Understanding the interrelationships between nature, livelihoods, well-being and poverty

Helen Suich, Julián Idrobo, George Akwah Neba and Tristan Tyrrell

1 Introduction

The aim of the People In Nature (PIN) knowledge basket is to promote the uptake of existing knowledge and generate new knowledge on the interrelationship between people and nature. These interrelationships are recognised as multi-faceted and dynamic, incorporating direct and indirect uses of species and ecosystems that are underpinned by deep-seated cultural norms, values and beliefs. This explicit inclusion of cultural values is one of the core elements of the PIN, along with the adoption of a rights based approach to the interrelationships between people and nature, and the use of mixed methods to understand these interrelationships and the distribution of impacts and changes on individuals, households and communities.

PIN is a knowledge basket which will contain approaches, tools and standards and associated capacity building regarding the interrelationships between people and nature[1]. It is anticipated that the development and application of the PIN will allow for more systematic data collection, documentation and understanding of local social-ecological contexts that are relevant to policy formulation and development interventions, and that will result in reductions in vulnerability and tangible improvements in wellbeing.

Early applications of the PIN will focus on indigenous peoples and local communities (IPLCs) in rural areas, in contexts where the direct, indirect and cultural values of biodiversity and water resources make important contributions to numerous dimensions of poverty or wellbeing.

The way humans utilise on nature has been described in detail in the Millennium Ecosystem Assessment (MA 2005), and the knowledge generated by this assessment has catalysed the world's interest in the area of human interactions with nature in academic and policy fields, recognising that every human society, large or small, technologically sophisticated or rudimentary, has developed and maintains a system of economic, spiritual, symbolic and religious interrelationships with their natural environment. Institutions, norms and social structures that govern the daily life of these societies

[1] The PIN will be comprised of standards, processes, relationships, capacity building, and tools, in a basket of knowledge mobilized through IUCN.

emerge from the diversity of representations and interpretations of nature, and the way in which any human society relates to and uses nature is determined by this diversity of interpretations and representations. The scope and importance of environmental goods and services sustaining livelihoods vary considerably amongst and between social groups.

The overall purpose of this paper is to explore the most appropriate approach to understanding the diversity of the linkages between nature, livelihoods, well-being and poverty. The paper is a contribution to a broader PIN reflection on a set of mixed methodologies that could be used for systematic generation of knowledge on the interrelationships between people and nature. The next section of the paper is dedicated to the exploration and conceptual clarifications of livelihoods, human wellbeing and poverty, and their key dimensions. The third section focuses on the key features of the PIN approach, based on these conceptual foundations for understanding these interrelationships. Section four reflects on the key benefits to policy-makers of the information generated by this approach. Links to the other discussion papers are highlighted where relevant; papers which discuss in detail issues of value, resilience, mixed methods, governance and the rights based approach, and data issues.

2 Principal concepts

2.1 Livelihoods

In general, livelihoods refer to the ways by which people secure the necessities of life; however, development scholars and practitioners have picked up this term as part of frameworks that examine how households make use of the range of assets, resources or capitals available to them and the ways they use them to live well (Rakodi 2002).

The sustainable livelihoods approach (SLA) is perhaps the most popular framework available to examine rural livelihoods. Livelihoods are defined within that approach as ‘the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term’ (Chambers and Conway 1991, p.6). That is, they are the means employed by a person, household or group of people, to make a living.

The framework highlights the variety of assets (known as ‘capitals’) that refer to the tangible and intangible resources that are available and accessible to a people and on

which they build and depend for subsistence. These capitals are key to rural livelihoods and the interdependence between them, recognizing that no single asset can deliver all of the livelihood outcomes that people seek (Carney 1998; Carney et al. 1999; DFID 1999). The five capitals are:

- human capital, which refers to the skills, knowledge and ability of people;
- natural capital, which refers to stocks of natural resources and nature-based goods and services that people depend on for their livelihood; [expand about relevance here]
- social capital, which includes social networks and connections, memberships, trust, reciprocity, and exchange
- physical capital, which includes basic infrastructure such as means of transportation, shelter and buildings, water and sanitation systems, etc., and 'producer goods' such as tools and equipment;
- financial capital, which involves the flow and stocks of financial resources that people can access and use to fulfil their livelihood needs (DFID 1999).

The SLA looks at the availability of these capital assets and the factors that favour or limit peoples' access and use of various assets to achieve livelihood outcomes. The SLA is underpinned by the understanding and recognition 'that more attention must be paid to the various factors and processes which either constrain or enhance poor people's ability to make a living in an economically, ecologically, and socially sustainable manner' (Krantz 2001, p.1).

The policies, institutions and processes (PIPs) element of the SLA framework covers the social, economic and political context within which people pursue their livelihoods strategies, and these may operating at one or more levels (local, regional, national, international), making the analysis of cross-scale links critical. Analysis of how access and rights regimes work fits within this element, and is of particular relevance to the PIN. The inclusion of these mediating factors means the SLA has been described as offering 'a more coherent and integrated approach to poverty' than was typically used (at the time) (Krantz 2001, p.1). The combination of capitals and the influence of policies, institutions and processes affects affect the choice of livelihood strategies and therefore impact on livelihood outcomes.

The SLA has been widely applied to understand the livelihoods of rural communities that depend on natural resources and biodiversity, (Ferrol-Schulte et al. 2013; Pokharel and Nurse 2004). SLA provides tools to understand the role that natural resources and the activities associated with their appropriation, consumption, transformation and exchange

play in the economy and everyday life of the communities that use them and their contribution to the overall livelihood of the households that depend on them (Ellis and Allison 2004, Rapley 2007).

The SLA deals with spatial and temporal dynamics well, enabling tracking over time household assets and changes in institutions, organisations, and policies that affect the choices that individuals, groups and communities can make about livelihood strategies. (Ellis, 2000). The approach can also deal with the spatial organisation of the livelihood activities undertaken, and, for instance incorporating migration in to livelihood strategies.

A particular strength of the SLA is that it 'recognizes human agency and examines the way in which household livelihood strategies are built around protecting, substituting, increasing, and using assets to produce security and achieve other goals' (Hulme and Shepherd 2003, p.414). The poverty neutrality of the SLA (Norton and Foster 2001) can be interpreted as a strength, especially when combined with the less confrontational language of sustainable livelihoods (i.e. compared to the poverty terminology), and the advantage that it highlights the strengths of people, rather than focusing on weaknesses, deprivations or lacks. However, this poverty neutrality also means that the identification of who is 'poor' remains difficult, creating difficulties when operationalising the approach in development programmes, if targeting individuals or groups for the receipt of goods or services is necessary.

Additional strengths are that the SLA allows for a livelihoods analyses that lead to the design and delivery of development interventions; the approach moves away from sectoral analyses (Gilling, Jones, and Duncan 2001) and recognises the interactions of different capitals affected choices and possibilities.

Criticisms have been levelled as some applications of the approach (rather than the conceptual framework), because of their limited analysis of policy processes, ecological sustainability, gender and power relations (Clark and Carney 2009; Ashley and Carney 1999), and of the institutional contexts and micro–macro linkages.

The framework has also been criticised because of its instrumental nature that over-emphasises the use of capitals, even reifying them into fixed categories and marginalisation of the role of culture in livelihood strategies (Allison and Horemans 2006; Gough, McGregor, and Camfield 2007), White and Ellison 2007). Capitals appear to exist independently of the individual and are understood as being 'out there' to be

accumulated, stored and used in order to achieve a particular end (e.g. Rakodi 2002). This position assumes that culture plays a marginal role in the basket of livelihood capitals or that is merely an element of social capital, rather than a lens through which other assets are constituted (Gough, McGregor, and Camfield 2007). By not fully acknowledging the role of culture, the SLA frameworks has develop a materialist approach to understanding the ways rural people live their lives (White and Ellison 2007).

2.2 Social well-being

The idea of well-being has gained increasing attention among development scholars and practitioners as it provides an alternative perspective of how indigenous peoples and local communities live their lives (Gough and McGregor 2007). The emerging approaches to well-being are rooted in perceptions of development that shift from narrow foci on economic- and deficit-oriented frameworks to the broader concept of a process centred on the needs of individuals and households and on their goals and aspirations (Gough and McGregor 2007; Weeratunge et al. 2014). Well-being has been approached from multiple perspectives and disciplines and there is no consensus about its definition, scope and objectives (Camfield, Choudhury, and Devine 2006). Sen's development of the capabilities approach (1999) has greatly supported this paradigm shift, by analysing well-being – through its antithesis of poverty – from the perspective of the opportunities available for people to lead the kind of lives they value. In the context of examining the benefits humans receive from nature, the well-being lens produced by the Millennium Ecosystem Assessment (MA 2003) and a social well-being framework (Gough and McGregor 2007) are helpful in building an understanding of how nature, society and culture are intertwined through socio-political processes that produce the landscapes in which people exist. Both of these frameworks evolved from the SLA framework and have an explicit commitment to understanding the ways of life and interactions with nature of rural societies (Bebbington et al. 2007).

The MA (2003: 29) defines human well-being as having 'multiple constituents, including the basic material for a good life, freedom of choice and action, health, good social relations, and security.' Nature is understood to provide a set of provisioning, regulatory, cultural and supportive services, which contribute to the construction of human well-being in its multiple constituents. The MA also highlights the importance of access to nature for well-being in the form of freedom of action and the way key ecosystem services, such as provisioning and regulating services, provide basic assets for living a good life.

In addition, the MA contributed to the understanding that the well-being of most indigenous peoples and local communities is based more or less directly on the sustained delivery of essential services, such as the production of food, fuel, and shelter, the regulation of the quality and quantity of water supply, and the control of natural hazards (e.g. Diaz et al. 2006). According to MA, freedom of choice and action, or 'the opportunity to be able to achieve what an individual values doing and being' (MA 2003: 28), depends on the access people have and the benefits they receive from specific arrays of ecosystem services. The MA framework treats well-being as an outcome of benefiting from nature rather than an integral and underlying process that shapes what services people need to fulfil their goals and aspirations.

The framework is limited by insufficiently incorporating the role that culture plays in the constitution of well-being. By treating the benefits human receive from nature as services, the MA takes for granted the processes that construct such resources, assuming them to exist independently of their individual beneficiaries. This is clearly reflected in the MA's intrinsic treatment of culture; cultural ecosystem services are evaluated as discrete services one can benefit from (i.e. recreational, aesthetic and spiritual benefits). Such a perspective ignores the instrumental role of culture as a process that constructs the perception of services through everyday practices (Sen 1998).

The social well-being framework from the Well-being Research in Developing Countries has been conceptualised as: 'a state of being with others, which arises where human needs are met, where one can act meaningfully to pursue one's goals, and where one can enjoy a satisfactory quality of life' (McGregor 2009:3). This definition is developed into a tri-dimensional theoretical framework, with material, subjective and relational components, that enables the examination of the experience and construction of well-being. The material dimension considers the objective circumstances of the individual, while the subjective dimension considers how the individual perceives these circumstances. Finally, the relational dimension considers how the individual establishes relations with their environment (Gough and McGregor 2007). This dimension of the framework recognises that the objective circumstances of individuals and communities, as well as perceptions of them, are situated within a societal context and are contained within contingently generated frameworks of meaning. Under this guise, well-being entails both the benefits people receive from nature and the processes that underlie the construction of such benefits (Gough et al. 2007).

The concept of well-being for indigenous peoples and local communities often focuses less on monetary stability or gain and more on their ability to undertake traditional practices and the recognition of rights, Tauli-Corpuz (2008), which suggests a number of themes that should be incorporated into well-being analyses: land, territories and natural resources; natural and cultural collective heritage; social organisation; identity (collective and gender); self-determination; and intercultural relations.

The social well-being framework provides an analytical lens to evaluate how people benefit from nature, given that the experience of well-being is affected by cultural and geographic context, and depends on class, age, gender and ethnicity, as well as changes over time (Coulthard, Johnson, and McGregor 2011; Weeratunge et al. 2014).

In considering specifically the role of nature, White and Ellison (2007) argue a social well-being perspective acknowledges that the use and perception of biodiversity, natural resources and ecosystem services depend on the perception of and multiple ways by which indigenous peoples and local communities benefit from them, rather than limiting nature to specific categories. While the SLA typically conceptualises natural capital as an independent entity, the social well-being lens acknowledges the specific dimensions (i.e. subjective, social and/or material) they acquire in the context of their use. Culture becomes a dynamic lens through which social life is constituted and confers relevance to certain practices, such as harvesting particular species and eating certain foods. While materials from nature exist on their own, culture mediates the processes by which they acquire meaning and come to exist in relation to individuals from a particular social group. This cultural meaning is bounded to the needs and aspirations of the individual and their immediate relations with other society members. At the same time, relations with other society members are influenced – being either hindered or enabled – by current social, economic and political circumstances.

2.3 Poverty and vulnerability

Poverty is a contested concept and therefore definitions and component elements require careful debate and definition. It is widely accepted as meaning a lack of, or an inability to achieve a socially acceptable standard of living; and/or the possession of insufficient resources to meet basic needs (World Bank 1990). However, while poverty has long been understood as multidimensional, it has historically been measured using single measures of income (or consumption) poverty, which ignore the many other non-income dimensions that can interact and reinforce each other. Drawing on Sen's capability approach (Sen 1983), in recent decades, poverty has been accepted (and increasingly

measured) as having multiple dimensions, and as being shaped by, and within the political, economic, social and cultural context (Stiglitz, Sen, and Fitoussi 2009; Barrett and Swallow 2005; Tiwari 2007).

Poverty can be understood as being absolute and relative. Absolute (or extreme) poverty occurs where an individual does not have the ability to meet the absolute minimum requirements for human survival (e.g. UN 1995). In contrast, relative poverty considers the status of each individual or household in relation to the status of other individuals or households (e.g. EC 2004), examining poverty in the context of inequality within a society. This argument is particularly relevant to the PIN because of the need to have a generalised acceptance in both the developed and developing world.

Despite the widespread acceptance of multidimensionality, there are no generally agreed upon dimensions of poverty (Alkire 2007), though a number are frequently used, including the elements required to meet basic needs (including food, shelter, energy, clean water and sanitation) health, education, security and good social relations in addition to the economic or income dimension (Narayan et al. 2000).

Arising from its integration in to social relations, poverty is experienced and conceived differently according to context, and partly as a result of this, it has been argued that poverty is most accurately represented when it is self-defined; i.e. where appropriate dimensions are identified locally. While this can make cross-site and time series analyses difficult, it can be viewed as strength – especially by those who support Chambers' view that poor people's definitions of poverty may differ from those assumed for them by professionals, and it allows the (local) selection of (locally) appropriate dimensions (1995).

The analysis of poverty dynamics provides information about changes over time (e.g. from season to season) and about the duration of poverty – whether it is transitory or chronic. Such analyses examine the factors affecting whether people move out of poverty, stay poor, or become poor (or poorer). Understanding of the factors affecting these poverty dynamics are critical to designing appropriate policies for policy alleviation and reduction.

Vulnerability relates to the sense of insecurity that something bad could happen, from which it would be difficult or impossible to recover, and is intimately connected to poverty dynamics. It typically refers to a drop below some threshold into (greater)

poverty, with exposure, sensitivity and adaptive capacity common to most approaches of vulnerability (Adger 2006). Shocks can affect single individuals or households (e.g. ill health or death, unemployment), or can be widespread in a community or region (e.g. natural disasters, macroeconomic shocks). Vulnerability is not only critical to understanding the short-term and long-term changes in poverty status (related to both the likelihood of falling into poverty, and the severity of that poverty), it contributes to fulfilling the basic functioning of security.

Analyses of poverty and vulnerability can be designed to ensure the disaggregation of data to the individual level, which enables the status, (or changes in status) of different groups (e.g. by age, gender, disability) to be determined (Daw et al. 2011; Bessell 2015). They also permit the analysis of poverty dynamics and their causes, and the consideration of interactions amongst different dimensions, both of which combine to boost understanding about social differentiation and distributional effects. Context, institutions, structures and relations are critical to understanding the underlying factors which framing people's opportunities and choices, their access to resources and the distribution of opportunities, benefits, costs and risks (PADG 2012).

Many of the identified weaknesses of multidimensional poverty refer specifically to attempts to measure multiple dimensions of poverty and their sometimes vague definitions (Qizilbash 2003), rather than arguments about the merits of considering multiple dimensions. Measuring multiple dimensions doesn't necessarily change who is considered as poor (though it can), but is important in the consideration of poverty reduction policies (Kanbur and Squire 2001; Spicker 2007), which must increase access to a wider range of assets and increase returns from those assets in order to be successful.

Few poverty analyses have, to date, explicitly incorporated the contribution of ecosystem services or natural resources, though these elements can be included in any analysis, as long as the appropriate dimensions are chosen to suit the purpose of the analysis – that is, appropriate locally and/or to what outcomes are being assessed.

3 Keys to the PIN approach

Conceptually, the three frameworks discussed above have significant overlap in terms of the material and non-material factors or dimensions they can incorporate (see Table 1); overlaps that are most obvious when examining material contributions, such as those measured by income, consumption, employment, etc.. Further, these factors have often been measured using the same, or very similar methods.

Table 1 Comparison of the key contributions, strengths and weaknesses of sustainable livelihoods, well-being and poverty

	SLA	**Social Well-being**	**Poverty**
Key contributions	Five capitals - Human - Natural - Financial - Physical - Social	Three dimensions - Material - Subjective - Relational	Multiple dimensions that can be chosen to suit the context. These can include material, non-material and subjective dimensions, which can be expert and/or self defined.
Overlaps	Well suited to mixed methods approaches Measure material and non-material dimensions Incorporate social context, power relations, etc.		
Strengths	Accounts for the multiple capitals that compose rural livelihoods. Focuses on opportunities.	Explicit incorporation of culture (e.g. takes into consideration culture as factor that shapes the perception of nature). Particularly strong on relational aspects. Measurement at the individual level enables to account for power dynamics associated with gender and age within the household. Focuses on opportunities, goals and aspirations.	Dimensions can be self-determined. Measurement at the individual level enables a greater understanding of intra-household distributional effects and power dynamics. Widely understood by many policy makers. Enables/facilitates targeting for interventions following analysis.
Weaknesses	Reifies and marginalises the role of culture. Reifies livelihoods into concrete aspects independent of human experience. No subjective dimension. Is largely determined by the five capitals structure, forcing self-definitions to fit in to a rigid structure. Typically gathers data at the household level; a level of resolution, which does not allow intra-household distribution of resources and dynamics to be understood (e.g. gender and age differences).	Can be difficult to measure change over time, and compare across locations. Need to be careful of interpretations of subjectivity, and their apparent instability over time.	No explicit of incorporating culture. Typically deficit centred/ focus on deprivations rather than opportunities.

In fact, the SLA was originally designed as ‘a way of thinking about the objectives, scope and priorities for development in order to enhance progress in poverty elimination’ (Ashley and Carney 1999, p.1) and has been used in many poverty analyses (e.g. Norton and Foster 2001; Moser and Felton 2007). Both poverty and sustainable livelihood analyses are therefore intimately linked, as ‘successful livelihoods transform assets into income, dignity and agency to improve living conditions, a prerequisite for poverty alleviation (Olsson et al. 2014, p.798).

It has been argued that poverty and well-being fall along a continuum (e.g. MA 2005); Chambers notes that ‘multidimensional poverty’ is the same as multidimensional deprivation and ill-being, applying as it does to ‘bad conditions and experiences of life in which material and other deprivations and disadvantages interact and reinforce each other as they do in the nets and webs.’ (Chambers 2005, p.4), and if well-being and poverty are multidimensional, then the two can co-exist.

In practice, while subjective measures are central to the conceptual foundations of well-being; with the acceptance of poverty as a multidimensional concept, many poverty analyses have also met the call to use subjective measurements to complement ‘objective’ assessments (Frey and Stutzer 2002; Anand and Clark 2006) because they are recognised as an important element of multidimensional poverty (Diener 1984; Gasper 2004). A subjective assessment of well-being or poverty refers to the experience of being well-being subjective and to an evaluation or judgement of his/her own life on the basis of his/her own experience and on his/her own terms, and can therefore be distinguished from perceptions of a material or non-material dimensions. There are no universally accepted subjective or objective dimensions of poverty (or indeed of well-being), though there are a variety of approaches to choosing appropriate subjective and objective, material and non-material dimensions, and methods to measure and analyse them.

The well-being framework used here emerged partly in response to SLA and therefore they have several aspects in common, particularly with respect to understanding rural livelihoods beyond their material aspects, and viewing wellbeing as an outcome of household livelihood portfolios. Likewise, the social capital and relational well-being elements of the two frameworks both examine the relations and institutional arrangements that make up rural livelihoods.

SLA has been particularly successful at incorporating environmental resources into analyses, given that natural capital is explicitly recognised as one of the five main

capitals. In contrast, neither poverty nor well-being analyses have been systematic in their inclusion of environmental resources, and in many cases, their contribution has been excluded from consideration. However, despite the volume of SLA literature, a poor understanding remains of the links, interactions and feedbacks between environmental resources and different dimensions of poverty, and how, and under what conditions, they can contribute to improving lives and livelihoods/pathways out of poverty. The presence of trade-offs in policy- and decision-making regarding economic, social or environmental management are increasingly being recognised, though the mechanics of these trade-offs are still unclear in most situations (Howe et al. 2014).

The importance of power is emphasised in the SLA conceptual framework, and for the understanding of poverty and well-being, but both types of analyses have been critiqued for the lack of systematic and sufficient investigations of the workings of power (Nunan 2015; Green 2008) (and others). This refers to analysis of power relations which operate to 'stigmatise the people involved, undermine their confidence, and systematically close off options for individual or collective advancement.' (PADG 2012, p.6). Understanding power relations is therefore particularly important, because if they are not addressed, certain social groups will be unable to escape situations of chronic poverty and ill-being, and any intervention being implemented in ignorance of these relations risks exacerbating them.

Thus, the gaps that most urgently need to be filled are those that build our understanding of the interactions and feedbacks between different environmental resources/ES and different aspects of poverty/well-being, and how these change over time. This information is necessary to understanding the trade-offs.

The foundation for the self-definition and cultural identification of a people is drawn from the people's economic, cultural and spiritual interactions with nature. The way people define and interpret the natural environment, what they get from it, what they do in it, etc., are key dimensions that help the understanding of the interrelationships with the surrounding natural environment, the natural assets it provides to support the system of living, and its role in and contribution to the people's identity construction and claim. Therefore, analysis of human dependence on nature takes into consideration the material and immaterial dimensions, that is: economic, cultural, religious and spiritual.

3.1 Features of the PIN approach

Any conceptualisation adopted by the PIN must help to meet its purpose: to promote the uptake of existing knowledge and generate new knowledge on the interrelationship between humans and nature, focusing on the use and reliance on ecosystem services and their contribution to local livelihoods and well-being.

As can be seen from the sections above, the frameworks for analysing sustainable livelihoods, well-being and poverty overlap a great deal in the factors and dimensions they incorporate, as well as many of the tools and methods used to understand and measure outcomes. The remainder of this section therefore discusses the principles and features that the PIN should adopt (in no particular order).

Any PIN analysis should not be simply a description of a situation, focusing on individual attributes, but rather any analysis should rather build knowledge about how and why conditions exist and are perpetuated, and how they might be influenced by developments interventions and management choices in that locality.

Analyses should be based on an understanding of the situation of individuals rather than households. By focusing on the individual, intra-household distribution issues and differential vulnerabilities can be understood, and analyses can allow for gender sensitivity, which is more difficult if the unit of measurement is the household. This may also enable better targeting of strategies and interventions, if and where necessary.

The multi-dimensionality of poverty and well-being must be recognised. Each application of the PIN will need to select dimensions that are appropriate to the context, ensuring that there are dimensions chosen that demonstrate the contribution of environmental resources and incorporate cultural values, that are designed to link with the status and changes in those environmental resources.

Subjective measures represent individuals' judgements about their lived experience and the aspects they value in their lives. Incorporating subjective dimensions in to the understanding of poverty and well-being recognises that individuals' and group decision making is affected by perceptions of constraints and opportunities, and is shaped by aspirations and available alternatives.

The process of selecting relevant dimensions should not be constrained by available data, but rather determined on the basis of what is locally appropriate. The PIN approach

should adopt the principle of responsiveness – that people must have a role in identifying elements or dimensions of their quality of life that are important to them (i.e. self-definition) (Ashley and Carney 1999; Chambers 1997). However, while (some) dimensions should be self-defined, some comparison of core elements across PIN sites must be retained. It is likely that these core dimensions will include (but not be limited to) education, employment, energy, food and nutrition, health, income, water and sanitation, asset ownership and social relations.

Given the dynamic situations in which the PIN will be implemented, it is appropriate to focus on the dynamics of poverty and wellbeing, and in particular on the vulnerability of individuals, households and communities. Identifying the sources of vulnerability of different social groups in a location can help to identify ways to protect against vulnerability, and to identify strategies to mitigate or minimise anticipated negative impacts of proposed policy changes or development interventions.

Relatedly, the incorporation of temporal and spatial dynamics is critical. Any PIN analysis must be able to represent changes over time and space, and building understanding of the interlinkages and feedbacks between and within elements of the social and ecological components of linked systems. This will be important if the baseline data collected is also to be used as the basis for a monitoring and evaluation of change, or of specific interventions. These spatial and temporal dynamics are also important in assessing changes across sites, thus the data collected must, at least in part, enable cross-site comparisons where appropriate.

Analysis must be complemented by a contextual analysis that helps to connect individual experience to the life of the community. The refers to the understanding of factors at micro and macro levels that provide opportunities and constraints, recognising the initial asset holdings have lasting effects on livelihoods, and that asset holdings (at both levels) either constrain or provide opportunities for production and the accumulation of more assets. (Ellis and Freeman 2005). The will include a particular focus on issues of governance, political economy and power analyses, which help to answer the questions of why people are poor, why they have, or do not have, access to resources (see also Nunan 2015, Madzwamuse et al, in prep.).

The methodological approach of the PIN is described in a separate discussion paper (Idrobo et al, in prep.), but in summary, three guiding principals of the PIN are that it is participatory, outward looking and based on factual quantitative and qualitative data. The

approach will be iterative, carried out over several phases, and is designed to build upon existing knowledge, and where primary data collection is necessary, utilising qualitative and/or quantitative methods as appropriate.

4 Relevance to policy formulation and development

It is anticipated that taking the PIN approach to examining the relationship between people and nature will improve the understanding of change, and responses to change at the individual, household and community level, as appropriate. Additionally, the approach will specifically help to strengthen knowledge where gaps have previously been identified – including, but not limited to the incorporation of culture, a focus on the individual ensuring sensitivity to intra-household distributions (where appropriate), and incorporating the understanding of power relationships and how these impact on relations; all of which have been poorly incorporated into empirical studies of poverty, livelihoods and wellbeing to date. [link to resilience paper to come.]

By adopting these key features described above, the PIN approach will generate information that is useful to policy makers in a number of ways. Firstly, it will be useful in describing the poverty or wellbeing dimensions that are most significantly impacted by any potential change, but also those that are most valued locally, and can therefore facilitate a focus on local priorities. It will also help to identify critical aspects of the interrelationship between humans and nature – what material or and cultural values are of critical importance to the continued wellbeing of communities; further disaggregated in to the identification of the critical dimensions, and the particular resources or species contributing (and potentially which aspects of nature/ecosystem services might be critical for adapting to, or mitigating, change, either local or global, environmental or economic).

Where appropriate, data will be collected that is sensitive to the individual (for example in terms of gender, age, disability, etc.), as well as to issues around intra-household distribution of resources, and the impacts of change on those distributions. In the case of the PIN, the information collected will inform current understanding of the situation at a particular site. Data collected at the baseline stage can potentially also be used as the basis for a monitoring and evaluation strategy, to assess the actual impacts of any intervention, and feed in to an adaptive management process.

The focus on dynamics and vulnerability will help to elicit the full range of direct and indirect impacts of changes across the social-ecological system (as well as the feedback effects), and the distribution of impacts, which can subsequently help to identify those

groups with the greatest vulnerabilities to particular changes, so intervention planning can offset, mitigate or compensate these costs. More nuanced analyses of potential change, enabling a focus on impacts on different social groups, as well as different dimensions, and with particular attention to sources of vulnerability, and how proposed changes may flow through, given local power relations, and to ensure proposed changes are not driving or strengthening exclusionary processes.

Understanding local (and wider) power relations is also necessary in identifying the factors that cause and keep people in poverty, or prevent them from improving their wellbeing. Understanding these power relations can help policy makers/programme designers to think through the way in which proposed changes will impact on different social groups, and ultimately whether proposed changes can achieve outcomes. Such information also has potential for facilitating action on the process driving poverty or preventing improvements in wellbeing to more effectively achieve improvements, and improve the equity of outcomes over the long run.

Overall, the PIN approach will collate and generate information about how people choose to utilise nature to meet their goals and aspirations, now and in the future. This can help to identify opportunities for, and constraints to, change, and in particularly will provide information that can help policy makers to think through the implications of any proposed change – how it may affect critical resources and multiple dimensions of poverty and wellbeing, and how such changes will create differential impacts across and within different social groups, given existing power relations. Such information can help interested policy-makers to anticipate adverse impacts and subsequently mitigate or minimise these negative impacts, and thus improve conservation and development outcomes over the long term.

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