

Paper Number P4:

Methodological challenges for developing an outcome measure based on Sen's Capability approach for assessing women's wellbeing in rural Malawi

Authors: Giulia Greco ¹ (Giulia.Greco@lshtm.ac.uk), Jolene Skordis ^{1,2}, Anne Mills ¹

¹London School of Hygiene and Tropical Medicine - Health Economics and Financing Programme

²UCL – Centre for International Health and Development

Introduction.....	1
Background.....	3
The capability approach.....	4
Methodological challenges of applying Sen's approach	5
i. How to select relevant capabilities/functionings	7
ii. How to aggregate capabilities/functionings into a composite measure of wellbeing.....	8
iii. How to validate the instrument	9
iv. How to move from individual wellbeing to societal welfare	10
Research Methods.....	10
i. Selection of relevant dimensions	11
ii. Construction of the questionnaire, pre-test, content validity and piloting.....	12
iii. Quantitative data collection.....	13
iv. Aggregation of the capability index	13
v. Validity, reliability and sensitivity of the instrument	14
Final remarks	16
References.....	17

Introduction

The MaiMwana Project is a development and research initiative that aims to improve maternal and newborn health in Mchinji District, Malawi. It has been running a community-based participatory programme that organizes women's groups (WG) in rural areas. Central to the community-based intervention is a four stage community action cycle: women gather together and engage in debates where they identify and prioritise health problems and needs; develop locally feasible and sustainable strategies to address these issues; implement the strategies with locally available resources; and evaluate them, after which the first phase starts again. Each WG is facilitated by a trained volunteer member of the local community who guides the participants of the group and their communities through the action cycle. The

mechanism which underlies the action cycle is driven by values of self-awareness of health and illness, community empowerment, participation and local mobilisation.

MaiMwana Project interventions are evaluated with a cluster randomised controlled trial designed by the Centre for International Health and Development at the University College of London (UCL). The trial has been designed to detect a reduction in maternal and neonatal mortality as the only outcome measure. However, the WGs are generating effects that fall beyond the health care sector and might impact the overall wellbeing of the people who participated at the programme and also on other members of the community.

Around two hundred Women's Groups are currently active in the district, they have identified and prioritized different maternal health problems, and have engaged in a variety of strategies. Limited data is currently available on the strategies implemented although preliminary analysis from project reports and from Rosato, Mwansambo et al. (2006) shows that the groups have identified anaemia and malnutrition as one of the threats to their health, and most of them have set up communal vegetable gardens and livestock rearing to improve their diet. Moreover, the excess production from agricultural activities have been sold for income generation. They have identified diarrhoea as one of the major threats to the survival of their newborn, and they have engaged with other members of the community for building wells and boreholes that provide clean and safe water. They have identified malaria as one of the causes of ill health, and they have lobbied the local authorities to receive 800 bed nets and to have a cleaner (malaria-free) environment. They have recognized the dangers of delivering at home and the importance of being attended by a skilled health worker, and they have lobbied local authorities and donors for establishing 11 mobile clinics, building 11 antenatal and under-5 clinics, purchasing 33 bicycle-ambulances and training traditional birth attendants.

How to identify, measure and value these broader outcomes is the main challenge that this study aims to tackle. While conventional techniques such as cost-effectiveness analysis and cost-benefit analysis have been shown to be well adapted for the evaluation of many interventions in the health care sector, their application in community mobilisation interventions is a matter of on-going debate.

There is growing interest in adopting Sen's Capability Framework for assessing the 'good of life'. Sen (Sen 1977, 1992, 1993, 1985) argues that individual advantage should not be seen merely as opulence or utility, but primarily in terms of the freedom people have to choose the kind of life they have reason to value. This paper outlines the methodological challenges of applying Sen's framework for developing an outcome measure to assess women's wellbeing in rural Malawi. The use of such a measure outcome in

the evaluation of a community based health intervention (MaiMwana Project Women's Group) will be explored. To achieve this aim, this study will seek to meet the following specific objectives:

- i. Identify a set of capabilities relevant to the study and context
- ii. Propose methodologies to measure robustly these capabilities
- iii. Translate the measurement into a single metric (index)
- iv. Validate and test the instrument

The economic evaluation of MaiMwana Project intervention is not central to the study proposed in this document, however it is envisioned that the findings will inform this evaluation.

Background

Health promotion¹ participatory activities such as MaiMwana Project WGs tend to be complex interventions and may often combine educational, social and political strategies with aspects of empowerment, capacity building and knowledge across different sectors (Borghi and Jan 2008) (Nutbeam 1998). They often target communities or groups of people rather than individuals, and usually rely on community engagement and participation aimed at changing the lifestyle or the behaviour of healthy individuals; behaviour change is a lengthy process, and the effect is also likely to be sustained beyond the intervention and might not be observable in a time-frame of conventional evaluation (Shiell and Hawe 1996).

Some effects of these programmes are likely to occur outside the health care sector and this should have an impact on the choice of health and non-health outcomes² to measure and value (Drummond 2008). Outcomes can be as varied as changes in the health states and determinants of health as well as changes in behaviour and characteristics of individuals and communities, and changes in the political and social environment (Green 1986). In a community-based project targeting women in Nepal it has been observed that non-health outcomes (identified as increased knowledge and confidence, and social participation) were valued by 84 per cent of the people that were willing to pay for the Women's Group intervention (Borghi and Jan 2008).

Attempts to use conventional techniques in the economic appraisal of health promotion and community participatory interventions are generally met with criticism. The main reason is because non-health

¹ Health promotion according to the Ottawa Charter for Health Promotion (WHO 1986) is "the process of enabling people to increase control over, and to improve their health" http://www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf

² For 'health outcome' is intended a change in the health status of an individual, group or population which is caused by a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status (WHO glossary). For 'non-health outcome' is intended a change beyond health status, that occurs on other dimensions of well-being. While acknowledging the broad WHO definition of health as a state of complete physical, social and mental well-being, in this study, in order to keep a clear definition between health and non-health outcome, we refer to health as the disease-free condition.

outcomes are generally ignored within economic evaluation (Borghini and Jan 2008) and neglecting to consider the multiple effects might overlook some benefits and the *holistic* impact of the programme could be underestimated. Hence the results of the appraisal are routinely devaluing these types of interventions and showing them as less effective and efficient compared to other types (Hale 2005). As Rychetnik and colleagues advocate, the evaluation of the effectiveness of public health interventions must be sufficiently comprehensive to cover their complexity, and the evaluative space should be stretched in order to include health and non-health outcomes in an adequate time-frame (Rychetnik et al 2002).

While recognizing that a well-established outcome measure for economic evaluation (the QALY measure³) poses its foundation in Sen's critique of Welfarism economics, in this study it is argued that such a measure is limited in four ways: it focuses exclusively on one dimension of wellbeing (health) and on the actual health gain (health functioning), rather than the freedom to achieve it; it is mainly concerned with the maximization of health gain, although this is not all that people are concerned about (Coast 2004) (Dolan et al 2005); it is based on preferences that suffer from biases for adaptation instead of being based on a societal value judgment.

Theoretical advances in economics such as Sen's concept of functionings and capabilities, entail a broader notion of wellbeing, and have been suggested to be well-suited for assessing community development programmes (Shiell and Hawe 1996) (Mooney 2005). Sen's approach is not new to health economics. However, it is only recently that the Capability approach has started to be considered more directly as an alternative to conventional approaches in several disciplines, including health economics (Coast et al. 2008) (Cookson 2005) (Anand 2005).

The capability approach

The Capability approach is a 'broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about societal change' (Robeyns 2006 p. 352). A crucial normative argument of Sen's vast work (Sen 1977, 1992, 1993, 1985) is that individual advantage should not be assessed using people's preferences or desires, but primarily in terms of the freedoms that people have to choose the kind of life they have reason to value. With this in mind, social and public policy should aim to expand people's capabilities, and a policy would be considered successful if it led to an expansion of the capability set.

The building blocks of Sen's framework are a set of dimensions of wellbeing, *beings and doings*, that are valuable to the population. A *functioning* represents the state of *being* and *doing* that an individual can

³ However, in a developing country setting such as Malawi, it would be more appropriate to use a DALY measure

achieve with the commodities possessed (and the characteristics of the commodities) in the bundle, given the individual's characteristics (e.g. health, strength, personality), and the external circumstances (e.g. social position, location, political environment, etc). In order to be significant, functionings must be of social importance at a specific time to a significant proportion of the population in which the individual belongs (established by quantitative empirical studies, by participatory methods, or challenged openly in public debate), and need to be socially influenceable (social and economic policies can influence them such as health, education, employment as opposed to a person's sense of peacefulness) (Alkire 2005). Functionings can be basic such as being well nourished, being educated, being free from avoidable diseases, or more complex such as being politically active in the community, having long-lasting relationships, playing a musical instrument. A functioning relates to commodities and utilities, although it comes after *having a commodity* as it expresses what an individual manages to achieve with the commodity, and it is prior to *having utility* (in the form of happiness generated by the functioning).

The novelty aspect of Sen's theory is the *capability* concept: the focus of value is not on the commodities that a person possesses, or the pleasure (utility) that the person can get from those commodities, but it is the extent to which the person is able to achieve valuable functionings with these commodities, according to the personal characteristics, and external circumstances, and no matter whether the person chooses to function or not. The capability set comprises all possible functionings that a person can achieve; it can be considered as an extended budget set, that include non-market commodities and services, and non-monetary constraints. Two individuals with the same capability set can choose different functioning vectors and on the other hand two individuals with different capability sets can end up choosing the same functioning vectors (Saith 2001)

Methodological challenges of applying Sen's approach

While it is quite straightforward to measure a subset of achieved wellbeing directly as they represent achieved and measurable functionings, it is more challenging to measure the capability set, as it represents the potential and feasible level of welfare that an individual can achieve. In theory it would be possible to estimate capability sets through a 'reference group' method, where the main assumption is that information about the opportunities open to an individual is necessarily based on the range of things that similar people do, as done by Burchardt, Le Grand, et al. (2002). However, in practice the 'reference group' method has two limitations: first, whether two individuals whose characteristics are similar would choose the same functionings is questionable; second, even if one accepts the first limitation, the amount of information required to link achieved functionings to personal characteristics and external circumstances is significantly extended (Cookson 2005).

In health economics, after Culyer's contribution to the extension of Welfarism beyond utility and the formulation of the QALY maximand, Anand outlined the limitation of such a measure in addressing ethical issues that are relevant in many medical decision-makings (Anand 2005) such as ageism and the right to die. He then advanced the application of the Capability framework exploiting data from the British Panel Household Survey (Anand et al. 2005). Anand and colleagues selected those questions that could be associated with the ten Central Human Capabilities proposed by Nussbaum (2000) and then designed a survey with integrated questions from other social survey.

Cookson (2005) has suggested three methods for applying the Capability approach: direct estimation of the capability set, combining WTP with capability information, and reinterpreting the QALY. He supports the reinterpretation of the QALY to include non-health measures as the most appropriate method, because direct estimation of the capability set is not feasible at present. In a reply to Cookson, Anand (2005) argues that measuring capabilities is indeed possible and thus desirable.

Hence, Anand's work has been taken forward by a group of researchers from the University of Glasgow, whose aim is to develop a general index to be used in public health. They have now developed and refined the capability questionnaire using mixed-methods, and have attempted to construct an index, although without a valuation exercise but assigning the same weight to each question (Lorgelly 2008)⁴. Their questionnaire is a great advance in the progress toward direct estimation of perceived capabilities, but while it has been designed and tested in such a way that it can be used in large scale public health interventions, its applicability in a developing country setting such as rural Malawi is perhaps doubtful⁵. Moreover, the survey is based on Nussbaum's list, while this study aims at drawing a list with participatory methods, 'from the bottom up'.

The only work on capabilities, that includes developing, testing and validating an index that could be used in economic evaluation, is the study that was conducted by Grewal and colleagues (2006) and the subsequent works led by Joanna Coast (Coast, Flynn et al. 2008) (Coast, Peters et al. 2008) with the elderly in England. Another study in the field of health economics, though not completed, is the one developed by Kinghorn and Smith (2008) that proposes an index for assessing the capabilities of chronic pain patients in England. Finally, there is no evidence so far of studies that directly collect capabilities and combine the data in a multidimensional index in a developing country context.

⁴ Some of the limitations of their study will be explored further through a PhD studentship granted by the Economic and Social Research Council together with the Scottish Government

⁵ In fact, some questions are not relevant to the context, and others would require major re-wording, such as *how often have you been able to enjoy recreational activities, how able are you to appreciate and value plants, animals and world of nature, how suitable is your accommodation for your current needs, are you free to use your imagination and to express yourself creatively.*

The methodology that will be employed in this study is described in detail. The main procedural challenges are:

- i. How to select relevant capabilities/functionings
- ii. How to aggregate capabilities/functionings into a composite measure of wellbeing
- iii. How to validate the instrument
- iv. How to move from individual wellbeing to societal welfare

i. How to select relevant capabilities/functionings

Sen has advocated the assessment of expansion (up to equality) in the space of capabilities rather than in the space of functionings. There are several reasons for moving beyond functioning and assessing capabilities (wellbeing freedom). First, the space of wellbeing freedom in which what is evaluated is the real opportunity to function, is much richer compared to measuring the actual achievement; second, freedom has an intrinsic importance in itself, and it should be valued; third is the degree of responsibility that can fall on the individual (Kinghorn and Smith 2008). Finally, there is empirical evidence that people are indeed concerned about their capabilities. In fact, the study conducted by Grewal and colleagues (2006) found that older people in the UK are concerned about their (lack of) capability to achieve particular functionings. In addition, Lorgelly et al (2008) asked in their questionnaire whether the respondents are more concerned about their functionings or their capabilities and the results show that there is significant support for having some capabilities rather than the actual expression of them (Lorgelly et al 2008).

Sen has deliberately refrained from providing a list of relevant capabilities, claiming that different capabilities are relevant to different contexts. Academics and political scientists have strived to develop sets of dimensions of wellbeing⁶ - or “ingredients of quality of life” (Alkire 2002 p. 181). The first attempt to develop a list of capabilities was made by Nussbaum (Nussbaum 2000). While her contribution has its foundation in Sen’s capability theory, and they did collaborate on some work, she has adopted a more political and normative approach. Her proposed list of ten Central Human Capabilities⁷ raised questions over its prescriptivity (Alkire 2002), academic legitimacy (Robeyns 2003) and lack of consistency with Sen’s central idea of pluralism (Sugden 1993)

Robeyns (Robeyns 2003) proposed five methodological criteria to follow for an appropriate selection of relevant capabilities. These are: to make the selection as explicit as possible because it has to be discussed and defended; to justify the method used; to make the selection sensitive to the context; to distinguish between different levels of generality, drawing the list in two phases: an ideal list and subsequently a

⁶ dimension of wellbeing is used with the same connotation as Alkire (2002 p. 21): the ‘primary colours of values’, elements of valuations that structure the space in which people function.

⁷ Life, Bodily health, Bodily integrity, Senses imagination and thought, Emotions, Practical reason, Affiliation, Other species, Play, Control over one’s environment

second-best list where practical constraints are taken into account; and to aim for the most exhaustive and complete selection as possible. The selection should be then scrutinised and endorsed by the general public or by interest groups. In order to reach a general consensus, an effort should be made to include differences of opinion and to adapt the list to the social and cultural context: any reasonable list of dimensions should be endorsed from the bottom up (Clark 2008).

However, in many studies the selection of functionings/capabilities is done with reference to the researchers' values (Klasen 2000) (Chiappero-Martinetti 2000) and the empirical evidence of participatory planning processes and public debate for developing a capability list is very limited (Grewal, et al. 2006) (Alkire 2002; 2005) (Vizard and Burchardt 2007) (Kinghorn and Smith 2008). Grewal and colleagues (2006) used informant-led in-depth interviews with older people in England to identify attributes of quality of life, and the findings showed that what is valuable to them is the ability to function. It is interesting to note that none of the five attributes that are found to be valuable for older people (attachment, security, role, enjoyment and control) are directly related to health. Kinghorn and Smith (2008) used focus groups for gathering information on how chronic pain impacts quality of life and a first list of 'key capabilities' and functionings was produced. Then, a series of interviews was conducted to review and amend the list ⁸.

ii. How to aggregate capabilities/functionings into a composite measure of wellbeing

The process of weighting attributes can be done using data-driven techniques or participatory/normative methods. While rejecting the use of preference, choices or desires to value capabilities, Sen argues that "open discussion, debate, criticism and dissent" are the means for "the formation of values and priorities, and we cannot, in general, take preferences as given independently of public discussion." (Sen 1999). However, as Robeyns noted, how to undertake this democratic process for attaching moral values is not clear, and it is also not clear how to ensure a fair and balanced participation in the process (Robeyns 2005).

The easiest approach to combining questions is to assume equal value for each dimension, as is done in the Human Development Index, the Human Poverty Index and the Gender-related Development Index. Lorgelly and colleagues (2008) assigned equal weight (1) to each of the 18 questions of their survey. For example, being able to live a life of normal length is as equally important as being able to enjoy recreational activities and being capable of independent thinking. This approach has been defended for its simplicity and for the 'agnostic' viewpoint (Decancq and Lugo 2008). However, there are many

⁸ being able to: have self respect, enjoy social interaction, to fulfil the role of parent/grandparent, to remain physically and mentally active, to have a positive and individual identity, to be independent/have control, to participate in a loving relationship, to enjoy good physical and mental wellbeing, to take enjoyment from life

criticisms for its lack of explicit value judgments (Ravallion 1997), and it seems unrealistic to assume that capabilities are equally valuable to people.

More complex approaches can be found in the capability literature, where the aggregation process has mainly been done with multivariate statistical methods such as factor analysis, principal component analysis, and fuzzy set theory (Chiappero Martinetti 1994). Factor analysis and principal components analysis⁹ are a set of multivariate statistical techniques that help to extract information from the data. They facilitate multidimensional analysis by reducing the number of variables and therefore reducing the complexity. Variables are identified and weights are assigned following a statistical analysis. Factor analysis has been widely employed (Index of Multiple Deprivation) (Schokkaert and Van Ootegem 1990) but involves some challenges. Firstly, if the observable variables submitted to factor analysis are measured on different scales, the factors might pick up method effects rather than substantive variance effects. Secondly, it is not sure that if the functionings in real life are correlated, orthogonal factors would represent adequately an individual's welfare. The third problem is that this method of letting the data decide how to put the weights, does not allow for an independent and legitimate ranking of capabilities and there is no value judgement, which is a core component of Sen's theory of freedom (Kuklys and Robeyns 2004)

Participatory techniques that are found in the capability literature have employed standard methods from economics for eliciting preferences, such as discrete choice modelling (Watson, Sutton et al. 2008) (Coast, Flynn et al. 2008). Coast and colleagues valued the ICECAP¹⁰ index for older people using best-worst scaling along with a stated preference discrete choice experiment (DCE). Because the respondent is asked what attribute is the best or the worst, and the respondent does not have to trade one for the other, Coast argues that it can be considered as a value judgment rather than a choice. The stated preference DCE is better than traditional DCE because it gives more information on preference heterogeneity rather than 'pick one' choices, and is less cognitively demanding. However, this method is more similar to a standard elicitation method than the capability framework. Other recommended methods are vignette (Lorgelly, K et al. 2008) and multi-attribute utility method (Kinghorn and Smith 2008).

iii. How to validate the instrument

An indicator should be tested and found to be adequate for the research purposes. It is generally understood that this means an indicator should be tested for (Ibrahim and Alkire 2007) (Atkinson, et al. 2002) (World Bank 2004) (Clark 2008):

- o validity – in terms whether the indicator is actually measuring what (and only) is supposed to measure;

⁹ Principal component analysis is a first order factor analysis

¹⁰ Investigating Choice Experiments for the preferences of older people CAPability instrument

- o reliability – in terms of yielding the same results on repeated trials;
- o sensitivity – in terms of the ability to detect change.

iv. How to move from individual wellbeing to societal welfare

It is unfortunately beyond the scope of this work to construct a societal welfare function. However, if the capability index is found to be a reliable, consistent, valid, sensitive and usable measure of wellbeing in this specific context (women of child bearing age in Mchinji, Malawi), it will be meaningful to explore the applicability in a broader context or perhaps to expand the sample in order to include the voices of other members of the community in drawing up the capability list, building the survey, and valuing the dimensions. A community capability set could then be built, assessed and validated, and a societal welfare function could be constructed.

Sen's framework is mainly concerned with equality in the space of capabilities, rather than a maximization of, for example, health. As Coast and colleagues (2008) have pointed out, the application of the maximisation principle in a context of capabilities is problematic because issues of redistribution cannot be addressed: it is not possible to transfer capabilities from one person to another; and maximising capabilities without addressing issues of equity and redistribution is not an acceptable option. Perhaps focussing on a minimal acceptable level of capabilities met by the majority of the population could be a feasible policy approach (Coast 2008). Substantial further research is certainly required to address the concerns of maximisation, equity and distribution. However, this study will be limited to develop a measure for assessing the wellbeing of a specific sample of the population, to test and validate the index and eventually to use it to aid comparison across intervention and control clusters in order to detect any change in wellbeing that can be attributed to the Women's Group intervention.

Research Methods

In this study, people will be asked directly to think about and assess their capabilities and functionings in the context of their personal characteristics and external circumstances. Objective measures of the capability set such as the vector of commodities and the vector of personal, societal and environmental characteristics will be used to test the validity of the instrument. In so doing, we are able to get information on perceived capabilities. However, we acknowledge the fact that there might be a disparity that we are not able to detect between what people can actually do/be and what they think they are able to do/be. The process for selecting the attributes and building a capability index will be done using both qualitative and quantitative research methods:

i. Selection of relevant dimensions

To be consistent with Sen's theory, the selection of dimensions of wellbeing will be conducted in a participatory manner using focus group discussions, as has been done by Alkire (2002) and Kinghorn (2008).

The aim of the focus group discussions is two-fold:

- to explore locally relevant concepts of quality of life, dimensions of wellbeing, valuable beings and doings.
- to explore the value and rank of the different concepts.

A topic guide has been designed and will be used to gather information on aspects of life that are important and valuable, aspects of quality of life that are absent/present in people's lives (Grewal, Lewis et al. 2006), and, for the WG members, if the WG had any positive/negative impact on their quality of life (Alkire 2002) p. 226. The topic guide in the appendix should be considered as a draft and is likely to be subject to revision.

The sample includes women who gave birth within the last year from WG only intervention clusters and women who gave birth within the last year from control clusters. There will be eight focus groups, with 6 to 8 participants each.

The sessions will be organized in two parts, according to the two-fold aim previously stated. In the first part of the session, the facilitator will ask the participants to list any *beings and doings* regarded as important and valuable to enjoy a good quality of life. During the exercise, responsive questioning will be used to explore the underlying concepts of quality of life. For example, if the respondent says that she thinks that being able to live in a decent house is essential for a good life, the facilitator will ask what is meant by living in a decent house (for example with corrugated roof as opposed to thatched roof), and why living in a decent house is considered valuable. The valuable dimension of wellbeing will be *being well-sheltered*. If we take for instance Nussbaum's list, in this example the dimension of wellbeing can fall in the category *bodily health*, and is related to the capability of having adequate shelter. The second part of the focus group session will be described in section (d): aggregation of the capability index.

The focus group discussions will be recorded, transcribed verbatim and translated by local researchers who will also be encouraged to record detailed written notes regarding the dynamics and interactions of the discussants. Detailed analysis of the content of transcripts and notes will then be undertaken using framework analysis or descriptive thematic analysis. In drawing the list, care will be taken to avoid including those dimensions that conceptually overlap. The data will be classified in mutually exclusive dimensions of wellbeing.

A final note to clarify: in Grewal's study, the respondents during the explorative phase identified that what was valuable to them was *the capability to function*. In our study, the respondents will be asked to identify what is valuable to them, and this might reflect either as *a state of being or doing*, or *the capability to achieve a valuable state of being or doing*. The survey that is described in the next section will use these dimensions to create the questionnaires and it will assess whether the respondent is able to achieve each of the valuable functionings (wellbeing freedom/capability), and whether she has actually achieved each of them (achieved wellbeing/functioning).

ii. Construction of the questionnaire, pre-test, content validity and piloting

The aim of the survey is to produce information on locally relevant capabilities and functionings and to assess the wellbeing of women in a quantitative manner. The list of dimensions that will be generated through the explorative phase will serve as the backbone of the survey and a first draft of the questionnaire will be developed with the research team. The set of questions will assess the capability to achieve the valuable beings and doings, and the related achieved functionings. In sum, the question will be formulated asking first whether the respondent, given her personal characteristics and external circumstances, possesses the capacity of being or doing what is valued (capability), second it will be asked whether the person is actually doing or being what is valued (functioning). This will provide additional information on the relations between achieved wellbeing and wellbeing freedom; and it will provide an additional test on the validity of the instrument (there should be a positive correlation between functioning and capability: a functioning can be achieved only if the person has the capability to achieve it – although it will be a one-way correlation). Moreover, it will help the respondent to make a distinction between the two concepts.

A lot of care will be given to the translation, pre-testing, piloting and testing of the questionnaire. As Bowden (2002) recommends, a description of the intended referential and connotative meaning for each of the survey questions will be drawn up. This will aid the assessment of content validity and it will facilitate clarification of the concepts for the translation, for use by other researchers, for use over time in the same context or perhaps in different context. Box 1 provides an example of the type of description that will be attached to each question. Assuming that a valuable functioning is *being well-nourished*, the capability question to assess if the functioning is achievable (rather than achieved) will be as follows – see Box 1. **Content validity** will then be tested with think-aloud interviews and paraphrasing.

Box 1. Sample meaning for a Capability question

Given how you are and where you live, are you able to eat sufficient nutritious food on a daily basis?

In this question we want to find out whether the respondent is able to eat enough, and whether the diet is adequately nourishing and varied given her personal characteristics and the environment she lives in. This may include for example having access to vegetables (tomatoes, spinach, aubergine etc according to season) and fruit (mangos, guavas, papaya according to season) every day. It is important to assess whether the respondent is *able* to access the food, purchased or grown in a vegetable garden. In case of purchasing, it will have to be considered the opportunity of accessing a trading centre and to have adequate means of payment (money or in kind). What we want to assess is whether the functioning *being well-nourished* is achievable, and not whether it is actually achieved.

iii. Quantitative data collection

After piloting, the questionnaire will be administered to a larger sample of the MaiMwana Project population. The collected information will permit a more complex statistical analysis for constructing the index and validating the instrument (construct validity and sensitivity). The sampling list of women enrolled in the trial is available at the MaiMwana Project office and women who delivered in the last year will be randomly selected. The sample will be stratified by socio-economic data and urban/rural (proximity to a tarmac road, or to a trading centre). Another aspect that requires attention is whether the cluster lies in a migratory area or not (for example tobacco plantation). **500** women who delivered in the last year will be randomly selected from **WG only** intervention clusters and **500** women who delivered in the last year will be randomly selected from **control clusters**. The clusters will be allocated following discussions with the research team. Information from completed questionnaires will be double entered independently into CSPro and routine checks will be carried out.

iv. Aggregation of the capability index

To estimate the index of capability, different weights will be assigned to each capability question based on qualitative and quantitative tools, and an index will be generated by aggregating the scores for all capability questions. The index will be anchored as follows: absence of capability is 0, full capability is 1. The index is not anchored to length of life (or death).

In this study qualitative and quantitative techniques will be used: statistical methods and participatory exercises. The latter are arguably more coherent with Sen's framework as they generate normatively inspired weights. Principal component analysis will be conducted on the capability data generated through the survey. As Alkire (2005) recommends, it is necessary to conduct an *ex post* assessment of the identified factor variables and of the statistical weights, in order to evaluate whether the dimensions and their weights are in line, corrected or justified by people's values. Hence, a participatory exercise will complement the statistical tool, and the results of the two will be compared.

The participatory exercise will be conducted during the second part of the focus group exercise. Qualitative valuation techniques will be used, the most context-appropriate and feasible methods of

conducting a ranking exercise will be explored. Respondents will be asked to discuss the values, make partial-ordering and finally reach an agreement on the ranking of the dimensions in three categories (indispensable, highly valuable, less valuable).

v. *Validity, reliability and sensitivity of the instrument*

Construct validity will be considered across a set of variables and will be able to generate information about the relationship between perceived capabilities and functionings. As Coast noted, it is difficult to observe capabilities, and usually alternative measures will be related to functioning. However, a functioning can only be performed if the capability is enjoyed by the individual and therefore comparing the capability data with data expressing functionings is meaningful (Coast, Peters et al. 2008). Hence, as mentioned before, the questionnaire will be structured in a way that information will be produced on both functioning and related capability and the association between the two will be explored.

In addition, associations between capabilities measured with the questionnaire, and other characteristics will be investigated using chi-squared tests (for unordered or ordered categorical variables) one-way analysis of variance (for continuous variables) and compared with the relation *a priori*. The other characteristics available are the data collected by MaiMwana Project and the Institute of Fiscal Studies¹¹ (IFS).

At this stage of development it is not straightforward how to describe the expected correlations because the dimensions of wellbeing valuable to the study population are still unknown. However, an example of hypothetical correlations are presented in table 1, based on the variables produced by the MaiMwana Project and the Institute of Fiscal Studies, and the expectation on the available literature (Coast 2008, Lorgelly, 2008). For example, assuming that the capability to express oneself freely appears in our list, a positive association is expected between this capability and the level of education.

Table 1 Variables and expected association *a priori* with capabilities

Variable	A priori expectation
Education	Positive association with the ability of express oneself freely

¹¹The information that MaiMwana Project is collecting is related to: women’s and their partner’s socio-economic status, antenatal and newborn health-seeking behaviour and care practice, malaria prevention and ITN use, HIV and sexual behaviour, family planning use and access, exposure to WGs, knowledge about pregnancy-related issue, participation to community life, control over personal and children’s health.

The Institute of Fiscal Studies is currently conducting a large scale survey in the area to assess the impact of MaiMwana Project interventions on human and social capital. IFS is collecting information on: household food and non-food consumption, household assets, ability to cope with risks, social networks and interactions, debts and lending, health of other members of the household (children under 5 years of age and others), income generating activity.

Age	Strong negative relation with capabilities of control (perhaps younger women feel less in control?)
Knowledge of health-related issues	Positive association with capabilities related to knowledge and control
Health status	Strong positive association with the majority of the capabilities. Maybe weak evidence of correlations with capabilities related to affiliation/attachment
Assets	Strong positive association with the majority of the capabilities
Antenatal and newborn health care practice	Strong positive association with the ability to access care and knowledge
Antenatal and newborn health seeking behaviour	Strong positive association with the ability to access care and knowledge
Proximity to a antenatal clinic	Strong positive association with the ability to access care
Proximity to a health clinic	Strong positive association with the ability to access care
Proximity to trading centre / market / tarmac road	Strong positive association with the majority of the capabilities related to movement, employment, access to care, access to education, access to food
Food consumption	Strong positive association with the capability of being well-nourished
Ability to cope with risks	Strong positive association with the capability of being well-sheltered,
Exposure to WG	Strong positive correlation with the capabilities related to control, decision, self-determination, access to the care, knowledge
Number of WG meetings attended	Strong positive correlation with the capabilities related to control, decision, self-determination, access to care, knowledge
Role in the group	Strong positive correlation with the capabilities related to control, decision, self-determination
Participation/affiliation/social networks	Strong positive association with the ability to participate in community activities, and to enjoy the interaction and respect of other members of the community
Employment/income generating activities	Strong positive association with the ability of being economically independent
Control and empowerment	Strong positive association with the ability to access care, the ability to influence community life, household life and personal life
Socio-economic characteristics of WG facilitator	This variable will be used to assess to what extent the WG facilitator has an influence on the development of the WG and hence on the capability index
Proximity of WG facilitator's home to the WG meeting place	This variable will be used to assess to what extent the WG facilitator has an influence on the development of the WG and hence on the capability index
Interviewer	This variable will be used to check for interviewer biases

Test-retest reliability will be checked in order to assess the extent to which the survey will yield the same results on repeated trials.

The randomised design of the trial and the comparison control/intervention clusters will enable us to assess sensitivity and change of some variables of the capability index. We expect to see a difference in the average index measure between clusters where the intervention Women's group is taking place and clusters with no intervention. For example, assuming that two valuable and relevant dimensions of wellbeing are *affiliation* and *control* as it is for Nussbaum (or similar: *social interaction* and *independence/control* for Kinghorn (2008) and *attachment* and *control* for Grewal (2006)), we expect to see a difference in the capability index for these two variables, due to the women's group interventions.

Final remarks

When assessing public health interventions, health economists face several challenges in capturing the complexity of their nature. Public health and community based programmes are likely to have an impact on broad quality of life and the identification and measurement of outcomes should take into account health and non-health aspects of wellbeing. Standard evaluation measures might fail to address comprehensively the complexity and multidimensionality of these interventions.

The Capability framework has been proposed as an alternative. In short, the main advantages in choosing to adopt this approach compared to others are:

- it includes broader measure of wellbeing,
- it focuses on the *freedom* to achieve rather than on the commodities possessed or the utility derived from these commodities,
- it is not based on preferences,
- it encourages researchers and decision makers to make the value judgments explicit, open to debate and perhaps more in line with people's values.

Sen's approach suggests that functionings and the capacity to achieve valuable functionings are the important factors to be considered while assessing people's wellbeing. Hence, social policies should be evaluated according to the extent to which they expand the freedom people have to promote or achieve functionings that they value. Finally, equality is to be demanded in the space of capabilities.

The Capability approach has already changed the theoretical underpinning and hence the empirical application of health economics. However its application until now has been partial, and only recently it is felt that its contribution could be much greater, in particular in the field of health promotion.

If the capability index is found to be a reliable, sensitive and valid measure of wellbeing, this study will provide a starting point to critically investigate the feasibility of using such an index as an outcome measure in economic evaluation. However, some issues remain unresolved. Some points for discussions can be:

- i. Is the process for generating data (focus group discussion and questionnaire) adequate to capture *capabilities*?
- ii. Is the valuation exercise (participatory process + principal component analysis) consistent with *health economics*?
- iii. How can the process for the validation of findings be more robust?
- iv. How can we address issues of comparability across different groups of individuals (beyond pregnant women in Mchinji District) ?

- v. How can the index be used in economic evaluation? How can we address issues of maximisation and distribution?

References

- Alkire, S. (2002). Valuing Freedoms: Sen's Capability Approach and Poverty Reduction, Oxford University Press, USA.
- Alkire, S. (2005). Measuring the Freedom Aspects of Capabilities. American Economic Association Conference, mimeo Harvard University.
- Anand, P. (2005). "Capabilities and health." J Med Ethics **31**(5): 299-303.
- Anand, P. (2005). "QALYs and capabilities: a comment on Cookson." Health Economics **14**: 1283-1286.
- Anand, P. and M. van Hees (2006). "Capabilities and achievements: An empirical study." Journal of Socio-Economics **35**(2): 268-284.
- Anand, P., G. Hunter, et al. (2005). "Capabilities and Well-Being: Evidence Based on the Sen–Nussbaum Approach to Welfare." Social Indicators Research **74**(1): 9-55.
- Anand, S. and A. Sen (1994). Human Development Index: Methodology and measurement, New York: Human Development Report Office.
- Atkinson, A. B., T. Atkinson, et al. (2002). Social Indicators: The EU and Social Inclusion, Oxford University Press, USA.
- Borghì, J. and S. Jan (2008). "Measuring the benefits of health promotion programmes: Application of the contingent valuation method." Health Policy **87**: 235–248
- Bowden, A., Fox-Rushby JA, Nyandieka L, Wanjau J. (2002) "Methods for pre-testing and piloting survey questions: illustrations from the KENQOL survey of health-related quality of life" Health Policy and Planning **17**(3): 322:330
- Burchardt, T., J. Le Grand, et al. (2002). Constraint and Opportunity: Identifying Voluntary Non-employment, London School of Economics and Political Science, Centre for Analysis of Social Exclusion.
- Chambers, R. (1995). "Poverty and livelihoods: whose reality counts?" IDS Discussion Paper **347**.
- Chambers, R. (1997). Whose reality count? Putting the last first London. London: Intermediate Technology
- Chiappero Martinetti, E. (1994). "A new approach to evaluation of well-being and poverty by fuzzy set theory." Giornale Degli Economisti e Annali di Economia **53**: 367-88.
- Chiappero-Martinetti, E. (2000). "A multi-dimensional assessment of well-being based on Sen's functioning theory." Revista Internazionale di Scienze Sociali **58**(207-39).
- Clark, D. A. (2008). Relevant Criteria for Selecting Indicators: A Proposal. Equality and Human Rights Commission (EHRC) project on 'Developing the Equality Measurement Framework: Selecting

_____. London Centre for the Analysis of Social Exclusion, London School of Economics and Political Science

- Coast, J. (2004). "Is economic evaluation in touch with society's health values?" *Br Med Assoc.* **329**: 1233-1236.
- Coast, J., R. Smith, et al. (2008). "Welfarism, extra-welfarism and capability: The spread of ideas in health economics." *Social Science & Medicine* **67**(7): 1190-1198.
- Coast, J., R. Smith, et al. (2008). "Should the capability approach be applied in Health Economics?" *Health Economics* **17**(6): 667.
- Coast, J., T. J. Peters, et al. (2008). "An assessment of the construct validity of the descriptive system for the ICECAP capability measure for older people." *Qual Life Res.*
- Coast, J., T. N. Flynn, et al. (2008). "Valuing the ICECAP capability index for older people." *Soc Sci Med.*
- Cooke, B. and U. Kothari (2001) Participation: the new tyranny? London and New York: Zed books
- Cookson, R. (2005). "QALYs and the capability approach." *Health Economics* **14**(8): 817-829.
- Culyer, A. J. (1989). "The normative economics of health care finance and provision " *Oxford Review of Economic Policy* **5**(1): 34-58.
- Dolan, P., Shaw, R., Tsuchiya, A. and A. Williams (2005). "QALY maximisation and people's preferences: a methodological review of the literature" *Health Economics* **14**: 197-208
- Dolan, P. (2008). "Developing methods that really do value the 'Q' in the QALY." *Health Economics, Policy and Law* **3**: 69-77.
- Drummond, M. (2008). *Assessing the challenges of applying standard methods of economic evaluation to public health*, York, Public Health Research Consortium, University of York.
- Green LW, Lewis FM (1986) Measurement and evaluation in health education and health promotion. Palo Alto: Mayfield
- Grewal, I., J. Lewis, et al. (2006). "Developing attributes for a generic quality of life measure for older people: Preferences or capabilities?" *Social Science & Medicine* **62**(8): 1891-1901.
- Hale, J. (2000). "What contribution can health economics make to health promotion?", *Oxford Univ Press.* **15**: 341-348.
- Ibrahim, S. and S. Alkire (2007). *Agency and Empowerment: A proposal for internationally comparable indicators*, OPHI Working Paper.
- Kinghorn, P, and R. Smith (2008). From theory to practice: are we capable of operationalising the Capability Approach? Paper presented at the Health Economists' Study Group, January 2008.
- Kinghorn, P., R. Smith, et al. (2007). Developing the capability approach to assess quality of life in patients with chronic pain International Health Economics Association Congress, Copenhagen
- Kitzinger, J (1995). "Qualitative Research: Introducing focus groups" *Education and debate* working paper series, Glasgow University Media Group, Department of Sociology, University of Glasgow

- Klasen, S. (2000). "Measuring Poverty and Deprivation in South Africa." Review of Income & Wealth **46**(1): 33-58.
- Kuklys, W. and I. Robeyns (2004). Sen's Capability Approach to Welfare Economics, Springer.
- Lorgelly, P., L. K, et al. (2008). The Capability Approach: Developing an instrument for evaluating public health interventions. Final report. Glasgow, Glasgow Centre for Population Health.
- MaiMwana Project "Improving essential maternal and newborn care in poor rural communities in Malawi: a community effectiveness trial of two health promotion interventions to reduce maternal and neonatal mortality" MaiMwana Project proposal. Mimeo
- Mooney, G. (2005). "Communitarian claims and community capabilities: furthering priority setting?" Social Science & Medicine **60**(2): 247-255.
- Nussbaum, M. C. (2000). Women and Human Development: The Capabilities Approach, Cambridge University Press.
- Nutbeam, D. O. N. (1998). "Health promotion glossary." Health Promotion International **13**(4).
- Ravallion, M. (1997). "Good and bad growth: The human development reports." World Development **25**(5): 631-638.
- Robeyns, I. (2003). "[Book review] Valuing Freedoms: Sen's Capability Approach and Poverty Reduction, Sabine Alkire. Oxford University Press, 2002, vii+340 pages. ." Economics and Philosophy **19**(02): 371-77.
- Robeyns, I. (2003). "Sen's Capability Approach and Gender Inequality: Selecting Relevant Capabilities " Feminist Economics **9**(2): 61 - 92.
- Robeyns, I. (2005). "Selecting Capabilities for Quality of Life Measurement." Social Indicators Research **74**(1): 191-215.
- Robeyns, I. (2005). "The Capability Approach: a theoretical survey." Journal of Human Development **6**(1): 93 - 117.
- Robeyns, I. (2006). "The Capability Approach in Practice." Journal of Political Philosophy **14**(3): 351-376.
- Robeyns, I. and W. Kuklys (2004). "Sen's Capability Approach to Welfare Economics", Cambridge Working Papers in Economics **0415**.
- Rosato, M., C. Mwansambo, et al. (2006). "Women's groups' perceptions of maternal health issues in rural Malawi." The Lancet **368**: 1180-88.
- Rosato, M., G. Laverack, et al. (2008). "Community participation: lessons for maternal, newborn, and child health." The Lancet **372**(9642): 962-971.
- Rychetnik, L., M Frommer, P Hawe, A Shiell (2002) "Criteria for evaluating evidence on public health interventions", Journal of Epidemiology and Community Health **56**:119-127
- Saith, R. (2001). Capabilities: the Concept and its Operationalisation. Queen Elizabeth House Working Paper University of Oxford **Working Paper 66**.

- Schokkaert, E. and L. Van Ootegem (1990). "Sen's concept of the living standard applied to the Belgian unemployed." Recherches Economiques de Louvain **56**(429-450).
- Sen, A. (1977). "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory." Philosophy and Public Affairs **6**(4): 317-344.
- Sen, A. (1977). "Social choice theory: A re-examination." Econometrica **45**(1): 53-89.
- Sen, A. (1982). Choice, welfare and measurement. Cambridge, MA, Harvar University Press.
- Sen, A. (1985). "Well-being, Agency and Freedom: The Dewey Lectures 1984." The Journal of Philosophy: 169-221.
- Sen, A. (1985). Commodities and capabilities Oxford University Press.
- Sen, A. (1987). On Ethics and Economics, Blackwell Publishers.
- Sen, A. (1987). The Standard of Living: Lecture II, Lives and Capabilities. The Standard of Living: The Tanner Lectures on Human Values Cambridge Cambridge University Press.
- Sen, A. (1992). Inequality Re-examined, New York.
- Sen, A. (1993). "Capability and Well-Being." In Nussbaum, M. and Sen, A. The Quality of Life, Claredon paperbacks.
- Sen, A. (1999). Development as Freedom. Alfred A. Knopf, New York.
- Sen, A. (2002). "Why health equity?" Health Economics **11**(8): 659-666.
- Sen, A. (2003). Development as Capability Expansion. Foreword to "Readings in Human Development. Concepts, Measures and Policies for a Development Paradigm", ed. by S. Fukuda-Parr and AK Shiva Kumar, Oxford University Press, Oxford.
- Sen, A. (2005). "Human Rights and Capabilities." Journal of Human Development **6**(2): 151-166.
- Shiell, A. and P. Hawe (1996). "Health promotion community development and the tyranny of individualism." Health Economics **5**(3): 241-247.
- Sugden, R. (1993). "Welfare, Resources, and Capabilities: A Review of Inequality Reexamined by Amartya Sen." Journal of Economic Literature **31**: 1947-1947.
- Vizard, P. and T. Burchardt (2007). Developing a capability list: final recommendations of the equalities review steering group on measurement. CASE paper 121. London, Centre for Analysis of Social Exclusion, London School of Economics and Political Science.
- Watson, V., M. Sutton, et al. (2008). "Deriving weights for the Index of Multiple Deprivation based on societal preferences: The application of a discrete choice experiment." Oxford Poverty and Human Development Initiative (OPHI) Working Paper 23.
- World Bank (2004). Poverty Monitoring Guidance Note 1: Selecting Indicators. Poverty Reduction Group, Poverty Reduction and Economic Management Network.