

# Model Forests in Argentina: Creating place and time for participatory sustainable forest management

*Coordinating lead author: John E. Hall*

*Lead authors: Mónica Gabay, Sean Dolter, and Mercedes Sá*

**Abstract:** This chapter presents the Argentine experience in fostering sustainable forest management (SFM) through the construction of a shared forest culture and the creation of spaces for participation. This ongoing process began 18 years ago, when the Directorate of Forestry of the Secretariat of Environment and Sustainable Development adopted the Model Forest (MF) concept that was first initiated by Canada in 1991. Stakeholders' participation proves to be a critical factor in advancing forest culture and promoting SFM. The Federal Government endorsed legal instruments providing for SFM, forest plantation and provincial capacity-building and institutional strengthening. This institutional framework allows MFs to reinforce their role in providing spaces for stakeholders' participation, particularly marginalised and vulnerable actors. MFs address SFM and promote sustainable livelihoods by enhancing entrepreneurial and accounting skills, fostering production diversification, increasing awareness of traditional and scientific knowledge, and involving the input of more stakeholders into forest land-use planning. Networking activities let MFs exchange experiences and carry out joint activities related to SFM.

**Keywords:** Forest policy, participatory governance, sustainable forest management, local level indicators, stakeholder, Model Forest

---

## 2.1 Introduction

During the period of colonisation of the area that became Argentina, indigenous traditions and culture became less prominent as the colonial perceptions became more dominant. From the actions of the colonialists, it is evident that they considered forests an unproductive use of land in contrast to agriculture and ranching (Gabay et al. 2011). As the global demand for Argentina's agricultural products rose, the pressure to convert native forestlands to agriculture uses increased resulting in the loss and degradation of much of Argentina's forests (SAyDS–Dirección de Bosques 2007).

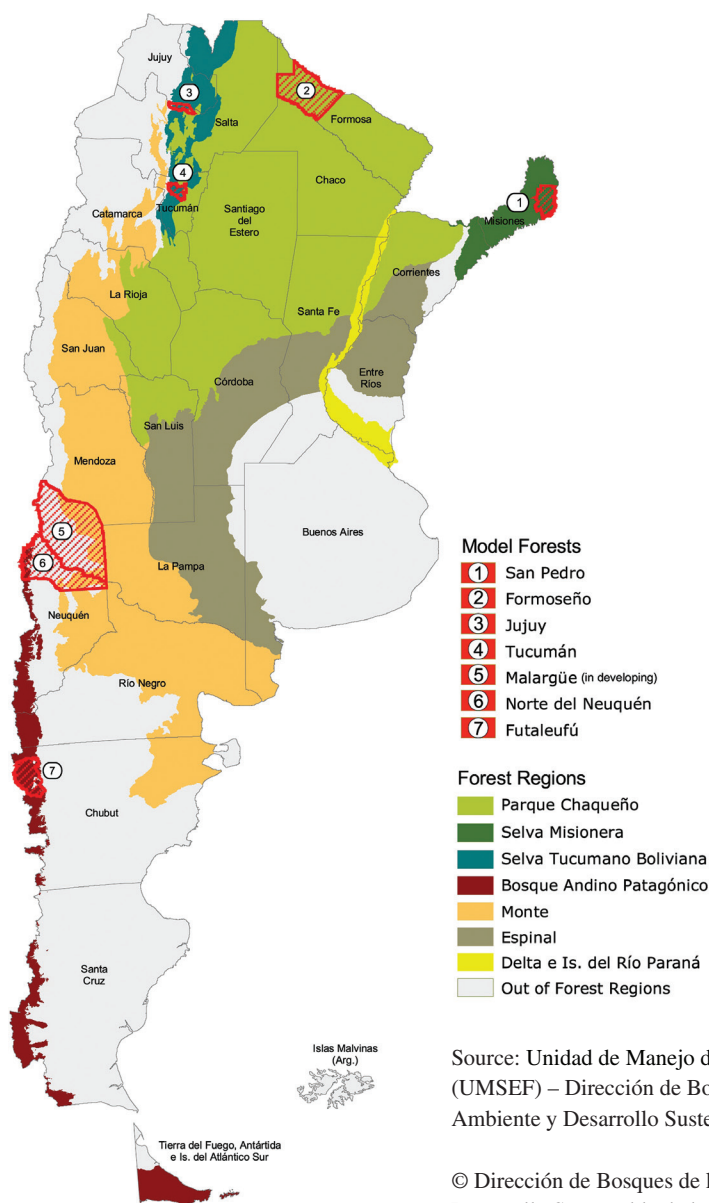
Well aware of this heritage, the Directorate of Forestry of the Secretariat of Environment and Sustainable Development in Argentina recognised the benefits that Model Forests (MFs) could bring to its own sustainable forest management (SFM) effort (see Box II 2.1 for MF concept). In 1995, the

directorato contacted the International Model Forest Network (IMFN)<sup>(1)</sup> and organised the inaugural Argentina MF (AMF) workshop in early 1996 to establish a national network of MFs.<sup>(2)</sup> There are currently six MFs and one under development in Argentina (Figure II 2.1, Table II 2.1). AMFs, like other MFs around the world, have governance structures that involve stakeholders from the public sector, farmers, academia, private sector, civil society, grassroots organisations, and indigenous communities. Participants work as equal partners to reach consensus on their organisational vision and on strategic lines of action to achieve local-level sustainable development (SD) with an emphasis on sustainable livelihoods and poverty alleviation based on SFM and the diversification of forest-based products.

---

<sup>(1)</sup> More information at [www.imfn.net](http://www.imfn.net).

<sup>(2)</sup> For further information, visit [www.ambiente.gob.ar/bosques\\_modelo](http://www.ambiente.gob.ar/bosques_modelo).



Source: Unidad de Manejo del Sistema de Evaluación Forestal (UMSEF) – Dirección de Bosques de la Nación, Secretaría de Ambiente y Desarrollo Sustentable de la Nación (SAyDS) (2014).

© Dirección de Bosques de la Nación, Secretaría de Ambiente y Desarrollo Sustentable de la Nación

**Figure II 2.1 Map of Model Forests in Argentina.**

MFs foster the involvement of stakeholders having a wide range of forest values and interests into equitable and inclusive processes related to developing sustainable forest landscape planning and local forest-based development. At the same time, each site achieves a global connection with peers through their involvement in the IMFN and the Ibero-American Model Forest Network (IAMFN). In 2002, Argentina proposed a joint initiative together with Chile and the Dominican Republic to facilitate the exchange of information and experiences at the regional level. With the involvement of more MFs having Spanish as their common language, this sub-network evolved into the present-day IAMFN.<sup>(3)</sup>

There is neither a textbook nor an instruction manual that outlines the formula for SFM of any given area, so MFs, as experimental organisations themselves, must develop and try different ways to discover how best to contribute to the practice of SFM. By observing and reflecting on their activities, MFs gather insights into what is possible to do and what is not and hopefully gain understanding of why and how their actions affect progress towards SFM. This chapter provides insights into the MF SFM experiences in Argentina since 1996.

<sup>(3)</sup> For more information, visit [www.bosquesmodelo.net](http://www.bosquesmodelo.net).

Box II 2.1 The Model Forest concept

*“A Model Forest is a large scale, forested landscape identified by a group of stakeholders who represent a variety of forest values, land uses, resource management administrations, and land ownership arrangements. The stakeholders voluntarily collaborate to develop and demonstrate Sustainable Forest Management practices relevant to the Model Forest area through those who have land use decision authority. All Model Forests are active members of the International Model Forest Network”\**

The implementation of the concept of Sustainable Development in forestry, which became known as sustainable forest management (SFM), was a proposition that held great attraction among the public in the late 1980s and early 1990s (Hall 1996/97). The implementation of SFM posed a series of operational challenges. At that time there was no comprehensive understanding of the breadth of values held for forests. Estimating future forest values was problematic. It was also difficult to assess the impact possible forest management decisions would have on the complexity of social, economic, and environmental circumstances and on the associated diversity of forest values. It became necessary to involve the public in SFM in a meaningful and accountable way to determine and to manage for the breadth of forest values beyond timber extraction and that required the creation of a new approach to forest management.

The solution proposed was to establish a network of organisations based on an iterative round table of

stakeholders representing a broad array of forest values and bringing intellectual, practical, and legal authority to the table. These groups were called Model Forests (MFs) in reference to the intent that they provide innovative approaches to SFM that others could learn from or model. Participation in MFs is voluntarily and each participant agrees to work together over time in a self-organised, respectful, equitable, and learning culture to develop, implement, and report on acceptable, credible, and practical approaches to SFM within the social, environmental, and economic circumstances of interest to the group. MFs, as organisations, have no management authority over the land nor do they hold tenure; rather, they strive to include in their round tables those having such authority. Governments and the participants provide funding and expertise to support logistics and activities related to SFM and each MF employs a small number of staff to manage its activities. A national secretariat coordinates network-level activities with support from the federal government. As a process with primarily a practical, local focus, MFs by definition participate in the MF network to gain and share experiences at the broader and more global scale and to help each other progress towards SFM (IMFN 2008b).

\* Personal communication with John E. Hall, former National Manager of Canada’s Model Forest Program, Natural Resources Canada, Canadian Forest Service, Ottawa, Canada.

Table II 2.1 Argentine Model Forests.

Name	Launch	Approval	Area (ha)	Forest region
Formoseño MF	1996	2001	800 000	Parque Chaqueño
Futaleufú MF	1996	1998	736 000	Bosque Andino Patagónico
Jujuy MF	1999	2002	130 000	Selva Tucumano Boliviana
North of Neuquén MF	2001	2007	1 500 000	Bosque Andino Patagónico
San Pedro MF	1997	2007	443 500	Selva Paranaense
Tucumán MF	2005	2008	180 000	Selva Tucumano Boliviana
Malargüe MF	2011	Under development	To be defined	Monte

Source: SAYDS – Dirección de Bosques – PNBM 2010. Iniciativa de la Red Nacional de Bosques Modelo sobre Criterios e Indicadores de Manejo Forestal Sustentable. Note: There were two previous initiatives to create San Pedro MF: in 1997 and in 2001. The economic and political crises then interrupted the process. In 2007, a new and successful process was launched.

## 2.2 Policies, institutions, and governance

### 2.2.1 Land tenure and rights to forests and trees

Over the past 20 years, the legal context of forestry in Argentina has changed. New national laws and adjustments in the constitution support the resolution and clarification of rights of tenure of indigenous communities to ancestral land<sup>(4,5,6)</sup> and surface rights to trees to promote an increase the area of forest plantations<sup>(7)</sup>, and formalise in law the constitutional right of Argentineans to a healthy environment<sup>(8,9)</sup>. These new laws and rights create the regulatory foundations that are the prerequisites for the development and implementation of SFM strategies and practices<sup>(10)</sup> and have created a supportive policy context for MFs.

Historically, forests and forestry-related issues lacked visibility on the national agenda; therefore, the enactment of the new laws referred to in this chapter mark an important milestone regarding SFM and conservation. However, the implementation process is complex and demands a sustained effort in order to strengthen the national and provincial authorities and enhance inter-jurisdictional coordination. The challenge, once such laws are enacted, is to translate their intent into changes in the decisions and actions on the ground that affect progress towards SFM; this is where MFs have focused their attention.

### 2.2.2 Public administration and law enforcement

The essential prerequisites of SFM are political will and established tenure. The expression of and respect for the forest values held by stakeholders over time is also necessary to build the complex processes and practices that lead to SFM. These values must be considered within an understanding of the potential intended and unintended impacts that actions to meet stakeholder interests can have on progress towards SFM (Hall 1993). MFs are designed to discover the balance among these considerations.

MFs are voluntary associations that agree to work together towards SFM in their areas. MF organisations do not hold tenure nor do they have land management authority; however, they do seek out and encourage those with such authority to become participants. In this way, MFs help develop and provide the information decision-makers (individual or groups) need to make decisions that support or contribute to SFM within their own areas of jurisdiction and responsibility. MFs articulate knowledge and provide advice and information that supports SFM to administrations responsible for law enforcement.

As participants or close collaborators, tenure holders can share their practical experience and perspectives in the SFM dialogue to help ensure that MF project design and objectives for SFM include practical and realistic constraints and opportunities. Organisations and individuals with tenure that are involved in MFs can also provide opportunities for field tests and inform reporting on SFM trial projects.

<sup>(4)</sup> A consequence of Argentina's endorsement of the International Labour Organisation (ITO) Convention 169 in 1992. The National Constitution of Argentina recognises indigenous peoples' rights and provides them legal entity (article 75, paragraph 17).

<sup>(5)</sup> Law No. 26,331 (2007), Minimum Standards of Environmental Protection for Native Forests, establishes rules for the use of land for the rational and sustainable management of native forests and provides for financial support to the provinces to compensate for forests' environmental services. Provinces classify native forests in three conservation classes according to ten criteria set forth by the law.

<sup>(6)</sup> Law No. 26,160 provides for a nationwide survey to define indigenous territories and established a blanket ban on evictions of indigenous communities from 2006 to 2013 that was extended until 2017 under Laws No. 26,554 and 26,894.

<sup>(7)</sup> Law No. 25,080 (1999) and Law No. 26,432 provide regulations with financial support for doubling the area of industrial plantation forests (to 3M ha) over 10 years, a plantation inventory, technical transfer agreements with international organisations and tax benefits and economic support for Argentine and foreign investors in establishing plantations and developing timber industries.

<sup>(8)</sup> Law No. 25,675 (General Environmental Law) regulates the constitutional principles described in Article 41 of the Constitution and determines the minimum requirements for environmental management that are sustainable and suitable for the environment, preserving and protecting biological diversity, and implementing sustainable development to provide basic environmental conditions that are equal throughout Argentina.

<sup>(9)</sup> National Constitution of Argentina, Article 41 (added by the constitutional Reform of 1994): "All inhabitants have the right to a healthy and balanced environment, suitable for human development, so that productive activities satisfy present needs without endangering those of future generations; and have the duty to preserve it."

<sup>(10)</sup> Available at [http://www.infojus.gov.ar/legislacion/ley-nacional-26331-presupuestos\\_minimos\\_proteccion\\_ambiental.htm](http://www.infojus.gov.ar/legislacion/ley-nacional-26331-presupuestos_minimos_proteccion_ambiental.htm)?3.

MFs promote SFM and play a role in enhancing the awareness of those in public administration and law enforcement that there are new laws for SFM and that there are changes in tenure arrangements and rights of MF stakeholders as well as new practices in resource management for SFM as a result of activities of the MF(s).

MFs hold no authority over the decisions of individuals nor do they have any authority over the choices made by other organisations. Participation in a MF does not mean that any individual or organisation relinquishes its autonomy nor are they obligated to follow MF findings or recommendations. Rather, the MF is an organisation that aspires to include all stakeholders that can affect the goal of SFM either positively or negatively. MF participants understand that it is just as important to include those who can detract from SFM as it is those who can support it because changing the attitudes and behaviour of detractors can often reduce their potential negative impact on SFM. Inclusion is an important avenue towards understanding what motivates stakeholder behaviour.

Through collaboration among their participants, MFs seek to develop practices that contribute to broader community aspirations for SFM, ideally by satisfying the needs of those who hold land tenure and those with decision-making authority so those with authority choose to adopt and implement the proposed SFM practices because they make sense. In practice, MF organisations must often work towards SFM without the involvement of all desired stakeholders. MFs keep their doors open to demonstrate that new stakeholders are welcome to enter the MF SFM dialogue at any time. In this way, the MF is able to offer insights into local circumstances and provide direct or indirect assistance to the efforts to implement new national laws aimed at supporting SFM.

### **2.2.3 Direct actions towards SFM at the Model Forest level**

Law No. 26,331, Minimum Standards of Environmental Protection for Native Forests, approved in 2007, provides incentives for SFM and for forest conservation by prescribing mandatory forest categorisation according to a set of criteria related to the environmental, social, and economical value of forests. The application of this law covers a wide range of forest uses, ranging from preservation to land-use transformation for agriculture.

MFs, as a network of local, practical, inclusive, consensus-based platforms for SFM planning at the landscape level are well-positioned to participate and

often to lead in the development and implementation of initiatives under these laws. MFs can help identify local issues and build acceptable ways to support implementation on the ground of the new laws regarding tenure and SFM. For example, MFs are active participants in the process of forest categorisation and land-use planning within the framework of Law No. 26,331 (RIABM 2009, 2010, 2011, 2012). Formoseño MF took part in the development of the Province of Formosa land-use management plan, particularly in the Strategic Plan for Local Development (Provincia de Formosa 2007), as well as the workshops leading to the forest categorisation prescribed by Law No. 26,331. Tucumán MF offers another good example of MF involvement in public policies through its support of the organisation of forest categorisation workshops throughout its home province<sup>(11)</sup>. Moreover, Tucumán MF collaborates with the provincial government in development of management plans for two protected areas: Ibatín Provincial Park and Santa Ana Provincial Nature Reserve (Tucumán MF General Manager's Progress Reports 2012–2013, RIABM 2012).

To help encourage SFM and conservation, Law No. 26,331 also recognises that native forests provide environmental services and provides for compensation for protection of these services under the National Fund for the Enrichment and Conservation of Native Forests. These funds are provided to the provinces to support the implementation of SFM and conservation plans. Landowners can apply to their province for support for SFM or conservation plans that meet the minimum standards under guidelines of the Federal Council for the Environment (Consejo Federal de Medio Ambiente 2012). There has been substantial interest in this fund and widespread improvement in sustainable land-use decisions is expected since 2475 plans received support from the fund in the first three years of implementation (2010–2013), totalling USD 116.8 million.

Before the enactment of these new laws with the attached funding, effective law enforcement by habitually poorly funded public agencies was difficult. Under Law No. 26,331, 30% of the National Fund is designated for institutional strengthening to enhance monitoring of native forests and assisting indigenous and peasant communities to participate in SFM. It is expected that reinforced provincial monitoring and enforcement capacity will advance forest governance to reduce illegal logging and other informal activities detrimental to SFM. Furthermore, the Secretariat of

<sup>(11)</sup> Personal communication with Daniel Manso, former Director of Flora, Wildlife and Soil – Ministry of Production Development, Province of Tucumán.



Environment and Sustainable Development is coordinating a regional initiative aimed at producing a unified mechanism to ensure legal timber chain of custody. This System of Forest Management, Control, and Verification<sup>(12)</sup> has been launched for Chaqueño Park, the region where Formoseño MF is based. MFs are contributing to this effort by promoting awareness about Law No. 26,331 and facilitating development of and helping in implementation of local SFM and conservation plans.

The MFs contribute to the land-tenure regularisation process under the new laws, giving particular attention to the need of indigenous communities and Creole farmers to formalise their traditional property rights. By establishing a process to support a program of soft loans as provided by the provincial government, the Formoseño MF created opportunities for small-scale farmers to purchase land and regularise their tenure claims.<sup>(13)</sup> Formoseño MF has also mediated negotiations between two indigenous communities to agree on their respective use of ancestral land in Tres Palmitas.<sup>(14)</sup> Similarly, San Pedro MF has helped in articulating land-tenure issues of indigenous communities (Arce 2013).

MFs are aware that their influence has limits: not all tenure situations have been resolved. For example, a large proportion of land tenure around the Futaleufú MF remains concentrated among a few large-scale foreign landowners that have not yet engaged in tenure discussions as proposed by the MF. The main challenge in the ongoing tenure review processes is that land uses are changing due to the expansion of the agricultural frontier into marginal forest areas (Brown 2013). Marginal forestland without clearly described tenure is where indigenous communities are often located. These lands are also commonly used for formal ranching. Those who can take advantage of rising commodity prices are converting marginal forestlands to agricultural uses, which, in turn, uproots indigenous and peasant communities and eliminates grazing access. As a result, new settlements and formal grazing activities are located even further into the native forests, resulting in more widespread ecological degradation.

Laws No. 26,331, 25,080 and 26,432 provide a federal framework for the implementation of SFM and plantation forests. These laws have proved to be effective in advancing SFM and conservation. Small-scale landowners and indigenous communi-

ties struggle to support themselves from traditional methods. Some provinces have developed strategies, in collaboration with MFs, aimed at achieving sustainable economic units based on diversification that include forestry as a key activity (e.g. Province of Misiones and San Pedro MF). Formoseño and San Pedro MFs, have been working with their medium- and small-scale farmers in diversifying their range of economic activities by taking advantage of funding for forest plantations. Formoseño MF helped locals establish 160 ha of plantations (Formoseño and San Pedro MF General Manager's Progress Reports 2007–2013), and in the San Pedro MF area, there are 14 557 ha of plantation forests for which tax incentives will be sought).<sup>(15)</sup>

The forest plantation subsidies under Laws No. 25,080 and 26,432 help small-scale Creole farmers and indigenous communities implement silvopastoral projects and improve the availability of fodder for cattle in ways that do not lead to deforestation (Formoseño MF General Manager's Progress Reports 2010–2013, RIABM 2009, 2010, 2011). The pilot projects show that improved cattle management techniques put less pressure on the natural forest for fodder and enabled farmers to improve income with reduced numbers of animals. Tucumán MF has brought stakeholders from the public and private sector to participate in planning and conducting SFM activities and organising workshops for forestland categorisation within the framework of Law No. 26,331.<sup>(16)</sup> Futaleufú MF partners developed best practices for cattle management within forestlands attaining results similar to those of Formoseño MF (SayDS–Dirección de Bosques–Programa Nacional de Bosques Modelo 2011, 2012) and is active in the development of a regional forest plan for Patagonia (SayDS–Dirección de Bosques and CIEFAP 2010, Van den Heede et al. 2011).

Local culture and traditions often treat natural resources as inexhaustible, resulting in unsustainable choices. These engrained habits must be changed for SFM to occur. To address this, Formoseño MF is engaged in an ongoing strategy of capacity-building for SFM that includes local people in SFM research, local consultation processes, and workshops that bring experts and locals together to identify and compare the impacts that browsing by indigenous herbivores and cattle has on natural regeneration over time.

The Argentine Model Forest Program (AMFP)

<sup>(12)</sup> More information available at: <http://sacvefor.ambiente.gob.ar/>

<sup>(13)</sup> Personal communication with Noel Carlos Paton, Formoseño MF general manager.

<sup>(14)</sup> Personal communication with Noel Carlos Paton, Formoseño MF general manager.

<sup>(15)</sup> Further progress is expected through the implementation of the Project ARG/12/013, Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(16)</sup> Personal communication with Daniel Manso, former director of Flora, Wildlife, and Soil, Ministry of Production Development, Province of Tucumán.

helped develop the Argentine System of Forest Certification (CERFOAR), which is currently being reviewed for certification by the Program for Endorsement of Forest Certification (PEFC).<sup>(17)</sup> The Argentine Model Forest Program (AMFP) developed a capacity-building project to prepare the MFs to implement CERFOAR locally. The AMFP is a member of the national Forest Stewardship Council (FSC) framework.<sup>(18)</sup>

### 2.2.4 Participation and stakeholder cooperation

#### *Stakeholder participation in the MF*

At its core, the MF is a local, inclusive stakeholder group with a focus on SFM and sustainable local development. MF organisations are enabling spaces that foster the meaningful involvement of stakeholders in their participatory governance structures based on equitable, respectful, and responsible dialogue (Cornwall et al. 2011). MFs work to provide all stakeholders with equitable opportunities to have a meaningful role in developing, testing, and assessing approaches to SFM (Gabay 2013a). MF capacity-building initiatives help participants become more effective by helping them gain more knowledge and insight into a broad range of SFM issues and experiences. This helps those who have normally been marginalised or consistently excluded from collaborative processes to strengthen their voices in the SFM dialogue.

MFs also include representatives from all levels of public administration (e.g. the Secretariat of Environment and Sustainable Development; Ministry of Agriculture, Livestock, and Fisheries; National Institute of Agricultural Technology; National Parks Administration; and provincial Ministries of Production, Environment, Rural Development) as stakeholders. These public employees bring to the MF table their interest in pursuing the constitutional mandates of their organisations to promote progress and well-being while preserving the environment as well as their professional expertise, leadership, and intellectual resources. These mandates align with the MF objective of SFM. Governments at all levels are responsible for enforcing implementation of public regulations that govern natural and plantation forests and land tenure in indigenous communities.

They also foster SFM and rural development through capacity-building and technological innovation programs targeting small- and medium-sized farmers and indigenous communities. Provincial organisations also deliver SFM-related programs and often channel national SFM program funds into their local areas. Municipal representatives with MFs are important collaborators, project leaders, and supportive participants in the governance structures of all MFs.

Farmers, indigenous communities, and grassroots organisations are MF key stakeholders because they make decisions every day that affect natural resources. Most intervention approaches to SFM and local development usually consider this population simply as beneficiaries or recipients of projects, often relegating them to a passive and unproductive role. MFs involve these stakeholders in the dialogue, empowering them to be protagonists of their own development needs and to articulate the impact land management decisions (both their own and those of others) have on them. Many farmers tend to adopt the stance that forests are unproductive and only good for converting to croplands or for forage and fuel wood extraction. MFs work to change this cultural view by fostering a broader understanding and acknowledgement of the role and value forests provide to all. In contrast, many local, indigenous communities value forests as their home and main source of food, medicine, energy, and craft and construction materials. Forests are crucial in their culture and spiritual beliefs. MFs encourage cooperation among small-scale Creole farmers through the development of grassroots organisations that empower them with more effective bargaining skills to protect their resources while helping make changes that improve their productivity.

Academics participate in MFs and contribute their expertise in research, innovation, and improvement of local production and SFM. They often take leadership roles in capacity-building and field activities. Civil society organisations related to forests, rural development, and indigenous communities are valuable MF members and bring funding and support for capacity-building related to environmental issues, participatory planning and local economic development.

#### *Developing and reporting on local-level indicators to measure MF progress towards SFM*

A good example of the MF participatory approach is the collaborative and inclusive process used to develop, test, and report on a suite of local-level indicators (LLIs) to measure progress made towards SFM in MF areas. MFs, like any responsible publicly funded organisation, need such a monitoring and reporting system to demonstrate accountability and

<sup>(17)</sup> PEFC 2013. Argentina seeks PEFC endorsement. Available at: <http://pefc.org/news-a-media/general-sfm-news/1325-argentina-seeks-pefc-endorsement>.

<sup>(18)</sup> It has been organised as a non-profit organisation called Asociación Civil Consejo de Manejo Responsable de los Bosques y Espacios Forestales.

efficiency (Principle 5 Program of Activities, IMFN 2008a). By late 2005, the AMF organisations had matured and were capable of effectively engaging in and benefitting from a large-scale technical transfer and networking activity. The AMFP requested and received technical support from the Canadian Forest Service (CFS) and Canada's Model Forest Network (CMFN) to transfer CMFN experiences and expertise to the Argentine Model Forest Network (AMFN) related to development and implementation criteria and SFM LLIs based on the Montreal Process criteria and indicators (Proceso de Montreal 2009) and MF principles-and-attributes framework (RIBM 2007) of the International Model Forest Network Secretariat (IMFNS).

The LLI project objectives are:

- ◆ Build and implement, through a participatory process, an LLI framework for monitoring and reporting on progress towards SFM across the AMFN that satisfies the IMFNS principles-and-attributes framework and reflects the internationally accepted definition of SFM agreed to by Argentina and the countries in the Montreal Process and Argentina's other international SFM commitments
- ◆ Strengthen local capacities to enable active participation in the ongoing development and implementation process for LLIs within Argentine MFs
- ◆ Contribute to and combine knowledge from local, national, and international levels to provide inputs for policies aimed at improving SFM

The AMFs produced their LLIs for the SFM framework through a series of participatory joint workshops with representatives from all the AMFs and experts from the CFS and the CMFN (MF of Western Newfoundland and Labrador). These joint workshops shared the LLI experience from Canadian MFs. Members of the CMFN had benefitted from the deep commitment of many stakeholders that brought a broad array of forest values, skills, and perspectives to Canada's MF LLI process. The AMFs sought similar engagement from its MF stakeholders through a series of national and local participatory workshops. The LLI process entailed the active involvement of local stakeholders working together with the AMFP team to develop this SFM monitoring tool to be implemented in their MF (Box II 2.2).

After a series of alternating joint, national, and local MF workshops over three years, the MFs completed and implemented a framework of six criteria (adopted from the Montreal Process) and 31 MF LLIs (Table II 2.2). The LLI process and the results of the LLI application were presented by a number of MFs at the XIII World Forestry Congress (2009), Buenos Aires. By 2011, all 31 indicators were measured in the six active MFs, which established a baseline for

monitoring progress towards SFM. Work has begun on a second round of LLI measurements for a national report.

### **2.2.5 Reconciliation of different land uses**

MFs are designed to proactively seek out and work with stakeholders who represent the breadth and depth of land uses. MF Principle 2 requires that MFs comprise "a large-scale biophysical area representing a broad range of forest values, including social, cultural, economic, and environmental concerns". MFs therefore focus on "a working landscape reflective of the diverse interests and values of the stakeholders and the uses of the area's natural resources". MF Principle 3 requires MFs to commit to "the conservation and sustainable management of natural resources and the forested landscape" (IMFN 2008a).

To affect progress towards SFM, MF participants seek to understand the choices of land use as well as the conditions under which those choices are made. With this knowledge, MFs develop and test choices in land use that will best bring balance to the sustainability and distribution of social, economic, and environmental benefits derived from the land over time. Change for SFM is incremental within the dynamic social, environmental, and economic systems that define MF circumstances. Argentina's new forest laws and their accompanying funds have invigorated the pursuit of SFM by the MFs. The MF conceptual framework and the availability of human and financial resources help MF participants identify and, where necessary and possible, reconcile land uses within the MF area in support of SFM.

When the general manager of the Tucumán MF was appointed director of Flora, Wildlife, and Soil of the province's Ministry of Production Development, the result was a higher profile for the MF approach within the provincial government, at a time when Law No. 26,331 required the provinces to classify their forestlands. Tucumán MF worked closely with the province to organise workshops for public participation in forestland categorisation, using the MF methodologies that engage stakeholders in informative dialogue (RIABM 2010). The MF approach successfully gained effective participation of a wide range of stakeholders that helped articulate the land uses in the area and led to a better stakeholder understanding that their inputs are valuable and essential for SFM (RIABM 2009). In a similar way Formoseño and Futaleufú MFs helped the forestland categorisation process launched in their areas (Formoseño MF General Manager's Progress Reports 2007–2010).



**Table II 2.2 Argentina's National Model Forest Network's criteria and local-level indicators.**

Criteria	Local level indicators
Criterion 1. Conservation of biological diversity	<ul style="list-style-type: none"> <li>• Area by vegetation type</li> <li>• Surface of protected areas in IUCN categories</li> <li>• Effectiveness in managing protected areas</li> </ul>
Criterion 2. Maintenance of the condition and productive capacity of forest ecosystems	<ul style="list-style-type: none"> <li>• Area of forest designated for production of timber and/or non-timber forest products</li> <li>• Area of forest affected by processes or destructive agents</li> <li>• Area of forest designated for timber production and/or non-timber forest products, under responsible forest management</li> <li>• Area of vegetation by types, classified according to their primary use</li> </ul>
Criterion 3. Conservation and maintenance of soil and water resources	<ul style="list-style-type: none"> <li>• Area of forest designated primarily for protection of soil and water, over the total land area designated primarily for protection of soil and water</li> <li>• A landscape-scale plan that includes the use and conservation of soil and ground water, based on the watershed approach</li> <li>• Land area with serious land erosion problems</li> <li>• Area with changes in land use risking alterations in surface runoff</li> </ul>
Criterion 4. Multiple benefits for society	<ul style="list-style-type: none"> <li>• Number of primary wood products extracted by type and species</li> <li>• Number of direct beneficiaries by type of project developed by the Model Forest</li> <li>• Percentage relationship of surfaces according to land tenure regime</li> <li>• Traditional cultural practices are identified, maintained, and respected</li> <li>• Number of direct jobs in the forestry sector</li> <li>• Percentage of primary production locally industrialized</li> <li>• Area of forest designated for recreation and tourism</li> <li>• A plan in place for education, awareness, and community sensitization on key aspects of sustainability of natural resources and the plan is implemented</li> <li>• Gross Geographic Product (GGP) of the Model Forest area, broken down by sector</li> </ul>
Criterion 5. Legal, institutional, and economic framework for forest conservation and sustainable management	<ul style="list-style-type: none"> <li>• Existence of laws and regulations that promote SFM and their effectiveness</li> <li>• Annual detailed Model Forest budget</li> <li>• Yearly state budget execution, classified by jurisdiction, for activities related to SFM in the area of Model Forests</li> <li>• Management capacity of the provincial forest authority</li> <li>• Number and type of organisations representing producers</li> </ul>
Criterion 6. Governance and networking	<ul style="list-style-type: none"> <li>• Degree of participation in the development of the strategic plan of Model Forest:               <ol style="list-style-type: none"> <li>a) approval of the strategic plan by board members and percentage of participants in relation to the total membership of the board</li> <li>b) strategic plan validation by Model Forest partners, detailing the methodology for and the % of partners involved in relation to the total</li> </ol> </li> <li>• Relationship between strategic plan objectives and Model Forest plans and/or programs in other jurisdictions</li> <li>• Type and degree of consistency of implementation and monitoring mechanisms of the strategic plan of the Model Forest</li> <li>• Type, number, and frequency of communication and dissemination activities of the Model Forest</li> <li>• Type and number of actions of cooperation among Model Forests</li> <li>• Model Forest membership by type of partners:               <ol style="list-style-type: none"> <li>a) percentage of members by sector over the total of organisations interested in the issues associated with the Model Forest concept present in the territory of the Model Forest</li> <li>b) degree of correspondence between the profile of the Model Forest members and stakeholders of the territory</li> <li>c) degree to which the composition of the Model Forest in terms of sector affiliation of its members is reflected in the composition of its board</li> </ol> </li> </ul>

Source: SAyDS – Dirección de Bosques - PNBm 2010.

## Box II 2.2 Background note to the cooperation of Canadian and Argentine Model Forest Networks in development of SFM local-level indicators for the AMFN

*Canada has played a prominent role in bringing SFM into being and in promoting it as a wise modus operandi both across the country and internationally. Canada has developed and acted upon an innovative framework of criteria and indicators (C&I), a key tool that is now helping to make the practice of SFM a reality (CCFM 2008).*

In response to the Forest Principles declared at the United Nations Conference on Environment and Development in Rio de Janeiro, June 1992, the Montreal Process Working Group (MPWG) was formed in 1994. The 12 member nations of the MPWG represent 90% of the world's temperate and boreal forests and understand the need for credible, science-based, socially acceptable, and international agreed-upon measures of progress towards SFM at the national level. They consented to work together to create a voluntary process to develop a comprehensive set of criteria and indicators for use by their respective forest conservation and sustainable management policy-makers and to define, measure and report on progress toward SFM. In February 1995, the 12 countries of the MPWG, which include Canada and Argentina, endorsed the C&I of SFM.

Canada developed and released its domestic C&I framework in 1995 through the Canadian Council of Forest Ministers (CCFM). These C&I represented the forest values, or criteria that Canadians wanted to enhance or sustain and were accompanied by an initial suite of indicators to report progress towards SFM at the national level. By 1997, the CCFM and the Canadian Forest Service (CFS) recognised a unique opportunity with Model Forests (MFs) across Canada to pioneer and apply methods for developing a local-level version of C&I using the multi-stakeholder approaches at the heart of MFs that could be linked with national and international C&I processes.

Through the Canadian Model Forest Network (CMFN), individual MFs were challenged to begin independently to develop local-level indicators (LLIs) for reporting local progress towards SFM using the national criteria as a common suite of forest values. Canada understood, as a participant in the MPWG, that global perspectives and technical help were key elements of success and that MFs would gain these benefits through an active association with a broader network of peers. Thus funds were provided to MFs to enable them to work together on LLI issues that more than one MF group found to be a challenge. This approach encouraged local innovation while simultaneously facilitating the sharing of LLI challenges and their solutions across the CMFN. The LLI initiatives in each MF helped local

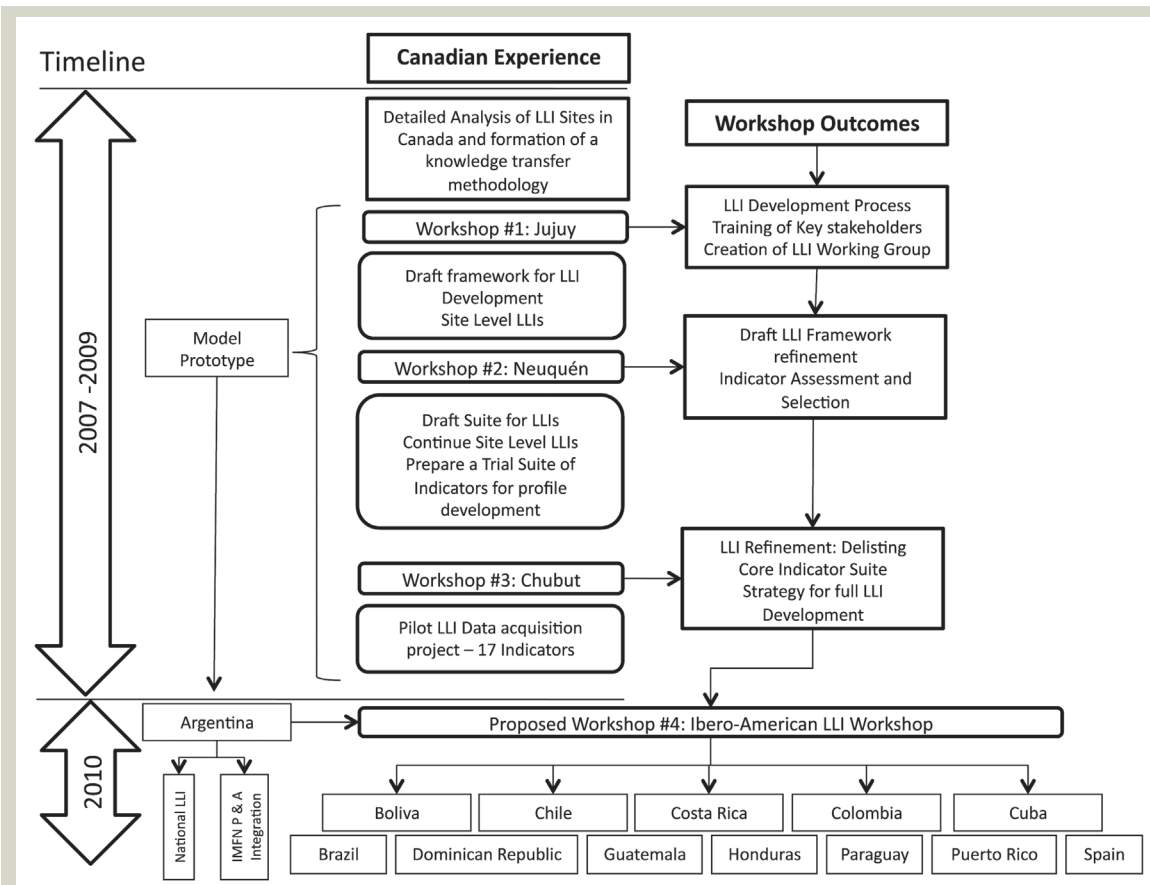
stakeholders to forge long-term relationships and discover meaningful ways to adapt national frameworks for planning and monitoring progress toward SFM to local perspectives. Through the use of the same, overarching set of criteria, these LLI suites remained relevant at different scales. Across Canada, each MF began developing its LLIs and found innovative approaches tailored to their diverse and broad partnership base and unique combination of perspectives, forest needs, and circumstances.

The Model Forest of Newfoundland and Labrador (MFNL) in Canada's eastern Province of Newfoundland and Labrador was selected by the CMFN to represent Canada's LLI experience in the Canada-Argentina LLI project. The MFNL had an exemplary record of achievement in developing LLIs that were adopted by managers and decision-makers into the day-to-day management of the province's forests.

The MFNL participants began their LLI process by building onto work they had done to develop their Integrated Resource Management (IRM) Plan. The IRM and the C&I framework were fairly similar in structure. The IRM required a focus on forest values, goals, indicators, objectives, and specific practices that were applicable to LLIs. The MFNL had established a process to explore forest values and practices through Value Groups and their work was periodically reviewed at plenary sessions with more than 40 stakeholders. They also established a formal data management structure and assigned measures to responsibility centres, using these methods to smoothly integrate their IRM experience and work into a process to develop LLIs for SFM.

An important step in the LLI approach used by the MFNL was creation of the Criteria and Indicators Steering Committee (CISC). The CISC strategic work plan for the development of its suite of LLIs involved a comprehensive series of focus group meetings and partnership workshops. Participants improved their knowledge of indicator development by first developing "easy to assess" indicators. These indicators were not necessarily functional at first but gave the CISC the ability to share ownership of the process with its diverse range of participants and ideas. In hindsight, this approach brought a long-lasting strength to the MFNL partners and is considered by some to be a more important outcome than the actual LLIs that were produced. As part of the LLI process, the forest industry (Corner Brook Pulp and Paper Inc. and Abitibi Bowater Inc.) and government representatives were tasked to explore possible mechanisms for forest certification. For most certification schemes, performance indicators are the most effective way of tracking management impacts upon forest resources and communities.

Over a period of three years, the CISC facilitated



**Figure A. Schematic representation of the process of transferring LLI expertise from the Canadian Model Forest Network to Argentina’s Model Forest Network and beyond. Source: Hall et al. 2009.**

the development of Newfoundland and Labrador’s first suite of indicators using its consensus-based, multi-stakeholder approach. From this process, both pulp and paper companies developed their own suites of tenure-based indicators and were later successful in integrating these LLIs into Canadian Standard Association’s Z809 forest certification standard. In 2003, the government of Newfoundland and Labrador developed, with the assistance of the MF, its own suite of SFM indicators for the province (Newfoundland and Labrador Forest Strategy, 2003). The province was not alone in this evolution of applications. Across Canada, C&I can be seen in national forest strategies, State of Forest reporting by other provinces, data collection and management frameworks, research, and international trade support.

Since 2007, CMFN, the MFNL, Natural Resources Canada–Canadian Forest Service (NRCan-CFS), the Argentinean Ministry of Environment and Sustainable Development, and AMFN have been working to transfer the Canadian experience in LLIs to help develop an effective LLI process for Argentinean circumstances (Figure A). Emulating the Canadian approach through the assistance of experts from the MFNL and the CFS,

annual workshops involving the six Argentinean MFs were held and a suite of local-level indicators were developed (Hall et al. 2009). The AMFP hosted workshop in Buenos Aires in March 2012 to the transfer Argentina’s MFs LLI experience to the MFs from the other countries of the southern cone of South America\*. Those participating MFs obtained insights into how to initiate the process of catalysing the adoption of the LLI process at their sites to help in their progress to SFM.

The LLIs developed through Canada’s Model Forest Program (Canadian Model Forest Program 2000) were adopted into the process developed for forest certification across Canada. Canada is the nation with the greatest area of third-party independently certified forests. There are currently 153 million ha of certified forests in Canada (FPAC 2014).

\* Personal communication with Brian J. Wilson, Director of Canada’s Model Forest Program, Natural Resources Canada, Canadian Forest Service, Ottawa, Canada.

Formoseño, Futaleufú, San Pedro, and Tucumán MFs are involved in SFM and conservation plans, receiving support from the National Fund for SFM and conservation planning activities (SAyDS 2013b). The AMFP and the MFs are also implementing projects related to SFM with support from the National Program for the Protection of Native Forests.<sup>(19)</sup> These projects deal with a wide range of issues, including implementation of geographical information systems, forestland and cattle management, certification, LLIs, traditional forest-related knowledge, sustainable livelihoods, local capacity-building, and public awareness.

The AMFP and MFs organised workshops to explain the provisions of Law No. 26,331 to local stakeholders regarding their rights and obligations concerning SFM (Formoseño MF General Manager's Progress Reports 2007–2013). As a result, small-scale Creole farmers and indigenous communities were able to obtain support to improve their forest-related productive activities. MF workshops across the network involve training activities regarding seed harvesting and production of seedlings, plantation establishment, silvopastoral production, beekeeping, handicraft production, water management, food security and charcoal production<sup>(20)</sup>, and integrated SFM techniques.<sup>(21)</sup>

The National Institute of Agricultural Technology (Instituto Nacional de Tecnología Agropecuaria – INTA), and the Futaleufú MF partners developed best practices for cattle management within forestland (Tejera et al. 2006, Hansen et al. 2009). INTA tested these practices with farmers, who received training and allowed INTA to implement them with their cattle on their farms. Most farmers adopted the recommended practices after concluding that good silvopastoral management improved beef production. Futaleufú MF and its partners conducted research, expert consultation, and workshops concerning the effects of grazing on natural forest regeneration. The AMFP, together with Futaleufú MF, organised expert workshops on forest degradation and the impact of grazing on forest ecosystems (SAyDS–Dirección de Bosques–Programa Nacional de Bosques Modelo 2011, 2012; Van den Heede et al. 2011, Van den Heede 2012).

<sup>(19)</sup> Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(20)</sup> For more information, visit <http://www.ambiente.gov.ar/default.asp?IdArticulo=293>.

<sup>(21)</sup> See more information at <http://www.patagoniaandinaforestal.blogspot.com.ar/2014/02/jornada-de-capacitacion-en-cosecha-y.html>, <http://www.patagoniaandinaforestal.blogspot.com.ar/2013/11/gira-tecnica-de-bosque-modelo-del-norte.html>, <http://www.patagoniaandinaforestal.blogspot.com.ar/2013/11/1-taller-de-produccion-de-plantas.html>.

### 2.2.6 Long-term societal commitment to SFM

MFs have been committed to SFM for almost 20 years in Argentina and the number of sites has increased. The realisation of the MF concept is a work in progress that has attracted and retained many participants over the long term. MFs have put many tools in place and are in a mode of continuous improvement. They have committed to provide, on an ongoing basis, a place for people to join with others to promote their interests in SFM. MFs have worked at the field level with people from all levels of society to create and share relevant SFM information; identify and communicate forest values and suggested SFM practices to local people; and undertake research, surveys, and trial projects to help stimulate awareness. MFs activities show both the need and the opportunities for society to provide continued support to SFM and have helped implement existing and new laws that support SFM.

Argentina has demonstrated its long-term commitment to SFM through the adoption of laws and policies aimed at promoting SFM. For example, federal forest Law No. 26,331 recognises forest environmental goods and services and Laws No. 25,080 and 26,432 support increasing the area of forest plantations.

The Secretariat of Environment and Sustainable Development has provided support to the AMFN since its inception. Participants that support MFs over the long term are empowered and gain pride of proprietorship as pioneers in MF initiatives. For example, main partners of Formoseño MF include academic institutions (Centro de Validación de Tecnologías Agropecuarias – CEDEVA, INTA, National University of Formosa, Instituto de Formación Docente Continua y Técnica Ingeniero Juárez, Escuela Agro-técnica Provincial No. 11 Pozo de Maza), the public sector (Secretariat of Environment and Sustainable Development, Ministry of Agriculture, National Parks Administration, Provincial Ministry of Production and Environment, Municipality of Ingeniero Juárez), grassroots organisations (Asociación El Algarrobal, indigenous communities' organisations), and civil society (Arandú Foundation, EPRASOL). There is a similar diversity of participants in all MFs and their long-term support of the shared vision of each MF is a demonstration of long-term commitment.

MFs also support each other within the framework of the AMFP. A good example is the collaborative project on sustainable livelihoods by Formoseño and San Pedro MFs that exchanged knowledge and experiences to improve the forest-related economic activities in both MFs.<sup>(22)</sup>

<sup>(22)</sup> For more information visit <http://www.ambiente.gov.ar/?idarticulo=12227>.

### **2.2.7 Influences of regional/global processes on forest-related policies and behaviour**

MFs, by definition, must be part of a network of MFs to ensure that each is engaged globally to gain perspectives, insights, and expertise that informs and shapes SFM activities locally. Activities in MFs across Argentina are influenced and affected by processes beyond their borders. The MFs have a strong record of engaging with numerous international organisations to address issues that emerge from both local and international SFM communities. The MFs and the AMFP have also been active in contributing their understanding and experience of SFM processes internationally. In 2002, under leadership of Argentina and Chile, the governments of Argentina, Chile, and the Dominican Republic launched the Latin American and Caribbean Regional MF Network. The regional initiative stimulated exchange among the MFs of Latin America and quickly attracted participation of other countries to become the Ibero-American Model Forest Network (IAMFN), which currently includes 15 countries.<sup>(23)</sup>

Argentina's MFs actively contribute and benefit through their regular interaction with participants in the IAMFN and IMFN. The AMFP also links with international donor agencies to address international issues of mutual interest that include the local perspectives and solutions from the MFs.

The AMFP participates in consultations and internal coordination meetings with Argentina's representatives to the Montreal Process.<sup>(24)</sup> This connection has helped strengthen linkages between the Montreal Process and the AMFN LLIs. The lessons learned while the MFs were developing their set of LLIs were shared with the international forest community at the XIII World Forestry Congress (2009) in Buenos Aires.<sup>(25)</sup> Also, AMFN's methodology for developing the set of LLIs was shared with Southern Cone countries through two workshops hosted by the AMFN, which resulted in establishment of a sub-regional MF LLI working group to advance the implementation of common LLIs across the Southern Cone and aligned with the Montreal Process.<sup>(26)</sup>

The effects of climate change are expected to affect the forests and their potential to provide resources and services in the MFs. Futaleufú MF, through

the Patagonian Andes Forest Research and Extension Center (Centro de Investigación y Extensión Forestal Andino Patagónico – CIEFAP), one of its partners, helped implement a collaborative project with the federal Secretariat of Environment and Sustainable Development and the Japanese International Cooperation Agency (JICA)<sup>(27)</sup> within the context of the United Nations Framework Convention on Climate Change (UNFCCC) to better understand the local effects of climate change. Futaleufú and Jujuy MFs explored the possibility of developing forest-related Clean Development Mechanism (CDM) projects, but they were not feasible due to high transaction costs (SAyDS 2007). Some MFs are currently doing cost-benefit analyses to determine the feasibility of deploying MF projects within the framework of Reduced Emissions from Deforestation and Forest Degradation (REDD). As well, AMFP officers, with the San Pedro and Formoseño MF participants, are working to determine options for the AMFN within the framework of the preparation phase for a REDD strategy for the country, with support from ONU-REDD (SAyDS 2013a).

## **2.3 Livelihoods, capacities, cultural, and socioeconomic aspects**

### **2.3.1 Contribution of forests and forest resources and services to livelihoods**

Within MF areas, the forest provides resources for a diversity of social, cultural, environmental, and economic activity. Local people often have no choice but to derive their livelihoods from the forest resource by applying their varying levels of abilities and skill sets. The view that natural resources are limitless is a popular misconception resulting in practices that do not contribute to SFM. It is beyond the scope of this paper to fully quantify the contribution of forests to livelihoods within the MF areas. However, it is known that natural resources within the focus areas of MFs are used for timber, food products from agroforestry, cattle ranching, forest fodder, beekeeping, and a wide range of non-timber forest products (such as fruits, nuts, handicrafts, textiles, flowers, plants and medicines), and tourism.

MFs seek to discover how the resourcefulness and technical and entrepreneurial skills of forest users can be directed to enhance SFM. The expectation

<sup>(23)</sup> For more information, visit [www.bosquesmodelo.net](http://www.bosquesmodelo.net) and [www.imfn.net](http://www.imfn.net).

<sup>(24)</sup> More information available at <http://www.ambiente.gob.ar/?idseccion=166>.

<sup>(25)</sup> Information on this side event is available at <http://www.ambiente.gob.ar/default.asp?IdArticulo=9464>.

<sup>(26)</sup> For more information visit <http://www.ambiente.gob.ar/default.asp?IdArticulo=11071>.

<sup>(27)</sup> Cooperation Project "Fomento de las Actividades de Forestación y Reforestación dentro del MDL". For more information, visit <http://www.ambiente.gov.ar/?Idarticulo=5073>.



of the MF is that the entrepreneurs, given correct training and motivation, could optimise the value of the forest resources they extract while their extraction practices contribute to SFM. MFs also seek to find ways that would help entrepreneurs increase their revenues by improving access to capital. Ideally these small loans would encourage entrepreneurs to increase the resilience of the natural ecosystem by using forest management techniques (including harvesting and regeneration practices) that help achieve SFM. MFs are also looking for effective means to promote the connection between forested lands and those socio-economic activities beyond the edge of the forest that depend on forest-provided ecosystem goods and services, such as forest-based water supply and habitat for crop pollinators.

The key purpose of each MF is to enhance stakeholders' abilities so that they can more effectively work together and engage in addressing the complex and complicated challenges posed when attempting to incorporate SFM into local day-to-day forest-based activities. Ultimately, the activities that the MFs undertake, such as regular meetings, workshops, field reports, and research projects, are intended to overcome social stigmas and help MF participants recognise and integrate useful information and strategies for SFM from many sources. These sources include academia, government officials, business people, and those with traditional knowledge and local, practical experience.

Indigenous communities and small-scale farmers at MF sites have a long history of using forestlands for a significant portion of their income and for their quality of life; therefore, many MF activities for SFM practices are geared towards meeting these needs. Traditional knowledge is considered an important asset in SFM planning and there are ongoing initiatives to collect that knowledge and make it available now and for future generations. The AMFP and San Pedro MF are implementing a project to collect, verify, store, and share traditional forest knowledge and management experiences from indigenous communities and farmers in the MF area.<sup>(28)</sup> Futaleufú MF is collecting and verifying information about traditional wicker weaving practices and about local medicinal herbs in the Percy River community (Futaleufú MF 2013) for the purposes of enhancing forest resource use for local benefits. This information will be shared among MF participants across the network (RIABM 2009).

In the Formoseño and Futaleufú MFs, forest-based income is often the sole source of livelihoods for a substantial number of indigenous communities, many of which depend on income from cattle

ranching within forestland. These MFs are working on capacity-building for SFM with an emphasis on silviculture for native forests, rehabilitation planting, timber and non-timber forest products<sup>(29)</sup> (RIABM 2009, 2010, 2011), and sustainable cattle management in forest ecosystems. In order to advance this work, the MF is implementing silvopastoral projects with technical support from CEDEVA (RIABM 2009, 2010, 2011) and financial support from the Secretariat of Environment and Sustainable Development under forest incentives from Laws No. 26,331, No. 25,080, and No. 26,432.<sup>(30)</sup> In contrast, income derived directly from forests is less important in the Tucumán MF area; instead, income comes mainly from sugar cane, lemon and berry production, and tourism. Tucumán MF therefore focuses on promoting public awareness and environmental education about the important contributions the forest makes to productivity of the agriculture sector through its provision of ecosystem services.<sup>(31)</sup>

Forest-based textiles and handicrafts featuring ancestral designs and techniques are a traditional source of income among Qom and Wichí women within the Formoseño MF, which has projects to preserve and enhance these activities (JICA 2005, 2009; JICA and Formoseño MF 2008). Also, Formoseño MF has projects underway related to the domestication of *chaguar* (*Bromelia* sp.), to increase the quality of handicrafts, and to build capacity for micro-entrepreneurship and marketing of handicrafts to increase revenues<sup>(32)</sup>. This MF has extensive experience in beekeeping with Creole farmers and indigenous communities<sup>(33)</sup> and has compiled information on melliferous plant species identified by Wichí communities (Pedretti 2004).

<sup>(29)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Plan Nacional de Protección de Bosques Nativos.

<sup>(30)</sup> Former projects on this issue had financial support from JICA (JICA 2005a, 2005b, 2009). Current support includes the UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos; GEF Project Manejo Sustentable de Bosques en el Ecosistema Transfronterizo del Gran Chaco Americano; and the aforementioned laws.

<sup>(31)</sup> UNDP Project ARG/12/013, Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(32)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos and GEF Project Manejo Sustentable de Bosques en el Ecosistema Transfronterizo del Gran Chaco Americano.

<sup>(33)</sup> JICA 2005a, 2005b, 2009. Apicultura en el Monte Project (2004–2008), implemented with support from the Asociación Franco Latina para el Desarrollo Humano (AFLDH); see <http://www.ambiente.gov.ar/?idseccion=161>. UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(28)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

The AMFP has been coordinating an ongoing pilot initiative with Formoseño and San Pedro MFs to promote forest-based sustainable livelihoods (i.e. contribute to the improvement of local production and value-added while promoting SFM). Local co-operatives (e.g. Cooperative of Artisans–indigenous women, the Formoseño MF Association of Beekeepers) have been brought in, and they have been successful in helping MF participants strengthen the value chain from raw materials to final products, commercialise their handmade products, and gain access to national and international markets through existing co-op channels. The transfer and application of lessons learned from this pilot has improved food security in rural and indigenous populations in other MFs (SAyDS–Dirección de Bosques–Programa Nacional de Bosques Modelo 2013).

The forest-timber industry does not play a significant economic role in the Argentine MF areas with the exception of San Pedro MF, which is taking steps to improve local sawmills by developing capacity of prospective workers and encouraging business to improve their technology to enhance product quality and reduce waste<sup>(34)</sup> (San Pedro MF General Manager's Progress Reports 2007–2013). These small producers will design and implement SFM through projects supported under the framework of Laws No. 26,331, 25,080, and 26,432 and will receive other sources of public revenue that will contribute to further local capacity-building and production strengthening efforts<sup>(35)</sup> (San Pedro MF General Manager's Progress Reports 2007–2013, RIABM 2009, 2010). In Tucumán MF, a local timber-based business has little impact on the local forest resource since its timber is supplied from outside the province.

With the help of MF network colleagues and NMFP officers, each MF sets its own rhythm of activity based on local capacity; social, economic, and environmental circumstances; opportunities; and timing.

### 2.3.2 Local development and capacity-building

Capacity-building for MF participants and their associates through technical courses, seminars, workshops, and scholarships is an ongoing preoccupation of the IAMFN and AMFP because abler and better-

informed stakeholders lead to better SFM strategies and practices. The AMFP channels grant opportunities offered by organisations such as the IAMFN, JICA, Tropical Agricultural Research and Education Center (CATIE), the UN Food and Agriculture Organization (FAO), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), dealing with SFM, climate change, forest culture, forest policy, resource mobilisation, and knowledge management. The AMFP also organises capacity-building activities in cooperation with the European Commission, Ministry of External Affairs and International Trade, government of Austria, government of Navarre (Spain), government of Castile and León (Spain), and government of Südtirol (Italy), among others. These seminars focus on environmental goods and services, bioenergy, SFM, forest policy, C&I and LLIs, forest certification, and water governance (SAyDS–Dirección de Bosques–Programa Nacional de Bosques Modelo Annual Reports 2002–2013).

At the local level, MF participants include organisations with strong technical knowledge about forest ecosystems and SFM. Members of these groups often take on leadership roles and mentor others in MF communities to bring technical assistance and capacity-building activities to the participants and other interested people. The Formoseño MF organised a number of short technical courses and workshops on animal health with support from the Ministry of Production and Environment, CEDEVA, and the National Service of Animal Health (Servicio Nacional de Sanidad Animal-SENASA) (Formoseño MF General Manager's Progress Reports 2007–2013, RIABM 2009, 2010, 2011). The Ministry of Production and Environment supported workshops on beekeeping and, in collaboration with CEDEVA, INTA, the National University of Formosa, and the Institute of Technical and Continuing Teacher Education, Municipality of Ingeniero Juárez, led capacity-building activities on SFM (*ibid.*). The National University of Formosa led special courses for carpenters to enhance their employment opportunities and to improve utilisation levels of timber resources.

San Pedro MF is developing a fuel wood certification scheme with the Undersecretariat of Forest Development, Ministry of Ecology and Renewable Natural Resources, National University of Misiones, Executive Committee for Technological Development and Innovation (Comité Ejecutivo de Desarrollo e Innovación Tecnológica-CEDIT), and CERFOAR. They also engage in courses for carpenters with the Municipality of San Pedro, National University of Misiones, Undersecretariat of Forest Development, Montecarlo Wood Technology Center, and CEDIT (San Pedro MF General Manager's Progress Reports 2007–2013, RIABM 2009). San Pedro MF has launched an initiative on bioenergy with cooperation from the Secretariat of Environment and

<sup>(34)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(35)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Plan Nacional de Protección de Bosques Nativos.

Sustainable Development, Undersecretariat of Forest Development, government of Navarre (Spain), National University of Misiones, CEDIT, National Industrial Technology Institute, and the Municipality of San Pedro.<sup>(36)</sup>

Tucumán MF conducts environmental education with a focus on opportunities for SFM in local forests with local elementary and high schools for the Municipality of Yerba Buena, the ProYungas Foundation, the Ministry of Labour and Social Security, and the Sierra de San Javier Park and Horco Molle Experimental Reserve (RIABM 2009, 2010). In the field of public awareness, Tucumán MF carries out events together with the Municipality of Yerba Buena, ProYungas Foundation, and Colegio San Patricio (Tucumán MF General Manager's Progress Report 2013). This MF also coordinated activities to introduce environmentally responsible practices in forest-sector production enterprises with the Secretariat of Environment and Sustainable Development (RIABM 2009) and collaborated in the organisation of a workshop on bioenergy with participation of a San Pedro MF partner, the Undersecretariat of Forest Development (Tucumán MF General Manager's Progress Reports 2012–2013).

Securing adequate financial support for activities related to forest production is a hurdle often faced by local entrepreneurs, hampering implementation of their development ideas. Local entrepreneurs associated with the MFs do have the opportunity to access funding for activities that contribute to local SFM through national and provincial government programs. Laws No. 26,331, 25,080, and 26,432 provide federal funds for approved SFM-related investments, and the provincial governments have similar programs. MF organisations work with local proponents to help them develop plans that will meet SFM requirements. An important instrument for SFM is provincial bridge funding that enables medium and small woodlot owners to implement SFM practices before receiving federal support.

An important factor that contributes to the success of MFs and the national MF program is the intellectual leadership and professional dedication provided by the staff. Each MF has a general manager and some administration and technical personnel. The national office has a network coordinator and a small team. These positions provide technical guidance, continuity, communication, and project development skills, organisational management, and leadership for the participants as well as liaison functions with governments, international organisations, and other expert groups for the benefit of the network. MF staff receives salary and some travel support and

project implementation funds from the Secretariat of Environment and Sustainable Development. The network coordinator reports to the Secretariat and is responsible for tracking progress, representing the network nationally and internationally, reporting policy-relevant information, and mobilising funds. The network coordinator also organises some training activities and workshops and initiates and implements network-wide initiatives like the multi-year LLI development and monitoring program and the national program on sustainable livelihoods. MF participants also contribute time and funds to support MF work plan activities and projects.

## 2.4 Natural resource base

### 2.4.1 Extent and condition of forest resources

By definition, the land base of a MF must include forested lands but the extent or condition of the natural forest base for any MF is not prescribed, rather the participants within each MF organisation agree upon it. MFs work towards incorporating the concept of SFM into the management practices that suit the social, economic, and ecological circumstances within their area and in this way demonstrate, or model, what is possible to achieve and identify what issues remain to be overcome to enable the practice of SFM. This demonstration by the MF is done for the benefit of the people in the MF area and beyond it. MF forest resources can include native forestlands, land with trees not within the forest, and forest plantations. (SAyDS–Dirección de Bosques Área de Ordenamiento Territorial 2013). In general, MFs consider that their forests have the potential to be sustainably managed and to provide goods and services over the long term (Gabay 2013b, Manso 2013, Paton 2013, Van den Heede 2013). There are examples where people persist in undertaking activities that affect the extent and condition of the forest in ways that hinder SFM. MFs continue to work towards minimising these negative effects, which are usually the result of unmanaged cattle grazing in forests, land use conversion from forest to agriculture and fruit production, encroachment by residential housing, and repetitive anthropologic forest fires that pose challenges to the development of SFM practices.

### 2.4.2 Trees outside forests, including agroforestry

MF participants recognise the contributions that trees outside the forest and agroforestry practices can have in an integrated approach such as SFM. Trees outside

<sup>(36)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa de Protección de Bosques Nativos.

the forest within the agricultural land base contribute to local livelihoods and to crop production through nitrogen fixation, humus development, and the provision of partial shade and fodder. The various MF projects are being studied by other MFs in the network in anticipation of adaption and adoption of best practices locally (see sections 2.2.3, 2.2.4, and 2.2.5; Formoseño MF General Manager's Progress Reports 2007–2013; RIABM 2009, 2010, 2011).

## 2.5 Research and monitoring

### 2.5.1 Research programs

Universities and other institutions conduct ongoing SFM research in MFs. MFs are viewed favourably by researchers as living laboratories with local participants willing to become involved in issues concerning best silvopastoral practices, genetic conservation, improved tree breeding (selecting superior quality trees for regeneration programs), best silvicultural practices, non-timber forest products (e.g. apiculture, mushrooms, ferns), and basic ecological research, among others (SAyDS - Dirección de Bosques - Programa Nacional de Protección de Bosques Nativos 2013). Participation by locals in extension and field-assistance activities associated with research in the MF in many cases helps to build capacity in local communities where new practices from their experiences are often applied, bringing immediate improvements to local sustainable livelihoods.

Most MF projects are applied research. The topics are usually tied to the immediate interests of MF stakeholders. For example, in Formoseño MF, projects and research focus on economic production, particularly cattle ranching, apiculture, and silviculture and handicraft production. In Futaleufú MF, there is a wider scope of research supported through the strong research capabilities of its key partner CIEFAP.<sup>(37)</sup> The CIEFAP, INTA, and National University of Patagonia San Juan Bosco are dynamic research centers that conduct applied forestry research and sustainable cattle management in Antarctic beech, or *ñire* (*Nothofagus antartica*) forests (Tejera et al. 2006, Hansen et al. 2009) and share their knowledge through extension activities

providing valuable inputs for the development of guidelines for sustainable silvopastoral systems at the regional level (Quinteros and Bava 2012, Van den Heede et al. 2011).

### 2.5.2 Monitoring programs

All MFs and the AMFP staff collaborated to create and report on LLIs for SFM. These form a framework for monitoring progress towards SFM at the local and network levels. MFs are experiencing positive results from their LLI exercise (SAyDS-Dirección de Bosques-PNBM 2002–2013. Annual Reports). These results include:

- ◆ The opportunity for stakeholders with conflicting views to share ideas in dialogue and reach agreements on a minimum common base for monitoring
- ◆ Stakeholders with no technical background begin to better understand SFM and have a say in the LLI process
- ◆ MF participants now have access to data sources and information that was not available before the implementation of the LLI initiative, which has increased the potential of MF participants to develop better approaches to SFM
- ◆ MF partners have a sharpened focus on progress to SFM locally, and through the amalgamation of data, a better idea of progress across the Argentine MF network, the impact of their actions on SFM, and a greater awareness of what is not being done to further SFM in their area
- ◆ There is a better sense across the AMFP of costs and benefits to help optimise investments in SFM
- ◆ A more clear context and identity of funding opportunities is provided and a means to describe priorities among the various issues involved in developing, implementing and monitoring SFM to support the business case for monitoring that carefully demonstrates to local stakeholders—especially those lacking a technical background—the usefulness and importance of identifying, measuring, monitoring, and reporting on LLIs.

All MFs organisations report annually on their activities plans and accounts.

<sup>(37)</sup> CIEFAP's research priorities are set by its executive board. Members include national public sector and Patagonian provincial forest authorities. Key areas of interest include mushrooms for commercial production, forests pests and diseases, forest fire management, and climate change. CIEFAP projects can be viewed at [http://www.ciefap.org.ar/index.php?option=com\\_jr\\_research&view=projectslist&Itemid=32](http://www.ciefap.org.ar/index.php?option=com_jr_research&view=projectslist&Itemid=32) <http://www.ciefap.org.ar/index.php?option=objectslist&Itemid=32>



## 2.6 Intersection among diverse policies and institutions

Both conflict and synergies can emerge from the intersection of diverse policies and institutions and have an impact on the SFM aspirations of MFs. Within the iterative forums that MFs provide, stakeholders, through collaborative dialogue, examine their circumstances and needs to determine their best courses of action to achieve SFM. For example, in Tucumán MF, land-use conflicts have arisen where land conversion to support accelerated urbanisation and the expansion of fruit and sugar cane crops is taking over lands traditionally used for grazing and gathering fuel wood and other forest produce and, as land-use change and populations grow, informal settlements are established within national parks (Tucumán MF 2008).<sup>(38)</sup> Tucumán MF has successfully brought together a broad range of stakeholders that traditionally were in conflict and did not share a culture of participation in dialogue as a first step to find ways to resolve these issues and support SFM goals (Tucumán MF 2008, Manso 2013). The AMFP coordinator participates in the Synergy Group made up of representatives from directorates and programs under the federal government Undersecretary of Environmental Planning and Policy. This group meets regularly to share information about the design, experience, and results of the various SFM initiatives that they are aware of or have undertaken. This conduit has been an effective way for MFs to provide and receive knowledge and experience related to SFM. This group is often the starting point for synergies that result in joint projects, such as a current example of handicrafts production using forest-based *chaguar* (*Bromelia* sp.) and *palo santo* (*Bulnesia sarmientoi*) that brings new economic activities based on sustainable forest use to MF areas.

San Pedro MF integrates key local and provincial stakeholders in its dynamic management board that mobilises strong support for MF projects. This MF is working with the local forest industry to improve overall added value of forest products with the larger-scale operators. The ongoing workers training program, combined with small farmers and indigenous communities support for SFM and the strengthening of San Pedro's forest industries, will enhance local livelihoods by improving its competitiveness and market access.<sup>(39)</sup>

North of Neuquén MF, participants include INTA, municipalities, and producer organisations that are working to attract additional local stakeholders to MF governance involvement to help implement SFM and reinvigorate the development of local, sustainable forest industries (North of Neuquén MF General Manager's Progress Report 2013). The MF is developing a sustainable multiple-use land management plan for the communal forests in the Department of Minas, an enhancement project for the Chos Malal tree nursery to produce native tree seedlings, and a collaborative project with a neighbouring sawmill enterprise.<sup>(40)</sup>

In Formoseño MF, interactions among partners and third-party organisations are synergistic. The land-management planning process triggered by the provincial Ministry of Production and Environment and reinforced by the approval of Law No. 26,331 helped create relationships with organisations based in the provincial capital (some 400 km away). The provincial government implements some of its production development programs through the MFs. CEDEVA works with the MFs to design new guidelines for SFM and other production activities such as cattle ranching (RIABM 2009, 2010, 2011; Formoseño MF General Manager's Progress Reports 2007–2013; Proyecto GEF Manejo Sustentable de Bosques en el Ecosistema Transfronterizo del Gran Chaco Americano report<sup>(41)</sup>). The Federal Environment Council (COFEMA)<sup>(42)</sup> is currently developing a framework to regulate minimum requirements for silvopastoral SFM plans under Law No. 26,331.

## 2.7 Projected future trends

The increase in policy instruments aimed at promoting SFM marks a new phase in forest management and conservation in Argentina. One trend will be a greater focus paid to factors affecting the country's progress towards SFM. MFs will continue to build on past achievements (including their successful engagement with government initiatives to regularise land tenure) and use the increased technical and financial support from national, international, and provincial programs to strengthen the capacity of their participants and their contributions to SFM. With the increase in SFM funding and the need to implement

<sup>(38)</sup> Fruit and sugar cane exports account for 67% of the total provincial exports (Subsecretaría de Planificación Económica–Dirección Nacional de Desarrollo Regional and Dirección Nacional de Desarrollo Sectorial 2011).

<sup>(39)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(40)</sup> UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos.

<sup>(41)</sup> More information at <http://www.ambiente.gob.ar/?idseccion=25>.

<sup>(42)</sup> Established under the Federal Agreement for the Environment (1993), ratified by General Environmental Law No. 25,675 (2002).



new laws, the vital forums that MFs provide for the involvement and enhancement of stakeholder contributions of knowledge and skills in informing the decision-making processes concerning SFM, will become increasingly needed and valued more and by more people.

This chapter has referred to the legislation, regulations, and activities enacted since the MF program started in Argentina and that have contributed to improving social, environmental, and economic conditions as Argentina seeks progress towards SFM (Laws No. 26,331, 25,080, and 26,432). A foundation to trend positively into the foreseeable future has been laid by the national consensus on forest management and conservation guidelines, within the framework of COFEMA; recognition of indigenous communities' ancestral land possession rights and Creole farmers land possession rights '(through land-tenure regularisation processes); and increased availability of technical and financial support from national<sup>(43)</sup> and provincial programs containing conditions that support SFM.

MFs will continue their support to increase new initiatives for capacity-building related to SFM based on the new laws and funding as well as use this increased activity to attract further participation in their programs. These actions will include enhancing entrepreneurial and accounting skills at the local level, increasing awareness of traditional and scientific knowledge, and involving the input of more stakeholders into forest land-use planning for SFM. MFs expect to be well positioned to report on their impact and progress towards SFM in Argentina through the application and ongoing refinement of the AMFN LLI framework (RIABM 2009, 2010).

<sup>(43)</sup> Over the past 10 years, the National Public Administration implemented a process of decentralisation. National public organisations such as the Secretariat of Environment and Sustainable Development, the Under secretariat of Family Farming, the National Institute of Agricultural Technology, and the National Institute of Industrial Technology currently carry out actions in the territory in an increasingly coordinated fashion.

## References

- Arce, H. 2013. Informe Anual de Actividades. Secretaría de Ambiente y Desarrollo Sustentable, Programa Nacional de Bosques Modelo – Bosque Modelo San Pedro. Proyecto PNUD ARG/12/013 'Apoyo para la Implementación del Programa Nacional de Protección de Bosques Nativos'.
- Brown, A.D. 2013. La deforestación no es la principal amenaza sobre los bosques nativos en Argentina. 5p. Available at: [http://www.proyungas.org.ar/publicaciones/pdf/editoriales/LA\\_DEFORESTACION\\_NO\\_ES\\_LA\\_PRINCIPAL\\_AMENAZA SOBRE LOS BOSQUES NATIVOS EN ARGENTINA.pdf](http://www.proyungas.org.ar/publicaciones/pdf/editoriales/LA_DEFORESTACION_NO_ES_LA_PRINCIPAL_AMENAZA SOBRE LOS BOSQUES NATIVOS EN ARGENTINA.pdf) [Cited 20 Feb 2014].
- Canadian Council of Forest Ministers (CCFM) 2008. Putting sustainable forest management into practice across Canada and beyond. 27p. Available at: [http://www.ccfm.org/pdf/CCFM\\_Measuring\\_our\\_progress.pdf](http://www.ccfm.org/pdf/CCFM_Measuring_our_progress.pdf) [Cited 20 Apr 2014].
- Canadian Model Forest Program 2000. A user's guide to local level indicators of sustainable forest management: Experiences from the Canadian Model Forest Network. Natural Resources Canada, Canadian Forest Service, Headquarters, Industry, Economics and Programs Branch, Ottawa. 265 p.
- Consejo Federal de Medio Ambiente 2012. Resolución COFEMA N° 229/2012. Available at: <http://www.cofema.gob.ar/?aplicacion=Normativa&tiponorma=4&idseccion=32&idpais=10&provincia=0&formulario=grupo> [Cited 20 Feb 2014].
- Cornwall, A., Robins, S. & Von Lieres, B. 2011. States of Citizenship: Contexts and Cultures of Public Engagement and Citizen Action. IDS Working Paper 363. 35 p.
- Formoseño MF General Manager's Progress Reports 2007–2013. FPAC 2014 (Forest Products Association of Canada). Forest Certification in Canada year end 2013. Available at: <http://www.certificationcanada.org/index.php/maps-en/national> [Cited 20 April 2014].
- Futaleufú Model Forest 2013. Proyectos Bosque Modelo Futaleufú 2013-2015. 32 p.
- Gabay, M. 2013a. Gobernanza y participación en paisajes forestales en Centroamérica. Paper presented at the III IUFRO Latin American Congress. 15p. Available at: [http://web.catie.ac.cr/iufrolat/iufroLat\\_resumenes\\_ponencias.htm#C](http://web.catie.ac.cr/iufrolat/iufroLat_resumenes_ponencias.htm#C) [Cited 10 Apr 2014].
- Gabay, M. 2013b. Gobernanza, participación y cultura forestal en Argentina. Bosques Modelo y desarrollo local sustentable. In: RIABM, CATIE & GIZ (eds.). Memoria del Taller. Taller de análisis: 'Construyendo Cultura Forestal' Desde los diversos ámbitos de gobernanza (comunal, territorial, regional, nacional). p. 25–32.
- Gabay, M., Bessonart, S. & Barros, S. 2011. Latin America –Argentina, Bolivia and Chile. In: Parrota, J.A. & Trosper, R.L. (eds.). Traditional Forest Related Knowledge Sustaining Communities, Ecosystems and Biocultural Diversity. Springer. p. 79–117.
- Hall, J.E. 1993. Managing Intervention for the sustainable development of the natural tropical forest: An East African perspective. D.Phil. Thesis, U. of Oxford. 48p.
- Hall, J.E. 1996/97. Canada's Model Forest Program – Bringing community forest values into the development of sustainable forest management in the Canadian context. Rural Development Forestry Network Paper 20e, Winter 1996/97 ODI, Portland House, Stag Place, London SW1E 5DP, UK p. 14–22.
- Hall, J.E., Gabay, M. & Dolter, S. 2009. The Canada-Argentina local level criteria and indicators initiative. Invited Poster World Forestry Congress, Buenos Aires, Argentina.
- Hansen, N., Fertig, M. & Tejera, L. 2009. Componentes de los sistemas silvopastoriles en bosques de ñire. Revista INTA Forestal N° 17:77–82.
- IMFN 2008a. Model Forest Principles and Attributes Framework. Available at: <http://www.imfn.net/system/files/PA%20Framework.pdf> [Cited 10 Apr 2014].

- IMFN 2008b. Model Forest Development Guide. International Model Forest Network Secretariat, Natural Resources Canada–Canadian Forest Service. 34 p. Available at: [http://www.imfn.net/system/files/Model\\_Forest\\_Development\\_Guide\\_en.pdf](http://www.imfn.net/system/files/Model_Forest_Development_Guide_en.pdf) [Cited 10 Apr 2014].
- JICA (Japan International Cooperation Agency) 2005. Fortalecimiento al Desarrollo Productivo Comunitario. Informe Final. 66 p.
- JICA 2009. Proyecto Forestal para el Desarrollo Social y Ambiental de los Productores Criollos y Aborígenes en el Área del Bosque Modelo Formoseño. Informe de Evaluación Final. 27p.
- Japan International Cooperation Agency (JICA) & Formoseño MF. 2008. Diseños Wichí. 22p.
- Manso, D. 2013. Bosque Modelo Tucumán: Un ejemplo de gobernanza participativa. In: RIABM, CATIE & GIZ (eds.). Memoria del Taller. Taller de análisis: Construyendo Cultura Forestal' Desde los diversos ámbitos de gobernanza (comunal, territorial, regional, nacional). p. 33–36
- North of Neuquén MF General Manager's Progress Report 2013.
- Paton, C. 2013. Bosque Modelo Formoseño una herramienta de Gestión. In: RIABM, CATIE & GIZ (eds.). Memoria del Taller. Taller de análisis: Construyendo Cultura Forestal' Desde los diversos ámbitos de gobernanza (comunal, territorial, regional, nacional). p. 37–44.
- Pedretti, F. 2004. Listado de plantas melíferas del Oeste Formoseño según época de floración. 5 p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/File/BMFO/LISTADO%20DE%20PLANTAS%20MEL%20FERAS.pdf> [Cited 20 Feb 2014]
- Proceso de Montreal 2009. Criterios e indicadores para la conservación y el manejo sustentable de los bosques templados y boreales. Oficina de Cooperación Forestal, Tokyo. 48 p.
- Provincia de Formosa 2007. Planes Estratégicos de Desarrollo Local Dic 07. Gobierno de la Provincia de Formosa. 317 p. Available at: <http://www.formosa.gob.ar/planificacion.desarrollolocal> [Cited 10 Apr 2014].
- Quinteros, P. & Bava, J.O. 2012. Ficha técnica: Ganadería en bosques de lenga de Chubut. Intensidad de uso ganadero en relación con la distancia a los mallines. Revista Patagonia Forestal, junio. p. 13–16.
- RIBM (Red Internacional de Bosques Modelo) 2007. Principios y atributos de los bosques modelo. Available at: [http://www.imfn.net/es/system/files/PA\\_Framework\\_s.pdf](http://www.imfn.net/es/system/files/PA_Framework_s.pdf) [Cited 11 Apr 2014].
- RIABM (Red Iberoamericana de Bosques Modelo) 2009. Anuario 2009. Bosques Modelo de Iberoamerica. Available at: <http://www.bosquesmodelo.net/admin/documents/67> [Cited 10 Apr 2014].
- RIABM 2010. Anuario 2010. Bosques Modelo de Iberoamerica. Available at: <http://www.bosquesmodelo.net/admin/documents/68> [Cited 10 Apr 2014].
- RIABM 2011. Anuario 2011. Bosques Modelo de Iberoamerica. Available at: <http://www.bosquesmodelo.net/admin/documents/93> [Cited 10 Apr 2014].
- RIABM 2012. Anuario 2012. Bosques Modelo de Iberoamerica. 142 p. Available at: <http://www.bosquesmodelo.net/admin/documents/147> [Cited 10 Apr 2014].
- San Pedro Model Forest General Manager's Progress Reports 2007 – 2013.
- SAyDS (Secretaría de Ambiente y Desarrollo Sustentable) 2007. Consultoría para transferir experiencias internacionales de pagos por servicios ambientales (PSA) y desarrollar las bases de dos estudios de caso. Préstamo BIRF 4085-AR Proyecto Bosques Nativos y Áreas Protegidas PNUD ARG/99/011 Manejo y Conservación de los Bosques Nativos. 146 p.
- SAyDS 2013a. Propuesta de Preparación. País: Argentina. Fondo Cooperativo para el Carbono de los Bosques (FCPF). Programa de Colaboración de las Naciones Unidas para Reducir las Emisiones debidas a la Deforestación y la Degradación Forestal en los Países en Desarrollo (ONU-REDD). 201 p.
- SAyDS 2013b. Registro Nacional de Planes – Ley N° 26.331.
- SAyDS – Dirección de Bosques 2007. Monitoreo de Bosque Nativo. Período 1998 – 2002, Período 2002 – 2006 (Datos Preliminares). 11 p.
- SAyDS – Dirección de Bosques – Área de Ordenamiento Territorial 2013. Informe resumen de estado de implementación. Ley N° 26.331 de Presupuestos Mínimos de Protección Ambiental de los Bosques Nativos. 19 p. Available at: <http://www.ambiente.gov.ar/archivos/web/OrdTerrBN/file/informe%20resultados%20Ley%2026331abril-2013.pdf> [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques & CIEFAP 2010. Documento de Síntesis – Proceso de Construcción. Plan Forestal Regional Patagónico (PFRP). 44 p. Available at: [http://www.ambiente.gov.ar/archivos/web/PNBM/file/PFRP%20-%20Documento%20de%20S%C3%ADntesis\(1\).pdf](http://www.ambiente.gov.ar/archivos/web/PNBM/file/PFRP%20-%20Documento%20de%20S%C3%ADntesis(1).pdf) [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques – Programa Nacional de Bosques Modelo (PNBM) 2002 – 2013. Annual Reports.
- SAyDS – Dirección de Bosques - PNBM 2007. I Taller Nacional sobre Criterios e Indicadores de Manejo Forestal Sustentable para Bosques Modelo en Argentina. 17p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/file/Informe%20%20-%20ITaller%20C&I.pdf> [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2008a. II Taller Nacional sobre Criterios e Indicadores de Manejo Forestal Sustentable para Bosques Modelo en Argentina. 10 p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/file/Informe%20%20IIITaller%20C&I.pdf> [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2008b. III Taller Nacional sobre Criterios e Indicadores de Manejo Forestal Sustentable para Bosques Modelo en Argentina. 13 p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/file/Informe%20Final%20III%20Taller%20CI%20v-4.pdf> [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2009a. IV Taller Nacional sobre Criterios e Indicadores de Manejo Forestal Sustentable para Bosques Modelo en Argentina. 16 p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/file/informe%20IV%20Taller%20v1-1.pdf> [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2009b. V Taller Nacional sobre Criterios e Indicadores de Manejo Forestal Sustentable para Bosques Modelo en Argentina. 15 p. Available at: [http://www.ambiente.gov.ar/archivos/web/PNBM/file/INFORME%20V%20TALLER%20V1\\_3.pdf](http://www.ambiente.gov.ar/archivos/web/PNBM/file/INFORME%20V%20TALLER%20V1_3.pdf) [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2010. Iniciativa de la Red Nacional de Bosques Modelo sobre Criterios e Indicadores de Manejo Forestal Sustentable. 61 p. Available at: [http://www.ambiente.gov.ar/archivos/web/PNBM/file/libro\\_C&I%20.pdf](http://www.ambiente.gov.ar/archivos/web/PNBM/file/libro_C&I%20.pdf) [Cited 20 Feb 2014].
- SAyDS – Dirección de Bosques - PNBM 2011. Workshop on Silvopastoral Activities in Argentine Southern Andean Forests. Technical Report. 23 p.
- SAyDS – Dirección de Bosques - PNBM. 2012. Workshop on Forest Degradation in Argentine Southern Andean Forests. Technical Report. 25 p.
- SAyDS – Dirección de Bosques – PNBM 2013. Sustainable livelihoods: Workshop on adding value to the production of indigenous people and small farmers in northeastern Argentinean Model Forests. Technical Report. 46 p.
- SAyDS – Dirección de Bosques – Programa Nacional de Protección de Bosques Nativos 2013. Posibles áreas de intervención de investigación y desarrollo para el manejo y aprovechamiento económico del bosque nativo. UNDP Project ARG/12/013 Apoyo a la Implementación del Programa Nacional de Protección de Bosques Nativos. 9 p.
- SIFIP (Sistema de Información Foresto-Industrial Provincial) – Subsecretaría de Desarrollo Forestal de la Provincia de

- Misiones 2010. Inventario Forestal Provincial 2009–2010. Available at: <http://extension.facfor.unam.edu.ar/sifip/inventario.htm> [Cited 20 Feb 2014].
- Subsecretaría de Planificación Económica – Dirección Nacional de Desarrollo Regional & Dirección Nacional de Desarrollo Sectorial. 2011. Tucumán. 7p. Available at: [http://www.mecon.gov.ar/peconomica/dnper/fichas\\_provinciales/Tucuman.pdf](http://www.mecon.gov.ar/peconomica/dnper/fichas_provinciales/Tucuman.pdf) [Cited 11 Apr 2014].
- Tejera, L., Hansen, N. & Fertig, M. 2006. Efecto de la cobertura arbórea y del pastoreo vacuno sobre la regeneración de Ñire. *Revista INTA Forestal* N° 12:51-54.
- Tucumán MF General Manager's Progress Reports 2012–2013.
- Tucumán Model Forest 2008. Propuesta del Bosque Modelo Tucumán. Planificación y gestión adaptativa para el desarrollo sustentable del territorio en la cuenca del río Lules, de la cuenca sur del río Tapia y de la cuenca norte del río Colorado. 55 p.
- Unidad de Manejo del Sistema de Evaluación Forestal (UMSEF) 2014. Map of the Argentine Model Forests. Direction de Bosques de la Nación, Secretaría de Ambiente y Desarrollo Sustentable de la Nación (SAyDS), Buenos Aires, Argentina.
- Van den Heede, B.C. 2012. Plan Forestal Regional Patagónico. I Taller sobre Bosque Degradado. Directorate of Forestry, Secretariat of Environment and Sustainable Development, Buenos Aires, Argentina. Internal unpublished report. 18 p.
- Van den Heede, B.C. 2013. Bosque Modelo Futaleufú, suma de alianzas estratégicas para su gestión. In: RIABM, CATIE & GIZ (eds.). Memoria del Taller. Taller de análisis: 'Construyendo Cultura Forestal' Desde los diversos ámbitos de gobernanza (comunal, territorial, regional, nacional). p. 45–47.
- Van den Heede, B.C., Quinteros, P. & Bava, J.O. 2011. Plan Forestal Regional Patagónico. I Taller sobre Herbivoría en el Bosque. 94 p. Available at: <http://www.ambiente.gov.ar/archivos/web/PNBM/file/PFRP/Taller%20herbivoría/1%20Taller%20herbivor%C3%ADa%20Nov%202011.pdf> [Cited 20 Feb 2014].