

Researching ICT-Based Enterprise for Women in Developing Countries: A *Livelihoods Perspective*

Women's ICT-Based Enterprise for Development project

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Introduction

Often 'poverty' is synonymous with low income but increasingly the multi-dimensionality of poverty has come into focus within the development literature. Sen (2001) identifies four dimensions of poverty such as opportunity (access to markets and employment); capability (access to health and education); security (vulnerability to economic risks and to all forms of violence); and empowerment (power within and beyond the household). The Sustainable Livelihoods (SL) framework is an emerging tool that draws on the notion of multidimensionality to improve our understanding of livelihoods, particularly the livelihoods of the poor (DFID 1999, Ellis 2000).

Developed by the Sustainable (Rural) Livelihoods Committee, the SL framework presents the main factors that affect people's livelihoods and typical relationships between these. It can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities. Within a 'vulnerability context' defined for example by shifting seasonal constraints, short-term economic shocks and longer-term trends of change, people deploy five types of livelihood assets or capital (represented by the asset pentagon¹) in various combinations within circumstances influenced by institutional structures and processes, in order to pursue diverse livelihood strategies with more or less measurable 'livelihood outcomes'. Further details are provided in Figure 1 below.

The interest here is in applying the SL framework to enterprise development; specifically to enterprises where information and communication technologies (ICTs) are used to promote sustainable livelihoods. The particular focus is on female-led enterprise given the growing and compelling body of evidence suggesting that persistent gender inequalities give rise to slow development, economic growth and poverty reduction (World Bank 2001).

A livelihoods approach to ICT-based enterprise should provide insights of particular relevance to issues such as vulnerability, sustainability and impact; especially in relation to those ICT-based enterprises that touch upon the lives of the poor. Although the livelihoods approach is, in its simplest form, gender-neutral, gendered perspectives have been incorporated into the livelihoods approach, as discussed below.

The paper will first examine the key components of the Sustainable Livelihoods framework drawing mainly from the DFID (UK Department for International Development) and UNDP approaches. It then proceeds to apply the framework in relation to ICT-based enterprises for women in Section B. Section C tries to draw a draft framework for research integrating gender, technology and enterprises within the 'Livelihoods Analysis' approach (used here synonymously with 'SL approach'). Finally, the paper raises some particular issues in relation to researching enterprise and ICTs in the context of sustainable livelihoods.

¹ The asset pentagon which is the core of the SL framework within the vulnerability context provides information about people's assets, bringing in inter-relationships (sequencing or substitution) between various assets and relationships with other framework components (assets and the vulnerability context; assets and transforming structures and processes; assets and livelihood strategies; assets and livelihood outcomes).

A. Understanding Sustainable Livelihoods

Sustainable Livelihoods approaches have evolved from changing perspectives on poverty, participation and sustainable development (see Chambers and Conway 1992, Carney 1999). Criticisms of narrow indicators of poverty that are confined to income and consumption led to interest in asset/vulnerability approaches to understanding poverty (see Moser 1998) that focus on sustainable local-level poverty reduction strategies which strengthen people's own inventive solutions. By the late 1990s the idea of SL had consolidated into an approach or a number of very similar approaches developed and/or implemented by intergovernmental organisations (eg. UNDP, DFID, FAO, IFAD, World Food Programme); NGOs (eg. Oxfam, CARE, DAWN) and research institutes (eg. IDS Sussex, ODI London). For a detailed discussion see Brocklesby and Fisher (2003).

The guiding principles are common although the framework and methods differ (Carney 1999). Broadly the concept of livelihood is "the means of gaining a living, including livelihood capabilities, tangible assets and intangible assets" (Chambers and Conway 1992:9, see also Ashley and Carney (1999)). More specifically:

"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base." (Chambers and Conway 1992)

Alongside its commitment to promoting sustainable livelihoods, the 1997 *White Paper* also commits DFID to promoting human rights through policy and practice. Rights-based and sustainable livelihoods (SL) approaches are complementary perspectives that seek to achieve many of the same goals (for example, empowerment of the most vulnerable and a strengthened capacity of the poor to achieve secure livelihoods). The primary focus of the rights perspective is on linkages between public institutions and civil society and, particularly, on how to increase the accountability of public institutions to all citizens. The livelihoods approach recognises the importance of these links and of enhancing accountability, though it takes as its starting point a need to understand the livelihoods of poor people in context. From this starting point it then tries to identify the specific constraints which prevent the realisation of people's rights and consequently the improvement of their livelihoods on a sustainable basis.

A1. Explaining the Livelihoods Framework

The framework for livelihoods analysis, based on DFID's approach, is described below, and in Figure 1, which outlines the major principles of the SL framework in terms of assets, vulnerabilities, processes, institutions and outcomes that are related to poor livelihoods.

Livelihood Assets

The SL framework identifies five types of assets or capital upon which livelihoods are built, increasing access (ownership or rights to use) to which can make a central contribution to poverty reduction:

- *Human capital* represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives.
- *Social capital* is the genre of social resources upon which people draw in pursuit of their livelihood objectives, networks and relationships based on trust, reciprocity and exchanges.
- *Natural capital* is the term used for the natural resource stocks from which resource flows and services useful for livelihoods are derived.
- *Physical capital* comprises the basic infrastructure and producer goods needed to support livelihoods.
- *Financial capital* denotes the financial resources that people use to achieve their livelihood such as available stocks, which can be held in several forms such as cash, bank deposits, liquid assets such as livestock and jewellery, or resources obtained through credit-providing institutions and regular inflows of money, including earned income, pensions, other transfers from the state, and remittances.

Vulnerability Context

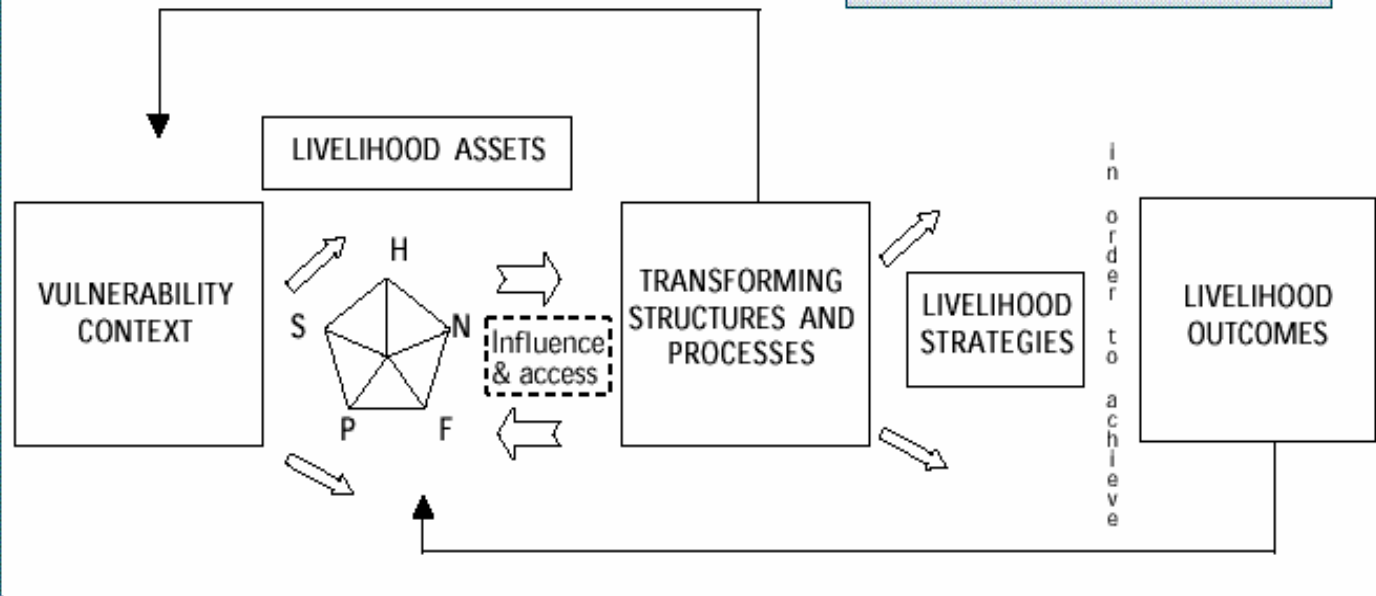
The *vulnerability context* includes resource trends, trends in governance, technological trends, human health shocks, natural shocks, economic shocks, conflict, crop/livestock health shocks, and seasonality of prices, production, health and employment opportunities.

Policies, Institutions and Processes

Institutions, organizations and policies are crucial in shaping livelihoods. They operate at all levels, from the household to the international arena, and in all spheres, from the most private to the public. *Structures* are both private and public organisations that set and implement policy and legislation and deliver services that affect livelihoods. *Processes* determine the way in which structures and individuals operate and interact. They include elements such as macro, sectoral, redistributive and regulatory policies, international agreements, markets, culture, societal norms and beliefs, and power relations associated with gender, caste or class. *Livelihood strategies* are the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals.

Figure 1. Sustainable livelihoods framework

Key
 H = Human Capital S = Social Capital
 N = Natural Capital P = Physical Capital
 F = Financial Capital



Source: DFID (1999)

Livelihood Outcomes

Livelihood outcomes are the achievements or outputs of livelihood strategies. They could include outcomes such as higher income levels, an increased sense of well-being, or reduced levels of vulnerability. Livelihoods outcomes are sustainable when they are resilient in the face of external shocks and stresses.

A2. Core Principles of the Livelihoods Approach

The sustainable livelihoods approach is based on a number of *core principles* for analysis and design.

- **People-centred:** this approach starts with an analysis of people's livelihoods, focuses on the impact of different policy and institutional arrangements upon people/households and stresses the importance of influencing these policies and institutional arrangements so they promote political participation by poor people.
- **Holistic:** the livelihoods framework recognises multiple influences on people and seeks to understand the relationships between these influences and their joint impact upon livelihoods. It incorporates multiple actors and stakeholders and recognizes multiple livelihood strategies and multiple livelihood outcomes, to be determined and negotiated by people themselves.
- **Unit of analysis:** is an identifiable social group and social divisions may include those relating to class, caste, age, ethnic origin, gender.
- **Dynamic:** the approach seeks to understand and learn from change so that it can support positive patterns of change and help mitigate negative patterns to uncover the nature of complex, two-way cause and effect relationships and iterative chains of events.
- **Building on strengths:** the framework builds on strengths rather than needs of people.
- **Macro-micro links:** development activity tends to focus at *either* the macro *or* the micro level. The livelihoods approach attempts to bridge this gap, emphasising the importance of macro-level policy and institutions to the livelihood options of communities and individuals.
- **Sustainability:** livelihoods are sustainable when they are resilient in the face of external shocks and stresses; are not dependent upon external factors; maintain the long-term productivity of natural resources; and do not undermine the livelihoods of, or compromise the livelihood options open to, others.
- **Extensive stakeholder participation:** coupled with a strategic and long-term approach to development is also key to the success of the livelihoods approach.

A3. Variations in Livelihoods Approaches

Some versions of the livelihoods approach alter some aspects of the original model. For example, in order to capture power relations, the orthodox pentagon has been modified, say, by dividing social capital into socio-cultural and socio-political capital (see Moore et al 2001). Ellis (2000) also provides a modified version of Livelihoods Analysis, as shown in Table 1.

Table 1: Livelihood Analysis Framework for Micro-Policy

Livelihood platform	Access modified by	In context of	Resulting in	Composed of	With effects on
<i>Assets:</i> natural, physical, human; financial; social capital	<i>Social relations:</i> gender, class, age, ethnicity	<i>Trends:</i> population, migration, technological change, relative prices, macro-policy, national economic trends; world economic trends	Livelihood strategies	Natural resources (NR)-based activities	<i>Livelihood security:</i> income level; income stability, seasonality; degrees of risk
	<i>Institutions:</i> rules, customs, land tenure, markets	<i>Shocks;</i> drought, flood, pests, diseases; civil wear		<i>Non NR-</i> based activities (trade, services, enterprise remittance)	<i>Environmental sustainability:</i> soil and land quality; water; forest, bio-diversity
	<i>Organisations;</i> associations, networks, local administration; state agencies				

Source: Ellis (2000)

For the purpose of our study, the SL framework will be applied to integrate gender aspects in relation to women-led ICT-based enterprises. The orthodox SL framework has been challenged in terms of analysing power and power relations (Moser and Norton 2001) which are crucial in determining gender roles and relations in households and communities.

B. Applying the Livelihoods Framework to ICT-Based Enterprises for Women

The SL approaches typify a shift in development practice from needs-based, resource-centred solutions to a focus on people and their capacity to initiate and sustain positive change (Carney 1999). This framework has been widely adapted in various contexts ranging from natural resource management to urban poverty reduction. In this particular context, we wish to adapt it for application to ICT-based enterprises for women. This can be seen as involving two aspects: first the clear incorporation of a gender perspective on livelihoods; second, incorporation of technology. Each of these will be dealt with in turn.

Gender is significant in influencing livelihood outcomes significantly. For example, gender differences in distribution and access to assets – such as credit or technology – are crucial in ownership and management of sustainable enterprises. The UNDP's Social Development and Poverty Eradication Division (SEPED) have integrated technology into its Sustainable Livelihood framework (see UNDP 1997) as gendered access to and use of technologies is crucial for livelihood outcomes.

The approach of the Sustainable Livelihoods Unit of UNDP aims to promote a holistic vision of development that includes income generation, natural resource management, people's empowerment, use of appropriate technology, financial services and good governance (see <http://www.livelihoods.org>). The Unit helps to operationalise the sustainable livelihoods approach within country programmes at two levels:

- policy formulation and programme planning processes
- design and implementation of discrete interventions within projects aimed at strengthening one or more household livelihood activities

In outlining the steps for integrating gender into the SL framework at the macro-level, UNDP emphasises the articulation of gender in the articulation of goals of SL which includes compilation of gender-based data on macroeconomic and household issues, gender equitable capacity building. It also develops the SL framework at the household level to capture complex power relations, activities analysis, resources analysis and relationship analysis (see Table 2).

Table 2: Integrating Gender into the Livelihoods Framework

Macro-meso-micro level	Gender dimensions in SL
Country level	Gender based data Availability of gender specialists/ structures Participatory assessment at grassroots, development of action plans Monitoring and evaluation
Household level	Power relations Activities analysis Resources analysis Relationships analysis and gender bias
Policy goals and strategies	Economic, political, socio-cultural and legal factors. Trade and industrial policies Customary laws that affect access to credit and resources, labour laws, unpaid work
Institutional factors	Goals, policy instruments, human resources development and opportunities, financial allocations, evaluation and strategic planning

Source: adapted from UNDP (1999a)

Having looked at one way in which gender is incorporated into livelihoods analysis, we now turn to the way in which various groups have dealt with the issue of technology. Certainly, the impact of innovative technologies on poor livelihoods is of increasing concern to policy makers, donors and international agencies. The criteria of an appropriate² technology strategy for sustainable livelihoods should be to improve productivity of community assets; enhance capabilities and opportunities; be sustainable in the social, economic and environment sense; empower communities

² It states to be 'truly appropriate, technology must be compatible with available natural, human and financial resources and correspond to the cultural practices of users'.

(particularly vulnerable communities) and link communities in similar circumstances and relevant stakeholders through appropriate networks. In outlining a 'Towards a Technology Strategy for Sustainable Livelihoods (TSSL), technology is defined as 'comprising of know-how and skills, goods and services, equipment (hardware) to organisational and managerial procedures, institutions and (social) support structure (see UNDP, 1999b). Certainly, within this we can see ICTs encompassed: modern information and communication technologies have an important role in poverty reduction if appropriately planned, invested and implemented in a manner to support sustainable livelihoods (DFID 2001).

Finally, we can see some attempts that have been made to draw in both gender and technology. For instance, UNDP (1997) outlines major steps in the SL framework that would help to incorporate gender and technology issues as follows:

1. Identification of assets, entitlements, activities and knowledge base largely done by participatory action research.
2. Macro-micro linked policy analysis to identify policies or policy combinations that lead to/disrupt local adaptive strategies or livelihood systems that are sustainable.
3. Assessment of key technologies that contribute to the livelihood systems, including assessment of the impact of introduced technologies over time.
4. Identification of micro-enterprise practices and facilities that identifies opportunities for the service of the local people.

To research ICT-based enterprises for women, the SL approaches based on the DFID and UNDP frameworks could be adapted to analyse ICT-based enterprises by a triangulation of methods such as qualitative, quantitative and participatory methods.

C. Livelihoods Analysis for Women's ICT-Based Enterprise

Some major tenets that will be adapted from the orthodox frameworks developed by DFID as well as UNDP are given in Table 3. This will be based on a holistic approach to studying livelihoods of the poor, but looking at their strengths and ways in which they manage their assets and develop strategies alongside macro-meso linkages (e.g. policies, institutional support and processes) to develop livelihood outcomes. For example, strategies in developing sustainable ICT-based enterprises on the basis of self-help groups, fostered by macro policies and institutional support from governmental agencies, intermediaries and NGOs.

Table 3: Framework for Livelihoods Analysis and ICT-Based Enterprises (draft)

Assets	Vulnerabilities	Coping strategies	Policies and processes	Impact
<i>Human capital</i>	Low income to start enterprises Lack of employment Health shocks	Training/entrepreneurial training, Human resource and personal development	Local government policies and initiatives	Individual, household and community level
<i>Financial capital</i>	Lack of access to credit / other forms of finance	Loans, savings	Role of banks, Creation of thrift and microcredit societies	Empowerment, reconciling social divisions
<i>Natural capital</i>	Insecurity	Renting	Role of institutions	Security, sustainable livelihood
<i>Social capital (including political capital)</i>	Power relations Social, economic and gender discrimination	Networking, Familial support	Role of local organisations, NGOs	Economic benefit
<i>Physical capital</i>	Lack of technology assets	Provision/access to assets	Loans, savings, investment	Capital accumulation

Steps in the livelihoods framework application process are suggested below:

1. **Identify the 'vulnerability' context.** Mapping of macro-meso-micro context to outline seasonality, trends, shocks that affect livelihoods and in particular the gendered impact on men and women (see Table 4). A contextual analysis of the particular location can also be outlined. Questions arise about how social and economic factors including technological change impact women in a manner that promotes or hinder poverty alleviation. In addition, has the use of ICT in any form helped/affected livelihoods. This stage would also identify the macro policies, institutional linkages and financial intermediaries that operate around the ICT-based enterprises.

Table 4: Mapping of Vulnerabilities Context and Outcomes

Type of vulnerability	Outcome	Solution
<i>Labour</i>	<ul style="list-style-type: none"> • Loss of income • Loss of employment • Extended unemployment • Disability • Lack of appropriate skills • Suicide 	
<i>Human capital</i>	<ul style="list-style-type: none"> • Inability to invest or maintain investment in education • Old age dependency • Destitution 	
<i>Economic infrastructure</i>	<ul style="list-style-type: none"> • Inability to use productive assets • Lack of technical skills • Lack of economic rights • Debt • Lack of services, farm, water, electricity, transport 	
<i>Household relations</i>	<ul style="list-style-type: none"> • Increase in domestic violence • Alcohol abuse • Lack of adequate childcare • Lack of caregivers for elderly • Disability • Split households • Sexual exploitation 	
<i>Social capital</i>	<ul style="list-style-type: none"> • Decline in community-based participation • Crime, harassment and homicide • Lack of security and physical mobility 	
<i>Externalities</i>	<ul style="list-style-type: none"> • Natural calamities • Change in policies • Conflict, exploitation 	

2. **Identifying the 'asset pentagon'**. In relation to all types of assets, bringing out, if any, differential access to these assets by gender. Does access to various types of assets such as ICTs, land, human, social and financial capital vary between men and women and across ethnicity, caste and regions (Table 5)? It is important to note that natural capital and resources, such as land, may be inappropriate to ICT-based enterprises, but more thrust could be laid on social, human and financial capital and, particularly, on the ICT component of physical capital. Has this increased in terms of setting up and building these enterprises? Measurement of ICTs could be undertaken in terms of financial investment, or in terms of number of assets. Levels of human capital, training, professional development could be indicators of human capital. Social capital could be addressed through notions of social relation and networking particularly with financial intermediaries, NGOs, local government offices, etc. Bebbington (1999) argues that frameworks of sustainable livelihoods need to understand how assets are combined and transformed as well as the ability to expand assets bases through engaging with

other actors. As well as quantifying the asset, the nature of ownership can also be established; e.g. for a natural or physical asset what is the source of ownership (inheritance, borrowing, lease, purchase), and what is the nature of ownership (shared or individual).

Table 5: Asset Pentagon of Respondents by Social Group and Region

Asset categories	Quantification of asset	Source/nature of ownership
1. Natural assets - House plot - Owned land - Cultivated land - Other		
2. Human assets - Average length of schooling - Extent of higher education - Technical qualifications		
3. Financial assets - Institutional loans (e.g. banks) - Non-institutional loans (e.g. self-help groups) - Informal loans (e.g. friends) - Family assets		
4. Physical assets - ICTs - Other enterprise-related productive assets - Other enterprise-related assets (e.g. transport, buildings) - Other assets (e.g. agricultural)		

3. **Analysing 'structures, institutions and policies and processes'**. How do macro policies and functioning of institutions affect these institutions and shape livelihoods? How could structures, policies and institutions be made more responsive to facilitate the empowerment of poor households and women? Include macro-meso-micro policy analysis to understand linkages. This could also include an examination of social relations and the way in which aspects such as gender and social divisions affect the livelihoods of different groups within a community or neighbourhood. Other issues covered may include (see Table 6):
- Social and political organisation: decision-making processes, civic bodies, social rules and norms, democracy, leadership, power and authority with local and community context.
 - Governance: the form and quality of government systems.
 - Service delivery: the behaviour, effectiveness and responsiveness of state and private service delivery agencies.
 - Resource access institutions: how the institutions that determine access to resources function.

- Policy and the policy process: the effect on livelihoods of key policies and the way in which policy affects/benefits certain groups (power relations).

Table 6: Mapping of Livelihood Strategies

Use of assets	Response	Positive/sustainable outcomes
<i>Human resources (including labour)</i>	Increase number of women working Migration Increased household responsibilities by women Participation in new initiatives for employment	Income/workload
<i>Housing</i>	Diversification of income through home-based enterprises Renting out extensions	Income/security
<i>Economic infrastructure</i>	Use of private services Use of microcredit Setting up enterprise	Quality/availability
<i>Household relations</i>	Reliance on extended family support networks Remittances	Social capital
<i>Social capital</i>	Informal credit arrangements, support networks for child care and space Community level activity	
<i>Political participation (political capital)</i>	Political network, mobilisations etc Local government NGOs	Empowerment
<i>Externalities (policies)</i>		Empowerment

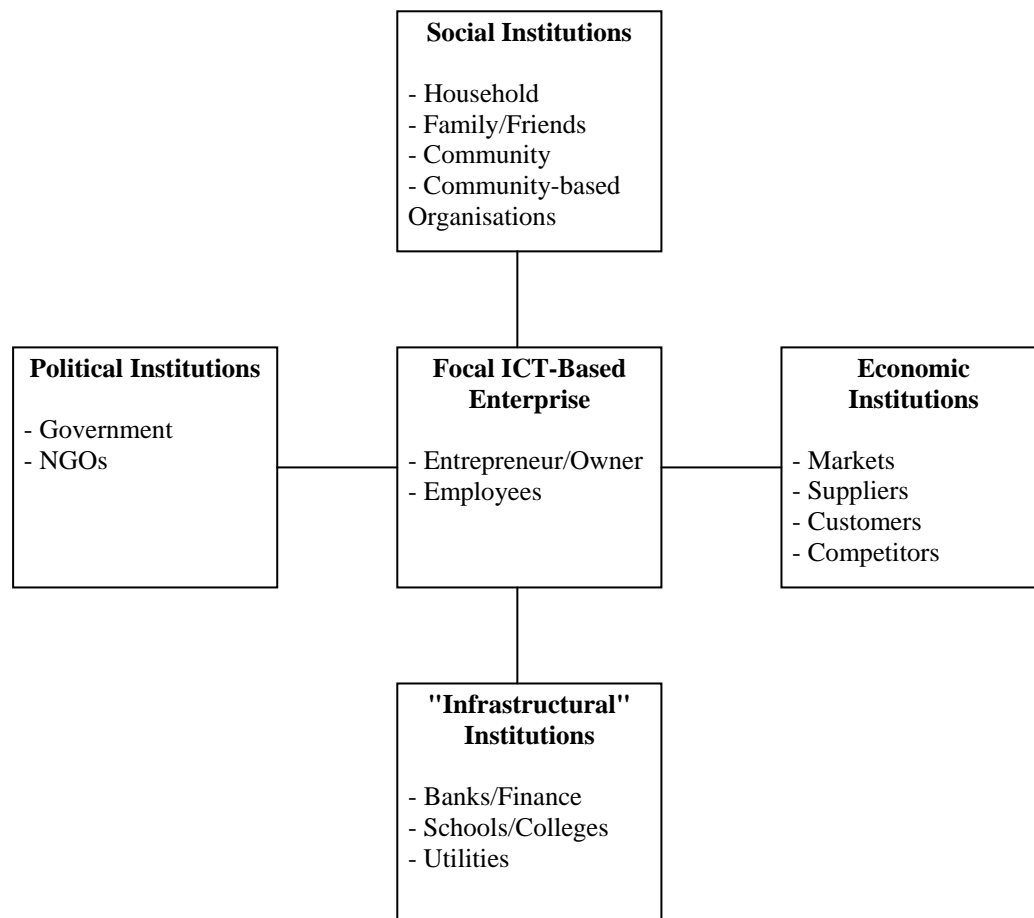
- 4. Identify use of technology in terms of both capital and capability.** The criteria of an appropriate technology strategy for livelihoods should be to improve productivity of community assets; enhance capabilities and opportunities; be sustainable in social, economic and environmental senses; empower communities (particularly vulnerable communities) and link communities in similar circumstances and relevant stakeholders through appropriate networks. While this appropriateness may well be clear for, say, simple technology for garment production, this issue needs to be interrogated in more depth when considering ICTs. Technology is constitutive of four inter-related aspects: technique (machines and equipment), knowledge (know-how and skills), organisation (systems, procedures, practices and support structures), and product (design and specification) (Scott 2001). Each of these can form the basis for a further investigation of this element of physical capital within the livelihoods framework.
- 5. Identify microfinance as an important strategy in micro-enterprises.** Lack of access to credit and financial services has been the most important barriers to sustainable livelihoods by the poor, particularly women. Where relevant, livelihoods research on women's ICT-based enterprises needs to take this into account.

6. **Identify role of markets in enterprise development.** Private markets are institutions that shape livelihoods and which are governed by formal and informal practices and structures as well as social, cultural and political processes. Analysis of labour markets, credit and financial markets can be examined in relation to questions about the sustainability of ICT-based enterprises.
7. **Assess ICT-based enterprise strategy and livelihood outcome impact.** Here one would look particularly at the enterprise strategies adopted, questioning whether they can bring about sustainable outcomes such as increased income, income stability, empowerment, well being, security and sustainable use of resources. If the enterprise strategy for the ICT-based enterprise is not a sustainable one, then neither will the livelihood outcomes be. One may also see if the enterprise strategy has differential effects on outcomes for women and men. In a situation of multiple ICT-based enterprises, one may also ask whether livelihood strategies vary between enterprises.
8. **Assess sustainability of institutional context.** A particular focus should be placed on issues of sustainability: are policies, institutions and processes sustainable over the longer term? This will be a particularly important issue where ICT-based enterprises for women have been developed as part of a state- or NGO-led project initiative. Investigation of sustainability will need to focus on issues such as political will (which can be subject to electoral cycles), and also social sustainability (questioning, for instance, whether there is an ongoing community consensus behind such enterprises). Perhaps most important is the question of economic independence and sustainability. Some initiatives to develop ICT-based enterprises for women provide an initial captive market for the enterprise (e.g. data entry enterprises will be given guaranteed work from the main project institution). Questions then arise about diversification, which must be undertaken if true sustainability is to be achieved; and about protection and competition: are the enterprises competitive against, say, larger ICT-based corporations, or are they protected from a viable economic model by their captive market?

An issue that arises in undertaking this livelihoods analysis is that of stakeholders. One might immediately think to focus on the main entrepreneur in the ICT-based enterprise plus other women working for her in the enterprise. However, there are many other stakeholders whose livelihoods may be impacted by the ICT-based enterprise. These are likely to include male employees of the enterprise (if any); members of entrepreneur and employee households; members of the communities and markets in which the enterprise operates. In addition, there will be institutional stakeholders. These will include suppliers and customers of the enterprise. They will also include relevant central and local government authorities, NGOs, banks and other financial intermediaries, other infrastructural institutions, etc.

Stakeholder analysis (a summary form is provided in Figure 2, from Heeks et al 2004) would thus need to form part of the livelihoods analysis (probably as part of the earlier steps that analyse context and structures/institutions). Decisions can then be made about how broad to set the scope of stakeholders to be covered by the analysis.

Figure 2: Stakeholder Framework for Women's ICT-Based Enterprises



D. Conclusion

The livelihoods approach enjoys widespread usage within the field of development but it has so far been little used in relation to the application of ICTs to development, partly because of the distancing that has typically been seen between ICTs and the lives of the poor (Heeks 1999). However, as ICTs continue to diffuse and as greater attempts are made to apply them to current poverty-focused agenda goals there are increasing opportunities for livelihoods frameworks and tools to make a contribution to understanding ICTs and development. This is true of ICT-based enterprise for women though, as seen, some situation-specific customisation of livelihoods tools has to be made. Such customisation is likely to progress further once a body of research is built that does apply livelihoods ideas to ICT-based enterprise.

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