MANAGEMENT

A FRAMEWORK FOR FOREST STAKEHOLDER COMMUNICATION: A CASE STUDY OF CÔTE D'IVOIRE

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ABSTRACT

Communication between stakeholders contributes to successful planning and implementation of forest utilization and management practices. A study carried out in 1997 examined communication levels between groups that were, or should have been, involved in forest management decision-making in Côte d'Ivoire. Using a communication framework developed by the authors, data were collected from the following five stakeholder groups: policymakers, forest managers, indigenous people, university officials and wood products manufacturers. Results indicated a lack of significant two-way communication among most stakeholders. However, exceptions were found in the communication between government policymakers and forest managers and, also between policymakers and wood products manufacturers. To promote sustainable forest utilization and management activities, communication gaps among stakeholders must be narrowed and overall communication levels should be increased.

For both practitioners and others involved in international forestry, it is important to understand current forest-related issues and dynamics in producing regions of the world. The media and researchers have often "sounded the alarm" that the health of Amazonian forests is linked to the survival of humankind (13). This same view is rarely expressed for other developing regions where the tropical forest plays a vital role in economic development. One such country is Côte d'Ivoire in sub-Sahara Africa (**Fig. 1**).

Formerly a French colony, Côte d'Ivoire is a stable, multiparty democracy that achieved independence from France in 1960. The total land area is 322,000 square kilometers with a population of 14.5 million. An estimate of about one-third of Côte d'Ivoire's population is non-Ivorian with most being immigrant workers from neighboring countries. Côte d'Ivoire contains 9 percent arable land, 4 percent permanent cropland, 9 percent meadows and pastures, 26 percent forest and woodland, and 52 percent for other uses such as shifting cultivation (9). According to the Ivorian constitution, the state has the ownership of the land, although indigenous people living on the land typically claim ownership. This often instigates conflict between the state and the indigenous people. Côte d'Ivoire has lost almost 83 percent of the 16 million hectares (39.5 million acres) of tropical forests that existed in 1960 (8).

Many forest-related problems currently impact development. For example, rapid deforestation is an acute problem that affects the daily lives of Ivorians. Although some corrective actions such as halting illicit harvesting, reforestation, and reforming logging activities have been taken over by the government, expansion of agricultural lands at the expense of forests remains the fundamental contributor to deforestation in Côte d'Ivoire. Other factors include a high natural rate of population growth (3.9% annually) and flexible immigration policies, which create land-use pressures (8).

The continuous destruction of forestlands is one of the most unfortunate and dramatic events in Côte d'Ivoire. Currently, Côte d'Ivoire is losing 450,000 hectares (1.1 million acres) of its tropical forests annually (8). Although tropical forest ecosystems are often viewed only as a source of commercial timber and fuelwood, they play a much larger and significant social and economic role in rural, urban, and national economies.

Unfortunately, government corrective actions have not addressed the fundamental factors leading to forest depletion. In essence, the government has transitioned from a policy of offering harvesting concessions, to an interim policy of timber export quotas, to an outright total ban of timber exports. These policies have not served to adequately combat forest depletion or to stimulate sustainable forest management and wood products production. They simply shifted export products from logs to semi-finished products. The conversion

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from sustainable utilization of forests to unsustainable agricultural cultivation had produced only short-term productivity gains at the expense of long-term socioeconomic benefits (1). The reason that the government of Côte d'Ivoire had promoted utilization of land for the production of food and cash crops was for short-term benefits, which was part of an overall strategy to reduce the national debt.

One way to increase success of governmental forest management policies and programs is to include stakeholders outside the government in the decision-making process. Previous work revealed that a lack of high levels of communication among stakeholders contributed to unsustainable forest utilization and management (2,7,10). Where the communication was effective, the sustainable forest resources utilization and management typically prevailed.

This paper examines the current levels of communication between stakeholder groups in Côte d'Ivoire. First, a framework of stakeholder communication is presented, followed by tests of hypotheses regarding communication strength.

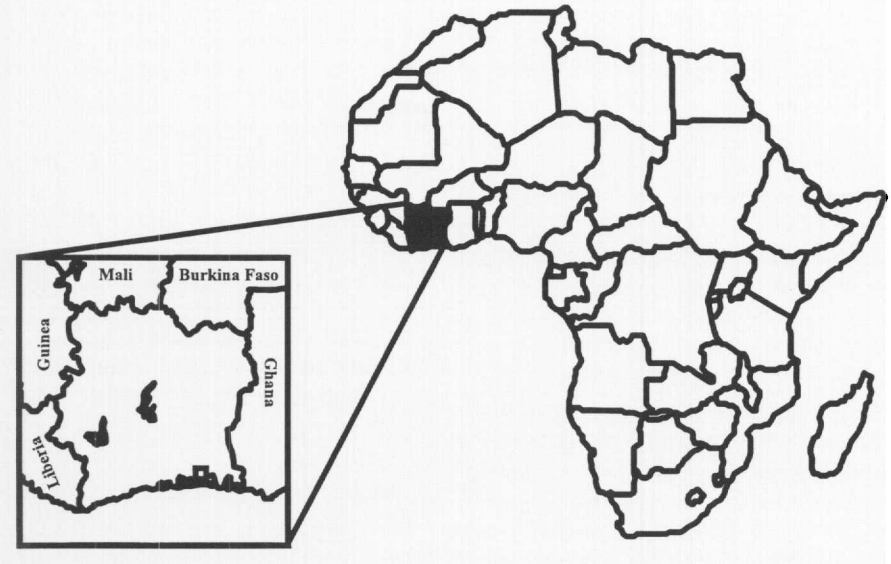

Figure 1. — Map of Côte d'Ivoire.

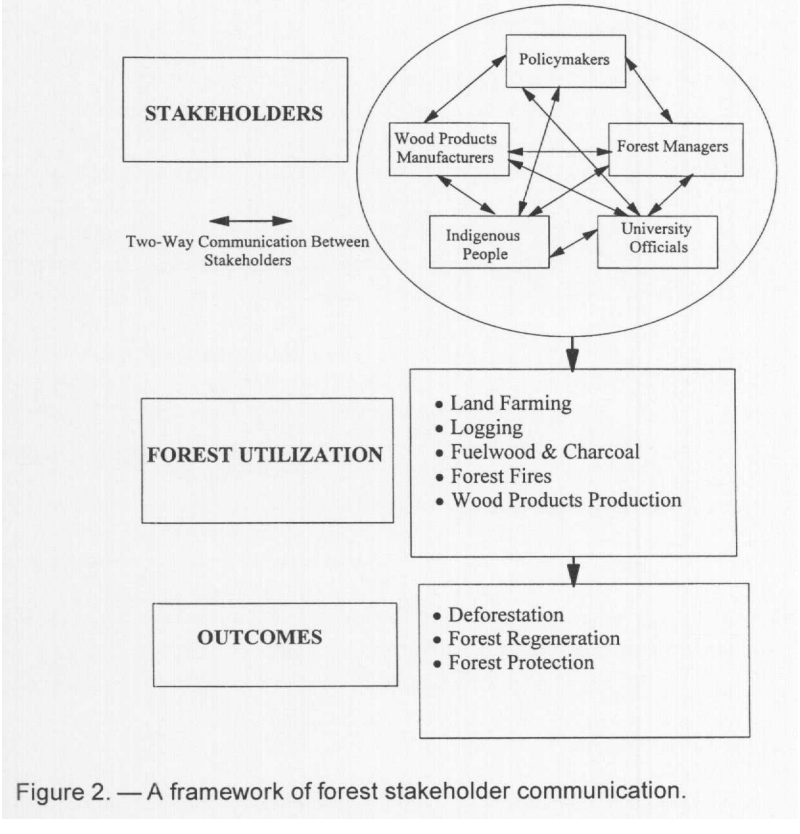

Figure 2. — A framework of forest stakeholder communication.

A FRAMEWORK OF FOREST STAKEHOLDER COMMUNICATION

Communication is the transmission of common understanding through the use of symbols, whereby information sources and receivers are engaged in encoding and decoding messages (5). Human communication can also be viewed as a process of constructing shared realities creating shared meanings. It is an attempt to have others understand our world as we do, and to assign meaning to the world of those around us (11).

The fundamental concepts of communication and interaction are keys to understanding stakeholder communication in this study's framework. Stakeholders are described as dynamic groups that engage in collective efforts for goal achievement (6). Like other forms of communication, stakeholder communication is related to individual stakeholder group competencies, experience, communicative context, and the effects or results of its interactions. It is the process through which stakeholder groups create and shape events. Communication among stakeholder groups is also the creation and exchange of messages specific to the common area of interest. It is the movement or transmission of verbal and nonverbal behaviors and the sharing of information among stakeholder groups. Communicators are connected together and messages are described with terms such as frequency, amount, and type.

Human relations assume that work is achieved by people and emphasize cooperation, participation, satisfaction, and interpersonal skills. Communication is a cornerstone of human relations and outcome success. Under this concept, peer-group interaction is recognized, encouraged, and viewed as potentially positive for productivity. Formal and informal communication networks carry task and social support messages. Interactions at all levels are promoted and may be extensive. Ultimately, communi-

cation becomes fundamental in decision-making processes.

In the context of sustainable forest resources utilization and management, human relations emphasize the interaction among stakeholder groups, and their motivations and influence on forest-industry issues. Low levels of communication among stakeholders may negatively affect stakeholder behaviors and attitudes as they are related to forest utilization. Because stakeholder behaviors and attitudes influence forest utilization, which in turn determines outcomes, a low level of communication among stakeholders can promote poor management and deforestation. For example, without adequate information and guidance from government policymakers, land farming by indigenous people may be unsustainable, or careless logging operations may occur on the part of forest-related companies. Unsustainable forest utilization for fuelwood and charcoal production, forest fires, and wood products production may be dominant.

A framework was developed that examines the communication between five stakeholder groups: policymakers, forest managers, indigenous people, university officials, and wood products manufacturers (**Fig. 2**). The framework also describes the communication linkages and interactions among stakeholders in the context of sustainable forest resources and economic development in Côte d'Ivoire. In addition to the communication component, which is the focus of this article, the framework also indicates that communication among stakeholder groups influences and promotes sustainable forest resources utilization and management practices.

The following summary describes each of the stakeholders, the potential relationships among them, and includes a discussion of the effects of stakeholders' attitudes and behaviors on forest utilization.

Policymakers are government officials who propose forest legislation amd concession policies, and manage the rural domain defined as non-classified forests used for forestry and agriculture.

Forest managers represent a government plantation forestry agency (SODEFOR). Their mission is to manage the Ivorian classified forests, also called the "Permanent Domain." They protect, regenerate, and harvest timber from their industrial plantations. Their actions, with regard to forest utilization, have limited negative impact compared to those of the other stakeholders, such as indigenous people and wood products manufacturers.

Indigenous people are members of rural communities where the principal economic activities are based on land cultivation. They include native and migrant populations. Most indigenous people are small plantation owners and their main techniques of forest utilization are slash-and-burn and shifting cultivation. They collect fuelwood for cooking and lighting, and sometimes they are involved in setting forest fires while hunting. Their actions on forest utilization are more detrimental than those of any other stakeholders. Indigenous people represent the less-educated group, have a minimum earning power, and live in close proximity to the forestland.

Wood products manufacturers are business units that are involved in timber and wood products production. They obtain concessions from government policymakers to harvest timber and process logs into wood products. They also provide seedlings to the indigenous people to regenerate forests where logging activities take place. Their actions on forest utilization are often detrimental in terms of damage to ecosystems.

University officials are researchers in the areas of forestry, and they provide innovative ideas in the context of forest utilization and management. Such innovative ideas might enhance the policymakers' ability to make decisions. Their research might also help indigenous people to better utilize forestlands. For example, the use of available inputs might improve indigenous crop productivity and minimize the forest depletion. Unlike other stakeholders, university or research experts' actions do not directly affect forest utilization and management. Rather, their actions have an indirect effect through the generation of new ideas and the development of new technologies.

INTERRELATIONSHIPS AMONG STAKEHOLDERS

The major focus of this research was to describe the links of communication and interactions between stakeholders. For instance, policymakers delimit the forestlands into harvest units called "perimetres" and grant concessions to the wood products manufacturers. They require wood products manufacturers to provide seedlings to the rural community and to encourage them to regenerate forests where logging operations are undertaken. As a control mechanism, policymakers contact indigenous people to ensure the seedlings' proper delivery and utilization. Similarly, policymakers empower forest managers to perform the task of managing, protecting, and regenerating the classified forestlands in Côte d'Ivoire. As a rule of thumb, forest managers have the responsibility to inform the indigenous people about land classifications.

THE STUDY METHODOLOGY

The overall purpose of this study was to discern stakeholders' current levels of communication and involvement in forest-related issues and to identify the gaps in communication between the different stakeholder groups.

Research was conducted in the summer of 1997 through personal interviews in Côte d'Ivoire. The interview survey instrument contained both structured and open-ended questions that allowed respondents to express thoughts and ideas not covered in fixed-format questions. The sample for this study included representatives from the following groups: indigenous people, policymakers, university officials, forest managers, and wood products manufacturers (**Table 1**).

The interviews were conducted in 15 cities and villages. The selection of the cities was based on the following criteria:

TABLE 1. Respondent groups and sample size.

Stakeholder group	No. of people contacted to be interviewed	No. of people interviewed
Indigenous people	25	24
University officials	25	13
Forest managers	25	25
Policymakers	25	21
Wood products manufacturers	25	25
Total	125	103

TABLE 2. — Summary of hypothesis tests.

From the point of view of:	In relation to the communication with:	Hypothesized level of communication	Directionally as hypothesized?	Significant difference at $\alpha = 0.05$
Policymakers	University officials	High	No	Yes
University officials	Policymakers	High	No	Yes
Policymakers	Indigenous people	High	No	No
Indigenous people	Policymakers	High	No	Yes
Policymakers	Forest managers	Low	No	Yes
Forest managers	Policymakers	Low	No	Yes
Policymakers	Wood products manufacturers	Low	No	Yes
Wood products manufacturers	Policymakers	Low	No	Yes
Forest managers	Indigenous people	Low	No	No
Indigenous people	Forest managers	High	No	Yes
Forest managers	Wood products manufacturers	Low	Yes	No
Wood products manufacturers	Forest managers	Low	No	No
Forest managers	University officials	Low	Yes	No
University officials	Forest managers	High	No	Yes
Indigenous people	Wood products manufacturers	Low	No	No
Wood products manufacturers	Indigenous people	Low	No	Yes
Indigenous people	University officials	High	No	Yes
University officials	Indigenous people	High	No	Yes
Wood products manufacturers	University officials	High	No	Yes
University officials	Wood products manufacturers	High	No	Yes

cities must have at least four wood products manufacturing firms, one office of policymakers, and one office of forest managers. Indigenous people were interviewed in the villages of the Gagnoa region. Most of the university participants were chosen from the Institut Politechnique Houphouet-Boigny de Yamoussoukro because it has a program of agronomy that includes forestry. Twenty-five scholars in agronomy and forestry were contacted with 13 agreeing to be interviewed.

The researcher and trained student assistants collected data through personal interviews in 1997. Before conducting the interviews, permission was obtained from officials of the Ministry of Agriculture and Natural Resources, village community leaders, and directors of wood products manufacturers through personal visits. The researcher explained the main objectives of the study to the government officials and village community leaders, emphasizing that the study would benefit Côte d'Ivoire. Student assistants were selected according to their experience, personality, education, willingness to work, and most importantly, language skills. The interviewers were told to only collect information within the identified five groups.

The personal interview is an efficient and effective method of obtaining information from a population, given its flexibility and degree of control exerted by the interviewer over the respondent and his/her environment (3). Sudman and Bradburn (12) suggest that if there are no threatening questions, and if the information to be requested refers to past phenomena or reactions, the personal interview method presents advantages related to social interactions, encouragement, clarification, and rate of response. de los Santos (4) also observed that the personal interview was the most appropriate method for obtaining required data because of the high degree of illiteracy among indigenous people and the fact that not all indigenous people have mailing facilities available.

RESULTS

The framework indicated that two-way communication flowed between the five stakeholder groups. Based on these flows, 10 pairs of hypotheses were developed. With regard to the hypotheses in this study, the terms "high" (> 3.0) and "low" (< 3.0) are defined as high and low communication, respectively, among stakeholders. A Likert-type scale was used with a range from 1 = very low to 5 = very high. These hypotheses were formulated based on secondary research collected prior to the fieldwork. One-tailed t-tests were used to test the hypotheses. **Table 2** shows the results of each hypothesis test.

In addition to the hypotheses of communication strength, differences in perceptions of communication between stakeholders were measured. These differences are termed "perception gaps." Using two-tail t-tests, it was determined whether or not these gaps were statistically significant at the $\alpha = 0.05$ level (**Table 3**). Graphical representations of a selection of perception gaps can be seen in **Figure 3**.

DISCUSSION

The perception gap between policymakers and university officials was not found to be statistically significant with both groups believing that the communication link is low. Currently, policymakers and university officials do not share a common interest in forest development programs. For example, in Côte d'Ivoire, the university does not offer a program in

TABLE 3. — Summary of communication perception gaps.[a]

Stakeholder group 1	Mean perceived communication level of stakeholder 1 with regard to stakeholder 2	Stakeholder group 2	Mean perceived communication level of stakeholder 2 with regard to stakeholder 1	Perception gap	Significant difference at $\alpha = 0.05$
Policymakers	2.0	University officials	1.3	0.7	No
Policymakers	3.5	Indigenous people	1.1	2.4	Yes
Policymakers	4.0	Forest managers	4.2	0.2	No
Policymakers	3.7	Wood products manufacturers	3.5	0.2	No
Forest managers	3.4	Indigenous people	1.2	2.2	Yes
Forest managers	2.4	Wood products manufacturers	3.4	1.0	Yes
Forest managers	2.8	University officials	1.6	1.2	Yes
Indigenous people	1.2	Wood products manufacturers	4.2	3.0	Yes
Indigenous people	1.0	University officials	1.7	0.7	No
Wood products manufacturers	1.6	University officials	1.2	0.4	No

[a] Scale: 1 = very low level of communication to 5 = very high level of communication.

forestry. Therefore, there are no research programs at the university level that affect forest policies. As a result, forest policymakers do not find it very important to establish a high communication link between themselves and university officials.

The gap between the viewpoints of the policymakers and the indigenous people was found to be statistically significant at the $\alpha = 0.05$ level, which indicated that a large gap (2.4) existed in their perception of communication with each other. While the policymakers believed that their communication with the indigenous people was higher than the norm (mean = 3.5), the indigenous people thought that their communication with the policymakers was very low (mean = 1.1).

Often, policymakers do not involve indigenous people in their decision-making processes to assess their needs, but rather, they tell the indigenous people what to do. The indigenous people respondents felt their needs should be assessed through participation in the decision-making processes. Such decisions could include the classification of forestlands and the transformation of natural forests into national parks and reserves. Policymakers believe that by telling indigenous people what to do, they are communicating with them.

The mean difference between the responses of the policymakers and the forest managers was not found to be statistically significant (0.2), which indicated that a small perception gap existed between these two groups of respondents. Both policymakers and forest managers believed that they had high levels of communication. While policymakers developed forest utilization and management approaches, the forest managers were involved in their application in the field. Both groups are government organizations that often exchange information to reach government forest utilization and management goals. Policymakers and forest managers were the only stakeholder groups in the study with high bilateral perceived levels of communication.

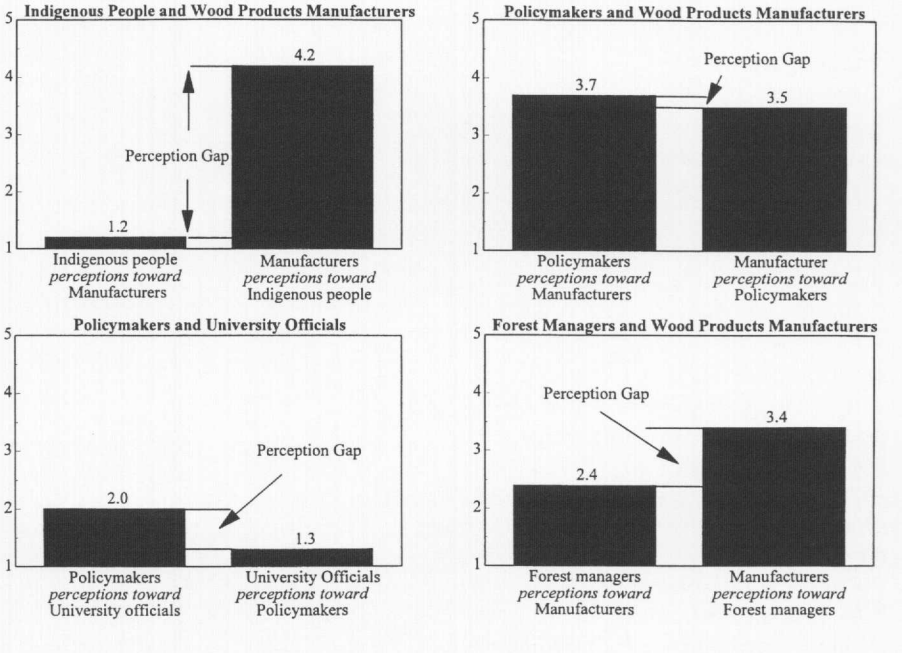

Figure 3. — Examples of communication perception gaps. Scale: 1 = very low level of communication to 5 = very high level of communication.

It was found that the mean difference between the responses of the policymakers and the wood products manufacturers was not statistically significant (0.2), which indicated a small gap in their perception of communication. Both stakeholder groups believed that they had a high level of communication with one another. On the one hand, the existence of a moderate communication link between both stakeholders was driven by the "perimetres" allocation defined by the policymakers and acquired by the wood products manufacturers. On the other hand, timber concessions were also defined by the policymakers and procured by the wood products manufacturers in the same way as the perimetres allocation. The degree of interaction between both stakeholders indicated the strength of their communication link. This communication link was also influ-

enced by the fact that wood products manufacturers directly paid taxes to policymakers for the timber concession acquired from them.

The mean difference between the responses of the forest managers and the indigenous people was statistically significant (2.2), which indicated that a large gap existed in their perception of communication with each other. While the forest managers believed that they had a communication link with the indigenous people (3.4), the indigenous people stated that their communication with the forest managers was very low. The forest managers seemed to believe in top-down communication practices, while the indigenous people disagreed with them and rejected the belief that such communication with the forest managers was effective.

The difference between the mean responses of the forest managers and that of the wood products manufacturers was statistically significant (1.0). While wood products manufacturers believed that their communication with the forest managers was moderate (3.4), the forest managers reported that they had a low level of communication with wood products manufacturers (2.4). This result was confirmed by the sentiment that wood products manufacturers communicated with forest managers only if they wanted to purchase seedlings from them. Seedlings were purchased from the forest managers and delivered to the indigenous people in order to regenerate forests after logging.

The mean difference between the responses of the forest managers and the university officials was statistically significant (1.2), which indicated that a large communication gap existed. With a mean rating of 2.8, the forest managers believed that they had a low level of communication with the university officials. University officials indicated that their communication with the forest managers was very low. Often, in Côte d'Ivoire, there was little or no contact between the forest managers and university officials because of the isolated role that university officials played in the forest utilization and management practices.

The mean difference between the responses of the indigenous people and the wood products manufacturers was statistically significant (3.0), which revealed that a large gap existed in their perception of communicating with each other. With a mean rating of 1.2, the indigenous people respondents believed that their level of communication with the wood products manufacturers was very low, whereas with a mean rating of 4.2, the wood products manufacturers believed that they had a high level of communication with the indigenous people.

Usually, the only occasion where the indigenous people interacted with the wood products manufacturers was when logging took place in their community. Wood products manufacturers generally sought the permission from the indigenous people to log, which led them to believe that they had a high level of communication with the indigenous people. The indigenous people, however, believed that the only time that they communicated with the wood products manufacturers was when they required the construction of some socioeconomic infrastructure component such as health centers, schools, and roads. Otherwise, they believed that there was a lack of continuous communication between them and the wood products manufacturers.

It was found that the mean difference between the responses of the indigenous people and the university officials was not statistically significant (0.7), which indicated that only a small gap existed in their perception of communication with each other. Both respondent groups believed that they had a very low level of communication with each other. This result confirmed the notion that the university officials were isolated from the rural communities.

Finally, the mean difference in the responses of the wood products manufacturers and the university officials was not statistically significant (0.4), which indicated a small gap in their perception of communication with each other. The wood products manufacturers and the university officials agreed that there was a very low level of communication between them. This was because the university system seemed to be isolated from the practical realities.

SUMMARY

Relationships among stakeholders influence forest utilization, which in turn, influence outcomes, such as deforestation, forest regeneration, and forest protection. Tests of hypotheses indicated a lack of two-way communication among a majority of the stakeholders in Côte d'Ivoire included in this study. A high degree of two-way communication existed only between policymakers and forest managers, and also between policymakers and wood products manufacturers. The other stakeholder groups had either occasional or minimal communication with each other. This lack of communication is expected to adversely influence the subsequent level of the framework that deals with forest utilization and management. Ultimately, outcomes such as deforestation, forest protection, and regeneration, may also be influenced. It follows then, that in order to increase the probability of successful outcomes, such as sustainable forest utilization and management activities, communication gaps among stakeholders need to be narrowed and overall communication levels need to be improved.

Of the 20 hypotheses tested, 2 were confirmed directionally but they were not statistically significant. Communication between the policymakers and forest managers was the highest among all stakeholder communication linkages. This was explained by the fact that both policymakers and forest managers are government agencies that report to the Ministry of Agriculture and Natural Resources, and thus, have a greater chance to interact with each other. Policymakers develop programs for forest utilization and management activities, while forest managers put them into practice.

There was a moderate level of communication between policymakers and wood products manufacturers, and also between forest managers and wood products manufacturers. Policymakers are in charge of providing concessions and collecting taxes from the wood products manufacturers, which requires at least occasional communication. Wood products manufacturers purchase seedlings from forest managers for the purpose of forest regeneration in their attributed perimetres in order to reforest areas where logging takes place. Minimal communication was found among all the other stakeholder groups. It should be noted that the university officials and the indigenous people had the lowest levels of communication with other stakeholder groups. In the case of the university officials, the communication gap was perceived by both the university officials and the other stakeholder groups involved, and reflected the isolation of the

university officials from other stakeholders in Côte d'Ivoire.

Overall, low levels of communication and wide communication gaps were found to be the rule and not the exception. Unless these gaps are narrowed, forest utilization and management in Côte d'Ivoire may be in jeopardy.

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