

**Including the Excluded- Can ICTs empower poor communities?
Towards an alternative evaluation framework based on the capability approach**

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Abstract

Under which conditions can information and communications technologies (ICTs) empower poor communities? This paper investigates this question, focusing on the role of information and communications technologies in promoting indigenous people's development in Latin America. First, the paper analyzes key factors under which information and knowledge can be instrumental and substantive for the empowerment of marginalized groups. Hereby, we argue that improved access to information and ICT skills, similar to the enhancement of a person's writing and reading skills, can enhance poor peoples' capabilities to make strategic life choices and to achieve the lifestyle they value. Furthermore, the paper develops an alternative evaluation framework for ICT interventions based on Sen's capability approach. This framework places, in contrast to the current discourse around the "digital divide", the human development of the poor and not technology at the center of the analysis. The paper concludes that there does not exist a direct and causal relationship between ICTs and empowerment, but that in fact this relationship is being shaped by a dynamic, multi-dimensional interrelationship between technology and the social context.

Introduction

The potential impact of information and communications technologies (ICTs)¹ on development has recently become a much contested issue within the development discourse. Proponents of ICTs (World Bank 2002, UNDP 2001; Pohjola, 2002; Braga, 1998) take an optimistic view and highlight the positive effects of the Internet and other forms of ICTs to create new economic, social and political opportunities for developing countries and the poor. Its critics on the other hand, take a pessimistic view and claim that ICTs due to existing socio-economic inequalities will favor the privileged segments within society and not reach the economically and socially disadvantaged thus leading to a widening of the socio-economic gap within developing countries (Panos, 1998; Wade, 2002; Gumucio, 2001). Finally, the contextualized approach to ICTs underscores the importance of the socio-economic and cultural context, which is being considered crucial for the better understanding of the potential effects of ICTs on development and the empowerment of poor communities (Avgerou, 2001; Walsham, 1993 and 1998).

In spite of their significant difference, all three approaches share one key feature in common: the focal point of their investigation represents technology and its societal, economic and political impact. Hereby, these different schools of thoughts distinguish themselves by emphasizing either the positive or negative impacts of ICTs on people's lives, or stress that the impacts will vary depending on the local and social context in which the ICT program is being carried out.

In contrast to these more conventional approaches to ICTs, we suggest in the following paper to initiate our investigation from the vantage point of the perspective of marginalized groups themselves. This approach stresses the capacity of poor people to define their own development priorities and goals, whereby outside agents should only 'begin' to work with the community, once it has developed its own 'development plan' and identified its specific needs for outside support.

Based on such a 'people-centered' approach to development, we will develop in this paper an alternative evaluation framework of ICT interventions. Hereby, we will attempt to operationalize Amartya Sen's capability approach and to directly apply its theoretical framework to the evaluation of the impact of ICT programs. Within this analysis, the paper will address the central question, whether and under which conditions the improved access to information and knowledge facilitated by ICTs can enhance the individual and collective capabilities of the poor to better achieve the lifestyle they value. At the outset of the analysis it will be argued that information and knowledge can play a role for the empowerment of marginalized groups as long as it is fully integrated into the much broader sustainable livelihoods framework of the communities. This approach places the communities' assets and capabilities in the center of the analysis and examines the role of the improved flow of information and knowledge thorough the use of ICTs as a catalyst in expanding the human and social

¹ For the purpose of this paper I am using Hamelink's definition of ICTs: "Information and Communication Technologies (ICTs) encompass all those technologies that enable the handling of information and facilitate different forms of communication among human actors, between human beings and electronic systems, and among electronic systems" (Hamelink, 1997:3). This functional definition of ICTs includes both the new (i.e. Internet, e-mail) and traditional (i.e. community-radio, TV) forms of ICT into its definition.

capabilities of the poor. Within this framework we will investigate key factors that have to be met to enable the poor to have ‘real and meaningful’ access to ICTs and allow them to appropriate these technologies as an instrument for their own development. In particular, we will examine the following key hypotheses:

- i) a *successful mediation* process by an effective and local intermediary is required so that ICTs can contribute in a meaningful way to improve the livelihoods of the poor;
- ii) ICT’s have to be *locally appropriated* by poor communities, in order to facilitate their empowerment; and
- iii) ICTs have to build on and *strengthen existing social and organizational community structures*, so they can lead not only to the individual, but the collective empowerment of poor communities.

On the basis of two case studies on the use of ICTs by indigenous peoples, the paper will provide a series of conclusions, which highlight that it is not possible to identify a direct and causal relationship between ICTs and the empowerment of marginalized groups, but stress the complex and dynamic interdependency between people, social institutions and technology.

1. The role of information and knowledge for development

The impact of ICTs on poor communities cannot be understood without first understanding the role information and knowledge play for development. In the ICT *for* development debate, the emphasis is frequently being placed on providing access to ICTs to the poor before analyzing the value information and knowledge exchanges play for development at the local level (Black, 1999; Mansell, 1998; Norris, 2001). The importance of traditional information systems, which are based on indigenous knowledge and traditional communication practices are hereby frequently omitted. For instance, the World Development Report 1998 stressed the critical value that knowledge plays for development (World Bank, 1999). While the report recognizes that there exist many types of knowledge it focuses only on two—technical knowledge (in health, agriculture, accounting, etc.) and knowledge about attributes (i.e. the quality of products, the credibility of a borrower). It emphasizes the importance of closing the ‘knowledge gaps’ and overcoming information problems in developing countries in order to improve the living conditions of the poor. The report emphasizes that the transfer of knowledge from the ‘north’ to the ‘south’ is fundamental for development and omits the important role indigenous and local knowledge play for sustainable development. This view of knowledge transfer is based on a supply-side approach, which identifies the lack of information and knowledge at the local level as an important reason for poverty in developing countries. Based on this conceptualization on the role of information and knowledge for development, ICT proponents frequently highlight the threats of an increasing ‘digital divide’ and advocate for the rapid provision of modern forms of ICTs (Internet, cell phones, videoconferencing) to poor communities in order to enable them to overcome these existing knowledge gaps.

In contrast to this more conventional approach to information and knowledge for development, this paper will emphasize that the existing information and knowledge gaps are rather mutual in nature, whereby not only poor communities lack access to information and knowledge, but at the same time, policymakers in capital cities lack knowledge about the local and cultural context of the poor and marginalized groups. This approach emphasizes that it is crucial to first understand the traditional information systems and to assess existing information channels and communication patterns before introducing ICTs (ITDG, 2001). Thus, rather than the lack of knowledge of poor communities, the existing political, socio-economic and cultural barriers between the urban elites and the poor, inhibit marginalized groups to make their information and knowledge known and disseminated, blocking their participation in the dominant society's political and economic system. In this sense, the discussion of the role of information and knowledge for development has to be seen under the broader context of existing structural inequalities and the social exclusion of marginalized groups within developing countries. The analysis will draw on the contextual approach to ICTs, which underscores the importance of the socio-economic and cultural milieu, considered crucial for a better understanding of the potential effects of ICTs on development (Avgerou, 2001; Walsham, 1993 and 1998). In contradiction to the technologically or socially deterministic approach, this viewpoint does not assume a linear and causal relationship between technological innovation and development, but highlights the dynamic interrelationship between the social context and information systems. It stresses that technology only receives meaning once it is being "enacted" by users and thus people can exert control over its use by interpreting and appropriating it to their specific realities. (Orlikowski, 2000). In essence, it places human action rather than technology at the center and emphasizes the interdependencies between technology and the social context (Orlikowski, 2000; Avgerou, 2001).

2. The concept of empowerment

As a growing literature Van Eyken (1991), Friedman (1992), Thomas (1992), Craig and Mayo (1995) and Rowlands (1997) demonstrates, empowerment is a very complex concept which is not easily defined. The main reason for the current lack of clarity concerning the definition of empowerment is based on the different interpretations of power and the contrasting views on the centrality of power for the development process.

2.1 The concept of power

In her study on empowerment in the context of improving the livelihoods of poor women in Honduras, Jo Rowlands (1997) distinguishes between 'power over,' 'power to,' 'power with' and 'power within.' These various understandings of power are embedded in the concept of empowerment and are responsible for the different approaches to empowerment in practice (see Annex 1.)

2.2 Implications for empowerment

Based on these different definitions of power, we turn to analyze their implications on the concept of empowerment. Conventionally, power is being seen as "power over" or the ability to exert control and influence over others. This notion of power as a "zero sum" implies that any gain in power by one group is inevitably resulting in the loss of power by another. In this view the dominant social,

political, economic or cultural group is responsible for the marginalization of other powerless and impoverished groups. This view emphasizes the need to improve the access of the 'powerless' to political structures and to enhance their participation in formal decision-making processes in the economic, social and political spheres of society (Friedmann, 1992).

A contrasting view of power is based on the conceptualization of power as a generative force, with a focus on the positive energy of people 'to be able' to transform their lives and to motivate others (Hartsock, 1985). Hereby power is defined as 'power to', 'power with' and 'power within', which entails very different meanings for empowerment. In this definition, this notion of power is based on a 'variable sum' whereby the increase in one person's power does not necessarily diminish that of another. This notion of empowerment is based on Freire's concept of "*critical conscientization*," whereby through a process of reflection and action (defined by Freire as praxis) the 'oppressed' are first becoming aware of the structural economic, social, political and cultural reasons for their oppression and then identify concrete steps to take action against the oppressive elements of reality (Freire, 1972).

Based of the definition of power as 'power to' and 'power within,' Neila Kabeer (1999a) has developed a specific concept of empowerment which emphasizes options, choice and control as the basic components of empowerment. Kabeer argues that empowerment is "*the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them*" (Kabeer, 1999a: 473). This definition highlights both, the actor's ability to make choices and the process of change in the achievement of these abilities. Hereby, the approach entails enabling people to develop their full range of human capabilities. This notion of empowerment draws strongly on Amartya Sen's (1999) 'capability approach.' Sen conceives development as "*a process of expanding the real freedoms that people enjoy*" and emphasizes the need for the "*expansion of capabilities of persons to lead the kinds of lives they value*" (Sen, 1999: 18). This view of development places people and their human development at the center of the development process. Sen stresses the importance of the poor's individual empowerment by arguing that: "*greater freedom enhances the ability of people to help themselves and to influence the world, and these matters are central to the process of development* (ibid.:18).

2.3 Different levels of empowerment

Empowerment at the individual level focuses on people's development of self-esteem and the expansion of their capabilities to 'doing' things ultimately reaching a state of 'being' they value (Sen, 1999). This approach stresses the importance of 'human agency' (Kabeer, 1999a), 'greater access to resources' (Chambers, 1993), and the 'ability to make strategic life choices' (Kabeer, 1999b). Thus, it is key to better understand the psychological aspects of empowerment (Rappaport, 1985) focusing on an analysis of the perceptions marginalized people have of themselves and their surrounding social and political reality.

The concept of collective or community empowerment is based on a collective view of power. It emphasizes the key role community-based organizations play for the empowerment processes. This

notion is based on the view that poor peoples organizations are central for the empowerment process, whereby coordinated activities of poor people as a group can significantly strengthen their bargaining power vis-à-vis the formal institutions of government, the market and civil society (Rowland, 1997). As Rigoberta Menchú has shown this form of empowerment is particularly relevant to indigenous peoples. In spite of the fact that indigenous peoples are to varying degrees marginalized and powerless throughout Latin America, indigenous communities have developed a 'culture of resistance' in relation to the dominant sectors of society, based on their traditionally strong organizational capacity and collective identity (Menchú, 1984).

Finally, empowerment can take place at a society-wide level. This societal empowerment highlights the need for social and political change at the macro-level of society. John Friedmann (1992) developed a model of empowerment at this level and distinguishes between state, corporate, political and social power. This notion of empowerment is based on the conceptualization of power as 'power over' and implies a power struggle between the elites and the marginalized groups, whereby the empowerment of the poor is only possible through the redistribution of power.

2.4 Empowerment as a process

Thus, it becomes clear that empowerment is a bottom-up process that needs to be initiated by poor people themselves and cannot be prescribed through a top-down strategy (Freire, 1972 Rowlands, 1997). This understanding of empowerment as an ongoing process emphasizes the dynamic and multi-dimensional characteristics inherent to the concept.

3. Amartya Sen's capability approach

Based on the analysis above, I am planning to use Sen's capability approach as the main theoretical framework, as it seems to best capture the main fundamentals of empowerment and it has developed the theoretical foundations to evaluate development projects from a human development perspective.

3.1 Functioning and Capabilities

Amartya Sen argues that human development should be viewed first and foremost as a process of expanding people's capabilities. What matters, according to Sen, is what people are capable of being, or doing, with the goods to which they have access.

A person's '**capability**' therefore refers *"to the alternative combinations of functionings that are feasible for her to achieve. Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or, less formally put, the freedom to achieve various lifestyles)"* (Sen, 1999:75). Capabilities include things that a person actually has done, as well as things people can possibly do. In other words capabilities refer to the extent of one's positive freedoms (Gasper, 2002: 5).

The concept of '**functioning**' "reflects the various things a person may value doing or being (Sen, 1999: 75). They represent "various components or aspects of how a person lives" (Gasper, 2002:4). A person's ability to realize her/his desired and valued functionings very much depends on her/his capabilities as well as entitlements or assets.

3.2 Operationalizing Sen's capability approach

In the last couple of years, there has been a lot of debate in the literature on ways to operationalize Sen's capability approach and to apply it in a more practical way to empirical research. On the one hand, as Comim has suggested the capability framework is well suited for "*evaluating and assessing social arrangements, standard of living, inequality, poverty, justice, quality of life or well-being*" (Comim, 2001: 4).

On the other hand, however several scholars have highlighted the difficulties to operationalizing the approach. Commin points out that these difficulties derive from the capabilities approach's "*theoretical underspecification and inclusive view of operationalization which contest not only the evaluative but also the practical foundations of utilitarianism*" (Comim, 2001: 2). Furthermore, a key challenge has been to define a-priori a set of basic capabilities, in order to have a base-line from which to start specific evaluations (Nussbaum, 2000; Alkire, 2002).

Another difficulty related to operationalizing the capability approach, is that some capabilities are harder to measure than others. For instance, it is much more difficult to assess a person's ability to have self-esteem, than their ability to write and read. This represents particular challenges for gathering data on the non-material aspects of people's wellbeing.

Comim highlights that the capability approach is particularly suited for micro-level studies, since the approach focuses its attention to a large extent on non-income variables (Comim, 2001). Such an approach, he argues will reveal more interesting findings at the micro than at the macro-level, since research at this level can focus on the analysis of peoples' ability to choose what to do or be.

3.3 Capabilities and the sustainable livelihoods approach

One particularly interesting way to operationalizing the capability approach has been suggested by Bebbington (1999), who integrates this method into the sustainable livelihoods framework and then develops his own version based on capitals (assets) and capabilities. The starting point of his analysis is based on the livelihoods approach and underscores the importance of the capitals or assets to which people have access.²The main question that the livelihoods approach addresses is what combination of livelihood resources (different types of capital) result in the ability of the poor to follow a combination of livelihood strategies (i.e. livelihood diversification) with what outcomes on their wellbeing (Scoones, 1998: 3). Bebbington thus develops a powerful framework which highlights the importance of combining capitals with capabilities. He argues that "assets (or capitals) are not simply resources that people use in building livelihoods: they are assets that give them the capability to be and act" (Bebbington, 1999: 5). He refers back to Sen's discussion on the significance of human capital to strengthen the capabilities of the poor. Hereby, Sen stresses that the possession of human capital not only means that people produce more, and more efficiently, it also gives them the

² I will use the definition of sustainable livelihoods which was mainly developed by Chambers and Conway (1992) as quoted by Scoones: "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 stress and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base" (Scoones, 1998: 5).

capability to engage more fruitfully and meaningfully with the world, ultimately and most importantly, providing them with the capability to change the world (Sen, 1997:1960).

I will turn now to the interlinkages between capitals, agency and capabilities. Kabeer defines agency “*as the ability to define one’s own goals and act upon them*” (Kabeer, 1999a: 438). She points out that agency is usually being operationalized as ‘decision-making’, however in terms of empowerment it is more important to see it within the context of the poor’s ability to negotiate or bargain with the formal institutions of the market, civil society and the state. The major significance of this notion of agency and its interlinkages with the poor’s capitals for operationalizing the capability approach lies in the *combination* between resources (or capitals) and agency, constituting to what Sen refers to as capabilities. In this sense, improving the access to resources for the poor, for instance providing access to girls’ education or access to ICTs only represents a potential for enhancing their capabilities and thus does not automatically have to lead to positive outcomes on empowerment. It is important to stress that there does not exist a direct and automatic causal relationship between improving access to resources (such as for example access to ICTs) and empowerment. Kabeer instead emphasizes the key role of the notion of agency and thus the process it plays in determining whether or not the increase in resources can be transformed into the expansion of the poor’s realized functionings.

When designing outcome indicators for empowerment, Kabeer highlights that an advanced knowledge of the development priorities and goals of the marginalized group themselves is needed, otherwise the intervention runs into the danger of prescribing the process of empowerment which would be violating its essence. This last point addresses the issue of who defines the desirable and valued livelihood outcomes which is of particular importance to this paper since I am suggesting to develop an alternative evaluation framework of the empowerment of marginalized groups through ICTs. Robert Chambers argues that within the capability (or wellbeing) approach to poverty and livelihoods, the analysis may allow people themselves to define the criteria that they deem important (Chambers, 1997b). This may result in a range of sustainable livelihoods outcome criteria including diverse factors such as self-esteem, security, happiness, stress, vulnerability, power, exclusion, as well as more conventional material concerns.

Thus, the investigation will use the existing data from several consultation workshops with indigenous peoples in Peru³. The purpose of the consultation workshops was to provide indigenous peoples with a mechanism to define their own development priorities and community development plans to be shared with the Peruvian government and international donors. The methodology used in the consultation workshops was highly participatory, whereby indigenous peoples themselves defined the agenda and the participants formed small focus groups to forge their own development plans. The results of the consultation workshops are summarized in Annex 2. This paper draws the remaining

³ In Peru, the study draws on the results of two regional consultations, which were organized by the Ministry for the Promotion of Women and Human Development (PROMUDEH) in collaboration with the World Bank and the Instituto Atinchik—a consultant group specializing on facilitating participatory consultations. The workshops were held in Cuzco in January 1998 with representatives of Andean and coastal indigenous communities and in Iquitos in June 1998 with representatives of Amazonian indigenous communities.

discussion on the impacts of ICT's on the livelihoods of indigenous peoples from these data, as indigenous peoples themselves have defined their own set of valued and desired capabilities in order to achieve a sustainable human development. Furthermore, indigenous peoples have defined specific steps that would be necessary to reach such goals. As is highlighted by the graph, information and ICTs have the potential to contribute to the various development goals, however they are not the starting point of the analysis. The center of the analysis is the sustainable human development of indigenous communities, while ICTs are placed in the outer circle of the model to indicate that they play a catalytic role.

4. Towards an alternative evaluation framework of ICTs programs

Based on the theoretical foundation discussed above, I am suggesting to develop an alternative evaluation framework of ICT interventions. The core question that this paper seeks to answer is, whether and under which conditions the improved access to information and knowledge facilitated by ICTs can enhance the individual and collective capabilities of the poor to better achieve the lifestyle they value.

Sen's holistic approach to development is very well suited to evaluate the potential effects of ICT interventions, considering that a key characteristic of ICTs is their multi-sectoral dimension, meaning that they can affect people's lives simultaneously in the economic, social and political spheres.

This approach stands in contrast to the majority of existing ICT evaluations which have focused primarily on the issue of 'access' and 'usage' and assume that the improved access to ICTs will have a direct positive impact on the lives of the poor. These evaluations focus on measuring more immediate and quantifiable output indicators, such as the increase in total numbers of Internet hosts or increases in number of computers per capita.

In an earlier analysis Richard Heeks (1999) has argued to place information instead of technologies in the center of the analysis. This approach is in favor of going one step further and placing individual and collective capabilities in the center with information and ICTs occupying the outer circles of the model. Thus, underscoring that ICTs are not a means to an end by themselves and that in fact under certain conditions can act to expand the capabilities of the poor to realize improved economic, social, political and cultural opportunities. Although it is argued that the right to information and knowledge is an important entitlement and its absence can be a contributing factor to poverty, this notion needs to be balanced against the broader context of existing social and economic inequalities, which may reinforce themselves through the technology (Castells, 1997; Hewitt de Alcántara, 2001). Consequently, the sustainable livelihoods framework will be integrated to attempt a more holistic socio-economic analysis of the possible effects of ICTs.

As a starting point, it will be argued that it is important to introduce information as an additional asset or capital into the sustainable livelihoods framework. The analysis of the role that information and knowledge can play for development and the view that the right to information represents an important entitlement of the poor calls for the inclusion of '*informational capital*' into the livelihoods approach. This concept is defined and analyzed, through the following four components:

- i) the extent to which the poor have access to information from the formal institutions of the market, state and civil society;
- ii) the ability of the poor to process and evaluate information;
- iii) the extent to which the poor do not only consume, but produce and share information within their community and networks; and
- iv) the extent to which indigenous knowledge plays a role in the lives of the poor.

As table 1 shows the ‘informational capital’ has been added as an additional dimension to the set of livelihood resources of the poor. Thus, the framework aims to underscore that the inter-linkages between informational capital and all the other capitals are crucial for evaluating the role of information and ICTs in the livelihoods of the poor. At the same time, it is argued that information on its own right is an important asset for the poor to improve and/or secure their livelihoods.

This approach underscores that the capability of individuals and social groups to transform valued functionings into realized functionings depends to a large extent on their livelihood resources or capitals. The expansion of capabilities is hereby understood as the strengthening of peoples’ capitals. What, however is the role that information plays in this context and what justifies broadening the livelihood approach by the additional dimension of the “informational capital”?

The main argument for including this dimension into the framework is that information and ICTs can play an important role not only in their own right, but can act as an ‘agent’ for the strengthening of the poor’s capitals in multiple areas. As the review of the literature (Kabeer, 1999a; Bebbington, 1999) above has demonstrated, only the combination of strengthened resources and agency can lead to enhancing individual and collective capabilities. This approach suggests to analyze the conditions under which the expansion of the informational capability can have a positive ‘multiplier effect’ on the other capabilities. In other words, does the expansion of the poor’s capability to make meaningful use of ICTs strengthen their capabilities to achieve valued functionings in multiple areas?

This notion comes from Sen’s concept about the role that human capital plays not only in enhancing a person’s ability to generate income, but also in expanding her/his capabilities to lead a freer and more fulfilled life and to reach her/his valued functionings (Sen, 1997:1960). In this sense the focus is on the agency role of human capabilities for bringing about social change. This paper suggests to apply this concept to the field of ICTs. Hereby it will be stressed that the better access to information and enhanced ICT skills similar to the enhancement of a person’s writing and reading skills can enhance peoples’ capabilities to make choices in their lives in various areas, including the economic, social and political spheres. As a result of the enhanced informational capabilities, individuals will be able to expand their control over important life choices; in this sense information and ICTs can contribute towards the empowerment of the poor. It is however important to emphasize that in this scenario the improved access to ICTs has indirect rather than direct effects on the livelihoods of the poor. The framework suggests that a quite complex process needs to take place for ICTs to have an impact on the lives of poor communities. Thus, the framework highlights that there

Table 1: Empowerment through ICTs framework

CONTEXT	LIVELIHOOD RESOURCES	INSTITUTIONAL PROCESSES	CAPABILITIES	LIVELIHOOD OUTCOMES
Socio-Economic Conditions	Economic/financial capital	Existing social structures	<u>Individual</u> - Psychological - Social - Economic - Informational	Informational Capabilities strengthened
Demographics	<=> Natural capital <=>		<=> =>	
Cultural Context	Human capital	Level and degree of	<=> - Political - Cultural =>	Human Capabilities strengthened
Political Context	Social capital	ICT intermediation		
ICT diffusion	Informational capital		<u>Collective</u> - Social - Economic - Political - Organizational - Cultural - Informational	Social Capabilities strengthened
ICT policy Framework				

Stages of ICT project

Existing Information Systems and Environments	Assess Information needs Informational capital	Community ICT Access Local and relevant content Capacity-Building	Local Appropriation and Use of ICTs	Ownership Sustainability
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INFORMATION

ICTs

IMPACT

does not exist a direct and causal relationship between ICTs, information and empowerment, but that the relationship between these variables is much more multi-dimensional and needs to be seen within the broader context of sustainable human development. Furthermore, the framework is based on the contextualized approach to ICTs (Walsham, 1998; Avgerou, 2001) and as such stresses the importance of the local socio-economic and cultural context in the analysis of the effects of ICTs on empowerment.

Moreover, the framework highlights the need to assess at the outset of ICT programs, existing traditional information systems and environments (Brown, 1991, O' Farrell, 2001). A common reason for the failure of ICT programs is that key community members perceived the new technologies as a mechanism to undermine existing information systems and as a challenge to the 'knowledge brokerage' role of key stakeholders (Robinson, 1998). Thus, it is decisive to carry out an information needs assessment prior to introducing ICTs, and to use this tool in identifying the key stakeholders and their interests in the information system. Such an assessment will make explicit the role that information plays for the community and which information and communications channels (i.e. oral tradition, community-radios) are traditionally being used in the communities.

Furthermore, the evaluation framework underscores the importance of understanding the institutional structures and processes that mediate the transformation process from livelihood resources into the expansion of capabilities, thus contributing to the attainment of positive livelihood outcomes. Hereby, it is important to analyze the interrelationship between existing social structures and ICT inter-mediation. The framework emphasizes that a successful mediation process by an effective and local intermediary is required before ICTs can have a positive contribution towards expanding the livelihoods of the poor. In addition, intermediaries play a decisive role in i) identifying and providing access to ICT products and services that suit the local communities information needs; ii) supporting the generation of local and relevant content; and iii) providing ongoing support in the areas of training and capacity-building.

Within this process the local appropriation of technologies by the communities and the contextualization of information provided through ICTs is required a-priori to poor communities being able to derive real benefits out of its use. Pure access to ICTs by the poor will not allow them to derive real benefits out of its use. In fact, a tool such as the Internet can be described as a medium of the western-elite and needs to be appropriated by non-western and poor communities before they can derive real value. Frequently the content on the Internet does not reflect the realities of local communities (Ballantyn, 2002). In fact, the language of the Internet often represents a prohibitive barrier for communities in their use of information, as most of its content is being written in a rather academic or business style and thus is not directly applicable at the grassroots level. Finally, a continuous program to support the capacity-building of people in using ICTs is necessary to ensure that these technologies can be used in a meaningful way and that in fact they are being used (Delgadillo et. al, 2002).

5. Indicators for the evaluation of the impact of ICTs on empowerment—a process view

The multi-faceted nature of the empowerment concept means that it is not readily quantifiable and measurable (Oxaal and Baden, 1997). What constitutes empowerment for poor communities may be very context specific: an activity may be seen to be empowering in one context and not empowering in another. At the same time, it seems important to ask the question on “*how in a process of empowerment we do know that a previously powerless group has been empowered?*” (Oakley, 2001: 45). As shown above, empowerment is essentially an intangible process that is best understood by those who are closely involved in the immediate context of specific development interventions.

Thus, as mentioned above, the evaluation framework will be based on the priorities of indigenous peoples themselves, which were expressed during the consultation workshops with indigenous communities in Peru (summarized in Annex 2). Hereby, indigenous peoples have defined the following five key dimensions for their human development: i) social development, ii) economic development, iii) political participation, iv) cultural identify, and v) organizational development. Making use of this basic classification scheme, the paper develops an Alternative Evaluation Framework (AEF) of the impact of ICTs on the empowerment of indigenous peoples. This AEF will primarily use qualitative indicators and place the monitoring and evaluation of the empowerment process at the center of the analysis. The approach stresses that empowerment is a dynamic and ongoing process requiring a holistic approach, by which a contextual analysis is being carried out within a particular social, cultural, economic, political and historical milieu. Moreover it is suggested that the individual and community aspect of empowerment be analyzed separately.

Based on this analysis the suggested AEF will base its methodological approach on a combination of the contextualized approach to ICTs and the specific instruments used within participatory action research. Such a methodology, in contrast to more conventional approaches, places poor communities at the center of the evaluation, so that the understanding of the communities’ existing social institutions, processes and ‘information ecology’ are the entry point for the evaluation of the impact of ICT programs (Tacchi, Slater and Lewis, 2002).

Initially, the AEF defines a specific set of ‘impact indicators’ in order to operationalize and apply the ‘capability approach’ to the evaluation of ICT programs. The framework hereby focuses its assessment on whether or not ICT programs have enhanced poor peoples’ livelihoods by having strengthened their i) informational, ii) human, and iii) social capabilities. The enhanced informational capabilities of the poor are thus similar to those of literacy and have a substantive as well as instrumental role in enhancing poor people’s wellbeing.

Secondly, the AEF defines a set of specific process indicators in order to provide a framework for the analysis of the role intermediary organizations play in the process of empowerment. Hereby, the analysis stresses that a set of ‘enabling factors’ through the provision of specific technical services (i.e. capacity-building activities) are indispensable for ICTs to enhance their human and social capabilities.

Finally, the AEF includes the analysis of the broader socio-economic and political context of poor communities. The investigation emphasizes that the ‘enabling environment’ or the broader ‘politics of information’ within a country is crucial in enabling poor communities to significantly improve their livelihoods through the use of ICTs.

5.1 Enhanced human capabilities—the key dimensions of individual empowerment

Within the analysis of the process of individual empowerment, the AEF distinguishes between the following six dimensions: i) informational; ii) psychological; iii) social; iv) economic; v) political; and vi) cultural. (see Table 2). These different dimensions contribute in different ways to the enhancement of a person’s human capabilities. While, the framework develops specific indicators for each of these dimensions, the analysis will stress the interdependencies of the different dimensions of empowerment and investigate whether or not the different dimensions of empowerment reinforce each other.

Due to the fact that the capability-approach stresses the non-material factors of wellbeing, the AEF emphasizes the important role the psychological, social and cultural aspects of a person’s life play for her/his empowerment.

In particular, ICTs can play an important and direct role in enhancing through a process of ‘self-reflection’ and ‘critical analysis’ the critical consciousness and self-esteem of poor people (Freire, 1972). Specific outcome indicators for the psychological empowerment of poor people through ICTs include i) the improved ability to analyze and solve problems; (ii) to enhance a person’s self-esteem; and iii) a sense of participation in the modern world. This dimension of empowerment is very relevant for strengthening a person’s human agency or in other words to strengthen a person’s ability to influence strategic life choices, a core concept of empowerment (Kabeer, 1999a, 1999b). In this sense it seems that the potential positive impact of ICTs on the psychological empowerment of the poor has not only a substantive value on its own, however can also be instrumental for the empowerment of a person in different aspects of her/his life. For instance the strengthened self-esteem of a person can be key to also expand the economic aspects of his/her life by enhancing the person’s ability to find new employment.

The second aspect of the potential positive impact of ICTs on individual empowerment focuses on the extent to which ICTs can enhance peoples ‘informational capabilities’. Within the assessment it will be key to evaluate to what extent ICTs can not only strengthen the poor’s informational assets, but also enhance related assets, such as human and social assets and thus act as an ‘agent for social change.’ The framework focuses on the following two impact indicators related to ‘informational capabilities’: i) does the ICT program enhance the information literacy of the poor?; and ii) does the ICT project enhance the poor’s ability not only to consume, but also to produce and disseminate information?

The first impact indicator is related to a person's 'information literacy'⁴. For the further analysis the paper will use the following definition: "*information literacy is a set of abilities enabling individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information*" (Association of College and Research Libraries, 2000:2).

The concept of information literacy is very much related to information technology skills, but includes a broader area of competency, such as i) the capacity to access the needed information effectively and efficiently; ii) the capacity to evaluate information and to incorporate selected information into one's own knowledge base; and iii) the capacity to process and share information effectively with others. This concept stresses that people need skills in order to be able to access information effectively and efficiently through ICTs, such as for example the ability to use search engines, websites, e-mail or list-serves. Furthermore, it is key that people know how to assess the quality of the retrieved information. A very relevant measurement for this will be whether or not a person is able to contextualize the retrieved information and integrate selective parts of it into her/his existing knowledge base. Finally, information literacy includes the ability i) to distinguish between alternative information sources; and ii) to summarize the main ideas from the gathered information, sharing it with others within and outside the community. Another important indicator for enhanced informational capabilities is the capacity of the poor not only to consume content, but also to generate and share their own content through the development of their own websites or by posting material on other sites. The AEF pays particular attention to the role of local content generation on empowerment. As such, it will be argued that being able to produce and share content is a key aspect of the informational capability and thus represents a key outcome indicator for empowerment (Rogerson and Itoh, 1998).

The third dimension of the AEF focuses on whether or not an ICT program enhances the human capital of the poor. The impact indicators analyse the extent to which the ICT program strengthened people's ICT management and leadership skills. In this context, ICT skills are being defined as "*a set of skills and understandings required by people to enable meaningful use of ICT appropriate to their needs*" (Oliver and Tower, 2000:384). This functional view of ICT literacy stresses the importance of the ability of people to appropriate technology to meet their local and cultural needs. Managerial and leadership skills represent a set of skills, such as the ability convene meeting, to supervise people and a basic knowledge about accounting and finance which are necessary to ensure the efficient operation and management of local Community Telecenter⁵ and are vital in ensuring the financial and social sustainability of ICT programs. With a focus on better understanding the process of empowerment,

⁴ For a good overview of the role of Information Literacy for ICT programs see: Michel Menou: (2002) "Information Literacy in National Information and Communications Technology (ICT) policies: The Missed Dimension, Information Culture".

⁵ A community telecentre is defined as a multipurpose centre, providing IT and telecommunications facilities, user support and training for members of a (usually remote and isolated) community who cannot afford such facilities on an individual basis and/or do not have the skills to use such tools" (Ernberg 1998:191).

Table 2: Indicators for Individual Empowerment

Human Capabilities strengthened

Dimension	Objective	Outcome Indicator
Informational	<i>To improve the access to information and informational capabilities</i>	<ul style="list-style-type: none"> ✍ improved capacity to use different forms of ICTs ✍ enhanced information literacy ✍ enhanced capacity to produce and publish local content ✍ improved ability to communicate with family members and friends abroad
Psychological	<i>To support a process of self-reflection (critical conscientization) and problem-solving capacity</i>	<ul style="list-style-type: none"> ✍ strengthened self-esteem ✍ improved ability to analyze own situation and solve problems ✍ strengthened ability to influence strategic life choices ✍ sense of inclusion in the ‘modern’ world
Social (Human capital)	<i>To strengthen people’s human capital (skills, knowledge, ability to work and good health)</i>	<ul style="list-style-type: none"> ✍ enhanced ICT literacy and technology skills (i.e. repair computers) ✍ enhanced leadership skills ✍ improved program management skills
Economic	<i>To enhance people’s capacity to interact with the market</i>	<ul style="list-style-type: none"> ✍ improved access to markets ✍ enhanced entrepreneurial skills ✍ alternative sources of income ✍ productive assets strengthened ✍ improved employment opportunities ✍ improved income through a) lower transaction costs (less time constraints); b) reduced transport needs; and c) increased timeliness of sales
Political	<i>To improve people’s participation in decision-making processes at the community-level and the political system</i>	<ul style="list-style-type: none"> ✍ improved access to government information/services (e-government) ✍ improved awareness about political issues ✍ improved capabilities to interact with local governments
Cultural	<i>To strengthen people’s cultural identity</i>	<ul style="list-style-type: none"> ✍ use of ICTs as a form of cultural expression (i.e. design of computer graphics, websites) ✍ increased awareness of own cultural identity

the assessment will also analyze to what extent the intermediary organization has transferred the responsibility of the daily management of technology to local community members and thus enabled them to gradually acquire the above-mentioned skill sets, contributing to their empowerment.

The impact of ICTs on the economic, social and cultural dimensions of a person's life depends on whether or not people make 'effective use' of ICTs as an instrument to reach their personal and collective development goals. This notion is closely related to the way people are making use of ICTs in their daily lives and how well ICTs are being integrated into their social, productive and cultural activities. Within the analysis the paper defines effective use *"as the capacity and opportunity to successfully integrate ICTs into the accomplishment of self or collaboratively identified goals."* (Gurstein, 2003:10). This definition refers to the instrumental role ICTs—similarly to literacy—can play in expanding the human capabilities of the poor and as such, contribute to their empowerment. The evaluation framework hereby follows the concept developed by the U.S. National Academy of Science and draws on indicators of user behavior and perceptions in the use of specific sectoral applications (Wilson et al., 1998; Daly 1999).

Due to the instrumental role of ICTs in enhancing people's human capabilities in multiple areas, it is key to base the analysis of the potential impact of ICTs on the evaluation of the actual and realized uses of ICTs. For instance, in order to assess whether or not ICTs have improved peoples' capability to access markets, or to improve their income, it is critical to understand people's motivation and patterns in using ICTs. Furthermore, it is important to know which types of ICTs—for instance community radio or the internet—and which specific applications they are using. In a second step, the framework suggests to carry out a participatory impact assessment using qualitative methods (i.e. focus groups and in-depth interviews), in order to assess whether or not the identified uses of ICTs have indeed led to any significant improvements in the economic, social or political spheres of peoples' lives. Within this analysis it is key to go beyond using purely quantitative methods and instruments, and instead to pay special attention to the 'perceptions' of people about the benefits and risks involved in using ICTs (ActionAid, 1999). Only through such an approach it seems that the process of individual empowerment can be critically analyzed.

5.2 Enhanced social capabilities—key dimensions of community empowerment

It is central to the discussion of empowerment to conceptualize its process not only in terms of the individual, but to take a broader view encompassing a dynamic continuum that includes but is not limited to the individual, and includes small groups, community organizations, partnerships and political action (Labtone, 1990; Rissel, 1994). This viewpoint stresses that based on the concept of power, one of the most important assets of poor people is their strength to form groups and organizations at the community level and to collectively pursue goals based on a shared vision. However, at the outset of the analysis it must be emphasized that communities are not a homogenous entity and that many development projects have underestimated the role of existing social norms and social institutions within communities, which often lead to power struggles and reinforce the

marginalization and exclusion of certain groups within communities (Agrawal and Gibson, 1999). Based on this frequent misconception of communities, the AEF suggests to first carry out an analysis of the locus and distribution of power relationships within the community, before beginning the assessment of the specific effects of the ICT intervention (Oakley, 2001:14). Power relations define the basic patterns of social and economic relations and therefore cannot be dismissed from an analysis of the potential impact of ICT on community empowerment. Based on this, the analysis suggests to distinguish between the following six key dimensions of community empowerment summarized in Table 3 (see below): i) informational; ii) organizational; iii) social development; iv) economic development; v) political participation; and vi) cultural identity. It is furthermore important to mention that in many of these areas there exists an important interdependency between the individual and collective empowerment process. At the same time, this separation adds significantly to the analysis, since it provides a clear logical framework on breaking up the different complex empowerment processes into smaller and more comprehensive units.

Similar to the individual empowerment, the strengthening of the communities' 'informational capabilities' acts as a cross-sectoral phenomena and thus can significantly strengthen the communities capabilities in the other dimensions of empowerment. At the core of this analysis will be the question whether information and ICTs can play an agency role, thus not only strengthening the informational capability of the poor, but also having a much broader indirect impact on other related capabilities.

A first important indicator measuring the effects of ICT interventions on communities is whether the new ICTs are building on and strengthening the existing traditional information system. For instance, in most indigenous communities, the council of elders plays a key role as an information broker and as a source of traditional indigenous knowledge. Thus it is important to find out to what extent these existing community structures have been considered in the design of the ICT program? Was there any significant level of participation of community leaders and by the community as a whole in the preparation of the project? One indicator to measure this dynamic is whether or not the project has allowed for a convergence between new ICTs (i.e. internet) and traditional forms of media. Such a convergence would signify that these traditional systems were indeed strengthened and not undermined by the introduction of ICTs.

Furthermore, changes in information flows can be used as a key indicator on as to whether or not the ICT program has supported the poor in strengthening their informational capabilities. This will entail an assessment of whether the project has led to an increase in the level of information exchanges and if so, which types of communications have increased. Thus, aiming to distinguish between horizontal exchanges with other communities or vertical exchanges with policy makers and development practitioners.

Table 3: Indicators for Community Empowerment
Social Capabilities strengthened

Dimension	Objective	Outcome Indicator
Informational	<i>To improve access to information and informational capabilities</i>	<ul style="list-style-type: none"> ⌘ traditional information system strengthened ⌘ information flows within community improve ⌘ horizontal knowledge exchanges with other communities strengthened vertical knowledge exchanges with the state, donors, NGOs strengthened
Organizational	<i>To strengthen organizational capabilities</i>	<ul style="list-style-type: none"> ⌘ transparent selection of leaders ⌘ increased efficiency ⌘ improved information flows ⌘ better coordination among different organizations ⌘ networks with other indigenous organizations strengthened
Social Development	<i>To improve access to basic social services</i>	<ul style="list-style-type: none"> ⌘ improved access to formal and non-formal education (i.e. e-learning) ⌘ improved access to health services (improved knowledge about health practices and traditional medicine) ⌘ improved knowledge and access social programs of the government (e-government services)
Economic Development	<i>To promote economic opportunities</i>	<ul style="list-style-type: none"> ⌘ improved access to markets and commercialization of products ⌘ improve productive activities through enhanced knowledge (i.e. better knowledge about agricultural practices) ⌘ enhanced capacity mobilize resources from outside donors ⌘ improved access to remittances through improved communication with migrant workers
Political Participation	<p><i>To improve participation in the political system</i></p> <p><i>To enhance transparency within community</i></p> <p><i>To improve participation in the political system</i></p> <p><i>To enhance transparency within community</i></p>	<ul style="list-style-type: none"> ⌘ improved 'voice' and participation in development process ⌘ improved transparency of political institutions (e-government) ⌘ enhance decision-making power in political process ⌘ better coordination of political activities enhanced transparency of information flows within community ⌘ direct participation in international policy dialogue (UN permanent forum)
Cultural Identity	<i>To strengthen the communities cultural identity</i>	<ul style="list-style-type: none"> ⌘ indigenous languages strengthened ⌘ indigenous knowledge strengthened ⌘ improved dissemination of communities own culture

The second dimension of community empowerment through ICTs is the organizational effect of ICTs on the existing social institutions. Hereby the key question is whether or not the ICT program was able to strengthen these organizations—or if in fact, it undermined them. To analyze this issue, it is particularly important to assess whether or not the project carried out an adequate information needs assessment prior to initiating any activities. Particular attention should be given to the issue of who has traditionally controlled information flows in the community and how the introduction of ICTs might affect existing power relationships. Another impact indicator for the organizational effects of ICT assesses whether the project has increased the efficiency and transparency of the existing organizations. Within this context it is key to evaluate to what extent the information flow between the community-based organization and the community has improved. Finally, ICT can strengthen community-based organizations by expanding their capabilities to communicate and exchange knowledge with other organizations in different communities. For instance, if indigenous community leaders are able to use e-mail to better communicate with their regional and national indigenous organizations, the use of ICTs can enhance their social capabilities by strengthening the indigenous organizations.

Third, the framework aims to evaluate the extent to which ICTs have improved the access and the quality of basic social services for the community, in particular in education and health. In education, for instance it is important to include in the assessment, the effects the ICT program has had on the communities outside of the school and what effect it had on adult education. Hereby it is particularly interesting to analyze the effects of ICTs on the relationship between teachers and students, as well as parents and children. Frequently young people acquire computer skills faster than adults and thus existing power relationships can be changed, since the students now have access to multiple sources of information and do not only depend on the information they receive from their teachers and parents. Finally, the assessment will inquire whether community members receive information about social government programs through e-government services. Such services have the potential to significantly contribute to the social development of the poor, since they can significantly improve the efficiency, transparency and reach of social programs.

In economic terms, the key question is whether ICTs can empower communities to access new opportunities. For instance, many communities are interested in improving their access to markets through ICTs. Improved access to information and knowledge about agricultural practices for instance, has the potential to improve the productive activities of the community. Another indicator for potential economic benefits of using ICTs is the enhanced access to remittances by improving the communication with migrant workers living abroad. In economic terms, people and communities frequently expect that ICT can improve their incomes and provide people and communities with improved access to financial resources, for instance through microfinance schemes). Frequently, it is very difficult to establish a direct link between improved incomes of individuals and communities and the use of ICTs, since it is difficult to isolate the effect of ICTs from other socio-economic effects.

Often times, an important and direct positive impact of ICTs on communities occurs, when a telecenter or cell phones are being directly managed by members of the communities, thus directly providing them with employment and a source of income. To track the income effects of the use of ICTs however seems to be much more challenging due to the factors mentioned above.

The impact ICTs have in terms of the political participation of communities can be divided into two parts: the internal politics within the community and the relationship of community members with the overall political system. For the first aspect of the internal politics, it is key to assess whether or not the ICT program has improved the transparency of information flows within the community. For instance a good indicator for this is the way community leaders are being chosen and how this information is being shared with all community members. Frequently, the more traditional forms of ICTs (community radio, printed press) can play a crucial role in enhancing the information flow within communities. The second aspect of political participation depends more on the political will of the political institutions to carry out administrative reforms and to enhance their efficiency and transparency, independently of ICTs themselves. Nevertheless, ICTs can play an important role as facilitators of institutional change and sometimes can act as agents or independent institutions for change. Key indicators to observe whether ICTs enhance the political participation of poor communities in the overall political process are: i) ability of communities to influence decision-making processes; ii) ability to make 'voices' heard; iii) improved transparency of government institutions through e-government; iv) enhanced capacity of communities to coordinate their political work with other communities; and v) ability to participate and influence international policy debates.

Finally, in terms of whether or not ICT can strengthen—or in fact undermine—the cultural identity of poor communities very much depends on the local, social and cultural context of the use of ICTs. Frequently, key criteria used to answer this question is whether members of the communities have acquired the skills and knowledge to manage and own the technologies and to what extent ICTs are being incorporated into the community's life. An indicator to assess the level of integration into community life is whether or not the center has become a 'social hub' hosting a broad range of community activities unrelated to the actual use of ICTs. For instance, the centers could be used for meetings of the local women's or youth groups. The level of activity in the center, whether related to the use of ICTs or not, represents a good indicator of the extent to which it has been incorporated into the community. In terms of opportunities for cultural expression through ICTs it is key to analyze the process of how the ICTs were introduced into the community. Only through an open and participatory process which takes existing community structures and power relationships into account, can local communities gradually gain trust in the new forms of communication and appropriate them to promote their own cultural identity. Example for specific indicators include, the level to which ICTs are using indigenous language, the way they are strengthening indigenous knowledge and whether they lead to the improved dissemination of the community's culture. Frequently, traditional forms of

ICT, such as community-radio stations are much more like to strengthen the diverse cultures of local communities, than new forms of ICTs (i.e. the Internet).

6.3 Enabling Factors – the role of intermediary organizations

A process of change is central to the concept of empowerment, whereby certain ‘enabling factors’ can be essential in supporting the individual and community empowerment of the poor. Within the context of ICT programs intermediary organizations, such as local NGOs, local governments and community-based organizations are playing a crucial role in the process of introducing ICT applications and services to the poor communities. The notion, that poor people can directly make use of ICT, in particular the Internet without any assistance from an outside agent seems to be unrealistic. Hereby, it is being assumed that intermediaries need to play a much stronger role at the outset of programs and should gradually transfer the necessary technical and management skills to the local community, in order reduce their direct involvement in a latent stage of the project.

Thus the AEF aims to analyze in detail the intermediary process focusing on the following aspects in more detail: i) the nature and extent to which a participatory process has facilitated the preparation and implementation of ICT programs; ii) the level of support by the intermediary organization in terms of its provision of specific technical services (i.e. capacity-building workshops, local content development); and iii) the degree to which local communities have gradually appropriated the technology and gained ownership of the program.

In order to assess the level of participation the ICT programs have incorporated, the framework focuses on analyzing the process of how the ICT intervention was conceived, whether it responded to existing local needs, and how active and early on community-based organizations and leaders were involved in its planning, preparation and implementation. Hereby, it will be important to consider the degree to which the participatory process has been incorporated in project design and implementation or whether the process was more driven by the necessity to fulfill a-priori requirements imposed by existing ‘guidelines’ of the program’s donor agency. Based on this conceptual analysis the following will be considered as indicators in measuring the level of participation in ICT programs. First of all the evaluation will assess whether the program has used any specific participatory mechanism or if in fact, it was driven more by technology considerations. The analysis will focus on questions, such as: i) did the program carry out community consultations and at what stage of the program did this occur?; ii) was there a participatory process in place to define the current management arrangement of the information center?; iii) did the consultation process include a broad range of stakeholders and pay special attention to particularly vulnerable groups, such as women or youth?; and iv) did the design or concept of the ICT program change as a result of the consultation process?

In addition, the AEF will evaluate the extent to which the intermediary organizations provided specific technical support to the communities, in terms of capacity-building activities and support in the generation of local content. Frequently, this issue is not a matter of technical expertise however a matter of time, resources and motivation on the side of the intermediary. Hereby the investigation

distinguishes between two different types of ICT projects depending on the level of intermediation: i) high and ii) low.

The first type of project is typically carried out by a grassroots NGO, whereby the NGO is actively involved in the project throughout all its phases, while the second type of ICT project is frequently managed by a central government and is national in scope.

An important indicator for the technical quality of the support received by beneficiaries is the amount and relevance of the existing local content provided through the ICT services. The AEF will focus on assessing the depth of the existing community information available on the Internet, the relevance and quality, as well as the cultural appropriateness of the information provided. Key indicators include the total number of websites available about the community, the number of websites on local government services, market information, and local news, as well as how user friendly (in local languages) the provided websites are. The analysis will evaluate to what extent the intermediary organization is supporting poor communities to contextualize the provided information to their own cultural and local context. Another key factor, is whether or not the ICT program is providing sufficient capacity-building activities to poor communities.

A final dimension of the analysis of the intermediary process is the extent to which existing community-based organizations have been and continue to be involved in the ICT program. Within this context it is key to analyze to what extent the ICT services (i.e. the information center) are being 'owned' by the community or are being perceived as external to the community. One telling indicator is whether or not a community-based organization is involved in managing the center or whether an outsider is responsible for its operation. Another important indicator measuring the organizations' involvement is their level of use, including criteria such as: (i) Did the information center strengthen the horizontal information exchanges among different community-based organizations?; (ii) Do these organizations use the center and do they benefit from it?; and (iii) What is the position of community leaders to the ICT program? These indicators will help to discern the level of the program's integration into the organizational and social structures of the communities. Experiences from several ICT programs that failed speak to the importance of the social and organizational aspects in facilitating a process of individual and community empowerment.

5.3. Enabling Environment- the broader socio-economic and political context

Finally, the AEF highlights that an evaluation on the impact of ICTs on the livelihoods of marginalized groups has to be seen within the broader context, examining the underlying reasons for their systematic social exclusion and discrimination. The analysis focuses hereby on the 'politics of information' and on the examination of existing information flows and the extent to which there exists an 'enabling environment' for ICTs to empower poor communities. The AEF makes use of the model of power relationships developed by John Friedmann, investigating in greater detail the linkages between state, political, corporate and social powers as they relate to information and knowledge (Friedmann, 1992). As a second dimension, the framework examines the role traditional information

systems play within the overall political economy of a country. Hereby the AEF analyzes how the ‘modern’ information system of the ‘western’ state, relates to these existing indigenous knowledge systems. This leads to the argument that within many developing countries continue to exist ‘two realities’ which usually do not meet and that there exists an important cultural, social and political gap between poor communities and the dominant groups of society (frequently the urban elites). Based on this analysis, the AEF assesses to what extent information and ICTs can enhance the communication between poor communities and the dominant group in society and thus support marginalized groups to overcome some of the existing structural inequalities.

6. Case studies of the use of ICTs by indigenous peoples in Latin America

Throughout the world an increasing number of poor communities are beginning to embrace ICTs as an instrument to promote their own development and to fight for their rights. The following section will focus on several case studies of concrete applications of ICTs by marginalized groups at the community and organizational level. While the majority of cases are focused on the use of ICTs by indigenous peoples in Latin America, many of the findings may also relevant for marginalized groups in other cultural and socio-political settings throughout world.

6.1 UNUMA- Bilingual and Inter-Cultural Education Project from Venezuela

Since 2000, UNUMA—Sociedad Civil de Apoyo al Indígena—a local NGO working for the promotion of indigenous peoples development and rights in Venezuela, has focused on the innovative use of ICTs to support a bilingual and inter-cultural education project of indigenous peoples.

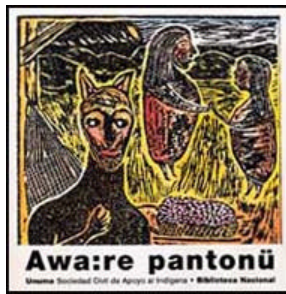
The initial objective of the program was to strengthen the capacity of indigenous teachers from the Wayu (Guajira peninsula), Kari’ña (El Tigre, Anzoategui) Uwo’juja, Hiwi and Pemón communities (Amazonas) by providing training in linguistics, production of books in indigenous languages, mathematics, psychology and the use of ICTs. The role of the ICT capacity program was catalytic in nature and meant mainly to reinforce the other training modules, rather than focusing exclusively on the field of ICTs themselves. Early findings demonstrate the high value of integrating an ICT intervention into a bilingual and inter-cultural education program. While visiting the project in December 2000, I had the opportunity to attend several computer-training workshops with the Kari’ña community and observed first-hand some of this program’s strengths and weaknesses.



Training workshop with indigenous youth in a Kari’ña community of Venezuela; Photo credit: Haydée Seijas, Executive Secretary, UNUMA

The Kari’ña live in the surroundings of El Tigre, a city that has been for the past 70 years a major area of oil exploration in Venezuela. As a consequence of the ‘oil boom’ in this region, the cultural identity and social institutions of the Kari’ña communities have become under significant pressure. Many Kari’ña communities, are today facing a situation of severe poverty, struggling to make ends meet and attempting

to preserve their cultural identity. This is the local context in which the project is working to strengthen the capacity of indigenous teachers. Most indigenous teachers had never used a computer before the training and were enthusiastic about exploring an entirely new world. During my field visit, one of the most fascinating moments took place when an indigenous leader showed me his computer artworks—all of which were based on traditional Kari’ña cultural and spiritual motifs. The story did not end here, as he then took his ‘digital artworks’ and reproduced them on T-shirts and other prints selling them to tourists visiting the area.



Artwork: Graphic designed by an indigenous leader of the Pemon community

Based on this pilot experience and the strong demand from indigenous peoples to continue the program, UNUMA was able to finance a second phase of the program in 2002 through a \$50,000 grant from the Development Marketplace of the World Bank. As a first step, a series of consultation workshops with indigenous communities were organized, where it was decided to purchase several computers (one computer for each region) in order to expand the ICT program providing training to more indigenous teachers, while in addition organizing a series of capacity-building workshops with indigenous peoples at the community-level. Due to the strong interest from many communities, the indigenous communities in all three regions developed a system to share the computers among many different communities, whereby indigenous youth themselves were trained to maintain the equipment and the distribution of computers among the communities. This model is based on the collective identity and the strong organizational tradition of the Kari’ña communities, whereby the concept of reciprocity is providing the basis for the sharing of computers among different communities. This model enables many more people to make use of the computers and to acquire new skills, in spite of the very limited resources of the project. This model in addition to being extremely cost-efficient, demonstrates the high level of ownership of the project by the communities. Based on this commitment of indigenous peoples, the municipality of El Tigre decided to support their efforts and donate an additional 40 computers to the program. In this sense, the very small original investment acted as a ‘catalyst’ and indigenous peoples manage to raise additional resources locally.

6.1.1 Some key lessons learned

These first findings from the field clearly illustrate that ICTs can play an important role in strengthening the human and social capabilities of marginalized groups. It is however important to take a closer look at the program and to analyze the following questions: i) what is the overall socio-political context in which the project is taking place?; ii) what were some of the ingredients of this successful application of ICTs?; iii) what role did the local NGO play in facilitating the individual and collective empowerment of indigenous peoples?; iv) in what manner did the project build on and

strengthen existing community structures?; v) what are the effects of the project on the cultural identity of indigenous communities? and vi) what are some of the key challenges the project is facing?

The following section will make use of the AEF developed in the previous section of this paper, in order to address these key questions and attempt to assess the impacts of this project on the livelihoods of indigenous peoples. Hereby, I will focus on some early findings from the research based on my experiences with the project so far. The overall socio-political context of the program is characterized through a permanent struggle of the cultural survival of indigenous peoples in Venezuela. With a population numbering between 2-3% of the overall population, indigenous peoples represent a very small minority within the Venezuelan society. At the same time, the reaffirmation of indigenous peoples' identity and rights throughout Latin America since the early 1990s had positive effects on improving indigenous peoples' rights in Venezuela. The Venezuelan government has for the first time officially recognized in its Constitution from the year 1999 that Venezuela is a multi-cultural society and has granted indigenous peoples significant rights within the new constitution.

One of the key issues, indigenous peoples are facing is in their struggle to secure control over land rights. While indigenous peoples, particularly in the Amazon region inhabit large areas of land, their lands are continuously being invaded by miners, loggers, oil companies and other vested interests in natural resources exploitation. Since the state has preserved its authority over the land rights for all resources found in the subsoil, while indigenous people possess the land rights for their territories, remain paralyzed in terms of being legally able to stop the ongoing invasion into their lands. Many young indigenous leaders are stressing the importance of maintaining their cultural identity while accepting and using the technical advances of modern society. Furthermore, due to the high level of out-migration, there exists an increasing number of an 'urban' indigenous population who is maintaining close social and cultural ties to their original communities.

In spite of this challenging socio-economic and political context the project is demonstrating that the meaningful use of ICTs by indigenous peoples can significantly enhance their human and social capabilities. One of the key success factors of the project is the fact that the ICT project was fully integrated into the bilingual and intercultural education program. The Kari'ña 's have been a core beneficiary of this program since the mid 1990s. The main role of the ICT program is it to enhance the other program components such as increasing literacy capacity, rather than to support the capacity-building of indigenous peoples in the use of computers and the Internet as a stand-alone project. It is important to highlight that the overall program responds to a key priority of indigenous communities, the strengthening of their cultural identity by recuperating their own languages and improving the quality of the existing bilingual education programs.

This case study illustrates how ICTs form part of a holistic approach towards promoting indigenous peoples development and responds to a very specific and concrete need expressed by the communities themselves. Within this overall framework, the ICT program is contributing to the core

objectives of the education program by complementing the other training modules. The objectives of the ICT capacity-building activities are to enhance indigenous peoples 'informational capabilities' not for their own sake, but in order to enhance their skills and further their 'human capabilities' in the cultural, social and economic spheres of their lives.

The example mentioned in the case about the indigenous leader who used his newly acquired ICT skills to design a graphic of his traditional wood carving showcases that ICTs are acting as an 'agent' to enhance his human capabilities in the cultural and economic spheres of his life. Based on this first experience, the program launched a national art competition among indigenous peoples in 2003. The program received 77 electronic artworks from different parts of the country and selected for four different age groups three winners. These examples clearly demonstrates that ICTs can reinforce indigenous cultures and values, when indigenous peoples acquire



Artwork: Marian Tempo, Kari'ña- winner of the First National 'digital' Art competition of indigenous peoples, 2003

the necessary skills to use, manage and control the technology without the interference of an outside agent. One of the most positive aspects of the ICT program is the enthusiasm the project caused for the overall program particularly among indigenous youth. The experiences from this case seem to indicate that computers and the Internet can have

extremely motivating effects on the marginalized youth, who continue to be excluded from the access to these technologies in many parts of the world. An important aspect of this individual empowerment are the positive psychological effects of enhanced self-esteem and a sense of being better connected to the rest of the world. The use of ICTs by youth of course raises the issue of the potential abuse of the Internet by teenagers. So far, the program has not yet had any problems in this sense, since there is a very strong social control mechanism in place, whereby young people are not being left alone for extended periods of time, and in fact adults are frequently using the computers together with young people. Frequently, the youth teaches adults how to use the technology.

The program has created new opportunities for indigenous youth to pursue a professional career and/or to find employment in the area of ICTs. For instance, in the Kari'ña community, the Ministry of Science and Technology has employed three Kari'na youth to become the manager of the local government-sponsored Information Center (Infocentro). Furthermore, five students who acquired advanced web design skills have formed a team and have successfully offered their services to design websites for their local municipality, small businesses and other organizations. Finally, several students have decided to pursue a career in computer science and have successfully passed the entrance exams of the universities.

Another important ingredient of the success of the program has been the key role that the local NGO has played in acting as a facilitator in promoting the process of individual and collective empowerment of indigenous peoples. Hereby, it is important that UNUMA has continuously been

working with the same indigenous communities since 1992 and thus has gradually gained the respect and trust of many indigenous peoples. Furthermore, the executive director of the NGO has been a longtime ally of indigenous peoples in their struggle to maintain their cultural identity and affirmation of their rights. As has been outlined in the theoretical part of the paper, the effective and local intermediation is a key ingredient for a successful ICT project. In the case of UNUMA, the NGO accompanies every activity of the program very closely, while providing indigenous peoples with the space to make their own decisions and to implement parts of the project. Furthermore, an important aspect of the program has been the emphasis on building all project activities on the existing traditional social structures. Hereby, indigenous leaders have played a key role in facilitating a participatory process which created an open, flexible space for all community members to freely express their views and perspectives on the program. A key aspect of this process encompassed a detailed needs assessment carried out in 2000 with indigenous teachers in order to better understand their attitudes, needs and perceptions towards the role of information and ICT for development. A major challenge encountered during the needs assessment was the fact that many indigenous peoples had difficulty imagining the potential positive or negative effects of ICTs prior to being exposed to these technologies. At the same time, it seems that the focus groups and surveys conducted during the needs assessment made an important contribution towards providing a space for reflection for the participants and helped to raise their awareness about the significant challenges involved in applying ICTs to indigenous development.

In spite of the overall positive outcomes of the program important challenges remain. To what extent can it be argued that the 'human capabilities' of individuals and the 'social capabilities' of the communities have been strengthened in such a way that they contribute to improving the livelihoods of indigenous peoples? Second, to what extent has the program reached a stage of social and financial sustainability and what would happen if UNUMA unexpectedly had to withdraw from the program?

First, due to the overall difficult political situation in Venezuela the execution of the program was seriously delayed. Furthermore, the indigenous organizations, particularly among the Uwo'tjuja, Hiwi and Kari'ña communities remain relatively weak and thus the entire financing as well as a large portion of the program management responsibilities remain with UNUMA. Finally, the entire program very much relies on the personal commitment of the executive director of UNUMA and it remains unclear whether the program would continue without her continuous personal engagement.

Based on these preliminary findings from the field however, there seems to be no doubt that the program contributed to the individual and psychological empowerment of many indigenous peoples, in particular indigenous youth. The capacity-building workshops have certainly enhanced the informational capacity of indigenous peoples 'empowering' youth in particular not only to make meaningful use of ICTs, but also to maintain and carry out small repairs on the computers. Second, indigenous peoples have significantly enhanced their capacity to share information and knowledge with other communities and to directly interact with outside agencies, such as for example,

international NGOs and local civil society groups. Third, the project had very positive psychological effects, particularly on the self-esteem of many participants. The program enabled them to acquire new skills and to interact for the first with technologies in their lives. Many participants expressed after completing the computer courses a sense of pride. Fourth, the ICT component certainly provided in particular youth with a strong incentive to participate in the overall education program and thus significantly supported the overall objectives of the program. Finally, the program has successfully used ICTs as an instrument to support the reaffirmation of indigenous culture, which was confirmed by the successful introduction of the First National Indigenous 'Digital Art' competition in Venezuela realized in 2003.

The broader question on how these newly gained capabilities will contribute towards improving the material well-being of indigenous peoples still remains to be answered, however the first experiences clearly demonstrate that the program is beginning to make a difference at least in the non-material aspects of well-being of indigenous peoples in Venezuela.

7.2 Internet Access in the Peruvian Amazons

The following case study illustrates the tremendous challenges involved in promoting the use of ICT for indigenous peoples development. In the year 2000, the Ashaninka community Marakiri Bajo with the support of IDRC Canada and the Red Cientifica Peruana initiated the first telecenter project located in a remote indigenous community in the Peruvian Amazon.



Ashaninka leaders of Mari Kiri Bajo using the Internet.

The Ashaninka represent the largest indigenous group of the central Peruvian Amazon region. They live in severe poverty, while their cultural identity and subsistence economy are under severe pressure due the exploitation of natural resources and invasion of indigenous lands since the early 1900's (*DUFa Hierro. P and Hvalkof, S., 1998). Moreover, their access to such basic social services remains very limited. Within this overall political and socio-economic context many indigenous peoples had very high

expectations about the potential benefits of the project, while others remained skeptical about the usefulness of ICTs from the beginning. This early enthusiasm about ICTs is best reflected in the words of Mino Eusebio Castro, the Asháninka leader, who spearheaded the project from inception. In an interview with the author in early 2001 he emphasized that: "through the help of the Internet indigenous peoples have the opportunity to overcome their exclusion and to have improved access to education, markets and political participation. The Internet also enables us for the first time to directly contact international donors, to present our opinions in policy debates and to directly negotiate funding proposals without any intermediaries."

Based on this early enthusiasm in the community, the project focused on finding a technical solution to provide telephone and Internet connectivity to the remote village of Marakiri Bajo, a

community without access to electricity and running water. Furthermore, since it was one of the key objectives of the program to provide education to indigenous youth, the program installed in the community a state of the art video conference facility (via a generator-operated satellite system), in order to supply courses from other educational institutions across Peru.

What was the impact of such a high-level investment in technology at the community-level? How did the community react to the newly introduced telecenter? What were the reactions of the Ashaninka in the surrounding communities? Was it possible to maintain the interest of the community into the project? Were people really empowered and did they derive real value out of its use?

At first, it seemed that the project was quite successful. Many indigenous peoples, in particular, indigenous youth and women started to explore the new technologies. Based on this demand, the project initiated a capacity-building program for indigenous peoples in the use of ICTs. As a result of the training, in particular indigenous youth quickly learned how to use the technology and started to make contacts with the Ashaninka living in Brazil and other indigenous groups throughout Latin America. Based on the new skills, several community members developed a website for the community and began using the video-conferencing facility. At this stage of the project in late 2000, the international audience started to become interested in the project and Mino Eusebio Castro, one of the community's indigenous leaders and 'champion' of the project was invited to several international conference to present the case as a best practice on how the Internet can 'empower' indigenous peoples by providing them with an instrument for the reaffirmation of their cultural identity and to contribute to their economic and social 'self-development'.

At the same time, however the project ran relatively quickly into a series of serious difficulties. First, right from its inception only a relatively few number of people actually used the telecenter and the entire project was controlled by a small group of indigenous leaders. As a consequence many indigenous peoples from within and the surrounding communities felt excluded and began to 'envy' the ones who were able to use and manage the center.

Second, the project aggravated existing tensions between the different groups within the community. Due to the long 'assimilation process' within the project area, about half of the population in Marakiri Bajo identifies themselves as Ashaninka, while the other half as 'mestizos' who have settled in the community relatively recently. The Telecenter was controlled by the Ashaninka and was not open for the general public, thus excluding a large number of people from its potential benefits.

In addition, the telecenter did not meet the high expectations of many indigenous peoples about its potential benefits, in particular in economic and social terms. First, many people hoped that the new technologies would enable them to better sell their products of fruits and artisans to the market in Lima. Unfortunately, this objective went unrealized due to the lack of an online market for such products within Peru as well as the communities' limited knowledge and experience with e-commerce.

Moreover, many people encountered problems in terms of being able to relate to the new media due to the lack of local content in their own language. In particular, the women in communities became relatively quickly 'disinterested' in the technology, as they felt that the center did not provide them with any concrete information or services they could use in their daily lives. The only group that continued to use the center was indigenous youth. Finally, the videoconference equipment was entirely underused due to a lack of both the supply of educational programs and a very low demand for this service from the community.

In the night of August 29th of 2001, these difficulties culminated, when the telecenter burned down and was almost entirely destroyed. It remains unclear to this date, who might have been responsible for this incident or what the motives might have been for the destruction of the center. Afterwards several community members decided to recuperate parts of the center and restarted the program in the following year, giving the program clearer objectives and a much more realistic approach. After a six month period of reflection and internal discussion, the community relaunched the ICT program through the opening of a local radio station. The Ashaninka Radio station is now producing and broadcasting local programs about agriculture, education, health and cultural topics in Ashaninka language to about 10,000 people in the project area. The Internet continues to be used but through existing telecenters in Satipo, the closest intermediary city, about 2 hours away from the original site.

This case study raises a series of research questions: What are some of the key lessons learned from this example? What are some of the key factors that led to the difficulties of the program? How could have some of the problems been avoided?

The first important factor which has contributed to the difficulties of the project is the overall complex political and socio-economic context of the project area. As a result of almost 100 years of continuous colonization of the Ashaninka territory, many communities such as Marikiry Bajo have been divided and have suffered under tremendous pressure to maintain their cultural identity. In addition to invasion of their lands, many indigenous peoples became the victims of the violence during the confrontations between the 'Shining Path' and 'government troops' in the 1980s. This violence had severe consequences for many communities and in spite of the end of most violence, several guerilla groups remain sporadically active in close proximity to the project area.

Secondly, the project did entirely bypass the existing organizational structures of the indigenous peoples of the Amazon region in Peru. In order to represent the interests and to fight for indigenous rights within the political system of Peru, the indigenous peoples have formed AIDSESEP, a national indigenous organization representing the large majority of the indigenous peoples of the Peruvian Amazon region. Aidesep as a membership organization has 6 regional offices, from which one is located in Satipo and represents the interests of the Ashaninka people of the central Amazon region. By executing the project directly at the community-level, without any coordination with the traditional organizational structure of the indigenous movement in Peru, the project created important

tensions and frictions between different indigenous communities and alienated many Ashaninka leaders within Aidesep.

Thirdly, the project's design overemphasized the role of technology, and did not carry out the necessary groundwork for the ICT investment. It seems that the consultative process at the planning phase was much too scattered and did not provide sufficient space for discussion and dissent within the community. The process did not include from the outset the non-indigenous population, which contributed to the raising tensions within the community. Furthermore, the technological solutions, in particular the videoconferencing facility were not based on real needs from the communities and thus remained underused

Finally, the local community was not supported by any local intermediary organization, instead the project was being monitored by the Colombian Foundation- Fundación Multicolor. In this way, the investment on the infrastructure was not adequately complemented by key preparatory steps identified above such as the carrying out of an information needs assessment, building of local content or extensive capacity-building workshops in the use and maintenance of the technology.

Finally, the project was implemented as an ICT stand-alone project and did not make any links with ongoing projects in other sectors in the community. In the Ashaninka territories several biodiversity protection projects were active at the same time, whereby both types of projects could have mutually benefited from synergies, in particular in the area of the development of local content or the use of specific ICT applications, such as Geographic Information Systems (GISs).

Conclusions

The analysis above has shown that ICTs under certain conditions can significantly enhance the human and social capabilities of the poor, thus empowering them at the individual and collective level. At the core of this empowerment process stands the notion that ICTs can enhance peoples' control over their own lives. Similarly to literacy, newly acquired 'informational capabilities' can act as an agent for change for individuals and communities enhancing their abilities to engage with the formal institutions in the economic, political, social and cultural spheres of their life.

In this context, the issue of whether ICTs are channeling resources away from the real priorities and needs of poor communities, seems to be misguided. Instead this question should be rephrased and address the issue of how ICTs could be used to meet the 'basic needs' of the poor. This however will require a shift in focus of ICT interventions to address such challenges as the fight against HIV/Aids, helping to avoid famines and their support in the mediation of conflicts.

At the same time, the case studies have demonstrated that due to the existing 'hype' around the potential benefits of ICTs, the high expectations of poor communities cannot be met. The experience shows that ICTs are only able to address certain aspects of the development challenges facing poor people and that in fact they are not able to change the existing structural, social, political and economic inequality. For instance, while ICTs can act as an effective tool in improving the access of

small-scale farmers to market price information, they are not able to address the underlying structural market inequalities between small-scale farmers and agro-businesses.

Furthermore, the paper has illustrated that there is not a direct and causal relationship between ICT and poverty reduction. This relationship is much more complex and indirect in nature, whereby the issue of its impact on the livelihoods of the poor depends to a large extent on the dynamic and iterative process between people and technology within a specific local, cultural and socio-political context.

Frequently, the most immediate and direct effect of ICT programs seems to be the psychological empowerment of poor people, whereby newly acquired ICT skills provide poor people with a sense of achievement and pride, thus strengthening their self-esteem.

A key recommendation of the paper is that the human development of people, rather than technology itself should be the center of the design and evaluation of ICT programs. As has been shown, the important advantage of using the ‘capability approach’ as the basis for the evaluation of ICT programs is its emphasis on the ability of ICTs to improve the daily livelihoods of poor communities, in contrast to more conventional approaches which overemphasize the significance of technology itself for social change. Furthermore, evaluations of the impact of ICT programs should focus on an analysis from the vantage point of the poor, rather than from the perspective of outside donors.

In addition the analysis provide the following concrete recommendations on the manner in which ICTs programs should be designed in order to be most effective on facilitating the empowerment of marginalized groups:

- ✍ First, the potential benefits of ICTs are largest, when they are being fully integrated into other sectoral development programs (i.e. in education or health). As the case study from Venezuela about the use of ICTs in bilingual education has demonstrated, ICTs can make a significant contribution towards reaching the core objectives of this development project; in this case improving the access to bilingual education to indigenous peoples. Hereby it is however important that marginalized communities first identify and define their own needs and development priorities before in a second step a project can define whether and how ICTs can support the community’s development goals. As has been shown in the Ashaninka case, in cases where such a process was not undertaken and the exact objectives of the ICT project were not defined, ICT programs frequently fail.
- ✍ Second, ICT programs are most effective, when combining traditional media with new forms of ICTs. As the case study of the Ashanikas has demonstrated the convergence between two different technologies—the Internet and community radio stations—is combining the advantages of both media. While the Internet is a powerful tool to connect networks and to exchange large amounts of information across long distance, community radios have a very broad reach and represents the most accessible and inclusive technology for the poor. Due to the oral tradition of indigenous communities this is of particular importance, considering that its use does not require literacy.

- ✍ Third, it is essential that ICT programs prior to initiating any project activities carry out a detailed assessment of existing information flows and information needs. Hereby, the analysis should focus on how the new technologies can strengthen existing communication and information exchanges within and in between communities. The assessment should furthermore identify key ‘information intermediaries’ in the community and analyze existing power relationships as they relate to the transfer of knowledge within the communities. As Scott Robinson has highlighted indigenous elders play a crucial role in the sharing of knowledge within communities. If the council of elders perceive ICTs as a threat to their existing power as an institution, the elders will attempt to boycott the ICT program and the consequence could be the failure of the entire project.
- ✍ Fourth, for the evaluation of the impact of ICTs on the livelihoods of poor communities it is crucial to analyze the process of how ICTs are being introduced. Hereby, outside agents or intermediaries are playing a key role in supporting communities in appropriating the technologies to meet their own local and cultural needs. Within this process, it is key that community members gradually gain the skills to make meaningful use of ICTs as well as gradually take ownership of the management of the program. As the case studies above have demonstrated, capacity-building activities and the provision of local content through intermediaries are two important factors, which influence, whether or not an ICT program will indeed strengthen the capabilities of the poor and thus contribute towards improving their livelihoods.

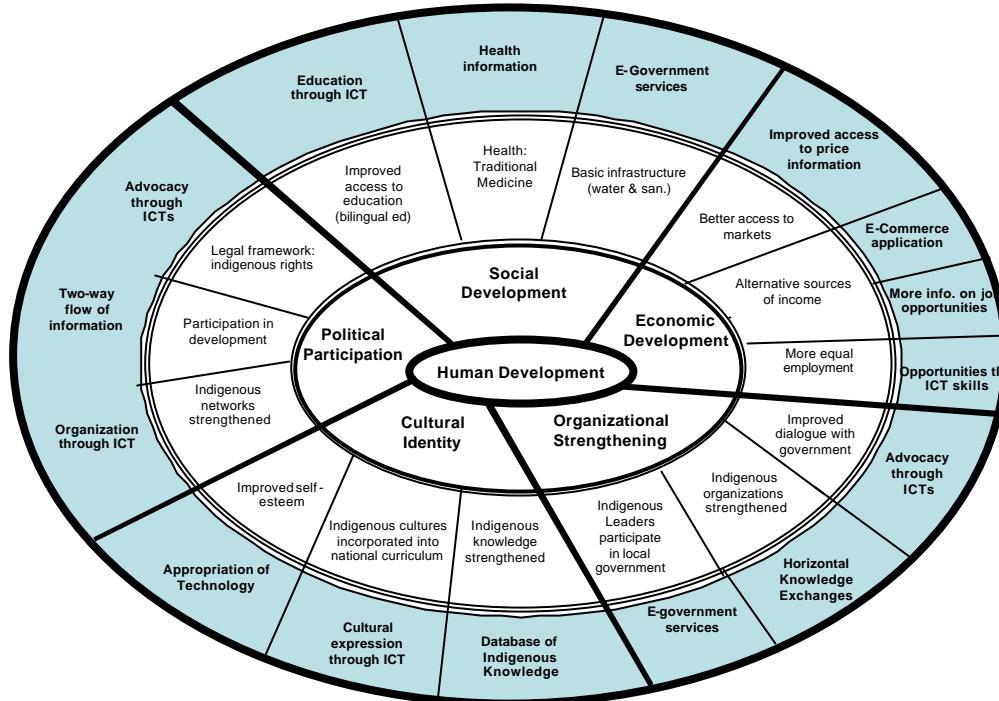
Finally, the paper has demonstrated that the most important factors influencing, whether an ICT program has positive outcomes or not are social, political and cultural in nature, while the technical issues involved in the provision of ICTs frequently do not play a key role. As the case study of the Ashaninka community demonstrates ICTs can disrupt existing social structures and alter the power relationships within communities. The analysis highlights that frequently ICT programs are not responding to a concrete need expressed within the communities, however are being designed through a top-down supply-driven approach. In order to avoid the potential social negative effects, it is crucial to base any ICT intervention on the existing social community structures. Hereby, the programs should strengthen traditional information systems, build on existing indigenous knowledge and enhance existing information channels rather than undermine existing structures.

ANNEX 1

Definitions of power and its implication on the concept of empowerment

Types of power	Definition of Power	Implications for empowerment	Interpretations of Empowerment
Power over	Controlling power: conflict and direct confrontation between powerful and powerless interest groups Power (Weber), Hegemony (Gramsci), Culture of Silence (Freire)	Socio-political Empowerment - radical change of the structural inequalities - focus on the broader political and socio-economic context	Friedman (1992) , Craig & Mayo, Moore, Yuval-Davis
Power to	Generative or productive power which creates new opportunities for actions It involves having decision-making authority and the power to solve problems. Capability Approach (Sen, Alkire) Livelihood Approach (Chambers)	Individual Empowerment - enhancing the capabilities of the poor - improving the participation in decision-making process	Capability Approach (Sen) Tools for self-reliance (Schumacher) Gender (Kabeer, Moser)
Power with	A sense of collective action through a group/ community sharing a common goal Social Capital (Putnam, Bebbington)	<u>Collective Empowerment</u> Social mobilization, building alliances and coalitions	Culture of Resistance (Menchu) Gender (Rowlands DAWN)
Power within	The power refers to self-confidence, self-awareness and assertiveness that resides in each human being Critical Consciousness (Freire)	<u>Psychological Empowerment</u> Strengthens awareness and self-esteem	Community Psychology (Rappaport, Zimmermann) Gender (Kabeer, Rowlands)

**ANNEX 2
Indigenous People's Development Plan**



Source: Consultations with indigenous peoples in Peru 1999 carried out by Instituto Atinchik

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