IUFRO

# COMMUNICATING FOREST SCIENCE

INTERNATIONAL UNION OF FOREST RESEARCH ORGANIZATIONS

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# 1 ACKNOWLEDGMENTS

# Acknowledgments

In 2005, the International Union of Forest Research Organizations (IUFRO) published *Public Relations for Forest Science*. The manual you are now reading, *Communicating Forest Science*, is an updated version of the 2005 publication. The first version was an initiative of the IUFRO Task Force on Public Relations for Forest Science, which was disbanded, but reformed in 2010 as the IUFRO Communications and Public Relations Working Party within Division 9. *Communicating Forest Science* is the first project of the IUFRO Forest Policy and Economics, Communications and Public Relations Working Party.

We acknowledge Max Krott for establishing the IUFRO Task Force on Public Relations for Forest Science at the direction of the IUFRO Board in 2000. We thank the IUFRO Board for their support in helping scientists to develop communication skills and in recognizing the importance of professional communicators at that time and since.

Professional communicators from around the world made both the first and updated manuals possible. Our thanks to all of the authors of the 2005 manual. Their insights into what makes a useful manual are reflected here. A special thanks to Daniela Kleinschmit, whose unwavering dedication to the previous manual and strong encouragement of this revision has been crucial.

This and the previous manual were funded by the IUFRO Special Programme for Development of Capacities (IUFRO-SPDC). Michael Kleine, as coordinator for SPDC, was essential to the development of this manual. As the IUFRO-SPDC headquarters coordinator for PR and Communication, Gerda Wolfrum was instrumental in reaching out to authors and reviewing this manual. We heartily thank you both.

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Portland, Oregon; August 2014

# 2 INTRODUCTION

# Introduction

Communicating about science in the setting of a forest, grove of trees, or chaparral can bring people with very different experiences together in unexpected and, sometimes, highly productive ways. The language of science translated and brought to non-scientists can transform confusion into understanding. When communicated well – whether in a forest, in a meeting room, or across the miles electronically – science information helps people sort out complex situations and changing conditions related to forests.

This manual was written to help scientists and professional communicators in their communication efforts with people outside of the scientific community. It may also be helpful to research administrators as they consider improvements in the communications of their organizations.

We provide concepts, approaches, and methods in the field of communications, starting with a quick overview of the social science behind communications. "Considerations for Success" were developed to be a quick reference. "Success Stories" provide an understanding of how people from around the world approach challenges in communication amid very different contexts and circumstances. Two of the "Success Stories" were submitted in Spanish, and an English translation is provided. The "Appendices" include a "List of Communication Instruments" that is also referenced to the "Success Stories" and should come in handy if you are exploring particular types of communications.

In developing this manual, we drew from the previous version, *Public Relations for Forest Science*, published in 2005. For example, the "Media Communication" chapter is still relevant today, with only minor updates needed. We still include the section on "Internal Communication" to help meet the challenges of building a common knowledge base among employees of research organizations. Other chapters were completely revised, and some new chapters were added. Most significantly, all of the "Success Stories" are new, to provide up to date examples of how scientists and professional communicators are meeting today's challenge of communicating forest science.

We wish all users of this manual a success story of their own in communicating forest science and encourage you to share any questions or comments you might have. We also invite you to become a member of the IUFRO Communications and Public Affairs Working Party to network with us in forest science communication.

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# 3

# SUCCESSFUL COMMUNICATION OF FOREST SCIENCE

# Successful Communication of Forest Science

*GERBEN JANSE*

Forest scientists are challenged to communicate in a world where messages are sent at dizzying rates across the globe. Scientists must traverse within their scientific community; in the organizations where they work; and among the many individuals, institutions, and organizations that have an interest in their scientific activities and outcomes.

Communications itself is a field of study. One of the first models of communications included four elements: source, message, medium, and receiver. Early instrumental theories described communication as an attempt by a sender to produce a pre-defined attitudinal change in the receiver. Merten (1977) described communications as principally a social phenomenon with the elements of communicator, stimulus, and receiver. Human communication can be explained as social action with an intentional character; that is, very specific objectives driven by specific interests.

More recently, conceptualization of communications has distinguished between one-way and two-way models and between asymmetric and symmetrical communication (Grunig 2001). Asymmetric is defined as communication that is one-way, with linear causal effect that is predicted and evaluated. Symmetrical communication is two-way and used in bargaining, negotiating, and conflict resolution to bring about symbiotic changes in ideas, attitudes, and behaviors of both organizations and their publics.

Forest science communicators can recognize how these concepts play out in their communications. Time used to understand communication concepts can help prepare communicators as they establish themselves as credible sources of scientific information and develop a message for an audience. Increasingly, scientists find themselves communicating in symmetrical scenarios, with multiple stakeholders all working toward resolution of problems and making substantial changes in approaches to managing forests. In these settings, scientists will be heard especially when they establish themselves as credible experts and share important interests with their audiences (Lupia 2013). Mutual respect between scientists and their audiences fosters successful communications.

Communication activities can be categorized as follows (Jones-Walters 2000):

- One-way information distribution, such as promotion and publicity
- Information as part of a two-way dialogue, such as answers to questions
- Education as a long-term process to transfer knowledge
- Dialogue with groups that is symmetric in nature and, perhaps, involves social networks

Science communicators may find most successful efforts involve all four of the above activities, whether they use newer media like the Internet and social media or not. Regardless of activities and methods used, a key question to begin with as a successful communicator is: Why does one need information? According to Van Woerkum et al. (1999), the need for information is caused by a discrepancy between one's own knowledge and the surrounding world. Burnkrant (1976) states that the need for information is a cognitive representation of a future goal that is desired. Habermas (1984) states that people have three types of knowledge interests: (1) an instrumental need, to help them choose the best option; (2) a practical need, to understand what is happening around them; and (3) a critical need, to help them see beyond existing frames of reference in order to come to genuinely new ideas. According to Innes (1999), who discusses Habermas' classification in a study on information in communicative planning by policy decision makers in land management, the instrumental need is served by empirically based, scientifically grounded knowledge.

The second type of need, the practical one, is served by knowledge grounded in experience and by the stories and metaphors people use to explain things to each other. To fulfill the critical need, finally, intuitive knowledge is essential. Decision makers in policy deliberations also have these needs, hence their call for scientific input into the policy process. They also base their decisions on their own experience and are influenced by how communication with the other partners in the deliberations takes place. Policymakers are not different from other people in the sense that their intuition also influences the decisions they make.

If we now pose the question, "Why do we communicate the knowledge that springs from forest science?", it is probably easiest to start by looking at the intended target groups of that communication, because the most simplified reason for any communication typically is that we desire a change – of attitude,

behavior, decision, way of doing things, etc. – in our target groups. One important target group of forest science communication is, of course, our peers. For the purposes of this manual, however, we choose to look at two other main target groups: decision makers and "the public."

Looking first at decision makers, one can make a rough division between (1) communicating scientific know-how to policy decision makers in the political/bureaucratic system (i.e., as input to the formal policymaking process) and (2) communicating scientific know-how to forest managers (i.e., as input for forest managers when deciding on or developing new silvicultural practices). The difference is, perhaps, largely dependent on level; the former concerns decisions made on a more overarching level, whereas the latter deals with the more localized, practical level. Depending on the governance system in place, there may very well be overlaps and grey zones between the two.

As both Innes (1999) and Hellström (2000) argue, it is not only scientific information that serves an important role in decision making about forests. It is also crucial to include public interest groups early on in expert/decision maker interactions. Such inclusion should be based on decentralized models where human sciences form a catalytic and interpretative role as discourse participants. Furthermore, policymakers should provide scientific expertise on as many of the participating group's interests as possible without recruiting expert advocates for any special interest group (cf. Janse and Konijnendijk 2007). These needs (i.e., to facilitate scientific input as well as public participation into forest policy processes) are also addressed in various sessions of the United Nations Forum on Forests (UNECOSOC 2004 and 2006).

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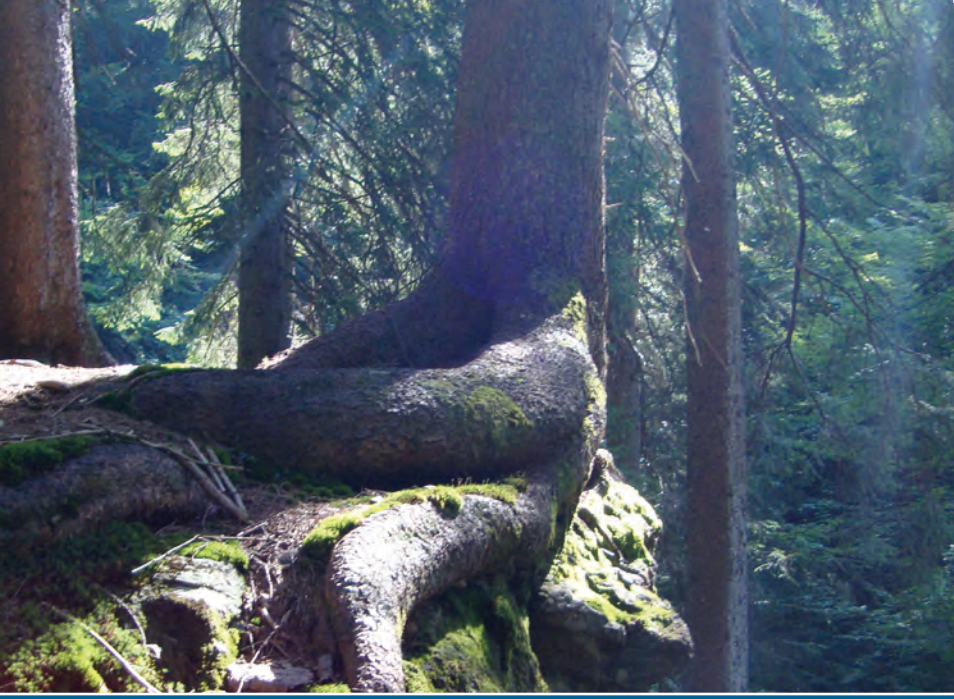

# 4 COMMUNICATIONS STRATEGY

# Communications Strategy

*JESSICA PORTELLI-WARD*

*We believe PR should be practiced to serve the public interest, to develop mutual understanding between organizations and their publics.*
– James E. Grunig, public relations theorist –

The role of communications in forest science has never been more important than in today's fast-paced media environment. We live in a 24/7 continuous global news feed, and the ability to effectively communicate research and worldwide expertise in protecting one of the world's most valued resources remains a key priority.

Communicating information and forest science is about building trust and confidence in the audience members receiving the messages. Whether the recipients are other scientists, academia, policymakers, or the public, strong and strategic consistent messaging is invaluable in generating public awareness.

## Communicating Forest Science

In today's business environment, successful public relations is becoming increasingly vital to an organization's success. Good communication is essential for conveying messaging and information between individuals or between an organization and its publics. The Public Relations Society of America defines public relations as a "strategic communication process that builds mutually beneficial relationships between organizations and their publics." But how do you build upon these relationships? What tools are needed to communicate your organization's key messages to your target audiences? To answer these questions, you need to develop a communications strategy. Whether for a research institution, team, or project, an effective communications strategy includes trust and confidence among its main objectives and outcomes.

## Building an Effective Communications Strategy

Essentially, a communications strategy is organized like a business plan. Begin by considering the following questions:

1. *Objective:* This is where you outline your background and introduction.

What are you trying to do? What has been done in the past? Did it work? What are you trying to do now?

2. *Environmental Scan and SWOT:* What does the environment look like at present? Can you identify the potential opportunities and threats?
3. *Audience:* Identify who you need to talk to and break them up into groups.
4. *Key Messages:* What do you want to say?
5. *Work Plans and Tactics:* How do you reach your audience?
    5.1. *The Media Relations Tactic*
6. *Finances:* How much will this cost to implement? Determine a budget.
7. *Evaluation to Measure Your Performance:* Did the implementation of the plan provide you with the results you wanted?

An effective communications strategy can be as comprehensive or as brief as you make it. The end goal is the same, simply by focusing on which outcomes you hope to achieve.

## 1. Objective

Having a clear understanding of your objectives is a prerequisite for developing an effective strategy. Provide a brief description of the project with well-defined results in mind. What are you trying to do? Is there a problem this strategy will be addressing? What's the scope of the project?

It's important that the objective be clear and focused, specific, and realistic. Link your objectives to organizational priorities and results so that everything that follows in the communications strategy supports the organization's main objectives.

Objectives are different from goals. Whereas goals are generally broad-based ideas or intentions, objectives are more precise and easy to evaluate. Objectives must also be measurable. Keep the priority of building trust and confidence in your stakeholders top of mind when developing these objectives.

> *TIP: Develop SMART objectives – ensure that they're Specific, Measurable, Achievable, Realistic, and Time-bound.*

## 2. Environmental Scan and SWOT

What does your environment look like? Identify your Strengths, Weaknesses, Opportunities, and Threats. Known most commonly as a "SWOT analysis," this analytical method is used to present and categorize internal and external factors of an organization or a specific project. A SWOT can be presented in various formats, but one of the simplest ways to express all elements is in a four-point matrix or a balance sheet of sorts.

> *TIP: Ensure that the questions being asked and answered during a SWOT analysis session are meaningful in that they elucidate all aspects of the scenario. You cannot make informed decisions without all of the information.*

Internal factors are generally identified in the Strengths and Weaknesses section, while external factors appear under Opportunities and Threats (Table 1).

**Table 1. Sample SWOT Analysis**

| Strengths (Internal Oriented) | Weaknesses (Internal Oriented) |
|---|---|
| • Tools to complete work (e.g., software)<br>• Strong teamwork<br>• Cooperative clients<br>• Creative, calculated risk-takers<br>• Effective planning process<br>• Results-oriented<br>• Think BIG PICTURE | • Low turnover (new ideas may be limited)<br>• Staffing levels<br>• Scheduling, project management<br>• Sharing expertise among staff, knowledge-transfer |
| **Opportunities (External Factors)** | **Threats (External Factors)** |
| • Strengthen partnerships with science colleagues<br>• Consistent and reinforced team branding<br>• Improved integrated planning<br>• Expand outreach events to key clients | • Process, approvals, red tape<br>• Technology upgrades – hinders output capacity<br>• Information overload – live in a 24/7 world, how do we make an impact with our message?<br>• Past reaction from relevant audiences (if negative) |

## 3. Audience

> *TIP: You can have more than one primary and secondary target audience. Over time, these groups will also change, so it's good practice to re-evaluate your priorities and your target audiences on a regular basis so you can ensure that you're targeting the right groups with the right information.*

To communicate effectively and achieve the end goals, it's vital to identify your target audience. Who are your key stakeholders? This is where it's important to identify internal and external audiences. Break up your target audience into primary and secondary categories – the more specific and focused your target audience is, the more effective and targeted your communications will be:

- Primary Target Audience(s): This group includes the key groups, persons, or stakeholders that you want to receive the most information.
- Secondary Target Audience(s): This group includes those individuals who would benefit from the messages from your organization, but have less of a vested interest in the information.

Depending on the scenario and the main objective of developing a communications strategy, the target audiences can shift. For one event or project, the primary target audience could be non-governmental organizations (NGOs), while the internal audience is listed as a secondary target. These same two groups could have exact opposite priorities when introduced to another communications strategy scenario. Be very specific when detailing your audiences. For example, "general public" would be citizens of Newark, New Jersey, USA, who are employed in the realm of forest science (see Table 2).

| Table 2. Sample Audience Analysis | | |
|---|---|---|
| *Key Message: The Government of Canada is committed to providing timely, relevant, and scientifically sound information on the nation's forests.* | | |
| Audience Type | Message | Preferred Method of Communication |
| *Primary Target: Policy Makers* | The Adford Forestry Institute* provides timely, relevant, and scientifically sound information and advice on national forestry issues like wildland fire, climate change, and invasive species. | Public opinion research, memoranda, briefing notes |
| *Primary Target: Forest Managers* | The Adford Forestry Institute provides timely, relevant and scientifically sound information and advice on national issues like wildland fire, climate change, invasive species and the forest industry's competitive positions. | Stakeholder sessions and newsletters, proactive (earned) media articles, news releases, conferences, and workshops |
| *Secondary Target: Research and Academia* | The Adford Forestry Institute has a worldwide reputation for scientific excellence and is a world leader in forest research. | Specialized research journals, science expos, conferences, and workshops |

**Adford Forestry Institute is a fictional organizational name that is used for illustration purposes only.*

## 4. Key Messages

The development of key messages as part of the communications strategy is critical. To build trust and confidence with your stakeholders, the key messages have to be clear and concise, particularly in dealing with complicated and sometimes controversial forest science. As an organization's spokesperson or science expert, you must be able to communicate the accurate message of your research, which lies in the ability to develop a key message that's targeted to your target audience or key stakeholder.

What messages do you want to communicate to your audience? One rule states that you should have no more than five key messages under your "umbrella" so that you can have similar messages but they can be tailored to suit specific key audiences.

> *TIP: Social media platforms are an easy (and inexpensive) way to reach both primary and secondary target audiences. Unlike traditional websites, most social media platforms require only minimal technical knowledge and skills to create, maintain, and update. Consider having a strong social media presence. It's not only a great way to promote your organization and mandate, but also*

*an excellent way to quickly reach new audiences and potential stakeholders. Continuously monitor the platforms and respond when appropriate. One caution, though: the social media sphere is constantly evolving, so it's important to stay current.*

## 5. Work Plans and Tactics

A work plan is essentially your itinerary or agenda for an upcoming project or event. This is where you outline the complete details of relevant communications activities in a project plan, complete with deadlines and assigned responsibilities. You can include items such as milestones and review dates to help keep yourself or the team on track. A work plan can also include a brief outline of forecasted costs and identification of the communications lead.

Work plans are living documents. It's important that they're regularly reviewed and updated, so that the team stays focused and on track to meet objectives (Table 3).

**Table 3. Sample Work Plan**

| Activity | Budget | Milestones/ Deadlines | Communications Lead |
|---|---|---|---|
| *Internal Communications* | | | |
| • Translation | $0 | | |
| • Newsletters | $0 | | |
| *External Communications* | | | |
| • Website | $0 | | |
| • Print Materials | $0 | | |
| • Promotional Items | $0 | | |
| • Events | $0 | | |
| *Media Relations* | | | |
| • Spokesperson Training | $0 | | |
| • Media Monitoring | $0 | | |
| Subtotal: | $0 | | |
| Budget Total: | $0 | | |

## 5.1 The Media Relations Tactic

Whether you're working in the realms of internal or external communications, involving media relations as a tactic in the work plan portion of your communications strategy is an effective way to ensure that you're communicating your forest science to the appropriate audiences through the appropriate channels.

Building and maintaining trust and confidence in your science with your stakeholders should be part of the marketing portion or media relations approach. To communicate your messaging, there are various outlets for getting the information out there, such as:

- Press releases
- Briefing notes
- Media talking points, which supply spokespersons with accurate and consistent messaging for interviews with reporters
  - Generally, when discussing forest science, the scientist or researcher is already the subject expert, so spokesperson training or media training would be beneficial to prepare the individual for communications with the media, particularly when encountering aggressive reporters on a tight deadline.
- Websites and Web copy
- Videos
- Social media (Facebook, Twitter, blogs, etc.)
- Print articles in journals, newspapers, and magazines

> *TIP: Not all budget lines of a communications strategy actually have to cost money. Think of activities that can be included as in-kind contributions or supported through professional partnerships. Develop a partnership with a key media stakeholder to increase your audience reach at little or no cost to your organization. This could be an agreement with a key newspaper, which could provide your organization with monthly space for an editorial column to feature key forest science stories and experts in the field.*

## 6. Finances

Any strategy, whether it be a communications plan or a business plan, is difficult to implement without adequate financial backing. A solid communications strategy should be supported by its own budget.

The financial section is where you will outline your budget and identify where the financial resources are coming from. Forecast for advertising or membership fees, and always have a contingency plan in place in case there are unforeseen costs that come into play, because there are usually at least a few!

If you do find yourself with some available funds, there are ways you can re-invest in the organization. Consider some of the potential options for putting the money to good use:

- Invest in hiring a firm to develop the campaign if communications campaigns are new to you.
- Hire a facilitator if you're hosting stakeholder sessions to better define your target audience and what they want to see. Sometimes having a third party run these engagement sessions will provide you with the most frank interpretation of your business and how you're being represented.
- Purchase extra copies of a brochure or improve a web page on your website.
- Invest the money in a web development program to run email management software.
- Hire a research firm to engage in opinion polling, develop focus groups, or conduct a survey. Some organizations have the staffing to take care of these elements; if you don't, there are options if you have extra funding.
- Invest in media relations or spokesperson training to enable your forest science experts to communicate to a variety of audiences more effectively.

## 7. Evaluation to Measure Your Performance

A communications strategy can be assessed like any other business plan. Did you achieve your main objectives? Did you go over budget or did you stay on target? Are there audience members that you may have missed?

Are you targeting the right audience? Did the audience get the messages you wanted them to get through the intended channels?

All of these questions are great, but how do you evaluate? It should be acknowledged that arriving at appropriate metrics to track communications and public relations objectives might be a challenge in some circumstances. However, it is important to make the effort to gather as much data (particularly, quantitative data) as you can in order to assess the efficacy of your strategy.

The following mechanisms are inexpensive examples of how to measure the impact of your communications activities:

- Did you offer evaluation and feedback forms to participants at your event?
- Did traffic to the website increase after a news release went out or if an article appeared in a newspaper?
- Has there been a change to your organization's social media profile – e.g., more Twitter followers, Facebook friends, etc.?
- Is the coverage of your organization changing in volume or tone? If you don't have the budget to work with a media monitoring firm (such as Cision or FPInfomart), then undertake "in-house" monitoring using simple and freely available tools such as Google Alerts as part of your environmental scanning efforts.
- Was there an increase in requests for information from your organization following a conference or advertising spot?
- Did membership applications to the organization increase or decrease?
- Did you use the appropriate tools to communicate the message?
- Did the audience understand and interpret the intended message? Create a focus group to evaluate specific marketing campaigns and their effectiveness.

*TIP: Complete regular stakeholder engagement sessions to better understand the ways your organization can improve communicating its messages to your target audiences. These could be bi-annual face-to-face meetings or periodic check-ins to see how you're doing. Try developing a 10-question survey and emailing it out. Always stay on top of maintaining those open lines of communication – it will ensure that you're evolving with your audience to remain relevant, and you'll have the upper hand with ever-changing priorities in today's markets.*

## Remember

- Build confidence in your stakeholders by **respecting the truth** in what you're presenting.
- Maintain open and active dialogue with feedback mechanisms to ensure openness and a continuous **exchange of ideas**.
- Know your audience and focus your efforts on what you want them to know about you – having a **clear and focused audience** allows you to adjust your messages, timing, and outlets accordingly.
- Develop a trust- and confidence-building communications strategy that is **always evolving with the priorities**. Stay current and stay on the move through continuous planning, analysis, and execution.

### FURTHER READING


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# 5

# INTERNAL COMMUNICATION

# Internal Communication

*JIM GROB, ZOË HOYLE, MICHAEL SULLIVAN*

## Internal Communication Defined

Internal communication is the communication that occurs among and between the members of an organization – in this case, a forest science organization. This can include distributing routine messages, sharing data, noting important milestones, and processing information valuable to the members of the organization and necessary to sustain productivity. Internal communication occurs every day in every workplace. Formalizing internal communication helps both managers and employees through consistent, accurate sharing of information and messages. Although many of the same methods are used to communicate internally and externally, there are significant differences. Internal communication is concerned with building a cohesive mission among people who share a common knowledge base as employees of an organization.

## Value of Internal Communication

- Gives people a sense of ownership in the organization
- Improves the work of the organization
- Keeps people informed along vertical and horizontal lines within the organization
- Explains decisions, issues, and events that have occurred or are scheduled
- Allows the organization to respond quickly to change and crisis
- Helps in problem-solving
- Builds respect and morale among the members of the organization
- Ensures consistency and accuracy within the entire organization, whether located together or dispersed throughout different regions
- Promotes fairness and equity

Many forest science organizations are structured as a network of geographically separate units. Others may be housed in one location, but separated into functional groups. In both cases, effective internal communication is impacted by how well information flows between units. This includes researchers, support staff, and management. The problems forest science research involves can rarely be confined to one discipline or approach. The need to collaborate on research in almost all areas becomes more pressing as the global and multidisciplinary nature of major issues becomes more apparent.

At the organizational level, a common characteristic researchers often share is that the importance and significance of their work is not well understood within their own organizations. Administrators and managers may not be as well informed as they would like about the work being done by their researchers. Support staff may feel unappreciated or nonessential. Employees who do not communicate regularly with one another may lose a sense of how their work contributes to the purpose of the organization. It is essential that all the employees of a forest science organization understand that what they do is important to the overall purpose of the organization and that their efforts are appreciated.

## Structuring Internal Communication

The first step in internal communication is to form a strategy that supports the vision of the organization and defines the goals of communication. This can be as simple as "maximizing science" or "having all employees understand the purpose of the organization." Internal communication can also be a powerful tool for promoting change within an organization; in this case, goals and messages must be clearly defined along with ways of measuring success.

Methods of internal communication include newsletters (electronic or printed), memos, guidelines, procedures, meetings, seminars, field tours, mentoring programs, trainings, supervision, and social situations. Some forest science organizations form cross-disciplinary themes within the organization, bringing together researchers from multiple units. Peer reviews of journal articles, study plans, and other publications are another example of internal communication. It should be stressed that internal communication is not a one-way flow of information, but rather a continuing conversation between and among members of an organization. Internal communication provides a way to sense the climate within the organization, as well as a means for building consensus. For researchers, internal communication can be an avenue to let other people within

the organization know about their work so that its importance and relevance can be conveyed more clearly to the public.

A key role of internal communication is standardizing the means to transmit and share information with staff. This can be an effective tool to share time-sensitive organizational information, acknowledge successes and awards, and outline strategies for implementation. To be truly effective, all communications must be two-way. There should be mechanisms in place to solicit staff members' replies or queries. Acknowledging the concerns, ideas, and input from all elements within an organization is critical to the health and effectiveness of an organization.

### Questions to Ask When Forming a Strategy for Internal Communication

- What needs to be communicated?
- Who does it need to be communicated to?
- How should it be communicated?
- Who needs to communicate it?
- What is the intended result of the communication?

General types of information to be communicated include strategic goals; budget data; job performance (expectations and directions); decision making (how decisions are made and how feedback and inputs are handled); changes to policies and procedures; and positive information and success stories about the organization and its work.

Examples of internal communication within a forest science organization include the following:

- Researcher communicates a field observation or a research need to an administrator.
- Administrators communicate with researchers about funding and training opportunities and seminars.
- Researcher communicates study plan to other researchers, practitioners, and administrators.

- Director communicates to all employees about changes in work process, policy change, and emergencies.
- Researcher informs communications office about research program.
- Communications office helps all employees know about awards received, goals achieved, and major research breakthroughs.
- Organization hosts meetings for all scientists, cross-disciplinary seminars, trainings.
- Researchers from one unit host a field trip for researchers from other units.
- Employees across positions and units take a hike or rafting trip together.

## Improving Internal Communication

As is the case with external communication, improving internal communication depends on evaluating present efforts. This can be done with a survey or, more informally, by asking for feedback or by making internal communication a topic at a meeting or training session. Speaking with a random sample of employees is another method. Focus groups are also a very good way to find out people's thoughts and opinions about the effectiveness of internal communication methods. Remember: it is a never-ending effort that can be challenging, yet very beneficial and rewarding to your organization.

# 6

# INTERNET COMMUNICATION AND SOCIAL MEDIA

# Internet Communication and Social Media

*MICHAEL HUCK*

The Internet is a worldwide network of computers connected through public and private telecommunications networks with the objective of exchanging information. It is the largest source of knowledge in the modern world, with both providers and consumers of information coming together in a variety of areas, including forest science.

Internet communication and the use of social media have become common platforms for communicating forest science. Scientists and communicators can take advantage of this and incorporate these tools into their overall communication strategies to reach a larger audience.

Many of the rules for successful communication mentioned elsewhere in this manual (see "Considerations for Success" on page 71) are important to carry over in online communications, perhaps even more so as the Internet provides a platform where everyone has a voice, and the sheer amount of information available to users is vast. New strategies need to be developed and employed, and those scientists and organizations willing to embrace new forms of Internet communication and social media will better engage stakeholders and spread their message. Outlined below are the key opportunities and threats of online communication to consider, as well as an introduction to best practices and an overview of popular tools for information dissemination in communicating forest science.

## Opportunities and Threats

The Internet has changed many industries in recent years, from retailing to real-time communications. Perhaps no industry has changed so profoundly, however, as the news media and, by extension, the communications industry. The news delivery process has become a fast-paced, non-stop stream of news played out on websites, chat boards, and social media outlets. Although the Internet has created an array of opportunities for communications by creating new means to reach larger and specific audiences, it, on the other hand, has made it more difficult to manage the information flows and to attract attention to specific pieces of information.

## Opportunities

Almost any communications vehicle – from newsletters to videos to press releases – can be adapted to the Internet for increased exposure with minimal additional cost for development and minuscule cost for delivery. In science communication, where information is the product, the Internet has a special place.

At a minimum, science organizations can post their full-text publications, decision tools, and data sets online. In many countries, publications that were written by government employees are in the public domain and so are not subject to copyright assignment to journals or book publishers. This allows federal Webmasters to post their scientists' papers to their agency websites, regardless of whether they were originally published in-house.

Another unique advantage of the Internet over other science delivery tools is that an organization can directly control releases of time-sensitive information – such as assessments, major breakthroughs, and controversial findings – giving reporters equal and simultaneous access to the information when it is released.

A third feature of the Internet that is extremely beneficial to scientists is the ability to use the medium to upload and download data for collaboration on manuscripts and other research products. It also makes it easier to communicate with other scientists, stakeholders, and policymakers in open dialogue.

## Threats

A common threat in communication is a focus on the tools instead of audience. For example, a director or board may say it is important to have a Facebook page, but it won't have much effect if your target audience does not have reliable Internet access. As with every communication strategy, you should first consider your target group and the message you want to convey.

Effective online communications are time-consuming – it takes an understanding of the tools along with a sufficient amount of time to successfully engage online audiences. It is easy for external stakeholders to believe an organization or individual is dormant if it is not active online.

The language of the Internet is different than that traditionally used by scientists, and it requires a change in the way information is presented. To grab the audience's attention, those communicating forest science need to do so in an

attention-grabbing way. A lot of other information is competing for the user's attention, and so there is a good chance that messages will be overlooked by the intended audience if they are not carefully crafted.

## How to Effectively Use Online Communications

### Email and Electronic Mailing Lists

Email is widely used as a communications tool as it is direct, accurate, fast, and dependable. It is a good tool to use when you wish to target a specific group of people with a message. It is important to recognize that many people receive far too much email and are frustrated with messages that are not relevant to them.

To ensure that people will not automatically delete your public relations email because it is unwanted mail (also known as "spam"), always indicate the contents of your email clearly in the subject line, keep the email contents concise and informative, direct a user to a Web page if further reading is required, keep the frequency of emails sent to a minimum, and be judicious in your use of attachments (i.e., do not share an overly large file via email unless necessary) – otherwise, you risk having your messages ignored.

> *If you wish to use email as a communications tool, first determine if your audience widely uses email, or even has access to it. Also check if people are interested in receiving your information. Unwanted mail, referred to as "spam," is annoying and harms your image.*

Listservers, or electronic mailing lists, are programs that redistribute mail messages to groups of interested email users. Users can subscribe and unsubscribe to a listserver by sending an email to the mailing list or by completing an online form. These programs are highly effective ways to share information with people who have explicitly expressed interest in your organization.

If you publish an e-newsletter, it is important to start your own electronic mailing list to ensure that people interested in the content can subscribe to the information. There are a number of external online services available to do this if you do not have the resources in-house. Look for one that offers social media integration, design templates, automatic list management, and email analytics.

Some good practices to follow when designing your newsletter:

- Use section headings and story titles that capture attention.
- Complement articles with photos to engage your audience.
- Ensure that users can unsubscribe from the newsletter easily if they wish to do so.
- Promote your newsletter in a prominent place on your website and spread the word via social media channels, email signatures, etc.
- Encourage feedback – whereas paper newsletters are one-way pieces of communication, e-newsletters can open up a two-way conversation.

### Website

The number of websites offering information on a variety of subjects including forest issues seems endless. As a source of information, the World Wide Web (WWW) is often regarded as the world's biggest library, and it can often be a challenge to navigate through the information available to find relevant material. Luckily, there are search engines that help you to browse through the vast extent of Web pages on the WWW today. There are also websites of various organizations offering forest-related overviews of useful information on various topics. For example, the Global Forest Information Service (http://www.gfis.net) (see "Success Story 5" on page 107) aggregates forest-related information from a worldwide network of partner organizations' websites and allows users to view and search through the information in one place, rather than visiting hundreds of different websites.

A website serves as the public face of your organization to online audiences and can be leveraged as an excellent tool in public relations. If your organization plans on including online communications in your communications strategy, it is important that you have a home website that showcases information about your organization as well as your public relations materials. Without a Web page, no one can retrieve your information through the Internet. When creating a Web page or updating a current page, it is important to keep the following in mind:

- Building a website is not a major effort, but maintaining it is. A website that is loaded with outdated information is not useful for public relations. So, before building one, consider the time and staff that will be required to regularly update the Web pages.

- It is important to carefully consider the structure of the website, what information should be available on all of the pages on your website, and what internal mechanisms will govern access to this information. Some essential elements are:

  – Mission or objective of the organization
  – Information on current work of the organization
  – Upcoming activities (i.e., events) planned
  – Outputs (such as news, publications, etc.)
  – Contact address for more information

- The third step is the creation itself, consisting of design and programming. The design is of major importance and should fit the organizational image and be readable.

- Many websites are built using a content management system (CMS). A CMS provides a user-friendly interface to upload, manage, and display the content of your website. In addition, most have extensions that can be installed to help disseminate your content. It is important to look at several free and proprietary CMS options before you make a decision, as each has its own distinct advantages and disadvantages.

- Ensure that you publicize your social media channels by providing links on your home page.

### Presenting Content

The next part, writing the content itself, is equally important. Writing for the Internet is different than writing an article for a magazine, newspaper, or journal. You should be aware of the limitations – namely that reading something on a computer monitor is more likely to cause eye strain than reading a magazine, so Web articles should be broken into shorter paragraphs and sentences. One should also make use of the specific features of the Internet, like linking (connecting to another Web page).

It is important to present your information on a Web page itself rather than rely on a portable document format (PDF) file. This format was designed for transferring documents, not for communicating them. When releasing a publication, for example, be sure to display the title of the publication, a description of the publication, and other relevant metadata on a Web page. If users are interested, they can then download the document. The importance of having good metadata

cannot be overstated. Metadata clearly defines pieces of information you upload and allows the effective management of the information. Without metadata, your information will be lost on the Web and rendered inaccessible in many cases. Some key metadata elements to include when uploading information are title, description, author, subject, keywords, and location.

### Making Your Content Accessible

It is easy to assume that once you upload your information to a website, those interested in the content will access it. Generally, this is not the case, and it is important to utilize online tools to aid in the dissemination of the content.

Create Really Simple Syndication (RSS) feeds for your content (like news, events, and publications) to ensure that users and organizations can subscribe to your information. RSS feeds enable syndication and distribute the core information about your content – the metadata – to a computer, which, in turn, presents this information to users via an RSS aggregation program (known as a "reader"). Most CMSs provide an extension that integrates RSS into your website, but if your website is an exception, RSS feeds can be created by a programmer who writes a script or provided by a Web-based service.

Incorporate the ability for users to help you disseminate your content by providing the option to share your news, events, and other information via social media channels. This enhances the chances that your content will be shared with your audience's networks. Again, nearly all CMSs provide an extension that can be incorporated into the website to allow this sharing.

### Social Media

The core principle of social media is the ability to share content with others. Social media tools can play a strategic and important role in the ability to send out and raise awareness of information and communicate directly with engaged stakeholders.

Social media still carries a stigma among scientists of being a waste of time, and many are reluctant to engage with it because they do not see the benefits of using it in a professional context. We must move past such viewpoints and recognize social media's power in communicating advancements in the scientific field by acknowledging that successful communication is achieved by utilizing the channels where the general public is engaged. For many stakeholders, the major sources of knowledge available to them are not the science journals, textbooks,

and conference proceedings that are the tools of the trade for professional researchers. Rather, it is through online media like news articles, blogs, social media platforms, and websites that a large proportion of these stakeholders gain scientific knowledge.

When taking the step toward embracing social media as part of your communications plan, it is important to realize that it will take time, patience, and perseverance to grow your online community and connect with stakeholders interested in your science. In addition, it is important to define a social media policy and strategy early on to ensure that social media engagement is controlled and undertaken with organizational goals in mind. Once a community of engaged stakeholders is built, you will have an invaluable tool you can use to share, discuss, and raise awareness of your information and organization.

Your organization can adopt various social media outlets. For the purposes of this manual, we will outline the most common outlets as of the time of this writing– Twitter, Facebook, and blogs – and introduce some best practices for each.

- Twitter:
  Twitter is a great tool for connecting to other organizations and individuals with shared interests. It is considered a micro-blogging site and allows users to submit 140-character posts. This translates into short, to-the-point "tweets" that usually link to a Web page for further information. When "tweeting," it is good practice to utilize hashtags (denoted by a "#"), which attribute the tweet to a specific topic; to mention stakeholders by sending direct tweets to their accounts; and to link to source Web pages for further reading.

  *e.g., #mustread @IUFRO releases new manual for communicating #forest science, see – bit.ly/ExaMpLe14*

  Remember that while everyone wants more "followers," it is quality over quantity that you want. Follow other organizations and individuals who share in your field of interest and retweet and respond to tweets that you believe your followers would benefit from seeing, and you will see positive growth over time in your social media channels.

- Facebook:
  Facebook is also a good tool and can be used to help communicate

with those who are on the social-networking site. Posts can be longer on Facebook than on Twitter, and it is a good platform for sharing images. On Facebook, users choose to "like" a page whose contents then appear in their newsfeed. Users who find a post interesting can share it with their networks, like virtual word of mouth. It is good practice to engage your audience with questions, polls, and interesting articles, and encourage comments and discussion.

- Blogs:
  Blog postings are a great way to introduce news stories or feature projects or new publications. Generally, blogs are written in an informal manner and allow the writer to explain a topic or issue. They are a way to keep people up to date with your organization and the people within it. When creating a blog post, whenever possible embed images, videos, presentations, or other media that will help to further explain the topic, along with your copy.

One goal of using social media should be to bring traffic to your core content–i.e., if you are releasing a new publication or highlighting a project, all social media posts should link to a Web page that provides further information on the publication or project. Remember that social media allows you to engage audiences in a way that no other media can, and opens up a two-way dialogue that should be embraced and used to engage the audiences, bringing an added dimension to your communications.

There is a whole host of online tools that can be employed to assist in your social media efforts and that can be purposed toward different tasks. These range from video and photo storage services, such as YouTube and Flickr, to link collection and curating services such as Delicious or Paperli. No matter what social media tools you choose, it is important to first think about the audience you are trying to engage and the purpose behind your communication efforts.

## Measurement and Evaluation

As with every communication tool, it is important to consider the effectiveness of the Internet in getting the information to the targeted audience. Any company that hosts your website should provide you with statistical reports on the traffic or visitors to your site. Information from these reports can identify your most popular content, how many visitors come to your site, time of day when you get the most visits, and other useful information to gauge the effectiveness of your communications. In addition, a very useful tool for analyzing website statistics is

Google Analytics. It allows real-time observation of your website and very detailed information that is useful in measurements and evaluation.

In addition, you can monitor your social media statistics through online tools that will provide you with information you can use to fine-tune your online communications strategy. Examples include Tweetreach, for Twitter, and Facebook impressions, for Facebook pages. This feedback will provide the opportunity to fine-tune your Internet tools to the various users and improve your communication in forest science.

## Lessons Learned

With the immense power of the Internet comes an equally heavy responsibility for credibility and customer service. Following are some dos and don'ts that will help Webmasters, content managers, and contributing scientists:

### DO

- Do treat your website, social media channels, and blog as tools for two-way communication and further dialog with scientists.
- Do trade links with your partners. Remember that most search engines give higher visibility to websites that are well connected.
- Do let your visitors know what level of credibility to expect from the information on your website. Is everything peer reviewed? Is "gray literature" clearly identified? What are the credentials of your scientists?
- Do use listservers to notify visitors of important new contents on your website, but follow best practices to ensure that you reach out and keep your audience happy.
- Do establish a social media strategy and policies to ensure your communication efforts fit your goals.

## DON'T

- Don't underestimate the resources it takes to maintain a website. Your organization's reputation will suffer if your website regularly sits neglected for more than a month at a time.
- Don't forget that different browsers and different monitors display graphics and color differently. What looks beautiful on your computer may be unreadable to others. Keep it simple!
- Don't reinvent the wheel. Before launching a new database or other labor-intensive application, explore opportunities to add to what already exists or collaborate with others who have similar goals and needs.
- Don't neglect the visually impaired when adding color or content. Remember that some people cannot distinguish between red and green. It is relatively easy and inexpensive to offer versions of your documents that can be recognized by screen readers.
- Don't be afraid to load your website with content, as long as it is well organized and easy to access and navigate. Research shows that visitors seek text and graphics more often than photographs.

7

# MEDIA RELATIONS

# Media Communication

*ZOË HOYLE, REINHARD LÄSSIG, KATARÍNA SLÁDEKOVÁ, KEN WOO*

## Introduction

### Why Approach the Media?

A proactive approach to the media can help scientists inform different audiences about the results of research, help build networks with other forest science researchers, provide expert information to the public, gain support for funding, and influence policymakers.

### What is News?

To target the media effectively, first determine whether your story is actually "news" – time-critical information appropriate for a wide audience. Your story may be more suited for a feature if the information you offer is more detailed and less timely. Making this first decision will help you choose which medium to use to distribute your information.

Who? What? When? Where? Why? The answers to these questions are the essential elements of a news story. Other factors to take into account when deciding whether your story is newsworthy include: the significance of the story in relation to other recent events; human interest; the "unusualness" of the story (when a dog bites a man, it is not news; but when a man bites a dog, it is); local interest; and whether the information helps people solve problems.

Subjects for a news story include: original research findings presented at a conference or published in an upcoming journal or book, unique or unusual scientific projects, and expert commentary on a current event or problem.

### What Gets Covered by the Media and Why?

For non-media people, it can be difficult to understand what kinds of stories get media coverage. There are many factors that can influence which stories will be picked up by the media. Some of the factors are well known, like the quality of a story and its timeliness; some are not, like the outlet's publication strategy, the mood of an editor, and competing stories. However, scientists, communicators, and forest managers who deal with the media regularly should keep certain factors in mind when trying to increase coverage.

The story should provide new knowledge to the audience. Whether the story addresses a current public concern also influences whether it gets covered. The more a story can show how people benefit from science findings or what may happen if they choose to not be informed, the higher the chance of getting covered will be.

Even if a story is newsworthy, the timing may be off. The media must balance their topics; they usually have limited space or time to report about science. A media outlet may not want to cover your science findings if a similar topic has been recently covered by a rival. Media work under keen competition, so if you approach a contact with a story that has received recent coverage, be sure to offer a new angle or perspective.

Another reason your story might not be considered is the sheer number of competing stories. Media professionals choose only a few topics out of the hundreds of pitches they get each day. News releases that refer to a certain date might be overlooked by a reporter who is juggling priorities; other less timely news might be postponed for a later date.

As important as the story are the relationships a communicator builds with media editors and writers. If media contacts do not know your programs exist, they will not contact you for news, comments, or background information. People who want to tell stories on a continuing basis must work on building relationships with reporters and editors. Keep them up to date about your area of research; invite them to discussions, talks, or congresses; and organize media events.

1. Know the market for your product. Which newspaper, magazine, television or radio station might be interested in your story? Which media reach your target audiences?
2. Contact the media regularly – but not too often – so they will listen to you when you have news to tell.
3. Apply for a practical course or internship at a science editor's office – or simply ask to "shadow" an editor or writer for a day. You will gain invaluable insight into how the staff works and how decisions about news are made.
4. Follow media-specific guidelines on writing and formatting materials precisely. Pay particular attention to the wording of the title and lead. Use strong verbs and active voice when possible.
5. Phone or email the editorial staff when you have a "hot" topic and briefly tell them what is new about the topic; how it is relevant to their audience; and, if you plan to write the article yourself, how many words you intend to write. Do not send a manuscript without contacting the media; chances are good that nobody will take notice of it. Alternatively, you can write and email a news release that highlights your story and piques their interest in it.
6. Don't get discouraged. Even if the media have rejected your ideas, news releases, or manuscripts, contact them again in the future when you have news that is appropriate for their outlets.
7. Look for special publication niches and new media formats to pitch your stories to.
8. Reveal your information sources, as editors must be able to re-examine them. Emphasize credibility and represent yourself and your institution as a serious partner.
9. Make photography and art produced by your institution available to media. Include a short, descriptive caption and identify the name of the photographer or artist and your institution.

1. Lying. This is the most grievous mistake you can make. A lie can shatter your reputation.
2. Saying "no comment." Refusing to comment makes it look as if you have something to hide. If there are legitimate reasons why you cannot comment, explain them.
3. Being afraid to say "I don't know." Reporters do not expect you to know all of the answers to their questions. If you don't have an answer, you can always say so: "I don't know, but I will see if I can get that information and call you back this afternoon." Follow up with a reporter when you say you will.
4. Not preparing for the interview. Anticipate the most difficult questions the reporter could possibly ask. Write down your response to these questions, practice them, and keep them in front of you so that you can refer to them during the interview.
5. Talking "off the record." When talking to a reporter, assume everything you say can be used.
6. Falling for the bluff. A reporter hears a rumor, calls you, and pretends to already know something. Before you talk, find out what the reporter really knows by asking questions such as "Who told you that?" to help you determine if the reporter is bluffing.
7. Responding immediately when you feel uncomfortable. If you need time to collect your thoughts, say so. Try to find out what kinds of information the reporter wants and ask if you can call back after you have time to prepare. Write down your talking points before calling back – and call back when you said you would.
8. Losing your cool. Always maintain control and do not allow yourself to react in anger if a reporter asks what you think is an unfair question.
9. Failing to correct errors. Always let the media know when they have erred. If you do not, the error could be reprinted and repeated.
10. Viewing the media as the enemy. Do not set yourself up as an adversary. Despite the media claims of being "impartial," they have friends as well as enemies. Become a friend.

## Types of Media

The two main types of media are print and broadcast. There are some obvious differences, but the two share certain constraints: absolute deadlines; an immediate need for details; severe time and space limitations; a distinction between "hard" news and features; and an organizational structure that includes reporters, editors, managing editors, and producers.

### 1. Print

Daily newspaper: news can be filed by phone or email; can provide more extensive coverage; no requirement for visuals; facts and figures can be easily reproduced; editors revise stories.

Weekly newspaper: (typically distributed on Sunday): between a daily newspaper and magazine; focus is still on news; more people-oriented than daily newspaper; good for science topics; some have science pages and space for longer stories.

Community newspaper: less rigorous about news; linked directly to community issues; most people-oriented; less staff, so more responsive to prepared copy; geographically limited.

Magazine: long deadlines, longer story possibilities; some are national, some local; many directed at special audiences. Science magazines include *New Scientist* and *Discover*.

Trade and professional publication: line between editorial and advertising is less clear; targeted to niche markets; opportunity for more detail and complexity. Publications in the science and technology trade are directed primarily toward scientists, engineers, or other professional groups.

### 2. Broadcast

Television: broadest audience, visual exposure, better product recognition; quoted directly, less margin of error; need either good visuals or emotional story; demands a more practiced response; interviews have high impact but increased risk.

Radio: provides more detail; exerts more control over topic and content; more interactive with audience; immediate response. In addition to news, television and radio produce special programs and documentaries. Laboratory and field work are attractive settings for producers. Local radio

and television talk shows are always looking for guests with interesting stories. Be cautious when talking to broadcasters about unpublished research that has not been peer-reviewed.

### 3. New Media

The Internet and social media are, arguably, the most powerful new tool for communicating science and are capable of incorporating text, sound, images, animation, and video into interactive modules. In addition, new digital technologies promise to blur the boundaries between television and the Internet and to bring new potential and challenges to communicating about science. Satellite radio also brings hundreds of channels into cars and homes across the world. (See "Internet Communication and Social Media" on page 40).

## How Media Works

Science communicators need to understand the media types they choose to reach their target audiences. In media offices with full staffs, science news is sent to a science department, which usually does not work under the same time pressure associated with local, breaking news. In other offices, general reporters cover science stories in addition to their other "beats." Most of the media follow a number of general rules.

Editorial staff are always in a hurry. Every day they produce a new edition of their publication, make a short video, or write an article. The first rule of the game is timeliness. With new media types cropping up daily, it becomes more important to be the first to report something. Science communicators need to learn to deal with the time pressures the media operate under, but must also be vigilant about maintaining the accuracy of information conveyed to the public. One way to do this is to ask the journalist to send a draft of the article for review. Some media never allow this, while others welcome the chance to have the "science" checked for accuracy.

## Media Outreach: A Communications Toolkit

### 1. The Press Release

One of the most critical communications tools is the press release. The press release answers the basic journalistic questions of who, what, when, where, and why. Basic elements that provide its structure include:

FOR IMMEDIATE RELEASE: These words should appear in the upper left-hand margin, just under your letterhead. You should capitalize every letter.

Contact information: Skip a line or two after the release statement and list the name, title, phone number, and email address of your spokesperson (the person with the most information).

Headline: Skip two lines after your contact information and use a boldface type for your headline, which should be attention-grabbing.

Dateline: This should be the city your press release is issued from and the date you are sending your release.

Lead paragraph: The first paragraph needs to grab the reader's attention and should include information relevant to your message, such as the "five W's" (who, what, when, where, and why).

Text: The main body of your press release, where your story and message are fully developed.

### 2. Collateral Material

Collateral material is anything that supports your announcement, such as simplified white papers summarizing your research, or even the scientific articles referred to in the release.

### 3. Third-Party Endorsements

When you are on the leading edge of research, the proof of concept or peer review process may not necessarily be timed with your announcement; however, a little advance planning can help. Share your research with other scientists or researchers and ask them to endorse your work. Having the data come from these third parties adds credibility to your story. If your third parties agree to support your work, provide them with two or three crisp and clear talking points.

### 4. Media Events

Think about ways to attract reporters and writers with special events. If your announcement is about research in the field, invite the press to join you there. Reporters will instinctively know to bring a photographer along. Press photography means more prominent story placement.

### 5. Press Conferences

Reporters hate press conferences because their competitors are in the room

with them. Although they are more time-consuming, one-on-one meetings with key writers and editors are more productive in getting a story told.

### 6. Artwork

Artwork should tell a story or explain a complex process and should be capable of standing alone.

### 7. Photography

Like artwork, photography must tell a story. Most major newspapers will not accept photographs taken by someone other than their own photographers. Others appreciate original photos from science because they are unique; medium-to-small newspapers, especially community papers, will more often accept them.

### 8. Cover Video (B-Roll)

If you interact with television, producing cover footage for reporters to use in their stories is very important. If your subject is difficult to shoot, hire a local video production company to do the work for you. Make sure the video format is correct for the markets you target. You also can post this footage to your institution's website.

### 9. Wire Services

There are two forms of wire distribution: fee and free. Services such as EurekAlert!, Business Wire, PR Newswire, or M2 PressWIRE charge to run your press release. Go to their respective websites to check for rates and distribution lists.

Free wire services include the Associated Press (AP), United Press International (UPI), Reuters, Bloomberg, The Canadian Press (CP), and Agence France-Presse. These services are subscribed to by news organizations, so the focus is on "news." Sending your press release to these services does not guarantee they will run it.

## Strategic Planning

Dealing with the media requires thought and planning. If your organization has a press officer, contact that individual early in the process to help plan for your desired outcome with the media.

### 1. Developing Objectives and Desired Results

What is the end result you want to achieve with your outreach to the media?

The media will not run a commercial for your work, so you need to think carefully about your approach. For example, it may be premature to invite the BBC over to chat with you, when it might be more appropriate to have a writer from *New Scientist* talk to you about your work. Set some specific objectives with desired results, and work with your press officer to refine these elements.

### 2. Key Messages

Never offer more than three key messages. If you go beyond three, you may create an information overload. Keep your messages short and simple.

### 3. Targeting Audiences

Think about the audience you want to reach. Is it the general public? Industry? Fellow scientists? Identify and segment who you want to reach and why.

### 4. Measurement and Evaluation

You need specific measurement and evaluation tools to determine whether you met your objective and reached your target audience. How do you measure your results? From press clippings? From new relationships with other researchers?

## Conclusion

As stated earlier, the number of media outlets is increasing, all competing for the attention of publics with severe information overload. At the same time, reporters and editors have less time to spend on stories; there are actually fewer outlets for the in-depth, detailed stories required to explain the complex, long-term research that makes up forest science. It is increasingly important that scientists and science communicators understand media and learn to get their findings out in plain, compelling language and visuals.

### FURTHER READING


*Blum, D.; Knudson, M.; Henig, R.M. 2005. A field guide for science writers: the official guide of the National Association of Science Writers. New York: Oxford University Press. 336 p.*

*Communicating Science News: A Guide for Public Information Officers, Scientists, and Physicians [online]: http://www.nasw.org/csn*

*Exploring Online Journalism [online]: http://faculty.georgetown.edu/bassr/511/projects/letham/final/explore.htm*

*Jurin, R.R.; Roush, D.E.; Roush, D.; Danter, J. 2010. Environmental communication: skills and principles for natural resource managers, scientists, and engineers. 2nd edition. New York: Springer. 310 p.*

# Handling Interviews

*BOB BURT*

## Introduction

This article is intended to provide you, as a researcher or scientist, with some tools, tips and techniques to help get you successfully through the interview process with traditional mass media – newspapers, magazines, television, or radio.

Elsewhere in this manual (see "Media Communication" on page 52), you will find an overview chapter on the media that is an excellent primer on the subject. It gives an informative summary of the different types of media, how they work, and some very useful dos and don'ts to think about when dealing with media. It also explains why you might want to contact the media and how to approach them in ways that best capture their attention. Anyone planning to take part in an interview would do well to treat that chapter as required reading.

This chapter is complementary to that one and offers more of a "how-to" in terms of dealing with the actual interview process. It touches on preparation, gives a few rules to keep in mind, helps you understand what the reporter wants and needs, and suggests ways to structure your responses and to avoid "ambush" questions.

## Preparation

For a successful interview, preparation is critical. You should go into the interview knowing what you want out of it and having some idea of how best to achieve that. This means you must prepare.

Assuming that the reporter has approached you to request an interview, apply the journalistic "5 W's" (who, what, when, where, and why) to learn what you can about it. The reporter should see this as an understandable and reasonable approach to take.

## Ask the reporter:

- Why do you want to interview me? What are you looking for? Can you be specific?
  Let the reporter know you're asking for specifics to enable you to prepare and give the best information possible so that he/she will have a better

story. The reporter should see that as a positive, helpful step. This should also give you at least a general idea of some of the questions you are likely to be asked and will allow you to think about how you might respond in ways that highlight your key messages.

- What's the format?
  This can help you determine how you prepare or, perhaps, even whether you accept or decline the interview request. Will it be a one-on-one interview? Will it be live (if it's electronic)? Will it be a panel discussion? And, if some panelists vehemently disagree with your findings, ask yourself: do you want to participate?

- When and where will it take place?
  No deep meanings here, simply time and location.

- Who else are you talking to?
  This can give you an idea of the scope of the interview and can also help you build a relationship with the reporter by suggesting other researchers – preferably those who are not dissenting voices – doing complementary work that might help flesh out the story.

Once you have learned as much as you can about the interview setup, your next step – in advance of the actual event – should be to ask yourself what you want to get out of the interview. What are the most important points you want to convey to the reporter's audience? These will be your key messages – the points you want the audience to remember. Generally, you'll want to have no more than three key messages. The average listener/reader/viewer, who is not a specialist in this field, can very quickly become overloaded with information.

Once you have settled on your one, two, or three key messages, write them down. If you have a communications officer in your organization, work with that person. He or she can help you hone your messages and give other helpful advice. Then, you might even want to practice delivering them, as key messages will resonate more when they are delivered in a natural and conversational fashion.

It's also worth keeping in mind that although the reporter interviewing you may have a reasonable understanding of your science, you are not speaking to the reporter. You are speaking through the reporter, using him or her as a conduit to reach a much broader, less informed audience. Again, keep the messages simple.

Equally important: the messages must be clear, concise, and in plain language. Given time and space limitations in the media, there is little room for nuance and lengthy responses. Jargon and acronyms will baffle the audience, and they will just tune out.

In regard to how you answer, here's an example. You may know someone who, in response to a question about a budget cut, might reply: "Well, it's fruitless to become lachrymose about precipitously departed lacteal fluid." Asked the same question, someone else would reply: "There's no use crying over spilled milk." Any bets on which quote would get used by the reporter? The bottom line: think simple. The onus is on you to keep your messages simple. If you don't, the reporter, or the reporter's editors, will simplify them for you. Ask yourself: who better to do it – you or a journalist?

Another excellent preparation suggestion from the "Media Communication" chapter is to figure out the most difficult questions you might be asked; determine the best responses to them; write them down; commit them to memory; and, when possible, keep them in front of you during your interview.

That chapter also lists among its "Ten Media Mistakes" the danger in responding immediately when you feel uncomfortable. It suggests trying to find out what information the reporter wants and asking if you can call back later, once you have had time to prepare and develop your talking points. It's excellent advice. Again, you can tell the reporter that you need the time to ensure that you have the most complete, recent, and accurate information to help make his or her story the best possible. And to that, I would add that if you tell the reporter you will call back at a particular time, be sure you do so. The reporter is working on a deadline and that deadline is real. If you don't get back as promised, three things can happen, and all of them are bad:

- There is no story and you have missed an opportunity to inform a broad audience about what you are doing.
- There is a story, but it runs without any input from you. Again, it's a missed opportunity.
- Future stories that deal with your area of expertise will use input and quotes from others who specialize in the same field because the reporter will have written you off as unreliable.

## What Does the Reporter Want?

My personal experience with reporters – having been one for years and worked with many as colleagues or competitors and then, in later years, dealt with others as a government communications officer – is that the vast majority are fundamentally principled and ethical people. They have a strong belief in the public's right to know and they see themselves as working in the public interest and for the public good.

The reporter is looking for a good story: one that shines a light on an area that needs it, is informative, resonates with the audience and – as a possible secondary consideration – underscores or increases the reporter's standing among peers and bosses and enhances his or her profile with listeners, viewers, or readers through more on-air time or a byline in the newspaper (preferably on the front page).

A good story is compelling. It makes the audience want to read, watch, or listen to it. It is balanced, giving all sides. It is clear and understandable. It is concise and it is accurate. A good story will contain at least some of the following elements: surprise, change, conflict, mistakes (that means mistakes made that cause the story to be reported, not mistakes in the story). And it explains who and what are affected by those elements and what those effects are or will be.

A former journalism colleague used to say: "You never see any stories about how many planes landed safely at Heathrow yesterday." That's quite true. News is usually about something that's gone wrong in the system – catastrophe, conflict, or confrontation. And any one of those three characteristics makes a story that is much more likely to grab the public's interest.

For you as interview subject, it means that some of the reporter's questions may be provocative and pushy, maybe even rude. A heated or intemperate response may make a better story for the reporter but, by distracting you from your messages, it won't help the story you're trying to get out. Should that happen, it will be up to you to remain calm and stay focused on your key messages.

Learn to translate what's asked. When the reporter asks an inflammatory question ("How did you people make such a mess of this?"), the essence of the question is: What went wrong and what's being done to correct it? By answering in a way that moves from the problem to the solution ("As soon as we discovered this problem, we immediately acted to...") you can defuse many awkward situations.

## Four Rules to Keep You Out of Trouble

There are four basic rules to getting through an interview successfully:

1. Speak to your own expertise
   The reason is obvious. Presumably you are being interviewed because of your work and your expertise. Sticking to that subject – and remembering to articulate your key messages – allows you to enlighten others about your work and its importance.

2. Do not speak to others' expertise
   The reporter says something like: "In a recently published study, Dr. X reaches some conclusions that seem to directly contradict yours. How do you respond to that?" Short answer: you don't, and for a couple of reasons. Getting you involved in a spitting match with Dr. X gives the reporter a story with a conflict or confrontation angle, but it has little to do with getting your key messages out.

   Regardless of what you know or think about Dr. X and Dr. X's research, as soon as you start talking about that work, you're switching the focus – giving profile to the research of Dr. X, and taking it away from your own – which is the primary reason you're doing the interview.

   Another danger is that the reporter may simply have misinterpreted the meaning of Dr. X's conclusions.

   In this type of situation, the answer you do give should be something that, instead of responding to a perceived weakness, plays up your strengths. Along the lines of: "I am not familiar enough with the details of Dr. X's research to offer an opinion on that. What I can speak to with confidence is my research, which, as I've said, shows..."

3. Do not speculate
   There's no upside to answering a speculative question. Once you get trapped into responding to one of those "But could this happen? And then what if this was to happen as a result, and then that was to happen and then..." questions, it's extremely difficult to pull yourself out of that particular quicksand and get back to the point of your interview: your key messages. Simply label the question as speculation and politely refuse to answer it.

4. Do not speak to policy or policy implementation
   This is a close relative of not speaking to others' expertise. You may have provided input into the policymaking process. In all probability, so did others with different areas of expertise and different perspectives. And you, in your role as a researcher, are unlikely to have actually set the policy. Ultimately, policy is decided upon and implemented by governments, corporations, and other institutions. (And at times, your specific input can seem to have been ignored.) The reporter may question you about this.

Your answer should be along the same lines as the answer to Rule 2. Something like: "I can only speak to the information I provided. I don't know what other information was provided or what other factors had to be considered in making the final decision. For that answer you'll have to ask the (decision-making body's) spokesperson."

## Giving "Good" Answers

A major part of a good answer, from your perspective, is making sure to deliver your key messages. You've decided they are the points you want the audience to remember, so you have to get them out there.

To engage the audience, your response should extend beyond the research itself to answer the "so what?" question. That is, if you were to speak solely to your research result and say: "I have discovered X," the audience's reaction would likely be: so what? Why should I care? Let them know the benefits – what's in it for them – right off the top: "I've discovered X and that is really good news for people who..." A good answer should also reflect the concerns of the audience most likely to be reached through your interview. You want what you say to resonate with them. If, for instance, the reporter works for a business or finance-oriented medium, and the interview is on an area of research that speeds up tree growth, your key messages might say something about what this will mean for job opportunities, competitiveness, and a stronger economy for a given area. If the medium is more generalized – a community newspaper, say – then key messages (on that same area of research, accelerated tree growth) might put more emphasis on environmental responsibility or stabilizing the community and its economy by minimizing the boom-bust effect in forest-dependent communities. Answering the "why" question right away is another good way to frame your response. It instantly links what you are doing to your motive for doing it. For instance: "Because there is a lot of concern about invasive species, we are taking the following steps..."

And, finally, remember that a good answer is always about people. As an example, think about statistical summaries released by national statistics organizations. Those summaries contain important and interesting information. And reporters certainly interview leading statisticians to get context on the statistics. But then, to drive the importance of the story home, the journalists always seek out and report on the people who exemplify those statistics or are affected by them. The people, not the numbers, are the story.

## Bridging

Bridging techniques are response strategies that help you move, quickly and relatively seamlessly, away from difficult or awkward parts of questions and to answer in ways that get you back to the ground you want to cover – the delivery of your key messages.

Following are some examples of difficult types of questions and bridges to a response.

1. "Hasn't this research project been a disaster from the start?"
   Response strategy: Bridge from the alleged problem to the solution. "Thank you for asking. Let me bring you up to speed on that."

   By the way, stay away from using or repeating negative words in your responses. In the above case, if you responded by saying: "I wouldn't call it a disaster...", the result, regardless of what else you might say, is almost guaranteed to be a headline, or the opening line of a news story, that will read something like: "Dr. X denies research program disaster." And "disaster" will be the word most people remember and associate with your story.

2. "Hasn't this research project been an enormously expensive undertaking?"
   Response strategy: If there is some truth to the question, make a small concession. Then move the discussion forward. "That's partly true, but it's certainly not the whole story. Let me tell you about..."

3. The reporter asks a confusing four- or five-part question.
   Response strategy: Cherry pick. Don't try to answer everything all at once. You could end up tripping over yourself. Choose the one question you prefer to answer and respond to it. If the reporter wants answers to any of the other parts, he or she will ask them again.

4. The reporter asks a question that you find is either too specific or too generalized.
   Response strategy: Telescope or microscope. In the first instance, you want to telescope – back away from the specific and look at things from a higher level. "There's a bigger picture here. Let me elaborate on that..." In the second case, you do exactly the opposite and microscope – take a closer look at the details. "Let me deal a bit more specifically with your question..."

5. The reporter asks a question that reflects an oppositional point of view.
   Response strategy: Parallel construction. Respectfully make it clear that there are other legitimate points of view. "I am aware of those comments. But there are certainly other ways to look at the issue. If you take into consideration..."

6. The loaded question: "How much damage has this allegation done to your organization?
   Response strategy: Don't accept the premise by ignoring it. Challenge it politely but firmly, and then move on to your messages. "The allegation was, in fact, baseless, but it helped us focus and work harder and, as a result we've accomplished..."

7. The "sympathetic" question: "It's a shame you lost all that funding. It must make it really difficult to do your job effectively."
   Response strategy: Don't be fooled into agreeing. "It's actually provided an opportunity to refocus and key in on a couple of top priorities so that we've accomplished..."

## The News Mix – Competition

Newspapers have a finite amount of space into which they cram as much news as they can. Electronic media are constrained by a limited number of minutes in which they broadcast the news. Your story is competing for time and space with every other news event of the day. A crisis in a political hotspot; outbreaks of war; national and international politics and elections; plane crashes; fire; flood; drought; famine; celebrity marriages, affairs, divorces, overdoses, and rehab are all part of the news mix. And those are only some of the outside influences. Within your interviewer's organization, reporters will be competing with each other, fighting to get their own more localized stories published or aired – news from city hall, educational institutions, the courts, charitable organizations, stories about

local traffic issues, police and fire calls, to name just some of the contenders.

Expect that only a very small segment of what you said will remain in the interview when it runs. Even though you may have spent 30 minutes or more answering questions, the final story is quite likely to be condensed into something like 60 seconds of airtime or 300 or so words in a newspaper article. And to complete and balance the story, in addition to your comments as the science expert on the subject, comments from any or all of government, industry, workers, ENGOs, academics, local residents, or others interested in or affected by the subject may be included.

Those last bits of information are mentioned to underline how important the need is for you to keep your key messages concise, clear, and compelling. Good luck. And stay focused.

# 8 CONSIDERATIONS FOR SUCCESS

# Considerations for Success

Communication efforts succeed differently. This section outlines twelve considerations for successful communication, extracted from the "Success Stories" presented in this manual and from communication theory in general.

1. Make Communications a Top Priority
   With the help of experts, forest science communication can be done and supported by nearly every scientist. In addition, your organization's management staff should take an active role in the communication process. They can help with the conception of the organizational identity and the desired image.

   *Success Stories 1, 3, 6, 8, 11*

2. Know Who You Are
   Before starting any communication process, you need to establish your organizational identity – who you are or who you want to be. Part of identity construction involves acknowledging your organization's needs and the targets it wants to reach. This information will help to define yourself in communications with stakeholders.

   *Success Stories 1, 2, 5, 6*

3. Use Expert Knowledge about Communications
   It is true that everyone communicates something every day. But professional communication is a field of activity for experts. When possible, consult with a communications specialist about your communication targets, the application of instruments, and skill-building.

   *Success Stories 1, 4, 6, 10*

4. Establish a Strategy
   At their core, successful communications efforts are those that are well planned and organized. Whatever instrument you use, it needs to be carefully adapted to your communication objectives, your target groups, and the other communication instruments you use.

   *Success Stories 1, 2, 4, 5, 7, 8, 9, 10, 11*

5. Identify Your Target Group
   "The public" doesn't exist; instead, there are different and distinct parts of the public with whom you communicate. Each of these distinct audiences needs to first be identified and then addressed in an appropriate way. To identify your audiences, find out who is important to achieving your objectives and who can help to legitimize your organization. Remember that, sometimes, direct communication is not the only way to reach your target group – influential, well-connected audience members known as "multipliers" often can indirectly enhance your communication by disseminating information for you and speaking on your behalf.

   *All Success Stories*

6. Use a Window of Opportunity
   In communication, it is all about timing. Simply put: the timing of communication is related to the effectiveness of communication. Plan carefully so that your messages reach your audiences at the best time and when you have their attention.

   *Success Stories 3, 5, 6, 11*

7. Participate in Coalitions
   Collaborative communication helps to achieve success. Consider your role as convener of stakeholders as you share and interpret science information to help in decision- and policymaking.

   *Success Stories 2, 3, 5, 7, 8, 10, 11*

8. Instill Confidence
   Realize that your audience may consist of lay people in your field. Your messages should be understandable for your audience to make informed choices. Your communications should instill confidence both in the credibility of forest science you present and in the audience's ability to understand it in a way that is meaningful to their needs.

   *Success Stories 1, 2, 3, 6, 8*

9. Meet the Audience Where It Is
   Too often, science topics are impersonal because they are far removed from the experiences of lay people. Always try to frame your messages

with the help of examples from everyday life. Use positive symbols, pictures, and metaphors for simplification to gain understanding. Consider methods that speak to the audience, such as engagement in management practices and monitoring, role play, and competitions.

*Success Stories 2, 6, 7, 9, 11*

10. Host Events

    Public events can help you to gain understanding and confidence in your research from others. Waiting for a good story to tell is not enough – instead, proactively seek out opportunities. Guest speaker sessions, workshops, consultations, and new laboratory inaugurations are just some examples of public events that can engage audiences with science information.

    *Success Stories 3, 5, 7, 9, 10*

11. Make Communication Interactive

    Communication is not just about sending a message; the communication process starts with listening. If you listen to your organization's stakeholders, you learn about their demands and wishes. Including this knowledge in your messages is the first step toward a participative communication process. In addition, stakeholders actively involved in your communications actions will be some of the best multipliers for your ideas.

    *Success Stories 1, 5, 6, 8, 9, 11*

12. Make Informal Contacts

    The most common instruments – like press releases, Web pages, and newsletters – have their place in the communications landscape. But these efforts should be supplemented by informal networking. Meaningful interactions with policymakers, land managers, national media outlets, or opinion leaders of your target groups help to pave the way for an unhampered flow of information.

    *Success Stories 3, 5, 7, 8, 11*

# 9 SUCCESS STORIES

1

# "IUFRO Spotlight"

*GERDA WOLFRUM*

Time Period: October 2011 – present

Problem: Introducing significant published forest research findings from IUFRO members to a worldwide network of decision makers, policymakers, and other stakeholders in a non-scientific language.

Communication Instruments Used: "IUFRO Spotlight" electronic brief, blog, listservers, Twitter, Facebook.

Reasons for Success: Plain language that quickly helps readers understand why a particular research finding or subject is important, well-defined publication process, close coordination with scientist whose research is featured.

Research results are usually published in scientific journals or series and presented to fellow scientists at conferences. However, these journals and conferences do not really cater to the need of policymakers and other stakeholders for relevant, fact-based, and easily understood information. Since policymakers are not necessarily scientists, they prefer to read in "plain language" and learn quickly why a particular research finding or subject is important and what the implications might be.

Scientists should, therefore, think about ways of providing this type of information, because, otherwise, they cannot really expect that their research will ever have an impact on decisions made by policymakers. Here, the International Union of Forest Research Organizations (IUFRO) offers its members the opportunity to cooperate with a communicator to prepare a suitable communication product for this purpose. This communication product is called "IUFRO Spotlight" and aims to introduce, in a timely fashion, significant published findings in forest research from IUFRO members or those involving IUFRO officeholders to a worldwide network of decision makers, policymakers, and researchers on a regular basis. It is

intended as a "teaser" – to pique policymakers' interest enough that, if the article is about an issue in which they have some involvement, it will spur them to go to the full report to learn more.

International Union of Forest Research Organizations
Union Internationale des Instituts de Recherches Forestières | Unión Internacional de Organizaciones de Investigación Forestal | Internationaler Verband Forstlicher Forschungsanstalten

IUFRO SPOTLIGHT

***IUFRO Spotlight*** is an initiative of the International Union of Forest Research Organizations. Its aim is to introduce, in a timely fashion, significant findings in forest research from IUFRO officeholders and member organizations to a worldwide network of decision makers, policy makers and researchers.

IUFRO will encapsulate, and distribute in plain language, brief, topical and policy-relevant highlights of those findings, along with information on where/how to access the full documents. The ***IUFRO Spotlight*** findings will be distributed in a periodic series of emails as well as blog postings.

## Urban Park Perks' Research Rounded Up & Rated

*IUFRO Spotlight #13 / May 2013*

Green areas and parks provide many benefits to urban spaces. That's what people have said for years – but without an awful lot of evidence to back it up.

Now there is an evidence-based report, ***Benefits of Urban Parks: A systematic review,*** offering some support to that assertion.

The recent study, one the authors believe is a first-of-its-kind, draws conclusions based on green space related research published in a number of top-level scientific publications.

It offers a comprehensive and critical assessment that evaluates the strength of the evidence supporting a series of park benefits.

*Floodplain forests in Leipzig, Germany. Photo Matilda Annerstedt.*

Across the globe, the report will be a useful tool for planners, policy-makers and politicians, especially at the municipal level, giving them a better foundation on which to base decisions for building or preserving urban parks. At the same time green space managers can use the findings to argue for parks based on a particular range of benefits (while supporting research in some of the less-explored areas) and researchers can begin to address some of the identified research gaps.

Already, green space managers in cities such as Helsinki, Oslo and New York have informed the authors that they will begin using the report immediately.

The report finds a significant amount of evidence to back up claims that green spaces do benefit urban biodiversity, local cooling and increased property values, as well as some evidence – ranging from moderate to strong – that indicates direct and indirect health benefits.

Screen shot of the May 2013 issue of "IUFRO Spotlight."

## What is IUFRO's Declared Communication Goal?

"Increase visibility of science-based research findings."

The International Union of Forest Research Organizations (IUFRO) is a non-profit, non-governmental international network of forest scientists. It unites some 15,000 scientists in over 600 member organizations (research organizations, universities, NGOs, etc.) in more than 100 countries. Scientists cooperate in IUFRO on a voluntary basis.

The primary aim of the Union is to promote international cooperation in scientific studies embracing the whole field of research related to forests and trees. This shall be achieved, among other things, by promoting the dissemination and application of research results, including science-policy interaction.

Consequently, it is one of IUFRO's declared goals to "strengthen communication within the scientific community and increase visibility of science-based research findings." IUFRO offers its members and officeholders several mediums to communicate their scientific findings to the wider IUFRO audience and beyond. IUFRO supports the dissemination of information primarily through electronic newsletters and releases; mailings; website postings; and social media, which currently includes a blog, Twitter, Facebook, and YouTube accounts. Through these media, IUFRO also helps to make its member organizations and affiliated researchers and their scientific achievements more visible.

## What is the Main Purpose of "IUFRO Spotlight"?

"Provide policymakers with relevant scientific information in plain language."

IUFRO has identified a particular need expressed by policy- and decision makers and other stakeholders: to be provided with relevant and fresh scientific information on topical issues related to forests and trees in a non-scientific language. This need is catered to by policy briefs that are published as accompanying documents of major IUFRO publications (e.g., assessment reports of the Global Forest Expert Panel [GFEP] or books by the Special Project on World Forests, Society and Environment [WFSE]). In addition, IUFRO explicitly wants to inform this target audience about publications produced within the network of member organizations and affiliate researchers. For this particular purpose, IUFRO started to develop a new and concise communication product called "IUFRO Spotlight" in 2011.

## How Does IUFRO "Spotlight" Achieve this Purpose?

"It encapsulates, and distributes in plain English language, brief, topical, and policy-relevant highlights of published scientific findings, along with information on where and how to access the full documents."

Published findings reported in "IUFRO Spotlight" are submitted by IUFRO officeholders and members. All members and officeholders are welcome to suggest publications that should be highlighted in "Spotlight," provided that these publications present fresh findings that address topics of policy relevance on a larger geographic scale and are, ideally, accessible online.

The "IUFRO Spotlight" articles are distributed in a periodic series of emails as well as blog postings to all IUFRO contacts, IUFRO mailing lists, and other lists such as forest-l, biodiversity-l, as well as groups of communicators including the Collaborative Partnership on Forests (CPF) and the ECE/FAO Team of Specialists of Forest Communications (Forest Communicators' Network). Tweets and Facebook entries that accompany the release of a "Spotlight" reach an even wider audience by taking the readers via the "Spotlight" directly to the research findings.

IUFRO highlights and circulates these findings to a broad audience but, in doing so, acts only as a conduit. The quality and accuracy of the publications are the responsibility of the authors and the member organization. Given the complexity in a global, voluntary-based organization like IUFRO, it would be difficult just to speak with one "IUFRO voice" to policy- and decision makers and to take full responsibility for the contents of the research that "Spotlight" promotes.

## How Was "IUFRO Spotlight" Developed and How is it Prepared?

The steps toward a new communication product:

1. Verify the need for a new communication product and define its objective(s)
2. Define the target audience(s) and how to reach them (mailing lists, social media, website) and determine the frequency of distribution
3. Decide on an appealing design for the product in line with the corporate identity (develop a product title, layout, and format)
4. Define selection criteria for the publications that shall be highlighted and find ways to advertise the submission of publications

5. Decide on who is going to do the actual "writing" (science writer)
6. Estimate the costs (for contracting a science writer, for example) and necessary work time for a given period of time based on the length and detail of the article
7. Seek approval of the planned product from corresponding authorities
8. Outline the procedure of developing the text
9. Determine who will be mentioned as "author" and clarify the responsibilities for the contents
10. Complement the text with adequate photos and identify useful hyperlinks
11. Find ways of evaluating the success of the communication product

One of the key decisions in the product development is to determine who should do the actual writing. The presentation of scientific findings in a digestible way for the target audience requires excellent communication skills. For IUFRO as an umbrella organization and a loose network of scientists, it was important to find a professional science writer for this task.

Of course, there are scientists out there who are good writers, but it would be hard to identify them and even harder to convince them to spend a lot of time on a communication activity. With a science writer and communicator, the scientist would still have to agree to spend some time on the preparation of the product, but it would be reduced to explaining what was important and newsworthy about the finding and checking the accuracy of the final text.

IUFRO, for example, contracted a writer with a journalism background who is a native English speaker and who, prior to retirement, worked for many years as a communicator with the Canadian Forest Service, where he developed his familiarity with forest science.

Authorship of the "Spotlight" also became an issue. The first few articles were "authored" by senior IUFRO officeholders knowledgeable in the field of the research presented, as we hoped that this would increase credibility of the texts. However, some officeholders did not feel comfortable with this procedure and it was abandoned. Now "Spotlight" is a media product "made by IUFRO" and

no specific author is mentioned. The author(s) of the publication that is being promoted is (are) named prominently in the text.

After a preparatory meeting with the science writer in July 2011, the first step was to collect suitable material for developing a schedule and to elaborate the procedure of preparing the individual articles. A series of IUFRO board members and other officeholders were contacted, and several proposals of publications that could be highlighted in "Spotlight" were received.

The writing of the text follows a scheme that was elaborated by the science writer together with IUFRO Headquarters. On the basis of a set of questions that follow a basic pattern and that the authors of the publication to be highlighted are asked to answer, the science writer develops a text. These questions are:

- Why was this research undertaken?
- What's the goal?
- What obstacles had to be (or have to be) overcome?
- What will help the findings become part of policy/management decisions?
- What key messages concerning these findings should policymakers take away with them?

Usually one or two questions specific to the particular subject are added.

The basic structure of the text, which is about a page and a half at most, is as follows:

- Explanation of significant findings (to underline importance of work done by IUFRO members)
- Explanation of why these findings are of policy relevance
- Example(s) to illustrate the benefits of the findings and their applications

Most scientists seem quite happy to have their work promoted and know that they will have the opportunity to review the copy before it is published. The article's style and tone are determined by IUFRO, so the scientists' comments and changes relate only to issues of accuracy.

## Has "Spotlight" Been a Success?

"Publishing research is good, but reaching an audience who actually reads it is better."

Admittedly, it is not an easy task to measure whether "Spotlight" succeeds in taking the audience to the research publication that is being promoted. On the one hand, one can count website visits and clicks and measure the time a visitor stays on a site. On the other hand, one can see from the researchers' interest in having their findings highlighted by means of "Spotlight" if they themselves consider it a useful tool.

When the "Spotlight" series was launched in October 2011 with a message from the IUFRO President titled "Forest Research Matters," there were several "Spotlight" issues in the pipeline, which indicated great interest. Thus, in the first year (until October 2012), a total of nine "Spotlights" were published, but only six followed in 2013. To reverse this trend, "Spotlight" was advertised strongly among IUFRO members and, in addition, a special series of IUFRO World Congress-related "Spotlights" were released in 2014. This series started in March 2014 and, on an almost monthly basis, highlighted Congress sessions to raise awareness of the Congress themes. This initiative, together with the fact that the new IUFRO homepage now offers a section titled "News from Members," demonstrates IUFRO's strong commitment to supporting the communication efforts of its members.

Nevertheless, after the IUFRO 2014 World Congress, a systematic evaluation of the "Spotlight" initiative will all take place. For this purpose, IUFRO members and officeholders will be asked for their opinions and assessment of "Spotlight" by means of a questionnaire. Whether "Spotlight" will continue in the same or in a modified format will then have to be decided on the basis of the feedback received, but the hope is that members will realize the usefulness of this service and cooperate to make it a great success in the future.

Visit http://www.iufro.org/media/iufro-spotlights/ to read and download all "IUFRO Spotlight" articles published so far. For more information about the publication, send an email to office@iufro.org.

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# Assessing the Cognitive Autonomy of Audiences with Respect to Tree– and Forest-Related Media Messages

*JULIE MATAGNE, CHRISTINE FARCY, THIERRY DE SMEDT, PIERRE FASTREZ*

Time period: 2011

Problem: Determine teenagers' ability to comprehend, contextualize, compare, and critically evaluate forest-related media messages.

Communication Instruments Used: Questionnaire and posters.

Reasons for Success: Two-part questionnaire – the first part determined socio-demographic characteristics of the respondents and their prior experiences with forests; the second probed their cognitive autonomy.

## Background

The Walloon Forest in Belgium can be considered a laboratory of periurban and multi-functional forest. Crowded space at the crossroads of major highways, both heavily forested (32% of its area) and densely populated (198 inhabitants per $km^2$), the Walloon Forest is owned jointly by public and private owners. The forest also has considerable land fragmentation, with the size of the private forests averaging only 2.5 hectares. The Forest Code of 2008, which replaces that of 1854, dictates multi-functionality as a cornerstone of forest management.

Public perceptions and uses of the Walloon Forest were the subject of a recent study (Bodson 2005). For half of the representative sample of 1,038 individuals, the relationship to the forest was concrete and based on regular use. The perception of the population, however, is far from the reality of the sector; indeed for a smaller but nevertheless significant percentage of the sample, activities such as adventure races, hunting, and logging should be prohibited. The percentage in favor of a logging ban was particularly high among those

between 15 and 24 years of age. Some 46% of respondents believed that pollution and acid rain, in particular, were a threat to the forest (a common concern in the late 1980s), while 18% thought that deforestation was a threat (despite the fact that forest area has tended to grow for several decades). For nearly 49% of the respondents, the main function of the forest was to provide an ecosystem for flora and fauna. For 21%, the main function of the forest was to enhance air quality. And for only 9%, the main function of the forest was timber production. Similar results were observed in France (Dobré et al. 2006).

The results of the 2005 Walloon Forest study are regularly brought up in debates like the one currently under way in Wallonia. This debate concerns the imbalance between forest and game (and ungulates, in particular). Other debates concern the felling of trees and sometimes involve spectacular actions such as tree occupations, attachment to trees with chains, or marches against the felling in France, Canada, and the USA. In Switzerland, where two successive studies have recently been conducted, a change in public opinion can be seen to be occurring, with a possibility of gradual reconciliation emerging as a result (Hunziker et al. 2013).

This study fits into this context of challenges faced by the public forest sector to manage its perception by the general public and to position its communication, in particular vis-à-vis environmentalists. In an exploratory analysis conducted in 2012, the forestry sector was indeed found to communicate mixed messages, with some aspects of these messages borrowed from the environmentalist world but not others. Thus, there is a need for clearer and more effective communication.

In this success story, we examine the sociocognitive abilities of the message recipients rather than the messages themselves. We did this to identify what is understood in relation to the intentions of the authors, in relation to characteristics of the recipients, and in relation to the media used to communicate the messages. In doing this, we asked ourselves the following questions: To what extent is the public cognitively autonomous with respect to tree- and forest-related media messages? Does prior experience with forests or forestry education affect the degree of cognitive autonomy?

Cognitive autonomy with respect to media messages was defined within the context of the present research as the ability to:

- Comprehend (i.e., identify the meanings of messages and understand expressed points of view)

- Contextualize (i.e., identify authors, intentions, and embed these in a given context)
- Compare (i.e., compare and contrast different messages and author intentions)
- Critically evaluate (i.e., position oneself with respect to expressed points of view and make judgments).

## Target Audience

For assessment of the degree of cognitive autonomy with respect to tree- and forest-related messages, we involved teenagers 16-18 years of age in our research. This was done because this age range is frequently targeted by environmental communication efforts (Rametsteiner et al. 2009, Rametsteiner and Kraxner 2003) and represents the future of society, and so will presumably be affected by changes in the communication strategies of tree and forest stakeholders in the not-too-distant future. The teenagers participated in the research as part of their high school education and were not compensated for their involvement. A large number of participants with a fairly similar demographic profile could be surveyed in such a manner.

Two studies were conducted. In the first study, 52 high school students (average age = 17.25 years) were recruited from two French-speaking high schools in Belgium. One school was urban and one was rural, with forests nearby. The schools were specially selected to obtain respondents with different prior experiences with forests. In the second study, 145 high school students (average age 16.5 years) were recruited from three French-speaking high schools in Belgium: one urban, one rural, and one specifically offering a curriculum in agro-forestry. This latter forestry school was added to investigate the role of explicit forest education in addition to informal interaction with the forest milieu (the school was also located in a rural area).

## Communication Methods Used

Three forest-related posters were selected for presentation to the participants in the two studies to evaluate the cognitive autonomy of the students, i.e., their capacity to understand, contextualize, compare, and make a critical judgment about media they face. The first poster was produced by Greenpeace on the topic of deforestation reduction in the context of the 2009 Copenhagen climate summit. The second poster was designed by the French National Committee for the Development of Wood (CNDB) to advertise a partnership between a French forestry organization

(France Bois Forêt) and the French Ministry of Agriculture for the promotion of the use of wood as a sustainable product. The third poster was created by the Forest Stewardship Council (FSC) and supported by the World Wildlife Fund (WWF) to not only promote the activities and label of the FSC, but also encourage people to purchase FSC-certified wood and paper. The three posters were selected for their contrasting positions on the theme of forest management:

- The first poster advocates stopping deforestation.
- The second poster promotes wood consumption.
- The third poster promotes the consumption of only wood from sustainably managed forests, and thus occupies a middle position.

## Process of Implementing the Methods

The participants were instructed to complete a two-part questionnaire. The first part was composed of seven questions used to determine the socio-demographic characteristics of the respondents (e.g., age, gender, parental occupations) and nine questions used to determine the prior experiences of the respondents with forests (e.g., number of forest visits during the past year; length of longest forest visit; types of activities engaged in during forest visit including camping, harvesting, hunting, observing, playing, wandering, etc.; and extent to which respondent stayed on marked trails and paths during forest visit). The Forest Experience Score was calculated on the basis of the responses to the nine "forest visit" questions.

The second part of the questionnaire required the participants to read and react to the posters. Questions were posed to probe for the following:

- Comprehension of message: understanding of the poster and its message
- Contextualization of message: identification of the institution(s) that produced the message, their intentions, and the types of people for whom the message is not intended
- Comparison of messages: assessment of compatibility of messages communicated by the posters
- Critical evaluation of messages: taking of a position with respect to the posters' messages

## Measuring Effect

### Comprehension of Poster Messages

The teenagers in our study showed a limited ability to understand the messages conveyed by the posters. The majority could describe the posters and their messages but, nevertheless provided only partial descriptions when doing this. The partial descriptions of the posters were slightly better in the second study than in the first study.

While the poster descriptions were more accurate for the CNDB poster, the descriptions of the messages were similarly accurate across posters. The forestry students understood the CNDB poster's message better relative to the other students. And the Forest Experience Score correlated with comprehension of only the FSC poster in the first study.

### Contextualization of the Poster Messages

The results here were threefold. Firstly, the majority of the students showed difficulties identifying the authors of the posters. Greenpeace was correctly identified by most of the students, but only a small percentage were able to describe the institutional quality of the organization. Other poster authors were identified only in part. Identification of the CNDB poster authors proved especially problematic for the students. The forestry students were better able to do this than the other students, but the ability of all the students to qualify the authors of the posters was still found to be independent of their Forest Experience Scores.

Secondly, the majority of the students managed to identify the intentions of the poster authors when given a closed list of items to do this. Only the forestry students had a harder time identifying the intentions of Greenpeace compared to the other students.

Thirdly, the students found it very difficult to identify the audiences not targeted by the posters. Most of them failed to do this. The forestry students and those students with a higher Forest Experience Score were better able to identity a non-target audience compared to the other students, but only for the Greenpeace poster.

## Comparison of Poster Messages

Our results showed it to be difficult for the students to compare the poster messages when asked to do this. They were only partially able to identify which pairs of messages were compatible or incompatible. Only about two-

thirds of the students received a high score when asked to compare the poster messages without justification of their answers (i.e., correctly identified 2 out of 3 relationships in the second study). Only one-sixth of the students received a high score when asked to compare the poster messages and also justify their answers in the second study. No significant correlations were found between the ability to compare the poster messages and either the Forest Experience Scores of the students or their participation in forestry education.

### Positions on Poster Messages and Forest-Related Issues

The vast majority of the respondents declared that they had not learned anything from reading the posters. Those declaring that they had learned something mentioned the CNDB poster most often. When we asked which poster they would choose to show others "for a better future," the majority of the respondents chose on the basis of the poster's message. A minority chose on the basis of the persuasion techniques used. And the forestry students chose only on the basis of the poster's message.

The students agreed more often with the message of each poster than they disagreed with the message. That is, the students rarely reported being opposed to the poster messages. Their cumulative positions on the poster messages were mostly incoherent, i.e., they agreed to contradictory messages. Nevertheless, the agreement rate for the message of the FSC poster positively correlated with the Forest Experience Scores of the students and was higher for the forestry students than for the other students.

When asked to identify the different functions of a forest, the responses of the students were often limited and depended on forestry education. The majority of students were able to cite several functions falling into two or three core categories: ecosystem, economic resource, and venue for well-being. The forestry students cited a greater variety of forest functions than the other students. They also cited functions concerned with the forest as a resource more often than the other students. When asked about the importance of the different functions of the forest, the forestry students most often chose serving as an economic resource as most important, directly followed by serving as an ecosystem. The general education students most frequently cited the ecosystem functions of the forest and always considered these most important when explicitly asked about this.

## Conclusion

The conclusions to be drawn from the present studies are twofold. First, teenagers have only a limited degree of cognitive autonomy when asked to comprehend, contextualize, compare, and critically evaluate forest-related media messages. Second, neither prior experience with forests nor involvement in forestry education affected the students' overall degree of cognitive autonomy. These findings show that even if young people understand the media message at least in part, they still have serious difficulties identifying the authors of the messages and the communication strategies used by the authors.

The implications of these findings are that new behaviors in forest communication might help the public better situate the relevant issues, actors, and themes. Four points for improvement can be mentioned in particular.

First, make the institutional status of the author of the message more explicit. A common media strategy is for the authors to conceal their institutional status either behind a friendly avatar or a striking metaphor that may, nevertheless, be obscure to the public on many occasions. Simple and clear conveyance of the institutional status of the authors of the message might, therefore, be more advantageous for adequate comprehension and interpretation of the desired message by the public.

Second, avoid presentation of overly simplistic messages and promote presentation of realistic messages presenting multiple points of view. Given the complexity of forest reality today, the challenges it is facing, and the nature of the players involved, simplistic messages stating "Save the trees" or "Trees are my friends" will not help the public acquire the knowledge needed to understand things and play a role in forestry issues, even if it should aspire to.

Third, articulate the specific competencies and expertise of forest management professionals. The world of professionals involved in forest management involves individuals with very different backgrounds, interests, and skills. This information is little known by the public and poorly identified for the public, which leaves the public a prisoner of its own stereotypes on account of this lack of information. Once again, public communication must articulate who is behind messages being sent, the techniques being used to do this, and the skills required for the management of forests.

Fourth, practice with the comparative analysis of media messages should be encouraged in schools, associations of stakeholders, and other organizations. This is not the responsibility of forest professionals but, rather, of society as a whole, and training and educational institutions in particular.

Optimal media reading consists of deciphering the media content. A media-literate person is capable of decoding, contextualizing, understanding, and evaluating a variety of media content: a fiction movie, an editorial, a website blog, medical instructions, and the interface for an Internet search engine. Media education should help individuals acquire the necessary competencies, which may include:

- The informational competencies in reading media with respect to the content and the representational systems they use, which will also call upon the reader's intellectual and cultural capacities to make sense of the incoming information
- The technical competencies in reading media with respect to the techniques necessary to produce, distribute, store, and access them
- The social competences in reading media with regard to the institutional context of media production, the intentions of the media designers, the cultural stereotypes that are being called upon and possibly reinforced, and so forth

More broadly, it appears from our investigation that the public has some capabilities and aspirations toward an optimal readout of messages, by exploiting its interpretative and critical potential. It is therefore up to the communicators in the forestry sector to decide which paradigm they refer to when they build their communication with the public.

The first paradigm is to consider the public as consisting of copycats. The following maxims can then be assumed to apply:

- Communicators must produce messages that are simple, common, universal, concrete, and efficient.
- Communicators must be credible and, therefore, should say what they think everybody loves to repeat.
- Influence is more efficient than information.

- The public needs to be impacted rather than informed and expected to act and react autonomously.

On the contrary, in the second paradigm (which we advocate), communicators may feel that they have an interest to benefit from a curious, proactive, and committed public. In this case, the following maxims can then be assumed to apply:

- Foster autonomy of the people.
- Communicate through ideas rather than slogans.
- Favor democracy and a diversity of opinions.
- Provide information that is useful and can thus help people make informed choices.
- Let the public know "who does what" and thus have sufficient knowledge.
- Make "who forest agents are" explicit (in terms of institutional position, field of competence, etc.).
- Explain in detail what trees and forest are, what the stakes of forest management are, and what the added value of forest administration is with respect to other agents.
- Distinguish social and institutional categories of audience for message formulation as opposed to using one message or one slogan for all.
- Take a position as a referee between stakeholders and not as a fellow competitor.
- Develop communication that promotes a dynamic representation of trees and forests in the audience's mind.
- Focus on the life cycles of forests as systems and not individual symbolic trees.
- Show the life of forests and present it at the scale of animal life, as the natural phenomenon of live-give-die.
- Articulate the multiple functions of forests, without opposing them (e.g., as a natural ecosystem, an economic resource, a place of leisure, a place for education, and a cultural value).

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3

# Legalizing Prescribed Burning in Bhutan: A Successful Example of an Evidence-Based Policy Decision

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Time Period: 2004 – 2012

Problem: Illegal status of land management practices as the mainstay of the local economy necessitated the generation of scientific evidence and its strategic communication to stakeholders to bring about the adjustment of the legal framework.

Communication Instruments Used: Formalized stakeholder workshops, ad-hoc workshops, participatory learning and action, formal trainings, policy briefs, public media reports, utilization of informal networks for effective communication.

Reasons for Success: Thorough stakeholder analysis, active involvement of a large number of stakeholders, clear communication strategy, optimal utilization of the issue-attention cycle.

## Background

Chir pine *(Pinus roxburghii)* forests of the inner dry valleys of the Himalayas have evolved with natural fires and have additionally been shaped by an intense history of anthropogenic fires. Covering 2.7% of Bhutan's land area, these forests presently experience large fires of mostly anthropogenic origin once every two to five years. In valleys, where East Indian lemon grass *(Cymbopogon flexuosus)* grows in the understory of open Chir pine forests, people mostly set fires to induce the growth of fresh shoots of the grass, which they subsequently harvest and distil locally for its essential oil (lemon grass oil). Historically, this cottage industry has formed the backbone of the local economy in two valleys of eastern Bhutan. Until recently, fires have been a prohibited practice. Facilitated largely

by the scientific evidence generated within the study described here, prescribed burning was approved as a legal land management tool in 2012.

The head of the Social Forestry and Extension Division (SFED), the unit at that time responsible for community-based forest and fire management under the Department of Forest and Park Services (DoFPS), recognized the need for scientific evidence to foster a solution to the deadlock of regulations and ground reality regarding the use of fire for land management. In 2004, SFED made use of a formal annual research coordination meeting to propose a study on the effects of fire in Chir Pine–Lemon Grass ecosystems in Eastern Bhutan. The formal meeting, with wide stakeholder representation, deliberated and approved a mandate for the forestry sectors of two regionally based, integrated Renewable Natural Resources Research Centers, along with SFED, to carry out the study encompassing both biophysical as well as socioeconomic aspects. The study was conducted within the framework of the Conifer Research and Training Partnership, jointly funded by the governments of Bhutan and Austria.

## Target Audience

**DoFPS** – As the agency responsible for enforcing the Forest and Nature Conservation Act and Rules, DoFPS sought to find an optimal solution to the problem of illegally set fires in Chir pine forests. This balanced approach was to address ecological restoration and fire hazard reduction objectives as well as local socio economic needs.

**Local communities** – The local population engaged in lemon grass harvesting activities were primarily responsible for illegal fires in Chir pine forests. They were interested in a legalized approach to prescribed burning that allowed them to continue to source the majority of their cash income via legal means.

**Cottage industry entrepreneurs** – Members of the local community have, over the years, obtained support from various external sources for purchasing small, portable distillation units to distill lemon grass oil. They employed fellow local community members as laborers for lemon grass harvesting and distillation.

## Communication Methods Used

DoFPS, local representatives, and forest researchers structured workshops and formulated the research agenda and a communication plan on an annual basis. As such, results were regularly communicated to the clients of research (DoFPS and

local representatives) and other stakeholders. Theoretical and practical trainings were used as means of participant sensitization and knowledge transfer on fire ecology, prescribed burning, and fire safety. Workshops and public meetings were held for local communities and other stakeholders to raise their awareness about the research study, associated data collection, and prescribed burning techniques and to communicate research results. Local media were also informed about prescribed burns and were usually present when they were conducted. In all, these processes generated awareness of the research study and its findings and contributed to the overall objective of advancing the legalization of prescribed burning techniques based on supporting scientific evidence.

Through financial support by the Bhutan Trust Fund for Environmental Conservation (BTFEC) and United Nations Development Programme–Small Grants Programme, DoFPS initiated the formation of community forest fire management groups. These groups were developed to raise fire management awareness for local populations living in fire-prone areas, mobilize them to address related issues, train them on prescribed burning techniques, and generate enhanced communication links between them and government officials. Additionally, forest extension staff from fire-prone locations throughout the country were trained on prescribed burning techniques and fire management.

DoFPS, with support of the United Nations Development-Small Grants Programme, similarly initiated the establishment of a forest fire volunteer organization, which provided support for firefighting vigilance and the expediting of information transfer on forest fire-related issues among the local population. The forest fire volunteer organization participated in the experimental prescribed burns within the framework of the study and facilitated a positive interaction between farmers and civil servants. Direct communication with the Director of DoFPS and the ad-hoc preparation of a policy brief at a critical project milestone ensured that public opinion in DoFPS remained positive and supported the use of prescribed fires.

Informal communication pathways between researchers, forest extension staff, local communities, SFED, BTFEC, and the legal section of DoFPS were continuously used to keep each other informed and to raise any related issues or realize any opportunity that arose. As a result, the researchers were made aware of the drafting of the new Forest Fire Rules in 2012 and were able to include the provision of prescribed fire as a land management tool in the document. Details of this process are described in the following section.

## Process of Implementing the Methods

### Study Initiation and Stakeholder Consultation

The forest extension service communicated to SFED repeated problems to curb fires of anthropogenic origin in Chir pine forests. These fires were set by local communities to induce the growth of fresh shoots of lemon grass. DoFPS needed scientific evidence on farmers' claim of higher lemon grass oil yield after fires and on the effects of fire on Chir pine forests, especially their regeneration, before taking any decision on fire management rules. The formally institutionalized National Annual Forest Research Coordination Workshop was used by DoFPS to communicate the need to the Council for Renewable Natural Resources Research of Bhutan, which at that time was the agency supervising all Renewable Natural Resources Research and Development Centers (RNR-RDCs). In the course of this workshop, a study on fire in Chir Pine-Lemon Grass ecosystems was mandated to be carried out by RNR-RDCs Jakar and Wengkhar along with SFED, and thus became part of these agencies' official agenda. The objectives of this study were to highlight the socioeconomic importance and constraints of the lemon grass cottage industry. A second component of the study focused on fire issues and evaluated various prescribed fire regimes in terms of their effects on Chir pine forests and on lemon grass, especially biomass and essential oil yield. SFED obtained special permission to set forest fires – a prohibited practice – under controlled conditions, in the form of prescribed burns for experimental purposes.

Research and communication methods were combined throughout the implementation of the study. Initially a socioeconomic study, using a participatory learning and action framework, helped to analyze the situation of the lemon grass cottage industry and facilitate the structured learning of the rural population involved in lemon grass collection about their own situation. This process, as well as the generated results, empowered the community to present their own situation in a more credible manner to DoFPS and local governments. Local governments at that time were elected only at the lowest levels and did not have financial authority. Three years into the research study, the introduction of democracy brought financial authority to local governments, which, from then on, were fully accountable to local communities. The change in local governance was a favorable external factor that helped to ensure that local communities could influence politicians, who had become powerful decision-makers.

To supplement the socioeconomic information with data on the biophysical effects of fire on Chir Pine–Lemon Grass ecosystems, researchers who were in continuous

communication with SFED designed a large experimental study encompassing the factors of different stand conditions and different burning regimes in terms of fire frequency and intensity. A team of researchers, SFED, and forest extension staff spent one week selecting optimal sites for the study in eastern Bhutan. They used this process as an opportunity to inform local government representatives and other government officials, lemon grass cottage industry supporters, senior forest officials, and other stakeholders about the study and, specifically, about the planned prescribed burns.

### Research, Demonstration, and Training

Budget limitations necessitated raising additional funding. SFED, using RNR-RDC's research proposal, applied for and was granted additional funding from BTFEC, the world's first environmental trust fund. These new funds enabled several new possibilities, such as training farmers on forest fire management and expanding the scope of the experiment. To conduct prescribed burns, acquisition of technical expertise in this field was necessary. A professor with expertise in fire ecology and prescribed burning was invited to train a large group of forest extension staff and researchers on fire ecology and prescribed burning. This training had a strong practical component, where, over the course of several days, the first set of prescribed burns were set on sample plots. The training also familiarized forest extension staff throughout the country, as well as leading officials of DoFPS, on the use of prescribed burning. The burns were conducted, accident-free, in difficult terrain, facilitating a strong learning curve for members of the Fire Section under SFED, researchers, forest extension staff, and farmers. Issues of fire safety were discussed and the objectives of the research study were repeatedly communicated to all parties involved. Press releases documented and communicated the prescribed burns.

Researchers carried out annual monitoring campaigns with close involvement of local community members and forest extension staff. Data on tree regeneration and lemon grass biomass yield were collected on experimental plots, and the entire biomass was distilled for essential oil using portable steam distillation drums used by local lemon grass distillers. Oil was tested for its citral content, its most important component. These annual monitoring campaigns helped to maintain awareness among stakeholders on the research process, and generated data were communicated as interim results. The study design foresaw the application of prescribed burns once every two years on plots burned at high fire frequency; hence, further prescribed burning campaigns were organized. These campaigns

facilitated the deepening of expertise and the development of a routine with members of the Forest Fire Section, forest extension staff, and community forest fire management groups.

### Feedback of Results to Clients at Critical Moments in Time

At the time of the third prescribed burning campaign, a fire of unknown origin wiped out all research plots and burned large tracts of forest in the surrounding area, rendering further continuation of the trial meaningless. The mishap of a large fire coinciding with a prescribed burn, along with the lack of possibilities to verify whether prescribed burning activities were to be blamed, put a temporary halt on prescribed burning practices. These events, however, drew considerable public attention and created an agitated atmosphere, intent on providing a solution to the problem. Members of the Forest Fire Section could well utilize this second phase of the issue-attention cycle. Along with researchers, they used the situation for immediate ad-hoc communication to the leadership of DoFPS on appropriate fire safety measures and presented a policy brief on the biophysical and socioeconomic aspects of prescribed burning obtained through the experiment until then. Thus, it could be ensured that no negative stigma became associated with prescribed burning. The events nevertheless highlighted the obligatory mandate not to compromise fire safety under any circumstances as well as the need to find a long-term solution for fire management.

### Translation of Scientific Results into National Policy

Data gathered by then proved to be sufficient to characterize fire effects on Chir pine trees, saplings, and seedlings, as well as on lemon grass biomass and essential oil yield and quality. Additionally, the effects of fire on the spread of the aggressive invasive Christmas bush (*Chromolaena odorata*) could be assessed. Results showed that fire triggered profuse regeneration of Chir pine, but small seedlings and, to some extent, also saplings were shown to be vulnerable to fire, while trees were unaffected. Repeated burning and harvesting resulted in a decline of lemon grass biomass, but increased essential oil yield, leaving oil quality unaffected. Fire promoted the spread of Christmas bush in open stands. Management recommendations summarizing the meaningful application of these results were developed and subsequently presented to various audiences. Consultations with stakeholders followed (DoFPS, local communities, education sector, National Environment Commission, and local governments). These actions paved the way to the incorporation of prescribed burning for land management in the Forest Fire Rules of Bhutan 2012, which effectively replaced relevant sections of the Forest

and Nature Conservation Rules 2006. The new rules declared prescribed burning a legal practice, albeit under more detailed guidelines yet to be specified: "6 Fire for forest management: In order to manage forests requiring fire, the Department /DoF/ shall develop guidelines to carry out control fire for management purposes. The guidelines shall include: a) fire for high altitude rangeland management, b) fire for lowland registered Tsamdros, c) fire for community forest management, d) fire for private forest management, e) fire for fuel reduction of fire prone forest types, f) fire for improvement of forest crops."

The rule drafting committee stated that the use of fire for land management objectives needs to be carried out with proper guidelines and according to an approved fire management plan under strict vigilance and with proper monitoring. Further, it has been discussed that local communities need to be well informed and made aware of the objectives to prevent uncontrolled burning by villagers.

## Impact

The Forest Fire Rules of Bhutan 2012, a policy document decreed by DoFPS in concordance with the Forest and Nature Conservation Act 1995, outlined the legalization of prescribed burning as a land management tool and the elaboration of guidelines detailing the constrains of its utilization.

Community Forest Fire Management Groups have been formed in the study areas, and farmers are well aware of the practice and necessary safety measures (fire lines, firefighting and necessary equipment, incident command control, etc.) of prescribed burning. Similarly, forest extension staff have been trained on the above topics in greater detail and have a basic understanding of fire ecology. A network of forest fire volunteers is present throughout the country, sensitizing the population on fire issues and supporting fire management.

As a result of the entire process, the negative-only stigma of fire has been successfully cleared from the minds of many opinion-makers within DoFPS and among the wider populace, and replaced by a more-informed attitude. General opinion now sees fire as a necessity in some fire-adapted ecosystems, where its management brings more tangible benefits than its suppression. The results will bring the legal situation closer to actual land use practices, with the potential to curb detrimental effects of fires. Based on the policy document, detailed operational guidelines are needed to elaborate prescribed burning to achieve tangible benefits, such as fire hazard reduction and ecological restoration.

## Conclusion

An illegal land-use practice with a high-profile potential for conflict – prescribed burning – created the need for objectively verifiable evidence generated through scientific research. An annually held, formal research-client workshop was used to express the need and mandate an interdisciplinary research study. The research team, consisting of scientists and practitioners, applied broad-based stakeholder consultation to draft the study and used the process as a platform to exchange ideas and opinions on prescribed burning. A series of formal workshops and trainings, as well as ad-hoc presentations and meetings, were used to disseminate various aspects of the research results as they became available. The momentum that the research process had generated was used to acquire funds from external donors for community development, necessary to address social aspects of fire management, which opened up further communication pathways. An unfortunate event created headlines on ravaging and uncontrolled fires and brought it in the context of prescribed burning. The resulting public attention, however, could successfully be utilized to present scientific evidence to decision makers, now receptive to a policy change. Intensive utilization of informal communication pathways ensured that the already identified need for policy change was reflected in a new policy document, effectively legalizing prescribed burning as a land management tool. The process is still on going, since the operational conditions of prescribed burning for various purposes still need to be developed under broad-based stakeholder consultation.

## Acknowledgments

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## List of Acronyms

- BTFEC: Bhutan Trust Fund for Environmental Conservation
- DoFPS: Department of Forest and Park Services (formerly Department of Forests)
- RNR-RDC: Renewable Natural Resources Research and Development Center
- SFED: Social Forestry and Extension Division (formerly Social Forestry Division), a Division under DoFPS

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# Communications at the European Forest Institute

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Time Period: 2010 – present

Problem: A lot of valuable research work is done within externally funded projects, but a great deal of information stays within the project group and is not adequately shared externally.

Communication Instruments Used: "Ready-made" news and information for distribution or to be translated into local languages to project partners; "multipliers" to multiply the dissemination flow.

Reasons for Success: Involvement of communicators from the project planning stage onward.

## Project Communications–Early Involvement Pays Off

Research work is usually carried out in organizations through projects. Often these projects are externally funded; in Europe, for example, the main funding mechanisms (such as Horizon 2020) come from the European Union (EU). A lot of valuable research work is done within the projects, but a great deal of information stays within the project group and is not adequately shared externally. Often the reason behind this is the low involvement of communications experts in the project work, or an underestimation of the resources needed to effectively disseminate the results. This success story discusses different stages of a project's life cycle and how to involve communications specialists throughout the project. It gives practical tips for overcoming the most common challenges.

## Involvement at the Planning Stage

Usually projects are planned well ahead of their onset. Proposal writing with a large group of scientists requires a lot of coordination. At this stage, internal

communication – who writes what, possible face-to-face meetings, etc. – is of key importance.

Usually, at least among EU proposals, dissemination is a key component of a proposal package. In EU projects, it is compulsory to inform society about the work; after all, it is the European taxpayers who pay for it. But more generally, spreading information about scientific work pays off in monetary terms – the greater the visibility, the more funding possibilities a topic or project may get. The proposal for a dissemination work package often includes basic explanations of how the writing of the communications plan will be done, what tools will be set up and used for communications, and how interaction with key stakeholders is to be arranged.

It is common to involve communications specialists in writing the proposal texts for the sections above. Sometimes the involvement comes late in the writing phase, sometimes early. But what is usually fully ignored are the benefits that come from involving such experts at the very start of the project design – giving them access to joint meetings where the topics and main outcomes are discussed and agreed upon, or to correspondence prior to the actual proposal writing. Unfortunately, this can mean that the communications part of the proposal is a thin layer on top of the actual content of the project and does not reach the deeper substance. It also means a lot of communications knowledge and potential input is not utilized and is wasted.

For example, a communications specialist who knows the background to the proposed project will be able to help you decide which communications tools and channels are appropriate (and have the best chance of reaching your target audiences), and help you plan a timetable and budget for your dissemination deliverables and milestones. He or she will be able to tell you, for example, that focusing only on final outputs (it's amazing how many projects plan to publish 10 policy briefs and a 200-page handbook and hold a final conference – all in the last month of the project…) is not sensible, not just because of the work involved, but also in terms of profile-raising. Dissemination needs to be there right from the start of the project – it's much easier to "drip-feed" stories and outputs from a project over its lifetime, cultivating relationships with the media and outside world and making a little noise along the way, which can build to a crescendo at the end.

A communications expert will also be able to help you budget effectively and generate a realistic estimate of the resources needed (both in terms of person-

months and direct costs) to maximize your dissemination and outreach. He or she should be able to tell you what is expected by the project funder in terms of dissemination, what communication channels or tools have been successful for other similar projects in your field, and the pros and cons of different approaches. An expert will also help you to plan for any commitments beyond the project's life (e.g., regarding the project website).

*Tips:*
- *Involve a communications expert right from the start of the proposal planning process.*
- *Budget for communications throughout the project, not only for final outputs.*
- *Check the funder's requirements and make use of best practices.*

## Involvement During the Project

The more technical and scientific in content the project is, the more challenging it is to communicate about it to different stakeholders and society at large. In big projects with many partners and scientifically diverse work packages, it can even be difficult to communicate internally. This is why it is critically important to involve communicators in project meetings, especially those dealing with scientific work.

Having someone in attendance who can focus on gaining a general overview is a real benefit – for project partners as well as external audiences. The communicator is best placed to ask the "non-technical" questions: Why is this part of the project important? What will it lead to and what will that mean for the average person on the street? How does it link to that other work package, or to that other project, or to the latest targets from the European Commission? How do we write a news item or policy brief from the results of this? Is any of this understandable to a policymaker or the general public?

Once the communicator has this overview, another important role comes into play: that of coordinator and distributor of information and news. Particularly in projects with many partners, there is a fantastic opportunity to use partner organizations as "multipliers," making use of their own domestic or international communication channels and connections to reach unexpected audiences and geographical areas. It's particularly important for projects that aim to reach industry stakeholders to make maximum use of subject matter experts with connections to the project, for example.

And the results? One small news item about the project, which partners can copy directly to their websites, newsletters, or email mailing lists, can easily reach across Europe. All of this enables a steady flow of news, dissemination, and outreach during the lifetime of the project.

It's also important to track the impact of these dissemination activities across the lifetime of the project-not just because this is easier than trying to collect everything together at the end for the final report, but because it allows you to see whether your ongoing dissemination activities are reaching their expected target audiences, and to alter them if not. It is useful to have a central contact who collects information from all partners about their respective dissemination activities and "multiplier" work, as well as monitoring official "project communications" and how they are made use of in the wider world. This can be a time-consuming task, particularly if such interactions involve ongoing social media work, and so it is important to budget for this.

*Tips:*
- *Make things as easy as possible for other partners – provide "ready" news or information for distribution or to be translated into local languages.*
- *Track the impact of dissemination activities over the lifetime of the project.*

## Involvement at the End of the Project and Beyond

Not all project outputs are available the very day the project officially closes; peer-reviewed articles may be published years afterward. A communicator who has been working closely with the project knows the history of the project and can place outputs into a context for news items promoting the results.

## Useful Link

Communicating EU Research and Innovation: A guide for project participants
http://ec.europa.eu/research/social-sciences/pdf/communicating-research_en.pdf

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# Global Forest Information Service – Building a Worldwide Network of Information Providers and Users

*MICHAEL HUCK*

Time Period: 2002 – present

Problem: GFIS needs to attract a large number of forest-related organizations from around the world to contribute information to its gateway and to increase awareness of the gfis.net website among stakeholder audiences.

Communication Instruments Used: Website, workshops, electronic newsletter, information manual, network leveraging, and Twitter.

Reasons for Success: Open lines of communication with key stakeholders and partners, adoption of new communication tools and tailoring of existing communications to keep up with service demands, network leveraging, workshops.

## Where Does GFIS Stem From?

The Global Forest Information Service (GFIS) is a collaborative effort of institutions aiming to maximize the value of forest information resources and providers worldwide through the sharing of forest-related information via a single gateway.

The GFIS website (http://www.gfis.net) is an online portal that aggregates forest-related information from a global network of partner websites. The information generally comes in the form of a news item, publication, event, job vacancy, video, or project. The content is then stored on the website and is made accessible to information seekers. This model of aggregation allows information seekers to visit GFIS and view the latest content from the entire partner network, saving them time and frustration in their information search.

The GFIS initiative has been many years in the making. In 1998, the Intergovernmental Forum on Forests (IFF) endorsed and promoted the

development of GFIS. The International Union of Forest Research Organizations (IUFRO), working in collaboration with the IFF Inter-agency Task Force on Forests, created a GFIS Taskforce that further developed the GFIS initiative. The first version of GFIS was released and demonstrated successfully in 2003 and included contributions from over 60 forestry institutions worldwide. In 2004, GFIS became a Collaborative Partnership on Forests (CPF) joint initiative led by IUFRO. In 2007, the GFIS Coordination Unit moved from the IUFRO headquarters in Vienna, Austria, to the Finnish Forest Research Institution in Vantaa, Finland, where it remains today.

At the time of this writing, over 500 organizations worldwide have contributed information to the GFIS gateway. Of these, 300 are regular contributors who syndicate their content with GFIS, ensuring that all of their information is shared via the gateway.

### Who is GFIS For?

The goal of the GFIS initiative is to enhance access to all types of forest information so that it is accessible to governments and stakeholders, including researchers, forest managers, NGOs, community groups, and the public at large.

GFIS categorizes its target audience in two groups: information users and information providers. The former consists of anyone who has an interest in searching for forest-related information online and includes all of the aforementioned stakeholders, while the latter is made up of forest-related organizations that have content that could be shared on GFIS. While there is overlap in communication efforts, the methods largely are targeted toward either information users or information providers.

## Communication Tools Used to Build GFIS

- Website
- Newsletters
- Workshops
- Information providers manual
- Network leveraging
- Twitter

## How Are These Tools Used?

### Website

GFIS was developed as a website, and the domain www.gfis.net serves as the face of the organization. The website itself, which was launched in 2003, aggregates the content shared from partner organizations. This content is then organized and displayed according to information type – news, event, publication, job vacancy, project, or video – it is categorized as, as well as organized according to its region. In addition, GFIS has highlighted topics that display information on timely events and topics. It is important to note that the original content is not available on GFIS; but, rather, a link to the original source, with a title, description, keywords, and other metadata, is displayed. Today, the website hosts over 215,000 items in its search index.

The website was not built using a content management system; rather, it was built from scratch by the GFIS coordination unit to fulfill its needs. This decision was made because of the uniqueness of the website, serving as an aggregation and search service rather than as a traditional representative website. The website's interface is available in 12 different languages to ensure its accessibility worldwide. In addition to the interface, content can be shared in the 12 different languages, although the predominant language is English. Other important facets of the website include a list of and links to all current partner organizations and their respective websites, a recognition of sponsors, a history of the initiative, and instructions on how to contribute information to the gateway.

Since the website was created, revisions and upgrades have been implemented frequently. This has included the removal of underutilized information types, such as experts and datasets and databases, and the inclusion of new information types, such as video. In addition, the website has undergone style changes, improvements in its caching to ensure that it loads quickly throughout the world, search engine optimization, and mobile scalability. These changes have always been made with the users in mind, to ensure that their experience on the gateway is a positive one. Many of these changes have been based on the analysis of website statistics or on user surveys and comments. For example, GFIS received feedback that the website loaded very slowly from a partner in Africa. This feedback proved valuable, and steps were taken to improve the loading speed of the website, including reducing image sizes and changing the way the server caches content to ensure that those with less broadband can still access the site.

GFIS has participated in link-building to raise awareness of its website and asks partner organizations to link to the gateway's homepage. In addition to providing a link, partner organizations are encouraged to embed a widget that showcases items from the GFIS news feed – an automatically updated list of recent news items from information providers. Furthermore, partners are encouraged to leverage the GFIS feeds themselves by using them on their own websites and attributing the information to GFIS.

### Newsletter

The GFIS newsletter was first released quarterly in 2011 as a way to reach out to a large number of partner organizations and keep them informed on the latest updates to the GFIS initiative. The newsletter has since been transitioned into a value-added service for information seekers and providers – highlighting popular content from the GFIS website, including news, publications, and upcoming events – and is released monthly. Updates to GFIS and other news, such as upcoming workshops, are still released via the newsletter in a separate subsection and via a quarterly member's update memorandum highlighted below. The newsletter is designed to be short in length and will often carry a theme – e.g., GFIS released a "Landscapes Edition" at the inaugural Global Landscapes Forum in Warsaw, Poland, in November 2013. The newsletter is delivered to a subscribers list, which is promoted on the GFIS homepage as well as via its social media accounts; in addition, the newsletter is sent to partner organizations for them to share with their networks.

Because the newsletter highlights content from the GFIS gateway contributed by information providers, it does not take a large amount of resources to release each issue. A member of the coordination unit will scan the website for relevant content; create the newsletter based on a common template developed at the onset of the newsletter; release it to subscribers; and disseminate it to key partners.

To keep partner organizations informed with updates from GFIS, a quarterly memorandum is released to partner organizations' focal contacts and includes information such as website statistics, new users, social media statistics, and any service updates and other announcements. This update is designed to inform partner organizations and keep them engaged in the initiative. One of the keys to GFIS's long-term and continued success is a stable platform and a commitment to communicating the growth in the initiative – two factors that make partners more inclined to continue sharing their information via the gateway and to provide support.

## Workshops

A number of workshops have been held for GFIS since its inception to introduce the GFIS information exchange standards to organizations wishing to become information providers. These workshops have taken place in many locations around the world and are organized in conjunction with major IUFRO meetings or with a partner organization that can provide in-kind support and assist with necessary arrangements, including identifying and inviting regional organizations to participate, arranging local logistics, and providing space for the workshop. The workshops have generally been located in areas outside the "developed countries" where extra capacity-building is needed. Typically, workshops will see between 5 and 15 organizations in attendance. When possible, participants' travel costs are fully covered to ensure greater attendance.

During the course of a one- or two-day workshop, representatives from the Coordination Unit introduce the history and background of GFIS, as well as the technical requirements for syndicating content with GFIS. In addition, roundtable discussions are held to identify and address key obstacles in disseminating information that organizations face. These workshops are a great tool for building the GFIS network and provide the necessary support, instruction, and capacity-building needed by many organizations. However, they are costly and require a considerable amount of time to organize. As a result, generally only one workshop can be arranged for each year.

## Information Providers Manual

It is easier to explain the overall idea behind GFIS than it is to explain how it technically works. Generally, when organizations choose to become partners within the GFIS framework, it is often a decision made by management, and the process of linking the websites together is delegated to a communications professional or a technical person, such as a Webmaster. In an attempt to answer all questions before they arise and explain the process of becoming an information provider, an Information Providers Manual was developed. The Coordination Unit developed a manual that explains how the syndication process works and provides an overview of metadata requirements, account creation, and best practices. This document was shared with the organizations after they chose to join GFIS and reduced the work of the communications team by proactively explaining the process of implementing the GFIS requirements.

### Network Leveraging

The organizations that collectively make up the GFIS Network each have their own individual networks, and the growth of the website up to now has been greatly attributable to leveraging these partner networks. The IUFRO network is a prime example, where all the organizations who are members of IUFRO have been made aware of GFIS through news releases and updates, during meetings and conferences, and via other means such as their websites.

When an organization joins GFIS, it is asked to share the news with its network along with a short excerpt on GFIS. Through contributions such as these, GFIS gains insteps to new potential information providers and seekers.

### Twitter

A GFIS Twitter account was created in 2011 to further disseminate the information aggregated through GFIS. Twitter was identified as a social media outlet to use because its short posts were well suited to what GFIS was promoting. Through Twitter, GFIS promotes information items to bring awareness of the gateway and promote partners' content. This outlet serves as a great space to interact with partner organizations and help promote and share their news, events, and publications. In addition, it has provided a secondary benefit by introducing the GFIS service to persons interested in forest-related information and potential partner organizations that use social media to promote their information products.

The Twitter account has seen consistent growth since it was created and has served as an excellent tool to promote the website and reach out to a forest-interested audience. However, it is a time-consuming effort and requires constant engagement by the Coordination Unit, unlike other one-off campaigns to raise awareness.

## Measuring the Growth of GFIS

The Global Forest Information Service has continued to grow year after year, both in terms of information seekers and information providers. GFIS largely gauges its success based on three factors:

- Measurement of website statistics, including:
  - Increase in number of unique visitors
  - Increase in overall visits (repeat visitors)
  - Duration of average length of visits
  - Clicks (or amount of traffic sent to partner organizations)

- Increase in number of information providers
- Direct feedback from users and information providers

The website statistics themselves tell a lot about the GFIS service and provide insight into how the site is being used. The unique visitors tell GFIS how many people are coming to the site, from what countries, and how they traveled to the site (via search engine, Twitter, direct URL, or hyperlink). These statistics, when compared, show how GFIS is growing as a whole. In addition, it serves to let GFIS know whether a certain action was effective in bringing in traffic. For example, it has been shown that on days when the newsletter is released, traffic increases on the site. Another useful measurement is average repeat visitors and duration of visit, as this shows how often users come and how long they spend on the site. When the numbers for repeat visitors and time spent on the site increase, it is a good sign that the content on GFIS has been of interest to them.

Another important measurement is the amount of traffic GFIS drives to partner websites. The more visitors GFIS can send to partners, the better. It also lets us know what type of information visitors are most interested in and provides the basis for crafting highlighted topics and content for newsletters.

The number of new information providers is a solid measurement of growth. A close eye is kept on this number, and it has been seen to steadily increase over time. However, it can be misleading at times as the number can continue to increase, but there might be less content being shared on GFIS because organizations that once shared information may let the links to syndication feeds break or might share less information for a variety of other reasons. As this is so, it is also important to track the number of active information providers, and this is done manually.

Also, direct feedback is actively sought through a variety of formal and informal methods. When in communication with partners, feedback is often received, and once a year a formal survey is sent to all the organizations that are members of GFIS. This feedback is used to improve the service and shows areas for improvement. For example, through a recent survey and from direct feedback form partners, it was discovered that most respondents believed that the information on GFIS should be made available via a regional map. This was taken into consideration and, after extensive consultation and planning, a regional service map was implemented.

## In Recap

It is through a combination of communication tools that GFIS has seen growth since its inception. Through maintaining open lines of communication with its partners and tailoring its services over the years to ensure that its services match its demands, it has been possible to build a high level and consistent amount of Web traffic. Through the use of network leveraging, exploring new arenas of communication, and the use of workshops, more organizations have become partners within the framework of GFIS. These partners are kept satisfied through feedback and the increased exposure their content gains through GFIS and its value-added services.

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# CIFOR and "Forests News": A Case Study in Science Communication

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Time Period: 2010 – present

Problem: Need to make CIFOR's broad-based research accessible and appealing to policymakers, while avoiding advocacy.

Communication Instruments Used: Blog, internal communication.

Reasons for Success: A strongly journalistic yet "solutions-oriented" approach, involvement and capacity-building of scientists to write about their work, measuring uptake via quantitative and qualitative data.

The Center for International Forestry Research (CIFOR) is the leading global facility on tropical forest research. Founded in 1993 and based in greater Jakarta, Indonesia, CIFOR is dedicated to advancing human well-being, environmental conservation, and equity by conducting research that enables more informed and equitable decision making about the use and management of forests in less-developed countries. A member institution of the CGIAR Consortium, CIFOR is in a unique position among forestry organizations for three reasons.

First, CIFOR has expanded its focus to encompass "landscapes." In this case, a "landscape" is a given area of land that includes the natural features of the land (forests, mountains, and rivers) as well as the human institutions that shape and are shaped by it (farms and cities, economies, and culture). Thus, CIFOR's work is not confined to just the trees in the forest – it covers economics, anthropology, agriculture, food security, biodiversity, climate science, and more.

Second, CIFOR is not purely a research institution. Instead, it seeks to be influential globally by conducting research that informs policy and by integrating forestry into global climate and development frameworks – while avoiding advocacy.

Finally, CIFOR is mandated by its funding partners to show that its work is having an impact. For this reason, CIFOR works in some respects as a development organization.

Given these three features, CIFOR's potential for impact is very wide. To achieve this potential, effective communication of the center's research and expertise – and measurement of the success of that communication – is critical.

## Target Audience

CIFOR seeks to place its research and expertise into the hands of the people who need to read it – ultimately, policymakers. But uptake of research requires a wider audience, and so CIFOR's communication apparatus targets mainstream media, partner organizations, development networks, academia, the private sector, and others.

## Communication Methods

For this purpose, CIFOR established a virtual news service about its work, in the form of a blog. "Forests News," online at http://www.blog.cifor.org, has amplified the reach of CIFOR's work like no other medium. In just a few years, "Forests News" has become the main conduit for dissemination of CIFOR's research, and it has become a crucial resource for researchers, journalists, academics, policymakers, and students.

Since its inception in August 2010, readership of "Forests News" has increased by more than 1,500 percent, and as of March 2014, it is averaging 45,000 page views per month. The quality and frequency of new, original articles posted to CIFOR's blog have resulted in it being recognized by Google News as a legitimate news source, and many of its posts are syndicated to respected platforms such as Reuters AlertNet, AllAfrica.com, Forest Carbon portal, Eco-Business.com, and others – lending "Forests News" further public credibility.

The purpose of "Forests News" blog stories is to distill detailed, specific, and complex research findings into a form that non-scientists can understand and appreciate, while still communicating the information accurately.

Blogs also act as "teasers" for the research – encouraging readers to go on to read relevant scientific studies that are featured in the story. A study conducted by Harvard University and Indiana University found that social media – including Twitter, Facebook, and blogs – play an important role in determining the scientific

impact of an article. The study showed that publicizing articles on social media platforms leads to increased article downloads and citations. This effect has been observed with "Forests News," as will be detailed later in this success story.

A 2012 survey found that CIFOR's blog readers cut across a wide swath of sectors, from students to government representatives to scientists to NGO/IGO representatives. Fifty-five percent of respondents said they download journal articles after reading the blog stories. Notably, 83 percent said they prefer to read blog articles written by scientists. At present, CIFOR publishes 3-5 blog articles per week, about 10 percent of which are written by scientists. The rest are written either by communications staff or by freelance science journalists.

That said, "Forests News" costs money. CIFOR is fortunate: The budget of nearly every research project that CIFOR undertakes allots a percentage to communications. This formula has served CIFOR's communications department well by contributing to a funding flow that enables the blog to maintain a high level of quality. A well-funded mandate is a luxury that the communications arms of many organizations do not have. Nevertheless, it is hoped that other organizations can still take lessons from CIFOR's experience, which will be detailed in the next section.

## Process of Implementing the Methods

This section will explore the processes – and challenges – related to who writes for CIFOR's blog, what we write about, and how we write about it.

### Who

Most of CIFOR's blog articles are written by freelance science journalists under contract with CIFOR. Our readers prefer blog articles written by scientists, however, because they carry more authority, and this is borne out in readership statistics: Scientist-written blog articles are consistently the most highly read on "Forests News," with articles from CIFOR's director general – who writes an average of once a month – ranking highest of all.

For this reason, CIFOR's communications team has actively encouraged scientists to contribute to the blog. There have been two key challenges to this. For one, scientists tend to eschew external communications outside of scientific forums, and so are resistant to efforts to display or disseminate their work, lest such displays adversely affect their credibility as objective, impassionate researchers by putting self-promotion

above science. Second, many scientists do not know how to write outside the style of a scientific paper, even if they want to. CIFOR's communications department has tried to overcome these challenges in several ways.

With respect to the first challenge, we had to prove to researchers that blog articles were in their interest in the first place. Luckily, in 2011, one of our researchers tracked readership of a major CIFOR research paper on climate change in the journal *Forests*. Before CIFOR's communications team published a blog about it, the journal article was downloaded from CIFOR's website three times a day on average. In the three days after a blog article about the research was published, the paper was downloaded 105 times and, for weeks afterward, was downloaded an average of seven times a day. "Publishing research is good," the scientist said afterward. "Being read is better."

With this in hand, the next step was to persuade the scientists themselves to write for "Forests News." One way was to afford scientists greater leeway in the style and subject matter of the blog articles they write. Unlike CIFOR's typical blog articles, written by freelancers or communications staff in the straightforward style of a newspaper story (to be discussed later in this section), scientists are encouraged to use their own voices, to express opinions, and to write about complex or esoteric research, even unpublished research. CIFOR's communications team does not relinquish editorial control of scientist-written articles, but, ultimately, the scientist's name is in the byline, and by putting their names in the byline, they are putting their own credibility at stake – so there is an impetus for them to be precise.

Recent scientist-written articles on "Forests News" have included a call for gray literature on the role of forests in food security; a detailed exegesis of research on net average productivity; and a lighthearted look at one scientist's first systematic review. All have seen higher-than-average readership.

But this kind of writing doesn't come naturally to many scientists. To help them, CIFOR has held internal communications training workshops to show scientists the usefulness of writing in this forum, to give them tips and advice, and to create an enabling environment. As a result, scientists have begun to approach CIFOR's communications team saying, "I want to blog about X, but I am not sure how to say it." Our communications staff then helps to draw out the themes they want to discuss, then build a narrative structure around them through a collaborative writing and editing process until what results is something compelling and publishable, with the scientist's name on it. This process takes time and effort,

but it can go a long way toward building a good rapport with scientists, which we have found is crucial – because now scientists approach us with blog ideas that they want to write. It is important to retain editorial control; a blog article – even if penned by a researcher – that is stilted, boring, inscrutable, poorly written, laden with jargon, or is a press release masquerading as a blog post will be damaging to "Forests News'" readership and credibility.

### What

The scope of "Forests News" has been narrowed somewhat in the past year to focus more directly on science undertaken by CIFOR and its direct partners, and to avoid the appearance of endorsement of non-CIFOR-related science. But CIFOR research does not exist in a vacuum – our work affects, and is affected by, trends and events in economics, development, politics, etc. Articles in "Forests News" must acknowledge these trends, but we generally avoid writing about them outside of the context of CIFOR research.

Topics that we do blog about include, but are not limited to:

- Published research by CIFOR scientists
- "Q&A"-style articles to explain current events that CIFOR scientists have researched intensively (e.g., forest fires in Sumatra)
- Recorded interviews with CIFOR scientists
- Features on scientific activities in the field by CIFOR scientists, such as field research and training workshops

Topics that we do not blog about include, but are not limited to:

- Institutional announcements
- Trends or current events in forestry that don't relate specifically to CIFOR research
- Presentations or publications of research from other organizations that are not part of CIFOR research or are not in partnership with CIFOR

This line is not easily drawn, and can vary depending on circumstances.

Generally, "Forests News" covers only research that has been published (whether by CIFOR or in a peer-reviewed journal). However, given the fact that many

research projects take place over several years, it does not seem useful to wait until the end of a project to announce preliminary findings that are of particular interest – and many times, those preliminary findings are the subject of conference presentations. In these cases, the preferred solution is for the scientist who is undertaking the research to write his or her own blog article. A good example is some recent preliminary research that used satellite images to determine the locations of peat land and plantation fires in Sumatra. Given the topic's timely nature and news interest, it was determined that, although the research was not complete, it was strong and credible enough to draw conclusions from, and thus it deserved to be presented by the scientist himself.

Processes are in place to ensure that "Forests News" fulfills its mission to promote evidence-based research. As each article is related to CIFOR science, each article has a scientist who is the article's focal point. The focal point is either a senior scientist or the scientist whose project is the subject of the blog and who will be consulted on the content and tone of the article. No article will be posted on "Forests News" until the focal point formally approves a final draft.

### How

Articles on "Forests News" are typically written in a "hard news" style – the style that most newspaper articles use. This enables readers to stop reading at any point and still come away with the essence of the story. It is crucial for us to maintain the editorial consistency of the blog by ensuring that everything published conforms to a journalistic approach – this is what has made "Forests News" a credible and highly sought source of information. Posting anything that resembles a press release or a "book report" synopsis will very quickly erode credibility and readership.

There is a dark side to this, however: Much day-to-day journalism as practiced in mainstream media focuses on conflict and problems. This approach is not always advisable for the communications arm of a research institute, for two main reasons.

First, articles that focus too heavily on the negative or problematic aspects of complex and controversial issues (such as land tenure reform, gender, REDD+, etc.) do not inspire confidence among policymakers and donors who are counting on CIFOR to make sense of these issues for the purposes of informing policy. Second, there exists a palpable sense of "doom and gloom" surrounding such issues as climate change, development, and deforestation. Take three news headlines from 2013, for example:

- "Amazon could shrink by 85% due to climate change, scientists say"
- "Forests and water could be doomed in 2060"
- "Fate of the rainforest is 'irreversible'"

The phrase "climate change" bespeaks bad news by its very nature, and this cannot entirely be avoided. However, the mention of forests and climate change in the same sentence condemns forests, by association, to perpetually being part of a problem. This has led to negative connotations about the word "forest" when it appears in a news headline. (When was the last time you read a newspaper story about forests that had anything but bad news?)

Daily journalism's focus on conflict has led to an endless parade of headlines that place forests in a starkly negative light. This problem is compounded by wide variations in the quality of science journalism, which leads to headlines that are speculative or lacking in nuance ("Amazon could shrink…," "Forests and water could be doomed…," "Fate of the rainforest is 'irreversible…").

This combination of factors causes "reader fatigue" when it comes to news about forests and climate change, and about science in general. While many readers might click on "bad news" stories about politics, health care, or consumer news, fewer readers are likely to click on "bad news" stories about science or the environment – in large part because many readers feel powerless about solving problems related to climate change and deforestation.

This feeling of powerlessness represents a major opportunity for organizations like CIFOR to show how solutions are being devised to address intractable environmental problems. We cannot and will not deny the negative aspects of the issues our organization is researching – we do a disservice to readers, and to our work, if we put a disingenuously "happy" spin on our articles. But there are many opportunities for the tone of "Forests News" to be more positive and forward-looking – by focusing on solutions.

Solutions stories are driven by problem-solving and pose questions about promising potential actions to address a problem. Drawing attention to programs or projects that are working on solutions does two things. First, these articles are generally more widely read, cited, and talked about – a sad commentary on the rarity of such articles in mainstream media. Second, they also contribute to a feeling of empowerment among readers. Instead of "doom and gloom," stories

with a more positive focus tend to appeal to the problem-solving curiosity of people who otherwise have little knowledge of, or interest in, forests and climate change. Such articles also offer hope that the problems of climate change and deforestation are not too big or too complex to address (if not solve).

Engaging readers is a challenge of framing an article, and the headline is the starting point. "Forests News" must ensure that headlines draw attention to the puzzles, the questions at issue, and the insights the stories contain. In contrast with the news stories mentioned earlier, a headline that reads "Tackling climate change may lessen Central African Republic conflict risks" is preferable to "Climate change seen as key threat to Central African Republic conflict." Even though the article explores the pathways by which climate change contributes to conflict, the headline shows that something is happening, that an action could address a problem.

Finally, because CIFOR is a research institution, care must be taken to avoid the perception of advocacy in "Forests News" articles, especially on controversial topics such as REDD+ or the recent haze from the Indonesian island of Sumatra. This risk is largely avoidable. An article that explains how and why a project is working (or not); that puts the subject in a broader context; that bases claims, facts, and figures in evidence; and that provides a critical analysis about the strengths and limitations of the project or program – in short, by acknowledging the negatives – can protect against allegations of advocacy.

## Measuring Effect

Anyone who publishes a blog can measure readership in terms of visits, page views, bounce rate, click-through, etc. But numbers tell only part of the story – the marginal gains in readership growth for any blog are bound to plateau at some point.

Donors are increasingly less impressed with pure statistics – they want to see impact: "We've given you a lot of money for communications – so what did your blog actually do? How did your blog contribute to a change to policy?"

It is fiendishly difficult to directly link blog articles to policy change, especially solely through readership numbers. So in reports to donors and others, CIFOR seeks to show that its blog has provided a forum through which long-term uptake of research is occurring. Anecdotal and qualitative evidence is crucial. Recent examples:

- A researcher told CIFOR's communications staff that her journal article was the most downloaded article on forest policy and economics, which she attributes partly to a blog post about the research on "Forests News."
- One senior scientist told us that a highly respected researcher in Peru asked her for a copy of another scientist's research paper, which was behind a pay wall. He found out about the paper because of a blog post on "Forests News."
- A researcher told us that a representative from a paper pulp corporation called him to chat about his research on forest fires, which directly affect the corporation's Indonesian holdings. The two spoke for 30 minutes, exchanging questions and information. This was especially important, as CIFOR is backing the creation of a research program on Indonesian forest fires, with input from the private sector. The corporation representative told the researcher he called him because he had read a blog post about the fires on "Forests News."
- Another researcher told us that she had been told that a blog post she had written for "Forests News" – again validating the power of scientist-written blog posts – had been forwarded multiple times at a major U.S. NGO and had compelled a staff meeting at the NGO for discussion about it.

Anecdotes like this do not arise often – they must be actively sought out by communicating with scientists – but when they do, they can be powerful tools for illustrating to your funders and partners that your communications efforts are having a tangible impact on the greater conversation about forestry policy.

## Conclusion

This article has sought to provide a general overview of the philosophy behind "Forests News" and the steps that CIFOR has taken to maximize its reach and effectiveness while overcoming challenges. Efforts like CIFOR's can be undertaken on a smaller scale by other organizations with limited funding, and it is hoped that this article has provided lessons that can be leveraged to do so. In CIFOR's experience, high-quality writing and strict editorial control are important; getting scientists involved is strongly urged; and a "solutions-based" approach to science writing is crucial.

7

# Creating Awareness of the Potential of Gums and Resins for Improved Livelihoods in the Arid and Semi-Arid Lands of Kenya

*SHEILA SHEFO MBIRU*

Time Period: 2014

Problem: Need to create awareness of the importance and potential of the gums and resins subsector to improve the livelihoods of communities living in the arid and semi-arid land (ASAL) counties in Kenya.

Communication Instruments Used: Consultation with relevant stakeholders, training workshops, marketing exhibition, media communication (radio advertisements and television), publications, drama.

Reasons for Success: Communications strategy, clear identification of target group, empowerment of local producer groups, involvement of all stakeholders, simple and clear messages, use of local community radio.

## Background

Plant gums and resins from the drylands of Kenya are among the key non-wood forest products (NWFPs) with potential to improve the livelihoods of rural communities through food security, income generation, and foreign exchange earnings. Products include gum arabic from *Acacia senegal* (L.) Willd. or *Acacia seyal* Del. and commercial gum resins such as myrrh from *Commiphora myrrha*, hagar from *Commiphora holtziana*, and frankincense from *Boswellia neglecta*. Currently, gums and resins are produced in at least eight arid and semi-arid lands (ASAL) counties of Kenya: Marsabit, Wajir, Garissa, Moyale, Mandera, Turkana, Samburu, and Isiolo.

The Constitution of Kenya, 2010, introduced a new governance structure in the country. The country was divided into 47 counties and a devolved structure with

governments at the national and county levels operating as distinct and inter-dependent entities.

According to the Constitution of Kenya, the devolution of government, among other things, should recognize the right of communities to manage their own affairs and to further their development; protect and promote the interests and rights of minorities and marginalized communities; promote social and economic development and the provision of proximate, easily accessible services throughout Kenya; and ensure equitable sharing of national and local resources throughout the country. Further, county governments will have reliable sources of revenue to help them to govern and deliver services effectively.

In the arid and semi-arid lands of Kenya, sustainable development of non-wood forest products (NWFPs) can enhance resilience by addressing vulnerability and alleviating poverty through promoting investment in alternative livelihood resources and approaches that create wealth and gainful employment, especially among the youth and women. Currently there is an increasing demand from national, regional, and international markets for natural products from pure and unpolluted sources in the ASALs. This represents enormous economic potential and a tangible development opportunity for the government and private sector actors to assist communities in the ASALs.

Gums and resins resources have the potential to generate wealth and uplift the living standards of the local communities in the ASALs of Kenya. They are articles of commerce both locally and internationally and can be sustainably harvested and used for household income, while still conserving biological diversity and ecosystem functions. They provide sustained employment opportunities during harvesting, primary processing, and trade.

There are many programs addressing the issues of the gums and resins sub-sector in Kenya. One of them is the Gum Arabic and Resins Association (GARA), an institutional and individual membership organization. The GARA is currently implementing an 18-month project titled "Using Gums and Resins for Enhancing Environmental Conservation and Livelihood Improvement in the Dryland" that covers three counties producing gums and resins in the Northern Kenya ASAL region – Isiolo, Marsabit, and Wajir. The program was started in August 2012 with the following overall goal and objectives:

- Overall Goal: Enhance conservation and sustainable utilization of gums and resins for improved livelihoods of marginalized communities in the counties of Isiolo, Marsabit, and Wajir.
- Objective 1: Enhance participation of communities and stakeholders in review of laws and policies governing the gums and resins sub-sector.
- Objective 2: Strengthen and increase the participation of producer associations in the market systems within the gums and resins value chain.
- Objective 3: Increase the capacity of 30 producers' associations in addressing environmental degradation in the gums and resin-producing areas.

The project targeted marginalized pastoral communities in the dryland counties of the northern Kenya ASAL region that depend on natural resources for their livelihood and have limited opportunities for alternative livelihoods.

## Marketing Exhibition

To strengthen and increase the participation of gums and resins producer associations in the market systems within the gums and resins value chain (objective 2) and to improve linkages among the various stakeholders in the gums and resins sub-sector, GARA organized a one-day marketing exhibition in April 2014 at the Isiolo Agricultural Training Centre, Isiolo County, to showcase gums and resin products from the three counties and to present the potential of the gums and resins sector to provide an alternative or complementary livelihood to the communities in the ASALs.

The theme of the event was "Gums and Resins for Improved Livelihoods," and the main objective was to share among partners the lessons learned (successes and challenges) as well as to allow partners and beneficiaries to network and showcase some of their results. A short discussion of lessons learned was held the next morning.

## Target Audience

The target audience for the Gums and Resins Marketing Exhibition were key stakeholders, including:

- Gums and Resins Producer Associations, Traders, Wholesalers, and Exporters: to showcase their products and business potential.
- National and County Governments: to understand the issues affecting the gums and resins sub-sector and create enabling policy and a legislative environment for gums and resins businesses.
- Local Industries: to determine the supply and quality of gums and resins locally available and to buy products from local traders and producers groups instead of importing them.
- Financial Institutions: to provide funding for undertaking a gums and resins business.
- Development Partners: to collaborate and partner with gums and resins stakeholders and improve the gums and resins value chain and sub-sector.
- Civil Society Organizations (CSOs): to advocate for an environment for the gums and resins sub-sector.
- Private Sector: to collaborate and partner with gums and resins stakeholders and improve the gums and resins value chain and sub-sector.
- Media: to promote issues of gums and resins trade and disseminate relevant information in print and electronic media.

## Planning Processes

The planning process began with a meeting of key stakeholders, including the government, forest sector, and NGOs and CSOs. Awareness was created and activities were planned in detail with national and county representatives in the host town. In addition, discussions were held to plan an effective communication strategy and develop simple key messages. Next, workshops were held with gums and resins producer associations to understand the benefits of an exhibition and begin the pre-planning process. Finally, invitation of guests was made and the program was prepared.

## Communication Methods Used

Two workshops were held with selected members of the gums and resins producer associations: the first to assist them in understanding the benefits of

the marketing exhibition, and the second to prepare for the exhibition. The first workshop was held in Nairobi in early March 2014 for selected members of the producer associations and the following was undertaken:

- Presentations: Including visuals, such as PowerPoint presentations, to understand the importance of the exhibition and to pre-plan for it.
- Role Play: Members of the producer associations participated in a role play dramatizing the challenges they face trying to get members of the communities to join the gums and resins producer associations. This was a great opportunity because some of the participants who were not contributing during the other sessions were very involved and engaged in the drama.
- Participatory Decision Making: There was participatory selection concerning which of the three towns will host the exhibition (as opposed to being decided by project staff). There was contention as to which town the exhibition was to be held in, with most favoring their own towns. Various criteria were established by all participants and each of the three towns was ranked. Ultimately, Isiolo town was unanimously selected by all participants in a participatory manner.
- Selection of Members of Cooperative to be Involved in Pre-Planning Process: A small group was selected from each of the three producer associations to be directly involved and responsible for the pre-planning process.

During the discussions, some translation was required from English to local languages for some of the participants to support communication. Translation was done "in house," by other members of the groups.

A second workshop was held in late March 2014, two weeks before the exhibition, for the selected group of officials in the pre-planning committee. At the second workshop, a smaller number of members of the cooperative selected during the first workshop was present. Discussions were more focused because of a deep understanding of the benefits of the exhibition. There were very exciting discussions with practical and useful ideas coming from the cooperative members on making the exhibition a success, including:

- Improve understanding of gums and resins, including the local and scientific names, local and commercial uses, and pricing

- Demonstrate sample raw gums and resins products in well-labeled, attractive, and appropriate containers
- Demonstrate processed products and tapping tools (Sonke) and techniques
- Use drama (role play) and a song especially written for the occasion
- Use public entertainment (a local school band to march from town to the out-of-town venue to draw attention to the event)
- Offer promotional giveaway items, including branded T-shirts and caps
- Select one representative from each cooperative to speak on the exhibition date to present issues and challenges in the production, processing, and marketing of gums and resins in each county
- Assign roles for various activities prior to and during the exhibition

### Communication Products Used

- Roadside banners (displayed one week prior to the event – one close to venue and one in town)
- Promotional flyers (given to all representatives to place at convenient locations within their counties two weeks prior to event)
- Gums and resins fact sheets (distributed during the event)
- Natural and processed gums and resins samples and product labels
- Promotional give-away items, including t-shirts and caps
- Advertising on local community radio (several days prior to the event)
- Print and electronic media (journalists were invited to the event to interview key stakeholders, including a representative from the Producer Association, the director of Kenya Forestry Research Institute, and a community resource representative)
- Audiovisual media at the event (including videos and projected slides that showcased the potential of the gums and resins sub-sector in the country)
- Technical reports, policy briefs, brochures, flyers, and fact sheets (on display during the event)



Key representatives of various stakeholders made formal presentations, including representatives from the Isiolo County Government, GARA, the Kenya Forestry Research Institute, the Kenya Forest Service, financial institutions, and local industry. A play presented by all members of the Producers Association depicted challenges of the gums and resins business.

## Measuring Effect

The Gums and Resins Marketing Exhibition, held on 4 April 2014 in Isiolo County, Kenya, had great success, with over 80 participants representing all targeted stakeholders in attendance. As a result, awareness of the potential of the gums and resins sub-sector in economic development was enhanced. The exhibition received further publicity as it was aired on one of the popular television stations. The importance of the gums and resins sector in improving the livelihoods of communities in the ASAL counties of Kenya was broadcasted widely as a result. To measure effect, organizers developed evaluation forms that were given to participants after the exhibition. A lessons-learned session was held one day after the marketing exhibition as well.

Based on the analysis of the evaluation forms distributed on the exhibition day, over 75% indicated that the exhibition was a success. In general, the attendees expressed a need to have more marketing exhibitions like this, with over 65% indicating they would want them to be held annually. In addition, over 80% indicated that the exhibition displays were informative and the quality of the publications and information material was high. However, 20% of the attendees indicated that the venue was not convenient and a venue closer to the town should be considered next time.

The most effective way the marketing exhibition was advertised was through radio announcements (37%), followed by the roadside banners (24%), and word of mouth (20%). The flyers were least effective (2%). It was noted that the school band that was requested to march from town to the venue to publicize the event was not available as they were taking exams. A local singer was recruited to replace the school band, but was not as effective as the band would have been. Another suggestion was that the use of a vehicle with a public address system to make the announcement one day before the event and on the event day would have been more effective.

## Recommendations

During the lessons-learned session with the producer associations the following day, it was agreed that the exhibition achieved the objectives. Participants decided that:

- Regular marketing exhibitions need to be held, especially in other producing counties, to increase awareness of the potential of the gums and resins sub-sector in economic development.
- Future exhibitions would benefit from increased participation of investors, local industry, national, and county government.
- One way to interest such participation would be through increased use of print and electronic media to highlight the potential of the gums and resins sector to contribute to economic empowerment and growth.

Participation of producer associations in the gums and resins market system could be enhanced by establishing formal partnerships with the private sector for improved production and marketing synergy. An idea that emerged was for the producers associations to form marketing cooperatives to increase participation in the gums and resins value chain and to enhance equitable benefit sharing. Producer associations could also participate at local and international trade fairs to showcase their marketing potential. Capacity-building can be continued for the producer associations through harvesting, post-harvest handling, enterprise development, and marketing (including packaging and branding) of gums and resins. Finally, organizing knowledge exchange visits to neighboring countries such as Sudan, Ethiopia, and Somalia and would provide opportunities to share best practices in the gums and resins sub-sector.

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*(English Version)*

# Participation and Local Empowerment in National Forest Inventories in the Tropics: Case Study in Nicaragua, Central America

*SHEILA ZAMORA, CARLA RAMÍREZ, WING LAU*

Time Period: October 9, 2007 – March 30, 2009

Problem: Nicaragua's first national forest inventory (NFI) required the active participation of stakeholders at different levels. A communication strategy was created to help secure entry permits, establish permanent sample plots, and collect information through socioeconomic and environmental interviews.

Communication Instruments Used: Press release, television reports, project brochures, posters, radio spots, lobby with key stakeholders, meetings with leaders of indigenous communities and municipal governments, participative workshops.

Reasons for Success: Communication strategy was defined from the beginning of the project and was flexible enough to adapt to changes; outreach in the native language used words and phrases common to the target groups (e.g., Creole, Miskito, and Mayagna); forest professionals and field assistants were native to the area or nearby towns and had prior working experience in the sites; constant feedbacks and communication were central.

## Background

Nicaragua, better known as "The Land of Lakes and Volcanoes," was the fourth Central American country to implement the National Forest Inventory (NFI), following Costa Rica, Guatemala, and Honduras, which finished in 2001, 2003, and 2006 respectively. From 2007 to 2009, the first NFI in Nicaragua was implemented; this inventory was a government initiative conducted by the National Forest Institute (INAFOR, in Spanish) with technical support from FAO.

The NFI project was funded by the Nicaraguan government and the Food and Agriculture Organization of the United Nations (FAO), with a total amount of US$1,088,000. Of that amount, US$850,000 (78%) was funded by the national reserve fund within the PRORURAL program in Nicaragua and US$238,000 (22%) by the technical cooperation program of FAO through the technical assistance project for the methodological enhancement of the National Forest Inventory (TCP/NIC/3105). In addition to administering finances, the FAO supplied technical methodological assistance for the development of the NFI process (planning, execution, systematization, processing, analyzing, and reporting information).

The NFI represents a milestone in the forest history of the country, not simply because it was the first forest inventory at the national level, but because it also applied innovative concepts. The methods included an integrated, multipurpose approach that permitted the collection of information based on biophysical, socioeconomic, and environmental variables.

The multipurpose and interdisciplinary approach of NFI assessed: (i) the dynamics of forests, (ii) the dynamics of land-use changes, (iii) the integration of environmental services and sustainable forest management, (iv) the requirements for sustainable management of natural forests, (v) the need for financial support on forest plantations and agroforestry systems, (vi) the increasing forest productivity, and (vii) the economic values of forests.

The NFI project created a baseline with information about forests and trees outside forests and established foundations for a national forest monitoring system with permanent plots across the country. Additionally, NFI results support the evaluation of the current National Sustainable Forest Development Policy, the National Forest Program, and other instruments of strategic planning of central and regional governments. The NFI contributes to monitoring the forest resources in the medium and long term. Therefore, NFI supports initiatives such as inventories of land use, land-use changes and the forestry (LULUCF) sector, and the reduction of emissions from deforestation and forest degradation (REDD+) in Nicaragua.

The forest inventories performed in other regional countries showed several weaknesses during the implementation. A common theme was the lack of communication with local stakeholders during the process and insufficient dissemination of results. For example, in Honduras after the forest inventory, little dissemination of the collected information to local communities occurred. In Guatemala, the dissemination of information was

partialized. In general, the spread of results of forest inventories in media was absent or minimal. Also, in both cases they did not collect data from all of the plots planned.

The NFI project team in Nicaragua considered the lessons learned in national forest inventories carried out in Central America. For this reason, a communication strategy was planned nationwide to cover all stages of the project and overcome the weaknesses observed in the previous inventories. The project results were widely accepted due to media coverage of the project from the beginning.

Some of the key outcomes were that it was possible to collect information from 100% of planned plots, the project calculated various statistical indicators (coefficient of variation, sampling error, etc.), and 1,339 interviews were conducted. Currently, Nicaragua has 25% of its national area covered by natural forests (3,254,145 ha); and 33% of the total (4,318,344 ha) represents areas without forests, but these areas are 25% of the total biomass of the country due to the trees included in many systems and the design of land uses. Therefore, the NFI project highlighted the importance of the tree component in productive management nationwide.

## Target Audience

The audience for the project included decision makers in the central, regional, and local municipal governments; regional and rural mestizo communities; landowners; forest owners; and indigenous communities in the country (Miskito, Rama, Mayagna, Creole, and Afrodescendants).

## Communication Methods Used

The project used newspaper articles, television reporting, project brochures, posters with key slogans, radio spots, and meetings with leaders of indigenous communities.

## Process of Implementing Methods

National forest inventories require technical, social, and political support of the countries in which they run. For this reason, the focus of the communication strategy was broad and inclusive; communication and dissemination of NFI were performed using various media. Three elements of communication according to type and purpose were defined, namely: (1) print and television media, (2) pre-defined print media, and (3) local broadcast media.

1. Throughout the NFI project, 17 newspaper articles were published in written mass media at the national level, of which four articles were published in 2007, 10 articles in 2008, and three in 2009 (15 in independent media and two in government media). Each of these reports received a fact sheet provided by the executive management of the project. Additionally, a discussion with journalists was organized, which resulted in a three-minute interview, broadcasted on national and local channels; they participated in radio reports with national coverage and community radio stations, which were placed on the national agenda of the NFI process (a description, significance, and progress of the project). At the end of the project, a special report in the Nicaragua FAO Newsletter was published from January to March 2009.

2. The predefined print media included project profile brochures and posters with key slogans. The brochures provided comprehensive details of the project objective, number of plots to settle in the country and region, general schedule of activities, and local and national significance of the NFI. The posters advertised the start of the NFI project in the town; their objectives were to inform the public about the NFI and to gain acceptance of it among the general public. These posters were located at strategic places in all local areas and communities. These media were published in different languages (e.g., Spanish, English, Miskito, Mayagna, and Creole) and distributed throughout the country. In addition, each interviewee landlord received a brochure, poster, hat, or bag as a reminder of both the interview and the NFI project.

3. The radio was used to verbally distribute information; three radio spots were released in different regions of the country, and the messages were translated into the local native language. The radio slots were scheduled before and during the time when the technical teams entered the towns so that landowners and the general public were aware that foresters would be visiting the communities.

## Measuring Effect

It was considered that the media used were effective at the local level across the country, because information was able to be obtained from the 371 sampling units planned, 1,339 interviews were conducted, and only one owner refused to participate. Part of the strategy included establishing local communication channels through teams hired to implement the inventory.

The NFI project hired 809 people to cover all necessary activities (e.g., initial contact with property owners, data surveying, local translation, local guides, and technical foresters of the project). In total, 99 were trained as foresters for the field survey nationally. Because all field staff were local, they had to reside in the area or have work experience in the region where they participated. Likewise, the support staff hired resided as close as possible to the sampling units; this not only provided temporary local employment, but also helped to gain the confidence of the communities where the sampling units were located.

Thanks to the political support and the positive public opinion, the NFI project coordination between INAFOR and several key institutions was facilitated. Stakeholders included the forest and the local, municipal, regional governments of the Caribbean coast; the indigenous communities; Ministry of Environment and Natural Resources (MARENA); Ministry of Agriculture and Forestry (MAG); Ministry of Finance; Forestry Technical Institute; National Police; Army of Nicaragua; and regional universities such as University of the Autonomous Regions of the Nicaraguan Caribbean Coast (URACCAN) and Bluefields India and Caribbean University (BICU).

An example of the inter-institutional coordination occurred after Hurricane Felix passed through the Northern Caribbean of Nicaragua on September 4, 2007. This phenomenon affected 1.3 million hectares of natural forest and blew over about 10 million cubic meters of wood. Because of the negative impacts of the hurricane, humanitarian assistance for affected communities was prioritized. However, local authorities also required specific information from these areas to assess the impacts of the storm. Therefore, the NFI project planned special interdisciplinary and interagency sampling designs for hurricane areas. The field survey was conducted some months after due to good coordination with local authorities and communities affected by the hurricane.

## Conclusions

The NFI project in Nicaragua is considered successful because of the positive results from the communication strategy implemented at the local and national levels and adequate interagency coordination. A key issue was the active participation and local empowerment by the communities as key stakeholders involved at different stages of the project.

The impact of the media and the local acceptance influenced the government's decision to support the whole process of NFI. At the end of the project, the

Department of Forest Inventories (DIF) was institutionalized within the INAFOR, which has trained technical staff during the NFI. Currently, Nicaragua continues to update information with its own resources, although with limited funds.

The DIF aims to continue with the collection, processing, analysis, reporting, and ongoing dissemination of forest information within INAFOR. The process of NFI has developed a validated methodology and provides a baseline of the state of forest resources in the country. The results of NFI became the framework for the formulation of the National Forest Program (NFP), which provides updated information to the Forest Resources Assessments in Nicaragua (e.g., FRA 2010).

The database generated by the NFI allowed the creation of indicators to assess dynamics of trees outside forests in the medium and long term. Furthermore, the design of the NFI (plots and interviews) can be adapted to improve the information collected; therefore, NFI is considered the basis to support the monitoring, registration, and verification needed to implement REDD+ initiatives; calculate emission factors in the sector of land use, land-use change, and forestry (LULUCF); and support the greenhouse gases (GHG) inventory in that sector.

The website for INAFOR was improved and updated, in which the national results of the NFI project were published. In addition to this outreach effort, six regional workshops were held to present the results of the NFI to local communities. At the end of the project, the national and local governments had updated and reliable information available on forest resources, which was disseminated through mass media and local meetings. The success of the NFI project was due, in large part, to use of the media throughout the whole process.

Some aspects to be avoided are the design of local media (brochures and posters, radio spots, etc.) with general messages directed simultaneously to different stakeholders and that do not take into account the local idiosyncrasies – this can reduce the empathy for the project locally and hinder the development of activities. Instead, the participatory development of media is suggested to achieve greater effectiveness, acceptability, and sustainability of activities in the territories.

Following the processes of national inventories in other countries in the region, FAO organized an initiative to promote and internalize information from national assessments of forest projects (NFMA, for its acronym in English) in Guatemala, Honduras, and Nicaragua. The objective of this initiative was to define how information from NFMA should be organized under a regional network of forest information.

The database of NFIs in Central America is a huge wealth of information on forest resources, which is useful for monitoring forest resources across the region and also forms part of the national monitoring systems (e.g., MRV) in each country. Along with satellite images and other technologies, these systems contribute to the development of the forest, environmental, and rural sectors; ecosystem monitoring at the national level; initiatives such as LULUCF GHG inventory and REDD+; and assessment of policies related to forests, agriculture, and climate change in the region in the short, medium, and long term.

*English reviewed by Katelyn Janette Keller*

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*(Spanish Version)*

# Participación y Empoderamiento Local en las Evaluaciones Nacionales Forestales en los Trópicos: Caso de Estudio en Nicaragua, Centroamérica

*SHEILA ZAMORA, CARLA RAMÍREZ, WING LAU*

Periodo de Tiempo: 9 de Octubre del 2007-el 30 Marzo de 2009

Problema: Por primera vez en Nicaragua se estaba planificando un inventario forestal a nivel nacional con enfoque multipropósito y permanente. Para cumplir con los requerimientos de información desde el nivel local hasta el nivel nacional, fue necesario establecer una estrategia de comunicación para lograr la participación activa de actores a diferentes niveles. El mayor reto en la comunicación era como dirigirse a las poblaciones locales. El desconocimiento local sobre cómo y para qué se desarrolla un inventario forestal a nivel nacional, representaba un alto riesgo para obtener los permisos de ingreso a las propiedades, para establecer las parcelas permanentes de muestreo del INF y para colectar información a través de las entrevistas socioeconómicas y ambientales.

Instrumentos Usados: Reportajes de prensa escrita, reportaje televisivo, folletos o volantes del Proyecto, afiches, mensajes por radio, cabildeo con actores claves, reuniones con líderes de comunidades indígenas y con autoridades de gobiernos municipales, talleres participativos antes y durante el INF con objetivos y metas bien definidas.

Causas de Éxito: Estrategia de comunicación definida desde el principio del proyecto y flexible para adaptarse a los cambios durante el avance del proyecto. RP se diseñaron con el idioma nativo y palabras/frases comunes a los grupos metas (por ejemplo, el creole, miskito y mayagna). La mayoría de los profesionales forestales y asistentes de campo contratados eran nativos de la zona o de pueblos cercanos, y con experiencia de trabajo previa en los sitios, por lo que estaban familiarizados con los lugares, las organizaciones y la población local. Retroalimentación constante entre la coordinación del proyecto y los equipos locales. La comunicación ocupó un rol clave durante todo el proceso.

## Introducción y Contexto

Nicaragua mejor conocido como "Tierra de Lagos y Volcanes" fue el cuarto país Centroamericano en el cual se implementó un inventario nacional forestal (INF) después que Costa Rica, Guatemala y Honduras lo finalizaron en 2001, 2003, 2006 respectivamente. Durante 2007-2009 fue implementado el Primer INF de Nicaragua, este inventario fue una iniciativa del Gobierno ejecutado por el Instituto Nacional Forestal (INAFOR) con el apoyo técnico de la FAO.

El proyecto INF contó con el apoyo financiero del Gobierno de Nicaragua y de la FAO, con un monto total de US$ 1, 088,000. De los cuales, US$ 850,000 (78%) fueron asignados a través del Fondo Común dentro del marco del programa PRORURAL en Nicaragua y US$ 238,000 (22%) por el Programa de cooperación técnica de la FAO, a través del proyecto de Asistencia técnica para el fortalecimiento metodológico del Inventario Nacional Forestal (TCP/NIC/3105). La FAO además de administrar el financiamiento, proporcionó acompañamiento técnico-metodológico para el desarrollo del proceso de planificación, la ejecución, la sistematización, el procesamiento, los análisis y el reporte de la información.

El INF representó un hito en la historia forestal del país, no sólo porque fue el primer inventario forestal a escala nacional, sino además porque se aplicaron conceptos innovadores. La metodología utilizó un enfoque integrado que permite recolectar información basada en variables tanto biofísicas como socioeconómicas y ambientales. El enfoque multipropósito e inter-disciplinario del INF permitió evaluar: (i) la dinámica del bosque, (ii) la dinámica del cambio del uso del suelo, (iii) la integración de los servicios ambientales al manejo forestal sostenible, (iv) los requerimientos para el manejo sostenible de los bosques naturales, (v) la necesidad de fomento para la inversión y manejo de plantaciones y sistemas agroforestales, (vi) el fortalecimiento de la productividad forestal y (vii) el aporte económico de los bosques a la sociedad.

El proyecto INF creó una línea base de información forestal de los bosques y árboles fuera de bosques, y estableció las bases para un sistema de monitoreo forestal con parcelas permanentes en todo el país. Adicionalmente, los resultados del INF apoyan la evaluación de la actual Política Nacional de Desarrollo Forestal Sostenible, del Programa Forestal Nacional, y de otros instrumentos de planificación estratégica del Gobierno Central y de los Gobiernos Regionales. Este sistema contribuye al monitoreo de los recursos forestales en el mediano y largo plazo, y apoya iniciativas como inventarios del sector uso de la tierra, cambios de uso de la tierra y silvicultura y la reducción de emisiones por deforestación y degradación forestal (REDD+) en Nicaragua.

Los inventarios forestales ejecutados en otros países de la región mostraron diversas debilidades durante su implementación, un aspecto en común fue la poca comunicación con los actores locales durante el proceso y la insuficiente diseminación de los resultados. Por ejemplo, en Honduras después del inventario poca diseminación de la información recopilada había sido devuelta a las comunidades locales. En Guatemala la diseminación de la información fue parcializada. En general, la diseminación de los inventarios forestales entre los medios de comunicación estuvo ausente o fue mínima. En ambos inventarios no se muestreó la información de todas las parcelas planificadas.

El equipo del proyecto INF en Nicaragua consideró las lecciones aprendidas en los inventarios forestales ejecutados previamente en Centroamérica. Por esta razón, se planificó una estrategia de comunicación a nivel nacional que permitió cubrir todas las etapas del proyecto y superar las debilidades observadas en los inventarios anteriores. Los resultados del proyecto tuvieron una amplia aceptación debido al seguimiento de los medios desde el inicio del proyecto. Algunos de los resultados claves fueron que se logró colectar información del 100% de las parcelas planificadas, la metodología permite calcular diversos indicadores estadísticos (como coeficiente de variación, errores de muestreo, etc.) y se realizaron 1339 entrevistas. Actualmente Nicaragua tiene el 25% del área nacional se cubierta por bosques naturales (3,254 145 ha); y el 33% del total (4,318 344 ha) representa áreas sin bosques, pero estas áreas constituyen el 25% de la biomasa aérea total del país debido a los árboles incluidos en diversos sistemas y diseños. Por tanto, el INF permitió destacar la importancia del componente arbóreo para el manejo productivo a nivel nacional.

**Audiencia meta:** Tomadores de decisión del gobierno central, gobiernos regionales, gobiernos locales municipales, territoriales y comunidades rurales mestizas, propietarios de terrenos, dueños de bosques, comunidades indígenas del país (miskito, rama, creole y afrodescendientes).

**Métodos de comunicación utilizados:** Artículos de prensa, reportaje de televisión, brochures del proyecto, afiches con eslóganes claves y cuñas de radio y reuniones con líderes de las comunidades indígenas del país.

## Proceso de Implementación de los Medios de Comunicación

1. Los inventarios nacionales forestales requieren principalmente apoyo técnico, social y político de los países en los cuales se ejecutan. Por

esta razón, el enfoque de la estrategia de comunicación fue amplio e incluyente, la comunicación y divulgación del INF se realizó a través de varios métodos. Se definieron tres elementos de comunicación de acuerdo al tipo y objetivo, a saber: (1) medios masivos escritos y televisivos, (2) medios escritos pre-definidos y (3) medios orales con amplia difusión local.

2. Durante las etapas de inicio, medio término y finalización del proyecto INF se elaboraron 17 artículos de prensa en medios escritos masivos a nivel nacional, de los cuales 4 artículos se publicaron en 2007, 10 artículos en 2008 y 3 en 2009 (15 en medios independientes y 2 en medios de Gobierno). Cada uno de estos reportajes recibió una ficha informativa (Fact Sheet) provista por la dirección ejecutiva del proyecto. Además se organizó un conversatorio con periodistas, del cual resultó un reportaje de 3 minutos que fue transmitido por un canal nacional; se participó en reportajes radiales los cuales ubicaron en la agenda nacional el proceso del INF, su descripción, importancia y avances del proyecto. Al final del proyecto se realizó un reportaje especial del proyecto en el Boletín Informativo de FAO Nicaragua enero-marzo 2009.

3. Los medios escritos pre-definidos incluyeron los brochures del perfil de proyecto y afiches con eslóganes claves. Los brochures brindaban un amplio detalle del objetivo del proyecto, número de parcelas a establecerse en el país y por región, avance del inventario a la fecha, cronograma general de actividades e importancia local y nacional del INF. En cambio, los afiches divulgaban el inicio del proyecto INF en la localidad, su finalidad era informar sobre el INF y a la vez ganar la empatía del público en general, por lo que estos afiches fueron colocados en puntos estratégicos en todas las localidades del país, principalmente en áreas cercanas a las parcelas de muestreo.

4. Estos materiales de comunicación fueron elaborados en diferentes idiomas (por ejemplo español, inglés, miskito, mayagna y creole) y distribuidos por todo el país. Además, cada propietario entrevistado recibió un brochure, afiche, gorra o bolso como recordatorio de la entrevista y del proyecto INF.

5. El medio oral con amplia difusión local fue la Radio, se elaboraron tres cuñas de radio que fueron difundidas en diferentes regiones del país,

y también los mensajes fueron traducidos al idioma nativo local. Las cuñas fueron programadas antes y durante el tiempo en que los equipos técnicos ingresaran a las localidades, de este modo los dueños de terrenos y la ciudadanía en general tuvo conocimiento de que los técnicos forestales estarían de visita en las comunidades.

## Efecto Medido

Se consideró que los medios de comunicación utilizados fueron efectivos a nivel local por todo el país, ya que se logró obtener información de las 371 Unidades de Muestreo planificadas, y solo un propietario no quiso participar de un total de 1339 entrevistados. Parte de la estrategia de comunicación incluyó establecer canales de comunicación local a través de los equipos contratados para la ejecución del inventario.

El proyecto INF contrató 809 personas que cubrieron todas las actividades necesarias, por ejemplo, el contacto inicial con los dueños de propiedad, levantamientos de datos, traductores locales, guías locales (baquianos) y técnicos forestales del proyecto. En total se capacitaron a 99 profesionales forestales para el levantamiento de campo a nivel nacional. Debido a que todo el personal de campo era local, éstos debían residir en la zona o tener experiencia laboral en la región donde participaron. Así mismo, el personal de apoyo contratado residía lo más cerca posible de las unidades de muestreo, esto permitió no solamente proveer empleo local temporal, sino también obtener la confianza de las comunidades donde se ubicaron las unidades de muestreo.

Gracias al apoyo político nacional y a la positiva opinión pública que generó el proyecto INF se facilitó la coordinación entre INAFOR, los equipos forestales y las instituciones claves, tales como los gobiernos locales o municipales, los gobiernos regionales de la Costa Caribe, las comunidades indígenas, Ministerio de Ambiente y los Recursos Naturales (MARENA), Ministerio de Agricultura y Forestal (MAGFOR), Ministerio de Finanzas, Instituto Técnico Forestal, Policía Nacional y Ejército de Nicaragua, Universidades regionales como la Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense (URACCAN) y la Universidad Bluefields Indian and Caribbean (BICU).

Un ejemplo de la coordinación inter-institutcional ocurrió luego del paso del huracán Félix por el Caribe Norte de Nicaragua, el 4 de septiembre de 2007. Este fenómeno afectó 1.3 millones de hectáreas de bosques y tumbó aproximadamente

10 millones de metros cúbicos de madera. Debido a los impactos negativos del huracán, la ayuda humanitaria para las comunidades afectadas fue priorizada. Sin embargo, las entidades locales también requerían información específica de estas áreas para evaluar los impactos del huracán, por lo que el proyecto INF de forma participativa, interdisciplinaria e interinstitucional planificó un diseño de muestreo especial para las áreas huracanadas. El levantamiento de campo se realizó meses posteriores gracias a la buena coordinación con las autoridades locales y con las comunidades afectadas por el huracán.

## Conclusiones

El proyecto INF en Nicaragua se considera exitoso debido a los resultados positivos de la estrategia de comunicación implementada a nivel local y nacional, y por la adecuada coordinación interinstitucional. Un factor clave fue la participación activa y el empoderamiento local por parte de comunitarios/as y de actores claves involucrados en las diferentes etapas del proyecto.

El impacto de los medios de comunicación y la aceptación local recibida, influyó en la decisión del Gobierno para apoyar todo el proceso del INF, y al finalizar el proyecto se institucionalizó el Departamento de Inventarios forestales (DIF) dentro del INAFOR, el cual cuenta con personal técnico capacitado durante el proceso del INF. Actualmente, Nicaragua continúa actualizando la información con recursos propios aunque con fondos limitados.

El DIF tiene como objetivo continuar con la recopilación, procesamiento, análisis, reporte y difusión permanente de la información forestal para el ejercicio y funcionamiento del INAFOR. El proceso del INF ha desarrollado una metodología validada y constituye una línea base del estado de los recursos forestales en el país. Los resultados del INF se convirtieron en la principal plataforma para la formulación del Programa Forestal Nacional (PFN) y para proveer información actualizada a la evaluación de recursos forestales (i.e. FRA 2010 de Nicaragua).

La base de datos generada en el INF permitió la creación de indicadores forestales para evaluar la dinámica de los bosques y áreas fuera de bosques en un mediano y largo plazo. Además, el diseño del INF (parcelas y entrevistas) puede adaptarse para mejorar la información recopilada, por esta razón, el INF es considerado la base del sistema de monitoreo, registro y verificación necesario para implementar iniciativas REDD+, para calcular los factores de emisión del sector de Uso de la tierra, cambio de uso de la tierra y silvicultura (LULUCF) y para el inventario de gases de efecto invernadero de dicho sector.

Así mismo se promovió la mejora y la actualización de la página Web del INAFOR, en la cual se incluyó una sección específica donde se publicaron los resultados nacionales del proyecto INF. Sumado a este esfuerzo de divulgación, se realizaron seis talleres regionales para presentar los resultados del INF y devolver la información recopilada a las comunidades locales. Al finalizar el proyecto, el Estado y gobiernos locales contaron con información disponible, actualizada y confiable sobre los recursos forestales, la cual fue divulgada a través de medios de comunicación masiva y talleres locales. El éxito del proyecto INF se debió en gran parte al adecuado uso de los medios de comunicación a nivel local durante todo el proceso.

Algunos aspectos que se deben evitar son la construcción de medios de comunicación masivos (brochures, afiches, cuñas radiales, etc.) con mensajes generales dirigidos a diferentes grupos de actores locales, si estos recursos no toman en cuenta la idiosincrasia de comunidades locales pueden disminuir la empatía por el proyecto a nivel local y entorpecer el desarrollo de las actividades. En cambio, se sugiere la construcción participativa de los medios de comunicación para tener mayor efectividad, aceptación y sostenibilidad de las actividades en los territorios.

A raíz de los procesos de inventarios nacionales en los países de la región Centroamericana, la FAO organizó una iniciativa para promover e internalizar la información de los proyectos de evaluaciones nacionales forestales (NFMA, por sus siglas en Inglés) en Guatemala, Honduras y Nicaragua. El objetivo de esta iniciativa fue definir cómo la información de los NFMA debe organizarse en el marco de una red regional de información forestal.

Actualmente la base de datos de los INFs en Centroamérica es un enorme bagaje de información, la cual es útil para el monitoreo de los recursos forestales en la región, que además forma parte de los sistemas nacionales de monitoreo (i.e. MRV) en cada país y que junto con imágenes satelitales y otras tecnologías contribuyen con el desarrollo de los sectores forestal, ambiental y rural; el monitoreo de ecosistemas a nivel nacional; el apoyo de iniciativas como REDD+ y LULUCF; y la evaluación de políticas relacionadas con bosques, agricultura y cambio climático en la región en el corto, mediano y largo plazo.

9

# Forestry Extension in Slovenia

*JURIJ BEGUŠ*

Time Period: May 1995 – present

Problem: Support forest management practices of small-scale private owners while emphasizing safe working habits.

Communication Instruments Used: Individual contacts, courses, lectures, workshops, television and radio programs.

Reasons for Success: Provided the opportunity for two-way communication in extension activities; participatory approaches; trainings for foresters; facilitation and use of mass media; evaluation of extension activities.

Two main historical facts have shaped the relation between forestry as a profession and the forest owner and have, thus, influenced forestry extension so that it is different than countries with a long tradition of forestry extension. First, as in other Central European countries, all activities in forestry were and still are regulated by legislation. Second, for almost a half-century, private ownership was disrespected. Not until the formation of Slovenia as an independent state did the term "extension" gain use in Slovenian forestry, even though communication between foresters and forest owners has a long tradition.

Today, forestry extension is performed by different institutions, among them the Slovenia Forest Service, which plays the most important role. The aim of extension is to have the best possible qualified forest owners for forest work; high respect for the forest; understanding of the basic principles and methods of the forestry profession; and understanding of the organization of the forestry service, regulations, and other spheres that interest owners as forest managers. Extension needs to be performed by well-educated and skilled foresters; therefore, great effort is devoted to their education, especially in their communication with forest owners.

## Understanding Forestry Extension in Slovenia

Techniques and professional forestry extension in Slovenia are a result of historical policies that reflect its society's relation to forests. Today, forestry extension is understood as an activity for forest owners. According to andragogy theory, it is a form of education, as in the Adult Education Terminology (Jelenc 1991), and defined as "a special form of andragogic work where a professionally skilled person helps others solve their learning and educational problems." This definition refers to education, but can just as well be used for professional forestry extension.

In Slovenia, forestry extension is defined as professional assistance to help forest owners resolve problems of forest management (Densa and Lesnik 2002). In forestry extension, through advisory work, we resolve specific problems that appear in forest management, while also providing professional guidance in forest management. Through participation methods, we include forest owners as partners, which means approaching the understanding of extension as indicated by Anderson and Ferrington (1996), who define extension as a systematic process of exchanging ideas, knowledge, and techniques, which leads to mutually acknowledged changes in relationship, practice, knowledge, values, and acting, with an aim to improve work with forests and trees. Thus, in performing our extension activities, we keep a forest owner in mind, as well as the forest itself (Beguš 1997). Slovenia developed its "National Forestry Program," the basic document of forestry strategy approved by the parliament that represents the policy for all forestry activities.

*In short, professional forestry extension is meant for forest owners. We resolve problems and guide forest management by following generally accepted aims, trying to include forest owners as equal partners in the process.*

## Conditions in Slovenia

In Central Europe, Slovenia is one of the smallest countries of the old continent, with an area of about 2 million hectares. It borders Austria, Hungary, Croatia, and Italy. Sixty percent of the country is covered by forest, making it among the most-wooded countries in Europe. The climate is moderately warm, with temperatures and conditions generally favorable for forest development. The growing conditions are very productive, due to the availability of rich nutrients and its transitory position between the Mediterranean, alpine, and continental climates.

Mixed forests of relatively good quality predominate, and pure coniferous forests are very abundant and mostly of anthropogenic origin. The main tree species are beech, spruce, pine, and fir.


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## The Frame for Extension for Private Forest Owners – Extension Goals

General guidance for extension activities is defined in the Resolution on National Forest Programme of Slovenia (NFP) along with fundamental long-term objectives of forest management. Some of these goals, essential for forestry extension, are:

- Sustainable development of forest as an ecosystem in the sense of its biodiversity and all of its ecological, economic, and social functions.
- Sustainable use of all material goods from forest for the owner, development of rural areas, and the entire society.
- Efficient system of communication with forest owners and the public, which ensures successful development of forests.
- Favorable political, legislative, and institutional environment that will support sustainable management of forests and their multipurpose use.

For NFP, the education of forest owners is one of the most important ways they can actively participate in the provision of efficient forest management, both

economically and by strengthening all non-material forest functions. The main objective follows: "Forest owners who are aware of the importance of forests and their functions and trained for work in forests, want to actively participate in planning of forest development." Guidelines to reach this objective are:

1. Prepare education programs in accordance with forest owner needs. Their existing knowledge, preparedness, and capacity for work in forests and other factors should strongly influence the creation of the content of education programmes, which should be provided in a multifunctional manner.
2. Create a national scheme of education of forest owners.
3. Improve courses for forest owners and introduce the possibility of a national professional qualification.
4. Establish a national database/register of all education activities.
5. Introduce the possibility of awarding concessions for education with supervision of education.

Main indicators of success in meeting these objectives are number of courses and lectures for forest owners and number of media posts dealing with forests or forestry.

## Performers of Extension

In Slovenia, two institutions have legal authority to regulate extension programs: Slovenia Forest Service (SFS), through the Forest Act, and the Slovenian Agriculture and Forestry Chamber, through the Agriculture and Forestry Chamber Act, which performs extension within agricultural forestry institutions. In addition, Forest Owners Associations are becoming more important players. The Secondary Forestry School also performs different forms of extension. Some individual extension projects also are run by the Slovenia Forestry Institute and the Association of Forestry Society of Slovenia, within which there is a forestry publishing house, which has issued publications for forest owners.

## Financing Extension Activities

To perform extension activities, different financial sources are used: state budget, EU Rural Development Programme subsidies, budgets of local communities,

and financial participation of participants themselves. Early on, we realized that some financial contribution by participants is very important, especially for more complex and intensive extension methods, such as field courses. When participants pay a fee, they take a course more seriously.

## Target Group

Professional forestry extension is intended exclusively for those who manage their forests; therefore, the target group is forest owners. Their number is extremely high – 318,000 private forest holdings with 490,000 owners and co-owners. From the forest management point of view, a property structure of holdings this small is unfavourable. Small-scale property prevails; the average size of estate is 2.6 hectares. Almost 90% of owners have estates smaller than 5 ha.

Forest property ownership has two groups: **small-scale forest owners** and **big owners**. Small-scale forest owners, of course, have different needs from those with larger estates, who, as a rule, depend on income from their forests. Based on estate status, there are **farmers**, **semi-farmers**, and **non-farmers**. This classification can be linked to yet a third classification, which is important from the extension point of view: **those who perform forest work themselves** and **those who have forest work done by others**. Farmers and semi-farmers regularly perform forest work themselves; therefore, extension activities are designed differently for owners who have work done by others.

## Forms of Extension

Forms of contact between a forestry expert and a forest include **direct** and **indirect** forms of extension. The number of people that attend an extension event include **individual** and **group** forms of extension. Certain combinations of both are also possible. "Direct" means direct contact between forester and forest owner or a group of forest owners, while "indirect" usually is conducted through various media.

Direct contact between a forestry expert and a forest owner is more personal and can be very effective. We most commonly use tree marking, preparation of silvicultural plans, arrangements regarding silvicultural and protection works in connection with subsidies, resolving problems regarding parcel limits, and other personal contacts. But this direct form of extension has a major drawback: we can reach only one owner at a time.

The most frequent topic of direct extension is tree marking. In Slovenia, all overmeasure trees (over 10 cm of thickness) must be marked by a forestry professional. Tree marking is done according to the Forest Act "after joint

extension and joint selection," where a forest owner (or his representative) and a forester act as partners. This direct group contact includes lectures, courses, or demonstrations. These forms are more efficient because they reach a large number of forest owners, which is very important for Slovenia, given that it has more forest owners than can practically be individually contacted.

More efficient, though less personal, is the indirect form of extension. Here, information is sent through selected media, including printed materials, Internet, and other means.

## Extension Topics

In our extension activities, we distinguish different groups of topics, like silviculture and protection of forests, forest techniques, forest-management planning, and others, as shown in Table 1.

**Table 1. Extension Topics**

| Group | Topic |
|---|---|
| *Silviculture and forest protection* | • Tree marking<br>• Tending of young forest<br>• Preventive protection<br>• Silvicultural and protective works<br>• Regeneration of forests<br>• Protection from bark beetles |
| *Forestry technique* | • Safe work in the forest<br>• Bucking<br>• Novelties in the area of working devices and technologies in forest work<br>• Building and maintenance of skidding trails and forest roads<br>• Economics of forest works<br>• Biomass |
| *Others* | • Preparation of forest management plans<br>• Forestry legislation<br>• Safety at work in the sense of extension for the preparation of risk evaluation<br>• Forest insects dangerous to people (ticks)<br>• Tourism in forest environment<br>• Preservation of old working techniques (charcoal-burning)<br>• Group promotion |

## Approaches to Extension for Forest Owners

Approaches used by SFS include:

- Individual contact
- Courses in the field
- Courses with a mobile classroom
- Demonstrations
- Lectures
- Printed materials
- Filmmaking
- Articles in newspapers and magazines
- Radio and television shows
- Demonstrations and stands at fairs
- Excursions
- Forest learning paths
- Telephone
- Internet
- Email

We cannot evaluate exactly how many owners we reach with different activities. Considering the number of administrative orders for tree marking, we reach only about 50,000 owners a year. Likewise, we don't know how many owners read a certain article or follow a certain television or radio show (viewing score could be more than 120,000 viewers on the show). Our records are relatively accurate only for activities where the number of owners who participate in a certain event can be recorded. The table below illustrates the number of events and participants for some forms of extension.

**Table 2: Number of Extension Events and Participants, from 2003 to 2013**

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of events | | | | | | | | | | | |
| *Courses* | 140 | 235 | 187 | 203 | 190 | 247 | 208 | 221 | 181 | 175 | 159 |
| *Excursions* | 36 | 30 | 35 | 32 | 31 | 32 | 34 | 46 | 35 | 30 | 31 |
| *Lecturers* | 19 | 81 | 81 | 75 | 96 | 48 | 54 | 49 | 55 | 60 | 34 |
| *Demonstrations* | 5 | 4 | 5 | 4 | 2 | 3 | 2 | 2 | 5 | 3 | 3 |
| No. of participants | | | | | | | | | | | |
| *Courses* | 2.551 | 3.717 | 3.502 | 3.880 | 3.497 | 4.726 | 3.653 | 4.089 | 2.317 | 2.814 | 2.912 |
| *Excursions* | 1,159 | 1,549 | 1,500 | 1,768 | 1,518 | 1,251 | 1,218 | 1,677 | 1,412 | 1,213 | 1,172 |
| *Lecturers* | 486 | 3,419 | 2,105 | 2,314 | 2,437 | 1,445 | 2,108 | 1,585 | 2,080 | 2,423 | 947 |
| *Demonstrations* | 10,000 | 8,000 | 90,000 | 8,000 | 4,000 | 11,000 | 4,000 | 4,000 | 11,000 | 11,000 | 6,000 |

The most efficient form of extension is the field courses that we have organized since 1995, mostly for silviculture and forestry techniques. Courses on forestry techniques have attracted over 37,000 participants. Some of the most frequent and effective approaches currently used by SFS are described below.

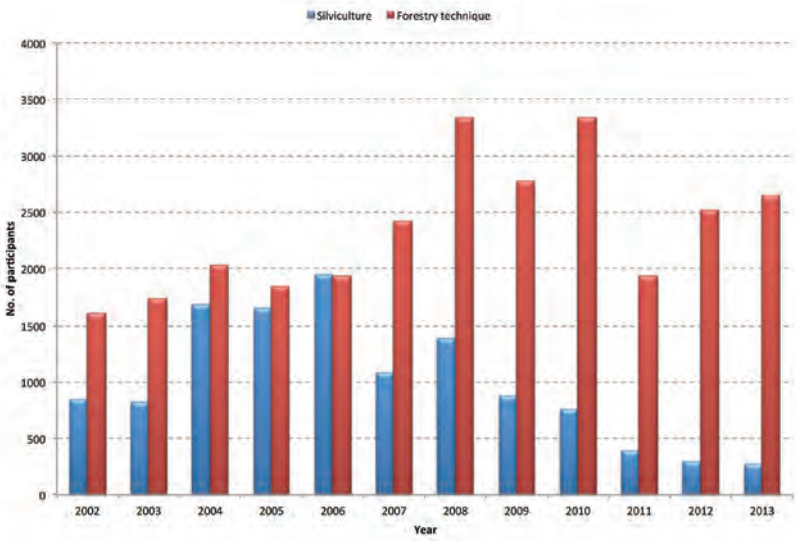


Figure 2: Number of Participants in Courses on Silviculture and Forestry Techniques

## Courses, Practical Demonstrations, and Lectures

These extension methods are most effective because we come into direct contact with the owners, either one on one or as part of forest demonstrations. From an organizational as well as pedagogic/andragogic perspective, these methods are the most demanding. Special organization and relatively high levels of funding are required to ensure suitable field facilities, special pedagogic staff with excellent professional knowledge, specific andragogic equipment, safety equipment, and perfectly working equipment. Last but not least is good weather, which no amount of organization or money can guarantee.

Detailed programs should be designed for the courses. In the performance of a course, improvisation is noted immediately, so it is indispensable to follow the agreed scenario with careful preparations for the course.

We organize lectures for forest owners as a separate event or in addition to courses. Some materials are prepared in advance for the SFS professionals to use to present on individual subjects in a more or less uniform way, including slide decks for computer presentations, slides, and transparencies.

### Publications

We produce the following publications:

- Booklets with professional contents
- Leaflets
- Video materials

Currently, the most effective publication is the leaflet, which provides rich information supported with pictures. The leaflet must be concise and designed to attract readers, even if they are not particularly interested in its contents. An attractive product better guarantees that it will be read. Leaflets are distributed to forest owners at meetings, during courses, and, occasionally, on administrative order.

For fairs and short lectures, we have recorded videotapes on topics including safe cutting and working practices in forests, storm damage, tending of forests, and forest birds.

### Mass Media and Advertising

Technical information on various topics is provided to radio, television, newspapers, notices, and advertisements. We frequently appear on the national radio and television in broadcasts for farmers and on private radio stations, the target audience of which is rural (Catholic radio). Technical articles deal with specific themes and are written in a language understandable to the forest owner by subject matter experts.

### Competitions for Forest Owners and Specialized Fairs

As a special form of extension, we organize cutting competitions for forest owners, where male and female teams from all Slovenian regions compete in different disciplines. We organized them at specialized fairs, which attract crowds, and so we are able to attract large numbers of forest owners. Through such competitions, we present correct cutting techniques, adequate equipment for

work, and personal protective means. At the specialized fairs, we have exhibition stands that are specially prepared outdoor testing grounds for demonstration of safe work techniques, adequate personal protection, and suitable work tools.

Figure 3 (Left): Recording of a Television Show About First Aid in the Forest (Photo courtesy of Jože Prah). Figure 4 (Right): Competition for Forest Owners (Photo courtesy of Miran Orožim)

### Mobile Classroom and Excursions

To bring extension even closer to forest owners without being dependent on classrooms and other capacities, we have started the project of a mobile classroom, designed for the purposes of education about safety at work, forest protection and tending, public awareness, work with schoolchildren, and many other topics. Many excursions are organized for forest owners, some to specialized fairs, but also to different parts of Slovenia and Europe for opportunities to meet colleagues and share experiences.

## Evaluation of Extension Activities

We use several approaches to evaluate the performance of extension activities and – most importantly – to determine if the extension activities contribute to reaching goals (better forest management, less accidents, higher economic output, etc.).

The most common method used are questionnaires, filled in by participants. Results show the quality of performance, the participant's attitude toward certain activity, the knowledge received, what to improve, and their wishes for the future. More than these attributes, we are interested in the results of extension – what they learned, if participants use the presented knowledge in practice, and if continuation of the method and content of the extension activity is reasonable.

Generally we do not test participants at the end of a course. We test their knowledge at chain saw competitions and, sometimes, with short questionnaires at fairs, delivering them among visitors who observe demonstrations. Through such an approach, we measure general knowledge among the population. More useful are surveys that show us if our approaches are successful. Two examples of such surveys follow: For safe work in the forest, we created questionnaires to get information about participant status, how they were equipped with mechanization, and primarily how they used the self-protection equipment. Surveys were performed from 1995 to 1996 and repeated in 2008. We focus here mainly on the results on use of helmet and protection chaps; results show we are making progress, as the use of helmet and protection chaps has been growing since 1995. This simple result also tells us that we need to change the attitude of forest owners in how they perform forestry operations, which is not a simple task.

The second survey is monitoring accidents among forest owners since 1997. We collect data about accidents among private forest owners – type of accident, status of victim, personal data, education, time of accident, etc. Our findings lead us to adjust our extension activities and make improvements. The analysis of fatalities during the years gives us two main results – first, that until 2011, we succeeded in keeping the number of fatalities to an average of 9 (before 1995, the average was 15), but after 2010, the number increased dramatically. Why? We estimate that the economic crisis is the main reason. Forest owners who use forests as a source of income go in and cut trees for fuelwood (oil prices are higher than wood) and sell the wood to earn money. This part of the population was not interested in our extension activities as they had no need for wood. When the crisis came, they went into forests with no knowledge, badly equipped and unskilled, so we have to find a way to reach them and address their needs. We also realized improvements could not be made only through extension. We are convinced that in Slovenia we need stronger legal measures to require forest owners to be equipped, well trained, and skilled.

## Successful Extension Performance by Foresters

In practice, extension of forest owners goes beyond education. It must address the trust between forester and owner, which can be good or bad. Depending on the quality of the relationship, the owner will take the forester's advice into consideration or not. The evaluation of this relationship depends on the side you are on.

Owner attitudes and perceptions are shown in the results (see Figure 5) of a survey performed in 2007 and 2008, where it was revealed that forest owners indicate the most help they receive from SFS is from extension. Extension activities are well accepted and seen as a very useful activity, but a proportion (18%) think that SFS does not provide them any help, so they are unsatisfied with SFS's services.

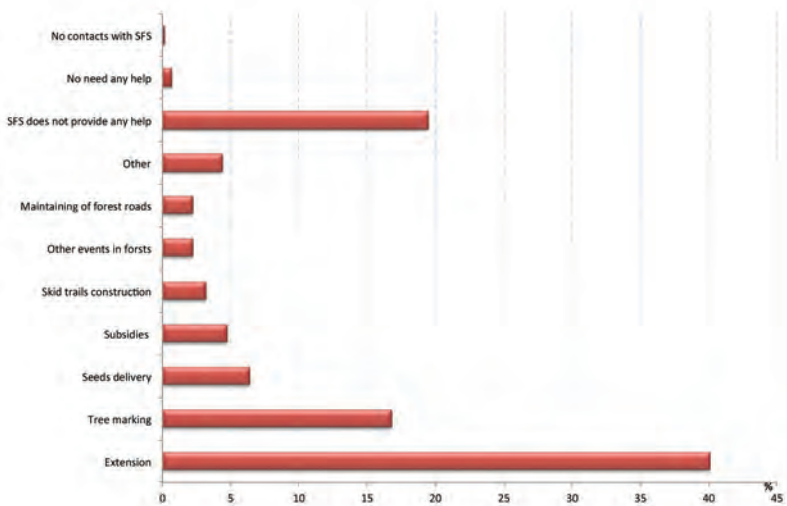


Figure 5: Frequency Distribution of Forest Owners' Identification of the Most Helpful Activities Performed by SFS

Foresters' opinions about the relation between them and forest owners were also surveyed for developing future extension activities. We examined the perceptions of foresters and asked them how they evaluated the relationship between forester and forest owner. We were interested in the reasons why they saw the

relationship wasn't ideal, and we classified the so-called negative reasons into the following four groups:

- Owners, their reactions, and their relation toward forest, forester, and forestry
- Property, where we cannot expect short or long-term changes and none of the sides has influence upon it
- Foresters (themselves)
- Other

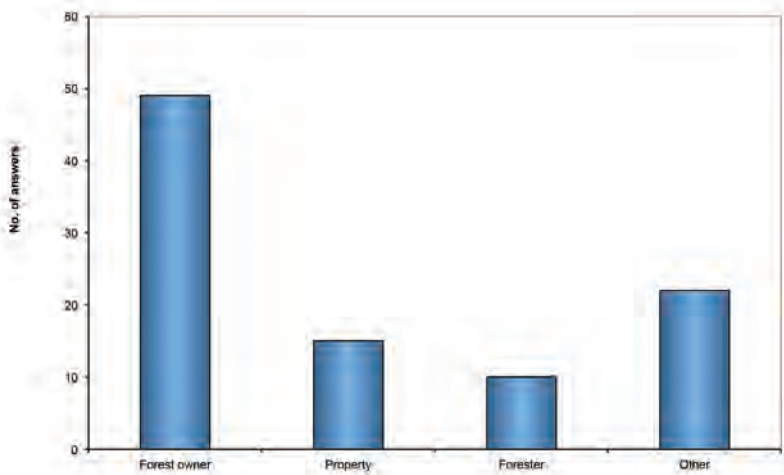


Figure 6: Perceptions of the Cause Behind Less-than-Ideal Forester-Forest Owner Relationships

As could be expected, foresters identified the owner as the main reason for poor communication. It means they did not, which is normal and commonly human, look for reasons in themselves. They see it in forest owners who are, according to their responses, not interested in forest work, do not stick to the agreements, have no knowledge, have great needs for wood, and so on. In these "negative" opinions, in the bad side of the relationship, we looked for indications that would tell us how to train foresters to provide successful communication between them and forest owners, because only good communication is a guarantee for efficient extension. Analyses show us that, despite having addressed these topics in the past, we have to continue with trainings on:

- Participation
- Conflict management
- Adult education
- Forms of extension

## Participation

In traditional extension, when the forester gives instructions to the forest owner, communication runs one way, from forester to forest owner. In this case, the owners receive the information the forester wishes to give them, and we don't ask ourselves whether the owners really want it, which means they receive it whether they ask for it or not. We are not saying this is bad; on the contrary, we can do a lot of good for the forest and for the forest owner. But our work is much more successful when the owner personally is included in the communication process or the process of deciding, through a two-way communication – forester:owner and the other way around. In this way, we admit that the owners have certain knowledge, we recognize their position, which undoubtedly they deserve, and most of all we surpass the old historical and mental frames which have been drawn in foresters' heads in the course of time. As we are working with adults, it is essential that they accept a certain idea, knowledge, or information as their own and that they get the impression it has grown from themselves. Therefore it is critical to include them into the extension process as participants.

To be successful in this in Slovenia, we foresters have to adopt the concept of participation ourselves. Futhermore, we have to understand it, which is more complicated already, because certain thinking patterns need to be changed. We are continuing the learning process, trainings, and information dissemination to forestry professionals about the possibilities and forms of participation that the SFS started in 2000 (Begus 2001). We know that this is not a simple and short-term process, but we are already seeing the results of our work.

Above all, owners have to be included in processes that determine how Slovenian forests will be managed and how extension activities and management plans are developed. In this way, the forest owners will see their contribution and accept the guidance provided by policy and management plans.

## Conclusion

In the past, sustainable forest management was regarded as the only way to preserve forests in Slovenia. Authorities and society tried to solve the situation in different ways, the first step being relatively strong legislation. To reach the objectives, defined by legislation and by forest management plans, forest owners were educated and provided extension services by the forest service. The content, intensity, and importance of forestry extension and education of forest owners in Slovenia has strongly depended on the general attitude toward private property, which has further depended on the political system, which has varied sometimes over short periods. Parallel with this and depending on all of the above, the relation between forest owner and forester has developed. This relationship is crucial for performing extension activities, so besides developing activities, we must continue to work on the relation between forestry profession and forest owners. By building on good communication and respect among one another, extension activities will be more successful.

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10

# Communications at the Slovenian Forestry Institute[1]

*TINA DROLC*

Time Period: 1991 – 2013

Problem: How to best incorporate scientific knowledge into legislative acts and bills.

Communication Instruments Used: Personal communication, field trips, meetings, workshops, conferences.

Reasons for Success: Professional and scientific papers and assessments that were the basis for amendment of legislative acts; personal, sustained communication with policymakers; development of communication skills by forest researchers.

## Introduction

Natural resources change relatively slowly and predictably. Culture, on the other hand, changes much more dynamically and unpredictably and depends mainly on the individual's and society's stage of development, tradition, experience, and existing social norms. This relation is reflected in the individual's notion of the forest's role and of its functions, uses, benefits, values, etc. Changes in the individual's attitudes toward the forest create changes in the position, identity, and mission of forest-related organizations as well. Classical forestry has evolved and developed mainly around wood production and processing roles, while modern forestry is based on three interconnected principles: the principle of sustainability, durability, and multipurpose uses.

Elected representatives, representing the people as the basic holders of sovereignty, decide on a common interest (Zajc and Drago 2004), which is based, in part, on the attitudes and interests of various stakeholders and formalized in a variety of policies. Thus, formalized common interest is documented in the form of the constitution, laws, and other acts of democratic government or system

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of political representation. Such is the context for forest research organizations initiated and funded within governments across the world. These organizations play a role in contributing to scientific understanding to forest policy.

In the case of the Slovenian Forestry Institute (SFI), impact on proposed legislation has taken place in three eras of the Slovenian state. The first is the era of Slovenian independence, when the legislation in the field of forestry was established. SFI researchers used personal communication, field trips, and professional conferences as communication tools in contributing forest science to forest policy.

In the second era, which coincides with Slovenia's entry into the European Union (EU) in 2014, SFI researchers started to apply new communication tools due to more intensive cooperation with EU scientists in the forestry sector. These tools focused communications on various projects and emphasized collaboration with joint working groups or various institutions and associations at the EU level.

The third era is the era of economic crises, which began in 2008 and is still ongoing at the time this paper was written. The communication tools of this era are still evolving.

The SFI was assigned particular tasks of public forestry service by the current Forest Act (ZG-NPB2), including providing professional and scientific opinions and expertise for the preparation of these acts in the field of forestry. During the implementation of the new Forest Act, which was adopted in 1993 (ZG-NPB2), SFI published over 45 professional and scientific papers and assessments. In the past, research agendas were mainly related to the exploitation of natural resources in the forest; only recently are they also aimed at exploring the cultural resources related to forests.

In 2013, the Ministry of Agriculture, Forestry, and Food of the Republic of Slovenia began assessing all regulations and other decrees for their conformity with the Forest Act of 1993, which serves as an umbrella act. This was carried out with an intention to harmonize and adapt all previous related acts with new recognition of cultural resources related to forests and forestry. It seems that the cultural resources at this moment deviate from the applicable act and that these resources will have to be formalized as part of new legislation.

## Communicating Professional and Scientific Information

Researchers working at the SFI have, since Slovenia gained independence in 1991, provided more than 45 professional and scientific published papers and assessments, which became the basis for the amendment of legislative acts in the field of forestry. This information was incorporated in the acts' proposals and was written at the direct invitation of the ministry in charge of forestry. It is difficult to say to what extent these proposals were actually incorporated into final legislation, because deviations from professional and scientific opinions were influenced by the general public opinion on forests and forestry and so influenced decision making and outcomes.

In addition to providing direct professional and scientific opinions and assessments for the legislative proposals, SFI shared scientific information through personal communications via working meetings, field workshops, and professional conferences. Personal communication with policymakers took place during working meetings held at the Institute or at the premises of the ministry in charge of forestry. These meetings had the goals of persuasion and familiarization with new opinions and findings, given that scientific information had significantly evolved from common understanding about forests and forestry held by the public. Personal meetings, in addition to formal communication, allowed an informal tone that enhanced persuasion.

Field workshops included an overview, presentation of procedures, methodologies, and results of research in the field. By holding workshops in the field and including other types of experts, current public perceptions were addressed in a way that raised the conceptual understanding of forests and forestry to new, broader levels.

The researchers included scientific conferences as a communication tool when a leap between the existing cultural understanding of the terms "forest" and "forestry" was significant, not only for those developing legislative proposals, but also for other professionals in this field. While the presence of policymakers was largely ensured at field workshops, their presence at scientific conferences was limited to the formal portion of the conference. Later, when substantive discussions or roundtables started, they had already left for other commitments. Often, this lack of attendance at these key portions of the conferences was addressed by publishing monographs that detailed the methodologies and results of the research. It is difficult, however, to say how many of these monographs were actually read by policymakers.

## Communications After Slovenia's Entry into the European Union

In 2004, Slovenia became a member of the EU and was, thereby, obliged to respect EU law and guidelines, decrees, etc. The EU passes laws, regulations, and other acts in its institutions and reviews their contents on working committees. The expert basis for their work is provided by national proposers. Researchers from the SFI participate by invitation or on their own initiative through personal communication or prepared professional or scientific opinions or expert advice. The main problem in communicating prepared opinions lies in the professional qualifications and familiarity with the topics of the professional or researcher and their ability to effectively present the prepared content. That is why the researchers at the SFI started employing other communication tools and a broader approach – in particular, by integrating their information at the European level and by getting involved in European research studies and institutions in the field of forest and forestry.

The SFI researchers continue to maintain personal communication with national policymakers and present their professional or scientific opinion or expert advice in working meetings and field visits. They also continue to present their findings at professional and scientific meetings where policymakers are invited to participate.

After joining the EU, some SFI researchers started to intensify cooperation with EU scientists in the forestry sector. The most common form of integration with foreign partners is through a basic research project that results in recommendations for policymakers at the EU level. The decision of individuals to connect is a personal one, which means that some researchers today, after 10 years of networking, have gained recognition from successful cooperation with foreign partners as reliable partners. Other researchers have not reached out on their own.

Some researchers decided for even more intensive involvement in the process of developing legislative proposals and have joined as members of working bodies or various institutions and associations at the European level. Among the nearly 60 researchers working at the SFI, there is one member of the working body at the EU level.

## After the Recent Global Crisis

The recent economic crisis has particularly impacted Slovenia because of the transition its society had already been undergoing. Various austerity measures are being prepared or already have been implemented. These austerity measures

will, among other things in the area of forest and forestry, affect research, requiring researchers to employ more effective communication methods to obtain funds and gain recognition of how research results have been incorporated in current acts, legislation, and policy.

It seems increasingly evident that forestry research will have to find its place in a society flooded with information where only the most urgent problems are of public interest. Society at large is not favorable to funding forestry research. This is because of a notion that a forest is an ecosystem that grows and develops by itself, so investing in research in this area does not seem to be economically viable. Within this social context, existing communication tools – personal communication in working meetings and field visits, scientific conferences, and involvement in institutions and research at the European level – should be complemented by other communication efforts and tools and not left solely to the discretion of the individual researcher.

## Conclusion

What all aspects of communicating professional and scientific opinions and assessments have in common currently is that the method of communication, communication tools used, and established communication objectives are subject to the personal decisions of the researcher. In the field of communication, SFI has no internal arrangements or instructions for researchers; this can be justified given that communication tools are adjusted by each individual researcher for their particular research field and goals to be achieved. However, considering the development of new communication tools, researchers with good communications skills are given priority over those with less communications skill. Successful communication of research results in the policy arena is increasingly associated with the successful provision of funding for research, which, in turn, means that the gap between communication skills among different researchers will continue to grow. In making a case for successful communication, we encourage researchers to look at their work in the field of forestry from a different perspective, not just through the eyes of a researcher.

The forest is part of our environment and its amenities are to a greater or lesser extent used by the whole community; therefore, research and forest management are very important and of direct interest to all. Either the research institution or the researchers have to decide when we will reach the point where it will be necessary to overcome the existing spontaneous communication frames that originate

from an individual's personal choice and work instead to frame communications from the institutional level with a planned, strategic approach. Two questions rise immediately: which researchers will, facing the increasing amount of paperwork involved, embrace this, and would it be appropriate to hire a professional consultant for communications?

A well-established and managed communications plan that will enable every researcher to pursue independent decision making and implementation is preferred. Thus, a prepared plan would establish a common communication goal at the level of the institution and, at the same time, allow each researcher to seek individual communication objectives – for a specific project or for the researcher's entire research path.

Why might a researcher be more suitable as a communicator than a professional consultant for public relations? More than 55% of the message received by a person is conveyed through nonverbal communication, and who knows or believes in the research, its results, and the methodology more than the researchers themselves? Of course, you first need to have knowledge of the importance that planned and guided communication carries, you need to be acquainted with individual communication tools – the advantages and pitfalls of their use – and, last but not least, you need to learn where your boundaries in communication are and be prepared to ask for help with demanding projects.

Preparation of a plan and adaptation of various communication tools requires intensive work. However, the result would be successful communication in the field of forestry research. The plan would enable researchers to influence stakeholders, policymakers, and the general public to consider use of their scientific information.

To conclude, successful communication is not reserved for communication professionals only, but is a skill that can be developed by forest researchers and, today, represents an indispensable part of every profession. Communication grounded in a quality education program would produce successful, skilled, and pleasant communicators who would significantly contribute to the SFI's accomplishments, success, and goals.

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*(English Version)*

# Exchanges of Agroforestry Experiences Between the Piaroa Communities in the Venezuelan State of Amazonas: Public Relations for the Agroforestry Sciences

*PEDRO MANUEL VILLA, NORMAN MOTA,*
*LUISA DELGADO, RICHARD CEDEÑO*

Time Period: February 2010 – present

Problem: A need to develop agroforestry systems with the Piaroa indigenous communities – who are not fluent in the Spanish language – to recover degraded areas, preserve forests, produce food, and create subsistence.

Communication Instruments Used: External and direct communication – dialogue and exchange of knowledge based on experience and local knowledge, guided visits, demonstration, direct communication of agroforestry experiences.

Reasons for Success: Bilingual communication was key to attracting the interest of, and facilitating understanding among, indigenous participants.

## Introduction

Evidence is sufficient that itinerant agriculture of increasing indigenous settler populations is a cause of forest loss in the Orinoco-Amazon Region (Llambí and Llambí 2000, Villa et al. 2012). Agroforestry systems are considered an alternative of sustainable production for the region from a social and environmental point of view (Brown 1996; Torres and Villa 2014). To contribute to the conservation and sustainable use of the forests in the Venezuelan state of Amazonas, the PROBIODIVERSA Foundation for biodiversity conservation and the National Institute for Agricultural Research (INIA –

Instituto Nacional de Investigaciones Agrícolas) launched a management project for developing agroforestry systems with the Piaroa indigenous communities in 2009. This was initiated to recover degraded areas, preserve forests, produce food, and create a means of subsistence for these families.

After a complex process of assessing the communities, taking actions for the project, attaining accomplishments, and obtaining some products, there is now interest among new indigenous families and communities in participating in the initiative. Promoting and strengthening collective abilities with the help of bilingual indigenous interpreters was key to the success of the project in the communities. Since then, the exchange of experiences between participant Piaroas has been fundamental, and through didactic fieldwork has been realized as a means to promote agroforestry activities and practice conservation and sustainable forest management in new Piaroa communities.

## Strategic Planning

Given the goal to promote effective communication between indigenous communities responsible for implementing the project and those interested in participating in conservation and sustainable management of the forest, the project's main objective was to facilitate the dialogue and the exchange of knowledge about local experiences with agroforestry systems among the Piaroa communities of the Cuao and Cataniapo Rivers, in the state of Amazonas, Venezuela. Public and private institution participation was very important as well. Guided visits and demonstrations were conducted along with an external and direct communication on agroforestry experiences. These were a means of performing comparative analysis on the initiation and management of such systems, examining advantages and disadvantages. It was anticipated that the institutions in Amazonas had a direct relationship with the communities, so synergistic communication could be possible in the agroforestry field through participant research, strengthening of skills, and knowledge exchange.

The demonstrative fieldwork in each community included three main steps: (1) induction and awareness; (2) fieldwork, consisting of visiting the agroforestry systems; and (3) general discussions about positive and negative aspects and local planning of important further steps.

## Target Group

The basin of the Cuao River is inhabited mainly by the ethnic group of Piaroa and is considered to be the habitat of their ancestors. Important transformations have

taken place for this settler population and the forest ecosystems surrounding them. When compared to the Creole populations, however, the Piaroa people remaining near the Upper Cuao show the most traditional and native traits of the Piaroa culture because of their greater isolation (Zent 1997).

During fieldwork and demonstrations, each community linked to the project had about 40 participants, with 153 people participating in total and representing different families within each of the six Piaroa communities. Also, during the fieldwork, public servants from the INIA and PROBIODIVERSA participated, as well as members of other Piaroa communities from the Autana municipality, such as Piedra Tonina, Pendare, Caño Veneno, with special participation of farmers from the Gavilán and Sardi communities in the basin of the Cataniapo River (Atures municipality, Amazonas state). Male and female Piaroa farmers from over 15 families living in the communities of Coromoto de Cuao, Raudalito Picure, Raudal de Danto, and Raudal de Perro actively participated. They played a main role at the events because of their relevant experiences in growing traditional crops.

## Key Messages

In sharing knowledge and exchanging intercultural experiences between indigenous communities and others in the management of forests, key messages centered around a growing sensitivity toward conservation and sustainability of the goods and services provided by those forests and the products from them. This project then resulted in new academic outcomes and papers on the current and future scenarios of the management and use of the soil in the basins of the Cuao and Cataniapo Rivers in the state of Amazonas. Furthermore, achievements of the community organization in meeting the demands of their agricultural production systems could be replicated, when the relationship between the social and environmental realities was considered.

## Communication Tools Used

It is important to stress that in all of the field demonstrations held as part of the agroforestry experience exchange, the indigenous people of the particular communities actively participated, gaining more advanced technical proficiency and carrying out roles as bilingual interpreters from Spanish to Huottöja and from Huottöja to Spanish – given most of the participants and families from the Piaroa communities do not speak Spanish. Within the external and direct communication methods held in those demonstration agroforestry lands, there is no doubt that the bilingual communication was key to meeting the goal of attracting the

interest and facilitating the understanding of the indigenous participants who, in the end, wanted to engage in the management project and in breaking down the communication barrier that had jeopardized previous projects that ended up being unsuccessful.

## Lessons Learned

Communication methods such as fieldwork demonstrations allow experience exchanges and are most suitable for this particular target group, which is characterized by limited understanding of Spanish and lack of professional training or education. Thus, the key messages had to be transmitted through bilingual interpreters for better comprehension and acceptance of the management practices. Translation was needed, and began with approaching the communities, working on the technical implications in maintaining agroforestry plots, and making measurements for the management and conservation of secondary and primary forests, especially for biodiversity. Similarly, it is to be emphasized that these experience exchanges made it possible for different key actors (INIA, PROBIODIVERSA, and indigenous communities) to participate in crucial debates on subjects of worldwide interest, such as climate change's impact, mitigation, and adaptation and the restoration of degraded areas and their biodiversity through activities and learning directly through close experiences.

## Recommendations

The workshops held with the Piaroa communities from the Venezuelan Amazonia need to be inclusive and, above all, they must take into account the importance of the participation of women, who, through generations, have been responsible for the transmission of their cultural values. In fact, for the Piaroa, women are in charge of many daily subsistence activities for the family's sake, as well as of the management of the biodiversity of the forests, in addition to raising children. Now, assuming that men and women have different ways of relating to the environment, it has been necessary to evaluate the existing link between gender and biodiversity, especially during the realization of activities of the agroforestry management project. This gender approach has significantly shaped the ways to transmit information about the means of using, conserving, and managing the biodiversity for Piaroa's present and future generations. Women generally devote a great deal of the time in their lives to managing biodiversity and raising their children simultaneously.

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*(Spanish Version)*

# Intercambio de Experiencias Agroforestales entre Comunidades Piaroa en el Estado Amazonas-Venezuela: Relaciones Públicas para la Ciencia Forestal

*PEDRO MANUEL VILLA, NORMAN MOTA, LUISA DELGADO, RICHARD CEDEÑO*

Período de Tiempo: 2 de Febrero de 2010 – presente

Problema: Desarrollo de proyectos sin una gestión participativa, y sin métodos externos y directos de comunicación sobre experiencias agroforestales demostrativas y conservación de los bosques, donde los participantes y familias de las comunidades Piaroa no dominan el idioma español.

Instrumentos Usados: La comunicación externa y directa: diálogo e intercambio de conocimientos basados en la experiencia y el conocimiento agroforestal en comunidades indígenas Piaroa.

Causas de Éxito: Dentro de los métodos de comunicación externa y directa la herramienta de la comunicación bilingüe fue clave para lograr el objetivo de atraer el interés y facilitar la comprensión del proyecto entre los participantes indígenas. Visitas guiadas a diferentes experiencias agroforestales. Contínuo sentido de sensibilización para la conservación y manejo sostenible de los bienes y servicios que proporcionan los bosques, a través de los productos demostrativos obtenidos.

## Antecedentes del Estudio de Caso

Existen suficientes evidencias que la agricultura itinerante de poblaciones indígenas sedentarizadas es una de las principales causas de la pérdida de los bosques en la Cuenca Amazónica. Frente a la necesidad de contribuir con la conservación y uso sustentable de los bosques en el estado Amazonas, Venezuela, la Fundación para la Conservación de la Biodiversidad (PROBIODIVERSA) y el Instituto Nacional de Investigaciones Agrícolas (INIA) iniciaron en el 2009, un proyecto de gestión para el desarrollo de sistemas agroforestales en comunidades indígenas Piaroa como base para recuperar áreas degradadas, conservar los bosques, producir alimentos y generar medios de vida para las familias. Después de un complejo proceso de abordaje de las comunidades, avance de las acciones del proyecto, y obtención de logros y productos, actualmente existe interés de participación de nuevas familias y comunidades indígenas en la iniciativa. Sin duda, se ha comprobado que la inducción y fortalecimiento de capacidades colectivas con apoyo de interlocutores bilingües fue la clave del éxito del proyecto en estas comunidades indígenas; desde entonces ha sido clave el intercambio de experiencias entre pueblos Piaroa participantes en el proyecto a través de jornadas de campo demostrativas, como mecanismo para promover la agroforestería en nuevas comunidades Piaroa, como práctica de conservación y manejo sostenible del bosque.

## Planeamiento Estratégico

Para asegurar una comunicación efectiva entre comunidades indígenas interesadas en participar en el proyecto de conservación y manejo sostenible de los bosques, se propuso como objetivo fundamental promover el diálogo e intercambio de saberes sobre la base de las experiencias y conocimientos locales en relación a los sistemas agroforestales entre las comunidades indígenas Piaroa del río Cuao y Cataniapo, e invitados de instituciones competentes. Así mismo, se realizaron visitas guiadas y demostrativas como un tipo de comunicación externa y directa sobre las experiencias agroforestales, con el propósito de realizar análisis comparativos sobre todo el proceso de establecimiento y manejo de los sistemas; así como las ventajas y desventajas presentadas. Se esperaba que las instituciones que hacen vida en el estado Amazonas, mantengan una relación directa con las comunidades para seguir teniendo un trabajo sinérgico de comunicación con estas comunidades en el ámbito de la agroforestería, a través de la investigación participativa, fortalecimiento de capacidades e intercambio de saberes.

La estructura general de las jornadas demostrativas de campo de cada experiencia en cada una de las comunidades visitadas, consistió en tres principales fases, i) Inducción: presentación de participantes y pautas generales del evento, ii) salidas de campo: visitas guiadas a los sistemas agroforestales, iii) acuerdos alcanzados: análisis de aspectos positivos y negativos, así como el planteamiento de importantes pautas de gestión para el futuro.

## Grupo de Enfoque

La cuenca del río Cuao está habitada principalmente por indígenas Piaroa, considerada como el hábitat ancestral de esta etnia. Actualmente en las comunidades del río Cuao ocurre una continua migración principalmente de la población joven, hacia otros centros poblados en contacto con la sociedad criolla. En estas poblaciones sedentarizadas se empieza a evidenciar importantes transformaciones de los ecosistemas boscosos. Por otra parte, según Zent (1997) los pueblos Piaroa que todavía permanecen en las inmediaciones del Alto Cuao, constituyen las formas más tradicionales y autóctonas de la cultura Piaroa, debido al aislamiento relativo con respecto a las poblaciones criollas.

Durante cada jornada demostrativa de campo en cada comunidad vinculada al proyecto, han participado aproximadamente 40 personas indígenas, y hasta ahora un total de 153 personas, representantes de familias por comunidad distribuidas en seis comunidades Piaroa. Durante las jornadas de campo han asistido funcionarios públicos del Instituto Nacional de Investigaciones Agrícolas (INIA), PROBIODIVERSA, miembros de otras comunidades Piaroa del municipio Autana (Piedra Tonina, Pendare, Caño Veneno), y con la participación especial de los agricultores de la comunidad de Gavilán y Sardi de la cuenca del río Cataniapo, municipio Atures, estado Amazonas. Así mismo, se contó con la participación activa de agricultores y agricultoras Piaroa correspondiente a 15 familias extendidas distribuidas en las comunidades Coromoto de Cuao, Raudalito Picure, Raudal de Danto y Raudal de Perro; las cuales fueron parte protagónica del evento debido a su importante función como facilitadores de sus experiencias agroforestales.

## Mensajes Clave

El mensaje clave que se pretende transmitir a través de los diálogos de saberes e intercambio de experencias interculturales entre comunidades indígenas y actores involucrados con el manejo de los bosques, es un continuo sentido de sensibilización por la conservación y sustentabilidad de los bienes y servicios que

proporcionan los bosques, a través de las productos demostrativos alcanzados hasta ahora, generando disertaciones sobre las perspectivas de la situación actual y futura en el manejo y uso de la tierra en la cuenca del río Cuao y Cataniapo del estado Amazonas, con intenciones de seguir replicando los logros de la organización comunitaria para atender las demandas de sus sistemas agroproductivos y realidades sociales.

## Herramientas de Comunicación Usadas

Es importante resaltar que durante el desarrollo de todos los eventos demostrativos de campo,como parte del intercambio de experiencias agroforestales, se ha contado con la participación activa de indígenas de las mismas comunidades, con un perfil técnico mas avanzado, cumpliendo funciones como interlocutores bilingües, haciendo las correspondientes traducciones Español – Huottöja, y Huottöja –Español, debido a que gran parte de los participantes y familias de las comunidades Piaroa no dominan el idioma Español. Sin duda, dentro del método de comunicación a través de parcelas agroforestales demostrativas, la interlocución bilingüe ha sido clave para lograr atraer interés y comprensión de los indígenas participantes, queriendo comprometerse con el proyecto de gestión yen romper con una barrera comunicacional que han atrevezado numerosos proyectos fracasados.

Finalmente, durante las plenarias de las jornadas de campo, en cada comunidad, se han generado discusiones generales entre todos los participantes del evento, donde se manifestan las impresiones de los intercambios de experiencias agroforestales, considerando diferentes aspectos asociados con el manejo de los bosques y medios de vida de los pobladores locales.

## Lecciones Aprendidas

En relación al método de comunicación implementado, con jornadas de campo demostrativas a través intercambio de experiencias, se presume que es el método más acorde para un grupo objetivo que tienen limitaciones de comprensión del español, formación académica o profesional. Por lo tanto, el mensaje clave tuvo que ser transmitido a través de interlocutores bilingües para mayor comprensión y aceptación del proceso de establecimiento de parcelas agroforestales, desde el momento de abordaje de las comunidades, hasta las implicaciones técnicas para el mantenimiento, como parte del proyecto de conservación y manejo sostenible de bosques. Así mismo, se destaca que estos intercambios de experiencias

permiten el encuentro de diversos actores claves (INIA, PROBIODIVERSA y comunidades indígenas) en el marco de un tema crucial en la agenda mundial como es la mitigación y adaptación al cambio climático, haciendo y aprendiendo directamente con estas jornadas demostrativas.

## Recomendaciones

Se recomienda que los talleres realizados en las comunidades Piaroa de la Amazonía venezolana sean inclusivos, y sobre todo, considerar la importancia de la participación de las mujeres, quienes por generaciones han sido responsables de transmitir el conocimiento de sus valores culturales. En efecto, dentro de los Piaroa, son las mujeres quienes se encargan de muchas actividades cotidianas de subsistencia de la familia, particularmente del manejo de la biodiversidad de los bosques; además de velar por la crianza de sus hijos. Partiendo de la premisa de que los hombres y mujeres se relacionan de manera diferente con el medio ambiente, resultaría necesario evaluar la vinculación que existe entre género y biodiversidad, especialmente durante el desarrollo de actividades pertenecientes al proyecto de gestión agroforestal. Del enfoque de género dependerá mucho como transmitirá la información sobre la formas de uso, conservación, manejo de la biodiversidad, a las generaciones actuales y futuras. Generalmente las mujeres dedican gran parte del tiempo de sus vidas atendiendo y enseñando a sus hijos.

# 10

# APPENDICES

# List of Communication Instruments

The different communication instruments described in the "Success Stories" are listed here.

| Communication Instrument | Success Story | Page |
|---|---|---|
| Brochure, Flyer, or Banner | 7, 8, 9 | 124, 132, 146 |
| Consultation | 3, 7 | 95, 124 |
| Field Visits | 10, 11 | 161, 167 |
| Media Outreach | 3, 7, 8 | 95, 124, 132 |
| Networking | 3, 4, 5, 7, 8, 9, 10, 11 | 95, 103, 107, 124, 132, 146, 161, 167 |
| Poster | 2, 8 | 85, 132 |
| Press Release | 3, 8 | 95, 132 |
| Radio | 7, 8, 9 | 124, 132, 146 |
| Science or Policy Brief | 1, 3, 7 | 78, 95, 124 |
| Social Media | 1, 5, 6 | 78, 107, 115 |
| Television | 7, 8, 9 | 124, 132, 146 |
| Training | 3, 7 | 95, 124 |
| Translation | 7, 8, 11 | 124, 132, 167 |
| Video | 7, 9 | 124, 146 |
| Website or Page | 1, 5, 6, 8 | 78, 107, 115, 132 |
| Workshop or Seminar | 3, 5, 6, 7, 8, 9, 10 | 95, 107, 115, 124, 132, 146, 161 |

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