



PEOPLE *in* NATURE

WORKING PAPER #1

HUMAN DEPENDENCY ON NATURE FRAMEWORK

QUALITATIVE APPROACHES BACKGROUND STUDY

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List of Acronyms 5

Executive Summary 5

1. Background and rationale 6

- 1.1 Problem statement 6
- 1.2 Key terms and definitions 7

2. Major frameworks and their associated tools and methodologies 9

- 2.1 Sustainable rural livelihoods 9
- 2.2 Human wellbeing 10
- 2.3 Food and nutrition security 11
- 2.4 Ecosystem services and the MA 11
- 2.5 Vulnerability 12
- 2.6 Ethnoecology 13
- 2.7 Political economy and political ecology 13
- 2.8 Landscape approaches 14

3. Relevant projects and assessment approaches 14

- 3.1 Wellbeing in Developing Countries program (WeD, University of Bath) 14
- 3.2 Food security assessments in emergencies (Oxfam GB) 15
- 3.3 Poverty Environment Network (CIFOR PEN) 15
- 3.4 Biodiversity, access and rural food systems framework (Davidson-Hunt et al.) 16
- 3.5 "Hidden Harvest" WB global study on small-scale fisheries 16
- 3.6 International Forestry Resources and Institutions (IFRI) 17
- 3.7 Livelihoods and Landscapes Strategy (IUCN 2007-2011) 18
- 3.8 Wellcoast: Human Wellbeing & Coastal Reliance Network 18
- 3.9 FAO Forests, Trees and People Programme (FTPP) 19
- 3.10 Ecosystem services for poverty alleviation: Marine and coastal situational analysis 19
- 3.11 "An Inuit Perspective on Food Security in the Alaska Arctic:
Building a Framework on How to Assess Change in the Arctic" 19
- 3.12 Gwich'in and Nunavut Wildlife Harvest Studies 20
- 3.13 Centre for Indigenous Peoples' Nutrition and Environment (CINE) Global Health Data Tables 20

4. General findings and considerations for development of the HDNF 20

References 23

Annexes 27

LIST OF ACRONYMS

CEESP – IUCN Commission on Environmental, Economic and Social Policy

CINE – Centre for Indigenous Peoples' Nutrition and Environment

ES – Ecosystem services

HDNF – Human Dependency on Nature Framework¹

IUCN – International Union for the Conservation of Nature

LLS – Livelihoods and Landscapes Strategy

MA – Millenium Ecosystem Assessment (United Nations)

PES – Payment for ecosystem services

PRA – Participatory rural appraisal

SULi – Sustainable Use and Livelihoods Specialist Group

TSL – Theme on Sustainable Livelihoods

EXECUTIVE SUMMARY

The objective of this background paper is to report on qualitative social sciences frameworks, and mixed methodologies, that could be incorporated into the HDNF assessment tool. Under this primary objective, this report investigates qualitative methodologies aimed at understanding peoples' own expressions of the value of ecological goods and services derived from nature, including people's dependency on these goods and services for their livelihood and wellbeing. This part of the framework looks at empowering communities to document and communicate how they use wild natural resources and provides comprehensive data on this use for fair and effective natural resource policies and decision-making.

This report outlines relevant frameworks, assessment tools, and their interrelationships. A literature search was conducted using a variety of search terms related to dependency on, and uses of, natural resources. In addition, help on identifying frameworks and assessment tools was solicited from the TSL and SULi membership via email. Major frameworks selected for inclusion in this report are listed below:

- Sustainable rural livelihoods
- Human wellbeing
- Food and nutrition security
- Ecosystem services and the Millenium Ecosystem Assessments
- Vulnerability
- Ethnoecology/ethnobotany
- Political economy/political ecology
- Loosely grouped landscape approaches

Several existing frameworks and associated assessment tools were designed to address perceptions and values of resource users with regard to wild or non-cultivated natural resources and ecosystem services, and potentially constitute an important base for future work on the HDNF. Such assessment tools were often informed by a combination of frameworks. Key finding and recommendations in this report include:

- The need to use a combination of frameworks to address goals
- Recommendations for a modular approach
- The need to be attentive to different scales of dependence on nature
- The need to develop a sequential mixed methods approach

¹ Since this paper was written the IUCN Human Dependence on Nature initiative has been renamed 'People in Nature'.

1. BACKGROUND AND RATIONALE

The Human Dependency on Nature Framework (HDNF) is a new knowledge product included in the IUCN Global Programme for which CEESP has a lead role. Early work on the framework is being conducted through the Theme on Sustainable Livelihoods (TSL), co-chaired by Iain Davidson-Hunt and Masego Madzwamuse. The goal of this framework is to assess, document, and communicate the role and importance of non-farmed natural/wild resources for communities' food and nutrition security. A goal for IUCN is to "...build new alliances with the food security community to incorporate the largely overlooked contribution of natural ecosystems into existing national and international food security strategies" (IUCN, 2012:19). The HDNF aims to capture non-cash consumption and any marketing from non-cultivated habitats within a mixed qualitative/quantitative methodological framework.

For livelihoods, food, and nutrition security (including subsistence and commercial harvesting for cash income), many households and communities are dependent on harvesting from forests, grasslands, freshwater and marine ecosystems. Beyond their importance in terms of livelihood needs, human relationships with non-cultivated ecosystems frequently underpin group identities, norms, and values for indigenous and local peoples. The HDNF thus must focus on monitoring benefits that nature contributes to livelihoods as well as to cultural continuity of groups in study areas. A large part of inappropriate decision-making processes in planning and management can be attributed to unfair consultation with indigenous and local communities that are not given the opportunity to document their values and needs tied to ecosystems. Results of such processes might include decline in availability of species and loss of access to resources for indigenous and local communities. The HDNF aims to empower communities to document and communicate how they use wild natural resources, and to provide comprehensive data on this use for fair and effective natural resource policies and decision-making.

There is growing interest internationally in assessment of cumulative effects of declining access to resources which help people to live well. Qualitative frameworks and quantitative indicators are being sought, sometimes through use of multiple assessment tools or mixed methodologies, but efforts often fall into distinct spheres. Nonetheless, these approaches could be understood to relate in some way to human dependency on wild or non-cultivated resources. The main questions addressed through these assessment frameworks are often divergent between different approaches. Examples include attempts to assess effectiveness of economic indicators of wellbeing, qualitative assessment of food security, and household-level assessment of livelihood security through use of questionnaires. A positive outcome

is that there is a wealth of methodologies to draw upon.

This report attempts to draw together some of the approaches which have been already developed and tested, or which are in the development phase, in an effort to inform IUCN's own framework development process, and to avoid re-inventing the wheel by providing a background for the evaluation of the suitability of existing methodologies. The report specifically attempts to single out frameworks and tools amenable to a qualitative approach.

1.1 Problem statement

Wild or non-cultivated resources generate employment for millions of people worldwide, but also provide important elements for peoples' diets and subsistence livelihoods. Uses of wild resources may include food, heating, employment and income, animal fodder, green manure, construction materials, medicine, and may provide an important backstop in times of need. These resources are especially valuable for poor, vulnerable, and marginal peoples, including indigenous peoples, peasants, fisher folk, and the urban poor. For food and livelihood security (including subsistence and commercial harvesting for cash income), many communities are dependent on harvesting from forests, grassland, freshwater and marine ecosystems. Relationship with wild resources also underpin the identities, norms and values of indigenous and local peoples.

While sometimes assumed to constitute a marginal part of peoples' livelihoods, this is not always the case for harvesting of non-cultivated resources. For example, small-scale fisheries or brazil nut harvesting can play major roles in both cash income, for household consumption, as a safety net, or as a source of start-up capital for other livelihood activities (World Bank, 2012; Zenteno et al., 2013). The livelihoods of peasants is often characterized by a mode of production featuring only partial integration into markets, and a sporadic market in which they must operate, thus integration of wild resources into livelihoods strategies may be important in terms of filling important gaps in household consumption as well as income (Bush et al., 2004). Through multiple stressors, livelihoods can quickly become more vulnerable, and continuity of access arrangements to wild resources such as fishing areas may prove vital, lest more stress be placed on other livelihood activities (Bunce et al., 2010). An HDN Framework could effectively capture and monitor this vulnerability and be attentive to layers of additional stressors. New instruments for revalorization of ecosystems such as forests, mangroves, wetlands, and grasslands are being developed at a global level (i.e. through payment for ecosystem services such as carbon and water) (Sikor, 2010). The potential is high for local uses related to consumption for small scale artisanal or livelihood needs to be undervalued, prosecuted, or marginalized, thus leading to higher

levels of food and nutrition insecurity, and livelihood vulnerability.² As ES take on greater (economic) value in a global context, special care must be taken to understand local resource dependent households' and communities' perceptions of the importance of wild resource use. This is particularly important in light of problems of substitutability of one resource for another. Of primary concern is the potential for wild resources to be under-valued based on certain indices or metrics, whereas in reality they play roles of concrete importance materially, socially, and culturally for local users.

Although a wealth of case-study literature provides a detailed look at these issues, there is a need to gather existing experience and knowledge in order to compare tools and frameworks, and try to avoid re-inventing the wheel. In addition, there is a need to explore possibilities for qualitative methodologies aimed at understanding peoples' own expressions of the value of wild or non-cultivated resources, and the dynamics of these relationships, that can be put to use at an international level.

An initial finding of this report is that there appear to be no examples of reviews of existing frameworks and methodologies dealing specifically with human dependency on wild resources at a global level, and across ecosystems. Existing frameworks and assessment tools were found across a range of literature and theory areas. Such tools often had an applied focus related to poverty alleviation and the need to assess the impact of development and poverty alleviation projects and interventions internationally (e.g., Tallis et al., 2008; Rasul et al., 2012). Although the objective of this report was to uncover and describe existing qualitative frameworks, several strictly quantitative assessment tools have been included in the review in order to allow for a wider discussion of approaches to the HDNF. This is partially due to the paucity of large-scale approaches to draw upon, but also because of the need to find an appropriate mixed methodology. This study aims to cover a broad range of approaches, and thus is not meant to cover particular frameworks and approaches in great detail.

1.2 Key terms and definitions

The use of dependency in the literature

A keyword search for "dependence/dependency/reliance", "resources" (including "fish" and "forest") and "nature" and "ecosystems" turned up references related to "forest dependence", "forest dependent people", "livestock dependence", and "marine resource dependent people". Dependency language was found to be closely associated with

poverty discourse and key research agendas relevant to this study have typically been developed around linkages between ecosystem services and poverty alleviation.

Scientific and institutional literature referring specifically to dependence or reliance on nature and wild resources were dominated by local or regional case studies undertaken in relative isolation from one another. The bulk of such studies relied upon quantitative tools such as household surveys which yield data amenable to comparison of economic indicators, for example, percentage of total household income (e.g., Adhikari et al., 2004; Bahuguna, 2000; Fisher, 2004). For example, a quantitative index system of human dependence on ecosystem services constructed using household survey data was recently published (Yang, Dietz, Liu, Luo, & Liu, 2013). Nonetheless, ethnobotany/ ethnoecology and related ethnographic, largely qualitative approaches referred to dependence in some cases (e.g., Harris and Mohammed, 2003). Standard quantitative methodological tools such as household surveys, but also PRA/RRA tools were commonly used to understand relationships of dependency and perceptions of local users of the importance of wild resource use. An assessment of forest-dependent people in India by the World Bank (World Bank, 2005) includes a section on perspectives of forest dwellers in terms of addressing livelihood needs. The World Bank approach used focus groups and community surveys.

Dependency, and poverty reduction were associated with ecosystem services through provisioning of subsistence food, shelter and natural disaster mitigation (e.g., Rönnbäck et al., 2003), but also through recognition of the crucial role of markets in wild resources. The importance of cash-based livelihoods is likely to increase as markets further penetrate into rural areas. This has often been associated with negative impacts on wellbeing (Godoy et al., 2005). At the same time, cash earning opportunities from nature-based enterprises as a significant opportunity for rural poverty reduction (Shackleton et al., 2008). Research has also shown that access to forests may reduce income inequality across households (Fisher, 2004).

Dependence on access to wild resources is related to the multiple roles of local resources in peoples' livelihood strategies. For example, access to forest land may be important for crop production, NTFPs, food for production, processing, preparation, and for income. What happens when normal flows are disrupted? What are the coping mechanisms for chronically food-insecure households when access conditions change? What are the impacts on food security as access or availability changes (Dembner, 1994)? De-

² The newly coined term "green grabbing" captures some additional stressors placed on local systems through new international instruments such as REDD+. While revalorizing ecosystem services of carbon sequestration in forest landscapes, these instruments have been criticized for the capacity to exacerbate land struggles for poor (often indigenous) peoples relying on wild or non-cultivated resources (Fairhead et al., 2012).

pendency is linked to vulnerability (see section 2.5). Highly dependent households and communities with strong linkages to wild resource harvesting might be worse off than those with more diversified livelihood practices should disaster strike. For example, a community or household that can switch to other activities is less vulnerable than one that relies or depends on these activities at times of crop failure, or following flooding (Füssel, 2012). Nonetheless, wild resources often provide a buffer for livelihoods at times of crisis, leading some to conclude that dependence might be better interpreted as “benefits” of living near a forest or wild ecosystem (Bush et al., 2004).

Community: Communities are understood here as local populations, and could also refer to arrangement of communal or mixed communal/private land ownership. Discourse around the term community raises important discussions around access to wild resources, and highlights differences between outsiders and insiders. For example, resource extraction industries are often considered outsiders as they do not rely on local ecosystems for livelihood resources (Larson & Ribot, 2007). Usage of the term “community” as a synonym to “village” appears to be a matter of preference, and usually includes the lowest administrative unit in an area (see for example, PEN Technical Guidelines).

Ecosystem services: ES are benefits people obtain from ecosystems. ES include provisioning services such as food and water; regulating services including regulation of floods, drought, land degradation, and disease; supporting services, as soil formation, nutrient cycling; and cultural services such as recreational, spiritual, religious, and also employment benefits through earnings from marketing and trade (Brown et al., 2008).

Household: A household is a group of people living under the same roof and pooling resources. Usually a household constitutes a family or close kin group.

Subsistence harvest: This is the portion of a household’s harvest which is primarily consumed by local households without entering the value chain, although surpluses may be sold (World Bank, 2012). Like the definition of wild resources above, subsistence harvesting is often easily slotted into a sub-sector or minor role of the economy, associated with local or indigenous production. These harvests are often not taken into account by major economic indices such as GDP.

Value chain: A value chain comprises all economic activities directly or indirectly contributing to harvesting, processing, and marketing, and also might include processes occurring before harvest, such as equipment-making, or purchase (World Bank, 2012).

Wild or non-cultivated resources: Wild resources are not necessarily found only in segregated natural areas, but are

often integrated in home gardens, or taken from woodlots or forest boundaries, and tidal flats. Urban forests may be significant sources of wild foods and medicines, and may play important roles in meeting material needs in urban contexts (Poe et al., 2013). Thus, the non-cultivated (or semi-cultivated) nature of wild resources does not limit them to wild or remote areas, but hints at their importance in the areas immediately surrounding homesteads, home gardens, and dwellings, including such landscapes as urban forests, lagoons and shorelines or estuaries, and field boundaries.

A major component of wild food use may derive from cultivated and anthropogenic environments, such as home gardens and forest edges, rather than in pristine landscapes (Cruz-Garcia and Price, 2011). Bharucha and Pretty (2010) make the point that because of the managed state of many “natural” ecosystems, there is a risk of creating a false dichotomy between wild and cultivated landscapes (and associated resources). Often, such resources are under-accounted for in major international frameworks, a fact acknowledged in some instances through a focus on the “hidden harvest”. For example, Scoones et al., (1992) provide an older, but extensive literature review and annotated bibliography on use of wild resources. A World Bank study on small-scale fisheries employs the term “hidden harvest” in the context of small-scale fisheries (World Bank, 2012).

The HDNF framework might then try to integrate underlying forms of management and tenure institutions which influence the relationship between people and wild resources (e.g. shifting cultivation patterns, use of fire). A landscapes approach might hold some responses to these difficulties with the use of such terminology (section 2.8). IFRI offers an important assessment framework developed for understanding linkages between tenure and wild resource use (section 3.6).

2. MAJOR FRAMEWORKS AND THEIR ASSOCIATED TOOLS AND METHODOLOGIES

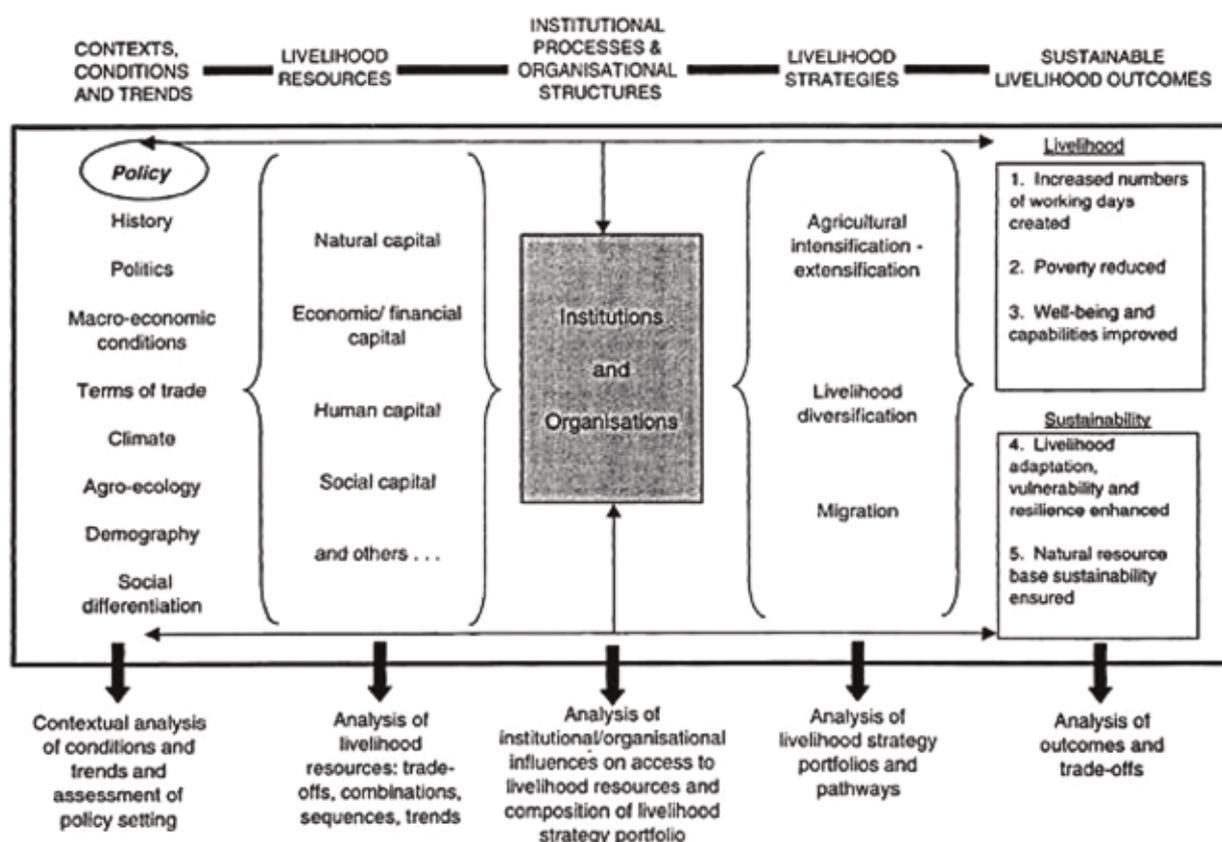
2.1 Sustainable rural livelihoods

The sustainable rural livelihoods approach is one of the major frameworks used in assessments of human dependence on nature, resources, and landscapes. The livelihoods approach has largely been associated in the rural and natural resources development literature with the role of markets and subsistence activities in material provisioning. Scoones (1998) sees natural capital as one of several capitals (natural, economic or financial, human, and social) on which livelihoods are negotiated. Natural capital may include resource stocks and flows, including wild resources, and ES. The livelihoods approach may also be harnessed to build understandings of people's lives, not only in terms of livelihoods they secure, but the meaning they create in the process (Johnson, 2009). A visual representation of the livelihoods approach is illustrated in figure 1.

Livelihoods thinking is associated with, and draws upon, the wellbeing and capabilities literatures (Scoones, 1998). These provide wider approaches to the livelihoods concept which go beyond material needs such as food intake and income. Chambers (1995) sees the wellbeing approach as allowing resource users themselves to define the criteria which are important for meeting livelihood concerns. A related question of substitution of livelihoods activities is relevant in the context of development of the HDN Framework. In the case that access to wild resources is cut off, can one type of capital be substituted for others? And are different capitals needed in combination for pursuit of particular livelihood strategies (Scoones, 1998)?

Household and community-level surveys and questionnaires are the most common tools in the sustainable livelihoods toolbox, but PRA/RRA tools, such as focus groups and ranking exercises, are also commonly used in livelihoods assessments (Scoones, 1998).

Figure 1: Sustainable livelihoods framework



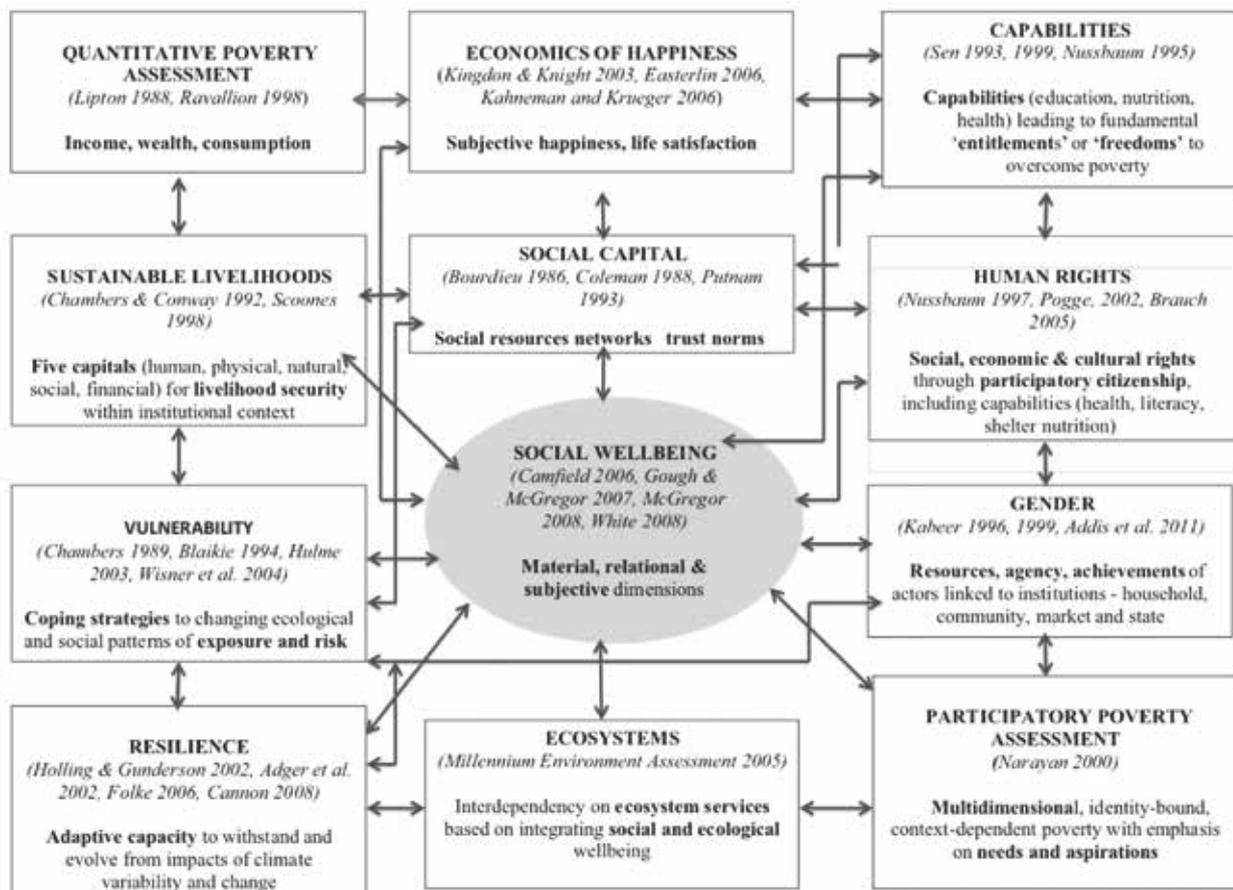
Reproduced from Scoones, 1998

2.2 Human wellbeing

Wellbeing is an evolving concept, and a universally acceptable definition has been difficult to agree upon in the literature (Yang, Dietz, Kramer, Chen, & Liu, 2013). Human wellbeing has been defined as constituting basic material needs for a good life, freedom of choice and action, health, good social relations, and security (Brown et al., 2008). It is also understood to be “...A state of being with others, where human needs are met, where one can act meaningfully to pursue one’s goals, and where one enjoys a satisfactory quality of life” (Wellbeing in Developing Countries Research Group, 2007). Wellbeing frameworks are conceptualized as going beyond the recognition of dynamics which affect people’s ability to meet their material needs. Instead, wellbeing is adapted to exploring ways in which these dynamics affect people’s engagement, and evaluate their ability to pursue their goals meaningfully (Johnson, 2009). Wellbeing can then be understood in terms of what it means to live well, thus it is an appropriate concept for understanding values around, and perception of dependence.

In the University of Bath’s WeD research program (see section 3.1 below), the roots of the wellbeing approach can be traced to Sen’s capabilities approach and the livelihoods approach (Johnson, 2009). However, both these approaches have been criticized for their insufficient treatment of social relationships, and the social construction of meaning (De-neulin & McGregor, 2010). University of Bath researchers point out that relationships within which resources could be accessed and deployed are key to development of a wellbeing approach. Thus resource use and management is understood to be socially and culturally negotiated (Johnson, 2009). The WeD approach incorporates a relational perspective, which recognizes the importance of social relationships of friends, family and community, but also social structure and power relations in outcomes for individuals and households (Johnson, 2009). A broad range of frameworks have been incorporated and distilled into wellbeing research. Figure 2 maps connections between wellbeing and other major frameworks. A hybrid approach by White (2009), which compiles aspects of several wellbeing approaches, introduces a number of domains of wellbeing research which may be assessed through a combination of tools (see annex 1).

Figure 2: Mapping common ground: social wellbeing and related approaches



Reproduced from Weeratunge et al., 2013

Indigenous peoples' perceptions of wellbeing sometimes conflict with indicators used in global reporting frameworks. Although easily amenable to qualitative assessments, wellbeing is often used to frame quantitative research. Notions of subjective wellbeing are frequently associated with indicators of happiness, based in positive psychology (Johnson, 2009). The critique is that the collection of statistics has been the primary focus, aiding development of "governmentality" by bureaucrats (Taylor, 2007). Such approaches overlook Indigenous worldviews. This is not to say that statistical knowledge is irrelevant in Indigenous contexts, but that it must be developed through a different type of process, e.g. via the Maori Statistics Forum described in Taylor (2007).

2.3 Food and nutrition security

Food and nutrition supported by wild biodiversity contributes to diversity and quality of diets, and is an often overlooked component of food systems (Powell et al., 2013). At times, wild foods have been relegated to the category of "famine foods", as used in local coping strategies when food shortages are especially severe (Scoones et al., 1992). A McGill study demonstrates the often high nutritional value of wild foods, making them difficult to substitute (see section 3.13). Access to wild food can potentially create more balanced nutrient availability during certain periods of the year, for example during the dry season (Scoones et al., 1992). Nutrient-dense foods may provide important benefits where store-bought foods are expensive and of poor nutritional quality, such as in remote communities and cities in the arctic (Kendrick, 2013). Structured surveys produced from Statistics Canada data were able to show that wild food was a significant part of the diet of many Inuit households (Statistics Canada, 2006).

Food insecurity is linked directly to damages in livelihoods, and is part of the process leading to loss of self-sufficiency (Young et al., 2001). Food and nutrition security as a framework has taken a human rights based approach linked to notions of justice, and tied to vulnerability. International frameworks drawing on notions of food security include the right to subsistence (UDHR, 1948, Art. 25), and recent work related to the International Declaration of Peasants' Rights. From a rights perspective, food security draws on Sen's entitlement theory of famine, which considers peoples' ability to acquire food in terms of production, trade and exchange, and inheritance, transfer, or gifting of resource rights (Sen, 1981). Human rights and political discourses in food security also revolve around values related to access to, and use of nature. For example, in the case of the Inuit Circumpolar Council, subsistence culture was argued to be central to Inuit identity, and was being damaged by climate change (ICC, 2005 in Reder, 2012).

Multiple agencies and organizations have developed approaches to assessing food security. Qualitative assessment of food security have developed since the 1990s to build country-specific qualitative food security measurements, especially in developing countries. These have commonly drawn on RRA/PRA techniques, yet usually do not cover values associated with food security, or development of local frameworks because they were designed to assess reliably the level of food and hunger from the perspective of those who experience it, and hence, to rank food security status (Kennedy, 2003). Oxfam, UK, stresses risks to livelihoods in their approach, and emphasizes food entitlements, coping strategies, and nutritional status (in contrast with food-economy approaches which look at the size of the food deficit in terms of meeting livelihood needs) (see annex 2). Young et al. (2001) describe similar assessment methodologies based on secondary information and rapid assessment techniques such as interviews and focus groups.

Availability of, and access to, nutritious foods may be looked at through production and trade, stability of food supplies, access to food, and food utilization as components of food security (Gregory et al., 2005). A need to understand effects of food insecurity on livelihoods and self-sufficiency in longer term requires analysis of vulnerability to food insecurity, and coping strategies, including effects of external shocks, and households' ability to cope (Chambers, 1989). Food and nutrition security oriented projects reviewed include the Inuit Circumpolar Council, Alaska's food security framework (section 3.11), and McGill's Centre for Indigenous Peoples' Nutrition and Environment (section 3.13).

2.4 Ecosystem services and the MA

ES can be defined simply as the benefits that people obtain directly or indirectly from ecosystems, including both natural systems or highly managed systems (Millennium Ecosystem Assessment, 2005). The MA provides a framework for assessing the value of ecosystem services, and includes a schema for the categorization of ecosystem services.

The MA work has proved useful for studying interactions among indirect drivers, direct drivers, ES, and human wellbeing (Yang, Dietz, Liu, et al., 2013). The MA had an explicit focus on human wellbeing and poverty alleviation, and promoted the importance of ES for poorer members of society (Adams et al., 2004). Recent research drawing from the MA has looked at a range of issues including access to ES, issues of spatiality, and scales at which benefit flows accrue. The ability of people to benefit from ES depends on a range of mechanisms of access, e.g. social relationships, institutions, capabilities, rights, and various capitals, including economic and social capitals. A conceptual approach to access to ecosystem services has been laid out in Ribot

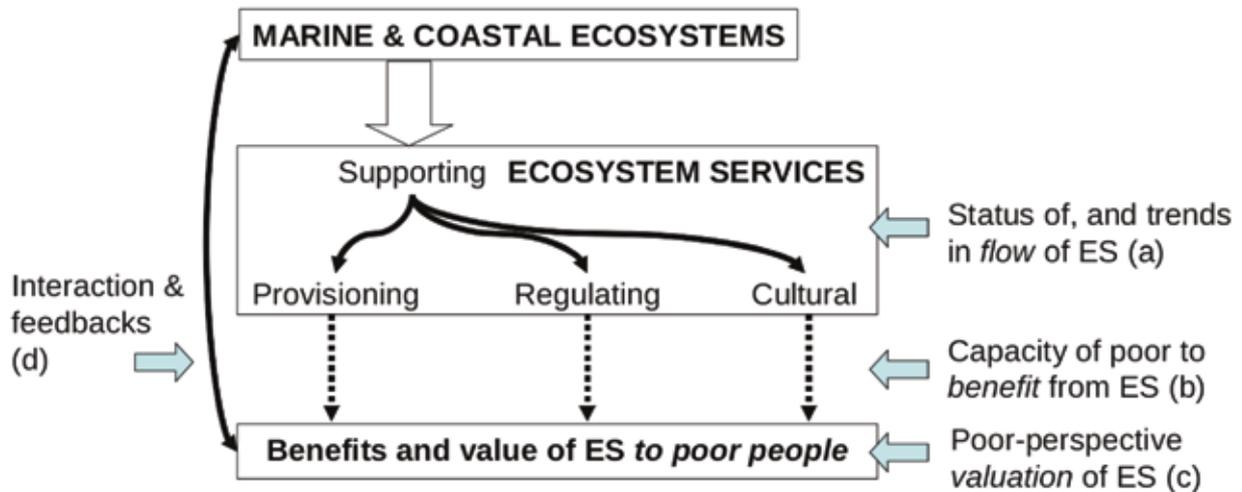
and Peluso (2003). Figure 3 illustrates Brown et al.'s (2008) conceptual framework which links flows of ecosystem services to constraints in their use and availability to poor people.

Daw et al. (2011) look at relationships between ecosystem services and the poorest members of society. In terms of understanding benefits of ecosystem services that may accrue to different groups, the authors have pointed out trade-offs, where models that quantify ecosystem services do not disaggregate beneficiaries, ignoring the distribution of benefits between groups and individuals in society (Daw et al., 2011). This is because different groups and individuals may rely on different services to different extents due to access and individual contexts. Individuals perceive different ecosystem services according to their backgrounds, gender, livelihood (Rönnbäck, Crona, & Ingwall, 2007). Changes in the "bundle of ES" from an ecosystem may create winners and losers, highlighting differences in wellbeing of different

people (Daw et al., 2011). In these cases, the individual and household levels are perceived to be an appropriate levels of analysis. These authors critique most ES literature for not fully engaging the issue of disaggregation of beneficiaries, and ignoring distribution of benefits (especially where ES analysis is applied in PES schemes).

Case study examples illustrate trade-offs and benefits from processes of valuation of ES. For example, the establishment of protected areas may reduce the overall number of people in an area who may benefit from resources, but those with skills benefited from improved wellbeing through increased employment opportunities through tourism (McClanahan and Kaunda-Arara, 1996 in Daw et al., 2011). ES analyses and PES processes also introduce scalar dynamics. Different ES have beneficiaries at different scales, hence warranting a spatially explicit framework (Hein et al., 2006; Nelson et al., 2010; Bateman et al., 2011 in Daw et al., 2011).

Figure 3: Conceptual framework for linking ecosystem services to poverty alleviation



Reproduced from Brown et al., 2008

2.5 Vulnerability

Social vulnerability is defined as the ability to cope with, and adapt to, stress placed on a group's livelihood and wellbeing. This in turn is related to availability of resources, and to entitlements of individuals and groups to call on these resources (Blaikie et al., 1994 in Füssel, 2012; Adger & Kelly, 1999). Human dependency is linked then to ability to cope with and adapt to pressures. The relative importance of an activity could be thought of as a determinant of this (Füssel, 2012). Vulnerability is commonly used in contexts such as ecology, public health, poverty and development, secure

livelihoods, famine, land change, climate impacts, and adaptation (Füssel, 2012).

Poor people have been shown to be more reliant on ES and goods because of the relative importance of natural resource based livelihoods and their vulnerability to natural hazards, but also other restrictions on flows and access (TEEB, 2010). Changes in climate, ocean current regimes, or precipitation regimes may impact poor people's livelihoods directly in terms of use of wild or non-cultivated resources, for example, through influences on distribution and availability of mobile species (Brown et al., 2008). This

vulnerability may not come out in local-scale analysis, especially in terms of having particular roles in poverty alleviation. Furthermore, the role of ES as “large scale life support systems” (e.g. climate regulation) are rarely considered relevant in the policy context of looking at drivers relevant to local livelihoods and poverty (Brown et al., 2008).

Attention to vulnerability is warranted because it takes into account factors of scale, and temporal variability. Vulnerability analyses may reveal the importance of non-cultivated resources in times and places which may occupy critical periods in which it is difficult for households and communities to meet needs.

2.6 Ethnoecology

Ethnoecology (often more specifically, ethnobotany) lists a host of qualitative ethnographic and quantitative methods. Specialized tools in the ethnobotany toolkit that are well suited to the assessment of human relationships with wild resources. Ethnographic methods are particularly effective for learning about everyday human interactions with wild species, identifying individual and cultural meanings, values, and norms associated with resources and landscapes (Poe et al., 2013). Ethnoecology is particularly well suited to detailed case study research. The objective of ethnoecological work is commonly to collect knowledge and narratives of resources and their use from the people that use them. This often involves developing a compiled list of all locally occurring harvested species, obtaining local vernacular names, studying uses of wild species, and ranking relative importance of wild resources used (Petersen et al., 2012).

Commonly used data collection tools include creation of dictionaries, word lists (freelisting), recording of interviews through use of maps and visual materials such as photographs, and group interviews including focus groups which explore a topic with the aid of a group of local knowledge experts. Mobility in the landscape helps identify uses and processes which may be difficult to assess indoors. Mobile methods include field trips and on-the-land participation in harvesting activities, and more specialized approaches include vegetation and resource mapping using plot studies (Johnson and Davidson-Hunt, 2011).

Quantitative ethnobotany allows for ranking of relative importance of wild resources in terms of livelihood provisioning, as well as in terms of cultural significance of species surveyed. Freelisting is a semi-structured method which can help understand the scope of the domain surveyed (e.g., medicinal plants), and can be used to rank relative importance of species against each other.³ Indices have

also been created to assess relative cultural significance of species, defined as the importance of the role of that species within a particular culture (Mathur & Sundaramoorthy, 2013). Approaches include the Cultural Food Significance Index and the Index of Cultural Significance (Mathur & Sundaramoorthy, 2013; Turner, 1988). The work of Reyes-García, Huanca, Vadez, Leonard, & Wilkie (2006) reveal differences in people’s knowledge, and actual use of plants to capture cultural and practical, everyday dimensions of plant use, employing an index comprising cultural, practical, and economic values. Some ethnobotanical or ethnoecological approaches combine quantitative indices with qualitative data collection, for example, through participant observation or semi-structured interviewing to assess perceptions about wild food sources, and social implications of their use and consumption (e.g., Agea, Okia, Obua, Hall, & Teklehaimanot, 2011). PRA or “rapid appraisal” tools can be combined to look at seasonality of use, local prices, availability, accessibility, and trade (e.g. Shackleton et al., 2002).

2.7 Political economy and political ecology

These frameworks typically take interest in enabling or hindering processes such as livelihood provisioning and harvesting activities. Literatures overlap as political ecology has roots in political economy. Political ecology pays attention to political economic dimensions of ecological problems (Poe et al., 2013). Political ecology is particularly useful here because attention has been given to differential conditions of access, where access depends on power and politics among other institutional and organizational issues (Ribot and Peluso, 2003; Scoones, 1998). Ideologies, state agencies, power dynamics, and politics influence peoples’ rights to access natural resources, and exercise management (Peet et al., 2011). Political ecologists have taken particular interest in how new approaches such as REDD+ have potential to exacerbate appropriation of forests by outsiders, and put additional pressure on forest livelihoods, further complicating issues of rights to resources. Political ecologists offer a cautioning voice in relation to such new processes of commodification of ES, and have coined the term “green grabbing” (Fairhead et al., 2012).

In terms of understanding peoples’ values and perception of nature and wild resource use, political ecologists have placed increasing attention on the relational and situated nature of knowledge. Through knowledge construction processes taking place at different sites and scales, ecosystems such as forests and coastal areas become sites of contestation, where users and professional managers might significantly differ in the central tenets of their knowledge systems (Peluso and Vandergeest, 2001; Peluso, 1992).

³ See <http://boxesandarrows.com/beyond-cardsorting-free-listing-methods-to-explore-user-categorizations>

Analytical tools influenced by political economy and political ecology tend to link entitlements, vulnerability and sustainable livelihoods. They pay attention to social differentiation and differentiated access, control, and distribution of natural resources and ecosystem services (Fisher et al., 2013).

2.8 Landscape approaches

A single landscapes approach or framework does not exist. Rather, a range of approaches under this general category, including the LLS approach (see section 3.7). Landscape as indicative of larger relationship of people with landscape, e.g. through research on seasonal cycles, place names, and knowledge of landscape processes, and through relationships between people and the resources they harvest (Johnson and Davidson-Hunt, 2011). The term landscape has been reevaluated in recent literature to include people as active agents in processes of landscape formation (Minca, 2007; Olwig, 1996). Landscape approaches have taken interest in the dynamics of human interaction with nature. Forest-dependent people both deforest and afforest or reforest in the example of swidden systems. Landscape change over long periods of time can reveal these processes (Peluso, 1996).

Political ecology contributes to understandings of complex landscape processes and the forces that drive them. It is a useful framework for understanding processes operating at different scales, and with different underlying drivers (Batterbury, 2001). Decisions taken at one scale might influence decisions related to livelihood strategies at the household level (Batterbury, 2001). This kind of interaction shows how landscapes can be understood through analysis of interplay of forces over time; namely through processes of interplay of different institutions and governance models, and the ways powerful narratives produce outcomes in terms of conservation and development policy and action (Batterbury, 2001).

Management systems such as parks and reserves may create landscape changes which not only affect peoples' access, but also the productivity of the ecosystem in terms of quantity and type of yield. Thus landscape frameworks often call for holistic approaches to landscape management, including swidden agriculture, agroforestry, and mangrove systems. Holistic approaches offer possibilities for connecting several different frameworks (Davidson-Hunt et al., 2011). In one example, a landscape approach to nutrition and food security looks at the role of forests in broader agriculture landscapes (Powell et al., 2013). In a larger framework, CIFOR in partnership with PROFOR (WB program on forests) is looking

at landscapes with forests, woodlands, and other landscape conformations with trees. CIFOR is exploring new ways to look at land use to better recognize complexities of land use systems and ES which support them. Key themes include livelihood provisions, sustained ecosystem services, food and non-food products from forests.⁴

3. RELEVANT PROJECTS AND ASSESSMENT APPROACHES

This section turns to existing assessment approaches to human relationships with wild natural resources with a view of addressing gaps and adding value to the HDNF under development. Attention should be paid to several aspects of these approaches:

- Level of detail
- Generalizability and applicability by IUCN to wide range of biomes and contexts
- Applicability in practice (i.e. in terms of informing research, policy changes, guiding organizations and governments, programming, and advocacy)

The HDNF can be designed to be able to capture all wild resources used, all uses of wild resources, the relative importance of wild resources in livelihood strategies and food security, constraints on use and access to resources, and cultural and social values attached to use of wild resources. The following approaches have been selected for their ability to address different aspects of the design.

3.1 Wellbeing in Developing Countries program (WeD, University of Bath)

University of Bath researchers propose WeD as a “holistic analytical framework for understanding wellbeing” (Johnson, 2009: 3). Development of the framework was motivated by the need to integrate understanding of subjective dimensions of quality of life with broader approaches to analysis of poverty and inequality. The objective of the WeD research programme was “to develop a coherent conceptual and methodological framework for understanding the social and cultural construction of wellbeing in specific developing societies.”⁵

The wellbeing methodology was originally grounded in the Resource Profiles Approach (RPA), which extends the usual conception of resources beyond their material and human dimensions, and includes social, cultural, and natural resources dimensions (McGregor, McKay, & Velazco, 2007).

4 See <http://blog.cifor.org/17933/communities-adapting-to-loss-of-forest-ecosystem-services-world-bank/#.UebVL-E-Opo>

5 See <http://www.welldev.org.uk/research/methods-toolbox/toolbox-intro.htm>

Assessment of wellbeing through WeD has been divided into three categories: 1) needs, including health, autonomy, security, competence, and relatedness, which have material foundations, such as food, secure livelihoods, etc.; 2) socially meaningful goals, which depend on social context as goals inform peoples' actions – looking at ways in which people are differentially enabled or constrained – which highlights the importance of having resources, capabilities and opportunities to achieve goals; and 3) subjective experiences, related to the broader idea of subjective wellbeing which is related to psychological philosophies around happiness. All three categories emphasize the need to create meaning, and are therefore amenable to a qualitative methodological approach.

Data collection involves a combination of quantitative and qualitative research methods. Application of methods is sequenced, such that understanding of social and cultural construction of wellbeing can be deepened in particular contexts.⁶ A methodological toolbox available online provides for six components of research: 1. Community Profiles; 2. RANQ: The resources and needs questionnaire; 3. IES: Income and Expenditure survey; 4. QoL: Quality of Life; 5. Process research; 6. Structures and regimes.⁷ The most relevant for the present study appears to be the RANQ questionnaire. At last check (August 1, 2013), the RANQ instruments do not appear to be available online, so relevant documents have been included in an attachments package.

The RANQ is used to map distribution of resources (including social and cultural) and needs satisfaction between households. The QoL instrument is used for researching local values and personal goals, people's perceived resources, and satisfaction with achievement of goals.

Households, communities, regions, and nation states are all structures understood to enable or constrain pursuit of wellbeing. WeD assessment tools focus on the community and nation state levels. Collection of community profiles is achieved using secondary data, key informant interviews, and participatory methods, followed by key economic, political, cultural systems at level of state.

Income and expenditure studies looking at how resources translate to income and expenditures over a period of one year. Seasonal sample household surveys or monthly household diaries are used for this purpose. Qualitative methods are used to study key forms of actions that individuals and households engage.

⁶ See <http://www.welldev.org.uk/research/methods-toolbox/toolbox-intro.htm>

⁷ <http://www.welldev.org.uk/research/methods-toolbox/toolbox-intro.htm>

3.2 Food-security assessments in emergencies (Oxfam GB)

Oxfam Great Britain developed a livelihoods approach for assessment of food security in emergencies. Oxfam defines two elements of food security: 1) availability (the quality and quantity of food supply; and 2) access (entitlement to food through purchases, exchange and claims). Although this assessment tool was developed for emergency contexts, its methods continue to be relevant for assessment of other contexts in which pressures on livelihoods may not be as extreme (e.g., as referred to in Turyahabwe et al., 2013).

This assessment tool was tested with a series of case studies, including: following a cyclone in Orissa in 1999; monitoring Oxfam's response to drought and food insecurity in Wajir, Kenya in 2000; and reviewing Oxfam's food-assistance and food-security programmes for displaced people in Uraba district, Colombia in 1999 (Young et al., 2001).

Assessment is based on information collected about context, including secondary information, key informant interviews, and mapping. Rapid assessments use mainly secondary information and new information collected during field visits. Rapid assessments of food security use a host of RRA/PRA tools, including household visits, walkabouts or transect walks, direct observation, proportional piling, ranking exercises, mapping, time trends, and seasonal calendars. Household surveys are avoided because of time constraints, and appropriateness of the methodology for rapid-appraisal. A range of rapid appraisal methods are summarized in annex 2.

3.3 Poverty Environment Network (CIFOR PEN)

PEN is a large framework with many partners. PEN looks broadly at forest-poverty links using a standardized survey instruments at over 40 study sites in 25 developing countries (<http://www.cifor.org/pen>). In each study site, household-level data collection looks at all forest and environmental uses of forests.

Research instruments include a village questionnaire, an annual household survey, and a quarterly household survey. The village-level instrument provides for the most open-ended responses, and in some cases, could get at values associated with wild forest resource use and identity. At each case study site, an annual and four quarterly household surveys are administered with the aim of understanding the importance of forests for poverty alleviation, and specifically the role of forests and forest products for different groups, in different environments, in different institutional contexts, and

in different market contexts (see PEN Technical Guidelines, included in attached package).

It appears that the network is working on a World Development Special Issue, entitled “Forests, livelihoods and conservation: adding empirical evidence” which should become available mid 2013 (<http://www.cifor.org/pen>, accessed July 27, 2013). A published book with methodological details was published in 2011 (Angelsen et al., 2011).

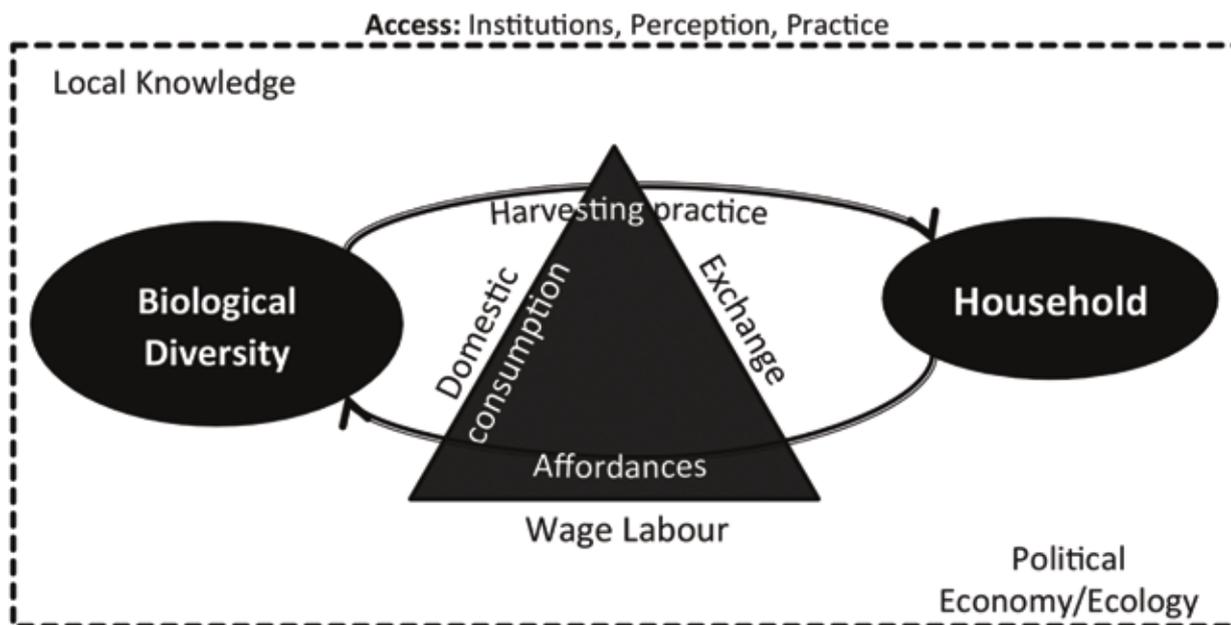
3.4 Biodiversity, access and rural food systems framework (Davidson-Hunt et al.)

The biodiversity, access and rural food systems framework is concerned with linkages between conservation policy, and rural household access to biodiversity for consumption and exchange in the context of regional economies (Davidson-Hunt, unpublished). This qualitative framework has developed out of ethnoecology, landscapes, wellbeing,

and political economy/political ecology. It considers household-level relationships with biodiversity through different possibilities of domestic consumption, exchange, and wage labour. This is framed within possibilities of access (broken into institutions, perceptions, and practice), thus research into the wider social and political context is necessary. Linkages between households and natural resource systems is illustrated in figure 4.

The framework aims at collecting data about 1) places where species are procured, 2) paths that allow for mobility, and 3) sites of infrastructure where biodiversity is transformed into food products and exchanged. An overview table for data collection pertaining to the framework structure is provided in annex 3. The framework does not attempt to identify or prioritize any particular quantitative indicator, but parts of it have been tested alongside a household survey, using a mixed methods approach (Bolton, 2012).

Figure 4: Biodiversity, access & rural food systems framework



Reproduced from Davidson-Hunt, unpublished

3.5 “Hidden Harvest” WB global study on small-scale fisheries

This study has been included although it did not attempt to qualitatively assess resource dependence because represents a large-scale attempt to analyze and describe the importance of small-scale fisheries globally using heterogeneous case study methods, but mainly document reviews. The study measured small-scale fisheries because subsis-

tence fisheries – where fish caught are shared and consumed directly by the families and kin of the fishers – are rare. In these cases, excess production is often sold or exchanged for other products and services, even in the smallest fisheries. Yet subsistence fishing implies a more household-centered than commercial activity (World Bank, 2012).

The study relied to a large extent on the latest secondary data available in the form of official statistics, published

data, and “gray literature”, thus, it comprises a desk study. In some cases, however, this data was complemented by primary research via interviews with key informants, through focus group discussions, or expert meetings, and interviews with a sample of fisher folk. The study also included a re-analysis of existing household survey data to assess production and consumption at a sub-sample of study sites (World Bank, 2012). Statistical data were collected to assess employment, catch, food fish supply, investment and operation costs including fuel consumption. Variables were chosen to focus on food security at the household level largely because they had also been included in earlier analyses (World Bank, 2012). Quantities of all aquatic animals were researched, but seaweed and other aquatic plants, pearls, and marine mammals were generally excluded from the study.

A companion study was conducted to assess impact of small-scale fisheries on GDP. GDP was understood as a key indicator of the role of fisheries in the national economy. A related study – the Sustainable Fisheries Livelihoods Program (SFLP) of the FAO – considered a wider range of economic and social impacts. GDP estimates included the whole fish value chain. Results showed that small-scale fisheries made the most important contribution to value added created along the value chain in most countries.

Seventeen developing country and eleven developed country case studies were conducted. The data collection period was 2004-2007 but some earlier data was used as necessary. Case study countries were chosen on the basis of importance of fishing. The study was pragmatic in that it had to be tuned to local circumstances and data availability for particular indicators. The study pointed to the importance of alternative and mixed approaches needed to show the true economic value of these sectors, as they are reflected poorly in official statistics and discussions of food security and livelihoods (Dyke and Sumaila, 2009 in WB 2012).

Subsistence fisheries were described as opportunistic, in that the patterns of activity observed were highly correlated with variability in available resources. In the process of the developing country case studies, the contribution of subsistence fisheries turned out to be considerably more important than anticipated. More detailed studies were warranted, and were undertaken for Bangladesh, Vietnam, and the Philippines using available data (no field surveys were undertaken).

Major difficulties were found in the use of document studies in completing the case studies. Official fisheries data were found to be unreliable, particularly with regard to small-scale fisheries because of their informal and dispersed charac-

teristics. Catches tended to be significantly underreported, especially in terms of the importance and extent of subsistence fisheries. This study was only able to bridge this gap for certain countries. This was partly due to difficulty with a lack of a definition for small-scale fisheries, and therefore, aggregation of statistical data with large-scale fisheries. Statistical information on small-scales fisheries was often non-existent.

3.6 International Forestry Resources and Institutions (IFRI)

The IFRI programme is aimed at analysis of governance and institutions. IFRI aims to assess the nature of trade-offs among forest conservation, livelihood development, and carbon sequestration, and to assess the role of institutions and policies in promoting better forest outcomes. It employs the Institutional Analysis and Development Framework developed at the Workshop in Political Theory and Policy Analysis at Indiana University. Data collected through a diverse range of forest case studies are stored in a central database for cross-study comparison.⁸

The IFRI research approach was developed out of the commons literature. The IFRI case study approach combines data on biophysical, demographic, cultural, economic conditions to assess sustainability of forest use, and provide policy makers with findings about how local populations interact with forest resources. The programme began in 1992, with pretests of research instruments in India, Nepal, Mali, Bolivia, and Uganda following shortly thereafter. The methodology and database approach facilitates multicountry, multiyear collection and analysis of data (IFRI, 2008).

IFRI provides ways to conduct baseline studies and measure change over time in forest conditions and local governance structures. Eleven survey instruments are used for each forest site, but they are not intended as structured research instruments. Research teams are instructed to leave the survey instruments at home when in the field, and fill them in from data collected using a diverse range of ethnographic research methods recorded in fieldnotes (IFRI, 2008). These field methods include mapping, unstructured interviews, observations, transect walks, and data collection from secondary sources, and other rapid appraisal techniques.

Of the eleven survey instruments, certain forms are more directly relevant to development of the HDN Framework (the IFRI toolbox likely digs much deeper than is necessary for the HDNF), in particular, the user groups and forest products forms. Forms allow long text responses, for example, in the case of descriptions given for policy impacts on forest

⁸ See <http://www.ifriresearch.net/about-us/what-is-ifri-2>. Also see IFRI (2008), which is provided in the documents package.

user groups and associations. The forest product form is open-ended, and includes space for relative abundance, access arrangements, and reasons for importance. Importantly, it provides detailed investigation of users, access, uses, ranked importance, marketing, temporality and spatiality of use, and provides space for ranked substitutes for resources that groups can access during crisis (IFRI, 2008).

3.7 Livelihoods and Landscapes Strategy (IUCN 2007-2011)

This IUCN strategy aims to “...provide hard evidence of the value of forests and the need to take these multifunctional assets into account in national and local policy-making” (IUCN, 2012: 2). Thus the main purpose was to respond to undervaluation of forest resource use by the international community. The economic significance of forests (both cash and non-cash) was perceived as unquestioned, and was a major topic under investigation. The strategy includes a prominent livelihoods component.

In terms of practice in the international community, the IUCN sees the LLS contributing in that: “A landscape approach is about turning an institutional wilderness into an area where everyone agrees about land use, land management and land rights in the different parts of the landscape, and where differing goals are either harmonised or complementary” (IUCN, 2012: 7).

The strategy was designed to be decentralized, and tailored to individual needs of case study sites and researchers/facilitators:

IUCN worked with more than 60 partner organizations in the implementation of LLS, in 27 landscapes and 23 different countries in Africa, Asia and Latin America. A tailor-made set of activities was developed for each landscape, according to the interests and needs of key stakeholders and the specific biophysical, socio-economic and governance conditions present. Common activities included for example negotiation of local access rights, support for locally-controlled forest management and restoration, and the development of income generating activities (such as the marketing of non-timber forest products or the development of forest-related jobs) (IUCN, 2012: 2).

The project supported non-cash incomes and sustainable production or collection of NTFPs. The aim was to add value to ongoing activities by IUCN and its partners, such as by adding better baseline analysis. Tools for baseline assessment and monitoring included visioning, videography, a “forest-poverty toolkit”, mapping, use of the Stella computer program for modeling changes in landscapes and

livelihoods, and market analysis surveys to gauge size and potential of NTFP markets, and a “landscape template” for structured collection of information (IUCN, 2012).

Changes in poverty levels were to be measured before and after the strategy was applied. The strategy looks at outcomes using a participatory wealth ranking approach based on local people’s perceptions of poverty. An identified weakness was the lack of qualitative assessment of change in favor of development of a monitoring protocol which was ultimately implemented late in the study, and not in all landscapes. Monitoring landscape transformation could have benefited from such a tool. Qualitative impacts were identified as an important focus, and thus towards the end of the study, more effort was put into documenting stories and case studies to show processes of change qualitatively (IUCN, 2012).

Important results came out of the quantitative assessment of forest reliance in terms of assessing the relative importance of income from forests. Forests were found to be not just safety net for poor: people of all wealth categories gather forest products, especially in more remote areas. Forest use was found to be important year-round on an inter-annual basis. The assessments were able to put a global figure on forest incomes from locally controlled forestry. Economic reliance was found to be skewed towards non-cash incomes for both men and women. Key organizations and institutions which have had influence or been influences on the LLS include the Collaborative Partnership on Forests, Global Partnership on Forest Landscape Restoration, Growing Forest Partnership, CIFOR, FAO, and UNFF. In addition, the LLS was identified as a major influence on IUCN’s new work program, including its new Index on Human Dependency on Nature.

3.8 Wellcoast: Human Wellbeing & Coastal Resilience Network

The Human Wellbeing and Coastal Resilience Network is comprised of institutions working with vulnerability of coastal people and the ES on which they depend (<http://www.wellcoast.org>). They refer to the MA concept of ES and the WeD research group concept of wellbeing. The network has several ongoing research projects in south Asia, northern Ireland, Ghana, Vietnam, and coastal Kenya.

In particular, the project “Developing a wellbeing framework for the assessment of small and medium scale fisheries in the global South” (2009-2012) looks at improving human wellbeing through maintaining the flow of environmental goods and services.⁹ The project aims to develop a conceptual framework for medium and small scale fisheries.

9 See <http://www.worldfishcenter.org/our-research/ongoing-projects/governing-small-scale-fisheries-poverty-reduction>

3.9 FAO Forests, Trees and People Programme (FTPP)

The FTPP was initiated in 1987 and ran until 2001. The FTPP was jointly managed by FAO's Community Forestry Unit (Rome), the Department of Rural Development Studies at the Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden, and Regional FTPP Centers in Africa, Asia, Europe, Latin America, and North America. The programme supported training, information exchange, and methods development around people's relationships with forests. The FTPP featured a study based on case-study research carried out in Tanzania, Bolivia, Thailand, and Vietnam. The objectives of this study were to: "... provide information on the links between forest products and household food security, the extent and manner of local people's dependence on the forests for food and their vulnerability to changes in access and availability to these resources; and to develop methods for generating information for forestry professionals for policy-making and implementation" (Dem-bner, 1995).

The project was designed to explore more qualitative, rapid and participatory methods in learning about dependence issues in local communities. All case studies made use of PRA and RRA methods that research teams deemed most appropriate for their needs in the initial, exploratory phase of research. Studies then employed questionnaires and household interviewing (Dembner, 1995).

3.10 Ecosystem services for poverty alleviation: Marine and coastal situational analysis

This study was funded by the UK Department for International Development, Natural Environment Research Council, and Economic and Social Research Council, and was commissioned in order to design a future research programme. The study assesses knowledge of linkages between ES and poverty alleviation (Brown et al., 2008).

Seven organizations were involved, providing "global, regional and national perspectives" in southeast Asia and the western Indian Ocean (Brown et al., 2008: 10). Assessment methods included literature reviews, national workshops in five countries (Kenya, Tanzania, Mozambique, Philippines, Vietnam), and focus groups. Key aspects investigated were: extent to which dynamics and uncertainty affect human wellbeing and livelihoods; and are changes making poor people more vulnerable and therefore less likely to cope with other changes or shocks?

Methods included stakeholder analysis, institutional analyses, scientific reviews, and national workshops including regional scientists, research and policy personnel, including government, donors, and NGO representatives. Section 5

of this assessment is about appraisal of ES from the perspective of poor stakeholders, which allowed for use of local knowledge to identify ES. Focus groups were designed to gain insights into fishers and dependency on ecosystem services, and to provide "alternative voices and perspectives on ecosystem services and poverty alleviation" (Brown et al., 2008: 13).

The assessment focused specifically on livelihoods of poor people, so it was relevant to consider income and employment benefits which were not explicitly addressed in the MA conceptual framework. The authors considered it unusual for studies to include employment and cash as ecosystems services benefits. Also tourism was viewed as a cultural ecosystem service under the MA, but from a pro-poor perspective, the authors pointed out the main benefit of tourism as a source of livelihood and thus felt it should be classified as a provisioning service. This points out the need to consider whether it is at all beneficial to consider classifying ecosystem services benefits a priori, or whether these should emerge from analysis at each individual application of the framework. The authors also found inter-dependence in several ES, thus the activity of categorizing and ranking ES was deemed complicated and confusing if taken from a more holistic perspective (Brown et al., 2008: 16).

3.11 "An Inuit Perspective on Food Security in the Alaska Arctic: Building a Framework on How to Assess Change in the Arctic"

This project of the Inuit Circumpolar-Council Alaska (ICC-AK) was recently initiated in response to questions related to food security (or insecurity) in the arctic. The aim was to build a framework for assessing food security from an Inuit perspective. The project places an emphasis on harvesting of arctic flora and fauna, Inuit traditional foods, medicines, nutrition, processing, social and cultural integrity, threats to food sources, and spirituality (ICC-AK, 2012). Three objectives of the project were identified: 1) Provide an understanding of arctic food security from an Inuit perspective; 2) provide a tool to assess food security across both cultural and environmental systems; and 3) identify what will need to be monitored in order to create action plans.

The entirely qualitative methodological approach involves community meetings and semi-structured interviews. The project aims to identify baselines needed to assess vulnerability to food insecurity, and identify Inuit priorities for assessing food security. The primary need was to establish knowledge needs, for example, in order to build an understanding of ice coverage to understand food web dynamics (ICC-AK, 2012). The food security framework and knowledge built will be used to inform community-based monitoring (Carolina Behe, personal communication, July 11, 2013).

ES have been defined very broadly to begin with in the project. Issues around social institutions and access to resources have come out through the research process during open-ended, semi-structured interviews. Interviews were sensitive to the need to capture and recording specialized knowledge of the knowledge holder (e.g. elder women tend to have knowledge of medicinal plants). Participants include a range of age groups from both sexes from young adults to elders (C. Behe, pers. comm., July 11, 2013). Behe stressed that the project was being carried out within an area where dialogue has already taken place, and trust has been built, so groundwork on which methods are being built has already been laid. 95 tribal councils have been brought in and engaged through community-level workshops. TEK holders have been brought into a peer review process which looks at results and analysis.

Following regional community work in Alaska, the hope is that the developed framework will be shared with the Arctic Council, and assessments will be conducted throughout the arctic (C. Behe, pers. comm., July 11, 2013). Behe recognized difficulties in scaling the study to other areas. For instance different arctic groups hold different values and perceptions around sale of food on the market. Whereas Greenland has a market for wild resources, Alaska Inuit do not.

3.12 Gwich'in and Nunavut Wildlife Harvest Studies

Various Canadian harvest studies began in different arctic regions in the 1970s before Inuit land claims had been settled. These studies explored trends and economics of wild harvests and associated sharing networks (Kendrick, 2013).

The Gwich'in Harvest Study (GHS) was conducted as a requirement of the Gwich'in Comprehensive Land Claim Agreement (1992). Objectives of the study included: 1) calculating the Gwich'in Minimum Needs Level (GMNL) of harvested species; and 2) the effective management of wildlife by the Gwich'in Renewable Resources Board (GRRB) and government. The data collection period spanned from 1995 to 2004, and involved indigenous harvesters in the Gwich'in Settlement Area in the Northwest Territories, Canada. Hunters were interviewed on a monthly basis over this period. They were asked to recall hunting, fishing, or trapping activities for the previous month, including numbers of animals by species, locations of harvests, and sometimes age class and sex of animals harvested (GRRB, 2009).

The GRRB was required to consult on all relevant factors when setting the GMNL, including contemporary use patterns and levels of past harvests, personal consumption needs, including nutritional, clothing, and cultural needs, trade among the Gwich'in to meet personal consumption needs, small-scale commercial sale of foods and furs (e.g., furs sold locally or non-locally through fur auctions, and car-

ibou sold locally), and availability of various wildlife species to meet these needs. Thus, trade and exchange were studied alongside immediate individual or household consumption (GRRB, 2009). Interviews aimed to fill in a survey form (thus a structured questionnaire was the main tool). Face-to-face interviews were preferred, but telephone interviews were used in some cases.

As per the Nunavut Land Claims Agreement, Nunavut undertook their own study to determine total levels of harvest for each of 27 communities beginning in 1996. Data was collected through interviews with more than 6000 harvesters. The study came to a conclusion in 2001. As with the Gwich'in harvest study, data was used to determine basic needs levels.

3.13 Centre for Indigenous Peoples' Nutrition and Environment (CINE) Global Health Data Tables

The need to develop this tool was identified in 2000. The primary question to be addressed through the procedure was: "Can the traditional food system be used to improve micronutrient status of the community? Can the negative effects of the nutrition transition (obesity, poor quality diet) be prevented or reversed (C.I.N.E., 2006). A section of the C.I.N.E. website contains detailed methodological manuals for conducting their assessment of indigenous peoples' food systems (<http://www.mcgill.ca/cine/resources/data>). Case studies were developed for Thailand, China, India, and Bangladesh. A work schedule for collection of data tables is included as annex 4.

4. GENERAL FINDINGS AND CONSIDERATIONS FOR DEVELOPMENT OF THE HDNF

To what degree can IUCN derive from what has been done, drawing on the above frameworks and assessment tools (i.e., to avoid re-inventing the wheel)? A summary of assessment programmes is contained in Table 1. A range of tools were employed in these assessments, drawing from quantitative, qualitative, and mixed methodologies. What lessons might be drawn from the frameworks and tools listed? What kinds of questions do they raise that could guide development of the HDNF?

Combining frameworks: Likely, a combination of frameworks is needed to address all concerns of the framework. Wellbeing and food security frameworks may offer specific advantages in developing a perspective on values and identity. These frameworks work well across developing and developed countries.

A modular approach: A primary concern is balancing a

flexible modular approach with consistent range of assessment tools across many sites. Several programmes raise the issue that certain research questions and methods may not be appropriate for some groups in some locations, while they may be in demand from other groups. For example, Behe (pers. comm., July 11, 2013) noted that looking at marketing of wild foods was not appropriate for many Inuit groups. Bolton (2012) observed that in his case study research, household surveys were identified from the start as an appropriate data collection tool, whereas many indigenous groups have had negative experiences with the collection of statistical data.

The LLS appears to provide relevant experience for development of the HDNF in terms of setting up a modular approach across case studies. The LLS presents a common set of themes and strategic outcomes, but is not predisposed to the rigorous application of tools at each individual site. The most compatible approaches for household and community level data collection and interpretation rely on the capability of local researchers to carry out meaningful work. This means encouraging close collaboration between organizations and organizational levels, but also caution in standardizing research instruments across all framework study cases. It may not be necessary or desirable to supply a standardized procedure, as local cases may dictate not only the way data is collected, but also the most appropriate indicators or metrics to employ. This does not imply that a standard tool, such as a household survey or interview schedule could not be developed, but merely that a sequential mixed methods design (Creswell, 2009) with a broad bag of tools may be more appropriate than a rigid design (see also below).

Attention to scale of dependence: Multiple levels of analysis deserve to be considered (family, household, community, nation state), as these represent overlapping areas of control and contestation with regard to resource rights. For example, forest commons may feature family tree ownership, but be under community or state control. A landscape approach could aid in identifying an appropriate scale of analysis for each case. A political economy/political ecology toolbox could be useful for analyzing cross-scale institutional interactions, including the way harvesting, transformation, and exchange of resources is enabled or constrained across sites.

Mixed methods: Quantitative metrics selected for measuring dependence (e.g., percentage of total household income, time and money invested in harvesting activities) might be sequentially assessed, along with qualitative exploration of perceptions and values. Qualitative assessment may help in determining the most appropriate quantitative metric to use. Careful choice and interpretation of quantitative metrics and indices are necessary in order to avoid the trap of *substitutability* of wild resource harvests with other livelihood activities – the finding that alternative livelihood activities could justifiably replace lost opportunities due to restriction of wild harvests or access to wild resources. If the importance of wild food use cannot be shown in terms of livelihoods-critical temporal and spatial harvesting patterns, there is a risk of underestimating dependency, which makes choosing appropriate metrics across study sites a challenge.

Table 1: Comparison of assessment programmes and tools

Assessment tool	Related framework(s)	Biome(s)/ administrative levels	Main tools	Assessment period
WeD	Wellbeing, livelihoods	Any / household to national	RANQ questionnaire, interviews, document review	1 year
Oxfam food security in emergencies	Food security, livelihoods	Any / household to national	PRA/RRA rapid appraisal techniques, document review	Rapid assessment (weeks) with possible follow-up
CIFOR-PEN	livelihoods	Forest / household to community	Village survey, household questionnaire	1 year
Biodiversity, access and rural food systems framework	Ethnoecology, wellbeing, landscapes, political economy/ecology	Any / household to international	Qualitative ethnographic, ethnoecology tools, policy analysis	Minimum several months
WB Hidden Harvest	livelihoods	Coastal-marine / national level	Document review, key informant interviews, workshops	Not known. Assessed for data covering 2004-2007 timeframe
IFRI	IAD (commons)	Forests / household – national level	Ethnography, ethnobotany, document review	>1 year
IUCN - LLS	Livelihoods, landscapes	Forest / Household, community	Mixed methods quantitative/qualitative, document review, interviews, workshops, focus groups, PRA	Multi-year
Wellcoast	Wellbeing, livelihoods, ES, vulnerability	Coastal-marine / household to community	Mixed methods, questionnaires, workshops, interviews, focus groups	Not known (multi-year?)
FAO- FTTP	livelihoods	Forests / community case studies	Mixed methods: PRA/RRA, household questionnaires	Not known (multi-year?)
ES for poverty alleviation	MA, livelihoods	Coastal-marine / household-national	Document studies, institutional and policy analysis, interviewing, workshops	Not known
ICC-AK	Food security	Alaska and Circumpolar north / individual harvester to community	Qualitative: community meetings, semi-structured interviews	Multi-year
Northern Canada indigenous harvest studies	Minimum needs level assessment for nat. res. management	Arctic / individual harvester	Quantitative: structured questionnaire	Multi-year
C.I.N.E. global health data tables	Food and nutrition security	Thailand, China, India, Bangladesh / Community level assessment	Mixed methods	8 weeks

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ANNEXES

Annex 1: Comparison table from White (2009)

WeD Working Paper 09/50

Appendix C. Assessing the Domains of Wellbeing.

Please note: these questions cannot be pursued directly as set out here – they are far too demanding!

However, this table gives an idea of the range of issues that people might wish to cover.

A. Domain of Wellbeing	B. What matters	C. Satisfaction	D. Enabling/ constraining factors	E. Potential support
1. Accessing resources	What resources would you say you need to live well and be happy?	How would you say you are doing with respect to these?	What enables/ constrains your access to these resources?	What do you think would help you gain better access to resources?
2. Exercising participation /agency	What kinds of activities do you participate in within the family and community?	How satisfied would you say you are with this?	What enables/ constrains your ability to participate effectively?	What do you think would help you participate more effectively in activities in the family and community?
3. Building social connections	What relationships and connections beyond the household are important to your living well and being happy?	How satisfied are you with these relationships or connections?	What enables/ constrains your ability to develop relationships and connections?	What do you think would help you build better relationships and connections beyond the household?
4. Sustaining close relationships	How do relationships within the family contribute to your living well and being happy?	How would you say you are doing with respect to these?	What enables/ constrains this?	What do you think would help to improve your close relationships?
5. Experiencing self-worth	What are some of the things in the way you are or what you do that make you feel good about yourself?	How satisfied are you with these characteristics?	What enables/ constrains your ability to be this way?	What do you think would help you feel better about yourself?
6. Enhancing physical and mental wellness	What aspects of physical or mental health affect your ability to live well and be happy?	How satisfied are you with your mental or physical health?	What enables/ constrains your ability to improve your physical/ mental health?	What do you think would enable you to enjoy greater physical or mental wellness?
7. Enjoying peace of spirit	What do you need in religious or spiritual terms in order to live well and be happy?	How satisfied are you with your religious or spiritual life?	What enables/ constrains your ability to improve your religious or spiritual life?	What do you think would enable you to enjoy greater religious or spiritual wellbeing?

Annex 2: Oxfam rapid appraisal techniques (Young et al., 2001)

food-security assessments in emergencies

Annex

Rapid appraisal techniques useful in food-security assessments

Direct observation

Direct observation assesses, among other things, the physical condition of the surroundings, the condition of crops and livestock, the physical appearance of people and their living conditions and the interactions between people. It is combined with a walk around the location, seeking out premises or sites relating to food security (the mill, shops or the marketplace, nearby fields), and visits to people in their homes.

Semi-structured interviews

Semi-structured interviews take place with key informants, who are purposively selected individuals. Interviews preferably take place away from other people. A mental or written checklist of key areas or open-ended questions is prepared in advance. Points of interest not previously considered are followed up.

Proportional piling

Proportional piling is used to find out about the relative importance of different things. In relation to food security, it can show the relative importance of different sources of food, and changes in relative importance following a certain event. People are asked to identify their main sources of food or ways of acquiring food. They then select symbols representing these food sources, and put them on the ground or on a table. Against these symbols, they share out a fixed number of beans (usually 100), beads or stones showing their relative importance. So, if there are 50 beans against crop production, this means it accounts for approximately 50 per cent of the respondents' source of food.

Timelines and chronologies

These are particularly useful in describing events prior to a displacement, or a historical review of periods of famine and food insecurity and people's perceptions of their main features, relative severity and underlying cause. This can give an indication of the relative severity of the current period of food insecurity, and different causes from previous periods of food insecurity.

Seasonal diagramming

With seasonal diagramming, local people can describe the seasonal factors relating to food security, such as the production cycle of different food crops (planting, weeding and harvesting); the production of different livestock products; labour demands; and periods associated with raiding or other attacks. This is useful in showing seasonal differences in food supply and access to food, and for identifying the 'hungry season', the period of plenty, and whether at a particular time of year the situation can be expected to improve, or deteriorate.

Mapping

In mapping, local people are asked to draw a rough map of their surroundings, showing features like water sources, religious meeting places, schools, shops, markets, fields, areas where livestock are kept, areas accommodating particular social or ethnic groups, new arrivals and areas of restricted access. This is useful in getting an idea of scale, particularly where access is restricted. It is also useful in terms of planning visits and walks around the affected area.

Activity profiles

Activity profiles are descriptions of people's activities throughout the day, and are useful in learning about gender differences and relationships, and the time spent acquiring food.

Annex 3: Tables from Davidson-hunt et al. (2012)

Table 1. Harvesting Practice and Affordances

Activity	Natural resources	Ecology	Material access	Human Actors	Access	Outcomes
		Season and location	(equipment necessary to undertake a given activity)	Individuals involved (gender, age, class)	Formal and informal institutions	Resources and their final destinations (what is consumed, exchanged, sold?)
					Policies	
					Protected areas	
					Landing sites	
					Fishing agreements	

Table 2. Domestic Consumption (movements of resources within the household)

Resource	Types of transformation	Processing Arenas	Human Actors	Knowledge and Institutions shaping preferences	Outcomes
What's being consumed?	What kind of processing do resources go through?	When and where processing happens?	Gender, age, class		Food security, well-being
	Immediate consumption (e.g., cooking - temporality)				
	Storage (e.g., freezing, drying, curing, canning)				

Table 3. Exchange

Types	Arenas	Actors	Institutions, Norms and Values	Outcomes
Markets, barter, gifts, sharing	farmers markets, cooperatives, festivals, ceremonies, value chains	(gender, age, class) Mobile vendors, middle persons,	Policies, laws, customary institutions, regulations	Identity, income, credit/debt, purchasing power, access to resources and capitals, well-being

Annex 4: Centre for Indigenous Peoples' Nutrition and Environment work plan (CINE, 2009)

	Week							
	1	2	3	4	5	6	7	8
Set-up and Background Data	■	■						
Community Food System Data Tables	■	■	■	■	■	■	■	■
Key-informant Interviews/ Focus Groups	■	■		■	■		■	■
Community Traditional Food List	■	■						
Market Survey			■	■				
Food Sampling and Laboratory Analysis			■	■	■	■	■	■
Community Discussions	■							■
Interpretation and Report							■	■
Planning to Conduct Intervention								■

IUCN is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its 1,300 Member organisations and the input of some 15,000 experts. IUCN is the global authority on the status of the natural world and the measures needed to safeguard it.

CEESP, the IUCN Commission on Environmental, Economic and Social Policy, is an inter-disciplinary network of professionals whose mission is to act as a source of advice on the environmental, economic, social and cultural factors that affect natural resources and biological diversity and to provide guidance and support towards effective policies and practices in environmental conservation and sustainable development.

The People in Nature (PiN) Knowledge Basket is an initiative established by the IUCN programme of work and whose development is led by a steering group composed of representatives from CEESP, IUCN secretariat and IUCN members. As described in the 2017-2020 CEESP mandate, PiN will promote learning to improve our understanding of how nature contributes to local livelihoods and well-being. It will focus on material use while recognising that use is embedded within worldviews that include deep-seated cultural norms, values, and understandings. It will also consider symbolic interrelationships with nature expressed through cultural narratives, language, and traditions, including diverse understandings of sacred and divine aspects of nature and our relationship with natural resources. This work will contribute to valuing and conserving nature through understanding the value of nature to human societies.