates are not regulated, informal credit becomes very expensive for households. More importantly, given the covariate element of conflict as a shock, informal sources of credit usually become unreliable (Shoji, 2008). Consequently, even those households that want to take up credit are unable to do so. A little under a third of Afghan households use credit for informal and emergency expenditures such as food purchases and health. Since these expenditures do not generate additional entitlements, it is difficult to repay the loan, causing overall household debt to increase. Per capita debt in Afghanistan amounts to US$ 378.30[14]. This is exorbitant when considering per capita income in Afghanistan is US$ 49.

Access to land allows households to generate productive entitlements through agricultural activity. In Afghanistan, land is a key source of productive entitlements since almost 33 percent of households derive income from agricultural activities[15]. Agricultural land in Afghanistan is of three main types: garden plots, irrigated land and rainfed land. Over half of Afghan households do have access to at least one of these land types. Garden plots provide the lowest potential for generating productive entitlements in that they are usually part of the homestead, smaller and irrigated through canals. Given their small size (on average 0.57 hectares), they are used for cultivation of fruits, nuts, grapes and, in rare instances, wheat. Irrigated land provides the greatest potential for generating productive entitlements because such land is developed collectively, land area is relatively large in comparison to garden plots and rainfed land, receives water throughout the year, is more fertile and produces greater yield. Given their relatively larger size (on average 1.69 hectares), this land is more suitable for cultivation of cereals and cash crops such as potatoes. Only about 11 percent of Afghan households have access to rainfed land. Though average holding of rainfed land is higher than that of irrigated land or garden plots, their potential to generate productive entitlements is restricted. These lands rely on rain for water and because Afghanistan has experienced severe droughts in recent years, these lands are not very fertile.

Over half the households (59 percent) that own irrigated land crop it twice. Such cropping patterns imply double the potential for generating productive entitlements. Very few households that own land do not cultivate it (8 percent for irrigated and 15 percent for rainfed land). Most households own and self-cultivate their land (78 and 72 percent respectively for irrigated and rainfed land). This implies prevalence of subsistence agriculture. It also indicates that households engaged in self-cultivation do not undertake other forms of employment. It should be stressed that the ability to generate productive entitlements from land depends upon the capacity to cultivate, which in turn, is determined by access to good seed and farm implements, which is limited[16].

About one-third of Afghan households have no access to livestock. As expected, livestock ownership is highest amongst kuchi populations, with over 90 percent households having over 10 livestock per household, including cattle, donkeys, goats and sheep. Likewise,

[14]Using 2005 Implied PPP Conversion Rate, International Monetary Fund, World Economic Outlook Database April 2009. US$1 = Afs 20.50

[15] These households are mainly located in rural areas. By their nature, urban and kuchi households do not engage in agricultural activities as a source of income.

[16] Access to farming inputs is determined by the nature of access to markets. This is discussed in detail in subsequent research.

ownership of livestock in urban households is lower; households usually own goats, sheep and poultry, on average less than 10. Rural households mostly own between 10 and 50 animals, mostly cattle, goats, sheep and poultry. Such patterns of holding suggest that while kuchi populations use livestock as a primary source of income, rural households primarily use livestock to supplement agricultural activities and urban households use livestock produce for domestic consumption (World Bank 2008). Average ownership of animals such as horses, donkeys and camels, commonly used for transportation, is low, indicating livestock is used primarily for production of milk, yogurt and other dairy products. In addition, veterinary services of any kind are either not available or are of poor quality. Livestock care and management remains insufficient and sub-standard (World Bank 2008). Ownership patterns and utilisation of livestock imply that the potential of livestock to generate productive entitlements is limited in Afghanistan.

Trade-based entitlements are enhanced through the direct trading of assets and resources. Utilising trade-based entitlements is not easy in a post-conflict situation because the covariate component of conflict has a macro impact, which reduces trade-based entitlements for entire communities. This reduces the freedom to exchange assets and resources. One of the main assets that can enhance trade entitlements is dwelling. A significant majority of households do not have proof of ownership. In the absence of a registered deed, when faced with shock, sale of property – to increase resilience is not a readily available option. On the demand side, given the macro impact of conflict, finding buyers for expensive purchases is not easy. There are other assets that could potentially be traded, including basic household assets (28 percent of households), income generating assets (27 percent of households), personal transport assets (36 percent of households) and communication equipment (10 percent of households). The last three categories have the potential to generate productive entitlements and are therefore not usually exchanged. For example, in the year prior to the survey, majority of the households (over 90 percent) did not engage in enhancing or reducing land. The extent to which household assets can increase trade based entitlements is low because these assets are basic in nature and most households own the same assets.

Labour entitlements result from the exchange of labour resources and are influenced by two factors: the level of education that determines the quality of labour; and, the nature of involvement in income generating activities that determines employment, as well as amount of labour utilisation. Education in Afghanistan is strikingly low: for a staggering 83 percent of households, the household head is educated only up to the primary level. Educational attainment is restricted for a number of reasons, lack of access being the main one (for 56 percent households). Children from 22 percent of the households were not allowed to attend school while only 13 percent of households did not attend school because of economic reasons (cost of schooling or requirement to work). Reading abilities are also low and reflect gender disparity. Only 16 percent of women and 40 percent of men are able to read. Reading abilities are higher amongst the younger age groups, between 6 and 18 years but remain low for older household members.

These numbers show that quality of labour entitlements amongst the current working-age population is very low. This dearth is manifested in low access to information, awareness and low returns from employment and implies limited ability to generate additional entitlements. This is corroborated by the fact that for 69 percent of households, income generating activities lie in the informal sector where labour is underutilised. Since the fall of the Taliban, a concerted effort has been made to increase enrolment rates. Consequently, within the ages of 6-13 years, 66 percent are enrolled in school of which 61 percent are male while 39

percent are female. This is a positive trend, which will ensure greater quality of labour entitlements in the long run[17].

Given large family sizes, availability of labour entitlements is high. However, less than 40 percent of available labour is employed, implying underutilisation of total labour entitlements. Moreover, employment of labour is marred by gender disparity. For over 80 percent of the households, men participate in the primary income generating activity. This figure falls to approximately 70 percent for the second source of income. Female employment is significantly lower, approximately 2 percent households report female participants for the main source of income and 10 percent for the second source of income. This is primarily because the second source of income is usually livestock production or handicrafts, which are home-based activities and culturally more acceptable. The cultural constraint restricts women to home-based income generating activities, lowering their income generating potential.

The extent to which labour can be efficiently utilised is also determined by the availability of employment opportunities. In Afghan households, on average, 50 percent of the members are available to work, half of which are employed. However, for 39 percent of the households, less than half of the available labour is employed; even-though the labour entitlement is available, it is not gainfully utilised because there are insufficient employment opportunities.

5.1.4. Social Capital

The loss in social capital entitlements results from social exclusion; it pertains to the lack of belonging and awareness about surroundings, which could negatively influence household well being. Moreover, social capital signifies the extent to which community members own the community within which they reside, as well as the strength of informal sources of support. However, data on such indicators is usually not collected, partially because sense of belonging is not easy to measure and partially because collecting data even for proxy indicators is not easy. Three indicators, for which data is usually possible and available, include membership in community organisations, most important sources of information and nature of support received from fellow community members.

Community organisations in Afghanistan are of two types: the shura and the Community Development Councils (CDCs). The shura have traditionally represented communities and consist of village elders and other respected members. While on the face of it, it appears to be traditional and undemocratic in its structure, the shura and the decisions that are made by the body are accepted and respected by community members. The CDCs are new, established after the war, with democratically elected representatives. Some of these representatives are the same as shura leaders but some are different. The eventual aim is to merge these two organisations to the degree possible and provide them with legal recognition.

Membership in community organisations in Afghanistan is not high. Male membership is markedly higher than that of women, particularly in the shura (15.20 percent). Female membership in CDCs is relatively higher than that in the shura (0.62 percent compared to 0.43 percent)[18]. An obvious explanation for this is the fact that community mobilisation to

[17] Female enrolment rates are heartening given that under the Taliban regime, women were not allowed to attend school.

[18] Female membership in community organisations is very low. Nevertheless, it is heartening to see that even-though the female CDCs were created in 2002 and they have not yet matured into robust community

form CDCs is high, emphasising women. CDC membership is low but given their short life, it can be expected that this will increase over time. Membership in shuras is also low and considering they have traditionally been the body of elders that have represented villagers, this figure is indeed alarming.

As mentioned, the shura embodies the seniority of elders within the community and although not legally recognised, it is respected by community members due to the fact that it is strongly embedded in the local institutional structure. More importantly, given the 30 years of war that Afghanistan has faced, the shura has remained constant in the face of institutional changes at the Central levels. The CDC on the other hand is a new structure of democratic representation at the community level. The present government uses the CDCs as a channel to disburse block grants for community reconstruction. Given this structure, it is important that the shuras work together with the CDCs to ensure peaceful and meaningful reconstruction that reflects the needs of the people. It is only in this way that maximum synergies and economies of scale can be captured. Only 0.81 percent of households have joint membership of male shura and male CDCs while the corresponding figure for women is 0.08 percent.

The joint membership in shuras and CDCs is strikingly low. While there are many reasons to explain this, the important conclusion is that community development processes remain immature, underdeveloped and inefficient. In addition, institutional development of these organisations is low, which could indicate that their ability to benefit households, both economically and socially, is restricted and being a member or not is almost redundant. This could have a negative impact on social cohesion and development planning at the community levels.

Access to information is another key measure of integration since it shows the extent to which community members are aware of their surroundings. By keeping abreast with financial, economic and social development in their community, members are able to enhance exchange entitlements. However, majority of households have access only to informal sources of information, which are not only inaccurate but also ad hoc. While mostly, friends and neighbours are the main source of information for 57 percent of households, 32 percent households rely on the radio for information. This is a relatively more accurate and advantageous source of information particularly considering the high majority of community members who are unable to read.

Informal coping measures are a key source of risk management in Afghanistan. A total of 90.99 percent of households live in close proximity to their extended family members, suggesting strong familial support. In addition, given that villages in Afghanistan are structured around tribal affiliations, possibilities of informal support are high. Support provided to households usually takes the form of in-kind transfers while providing substantial help for provisions, such as finding jobs and cash, is not very common, although there is some evidence of support for debt relief and small loans. This nature of support is intuitive once the covariate nature of conflict is considered. Most community members have reduced entitlements that they can share. Therefore, this type of support cannot be relied upon to increase resilience against risks and protection against shocks.

5.1.5. Access

organisations, women do appear to be gaining CDC membership. It is also positive that although CDCs are much younger than the traditional shura, their membership is higher than that of the shura.

Entitlement loss resulting from loss of productive infrastructure is in itself multi-faceted and potentially relates to every aspect of post conflict reconstruction. Physical infrastructure can relate to communications such as roads, land development, power generation, industrialisation, agricultural mechanisation etc. This research focuses on the former since it is critical to reconstruction efforts, particularly in those conflict ridden areas where settlements are remote and the topography difficult to traverse. Loss of communications infrastructure such as roads manifests itself in reduced access to health and education services and markets as well as time wastage in travelling. As mentioned above, one of the key reasons for low enrolment in education institutions is lack of access. In addition, given that main income generating activities relate to agricultural and livestock production, which are perishable products, even if households are able to generate marketable surpluses, they are unable to sell these in time.

As mentioned, the NRVA data does not provide sufficient data to measure all the indicators that influence access. Nevertheless, this paper makes an attempt to highlight basic issues related to access, focussing specifically on availability and access to education. Availability of communications infrastructure is low: 46 percent of households have only footpaths leading up to their homesteads. This not only indicates a degree of isolation but also highlights the inability to access motorised vehicles. The unavailability of roads and transport services implies low mobility. It also implies low access to services. Over 50 percent households are unable to enrol in schools because schools are either too far or there are no facilities available to travel of schools. The markets most commonly accessed include village markets. District and provincial centre markets are not accessed as frequently (World Bank (2006)). Access to health services, particularly health centres is more common. Hospitals, which are located in provincial centres, are a little more difficult to access since they are located at a distance. While access to health centres exists, it should be emphasised that the quality of and diversity of health care provided in such centres is not very high (World Bank (2006)).

Most households do not have efficient access to services and markets, implying that when faced with health risks, to expand labour entitlements, or to escape from adverse security conditions, households are likely to suffer well being losses. This translates into poor resilience.

With this background, the next section attempts to measure multidimensional vulnerability based on the dual cut-off approach (Alkire and Foster 2007).

6. Multidimensional Vulnerability

When measuring multidimensional vulnerability, a household is defined as less vulnerable when it is deprived in up to two indicators. However, since deprivation rates are so high in Afghanistan, deprivation across two indicators is almost akin to uni-dimensional vulnerability. Therefore, a stricter criterion is applied when identifying the vulnerable and very vulnerable households. These are those that suffer from losses across three and four indicators respectively. When calculating overall rates of vulnerability at the two, three and four indicator levels, those indicators for which deprivation rates lie between 10 percent and 80 percent of the population will not be used. Indicators for which deprivation rates lie outside this range make the entire population vulnerable and will artificially inflate the results for multidimensional vulnerability.

Multidimensional vulnerability based on the dual cut-off approach has two components. One is intra-dimension vulnerability and the other is inter-dimensional vulnerability. The results presented in this section are divided in two sections: the first present intra-domain vulnerability while the latter present inter-domain vulnerability.

6.1. Intra-Domain Vulnerability

6.1.1. Human Security

As mentioned in Section 3, indicators for which more than 80 percent and less than 10 percent of the population is deprived are excluded in the calculation of multidimensional vulnerability. Based on this criterion, for the domain of human security, the indicators that are excluded include access to shelter, unsafe sanitation, unsafe drinking water and unreliability of fuel. The analysis is restricted to the indicators of average annual per capita income, diversification of income, frequency of income received, food security and condition of dwelling.

Table 4 provides information on the incidence of vulnerability across strata in the domain of human security.

Table 4: Incidence of Multidimensional Vulnerability – Human Security

	Kuchi	Rural	Urban	Total
Not vulnerable	13.03	16.52	41.09	20.96
Less vulnerable	25.01	25.82	27.89	26.17
Vulnerable	32.80	32.37	20.54	30.16
Very vulnerable	29.16	25.29	10.48	22.71

Source: Author's own calculation using NRVA (2005)

In the domain of human security, a total of 21 percent households are not vulnerable, while 26 percent of the households experience deprivation across two dimensions, 30 percent across three indicators and 23 percent of the households experience deprivation across four or more indicators. As is the case with uni-dimensional deprivation, vulnerability is higher for rural and kuchi households, with the latter being worse off. This conclusion is intuitive since living conditions and income generating opportunities are better for urban households as compared to rural and kuchi households.

These rates are broad and do not provide information on which out of the five indicators is contributing more towards vulnerability. Table 5 provides information on the numbers of households that experience deprivation across specific combinations of indicators. For example, 30 percent of the households have average annual per capita income below US$ 456 and derive their income from less than two sources. Likewise, 42 percent households that have average annual per capita income below US$ 456 also experience food insecurity.

Table 5: Human Security – Two – Dimensional Vulnerability

	No. Income Sources	Food Security	Frequency of Income	Condition
Per Capita Income	30.30	42.32	25.60	27.10
No. Income Sources		31.82	11.43	22.07
Food Security			29.08	31.48
Frequency of Income				15.83

Source: Author's own calculation using NRVA (2005)

Based on the information in Table 5, it is possible to say that the indicators of income, food security and condition of shelter have greatest impact on vulnerability. Less than one-third of the population below the poverty line derives income from one source. This implies that diversity of sources does not necessarily generate greater income for Afghan households. Only about a quarter of the households living below the poverty line receive income infrequently. Income, low mean, only one source and low frequency all influence food security. As expected, poor households have a difficult time satisfying food needs. Condition of housing is also influenced by income: the poor tend to live in poor quality accommodation. Needless to say, if dimensions such as poor sanitation, water and informal sources of fuel were included in vulnerability measurements, majority of Afghan households would be severely vulnerable.

6.1.2. Exchange Freedom

For the domain of exchange freedom, the number of households that experience deprivation across all indicators is above 10 percent and only for two indicators is it higher than 80 percent. These two indicators include education of household head up to or below primary level and access to informal sources of credit. Both these have been excluded leaving a total of nine indicators in this domain. These are summarised in Table 7.

Table 6 provides information on the incidence of vulnerability across strata in the domain of exchange freedom.

Table 6: Incidence of Multidimensional Vulnerability – Exchange Freedom

	Kuchi	Rural	Urban	Total
Not vulnerable	0.40	2.08	0.35	1.71
Less vulnerable	2.31	9.38	1.90	7.80
Vulnerable	4.84	17.98	7.76	15.64
Very vulnerable	92.45	70.57	89.98	74.85
Total	100	100	100	100

Source: Author's own calculation using NRVA (2005)

Vulnerability in this domain is severe. Only 2 percent of households are not vulnerable while 8 percent are less vulnerable, 15 percent are vulnerable and 75 percent are very vulnerable. The high vulnerability rates in this domain result from two distinct yet equally important reasons. First is the definition of the domain. Exchange freedom is determined by the ability of households to exchange three types of entitlements, including productive, trade-based and labour-based. When making a comprehensive list of indicators that measure these three types of entitlements across each component of vulnerability (exposure to risk and lack of entitlements), a much larger number of indicators are measured when compared to other domains, making the domains unbalanced. Second, over thirty years of war have severely

depleted the stock of entitlements in Afghanistan. This creates extreme deprivation in all the indicators that measure exchange freedom.

Unlike other domains, in the domain of exchange freedom, more urban and kuchi households are deprived. However, a number of indicators used to measure this domain are not applicable to kuchi and urban households because of lifestyle choices. This result is also driven by the fact that for over thirty percent of households, agricultural activities are a key source of productive entitlements. These are undertaken mainly in rural areas. The practice of taking credit for productive purposes is also more common for rural households than for urban and kuchi households (even-though there is evidence to suggest when urban households do take credit, they tend to use it more productively than rural households).

Table 7 provides information for the number of households that are deprived across specific combinations of indicators.

Table 7: Exchange Freedom – Two – Dimensional Vulnerability

	Access to Credit	Purpose of Credit	Access to Land	Reading Abilities	Enrolment Rate	Number of People available to work	No. Ppl employed as % of all available	Access to Livestock	Access of Assets
Deed	24.98	14.16	20.07	19.83	32.21	19.86	16.03	11.99	13.10
Access to Credit		-	34.59	27.65	47.42	28.00	23.76	22.75	14.90
Purpose of Credit			13.92	11.88	21.70	13.85	11.41	9.80	9.87
Access to Land				23.38	41.98	24.76	25.08	28.48	15.87
Reading Abilities					40.01	20.88	14.09	12.26	14.91
Enrolment Rate						32.62	30.06	28.06	21.72
Number of People available to work							11.79	16.34	13.29
No. Ppl employed as % of all available to work								17.80	9.75
Access to Livestock									9.09

Source: Author's own calculation using NRVA (2005)

Access to and utilisation of credit appears to contribute most towards vulnerability. Vulnerability is also caused by lack of education. Availability is restricted and the ability to convert education into gainful employment is low; only 40 percent of those available to work are actually employed (see Table 3). Only a quarter of the population available to work has access to credit and land, while less than 20 percent have access to livestock. The former inhibits households from fostering labour entitlements and the latter results in under utilisation of labour. Households that have low education or reading abilities also have low access to productive assets such as land, livestock and credit. This has a negative impact on the ability of the household to generate productive entitlements. Lack of access to household assets appears to have the least impact in enhancing vulnerability.

The results for this domain reveal a key aspect of the dynamics of vulnerability in Afghanistan: households are unable to create and/or exchange entitlements. The fact that households suffer from deprivation across such a high number of indicators also implies that these households are deprived of a basic stock of entitlements that could potentially be expanded to promote economic activities. Resultantly, the potential for economies of scale remains low. This reduces their ability to build resilience against an uncertain future.

6.1.3. Social Capital

Based on the criterion of excluding indicators that report deprivation for more than 80 percent and less than 10 percent of Afghan households, none of the four indicators in the domain of social capital are excluded.

Table 8 provides information on the incidence of vulnerability across strata in the domain of social capital.

Table 8: Incidence of Multidimensional Vulnerability – Social Capital

	Kuchi	Rural	Urban	Total
Not vulnerable	32.62	40.88	37.61	39.80
Less vulnerable	43.52	42.67	36.70	41.59
Vulnerable	15.45	11.98	18.90	13.48
Very vulnerable	8.42	4.47	6.78	5.13

Source: Author's own calculation using NRVA (2005)

Compared to other domains, vulnerability in the domain of social capital is low, with 40 percent of Afghan households not being vulnerable. A total of 42 percent of the households are less vulnerable, 13 percent being vulnerable and only 5 percent are very vulnerable. As with exchange freedom, the least vulnerable in this domain are the rural households. Because communities are ethnically homogenous, the trend to help each other is high, especially relative to urban households. Rural communities are engaged in disparate income generating activities, ensuring that the covariate nature of shock does not affect them as strongly as it does kuchi populations, which rely primarily on livestock activities. Consequently, the ability of rural households to help each other, even when faced with severe shock is higher than that of kuchi households.

Table 9 provides information on the numbers of households that experience deprivation in various combinations of dimensions.

Table 9: Social Capital – Two – Dimensional Vulnerability

	Informal Support	Source of Information	Frequency of Support Received
Indigenous Insurance	14.82	48.79	15.98
Informal Support		10.49	9.05
Source of Information			11.33

Source: Author's own calculation using NRVA (2005)

Majority of households do not have membership in community organisations. In theory, this would undermine the informal contract of mutual support that exists between community members. Particularly when combined with source of information, almost half of Afghan households are vulnerable in the functioning of social capital. However, community members do help each other frequently throughout the year. This is the reason why vulnerability in the domain of social capital is relatively low. Even-though almost 80 percent households are vulnerable because they do not have formal membership in community organisations, this figure drops to 15 percent when combined with the entitlement of access to informal support.

When combined with frequency of support received, the total number of households that are vulnerable falls to 16 percent. The same reasoning can be applied to the case of source of information. Although 60 percent of the households have access to only informal sources of information, when combined with informal support received, the number of vulnerable households reduces to 10 percent. When combined with frequency of support, the number of vulnerable households falls to 11 percent.

Vulnerability in this domain is caused primarily because of deprivation across the indicators of membership in community organisations and reliance on informal sources of information. This is offset by the pervasiveness of informal support within the communities, redressing vulnerability in the domain of social capital.

6.1.4. Access

Using the two indicators for which data is available, it is possible to conclude that more than one-fourth of Afghan households are vulnerable in this domain, almost entirely consisting of kuchi and rural households only. Traditionally, rural infrastructure in Afghanistan was not very well developed and with prolonged war, existing infrastructure was destroyed, particularly tertiary level infrastructure that connects villages to villages and district centres. The implication of this deprivation is severe: the main reason for low enrolment in schools is the long distance.

Table 10: Incidence of Multidimensional Vulnerability - Access

	Kuchi	Rural	Urban	Total
Not vulnerable	59.88	69.09	96.02	73.65
Less vulnerable	40.12	30.91	3.98	26.35

Source: Author's own calculation using NRVA (2005)

As Table 3 shows, a total of 46 percent households do not have roads leading up to their homestead. This restricts the ability to use motorised vehicles. A total of 50 percent households report their children do not attend school because the distance to the school is too much. At the two-indicator level, a total of 26 percent or over a quarter of Afghan households is unable to access education because of lack of access.

Conducting a three and four dimensional analysis of access is not possible because data is available only for two indicators within this domain.

Table 11 summarises the results for intra-domain vulnerability. Majority of households in Afghanistan experience two-dimensional vulnerability for the domains of social capital and access. Vulnerability rates increase for the domains of human security and exchange freedom when a stricter criterion of measurement is applied i.e. measuring deprivation across three or more dimensions. Households particularly suffer from deprivation in the domain of exchange freedom: even at the four-dimension cut-off point, almost 75 percent of Afghan households experience vulnerability. A similar conclusion can be drawn for the functioning of human security, wherein almost one quarter of the population remains vulnerable at the four-dimension cut-off point.

Table 11: Levels of Vulnerability in Afghanistan (percentages)

	Human Security	Exchange Freedom	Social Capital	Access
Not Vulnerable	20.96	1.709	40.57	73.85
Less Vulnerable	26.17	7.796	41.34	26.15
Vulnerable	30.16	15.64	13.13	
Very Vulnerable	22.71	74.85	4.96	
	100	100	100	100

Less vulnerable: experiencing deprivation across two dimensions
Vulnerable: experiencing deprivation across three dimensions
Very Vulnerable: experiencing deprivation across four dimensions
The calculation of overall vulnerability is explained in the next section.
Source: Author's own calculation using NRVA (2005)

The next section analyses the situation of over-all vulnerability by extending the multidimensional measurement approach to an inter domain analysis.

6.2. Inter-Domain Vulnerability[19]

Methodologically, calculating inter domain vulnerability is distinct from calculating intra domain vulnerability. This section outlines this methodological distinction, in addition to analysing the overall rates of vulnerability. Calculating inter domain vulnerability is relatively more complicated since a number of aspects have to be accounted for. Because inter domain vulnerability is measured by aggregating across domains, all possible combinations of vulnerable households have to be considered. The main question that arises is: how are different households with differing levels of intra domain vulnerability treated? In order to answer this question, the criterion that determines levels of inter domain vulnerability has to be changed. Based on their level of intra domain vulnerability, households are given a rank, which measures possible combinations of intra domain vulnerability. This is outlined in Table12.

Table 12: Ranking of Overall-Vulnerability

Level of Vulnerability	Human Security	Exchange Freedom	Social Capital	Access
Not Vulnerable	0	0	0	0
Less Vulnerable	1	1	1	
Vulnerable	2	2	2	1
Very Vulnerable	3	3	3	

Different levels of vulnerability for each domain are assigned a rank between 0 and 3, representing none and uni-dimensional, two-dimensional, three-dimensional and four or higher dimensional vulnerability, respectively. The rank for access remains between 0 and 1 because households can suffer a maximum of two-dimensional vulnerability in this domain. If households suffer highest possible vulnerability in each domain, they attain a rank of 10, 3 each for the domains of human security, exchange freedom and social capital and one for access. If they suffer no vulnerability, they attain a rank of 0. Based on this, it is possible to define the range of the rank as lying between 0 and 10. Every value that falls between 0 and 10 represents differing combinations of inter-domain vulnerability and represents not just multi-dimensional vulnerability but also multi-dimensional vulnerability at a multi-domain level (the dual cut-off as defined by Alkire and Forster 2004). So, for example, households that suffer two-dimensional vulnerability in the two domains of human security and exchange freedom would receive a rank of 2: they receive a rank of one each for intra-domain

[19] To conceptualise the inter domain analysis, it is useful to view domains as dimensions.

vulnerability, which is aggregated across domains. However, a rank of 2 can also be achieved if a household experiences three-dimensional vulnerability across any one domain. Since it is not objectively possible to say which of these two households is more vulnerable, the assignment of the same ranks treats these two households equally.

Based on this system of ranking, the criterion for being not vulnerable, less vulnerable, vulnerable and very vulnerable is as follows: a household is not vulnerable if the rank is 0. It is considered less vulnerable if the rank is between 1 and 3, vulnerable if the rank is between 4 and 7 and very vulnerable if the rank is between 8 and 10. Table 13 shows the number of households at each level. Overall level of vulnerability in Afghanistan is high, with a significant portion of the population receiving an overall rank of between 4 and 7. This translates into multidimensional vulnerability mainly at the three- and four-dimensional levels.

Table 13: Vulnerability in Afghanistan – Overall Levels

Levels	% Households
Not Vulnerable	0.22
Less Vulnerable	15.46
Vulnerable	74.51
Very Vulnerable	9.81
Total	100

Source: Author's own calculation using NRVA (2005)

However, this analysis does not provide insights into the specific domains that are driving up these results. Table 14 identifies specific combinations of vulnerability, irrespective of the level of vulnerability experienced by the household. The table shows that 77 percent of households that are vulnerable in the domain of human security, at all levels, are also vulnerable in the domain of exchange freedom. Likewise, almost 48 percent of households suffer vulnerability in human security and social capital, 23 percent in human security and access, 58 percent in exchange freedom and social capital, 26 percent in exchange freedom and access and 17 percent in social capital and access.

Table 14: Inter Domain Vulnerability: Specific Combinations

	Exchange Freedom	Social Capital	Access
Human Security	77.99	47.51	22.99
Exchange Freedom		58.61	25.74
Social Capital			17.07

Source: Author's own calculation using NRVA (2005)

Table 14 shows that, as indicated in earlier sections, deprivation in the domains of human security and exchange freedom are key determinants of vulnerability whereas the domains of social capital and access contribute less towards vulnerability. This conclusion has policy implications: in order to reduce vulnerability, exchange freedom and human security have to be enhanced significantly.

6.3. Components of Vulnerability

To recall, vulnerability is the combined result of lack of entitlements and exposure to risk. The former creates internal defencelessness through reduced resilience. The latter reduces household ability to convert their entitlements into functionings because the external

environment surrounding the household becomes uncertain. This increases external defencelessness.

With this definition in mind, in order to make an effective profile of vulnerability, it is important to identify which component contributes more towards vulnerability. This section presents component-wise results for vulnerability at both the intra- and inter-domain levels. Calculating intra-domain vulnerability is straightforward. Households are not vulnerable if they experience either *no* deprivation or deprivation in *one* indicator across both components of exposure to risk as well as lack of entitlements. In measuring component-wise intra-domain vulnerability, levels are not emphasised, rather multidimensionality is measured simply when households experience deprivation in more than two indicators within each component. Households are vulnerable with respect to exposure to risk if they experience deprivation in two or more indicators that measure this component in a particular domain. Likewise, households are vulnerable with respect to lack of entitlements if they experience deprivation in two or more indicators that measure this component in a particular domain. Households are particularly vulnerable if they experience deprivation in indicators that measure both components.

Based on this criterion, component-wise vulnerability rates broken down at the intra-domain level are presented in Table 15.

Table 15: Component-wise Intra-domain Vulnerability Rates

	Human Security	Exchange Freedom	Social Capital	Access
Not vulnerable	35.32	5.80	78.22	29.70
Exposure to risk (ETR)	5.81	6.73	6.63	20.44
Lack of entitlements (LOE)	48.51	47.91	10.03	23.51
ETR and LOE	10.36	39.57	5.13	26.35
Total	100	100	100	100

Source: Author's own calculation using NRVA (2005)

The table also shows that vulnerability is caused primarily by the lack of entitlements; in all four domains, majority of Afghan households experience deprivation across this component. In contrast, exposure to risk is a less severe problem as relatively fewer households experience deprivation in this component alone. However, this research argues that vulnerability is the combination of both components. Therefore, it is the households that experience deprivation in both components that are truly vulnerable.

As when measuring levels of vulnerability, measuring overall inter-domain component-wise vulnerability also requires the assignment of ranks to vulnerable households for each component. For each component, the rank encapsulates the different combinations of indicators across domains. It combines three distinct aspects of measurement: component, which is either exposure to risk, lack of entitlements, or both; the various domains that are being combined; and, the aggregation across domains that, in fact, capture the multidimensionality. Households are assigned a value of 0 if they experience none or uni-dimensional vulnerability and one if they experience deprivation across two or more indicators. Therefore, when aggregating across the four domains, the minimum rank that can be attained is 0 and the maximum is 4 for each component. Households experience exposure to risk if their aggregated rank for that component is higher than or equal to 2. Likewise, they experience lack of entitlements if their aggregated rank for that component is higher than or

equal to 2. Households are particularly vulnerable when they experience combined deprivation in both components of vulnerability: exposure to risk *and* lack of entitlements.

Based on this definition, Table 16 presents a component-wise breakdown of vulnerable households.

Table 16: Component-wise Breakdown of Vulnerable Households

Component	Overall
Not vulnerable	0.68
Exposure to risk (ETR)	2.56
Lack of entitlements (LOE)	20.86
ETR and LOE	75.90
Total	100

Source: Author's own calculation using NRVA (2005)

A very small proportion of Afghan households experience only exposure to risk. In contrast, a relatively higher percentage of households experience lack of entitlements. This conclusion is intuitive because it reflects the severe depletion of resources caused by prolonged war in Afghanistan. When measuring overall vulnerability, over 75 percent of the population experiences deprivation across both components. This is in line with the hypothesis regarding vulnerability in post conflict environments: overall vulnerability in Afghanistan is the combined result of exposure to risk that results from external defencelessness; as well as lack of entitlements that results from internal defencelessness. In Sen's terminology (1981, 1989, 1997) of entitlements, capabilities and functionings, this deprivation implies that households lack the capabilities to effectively *utilise* resources they have at their disposal (entitlements) and *convert* them into states of well being (functionings).

6.4. Comparing the Overall and Component-wise Measurements

The overall and component-wise analyses represent two distinct approaches towards multidimensional measurement. The first is applied when compiling levels of overall vulnerability in Afghanistan while the second becomes relevant when analysing which component of vulnerability contributes more towards the phenomenon. The distinctiveness of the approaches arises because the relevant set of indicators within one domain is different for the two types of analyses: for the component-wise analysis, the emphasis shifts to a subset of indicators. When calculating overall vulnerability within or across a domain, it does not matter how the indicators in which a household is deprived are distributed across the components. However, this distribution becomes relevant when making a component-wise analysis. A household would be considered vulnerable in the overall analysis if it is deprived across two indicators, one in each component because it experiences multidimensional vulnerability. When aggregating at the component level, the same household is considered not vulnerable because within each component the household experiences only uni-dimensional vulnerability. Therefore, the proportion of vulnerable and not vulnerable households differs depending on which approach is used. These differences are summarised in Table 17.

Table 17: Comparing Overall and Component-wise Vulnerability Measurement

	Human Security		Exchange Freedom		Social Capital		Access		Inter-Domain	
	Overall	Component-wise	Overall	Component-wise	Overall	Component-wise	Overall	Component-wise	Overall	Component-wise
Not Vulnerable	20.78	35.56	1.71	5.80	40.57	78.81	73.85	29.66	0.22	0.68
Vulnerable	79.22	64.44	98.29	94.21	59.43	21.19	26.15	70.34	99.78	99.32
Total	100	100	100	100	100	100	100	100	100	100

Source: Author's own calculation using NRVA (2005)

6.5. Determinants of Vulnerability

From the analysis above, it is possible to conclude that loss of exchange freedom contributes significantly towards creating vulnerability while having social capital in the form of informal support contributes towards reducing vulnerability. It is also possible to say that while exposure to risk is an important component of vulnerability, the lack of entitlements component contributes more towards creating it. This is expected given the high level of deprivation across dimensions. If overall levels of vulnerability are analysed, 60 percent of households that experience exposure to risk also experience lack of entitlements.

With this brief contextualisation, this section analyses vulnerability based on demographic characteristics. The analysis is divided in two parts: one examines levels of vulnerability based on the characteristics and the other identifies the incidence of vulnerability based on its components.

6.5.1. Levels of Vulnerability

As shown in Table 18, majority of Afghan households are vulnerable, which means they score an overall vulnerability rank of between 4 and 7. At this level, irrespective of the determinant, rates of vulnerability are similar. It is not possible to say which determinants contribute more towards vulnerability. Variation in vulnerability rates becomes apparent when considering the very vulnerable households. At this level, it is possible to identify those demographic characteristics that contribute more towards vulnerability.

When considering population strata, kuchi populations have the highest incidence of vulnerability followed by rural populations. In terms of income generating activities, households that rely on agricultural wage labour are most prone to vulnerability followed by households engaged in livestock activities. Households that rely on other wage labour, remittances and other informal activities also experience vulnerability albeit to a lesser degree. Households that derive income from formal employment, opium activities, agriculture or small businesses have the lowest incidence of vulnerability. The impact of education on vulnerability is as expected. The incidence of vulnerability is higher for households where the household head has no education than households where the household head is educated. Interestingly, the number of vulnerable households where the household head has received post graduate education is higher than households where the head has received university education. This is because employment opportunities for highly educated Afghans are low. In terms of household sizes, vulnerability is higher for households that have none or up to three children. The incidence of vulnerability reduces as the household size increases, indicating economies of scale of living in the family. Finally, the incidence of vulnerability is higher for households that have more women than men. For Afghanistan, this result is intuitive since cultural traditions prevent women from engaging in economic or social activities.

Table 18: Determinants of Vulnerability – Levels (% households)

	Overall Vulnerability			
	Not vulnerable	Less Vulnerable	Vulnerable	Very Vulnerable
	Strata			
Kuchi	0.06	5.53	75.73	18.67
Rural	0.27	15.66	73.55	10.52
Urban	0.06	17.47	78.73	3.75
	Income Generating Activity			
Agriculture	0.34	18.33	72.51	8.81
Livestock	0.07	10.31	71.41	18.20
Formal employment	0.33	19.92	76.03	3.72
Income from opium	0.61	34.09	61.40	3.90
Small businesses	0.22	17.52	76.35	5.91
Agricultural wage labour	0.15	4.72	70.19	24.94
Other wage labour	0.04	7.61	79.39	12.96
Remittances	0.25	19.60	70.44	9.72
Other	0.09	14.40	73.18	12.32
	Education of Household Head			
None	0.12	11.39	73.53	14.96
Primary	0.18	20.00	74.66	5.16
Secondary	0.41	22.94	72.79	3.86
High School	0.47	26.21	72.01	1.31
University	0.29	27.38	71.87	0.46
Post Graduate	1.18	34.24	63.37	1.21
	Number of Children			
None	0.08	14.20	77.76	7.95
1 to 3	0.29	16.11	73.43	10.17
4 to 5	0.13	14.75	74.74	10.39
6 +	0.31	15.62	75.37	8.69
	Household Composition			
More Men	0.22	15.56	74.63	9.60
More women	0.24	15.13	74.11	10.52

Source: Author's own calculation using NRVA (2005)

6.5.2. Component-wise Analysis

Table 19 breaks down vulnerability into its components: it highlights those households that suffer from exposure to risk only, lack of entitlements only and both. Based on the definition, it is this latter category of households that is truly vulnerable. As the table shows, irrespective of the demographic category, the largest number of households suffers from exposure to risk as well as lack of entitlements. Moreover, the lack of entitlements by itself is a more pervasive problem affecting a relatively higher majority of households than exposure to risk. This is particularly true for households that derive their income from relatively more formal activities, households for which the head is educated and households with a higher number of children. Formal income generating activities ensure availability of income throughout the year, which ensures protection against risks. For households where the head is educated, the incidence of overall vulnerability is lower compared to households where the head is uneducated even-though the former experiences a greater lack of entitlements. Households with a higher number of children are less vulnerable than households with no children. Even-

though they have lower entitlements, they have low exposure to risk because of the availability of additional labour, which can be mobilised when necessary. Households with more men than women have lower entitlements than households with more women but are, in overall terms, less vulnerable. This is because of exposure to risk: women are unable to fully utilise their labour entitlements because of cultural constraints.

Table 19: Determinants of Vulnerability: Components (% households)

	Not vulnerable	Only ETR	Only LOE	ETR and LOE
	Strata			
Kuchi	0.23	0.75	9.16	89.86
Rural	0.79	3.09	17.43	78.70
Urban	0.31	0.60	40.71	58.38
	Income Generating Activities			
Agriculture	1.14	4.01	18.34	76.52
Livestock	0.44	2.06	13.60	83.90
Formal employment	0.66	1.74	35.91	61.68
Income from opium	2.43	2.77	13.70	81.10
Small businesses	0.55	1.96	28.68	68.81
Agricultural wage labour	0.22	1.00	14.00	84.79
Other wage labour	0.26	2.01	16.49	81.24
Remittances	0.50	4.10	13.66	81.74
Other	0.10	1.02	22.18	76.69
	Education of Household Head			
None	0.29	2.75	9.04	87.92
Primary	1.06	3.65	25.09	70.20
Secondary	1.52	3.49	30.47	64.53
High School	1.14	3.64	36.75	58.48
University	1.11	2.13	47.66	49.10
Post Graduate	1.19	1.18	49.91	47.73
	Total Number of Children			
None	0.50	3.60	13.66	82.24
1 to 3	0.89	2.92	21.16	75.02
4 to 5	0.35	1.31	24.18	74.16
6 +	0.51	1.61	23.27	74.61
	Household Composition			
More Men	0.70	2.66	21.82	74.82
More women	0.62	2.22	17.57	79.59

Source: Author's own calculation using NRVA (2005)

7. Conclusion

Vulnerability persists in post conflict environments due to the combined impact of reduced entitlements at a point in time and uncertain access to entitlements over time i.e. the loss of both the **availability of** and **access to** resources. Vulnerability results from the combination of low and fragile entitlements; low entitlements at a point in time capture the poverty element of vulnerability while fragility captures the uncertainty of entitlements over time, which results from exposure to risk. How this vulnerability is internalised by households is determined by a covariate and idiosyncratic impact. The covariate component is determined by the external environment that households find themselves in, while the idiosyncratic

component is determined by household entitlements. This paper sought to develop a profile of vulnerability for Afghanistan using the NRVA (2005) data. The specific aims of the paper were three fold: to develop vulnerability thresholds for Afghanistan, to identify which component of vulnerability contributes more towards the phenomenon and to identify the limitations of the multidimensional measurement approach.

At the intra domain level, majority of Afghan households experience two-dimensional vulnerability in the domains of human security, social capital and access. Vulnerability in the domain of exchange freedom is more severe and implies deprivation across three or more indicators. At the inter domain level, the majority of the households in Afghanistan experience high levels of vulnerability, particularly in the domains of human security and exchange freedom. Using inter domain analysis, it is also possible to say that while lack of exchange freedom exacerbates vulnerability, having social capital, or more specifically, informal exchange at the community level, contributes less and may even help redress vulnerability.

The incidence of vulnerability is higher for kuchi and rural households and households that rely on livestock activities, wage labour and remittances for income. Also, the incidence of vulnerability is higher for those households where the household head is uneducated. Households with up to three children are more vulnerable than households with more than three children or households without children. This indicates the existence of economies of scale of living in a family. This difference in the incidence of vulnerability can also be explained by the fact that having more children implies a greater availability of labour entitlements and lower vulnerability.

In terms of components, the number of households that experience only exposure to risk is much lower compared to those households that experience only lack of entitlements. If lack of entitlements is used as a proxy measure for poverty at a point in time, it is possible to say that poverty is widespread in Afghanistan. Nevertheless, the majority of households experience both exposure to risk as well as lack of entitlements, which reinforces the fact that vulnerability results from the combination of both components. Analysing vulnerability based on its components is necessary because it helps establish the fact that it is not just deprivation, which makes households vulnerable but also the inability to convert resources into well being.

Kuchi and rural households have a higher incidence of vulnerability than urban households, which suffer more from lack of entitlements than exposure to risk. Likewise, households that engage in regular income generating activities such as formal employment and small businesses have lower levels of exposure to risk as well as lower vulnerability in comparison to other income generating activities. Education also reduces the incidence of vulnerability, mainly because if the household head is educated, exposure to risk is reduced. Households with children have lower entitlements but also lower vulnerability. This can be explained by the fact that these households have greater labour entitlements that can be utilised in the future or when shocks occur.

Measuring vulnerability using a multidimensional dimensional approach is marred by two key constraints. First, each of the four domains analysed have a differing number of indicators. The greater the number of indicators, the more inflated the results are for multidimensional vulnerability. Second, indicators of vulnerability are weighted equally because the assumption is that each indicator is important in itself. This means that for

domains which have a higher number of indicators such as human security and exchange freedom, each indicator gets a lower weight. Conversely, for domains that have a low number of indicators such as social capital and access, each indicator gets a higher weight. This becomes a problem particularly when calculating inter-domain multidimensional vulnerability: the indicators that measure social capital and access are implicitly weighted higher.

The profile developed in this paper focuses on the idiosyncratic component and highlights this for a multitude of entitlement losses. It captures the covariate component by showing how external risks combined with low entitlements reduce household resilience against future shocks and prevent households from converting their entitlements into functionings. The analysis argues that entitlement failure has implications for the household at a point in time but when combined with other entitlement losses, it increases exposure to risk. Such exposure makes households susceptible to loss of well being in the future. This combination makes households vulnerable. Response mechanisms aimed at reducing vulnerability should therefore focus on both enhancing entitlements as well as reducing exposure towards risks. The latter would decrease when household would be able to convert entitlements into functionings. Interventions that are geared towards reducing vulnerability are usually not so comprehensive as to address all these aspects of the phenomenon.

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Annex A: Indicators for Assessment

A key challenge in conceptualising vulnerability has been to measure the concept. The differences in terminology can also imply different ways in which the notion is operationalised. There is, however, considerable consensus in the literature over the fact that measurement indicators should have at least three broad characteristics: first, indicators should reflect the underlying causes of vulnerability. These may be exacerbated by hazards and shocks. Second, the indicators should identify and visualise the features of vulnerability. The third characteristic of indicators is that these should focus on ways of monitoring and evaluation for impact assessment and feedback.

McLaren (1996) has developed a staged process of indicator selection. The first key step towards identifying indicators of measurement is to determine the goals for which the indicators are being selected. Clearly established goals would automatically lead to the second step: establishing scope of indicators, both spatial and temporal. Once the goals and scope of indicators are determined, it becomes easy to identify a conceptual framework that would be used to analyse the problem. The next step is to determine the selection criteria for indicators, which could include quality, measureability, data availability and robustness. These three steps determine the environment within which the indicators are to be used. A list of potential indicators is compiled from which a final list is selected. Analysis and reporting is based on these.

In order to set indicators to measure vulnerability, it is important to set priorities. This necessitates reduction of complex problems and trends to align them with goals, outputs and other requirements for assessments. On the one hand, setting priorities and simplifying complex tasks is essential to measure vulnerability. On the other hand however, if not handled with care, there is a threat that such simplification may lead to a loss of data: causes, features and aftermath of shock and how it relates to future vulnerability on the basis of baseline analysis. Moreover, practical examples of vulnerability measurement focus on ex-ante features such as prevention and mitigation. Ex-post measurement is more difficult because in the immediate aftermath of shock, there is insufficient data availability to effectively assess characteristics of vulnerability due to which, it is not possible to carry out in-depth analyses. In these scenarios, vulnerability assessment becomes difficult and is reduced to a political interpretation of vulnerability in the context of resource allocation for relief work, humanitarian assistance and recovery.

As a solution to such problems, Pelling (2006) has distinguished between three different types of assessments. Damage assessments emphasise losses resulting from a shock. They are usually narrow in their scope and do not focus on the nature or causes of the resultant vulnerability. Such assessments usually consist of rapid needs assessments to allow rapid response mechanisms. Moreover, as Birkmann (2005) points out, such assessments do not estimate whether groups or communities were able to learn lessons. Vulnerability assessments focus on those factors that drive and shape vulnerability in a given context. Such assessments have a longer term time horizon and stress factors that determine recovery. Impact assessments are like vulnerability assessments in their scope. These highlight the positive and negative aspects of the shock as well as the environment that is created as a result of the shock. Both also attempt to make predictions of the future. While vulnerability assessments focus on the factors and coping measures that create and influence vulnerability,

impact assessments are more holistic, focussing on direct as well as indirect aspects of vulnerability.

Differentiating assessments in this manner helps clarifies objectives. Moreover, Pelling stresses that whatever the nature of assessment, it is always necessary to keep in mind the question: vulnerability to what and of whom? Also, every assessment should try and bridge the gap between theoretical knowledge and practical day to day experiences of vulnerable individuals and households.

The hotspots model concentrates on two variables: hazard exposure and historical vulnerability. As a proxy to measure these, the model uses gridded population and GNP respectively. It model uses knowledge of previous losses to estimate future losses. Moreover, like the DRI, the model provides information on *risks* of mortality and economic losses and real economic losses. It does not provide information on resilience over time. The only losses considered include mortality and GNP losses, and does not include other losses, which may reduce resilience. Details of this model are published in Dilley et al. (2005) and Dilley (2006).

The Americas Project (summarised by Cardona (2007)) was initiated to develop a language of risk and a systematic benchmarking system for the Americas. The project came up with multiple indicators, sumamrised in Table 3.

Table 3: The Americas Project – Indicators for Risk Assessment

Disaster Deficit Index (DDI)	Measures country risk from macroeconomic and financial perspective or stated differently, the economic resilience to recuperate from the losses that can occur from a disaster. For ex-ante measurement, losses are replaced with expected annual loss and economic resilience replaced with capital expenditures. Losses and expenditures are calculated for a defined period of time, making the conclusions more relevant. A shortcoming is that measuring resilience in terms of capital expenditures alone can be restrictive and may not capture the full picture.
Local Disaster Index (LDI)	Composite indicator that measures incidence and uniformity of risk in terms of deaths, affected population and losses. The incidence measures the intensity of the damage while the uniformity measures the spatial distribution of risks as well as losses. Indicator allows for an assessment of persistence of and cumulative impact of a hazard. It is effective for a quick evaluation of the situation, which determines the nature of quick response. A shortcoming is that the indicator is not very comprehensive in terms of capturing resilience, which is necessary for a holistic picture of the causes and consequences of vulnerability.
The Prevalent Vulnerability Index (PVI)	Composite indicator of exposure, fragility and resilience, it views vulnerability as a result of the combined impact of inadequate growth and deficiencies. Within the framework, *exposure, fragility and resilience* are represented by sub-indicators that have additional components. It is a step-wise approach that has the flexibility to capture significant amounts of information and hence the richness of the causes and consequences of

	vulnerability.
The Risk Management Index (RMI)	This index focuses on a country's risk management performance in terms of organisational development and institutional actions taken to reduce vulnerability. It helps in establishing targets and benchmarks for risk management initiatives to attain. The components of this indicator focus on the chain of risk management: identification, reduction, disaster management and financial protection. Each indicator is ranked based on five levels to ascertain performance against benchmarks/targets.

The indicators can be applied to examine ex-post vulnerability and coping strategies. The theoretical underpinnings of this approach are perhaps most similar to the concept of vulnerability developed above. Viewing post-conflict vulnerability in terms of functionings losses allows for in-depth analysis that delves in all stages of vulnerability. It begins by identifying the nature of losses (functionings), how these relate to a shortage of resources (entitlements) and the dynamic processes (capabilities) by which one leads to the other. By allowing a detailed elaboration of each stage of vulnerability, the framework suggested above becomes context specific yet replicable. It captures the nuances of vulnerability that make the concept distinct in itself by defining it as a combination of exposure to risk *as well as* a lack of entitlements. The framework effectively captures the ideas of internal and external defencelessness, specifying indicators for measuring each state, thereby making these notions more concrete.

These measurement techniques have a number of limitations. They emphasise ex-ante estimation to determine preparedness and plan prevention and mitigation measures. Post conflict environments, by definition, imply ex-post analysis of a situation and focus on coping strategies. Conflict Analysis Frameworks (CAFs), usually adopted by international and other non-governmental organisations, fall prey to the caveat pointed out by Chambers: they substitute poverty for vulnerability. While such substitution allows for convenient and rapid assessment, it does not outline fully the causes and consequences of vulnerability. Also, they are restrictive in terms of variables they include, which makes it difficult to get a holistic picture of vulnerability, its causes and manifestation.

Annex B: Evolution of the NRVA

During the late 1990s, WFP utilised the Vulnerability Assessment Mapping (VAM) exercise primarily to track the situation of food security in Afghanistan. VAM assessments were specific and provided localised information resulting in the Emergency Food Needs Assessments (EFNA). In the post war period, it was realised that the needs of the population were constantly evolving, making the VAM assessment insufficient. In 2003, a joint stakeholder review was conducted with participants representing various ministries in Afghanistan, Central Statistics Office (CSO), NGOs and international organisations (Pinney 2004). This review identified six broad categories of questions that needed to be answered in the new post-war context. First, as obvious, the range of indicators had to be broadened to capture new needs and a wider range of output products driven by priorities of new national programmes. Second, a greater number of women were involved in this stakeholder analysis, making it more gender sensitive and reflective of the needs of the female population. Third, whereas VAM was predominantly about rural communities, a need was identified to highlight the vulnerability faced by the urban poor, nomadic populations and the internally displaced people. Fourth, better research techniques were being adopted and used to design, enumerate and tabulate the data. Related to this is the fifth category, which pertained to improving capabilities within ministries and each stakeholder group. Better staff in ministries and international donor organisations implied that bolder methodologies could be adopted to conduct the vulnerability assessment exercise. Finally, the nature of information that needed be collected in the post-war era necessary for providing a tool for effective analysis and benchmarking for a comprehensive follow-up to ensue was evolving.

The National Risk and Vulnerability Assessment (NRVA) built on the VAM to answer the six questions highlighted in the previous paragraph. In terms of methodological changes, the NRVA introduced different levels of analyses; at district and household levels and across wealth groups ranging from very poor, poor and medium. In addition, it included information on labour details and access to services such as health, education and markets. It adopted different instruments for soliciting data from male and female respondents, implying greater depth. More income categories were included so that individuals could provide more accurate assessments of their overall income. Finally, more groups were covered through the NRVA exercise including urban poor, nomads and the internally displaced people. By introducing these changes, the data collected through the NRVA provided a more comprehensive picture of household entitlements when compared to the VAM, which focussed mainly on food security.

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