



# Conceptual Framework and Guidelines for Methodology

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## **1. Introduction and Overall Methodology Statement**

The overall goal of the AgriDiet project is to contribute to poverty reduction through the identification of policies and interventions that can make a positive impact on the nutritional status of vulnerable rural households. This will be achieved through a multi-faceted programme of policy analysis, field research, training, information dissemination and stakeholder engagement.

The specific objectives of the programme are as follows:

1. To critically assess how agricultural policies and practices in Ethiopia and Tanzania, in the context of broader socio-economic policies, address nutritional goals, especially for women and children, and the possibilities for scaling-up of promising initiatives
2. To identify the social, economic and environmental factors influencing local agricultural practices in four selected sites, and the implications for nutritional status of members of rural households
3. To facilitate the creation of a network of stakeholders to address nutrition issues in Ethiopia and Tanzania
4. To build the capacity of stakeholders to mobilize knowledge, promote participation and increase the evidence base for informed policy making and practice in the area of agriculture-nutrition linkages

A programme of nine integrated Work Packages has been designed to achieve these objectives. International- and national-level reviews of agriculture-nutrition linkages will provide analysis of recent policy developments and experiences. These reviews will contribute to the design of field studies in Ethiopia and Tanzania and the identification of key policy questions for further investigation. Field research will then be carried out in rural areas of high nutritional vulnerability; these constitute the core of the AgriDiet research and the focus of the six doctoral theses. These household-level studies will be augmented through multi-dimensional studies of local food systems, markets and support services, as a means of situating the household data within the social, economic and policy context.

Looking beyond the immediate study sites, a review of recent pro-nutrition interventions in the agricultural sector in Ethiopia and Tanzania will be conducted, in order to identify initiatives with potential for scaling up., Sustained engagement with stakeholders at multiple levels, throughout the process, will help to shape the detailed research design while also creating a receptive audience for emerging policy recommendations. Taken together, the AgriDiet programme of research, policy analysis and stakeholder engagement is designed to substantially advance the understanding of agriculture-nutrition linkages in Ethiopia and Tanzania, and generate evidence-based policy recommendations.

### **1.1 Defining Characteristics of the AgriDiet Project**

AgriDiet is informed by the following features, which will guide all aspects of our research and policy engagement:

- A focus on chronic undernutrition, particularly of women and children

- In-depth analysis of agriculture-nutrition linkages, in specific local contexts
- Mutually-supporting investigations at multiple levels: international, national, regional and local
- An integrated, multi-disciplinary approach that brings together expertise in the areas of agriculture, nutrition, rural development, food policy, economics and sociology
- Multi-dimensional research methods within a single site, combining quantitative and qualitative methods of data gathering and analysis
- A critical appreciation of social relations, particularly gender relations, at the household and community levels
- Close linkages between research and policy, to be advanced through continuous engagement with a wide range of policy makers, local stakeholders and international donors
- A collaborative approach to all aspects of project management and implementation, including publications, that strengthens relationships between team members
- A commitment to building the capacity of our team members and partners, particularly African-based doctoral students.

## **1.2 Research Questions**

This document focuses specifically on the research components of the AgriDiet project. AgriDiet research is structured around three research questions:

1. How does the wider economic and policy environment impact on food systems and human nutrition?
2. In what ways do current agricultural and food systems impact on nutritional status, particularly of women and children
3. What existing agricultural initiatives are likely to have positive impacts on nutritional status and have potential for wider application?

These, and the associated research methods, are discussed in detail below.

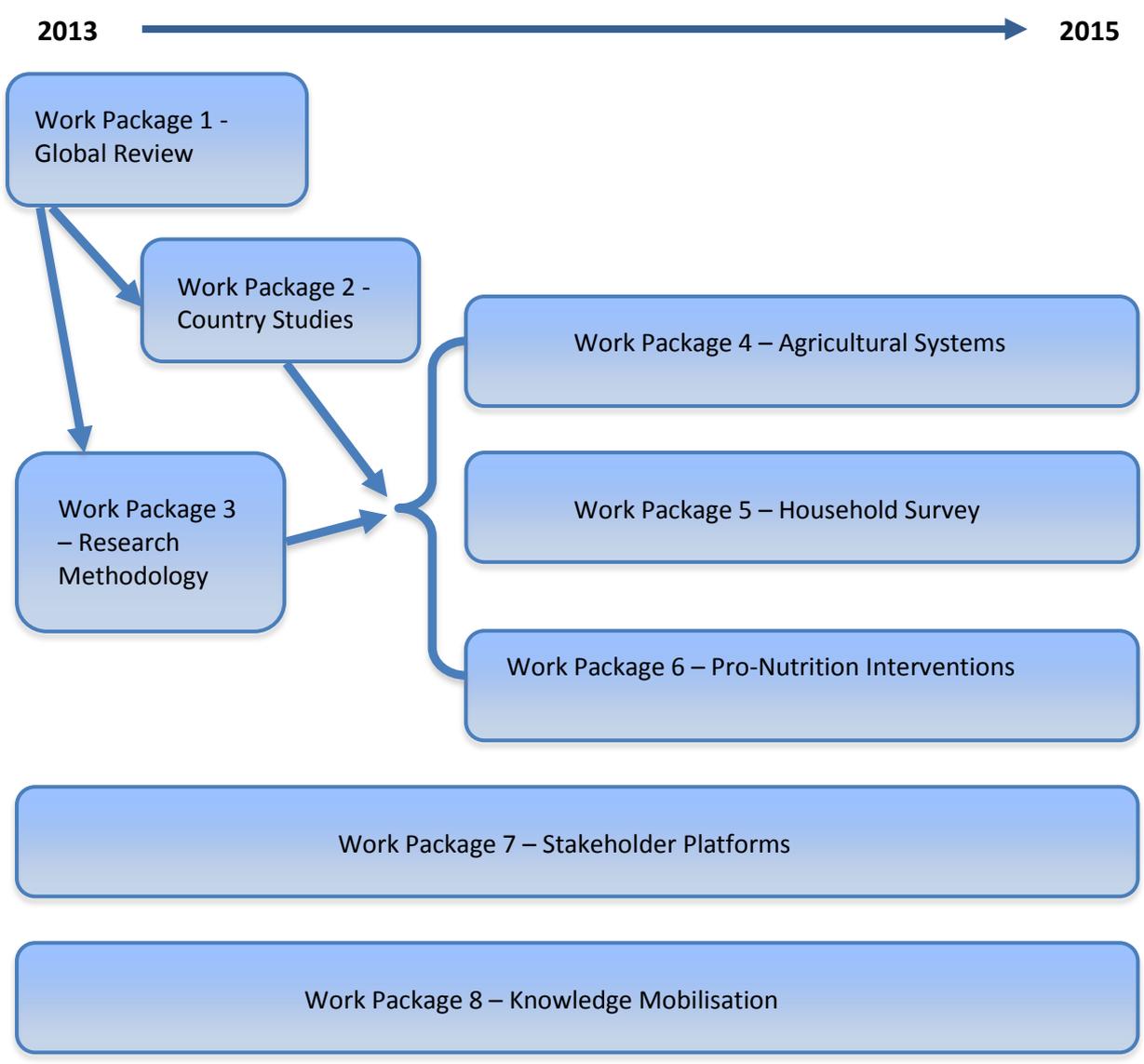
Table 1 shows the relationship between the overall objectives and research questions of the project, and the Work Packages.

**Table 1 - AgriDiet Objectives, Work Packages and Research Questions**

<b>Objectives</b>	<b>Work Packages</b>	<b>Research Questions*</b>
1. To critically assess how agricultural and broader socio-economic policies and practices address nutritional goals, especially for young women and children	Work Package 1 and 2	1. How does the wider economic and policy environment impact on food systems and nutrition?
2. To identify social, economic and environmental factors influencing local agricultural practices and implications for nutrition	Work Packages 3, 4, 5 and 6	2. In what ways do current agricultural and food systems impact on nutritional status, particularly young women and children. 3. What existing agricultural initiatives are likely to have positive impacts on nutritional status and have potential for wider application?
3. To facilitate the creation of a stakeholder network and construction of a stakeholder platform to address nutrition issues	Work Package 7	Findings from research questions 1 to 3 will inform and be informed by discussions within the stakeholder networks.
4. To build the capacity of partners to mobilise knowledge, promote participation and increase the evidence base for informed policymaking and practice in agriculture-nutrition linkages	Work Packages 5 and 8	Findings from research questions 1 to 3 will contribute to the evidence base

Diagram 1 below shows the overall sequencing of the project. The global review of state-of-the-art thinking on agriculture-nutrition linkages in Work Package 1 will feed into the country policy studies for Ethiopia and Tanzania in Work Package 2. Together, these will be used to develop the field research in Work Package 4 (agricultural systems and value chains at the meso-level), Work Package 5 (the detailed household surveys on agriculture and nutrition linkages) and Work Package 6 (pro-nutrition agricultural interventions in Ethiopia and Tanzania). The methodology guidelines under Work Package 3 will also support the field research in Work Packages 4, 5 and 6. The stakeholder platforms under Work Package 7 and knowledge mobilisation activities under Work Package 8 will run over the whole course of the project.

**Diagram 1 - Sequencing of AgriDiet Work Packages from 2013 to 2015**



## 2. Conceptual Framework

In order to support the programme of research outlined here, the AgriDiet team has collectively generated a conceptual framework illustrating the multiple links between activities and actors within the food system. This draws on two established conceptual frameworks for food security, those of the FAO Food Insecurity and Vulnerability Information and Mapping Systems or FIVIMS (FAO 2000) and the UNICEF framework (UNICEF 1990). It also bears some similarity to the framework used in a recent Conference Brief by IFPRI (Gillespie and Kadiyala 2011).

The following diagram provides a schematic overview of the food system, showing the key levels and relationships that will be investigated as part of the AgriDiet research. Reading from left to right, AgriDiet research will focus on international, national, sub-national (district and community), household and individual levels.

At the international level, Work Package 1 will consist of a broad review of development policy and practice in relation to agriculture-nutrition linkages, providing key theoretical and methodological insights that will frame the national policy reviews and the in-depth field work (see below).

At the national level, attention will be given to policy and law in the areas of agriculture, food security, nutrition and health (including water and sanitation), as well key socio-economic development indicators. This will be carried out largely through Work Package 2.

At the sub-national level, attention will be given to agricultural systems, services and infrastructure, and interventions in the agro-food system by state and non-state actors. This will be carried out largely through Work Package 4. Assessments of on-going agricultural and natural resource management interventions which have nutritional objectives will also be conducted, in order to identify interventions which provide lessons and potential for scaling up. This work will be done primarily in Work Package 6.

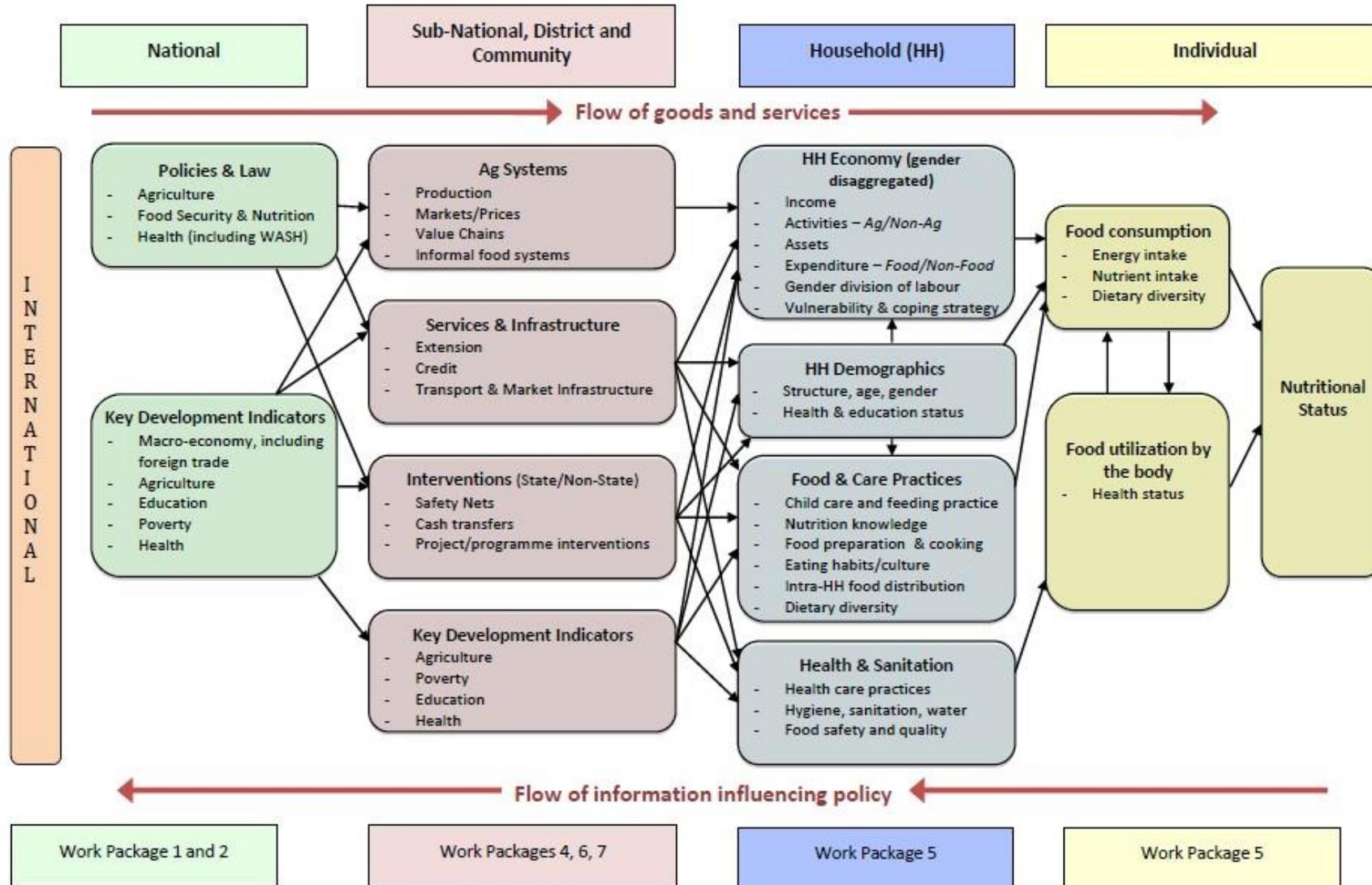
At the household level, attention will be given to economic activities (both farm and non-farm) asset ownership, social relations, demographic structure, food security status, food and care practices, consumption habits, gender division of labour, women's education, health, water and sanitation. This will be carried out largely through Work Package 5.

At the individual level, attention will be given to food consumption of women and children and factors influencing food utilisation (e.g. frequency of meals and dietary diversity). Ultimately, the key measure of a food system is the nutritional status of individuals and this will be assessed by a range of measures to include anthropometry and, where possible, analysis of micronutrient status. This work will be carried out largely through Work Package 5.

Analysis of each element within the conceptual framework, the multiple and multi-directional linkages between the elements and the functionality of the agro-food system with its national and international context constitute the core activities of the AgriDiet research, as outlined in the main sections of this document.

The research will be conducted concurrently with a process of stakeholder engagement which will aim to bring together policy makers, practitioners and researchers around agriculture-nutrition issues in both countries. This work will be carried out in Work Package 7. Dissemination activities, including a project website, policy briefs, and links to broader on-line communities of practice, will be carried out in Work Package 8.

### AgriDiet Conceptual Framework



### **3. Work Package 1 – Global Overview of Current Theory and Policies on Agriculture-Nutrition Linkages**

Work Package 1 aims to deliver an international review of policy and practice in relation to agricultural-nutrition linkages, through a desk review. It will take the form of a synthesis of recent scholarship on agriculture-nutrition linkages and policy innovations, with five main objectives:

1. map the global trends affecting food systems in low-income countries, particularly in sub-Saharan Africa
2. highlight key debates and state-of-the art practice in the area of agriculture-nutrition linkages, with particular focus on research methodologies
3. establish a comparative framework for the national reviews in Ethiopia and Tanzania
4. develop theoretical and methodological insights that will inform the design of the field studies
5. identify recent policy initiatives in the areas of agriculture and nutrition with potential for wider application /scaling up (and which, together with the national reviews carried out under WP2, can help start a dialogue with policy makers and other stakeholders).

Particular attention will be given to the challenge of micronutrient deficiencies, the pathways through which agriculture and nutrition are linked, barriers to greater emphasis on nutrition in key policy areas (e.g. agriculture), known research gaps, and the challenges of measuring nutritional outcomes.

The international review will serve as an important input to other components of the AgriDiet research, and raise key questions of relevance to our core target audience.

### **4. Work Package 2 – Country Studies**

The objective of the Ethiopia and Tanzania Country Studies is to critically assess how agricultural and broader socio-economic policies and practices address nutritional goals, especially for children and young women, and the possibilities for scaling-up of successful projects.

These studies will provide up-to-date analysis of the macro-economic and policy environment, linking the findings of the international review (above) with the more local studies outlined below. A strong emphasis on gender-disaggregated statistics and analysis will be pursued throughout. The country studies (one each for Ethiopia and Tanzania) will form the core activity of Work Package 2, and will be based largely on desk documentary analysis and personal interviews with key informants.

The scope of the studies will include both external (international) and internal (national and sub-national) factors potentially impacting on food and nutrition in the study country. These will include - but not be limited to - the following:

- Key international influences on national food security, e.g. food prices, multilateral programmes, trade policy, climate change
- National development indicators, e.g. demographic trends, hunger, poverty, status of women, distribution of income, land and other assets, health, education, sanitation, safety nets;
- Relevant policies and laws in the area of agriculture, food and nutrition; this will include policies that address these issues directly (e.g. food security) and indirectly (e.g. nutritional dimensions of agriculture, health and other programmes)
- Role of the private sector in agriculture and nutrition systems
- Policy debates and actors: who is driving policy and with what objectives? What voices remain marginalised?

Specific research questions which will serve as a guide for the country studies are set out below:

1. What are the key agriculture-nutrition issues in the country?
2. To what extent has recent agricultural policy taken nutrition into account, both in terms of the stated policy and what is being implemented?
3. How does agriculture policy balance the need to increase production of staple crops, increase income through cash crops and other objectives (e.g. diversification, food security at any level, etc.)?
4. How does policy address intra-household issues on nutrition, if at all?
5. How does policy address micronutrient status, if at all?
6. How does policy address issues related to the operation of value chains and market imperfections (e.g. availability of agricultural inputs, functioning of agricultural and food markets, and bargaining power within value chains)?
7. How coherent or contradictory is policy relating to nutrition across multiple sectors?
8. Is there evidence of cross-sectoral links in government – e.g. between the Ministry of Health and Agriculture – and if so, how effective are the links?
9. What is the extent of food price volatility for specific agricultural commodities in specific locations?
10. How does policy address access to land, and security of tenure, for both men and women?
11. What social protection policies and programmes are in place, and to what extent and in what ways do they take nutritional outcomes into account?
12. What recent studies have been conducted in the country on agriculture-nutrition linkages, and what are the key findings?

The studies will clearly identify (a) the key challenges in relation to agriculture-nutrition linkages for the country, and (b) the specific issues which the AgriDiet project needs to address through the meso-level and household-level studies.

## **5. Work Package 4 – Agricultural Systems at Meso-level**

The overall objective of the meso studies is to identify and understand factors within agricultural systems, above the household level, which influence local food and nutrition security. This links with the household survey in Work Package 5 by helping to identify differences within woredas/districts that can facilitate the selection of specific villages for the household level studies.

The first step will be a rapid appraisal approach that will identify key characteristics of the rural economy, including demographics, land use systems, water resources, energy conditions, income distribution, livelihoods, production characteristics (agriculture and non-agriculture), food security, nutritional status, agro-ecological descriptions, infrastructure, market access, government services and programmes by development actors, all disaggregated by gender where relevant. This will be based on available data (published or unpublished, particularly from local sources) and interviews with key local informants.

An assessment will next be made of local markets, including retail food markets, agricultural commodity markets and agricultural input markets. The purpose of these studies is to identify how markets impact, directly or indirectly, on income and on food and nutrition security, investigating both retail and wholesale market structures and functions for the main commodities, the key actors involved, and price trends and fluctuations. This assessment will identify the key food and cash crops as well as livestock products and markets in the area.

The initial assessments will draw from the rapid rural appraisal (RRA) methodology instigated by the Consultative Group on International Agricultural Research Centres (CGIAR) and refined by the FAO (Crawford 1997) , as well as the rapid market appraisal approach developed by the International Labour Organisation (ILO 2006) and the recent IDS tools, developed with the Global Alliance for Improved Nutrition, to strengthen the link between agriculture and nutrition (Henson et al 2013).

The second main step will be to select at least two of the commodities identified in each area as being crucial to nutrition and/or income and conduct a detailed analysis of their value chains.. There will be a particular focus on the impact of value chains on vulnerable households, and especially on women and children.

The value chain work will draw on the work of Hawkes and Ruel (2011) in identifying key dimensions of nutrition along the value chain, as well as value chain mapping and analytical methodologies, as developed by Kaplinsky and Morris (2001) and work published by the ILO on mainstreaming gender in value chain analysis (Mayoux and Mackie 2007).

## **6. Work Package 5 – Household Research**

The household level research will be based upon the collection of detailed information on diet, nutritional outcomes and the many variables affecting such outcomes at household level. This will involve the collection of both quantitative and qualitative data on the same

issues and households through a range of instruments including a household survey, focus group discussions, in-depth interviews with key informants, in-depth investigation of nutritional status in a sub-set of households and insights from field observations over about 12 months. The methodology for the sub-set of households is described in section 6.4.

The household survey will be conducted twice over the 12-month period, with the same respondents, with the omission of some background issues in the second iteration. The design of the household survey will draw on the Household Economy Approach (Save the Children) and the Sustainable Livelihoods Framework. Specific modules will focus on the household economy, demographics, food and care practices and health and sanitation, including packages for diet diversity at household and individual level – recently developed by FAO, which comes from the FANTA Project.

Analysis of the survey data will identify how current food systems impact on nutritional status using a range of quantitative methods such as propensity score matching techniques. Moreover, the association between nutritional status of women and children on the one hand and socioeconomic conditions on the other hand, will be established using advanced econometric techniques in order to identify possible policy interventions. Descriptive statistics will be used to identify key differentiating and correlating factors within the sample and across the study areas in each country. Household food balance approaches will be used to identify the sources of food groups and micronutrient availability at household level. Linear Programming models will be used to assess the affordability of nutritionally adequate diets, drawing on, for example, the minimum cost of diet methodology developed by Save the Children UK (SCF).

### **6.1 Study Areas and Site Selection**

There will be two study areas in each country, chosen to be representative of major farming systems, each within areas vulnerable to food insecurity. In Ethiopia this will be one woreda in Tigray region and one woreda in Oromia; in Tanzania two districts will be selected, one in the Lake zone area and another in central Tanzania. Key country-specific determining factors, e.g. agro-ecological zone/altitude, will also be considered in the identification of specific study areas.

Within each study area one or two sites will be selected. These sites will be as representative as possible of the farming systems and vulnerable populations in the area, and will exclude locations where exceptional interventions or events have taken place in recent years.

In Ethiopia, the Tigray site will be chosen to represent a highland/mid-highland agro-ecological zone and the Oromia site will represent a lowland zone. Specific sites in Tanzania will be selected based on contrasting agro-ecological zones and associated farming systems that represent a high proportion of rural households in the country.

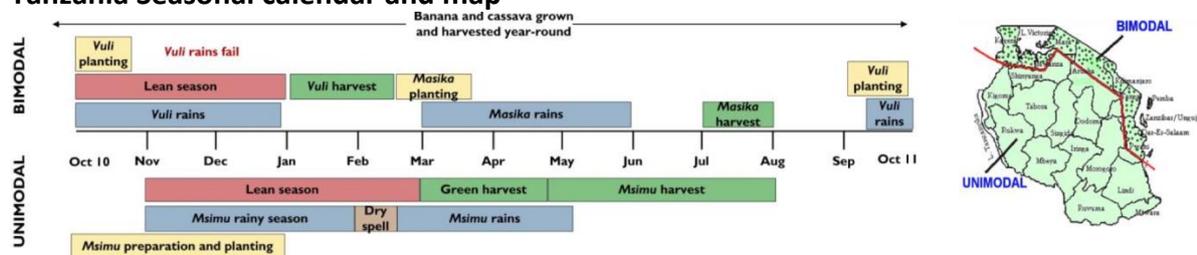
### **6.2 Sampling**

Sample size will be determined based on power calculations specific to Ethiopian and Tanzanian target populations. In Ethiopia, it is intended to sample approximately 400

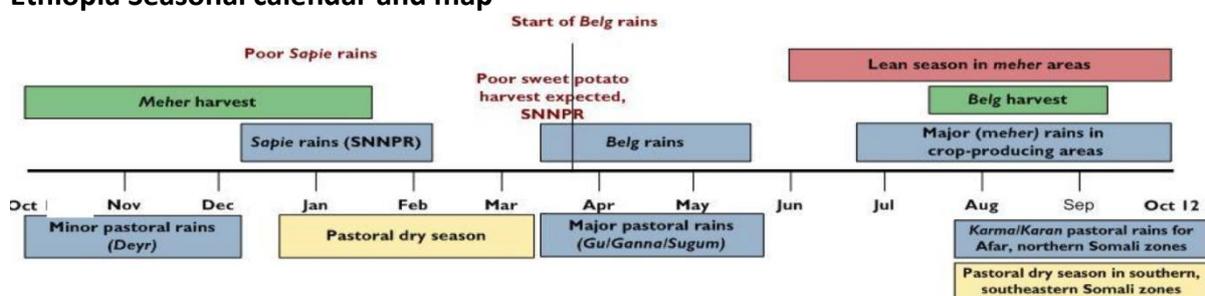
households in each study area, depending on the availability of resources: sample sizes for Tanzania will be included at a later date. Two PhD students will be responsible for organising and managing the general household surveys in each country. The sample households will be selected to ensure that there are a sufficient number of households with children under the age of 2. Details of the sampling approach and final sample sizes will require further discussion.

The households in each site will be surveyed twice over a 12-month period, once before harvest and once again after harvest to reflect food shortage and surplus periods. In Tanzania, the first survey will be conducted in the early months of 2014 during the pre-harvest period, with a second round survey in the post-harvest period between August and October. For Ethiopia the lean season in Meher (main harvest) areas is July to September and the harvest following in October through January, so the survey will start in the post-harvest period between January and March 2014, with a second survey in the short season between July and September.

### Tanzania Seasonal calendar and map



### Ethiopia Seasonal calendar and map



Source : USAID FEWS-Net

## 6.3 General Household Questionnaire

The questionnaire will follow the structure of the sustainable livelihoods approach, with particular emphasis on collecting data on the sources of food at household level. The questionnaire will be structured in terms of four modules, corresponding with the household-level factors shown in the conceptual framework. A sub-sample will be selected for more in-depth study of diet and nutritional status (see below).

### 6.3.1 Module 1: Demographics

Demographic variables will be collected via a household roster, including household ages, gender, attained level of education and relationships to household head, as well as employment status.

### 6.3.2 Module 2: Household Economy

This section will include housing quality and condition, ownership and access to land, livestock and other productive assets and ownership of durable goods.

Agricultural activities will be detailed for both the pre and post-harvest surveys.

The pre-harvest survey will include farm size, land use and tenure, detailed input/output data on crop and livestock production (providing data on crop diversification), as well as own usage, losses, sales, barter and prices from the previous year, which may comprise a main and minor harvest. The input data will include labour time on the farm by household member. The survey will also include information that, together with the demographic data (above), will allow us to assess the level of women's empowerment. For this purpose relevant indicators in the study context will be adapted from IFPRI's (2012) Women's Empowerment in Agriculture Index.

The post-harvest survey will not include as much detail on the farm structure and ownership, but will incorporate input/output data on crops and livestock, with immediate post-harvest sales and prices, amounts stored and estimated supplies versus needs until the next harvest.

The survey will also consider trends in cropping followed by households – e.g. cash crop orientation versus food crop – as well as general trends within farming such as temporal intensification by investing in irrigation for off-season production.

Non-agricultural activities will require a list of all off-farm income sources for the household, including income from employment, remittances and income from own businesses.

The survey will seek to determine the extent to which the household is embedded in relations with other households both inside and outside of the village that are part of, or have an impact on, its livelihood strategies and its nutritional status, whether based on kinship, proximity in residence, gender, ethnicity, age, political affiliation, etc. The questionnaire will include labour-exchanges (whether paid or gratis/reciprocal), shared farm inputs and outputs, shared food, fuel and water, money loans, child care, and producer group work and advice.

Information will be gathered on expenditure on the main foods purchased or otherwise acquired each week, with quantities and prices, as well as those foods less regularly acquired. This will include food bartered or provided gratis, and food aid under social programmes.

Participation in public safety net programmes will also be investigated, including food for work, food aid and cash transfers.

In order to understand coping strategies, the survey will explore whether households suffered any shocks in recent years and if so what coping strategies were employed and how successful they were. Detailed methodology guidelines are provided by Maxwell and Caldwell (2008) and, for the Ethiopian context, by Doocy et al (2005).

### 6.3.3 Module 3: Food and Care Practices

The main household survey will include a number of questions related to food consumption, including the household dietary diversity (HDDS), individual (women and children) diet diversity (WDDS and CDDS) as measured over the previous week, the perception-based Household Food Insecurity Access Scale (HFIAS) and/or Household Hunger Scale (HHS), as measured over the past month, and a record of typical daily and weekly quantities of consumption of the main foods over the past year, including periods of shortage and adaptation in terms of meal numbers and portion sizes during those periods, in order to calculate food balances. More detailed information on food consumption, using a 24-hour recall, as well as food frequency questionnaire will be carried out as part of the nutrition sub-sample.

Nutritional status will be measured by a combination of dietary diversity measures at individual and household level, household food insecurity access scale and food balance sheets.

Other nutrition-related issues addressed in the household survey will include the frequency of child diarrhoea and other illnesses that can impact on nutrition status, and basic sanitation questions (see 6.3.4 below).

### 6.3.4 Module 4: Health Status

Health status of the adults in the household, access to water and sanitation (cf. WHO 2006), and illness and disability within the household (including incidence of illness) will be captured. Data will also be collected on labour allocation and time spent collecting water and fuel by household members.

Issues related to food safety, food preparation and food handling will also be addressed in this module.

## **6.4 Nutrition Sub-Sample Survey**

A sub-sample of households that include mothers with children under 2 years of age will be drawn from the main sample of households. Approximately 50-100 households in each of the four study areas (2 each in Ethiopia and Tanzania) will be included in this focused survey. The aim of this part of the study is to record the dietary intake and determine the nutritional status of the mother and child less than 2 years of age. 24h dietary recall, anthropometry and clinical biomarkers (where possible) will be employed. The methodology

outlined below focuses on Ethiopia. Similar aims will be pursued in Tanzania, with the final details regarding methodology to be tailored by the UCD and Tanzanian partners.

The Scaling Up Nutrition (SUN) strategy adopted by United Nations organizations and internationally focuses on targeted action and investment to improve nutrition for mothers and children in the 1,000 days between a woman's pregnancy and her child's 2nd birthday when better nutrition can have a life-changing impact on a child's future and help break the cycle of poverty (Scaling Up Nutrition, 2012).

In line with the SUN strategy, we propose to focus the nutrition survey on mothers and children < 2 years old. Once informed voluntary consent has been obtained, we will evaluate the nutritional status and dietary practices of the Mother and Child in these households. This will be done both pre and post-harvest in both areas of the country in line with the main household survey described above.

#### 6.4.1 Nutrition Sub-Sample Survey in Ethiopia

This section outlines the approach to be used in Ethiopia, which will serve as a model for the Tanzanian studies (section 6.4.2).

Ethiopia is one of the world's poorest countries with very high levels of malnutrition across the population and especially in children. The Ethiopian Government publishes very comprehensive national surveys of health including nutritional health data approximately every five years. The most recent survey was conducted in 2011 and published in 2012 (Central Statistical Agency [Ethiopia] and ICF International, 2012).

Very high levels of malnutrition are reported in this recent survey and in a multitude of studies conducted in the country over the last several decades. This recent national survey reports levels of stunting (height for age > 3 standard deviations below median) in children at a prevalence of 44% in Ethiopia which indicates a massive issue with chronic malnutrition in children under 5 years of age. This cohort of children had an anaemia prevalence of 44.2% (< 11 g Hb/dl). Levels of Vitamin A deficiency and Iodine deficiency are also exceptionally high in Ethiopian children. Evidence of very high levels of malnutrition is also reported in adult Ethiopians. For example, 27% of adult Ethiopian women have a Body Mass Index of <18.5 indicating they are underweight, 17% of women are anaemic (with higher prevalence in poorer segments of society). Vitamin A and Iodine deficiency are also major issues among adults (Abuye et al., 2007; Demissie et al., 2010).

In Ethiopia it is proposed to carry out the nutrition study in two very different areas of the country with very different ecological environments and agricultural practices. These areas are close to UCC's partner universities – Haramaya University in the eastern part of the country and Mekelle University in the northern part. As outlined earlier in the methodology, 2 PhD students will carry out the large general survey (approximately 400 households in each area) relating to agricultural practices, rural development and economic issues. From this large number of households, we will identify 100 households in each area which have a Mother and Child (> 6 months and < 2 years old) present in the household. In line with the SUN strategy, we propose to focus the nutrition survey on mothers and

children < 2 years old. Once informed voluntary consent has been obtained, we will evaluate the nutritional status and dietary practices of the Mother and Child in these households. This will be done both pre-harvest (July - September 2014) and post-harvest (January – March 2014) in both areas of the country.

We propose to gather basic demographic data on the households using standard questions employed in Ethiopia for this purpose. The questionnaire will be prepared first in English then translated to Tigrigna and Afan Oromo language for the northern and eastern study regions in Ethiopia, respectively. The Data Collectors will be educated to grade 12 and above education level and will be trained intensively for one week on the data collection procedures, the context of specific questions across the questionnaire, and anthropometric measurement procedures to be used. Training will be conducted by Kedir Teji Roba, BSc, MPH, College of Health Sciences, Haramaya University. For haemoglobin, retinol and iodine status assessments, trained and experienced BSc level and above health professionals (nurses) will be used for phlebotomy (see below). Each household will thus be visited by a trained and experienced Data Collector and a qualified Health Professional. At least one of these will be female given that the key person questioned in each household will be the Mother.

We propose to interview the Mother regarding her quantitative food intake over the previous 24 h (24 h Dietary Recall). We will also ask the Mother to recall the quantitative food intake of the Child over the previous 24 h and also to indicate the quantitative food intake of the household overall in the previous 24 h. From these data, we can subsequently conduct analysis to determine energy intake, nutrient intakes, Dietary Diversity Scores (Kennedy et al., 2013) using the Ethiopian Food Composition Database.

We propose to interview the Mother and ask her to respond to a variety of questions to supplement the detail in the general household survey, including: water and sanitation facilities, health services utilization, child feeding knowledge and practices and child's morbidity status.

We propose to conduct anthropometric measurements on the Mother and on the Child:

- Height (stadiometer or length board if the child is too young to stand)
- Weight (calibrated balance)
- Mid upper arm circumference – left arm (MUAC) (using circumference tape).

Height, length, weight and MUAC will be assessed in accordance with procedures outlined by Cogill (2003). Age will also be ascertained. If age of a child is uncertain, FAO (2008) Guidelines for Estimating the Month and Year of Birth of Young Children will be employed. If anthropometric measurements on pastoralists are conducted, the modified procedures and cut-offs outlined by Myatt et al. (2009) and Chotard et al. (2010) will be employed. WHO Growth Standards will be used for children (WHO, 2006; de Onis et al., 2009).

Finally, we propose to obtain a blood sample (< 2 ml) from the median cubital vein of both the Mother and the Child. The sample will be taken by a qualified Health Professional competent and experienced in phlebotomy. This sample will be used to assess status for the three micronutrients of greatest concern with respect to deficiency – iron (haemoglobin

measurement g/dl), Vitamin A (serum retinol) and Iodine status (serum T3 triiodothyronine and T4 thyroxin). Haemoglobin will be measured immediately using a HemoCue instrument (Aubuchon-Endsley et al., 2011) and the remaining blood samples will be placed in a Cold Box after collection each day until subsequent freezing that evening. Analysis of serum retinol, T3 and T4 will be conducted in Addis Ababa by the Ethiopian government laboratory. Sterile sharps will be used for every collection and disposed immediately post-collection in a standard portable safety box.

#### 6.4.2 Nutrition Sub-Sample Survey in Tanzania

Details to follow.

### **6.5 Qualitative Research**

A variety of qualitative research methods will be used to understand processes, trends and perspectives pertinent to food and nutrition security. This will include a focus on households, communities and institutions within the study area. Topics to be investigated will include, for example, innovation and constraints in local farming systems and capacity to respond to change, including how and why producers take different approaches and how these affect nutritional outcomes. Qualitative analysis will include a particular focus on gender and other social relations within and between households. Experiences in environmental degradation which influence production, and choice of cropping system, will also be examined. Specific data-gathering methods will include interviews with key local informants, group interviews with particular social groups (men, women, farmers, traders etc.), biographical narratives and focus group discussions. Such approaches will highlight the subjective perspectives and experiences (i.e. 'the voice') of the rural poor in order to deepen the understanding of agriculture-nutrition linkages at the household level.

## **7. Work Package 6 – Experience of Pro-Nutrition Agricultural Interventions in Ethiopia and Tanzania**

Work Package 6 will identify project-level interventions in Ethiopia and Tanzania which have potential to improve nutritional status, particularly of women and children, and which may provide scope for scaling-up. The Work Package particularly addresses Research Question 3 of AgriDiet.

This Work Package will be undertaken primarily by researchers in the partner Universities in Ethiopia and Tanzania. A three-stage approach is envisaged:

- (i) Mapping of the range of recent agricultural interventions with nutrition-related objectives;
- (ii) Development of a suitable framework for evaluating the evidence for positive impact on nutrition of women and children
- (iii) Detailed assessments of a selection of interventions with strong claims to nutritional impacts.

This research will be conducted in four regions - two in Ethiopia, two in Tanzania. As far as possible, a common approach to the work will be agreed across the four regions.

The first objective of this study is to identify the widest possible range of agricultural interventions - whether implemented by Government, NGOs, or farmer-driven - that claim to impact positively on household nutrition (or more especially on the nutritional status of women or children), or which can reasonably be argued to embody such a claim. The mapping exercise may focus on the respective regions where the research under Work Packages (WPs) 4 and 5 will be carried out but can also extend beyond the immediate survey areas to include interventions in comparable agro-ecological zones elsewhere in the country. This is due to the need to position WP4 and WP5 in areas where there are relatively low levels of intervention while WP6 will be best situated in an area where there has been a history of interventions in agriculture and nutrition.

A key task here will be to distinguish between direct and indirect impacts: for example, a soil and water conservation programme may be considered to have an indirect impact on nutrition, whereas the introduction of a bio-fortification programme (e.g. promotion of orange-fleshed sweet potato) may be considered to have a more direct impact; the focus will be on interventions that appear to have a more direct impact. While the main emphasis will be on interventions in the area of agricultural production (including both crops and livestock), consideration should also be given to interventions in the areas of food processing and food markets that may have an impact on nutrition.

Key questions for this first stage of the research will include the following:

- What types of pro-nutrition agricultural interventions are currently underway in the region and in particular those that are directed at the target groups (women and children).
- What specific nutritional needs do particular interventions address?
- What is the nature of the evidence for positive nutritional outcomes for the rural poor?
- How are the agricultural interventions integrated with other sectoral programs with nutrition relevance?
- What interventions in food markets or processing or other parts of the supply chain are of relevance to nutrition?

The second phase of this research involves the development – and application - of a suitable methodology for evaluating evidence for positive impact on nutrition of women and children. This will lead to the categorisation of interventions/projects into ‘strong’ and ‘weak’ claims for nutritional impacts. Strength of claims will be based on a range of indicators, including quality of evaluative studies (if any), duration of the intervention, inclusion of anthropometry or biomarkers or dietary data in evaluations etc. This will be informed by recent international studies in the field, such as Berti et al (2003), Masset et al (2011), Girard et al (2012), Wiggins and Keats (2013).

The methodology (or criteria) will help to identify a sub-set of interventions with relatively ‘strong’ claims for positive impacts on nutrition for further investigation. This sub-set should

be representative of the range of interventions identified in phase 1, including different types of interventions (inclusive of both crop and livestock sectors), large- and small-scale projects, stand-alone and integrated projects, and projects implemented by a range of actors (e.g. state, NGO and others).

The more detailed review of selected projects will be based on a combination of meta-reviews (i.e. reviews of existing documentation, including evaluation reports where available) and discussion with key informants such as project/programme managers, M&E specialists, etc. It is not envisaged to conduct rigorous impact evaluations, but some focus group discussion with project target-group households may be conducted.

For the projects selected for in-depth analysis, we want to examine their effectiveness in addressing under-nutrition. To do this, we can draw on some of the recent systematic studies of the agriculture-nutrition linkage (see e.g. Arimond et al (2011), Girard et al (2012), Masset et al (2011)), which have identified some important lessons for project design.

- a. Attention to the gender dimensions of agricultural interventions, given the importance of women as food producers and as decision-makers in terms of household nutrition;
- b. The importance of strong BCC strategies to help translate increased access to food and income into improved nutrition;
- c. Projects which promote dietary diversity and increased supply of micro-nutrients may have particular potential to bring about improved nutrition through a direct link between production and consumption;
- d. Attention to context, e.g. the overall livelihood and vulnerability situation;
- e. The importance of analysing overall changes in key variables (i.e. overall changes in income or food consumption, rather than simply take-up of a specific project intervention);
- f. Attention to the causal mechanisms (impact pathways) by which the project aims to improve nutritional status.

The recent studies also identified key measurement criteria in terms of nutritional outcomes (see Masset et al 2011) including:

- Changes to household diet composition of participants;
- Effects on micronutrient intake;
- Changes in children's nutritional status;
- Changes in income;
- Enhancement of women's economic and nutritional status.

It is also desirable to provide evidence on cost-effectiveness of interventions if sufficient data are available.

Conclusions on the potential for scaling-up will be drawn based on the above analysis. Key questions for this phase of analysis will include the following:

- What information, skills or resources are required by farmers wishing to take up the intervention?
- What risks (socio-economic and environmental) are associated with the intervention?
- What factors have favoured the development or uptake of the intervention?
- What factors have hindered the development or update of the intervention?
- What is the potential for wider roll-out or up-scaling of the interventions?

## **8. Work Package 7 - Stakeholder Platforms**

Work Package 7 consists of the development of country-level stakeholder platforms with key role-players in Ethiopia and Tanzania. This work will largely be carried out by in-country partners and led by IDS with support from Irish-based team members.

The purpose of these platforms is to promote knowledge and debate around agriculture-nutrition linkages, to better inform the research team and key stakeholders of recent developments and processes and to create a conducive environment for the conduct of the AgriDiet research and for the policy proposals that emerge.

Key strategies for this work area will include the following:

- Mapping of relevant stakeholders and other stakeholder networks within each country
- Hosting of stakeholder workshops to encourage the discussion of agriculture-nutrition linkages and monitor current activities and policymaking
- Exploring behaviours and preferences around information searching and sharing and identifying research not easily available or unpublished
- Feedback of emerging findings from the AgriDiet research

These platforms, through encouraging information sharing, discussion and learning, will help to increase the stakeholder's access to knowledge and also stimulate the desire, capacity and demand to use and apply this knowledge. The face to face workshops will also inform our knowledge mobilization strategy.

## **9. Work Package 8 – Knowledge Mobilisation**

This Work Package is focussed on the development and delivery of knowledge mobilisation strategies that respond to local stakeholders needs and actively engage them in the update and application of research knowledge. The knowledge mobilisation strategy will determine the methodological approach for this package.

The knowledge mobilisation strategy aims to help AgriDiet achieve its goal by engaging research users, policy influencers and decision makers, with the evidence needed to help them prioritise the strategies and actions required to bring about effective change. The strategy will be shaped by the outputs of the initial stakeholder consultations through Work

Package 7 and is intended to be a two-way iterative process, shaped according to the needs of our stakeholders.

A key element in this approach is to ensure that the research knowledge generated through the programme is used by stakeholders and ultimately helps to shape policy and practice to be more nutrition sensitive. In addition the programme contains a number of knowledge mobilisation elements which are not only focussed on communication of the research generated, but also around mobilising the wider body of knowledge around agriculture and nutrition linkages.

Knowledge mobilisation activities fall within three main domains:

**1. Availability of relevant content**

Is the research knowledge generated through AgriDiet available and relevant to our target audiences?

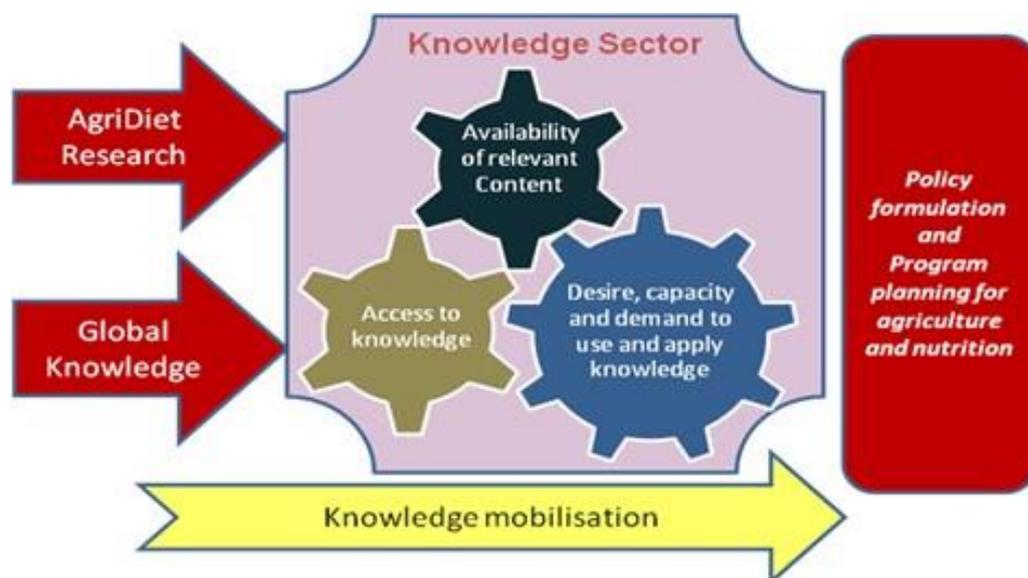
**2. Access to knowledge**

Do our target audiences have access to the research?

**3. Desire, capacity and demand to use and apply this knowledge**

Is our target audience aware of the available knowledge? Do they have the desire to use it and do they have the capacity to act on it?

These three domains all need to be considered in our knowledge mobilisation strategy; their relationship is illustrated below:



**9.1 Communication Outputs**

A key to the success of knowledge mobilisation will be the ability to produce a variety of outputs, tailored for different audiences. Not all of the research outputs will be relevant to all of the target audience groups and through our engagement with stakeholders we will aim to identify their needs and communication preferences. This will help us to tailor our research communication to be more effective and relevant. We will use multiple channels to

communicate the research findings. Some of the methods are outlined below. The list is not exhaustive, but will grow as other methods emerge which suit the purpose.

- **Workshops** will be held throughout the duration of the programme, bringing together different stakeholders in each of the focus countries, to present the research, invite feedback and build the network of actors with whom we are engaging.
- **Face to face meetings**, in small groups or one to one, will be conducted both as part of our initial scoping phase to research in more depth the knowledge and attitudes of stakeholders, to monitor change in these as the programme progresses and to communicate AgriDiet findings and policy recommendations.
- **Conference or seminar events** are often highlighted by policy makers as a preferred method of receiving information, and provide a valuable opportunity for debate around emerging issues. This will be explored further in the scoping.
- **Briefs (Policy / Business / In Focus)** will be an important output considering the nature of the target audience.
- **Multi-media outputs** can be used to target a variety of audiences. Tools such as video clips, radio, info graphics, visualisations and posters may be used where appropriate. (Where necessary we will translate messages into local languages. This will be led by the country partners).
- **Dissemination through existing networks and high profile sites.** For example Secure Nutrition (World Bank), UNSCN Agriculture and Nutrition CoP, ELDIS, IDS, UCC sites.
- **Peer reviewed publications** will be submitted as the research findings emerge.
- **Media** has been found to influence policymakers in some countries. As such, selective publications will be targeted and engaged with throughout the research. This will also be an important method for building awareness among the wider public.

The knowledge mobilization activities will be threaded throughout the various Work Packages in order to satisfy the overall project objectives.

## 10. Ethical Guidelines for Researchers

It is possible to conceptualise the ethical dimensions of research at two levels:

- the formal procedures required by the universities and institutions in Ireland and in Ethiopia and Tanzania and the official clearance required within these countries
- the ethics of undertaking research in the field and those underpinning the writing up of the research and its dissemination

In terms of the formal procedures, each university/institution involved in the AgriDiet project will have to obtain approval from their institutional ethics committees (IECs). In addition, the undertaking of fieldwork will require the official clearance of the relevant authorities in Ethiopia and Tanzania. It has been suggested that IECs are often ill-equipped to provide proper ethical oversight of social science research, as these committees are influenced by quantitative biomedical research and may have little understanding and experience of qualitative research in the social sciences (Mackenzie, McDowell and Pittaway, 2007: 300). The ethical guidelines provided at the institutional levels might be seen as the minimum and ideal standard to produce ethically sound research.

However, much of the critical social science analyses of methodology and research ethics reveal and emphasise the more complex and often contradictory processes that underpin the research process, beginning with the formulation of the research questions through to the dissemination of the research findings. While there is general agreement about the central normative principles of beneficence, integrity, respect for persons, autonomy and justice, these principles are highly abstract. Critical accounts of the ethical dimensions of undertaking research highlight the inadequacy of a simplistic and formulaic approach to addressing ethical issues as they emerge in the field.

A good starting point for a discussion of some of these ethical issues and standards is to be found in the Statement of Ethical Practice for the British Sociological Association (2002). ([www.britisoc.co.uk](http://www.britisoc.co.uk)) Two of the most important sections of this document are on professional integrity and on relationships with research participants.

In terms of the ethical dimensions of the relationships between researchers and research participants, the BSA statement highlights the importance of the recognition of disparities of power and status between the researcher and the participants. Here, the ways in which differences in class, gender, and ethnicity have an impact on the research process need to be considered and addressed by those undertaking research, particularly with vulnerable populations such as those in the rural areas of Ethiopia and Tanzania characterised by high levels of malnutrition.

The impact of power differentials on the research process and the relationships between the researchers and the participants is particularly important in considering the issues of informed consent, the right to refuse participation, anonymity, confidentiality, and privacy. The BSA document suggests that the obtaining of consent is to be best considered as a process rather than a once-and-for-all prior event. Mackenzie, McDowell and Pittaway (2007) propose an iterative model of consent as a way of addressing some of the complexities for social science research. *“Iterative models of consent start from the assumption that ethical agreements can best be secured through a process of negotiation, which aims to develop a shared understanding of what is involved at all stages of the research process”* (Ibid.: 307). Mulder et al likewise highlight the inadequacies of standard approaches to research ethics in their article, “Unethical Ethics? Reflections on Intercultural Research Practices” (2000) where they suggest that the notion of informed consent *“...does not always take into account the multiple forms of inequity that permeate power relations and social dynamics. Informed consent cannot be reduced to the subject’s individual will. Custom, tradition, social and cultural obligations, prestige, access to material and symbolic*

*resources, and past experiences can all powerfully affect personal and collective decisions*” (Ibid.: 106). They argue that *“[e]thical’ research can rarely avoid reinforcing existing relations of inequality”* (Ibid.). McKenzie (2009) further problematises the ethical dimensions of consent in the context of undertaking research based on participant observation. He argues *“[t]he principle of informed consent even in overt participant observation studies would be difficult to uphold in any research situation for a whole variety of reasons. Research is a situated business and not open to rationalistic planning. It is in the particular cases of the here and now with participants that ethics are situationally accomplished”* (p. 9).

Other related issues are those of representation and the role of ‘gate keepers’. (See Mackenzie, McDowell and Pittaway as well as Bolognani, 2007). The undertaking of collaborative research presents particular problems in terms of interpretation and representation, as highlighted by Gerstl-Pepin and Gunzenhauser (2002). Their article addresses three paradoxes: interpretative differences on the research team, representation of diverse voices in the research process, and the conflicting roles as evaluators and critical researchers. Given the collaborative nature of AgriDiet, Gerstl-Pepin and Gunzenhauser’s suggestion of the formation of an “interpretive zone” where differences in interpretation are recognised and explored amongst those working on a project such as ours is useful.

Building upon the above insights, an increasing recognition of the importance of researchers developing a high level of reflexivity and an awareness of their own positionality in the research process is emphasised in social science discussions of methodology. As is suggested by Mulder et al, it is necessary for researchers to confront stereotypes regarding the researched and that they would benefit by reflecting on their own ethnic and cultural self locations (2000: 110), including gender. A recent contribution to this type of analysis is to be found in Geleta (2013) based on his undertaking of fieldwork on microcredit in the Amhara region of Ethiopia.

Finally, ethical issues emerge in the context of the writing up of the research and its dissemination. Some questions that need to be considered are: What are the risks for the participants in the writing/presentation of the research? How can these be reduced? What are the responsibilities of the researcher in writing and presenting their research? How can these responsibilities be upheld in a postgraduate thesis? and Should the research and writing process be a collaborative one? The complexities of these issues are revealed in a comparison of the contributions by Chase (1996) and Etter-Lewis (1996) to the same volume, *Ethics and Process in the Narrative Study of Lives*, with Chase arguing *“...that claiming and acknowledging one’s interpretive authority is imperative”* (p. 52) while Etter-Lewis suggests *“...that interview-based data be interpreted within the context of the narrator’s world view rather than that of the interviewer-researcher’s”* (p. 116). Savin-Baden (2004) echoes Etter-Lewis’s position when she states *“[w]hen interpreting data it is vital to keep participants at the centre of data interpretation”* (p. 370). While it is clear that there are no right or wrong answers to the questions posed above, it is crucial that they are taken into consideration in the formulation of the methodological approach adopted by the AgriDiet research team, in particular given its multi-disciplinary and collaborative nature.

## 11. Role of Supervisors and Students

Supervisory structures and relationships need to ensure and enhance the core principles of collaboration, integration, multi-disciplinarity and capacity building which underpin AgriDiet.

- While registration of the students will be in their relevant departments of specialisation (e.g. nutrition or rural development/agriculture), supervision will take a multi-disciplinary and multi-level approach.
- Supervisory Panel: At UCC/UCD each student will have a designated supervisory panel comprising one member from the primary discipline (e.g. nutrition, rural development or agriculture) and up to three other members from other disciplines, including at least one Africa-based member.
- Students and supervisors are expected to adhere to established Codes of Practice within their respective institutions. Drawing upon the UCC Code of Practice 2010 as a guideline, duties of the supervisory panel include:
  - Guide and support the student's research topic
  - Maintain highest ethical and academic standards
  - Undertake professional development in supervision
  - Have an effective relationship with student/other staff
  - Communicate regularly with the student
  - Provide advice on training strategies
  - Ensure continuity of supervision when absent: communication of this information to all supervisors, both in Ireland and in Ethiopia/Tanzania
  - Provide advice and support on the thesis and viva
  - Meet the student regularly to review research progress and to keep a record of these meetings, on at least a monthly basis, to be shared with supervisors at the host institution and those in Ethiopia/Tanzania
  - Provide formal and informal feedback on student's progress, and to share this information with the supervisors in the host institution and those in Ethiopia/Tanzania
  - Support students' publication of research findings in the form of sole or jointly-authored papers.

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