

## **Gender analysis in forestry research: Looking back and moving ahead in international research**

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### **ABSTRACT**

This review charts out the evolution of gender integration in forestry research. Gender has been incorporated in forestry research for the two main purposes of efficiency and equity. Prior to the 1990s forestry research had a strong focus on women's roles, status and their contributions to forest or forest-related sectors. From the late nineties, however, focus shifted to a greater analysis of gender composition in forest users groups (FUGs) and to gendered impacts of forest resource management. Research evolved from assessing and identifying women's roles and contributions to a greater elaboration of women's bargaining power and a conscious effort at engaging their marginalization and exclusion. However the thematic focus of gender research has been uneven and community forestry and related processes of decentralization have been most studied. Asia accounts for the most studies and Latin America the least. Integrating gender into forestry research is constrained by the broad perception that forestry is a male dominated profession and occupation, lack of clarity among researchers of the concept of gender, and a lack of technical skills to work on a social complex term like gender.

**Key words:** women, gender, evolution, forests, forestry, management

## **1.0. Introduction**

A burgeoning literature and the visible existence of gender mainstreaming in gender equality programs, policies, plans and strategies in international development institutions demonstrates the benefits of incorporating gender analysis in development and natural resources management. Efforts to engage gender in forestry research, however, are insufficient or even absent (Agarwal 2000; FAO 2007; Mwangi et al 2009; Gurung 2002). Forestry sector has been seen as a gender blind sector due to its traditionally male dominance (Lyren 2006; Gurung 2002). FAO's regional report on gender and forestry in Africa, notes that "sustainable development, including forestry and forestry related concerns, should focus on both women and men due to the explicit and implicit differences expressed in gender interests and needs....What is generally considered women's roles permeates almost all organizations, with the forestry sector being one of the outstanding examples" (2007: 1).

This review paper charts out the evolution of gender integration in forestry research. It synthesizes research and policy lessons from diverse forestry settings and analyzes approaches to the integration of gender analysis in forestry research. It highlights some of the fundamental constraints to gender incorporation and outlines thematic areas in which gender has been most addressed and suggests areas for further research. Broad reviews and syntheses are oddly lacking yet a renewed focus on gender, especially among the system of research centers within the CGIAR, necessitates an improved understanding of the factors that enhance or constrain gender-focused research, the methodological underpinnings of such research and existing knowledge gaps.

We reviewed gender and forestry literature from journal articles, books, reports on gender studies in forestry since 2000. We also reviewed articles from early 70's to 90's in the bibliography compiled by Lyren (2006). The results from the gender research review of Center for International Forestry Research (CIFOR) is also incorporated in each step to elaborate on some of the findings.

The first part of this paper describes the origins of gender in forestry research and explores the past and current trend of women and gender studies. The second part discusses the benefits and the third part focuses on the constraints to incorporate gender in forestry. The fourth section charts out studies that have been done in forestry research in the last ten years in order to identify the arenas in the forestry sector that gender has been analyzed. This will assist in highlighting knowledge gaps and proposing new directions for gender research in forestry. The last section provides some conclusions and recommendations.

## **2.0 The origins of gender in forestry research**

Gender research in environment and resources management in general and in forestry particularly, originates from two concerns. First, the feminist movement and its concerns with women's inclusion in development interventions and second, from development practitioners concern with poverty and marginalization as applied to environment. In the early 1970s, feminist advocates demanded for female equality and a greater recognition of women's involvement in development (WID) by arguing and demonstrating women's positive contribution to economic efficiency (Akerka 2001; Razavi and Miller 1995). Boserup (1970) provided a detailed account of women's vital roles in economies through their contributions in farming systems and food production but which continued to be ignored by development practitioners. Similarly, Forthmann and Rocheleau (1985) also spotlighted women's essential contributions in forestry components of agroforestry production but which were also frequently ignored in the design of agroforestry projects. Other authors in the 80's and 90's contributed to this genre of research by broadening the study of women's contributions in various topics such as women's roles in the forest dweller economy (Fernandes and Menon), women's knowledge in biodiversity (Zweifel 1997) and in plant resource use in extractive reserves (Kainer & Duryea 1992); and women's key roles to maintain food security (Quisumbing et al 1995), etc.

This early approach focused more on women's subordination status, and faced several shortcomings (Akerkar 2001; Razavi and Miller 1995). Although it demanded for more women's participation in development projects and overall decision making process, it failed to consider their existing workloads and the social context that undergirds their status and expectations. It inadvertently increased the burdens on the women who already contribute their labor in various forms such as housework, taking care of children, husbandry, etc (Akerkar 2001). Later studies demonstrated the dangers of advocating for greater participating without a complete understanding of women's preferences or of the opportunity costs of their time. In the Philippines for example Resurreccion (2006) found that the women were unwilling to be more involved in environmental governance and tenure struggles because they preferred to be involved in markets more than in identity struggles. Hecht (2005, 2007) found the extractive reserves projects in the Amazon underestimated the demands and the opportunity cost of the women's time and the importance to them of formal employment in urban areas. It subsequently failed to engage them. The failure to address women's preferences and time constraints under WID approaches was further compounded by its underlying assumption that women are a homogenous group, which runs the risk of ignoring other forms of marginalization such as through poverty or age. Several scholars argue that even among groups of men and women, they do not share the same interests and needs with the other groups of different ages, classes and ethnicities (Agarwal 2001; Cornwall 2003; Gupte 2004). Therefore, by treating men and women as homogenous groups misses within-group differentiation and may perpetuate the exclusion of other marginalized individuals.

The above-mentioned shortcomings of the WID approach paved way for a new approach: the gender in development (GAD), which pushed for a better understanding of the *relationships* between men and women, their relative status in society, in order to better address the needs of each group in development policy and practice (Razavi and Miller 1995). Researchers in the GAD mode have worked to understand gender dynamics by studying gender production and reproduction roles at household level, gender needs (see more in Moser 1989), their access and control over resources (Harvard framework described in Razavi and Miller 1995), the social valuation attached to each set of activities and the mechanisms by which gender roles are ascribed to shape gender relations (Razavi and Miller 1995). The gender roles framework and the social analysis framework hence were developed to overcome concerns of the early WID approach. Instead of focusing on the women, the gender roles framework looks at households and attempts to describe the different roles of women and men within that household and their relative access and control over resources (Reeves and Baden 2000). The framework takes as its starting point that the household is not an undifferentiated grouping of people with a common production and consumption function. The framework defines gender equity in terms of individual access to and control over resources and assumes that women's (actual and potential) productive contributions provide the rationale for allocating resources to them. However, there also concerns that by collecting household data, researchers assume that household is an egalitarian unit (Coe 2008) and there is a need for intra-households surveys (Quisumbing 2004).

The gender roles framework however also assumes that groups of men and women are homogenous and fails to elaborate further on other factors such as class, race, ethnicity, etc, that may influence within-group dynamics, including access and control (Agarwal 2001; Akerka 2001; Gupte 2004). The social relation framework improves on the gender roles framework by explaining the influencing factors: the "non-spoken" rules underlying inequality. It explores the context in which men and women are influenced such as: community, market, and the state institution (Razavi and Miller 1995) and spotlights other mediating factors such as class, race, ethnicity, and age. This helps in understanding the gender dynamics in different contexts which enable to define strategies to improve women's bargaining position (Reeves and Baden 2000). This framework however involves many criteria which in practice is not straightforward or easy done job to collect all relevant data but it substantially expands beyond focusing on women, to include the dynamics that determine women's positions.

These two approaches of WID and GAD from 1970s have created the foundation for the awareness of the impacts of gender inequality on development and economic growth and poverty alleviation (Sen 1999; Derbyshire 2002). It has also inspired linkages to environment and natural resources management, including to issues of poverty and environment (Razavi and Miller 1995; FAO 2007). The common argument used is that poor people, in most cases, marginalized groups (for example: poor women, children and the elderly) who have

little capability to influence forest management decisions, frequently suffer negative consequences of the decisions, exacerbating their vulnerabilities further (FAO 2007). This has spurred the need to involve the marginalized groups, especially the women's knowledge to sustainably manage natural resources (World Bank 1991 cited in GDRC 2010), and study further on the different needs of men and women to "reach the right people" in the delivery of forestry services (GDRC 2010). This demand has then, prompted research organizations to consider gender studies in their research (Coe 2008).

Researchers in the forestry sector have conducted their gender studies in different manners according to WID and GAD approaches. One approach uses efficiency arguments to justify the incorporation of women in forestry management and demonstrate that more women's involvement will enhance the efficiency of forest management. Agrawal's studies in Nepal and India show that women's inclusion in forest management executive committees, and their effective participation in decision making (eg rule crafting and enforcement) were positively correlated with improved forest governance and resource sustainability (Agrawal, 2009a and b; 2001). On the other hand, GAD-informed studies examine the gender composition of groups and argue about the gender impact on forest management and claim that studying both men and women facilitates the generation of more accurate and clearer research results, and increases the relevance of solutions aimed at fostering more sustainable use of natural resources (Camou-Guerrero et al 2007; Chukwuone 2009; PRB 2001; USAID 2001; Hovorka 1998). This is not possible if the focus is on women alone (Leach 1992).

In conclusion, the feminist movement and its concerns with women's inclusion in development interventions laid the foundations for the inclusion of women in not only development discourse but also in research. While the WID approach increased the visibility of women's contributions, grounded them in efficiency arguments and advocated for their empowerment, the GAD approach dug deeper to explore and explain the complex differentiation in roles, access and control between men and women. It articulated a concern for transformative change that targets the institutional factors and social valuations that exclude women from resource management and benefits. Despite their deep-seated differences both approaches are essential and complementary, although it can be argued that a well-elaborated identification of gender relations and the social institutions that animate them is relevant for identifying strategies for both groups of men and women to meet their specific needs and roles in forest resource management. An attention of other differentiating factors (such as race, class, age, ethnicity) is necessary to further fine-tune strategies and interventions for enhancing gender equity in forestry settings. Both WID and GAD influenced forestry research from the 1980s onward (GDRC 2010).

### **3.0 Gender concepts and their rationale in forestry research and management**

Gender inclusion in forestry research means taking into account the differences between men's and women's contributions to forestry (including benefits and costs) by analyzing their interactions, particularly their roles, their knowledge in various forestry domains, and the factors that determine gender differentiation (Camou-Guerrero et al 2007; FAO 2007; PRB 2001; USAID 2001). Forestry sector has been seen as a gender blind sector due to its traditionally male dominance (Lyren 2006; Gurung 2002; Watson 2005). FAO (2007: 1) in its regional report on gender and forestry in ten countries in Africa, said "sustainable development, including forestry and forestry related concerns, should focus on both women and men due to the explicit and implicit differences expressed in gender interests and needs....What is generally considered women's roles permeates almost all organizations, with the forestry sector being one of the outstanding examples". The benefits of incorporating gender analysis in research have been amply demonstrated. Research projects that adopt gender analysis techniques often help in enhancing the prospects for sustainable forest management, ensuring an equitable distribution of benefits and in enhancing the efficiency of policy implementation.

On efficiency, Agarwal's (2009 a and b) studies in Nepal and India demonstrate that women's inclusion in forest management executive committees, and their effective participation in decision making (eg rule crafting and enforcement) were positively correlated with improved forest governance and resource sustainability. Agarwal (2009 a and b) argued that women's presence in EC of CFGs statistically did not significantly affect the forest closure rules, but it helped to improve forest quality because of effective protection. She argued that women's presence would help CFGs frame more acceptable rules of extraction and protection, and decrease violations by the community, including the women. It improved protection of the forest as sometimes women, through their work as forest products collectors, were able to notice illegal cuttings missed by male guards (Agarwal 2007). Acharya and Gentle (2006) noted positive changes made in community forest user groups in Nepal after women participating and holding key decision-making positions in the groups such as: better financial management, more application of gender sensitive policies and programs, contribution to poverty alleviation through increasing portion of budget for pro-poor programs, change in forest management through cultivation fodder trees to increase fodder production and campaigns against free grazing in the community forest, and support in education sector.

On equity, additional benefits to engage both men and women in forest management include the empowerment of marginalized groups by providing an opportunity for voicing and acting on their preferences and needs in forest management (Argarwal 2009a and b). CIFOR's research on forest governance using adaptive collaborative management approaches in Africa, Asia and Latin America saw results in increasing the decision-making and bargaining power of marginalized groups, especially women (Colfer 2005a and b). Elite capture of benefits during decentralization reforms were offset through facilitated multi-

stakeholder consultations. Such consultations were instrumental to securing women's and men's access to local forest resources and to improving women's access to district-level budgeting processes (CIFOR 2009; de Vries and Sutarti 2006; Komarudin et al 2008; Siagian and Neldysavrino 2007; Syamsuddin et al 2007).

With regard to improved policy implementation, not taking gender into account in policy research undermines potential opportunities for successful policy implementation as it may distort the understanding of human impacts on resources management; hinder forestry planning and skew resource allocation (PRB 2001; FAO 2007). In Thailand, for example, a community forestry project that invested in seedling distribution to communities failed because women, who care for the seedlings, were not informed. However, when both men's and women's preference and roles were included, the failure was reversed by satisfying both the men and women of the village (Wilde and Vainio-Matilla 1995 in PRB 2001).

Besides the benefits to forest management demonstrate above, studying both men and women facilitates the generation of more accurate and clearer research results (Hovorka 1998) since the knowledge of both male and female are studied and consulted. Researchers acknowledge that excluding gendered knowledge in climate adaptation strategies can result in uncertain predictions of climate change that negatively affect the efficiency and effectiveness of the response to climate change (Shea et al 2005; Nelson et al 2002). CIFOR's own empirical work demonstrates that adaptation to climatic variability is decidedly gendered (Djouidi et al, forthcoming). Women face increased workloads as male adaptive strategies lead to male migration, with a consequent labor decline in households, suggesting that further development interventions should not exacerbate women's work loads. Moreover, since charcoal production is a key adaptation strategy for women, interventions that improve market access and an equitable distribution of benefits for charcoal trade will not only enhance women's livelihoods but reduce their vulnerability.

#### **4.0 Obstacles to integrating gender in forestry research and management**

A burgeoning literature demonstrates the benefits of incorporating gender analysis in natural resources research as well as the visible existence of gender mainstreaming in organizational gender equality programs, policies, plans and strategies in international development institutions. Efforts to engage gender in forestry research, however, are insufficient or even absent (Agarwal 2000; FAO 2007; Mwangi et al 2009; Gurung 2002). Magnus (2003) and Watson (2005) found that gender is often addressed inconsistently in natural resources management projects. In the study of Magnus (2003) across six case studies of projects that integrated gender within the Natural resources system program (NRS), he found that in some projects gender was analyzed in detail while in other projects, attention to gender was superficial and stopped at counting women. He suggested

that there are other factors aside from gender equality policies that influence the uptake of gender mainstreaming, which are 1) the inconsistency or misused of gender analysis meaning; 2) the interest and the skills of researchers in gender analysis (in which social and female scientists tend to be more interest) and 3) gender analysis are taken more serious when there is a “community of practice” across the research teams (Magnus 2003). A review of CIFORs own work that the incorporation of gender analysis in research also driven by the overall purpose and goal of the projects as gender is not relevant in all forestry research (Mai and Mwangi, forthcoming).

In the following account we discuss in details three main obstacles in incorporating gender in forestry, which are 1) forestry in many cultures are still seen as a male dominant area, 2) the misunderstanding or unclear concept of gender among scientists and organizations, and 3) the technical skills and/or interest of scientists to work on a social complex term like gender.

Firstly, forestry has traditionally been a male dominant area (Lyren 2006; Gurung 2002; Watson 2005) which is one of the reasons why gender is hardly incorporated into forestry research and hence makes it more difficult to include women in forest management and decision making. The study of FAO (2007) in 10 countries in Africa showed a “strikingly” inequality in forestry organizations. The percentage of women in professional and managerial positions has been static in most countries, with no women representation at those levels. Of the two countries having some data, the United Republic of Tanzania and Ghana, the statistics reveal that professional women represent 10 and 11 percent, respectively, an indicator that shows that women are grossly under-represented in all the countries in the study (FAO 2007). Watson (2005:iii) in three case studies in India and Ghana also found perceptions among actors involved in these projects that “natural partners for natural research for development projects are men” and “that men are the main natural resource users and managers and that to work with them will improve the well-being of the whole society, including the women”.

Secondly, one of the main obstacles is the misunderstanding over the meaning of gender. Researchers commonly relate gender studies to women studies (Magnus 2003); one of the reasons might be due to the strong WID movement from early 1970s that explicitly focused on women. CIFORs gender research has shown that the concept of gender within the organization remained in a narrow sense and is equated either with a focus on women only or with the collection of sex-disaggregated data. Little attempt has been made to unpack the drivers of gendered relationships (Mai and Mwangi, forthcoming). A quick scan of the titles for publications on gender in forestry from the seventies until 2006 in the bibliography compiled by Lyren (2006) showed the focus between women and gender was uneven. The gender term was mentioned in about 30% of publications while women in about 60% of publications. According to Razavi and Miller (1995) the confusion over the meaning of gender has been deliberate. Donor agencies involved in mainstreaming gender are partly accountable for this reinterpretation,

which suites their institutional objectives. While these actions can be useful for achieving specific, time-bound goals, they side-track a deeper understanding with the consequence that guidance for policy and practice may fail to address the fundamental changes needed to improve gender equity. In the worst case they may unleash negative reactions that place women at risk.

Thirdly, while the benefits of incorporating gender in research projects are increasingly appreciated, many researchers and practitioners are uncertain of how to do so because they are lacking technical skills and/or interest. Gender is a complex topic and studying the differences between groups of men and women, but also about their relationship and the social context that surrounds them. It is a social and contextual matter; and the way in which gender is incorporated depends on various cultural, political and economic features of the institutions (Pandolfelli et al 2007; Reeves and Baden 2000). The complexity of gender and the skills to analyze such complexity would require researchers and practitioners to have a knowledge of social sciences which is often lacking among biophysical researchers within forestry (Fajber and Vernooy 2006) and training would be required to ensure quality (Barrett et al 2009).

A review of CIFORs gender research reveals additional factors that influence the likelihood of incorporation of gender dimensions in forestry research. More than half of projects (around twenty out of thirty five projects) that have a gender component in CIFOR are led by gender champions (Mai and Mwangi, forthcoming). Gender champions recognize the value of gender incorporation for improved policy and practice, are committed to ensuring gender differentiation in their research and outputs and have the requisite skills for doing so. They mostly tend to be female.

In addition to the presence of gender champions, the research questions and topics also determined whether or not researchers pay attention to gender in their studies. In CIFOR, the Adaptive Collaborative Management Research Program (ACM), for example, the overall goal of the research was to facilitate processes that integrate input from various segments of forest communities in a just and equitable manner (Colfer 2005a and b; Colfer and Byron 2001). In the Collective Action and Property Rights (CAPRi), the purpose was to prevent elite capture during decentralization reforms by enhancing the capabilities of poor, local communities (both men and women) to access influential decision-making arenas and networks so that policy outcomes reflect their long-term development interests (CIFOR 2009; de Vries and Sutarti 2006; Komarudin et al 2008; Siagian and Neldysavrino 2007; Syamsuddin et al 2007). The Gender, Tenure and Community Forests research project in Uganda and Nicaragua has an overall goal of improving women's tenure rights to forests by increasing their participation in community forest user groups and other decision making arenas at district and national levels (Mwangi and Larson 2009<sup>1</sup>). All these above-mentioned research projects had an equity motivation that necessitated a disaggregated approach to

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<sup>1</sup> Recently initiated research project (Mwangi and Larson, 2009).

data collection and the inclusion of socially marginalized actors such as women and the poor in decision making and benefits capture. Scientists thus had little choice but to incorporate gender in order to meet the project's objectives.

However, beyond a specific interest by individual scientists, gender also gets incorporated where scientists are aware of its impacts on the variable of interest (Mai and Mwangi, forthcoming). For example, a large literature points to the importance of women's knowledge, skills and management of NTFPS and to the benefits they derive from such management. Consequently, in order to provide a systematic understanding of the economic importance of NTFPs, and their potential in conservation and development in Africa, Asia and Latin America, the NTFPs project recognized gender differentiation as a critical variable in influencing access, use and distribution of benefits from NTFPs in these countries (Alexiades and Shanley 2004; Kusters and Belcher 2004; Sunderland and Ndoye 2004). Gender differentiation in the use, access and benefits of NTFPs was a crucial part of the study (Ruiz-Perez et al 2002; Sunderland and Ndoye 2004). In the research on climate change adaptation in Mali and Sub-Saharan Africa, the research groups were aware of the importance of studying men's and women's different perceptions on vulnerability in order to capture the effects of adaptive strategies on men and women (Djoudi et al 2009; Germans 2008<sup>2</sup>).

In sum, obstacles to incorporate gender in forestry research are rooted in the perceptions that it is a male dominant sector as well as in the confusion about what gender means and in the lack of technical capabilities of researchers and practitioners to conduct gender analysis. Thus mainstreaming gender analysis in forestry research requires time, money and energy (Fajber and Vernooy 2006), not only to provide relevant scientists and practitioners with the requisite skills to conduct gender analysis but also to change the aged-old perceptions that forestry is a male domain of policy makers and practitioners who play a great role in implementing lessons and guidance from research (FAO 2007). Overall, topics like community forestry management, the use and conservation of NTFPs, human health and forests, biodiversity management, land tenure and forest poverty relationships are topics that have been long demonstrated to incorporate gender. The presence of gender champions however provides a starting point around which such research can develop and grow, while the specific research question and purpose can motivate researchers to pay closer attention to gender issues when they otherwise would not. Increasingly, researchers are required to undertake gender research and research organizations are investing in supplying the necessary skills and incentives to ensure that these new demands are met.

## **5.0 Overview of gender incorporation in forestry research**

The section of the paper is to explore the existing literature on gender and forestry published in 2000-2010 in order to pinpoint the topics most frequently covered by existing forestry research and to identify gaps for new research in tropical and dry

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<sup>2</sup> Recently initiated research project (Germans 2008).

forests in the developing world. Publications reviewed were mostly extracted from the Web of Knowledge database, using forest\*, gender and women as the search terms. A total of 80 peer reviewed works were located in this manner (Figure 1 and 2). Additional resources included a bibliography list created by Di Gregorio (2008), CIFOR's gender studies of the last 10 years and the bibliography compiled by Lyren in 2006. All reviewed literatures are in English only, although the Lyren's bibliography (2006) included Swedish entries, non-peer reviewed accounts. It also covered a wider time-span going back to the 1970s. These multiple sources allowed us longer term coverage and breadth since even non-peer reviewed and gray literature was consulted.

There are 80 publications in this review (not including publications from CIFOR and Lyren (2006), see Figure 1 and figure 2).

### **5.1 Geographical coverage of gender research**

The majority of publications located were conducted in India and Nepal, 34 and 12 publications, respectively. 26 other publications covered South East Asian countries. 13 articles covered countries in East and West Africa, while nine papers were located in Central and South America (see figure 3). Thus there is a strong focus on gender and forestry in Asia. This result is further supported, by the results from Lyren's bibliography (2006). Even though this , bibliography includes gender and forestry studies written in English and Swedish and covers a time span since the early seventies, across all the trend is consistent with items pulled off of the Web of Knowledge. The Lyren's bibliography (2006) showed that 236 publications have been produced that focus on countries and sites in Asia, followed by Europe (136 publications), Africa (121), North America (53) and South America (21 publications). The low count for Latin America may have been influenced by the exclusion of articles written in languages other than English.

### **5.2 Methods used to integrate gender**

Researchers use either qualitative or quantitative methods in forestry research. However, on-site observation, questionnaires/interview (semi-structured, structured, or open-ended interview), key informant interview, and focused group discussion were the common qualitative methods used in data collection. Participatory approaches to data collection were mostly used by researchers and included: Participatory rural appraisal, rapid rural appraisal, transect walks, participatory mapping, diagnostic checklist (Figure 4&5). For quantitative analysis, researchers use surveys for data collection and the application of statistical analysis, from descriptive statistic to the more advanced regressions. This trend in participatory approaches in gender research is also reflected in CIFOR's research whereby participatory techniques are commonly applied; more than half of reviewed projects (i.e. 21) employed participatory techniques. While it is unclear why researchers selected the methodologies they did, for CIFOR however, the disciplinary backgrounds of scientists generally informed their methodologies.

Economists tended to favor quantitative techniques that attempt to measure relevant variables at the household level (like surveys), while anthropologists are keen on participatory approaches to research that involve groups of men and women (Mai and Mwangi, forthcoming).

Recent work conducted by International Center for Tropical Agriculture (CIAT) suggests that gender-responsive participatory research provides an effective strategy for a more inclusive research that is sensitive to the needs of multiple actors (CIAT 2010). The focus on participatory research is however beset with cautions. Since participation is not automatic and is conditioned by rules, norms and perceptions, participatory processes face the risk of excluding women if researchers are unaware of contextual factors conditioning social relationships where they work (Agarwal 2001; Gupte 2004). Thus researchers need to be conscious of these risks in their attempts to foster inclusion through participatory approaches.

The risk of women's exclusion is even more pronounced in the administration of household surveys. Conducting interview with heads of households alone to ascertain income benefits of both male and female headed households assumes that households are egalitarian units of equal income distribution (Coe 2008). Yet the unitary model of the household is increasingly challenged and studies have shown that not only do men and women in the same household have different preferences and opportunities, but that households can be the arena of intense competition over resources (Alderman et al 1995; Falkingham and Baschieri 2009). Despite the difficulties in time and cost, researchers are increasingly using intra-household surveys (Quisumbing 2004).

### **5.3 Topics covered in forestry research**

#### **5.3.1. Gender in community forestry management (CFM) and joint forests management (JFM)**

Ten out of 80 collected publications, mostly based on studies in India and Nepal, discussed how participatory forest management is not always participatory or equitable despite the intention of policy (Agarwal 2009a,b, 2001; Buchy and Subba 2003; Gupte 2004; Kameswari 2004; Lama and Buchy 2002; Nghi 2002; Ogra 2000; Singh 2001).

Agarwal (2000a, b) concluded that in the community forestry groups (CFGs) in South Asia, women have little say in the framing of forest use rules, monitoring, and benefit distribution because they are marginalized in decision-making bodies such as Executive Committees (EC) of the CFGs. Agarwal (2001) also noticed that being an EC member does not necessarily demonstrate participation as some women were chosen as EC member for fulfilling donor or NGOs. Some women were not even aware that they had been chosen as member of EC as they were selected male EC members in their absence and without consulting them. Unequal

costs and benefit sharing between men and women in CFG system also discouraged women's participation in the CFGs (Agarwal 2009a, b; 2001).

Most community forestry policies allow only one representative per household, which mostly fill by men as head of households. In addition to this social norms that discriminate against women and the time constraints they face further discourage women's participation. These obstacles to participation in in community forestry are further compounded by women's own class, caste, wealth, literacy and an overall disdain by men with regard to their contributions.

Kameswari (2004) saw ineffective communication network (i.e. top-down approach and lack of mechanisms for feedback) in JFM in India contributed to lack of women participation and inequitable benefit sharing between men and women. Twenty six percent of women respondents (compared with 10 percent of men respondents) reported that they did not attended the JFM meetings because they were not informed. Otysina (2002) also reported that lack of community support and participation in a soil conservation and afforestation projects in Tanzania was due to the ineffective communication practice: the top-down approaches and lack of mechanisms for the communities to give feedback to project managers and policy makers. Few studies, however, counterbalance the generalized lack of participation. Forest co-management in Sri Lanka exhibited high participation rates of women, who were motivated by concrete benefits as well as free interaction between men and women and social norms that did not discriminate against women's involvement in decision making (Nuggehalli and Prokopy 2009).

In order to improve women's participation, Agarwal (2001, 2010) and Kameswari (2004) suggest that strengthening the women bargaining power in State (government), community and family is important to women's effective participation in public forum such as community forest management groups. Increasing women's numbers in meetings and in committees can result in a critical mass that would encourage women to speak up and. Critical mass is critical for providing solidarity and backstopping and increases the likelihood that women with gather enough enhance courage and confidence to challenge power relations (Gurung 2002) showed that add in more female personnel in Nepal's Forestry Department helped in changing gender biased attitudes of forestry professionals by increasing their awareness and responsiveness to the realities faced by rural women. Separate women's groups are not encouraged as they tend to sharpen gender segregation (Agarwal 2001; Cornwall 2003); while increasing the number of women in decision-making committees should also be accompanied with capacity building. Moreover, a gap remains in establishing the exact manner of governance, including issues of corruption, when more women are involved in decision making Acharya and Gentle, 2006). Also the general assumption is the rural women are keen on resource management, which may not always be the case. Jewitt (2000) and Resurreccion (2006) find that not all women who live in forestry settings would like to participate in forest or land related issues. Religion

and wealth were key factors motivating women's self-exclusion from forest-related work Jharkaland, India (Jewitt 2000).

### 5.3.2 Gendered knowledge and usage of plants

Howard and Nabanoga (2007) demonstrate that social identities, including gender, play important roles in defining gendered rights and obligations in relation to plant. They found that men are owners of trees growing on private land; women need permission to plant trees and can harvest from trees only for subsistence uses and generally only with men's permission. The authors also found that social powers and obligations are also affected by spiritual beliefs, which are often a more effective deterrent against overharvesting than the monitoring of State Forest Rangers.

Camou-Guerrero et al. (2008) found no significant difference between sexes in the overall knowledge of plants, although women had more knowledge on medicinal plants, while men on plants used for construction and domestic goods. Both sexes had similar knowledge on plants used for food and firewood. There is also difference in the role of men and women in gathering activities. Women mainly gathered medicines and food species, while men mostly gathered and used plants for manufacturing domestic goods, firewood, and building materials. From gender aspect women and men are equally concerned with commercialization of harvested plants, but women tend to value fruit and other non-timber species more highly than timber, while the converse is shown by men (Lawrence et al, 2008).

### 5.3.3 Gender and wildlife

There are four articles in this review that discussed on men and women interaction with wildlife. Kaltenborn et al (2006) studied local preference (based on gender, age and education) on wildlife species in the dry forested area of Serengeti National Park in Tanzania. Their data showed that gender has a significant effect on species preferences. This may reflect male central role of hunting in these cultures. For some animals, gender affects the preferred management actions. Ogra (2009) showed that women were less likely than men to support economic compensation in dealing with human-wildlife conflict and instead preferred that the village resolved the problem. Existing compensation schemes, which are focused on male landowners and require filing applications in distant government offices exclude them even though they incurred substantial losses from wildlife depredation. Noss and Hewlett (2001) found that female Aka forest hunters of Central Africa Republic, who obtained relatively high caloric returns from hunting, used efficient hunting technologies and strategies and were more likely to net-hunt and to hunt in groups than were men.

### 5.3.4 Gender and NTFPs

Quang and Anh (2006) statistically examined the dependency of forest dwellers on NTFPs and the relation between household characteristics and cash income generated by NTFPs collection in Vietnam. Commercial collection of NTFPs is positively correlated with number of female labor of the household, and NTFPs are proved to be very essential in household with high rate of female labor. Chukwuone (2009) found that gender, farming occupation (especially of women farmers), and distance to NTFPs collection areas in the forest are among the factors that positively determined cultivation of NTFPs. However, men tend to cultivate NTFP than women because they own land while women relied on collecting from forests. Household with large numbers of females tend to be involved in cultivation of NTFPs.

Coulibaly-Lingani et al (2009) ascertained socio-economic determinants and other constraints on villagers' access to forest NTFPs, including livestock grazing. They found that gender influenced access to the forest for grazing livestock and collecting NTFPs; and women found the formal forest law that prohibits livestock grazing and land tenure customary rules as serious constraints to forest access. Alexiades and Shanley (2004), Kusters and Belcher (2004) and Sunderland and Ndoye (2004) conducted a systematic comparison of the the relationship between NTFPs commercialization, poverty reduction and forest conservation in 21 cases from Asia, 17 from Africa and 23 from Latin America. Gender dimension was studied with focus on women's involvement in the production-to-consumption system (PCs) and the gender differentiation surrounding NTFPs. The studies found that NTFP systems were of particular importance to women, who played important roles in the marketing and trade of NTFPs. Results showed that trade in NTFPs created opportunities for women at all stages of the value chains, giving them control over part of the household money and decision making power over household expenditure. However NTFPs commercialization often resulted in men taking over business from women.

#### 5.3.5 Gender and forest certification

Van Kooten et al (2005) ascertained national conditions that encourage the growth of forest management practice certification under the Forest Stewardship Council and domestic competitor schemes in 117 countries. Their model used gender's literacy proportion as social capital variable, among other variables, to determine women opportunity and role in civil society. The study showed that firm and forest owners significantly less likely to certify their forest practices if women have little or no effective voice in civil society, particularly pertinent to the forestry in developing countries.

#### 5.4.6 Gender and forest tenure

One of the Munshi (2001) found that changes in the forest management system and the accompanying socio-cultural transformation have reduced women's access to land and forest in India. This condition has worsened the traditional

tension between men and women and renewed a wave of witch hunting (Munshi 2001).

#### 5.4.7 Gender, forests and health

Edmond et al highlight the achievements of the Population Health and Environment projects in Cambodia, Madagascar and Philippines. They claim projects that introduced family planning programs reduced population pressures on forests/protected and achieved its conservation objectives. Smith (2008) found that that the burning of wood, among other biomass fuels such as trees, crops, animal dung, shrubs, grasses and root plants, was the main cause for premature death among women and young children who are more exposed since they are often the ones who cook. On the other hand, men are often exposed to industrial accidents and disease-transmitting vectors (Allotey et al 2008 in Colfer 2008).

Although the literature reviewed in this section cannot be viewed as fully exhaustive and representative of the gender research conducted over the years, it is indicative of the main topical or thematic areas that have concerned researchers, policy makers and practitioners in the past decade. Evidently, the focus on gender in community forestry is a reflection of the trend in devolution and/or decentralization of forest management authority that has been so dominant among many developing countries over the past twenty years. That majority of the studies are in South Asia is testimony to the pioneering position of these countries in the shift towards devolution in the forestry sector. The literature is thus most advanced in community forestry and especially in south Asia, where researchers are now rigorously testing hypotheses regarding the effects of critical mass on women's effectiveness in decision making, after capably demonstrating that women's participation is important in enhancing forest sustainability. Recent research is starting to show that gender balanced forest user groups, with both male and female participants, perform better with respect to sustainability indicators than female or male dominated groups (Mwangi et al, forthcoming). More information is needed on the emergence of mixed groups, and the distribution of responsibility, benefits and information between men and women participants. Further knowledge gaps relate to the nature and quality of governance advanced by achieving women's leadership in decision making and management.

As mentioned above, many countries have engaged in different kinds of formal processes that devolve authority and rights to lower levels, including property rights/tenure reform. While the lessons from land tenure reforms, especially in African settings, provide a pessimistic prognosis of the impacts of formalization processes on women's rights and access (and on overall performance), similar research in assessing the impacts of forestry reforms is rare. Research is sorely needed to establish the implications of reforms on women's rights to trees and forest resources and ultimately on the security of their rights and access and other related outcomes such as livelihoods and forest sustainability. Importantly, while collective action (both large scale eg social movements and

small scale) is a critical pathway towards increasing bargaining power and defending against threats that are internal and external to groups, there is much less understanding of the relative roles and contributions of women and men in organizing and maintaining such action, or of the constraints experienced in such organizing. The need for this kind of research is urgent as many communities in different parts of the developing world confront the specter of losing rights and access to forests due to land acquisitions for biofuels, food security and even conservation and timber concessions by mostly foreign companies.

Gurung's (2002) analysis of staffing within forestry authorities paves way for exciting research possibilities, both within the formal forestry sector and among civil society agents involved in forestry management. That cultural bias, budgetary support, lack of skills in facilitating gender-sensitive policy implementation and practice, have been widely identified as obstacles to the implementation of gender-sensitive policies, there still exists knowledge gaps with regards to the kinds of incentives, including organization strategies, that can improve implementation. This type of research is motivated by a need to ensure that supporting organizations provide the backstopping that is needed for gender equity in forest management.

A major gap for further research relates to establishing the gender-differentiated effects of emerging global processes and policies. Climate mitigation and adaptation interventions, and global investments in biofuels have direct implications for women, and may restrict or expand the nature and extent of rights to forests, the distribution of rents generated from the various interventions, and overall gender relations within local communities. Research on these aspects, in addition to research on group emergence and function outlined in previous paragraphs, and the role of forestry certification can provide useful insights for policy and practice.

## **6.0 Discussion and conclusions**

The two approaches WID and GAD, have influenced the evolution of forestry research. First, by providing arguments for and advocating for the incorporation of gender in forestry research and management and second by informing the manner in which gender concerns have been incorporated. Consequently early gender-related research in forestry began by focusing on women's contributions in forest management and shifted, in keeping with GAD principles, towards increasing analysis of the interactions between men and women and the underlying determinants of such interactions. While the former approaches were concerned with increasing women's visibility and their empowerment in the policy arena, the latter were concerned with transforming relationships to increase women's capacities for decision making. However, even though there is a shift towards a focus on gender dynamics (and not on women alone), a large proportion of recent studies still focus on women (more in Lyren 2006). The need for the elaboration of gender *relations* is necessary for identifying relevant strategies for both groups of

men and women to meet their specific needs and for preventing backlashes against women that may happen if men are excluded. Moreover, the inclusion of other factors that differentiate men and women even among themselves, such as class, age, ethnicity wealth is necessary.

An overwhelming majority of the research has been conducted in Asia and much less in Latin America where the largest stands of forests exist today. While this may reflect a language barrier, it is still illustrative of a need for greater focus, not least because approaches to forestry, including decentralization to communities as well as community forestry enterprises are most advanced in Latin America and lessons and insights for both Africa and Asia abound.

Methodologically, we find an overwhelming dominance of participatory techniques. While this may reflect a conscious effort at inclusion and is particularly useful for in-depth studies, some research questions demand the collection of disaggregated at broader scales. Household surveys, especially intrahousehold surveys, provide a pathway for maintaining a focus on gender relations where broad-scale comparisons are made. The quest for methodological pluralism cannot be overemphasized if our goal is to understand the drivers of gender-differentiated outcomes in order to inform policy and practice. Such methodologies should attempt to further disaggregate men and women along other factors that may account for within-group variation (such as age, wealth etc), as against treating them as homogeneous. In addition, global comparative studies using similar research techniques to answer similar questions in different settings in the developing world can help further our understanding of gender-related concerns. Importantly, women's involvement needs to be considered as an empirical question (not as a foregone conclusion) as there are known cases where women are least interested in forest resources management (Resurreccion 2006).

Finally, several matters explored in the previous section require further investigation. The nature and quality of governance arrangements under increasing participation of women in forestry decision making forums, the dynamics and division of labor between men and women in mixed male/female forest user groups, transforming incentives and attitudes of forestry personnel, the replication of 'critical mass' studies in other settings besides India and Nepal (Agarwal 2010), the implications of global processes, interventions and trends on women's relative participation in decision making and benefits capture such as forest tenure reforms, climate change adaptation and mitigation, and large scale forest land acquisition for biofuels and food security.

## APPENDIX 1. Reviewed publications from 2000 – 2010.

Figure 1. Type of publications

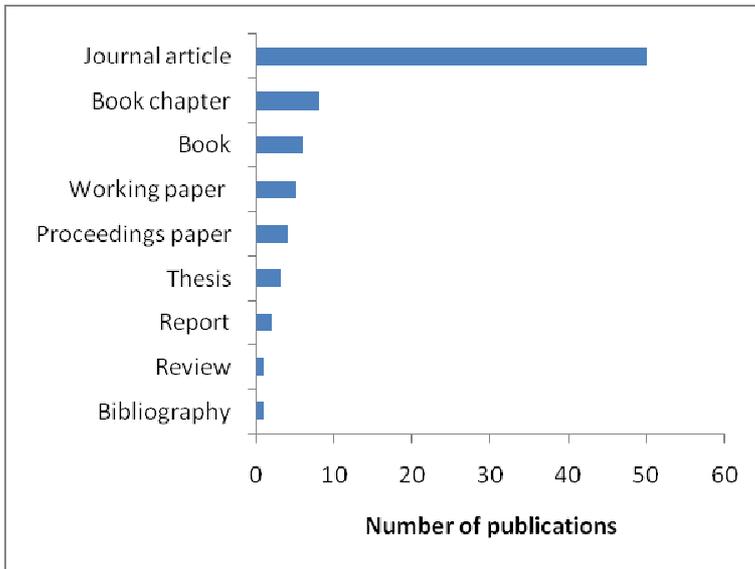


Figure 2. Selected journals

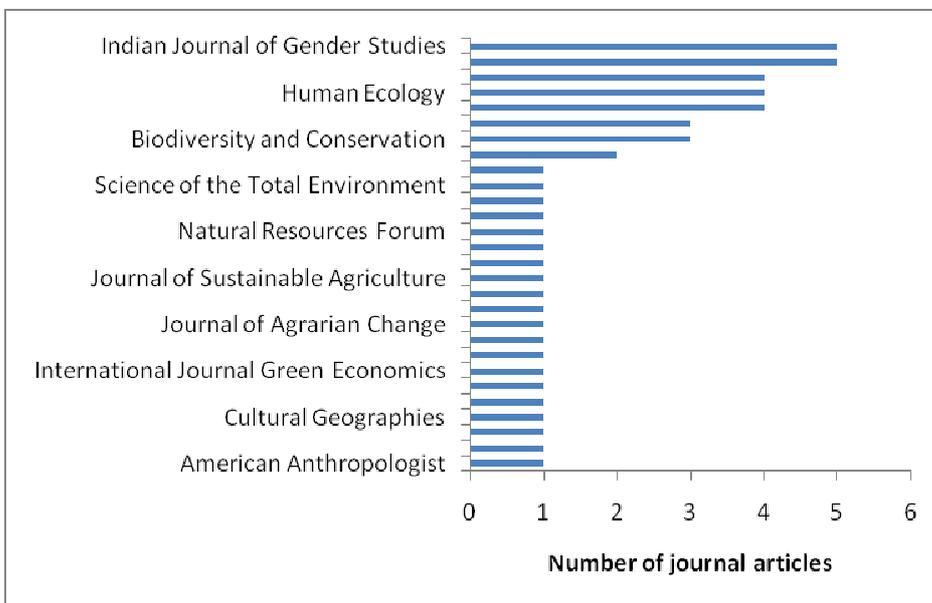


Figure 3. Geographical coverage of publications



Figure 4. Methods used

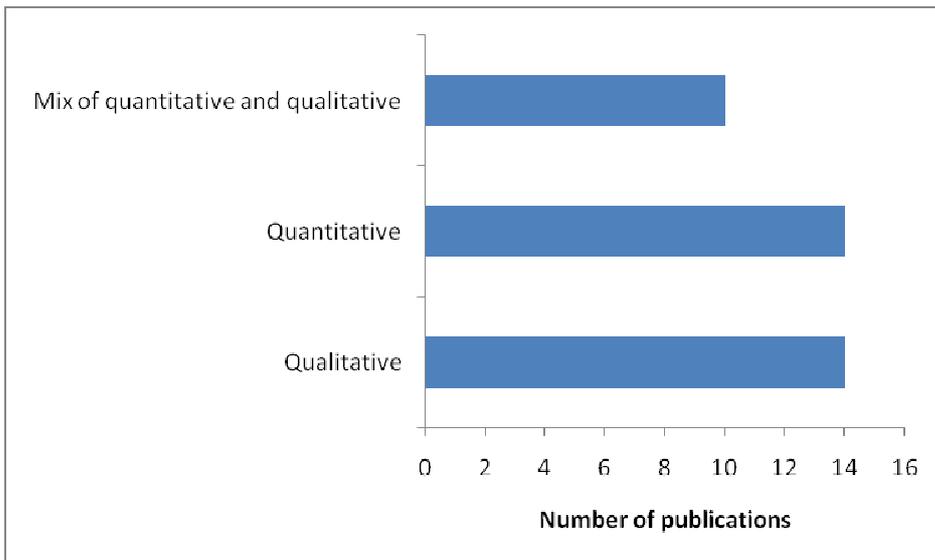
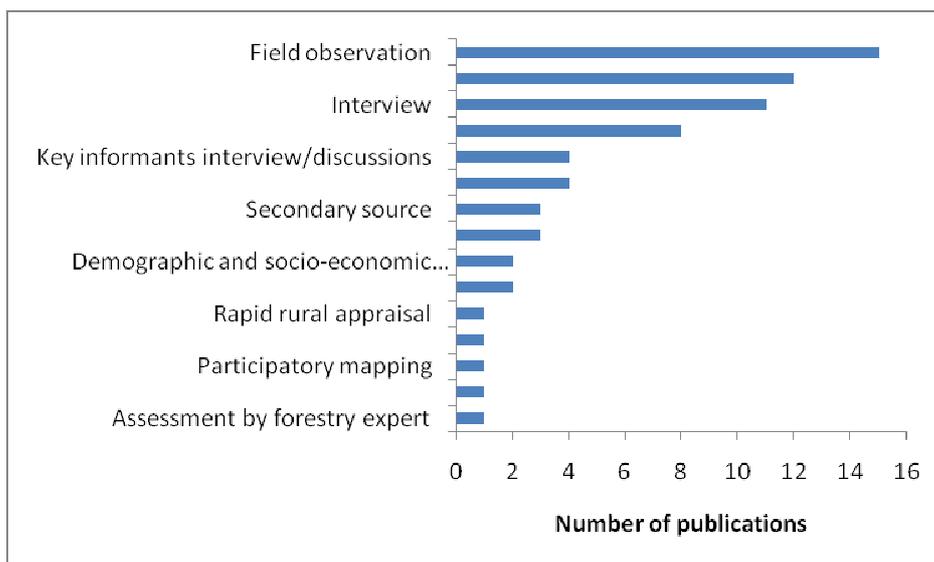


Figure 5. Data collection methods



## **ANNEX 2: LIST OF CIFOR REVIEWED PROGRAMS AND PROJECTS**

### **Projects got funded before 2008**

1. Adaptive Collaborative Management Research program (ACM)
2. CAPRi (Collective Action and Property Rights) Research Project  
"Collective Action to Secure Property Rights for the Poor: Avoiding Elite Capture of Natural Resource Benefits and Governance Systems"
3. Assessment of the potential for Non-Timber Forest Products (NTFPs) based development
4. Benefits of Biodiversity
5. Forests and human health
6. Vulnerability to climate variability and change among communities depending on livestock and forest in Northern Mali: a cross-scale analysis

### **Projects got funded in 2008**

7. Forest Fire Management in India : Integrating Ecological and Cultural Contexts and Consequences
8. Mahogany and teak furniture: action research to improve value chain efficiency and enhance livelihoods
9. EC/IFAD CGIAR PROGRAMME - EC Attribution: Forest Finance and Trade, Law Enforcement and Corporate Accountability"
10. Bio-energy, sustainability and trade-offs: Can we avoid deforestation while promoting bio-energy?"
11. Mobilization & Strengthening of capacity of small & medium size enterprises involved in works or non-timber forest in Central Africa (Mobilisation et renforcement des capacites des PME Impliquees dans les filieres PFNL en Afrique Centrale)
12. The Role of Forests in Adaptation to and Mitigation of Climate Change

13. Promoting Participatory Action Research through Structured Learning on Climate Change Adaptation in Africa
14. Biodiversity monitoring in Laos: from theory to practice
15. The 1st phase of a collaborative process to provide meaningful and effective analyses of alternative policy proposals for inclusion of reducing emissions from REDD in the post-2012 global climate change agreement
16. REDD Implementation in Indonesia
17. Longhouse of the Tarsier: Changing Landscapes, gender and well-being in Borneo
18. LAMIL (Guinea/Sierra Leone Transboundary Biodiversity & Conservation Program)
19. Assets and Market Access Collaborative Research Support (Tropical Forests Poverty Alleviation)
20. Livelihoods and Landscapes Strategy: Simulation Modeling of LLS Landscape
21. Implementation of LLS project in the Sangha Tri-National Park (TNS)

#### **Projects got funded in 2009**

22. Supporting Community forestry to improve livelihoods and to facilitate sustainable management of dry forests in Ethiopia
23. Gender, tenure and community forests in Uganda and Nicaragua
24. Sustainable managing the wood energy & source in DRC (Makala Project)
25. REAFOR Phase 2 (Appui a la politique Nationale de conservation et gestion des forests et de la biodiversite en republique democratique)
26. Mobilisation et renforcement des capacites des PME Impliquees dans les filieres PFNL en Afrique Centrale (Mobilisation et renforcement des capacités des PME impliquées dans les filières PFNL en Afrique Centrale)
27. Research, Training & Information exchange to improve formulation and implementation of natural resources policies in East Kalimantan & West Java
28. Project Biofuels Development, Local Resource Rights and Governance in Africa and Asia
29. Production to Consumption System (PCS) of Bamboo in Cameroon
30. Learning from REDD: A global Comparative Analysis
31. Regional Analysis of Forestry Conflict in the Context of Devolution in Asia
32. A Program of Training in MLA in Baliem, Papua, Indonesia, as a contribution to the IUCN Livelihoods and Landscape Strategy
33. Saving the remaining orangutan population and their habitat within and surrounding Danau Sentarum National Park
34. Carbon Benefits Projects: Modeling, Measuring & Monitoring
35. Design Principles to Maximize learning from REDD Demonstration activities

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