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Building Climate Governance through the Model Forests Platforms: Reflections and Challenges

Josique Lorenzo, Ibero-American Model Forest Network (RIABM) / CATIE (Tropical Agricultural Research and Higher Education Centre)
Róger Villalobos, Bosque Modelo Reventazón (ABOMORE) / CATIE

Series Editors:

Katherine Lofts (CISDL), Sébastien Duyck (University of Lapland), and Sébastien Jodoin (GEM)

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Centre for International Sustainable Development Law
Chancellor Day Hall
3644 Peel Street, Montreal (Quebec), H3A 1W9 Canada
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Governance, Environment & Markets Initiative at Yale
195 Prospect Street
New Haven, CT 06511
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Northern Institute for Environmental and Minority Law
Arctic Centre, University of Lapland
P.O. Box 122
FIN-96101 Rovaniemi, Finland
www.arcticcentre.org/EN/RESEARCH/NIEM

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1 Introduction

Climate change is arguably the most important challenge facing the international community in our era. Its importance has been recognized in recent reports from the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC), and one of the proposed Sustainable Development Goals refers explicitly to the necessity of taking urgent action to combat climate change and its impacts.[1]

Climate change adaptation is primarily a governance challenge (e.g. Meadowcroft 2009, Vignola 2011). International institutions have acknowledged that high-quality, effective governance is essential for the successful mitigation of climate change, for example through reductions in deforestation and forest degradation (e.g. FAO and ITTO 2009).

However, the global governance frameworks and international climate processes have not progressed enough toward a solution, highlighting the need to implement measures at other scales (such as national, municipal, and landscape). Effective climate governance will require complementary actions in smaller settings and the participation of a wider range of formal and informal institutions (Busby 2010). Moreover, climate governance has evolved from being a problem essentially dealt with in the public realm by states, to one that also needs to be addressed in other spheres and through other instruments, such as public-private partnerships.

In light of these new tendencies, Model Forests come into play as an important alternative to establish more effective and equitable climate governance processes at the landscape-level. The stated goal of the International Model Forest Network (IMFN) is to use Model Forests as platforms for examining the links between international policy objectives and on-the-ground actions. Indeed, the IMFN has established climate change as one of its Strategic Initiatives and indicates explicitly that:

> Climate change has far reaching implications for sustainable livelihoods, food security, health, water availability and biodiversity. Model Forests, with their landscape-scale platforms and broad stakeholder engagement, are ideally suited to carry out climate change research, develop community adaptation and mitigation strategies and monitor such efforts over the long-term".[2]

We will discuss how Model Forests help to fulfill the principle of public participation through dynamic interactions and cooperation efforts between governments, international organizations and NGOs. We will also reflect on how Model Forests contribute to adaptive environmental governance, landscape learning and the creation of social capital.

Drawing on a review of the literature, interviews and the analysis of some strategic documents and reports, this paper aims primarily at unpacking the potential of the Model Forest approach for improving

[1] SDG 13, retrieved on July 15, 2014 and found at: <http://www.landscapes.org/forests-gain-foothold-proposed-post-2015-development-framework/>
[2] Found at: <http://www.imfn.net/climate>

the implementation of policies related to climate change. Some environmental initiatives in Model Forests will be presented; these relate to, *inter alia*, scientific research on climate change adaptation, capacity-building activities concerning REDD+, and participation in FLEGT negotiations. To conclude, some of the main challenges and implications for the Model Forest approach are examined.

2 Model Forests and the Model Forest Network

"People think they know what a Model Forest is, until you start explaining to them… then they realize that it means much more than what they originally thought. It takes some time to assimilate the concept, but once it is understood, it generates a lot of enthusiasm and support."

- Fernando Carrera, General Manager of the Ibero-American Model Forest Network (RIABM)

Historically, in Latin America, the management of forests and other natural resources has been a problematic and delicate topic. Policies that are not sensitive to local contexts have contributed to the emergence of alternative narratives related to more flexible, decentralized and participatory approaches. One of these approaches is called "Model Forests".

Model Forests are social initiatives through which a diversity of people and organizations work in partnership toward a common vision of the sustainable development of a given territory. In South America, Latin America, the Caribbean and Spain, there are currently 29 Model Forests located in 15 member countries, which means that the approach is having a potential impact on the management of over 30 million hectares and on the lives of more than 7 million people (RIABM's website[3]).

The International Model Forest Network (IMFN) proposes the following definition:

> Model Forests are based on an approach that combines the social, cultural and economic needs of local communities with the long-term sustainability of large landscapes in which forests are an important feature. By design they are voluntary, broad-based initiatives linking forestry, research, agriculture, mining, recreation, and other values and interests within a given landscape. (IMFN's website[4])

As a multidimensional concept, it should also be understood as: A multi-stakeholder process; A participatory governance platform; A forum based on consensus; An integrated landscape management approach. The model is being applied in geographically and biophysically defined landscapes of several thousand to several million hectares in size, which include all types of ecosystems and land tenure. Indeed, the impact area of a Model Forest goes beyond natural forests to encompass the whole landscape: protected areas, agricultural and pastoral areas, hydrological basins, biological corridors, forest plantations, and even urban centers.

[3] See: <www.bosquesmoldelo.net>
[4] See: <www.imfn.net>

Rather than being a single model, the idea is that each country "models" the concept according to its context, while always respecting the six basic principles adopted by the International Model Forest Network (see for example the Model Forest Development Guide[5]).

> **Principle 1**. Broad-based Partnership (each Model Forest is a neutral forum that welcomes representatives of stakeholder interests and values on the landscape).
>
> **Principle 2.** Large Landscape (a large-scale biophysical area representing a broad range of land uses and values, including social, cultural, economic and environmental concerns).
>
> **Principle 3**. Commitment to Sustainability (stakeholders are committed to the conservation and sustainable management of natural resources).
>
> **Principle 4**. Participatory Governance (the Model Forest process is representative, participative, transparent and accountable, and promotes collaborative work among stakeholders).
>
> **Principle 5**. A Broad Program of Activities (reflective of the Model Forest's vision and stakeholder needs).
>
> **Principle 6**. Commitment to Knowledge Sharing, Capacity Building and Networking.

In Latin America, experiences with Model Forests are two-fold. At the landscape-level, the individual platforms operate independently, setting their own strategic objectives and priorities and their own agendas and programs of activities. We will see how these platforms create a collaborative culture and a favorable environment for the implementation of global policies. Indeed, international conventions or agreements often face localized challenges, which Model Forests can help resolve by translating policy into practice.

At the regional level, the Ibero-American Model Forest Network (or RIABM, its Spanish language acronym), connects all these social platforms together, playing an essential role in consolidating Model Forests and strengthening their governance processes, facilitating education, public awareness and horizontal cooperation, systematizing relevant experiences, and promoting understanding and local action on complex issues, such as climate change. The RIABM not only connects and supports individual Model Forests, but it is also part of the International Model Forest Network (IMFN), thereby serving as a bridge between the local and the global, and providing added value to its members in terms of credibility and visibility.[6]

[5] IMFN 2008 found at: <http://www.imfn.net/system/files/Model_Forest_Development_Guide_en.pdf>

[6] The RIABM was founded in 2002, 10 years after the Model Forest concept was officially presented to the world at the UNCED in Rio. As a voluntary partnership among Model Forests that is endorsed by government entities of each member country, it currently brings together 15 countries and 29 landscapes to share knowledge and exchange experiences. The RIABM is considered one of the most, if not the most dynamic of the 6 regional networks within the International Model Forest Network.

3 Participation in Model Forests: The Value of a Collaborative Culture

"Indigenous people used to see the CONAF [the national forest authority of Chile] as the employer who gave them work. But now they realize that it can be not only their employer but also a co-participant. This is what the Model Forest wants to show them: they can get more if they cooperate, both parties can win."

- Abel Igor, former Chiloé Model Forest Management Team, 2006[7]

Participation can be understood as "forms of genuine delegated control that enable people to exercise a meaningful part in making the decisions that affect their lives" (Cornwall 2008). Model Forests emerged during a time when growing environmental concerns and accelerated policy-making, in the context of the globalization of markets, demanded more public participation in resource management (Bonnell et al. 2012). It offered a fresh, dynamic perspective focused on the landscape.

(a) Model Forests build on the value of multi-stakeholder processes

Multi-stakeholder dialogues are commonly believed to lead to more legitimate and effective policies at the local level. More concretely, scholars have highlighted the value of multi-stakeholder dialogues for consultation, learning, idea generation, problem solving, decision-making, overcoming conflicts and collective action.[8]

Diverse actors bring to the table diverse types of knowledge; these can add value to governance and decision-making through providing different perspectives on processes, therefore reducing the risk of poor management outcomes (Hatfield-Dodds 2007). Model Forests provide for such diversity. Model Forests are multi-level and multi-sectorial, bringing together government bodies, NGOs, the private sector, indigenous peoples, and migrant communities, among others. Similarly, they are multidisciplinary, since all kinds of people participate voluntarily in the process, be they forestry workers, scholars, activists, scientists, technicians, mayors, policy-makers, indigenous groups, government officials, industry representatives, or community leaders.

Table 1 shows the diversity of the organizations that comprise the Board of Directors of five Model Forests in Latin America. To this end, representatives have been divided in the following categories: Public Sector, Private Sector, Civil Sector and Academia.

[7] Cited in Barriga et al. 2007. Loose translation.
[8] Found at: <http://www.wageningenportals.nl/msp/topic/rationale-why-do-we-need-msps >

Table 1. Composition of the Board of Five Model Forests, by Sector, August 2014

Organizations represented in five Model Forests Board of Directors, by Sector				
Model Forest	Public Sector	Civil Sector	Private Sector	Academia
Atlántida (Honduras)	• National Institute for the conservation and development of forests, protected areas and wildlife (ICF) • Central Atlántida coalition of municipalities (MAMUCA) • Municipalities of La Ceiba, Tela and Jutiapa	• Madera Verde / Green Wood Foundation • Atlántida livestock producers and farmers association (AGAA) • Honduran broadleaf forest management network (REMBLAH) • Honduran ecology network for sustainable development (REHDES) • National forestry producers association (ANPFOR/COATHLAL)	• Regional agro-forestry cooperative Colon, Atlántida, Honduras Ltd (COATLAHL)	• National Autonomous University of Honduras (UNAH)
Colinas Bajas (Dominican Republic)	• Ministry of Environment and Natural Resources • Dominican Agrarian Institute • 44 Environmental Municipal Management Units (UGAM)	• Association for the local development of Monte Plata (ADELMOPLA) • Peasants Federation of Zambrana • Forestry cooperatives of small producers of Zambrana, Bayaguana and Villa Altagracia • 35 associations of agroforestry small producers • 8 livestock producers	• Forest entrepreneurs cluster • Dominican Forestry Chamber • Enterprises for the transformation of biomass into energy • Network of ecotourism micro-enterprises	• Catholic University Nordestana • University of Technology – Cibao Oriental • INTEC University
Mosaico Sertão Veredas-Peruaçu (Brazil)	• Chico Mendes Institute for the conservation of biodiversity – ICMBIO • State Forest Institute (IEF) • Superintendency of the Brazilian Institute for the Environment and Renewable Natural Resources in Minas Gerais – IBAMA • Regional Executive Administration of the National Indian Foundation (FUNAI) of Governador Valadares • Sixteenth independent military police company of environment and traffic • 8 municipal governments	• Foundation for the protection of nature – FUNATURA • Biotrópicos Institute, Rosa e Sertão Institue and Grande Sertão Institute • Sustainable and integrated development agency for Chapada Gaúcha-ADISC • Rural workers union of Chapada Gaúcha • Group of speleology and oriented studies of Januária • Environmental agents association of Vale do Peruaçú • Indigenous Association Xakriabá – Aldeia Barreiro Preto • Social Service of Trade – SESC / LACES of Januária • Association of small rural producers of Várzea Grande – Itacarambi and of Vila Bonita – APRUVIB • Diocesan CARITAS of Januária • Quilombola Association Vó Amélia – Chapada Gaúcha • Environmentalist Association Vida Verde	• Pioneer farming cooperative (Cooapi) • Privately Owned Nature Reserves (RPPN) Fazenda Porto Cajueiro and Aldeia • Cooperative of forestry and agro-extraction Sertão Veredas Ltd • Cooperative of the small agro-extrativist producers of Pandeiros – Coopae • World Wildlife Fund (WWF) – Brazil	• State University of Montes Claros - UNIMONTES
Panguipulli (Chile)	• CONAF (National Forestry Corporation) Los Ríos • Municipality of Panguipulli • Agricultural and livestock service (SAG) Los Ríos	• Coz Coz Parliament • Puwincul Liquiñe tourism association • Environmental Front of Panguipulli • Beekeepers community association		• Forestry institute (INFOR) of Valdivia • Centre for environmental studies CEAM-UACH
Reventazón (Costa Rica)	• Ministry of Environment and Energy • Federation of municipalities of Cartago • National Groundwater, Irrigation and Drainage service • UNDP/Global Environment Facility (GEF) Small Grants Programme	• Federation of community development associations • Volcánica Central-Talamanca Biological Corridor • COBRISURAC Biological Corridor • Friends of the Model Forest Foundation (FUNDABOSQUE)	• National Horticulture Corporation • Chamber of Commerce, Industry, Tourism and Services of Cartago	• Tropical Agricultural Research and Higher Education Center (CATIE)

The above table is illustrative only. It is limited to the stakeholders who sit on the Board and is not a complete list of the wide range of other partners and alliances involved in Model Forests. Indeed, Model Forests can be seen as a complex web of local organizations – "an interactive constellation of landscape institutions" (Oosten 2013).

Model Forests usually build on pre-existing participatory structures and on the leadership of one or more community organizations that drive the process (such as Madera Verde in Honduras, Casa Pueblo in Puerto Rico or Enda Dominicana in the Dominican Republic – all outstanding community-led organizations at the time the Model Forest creation process was initiated). In other cases, Model Forests have been created through a more top-down approach, such as in the case of Lachuá Model Forest in Guatemala, where the process was initiated by the National Forest Authority (INAB).

(b) Model Forest platforms clearly make an effort to be inclusive

As stated above, multi-stakeholder collaboration is one of the key characteristics of Model Forest platforms. However, as noted by Cornwall (2008), most participatory processes do not and literally cannot involve everyone. Consequently "full" participation is an illusion. Cornwall proposes that an optimum participation should be the goal: getting the balance right between depth and inclusion for a given purpose. Model Forests seek to include all relevant stakeholders in the process, in order to be representative, but will not force anyone to participate, as people must adhere on a voluntary basis and embrace similar values.

One frequently-used mechanism for inclusion is through the identification of categories of stakeholders whose views are considered to represent other similar ones (Cornwall 2008); therefore, participatory processes can serve to deepen the exclusion of particular groups with different stances or values, unless explicit efforts are made to include them. Model Forests need to be aware of that risk.

The involvement of indigenous peoples is especially important due to their proximity to forest resources, their dependency, to varying degrees, on non-timber forest resources, their recognized rights attached to the land (Klenk et al. 2013), and the special cultural bond they usually have with the land and the forest. Moreover, they have been in many cases traditionally marginalized by decision processes that have impacted on forest conservation in their territories (Vignola et al, 2012).

Within Model Forests, deliberate actions are taken to include them in the process. For example, in Chile, the Coz Coz parliament is an informal sociocultural and sociopolitical entity, without legal personality, that represents the traditional Mapuche organization. The Coz Coz parliament is a fundamental partner of the Panguipulli Model Forest; a group of young Mapuche leaders formed a legal association to represent the parliament and one of its members sits on the Model Forest Board.

(c) Model Forests enforce mutual trust among parties

The process enforces trust between co-participants, across sectors. This is notably evidenced by the partnerships established by Model Forests with the private sector. For example, the creation of the Chiquitano Model Forest was led by a Foundation (FCBC – Fundación para la Conservación del Bosque Chiquitano) that was created with the money paid by an oil company as compensation for the construction of a pipeline. In Jujuy Model Forest, Argentina, there is an ongoing partnership with the

cement company Holcim, while in Sabana Yegua Model Forest, in the Dominican Republic, Sur Futuro Foundation (the leading organization and financing arm of the Model Forest) canalizes resources coming from a private local development bank.

The same is true vertically. National authorities are more willing to collaborate with a local platform that is well organized, that engages the participation of multiple actors and sectors, and that enjoys a higher level of credibility by being backed by regional and international networks. Similarly, the process gives confidence to civil society organizations and individuals to participate in policy-making processes, by enhancing their level of trust in public institutions. In an internal survey about communications, which was conducted in February 2014 by RIABM's management team (unpublished), 91% of the 24 Model Forests that responded declared that they maintained fluid or quite fluid communications with their governmental authorities, while only two Model Forests indicated that these contacts were infrequent (9%).

An illustration of these complex interactions across multiple sectors and scales is the process that is being facilitated by Model Forest Reventazón Alliance in Costa Rica regarding the development of a local platform for the management of a protected zone (Zona Protectora Cerros de la Carpintera), within a nationally protected area located on privately-owned lands.

(d) Model Forests provide conditions to enact transformative participation

White (1996) elaborated a typology of four types of participation: nominal, instrumental, representative, and transformative. The last category relates to the empowerment of those involved, enabling people to make their own decisions, come up with their own solutions, and take action. As a result, it alters the structures, institutions, social relations and capacity gaps that are at the source of exclusion. We argue that Model Forests, as long-term processes, enable actors to empower themselves through high quality participatory processes. These might yield political results (depending on the context and numerous factors), but they always have a social effect. Model Forests do not consider participation as an instrument to reach certain punctual objectives, but rather as a real contribution to create social capital[9] within landscapes, by promoting a culture of collaboration.

Indeed, community engagement in decision-making processes impacts on the understanding and attitudes of those involved (Hatfield-Dodds 2007). This transformative participation process is also instrumental in educating the public about climate change issues.

Because of all the above, Model Forests also provide an excellent, neutral platform for conflict resolution. Conflicts of power and interest are inevitable in relation to natural and forest resources management and climate change policy. An example of this is the unique partnership established between the Colinas Bajas Model Forest in the Dominican Republic and the multinational company

[9] Social capital is defined by the World Bank as "the institutions, relationships and norms that shape the quality and quantity of a society's social interactions. Social capital is not just the sum of the institutions that underpin a society, it is the glue that holds them together." (retrieved on August 8, 2014 on <www.worldbank.org>)

Barrick Gold; the company has mining activities in the region while simultaneously financing major reforestation activities that improve local livelihoods.[10]

4 From Participation to Good and Adaptive Governance in Model Forests

"Perhaps the greatest strength of the Model Forest and initiatives like it is its flexibility to adapt to the changing ecological, political, social and economic conditions of the landscape."

- Abigail Hart, EcoAgricultures[11]

"*Regional exchange can be a source of growth and development, and of enhancing good governance*."

- Anna Lindh, Swedish politician

The level and quality of participation in a number of Model Forests suggest the existence of a well-defined governance structure. In the context of natural resources, governance refers to decision-making processes and networking aimed at problem solving and policy implementation; it is "focused on participation and deliberative consensus-building processes with the goal of enhancing cooperation and coordination among a diverse range of stakeholders" (Elbakidze et al. 2010).

Within individual Model Forest landscapes, stakeholders develop a governance structure that facilitates the active participation and decision-making of interested parties (IMFN 2008). Governance tools include statutes to establish norms and avoid internal conflicts, annual plans, long term vision and transparent mechanisms for reporting and transferring information.[12]

At the regional level, there is a Board comprised of one representative of the national authority of each member country, one representative for all the Model Forests of each country (this representation varies from one Model Forest to another for each Board meeting), and one representative of each partner organization.[13]

(a) Model Forests and good governance

The notion of good governance is commonly considered as an essential foundation to achieve sustainable social, environmental and economic outcomes. It is not easy to define or measure, however. Even though the term has become part of the vernacular language of many development institutions, it seems to be lacking conceptual clarity.[14]

Each Model Forest tends to give meaning and conceptualize (implicitly or explicitly) its own ideal of "good governance." For example, the Reventazón Model Forest (Costa Rica) has defined in its strategic

[10] This example will be reviewed further in the last section.
[11] Found at: <http://blog.ecoagriculture.org/2014/07/23/diving-deeply-into-integrated-landscape-management-the-case-of-araucarias-del-alto-malleco-model-forest-in-chile/>
[12] In three countries of Latin America, a network has also been established at the national level to connect and support Model Forests; this is the case of Argentina, Honduras and Chile.
[13] Currently the FAO (Food and Agriculture Organization of the United Nations), CATIE (Tropical Agricultural Research and Higher Education Center), Cuso International and the IMFN.
[14] See for example: <http://unu.edu/publications/articles/what-does-good-governance-mean.html>

plan the four elements of what it considers to be good governance, based on the international network guidelines: representativeness, participation, the existence of a set of rules, and transparency (Alianza Bosque Modelo Reventazón strategic plan for 2011-2015 – unpublished).

Good governance is also outlined as part of the mission of the regional network (RIABM 2013). The monitoring tools set in Dumet et al. (2012) provide guidance and specific indicators to evaluate if "the management of Model Forests is participatory, transparent, responsible, and fosters collaboration among the parties" .[15]

(b) Model Forests and adaptive governance

It might be more useful to examine the Model Forests approach through the lens of "adaptive governance". Adaptive governance "refers to the ways in which institutional arrangements evolve to satisfy the needs and desires of the community in a changing environment" (Hatfield-Dodds 2007). The concept of Model Forest itself, with its wide array of different meanings and applications, seems to be a flexible, adaptive concept by nature to promote a high level of exploration, defined as "the capacity of governance to nurture learning and experimentation" (Duit & Galaz 2008).

Hatfield-Dodds (2007) suggests placing the notion of "adaptive governance" in the middle of two alternatives: on one end of the spectrum would be the centralized expert management approach based on biophysical science, and on the other end, the romantic view that pre-industrial societies naturally lived in balance with nature. Both fail to take into account the complexity of human institutions and motivations. Through an adaptive governance approach, which is somewhere half way between these two poles, Model Forests have the potential to strike the right balance between scientific expertise and the participation of a community of non-experts in the management of natural resources.

Elbakidze et al. (2010) argues that adaptive governance constitutes a basis for sustainable landscapes, with the ultimate goal of building adaptive capacity of interconnected social and ecological systems in order to reach sustainability, defined as "the capacity to create, test and maintain adaptability".

In line with this, key characteristics or mechanisms of adaptive governance would be (1) iterative learning and (2) enabling institutions that guide public and private interactions (Elbakidze et al. 2010). To achieve adaptive governance, there are also preconditions such as (3) the pre-existence of networks that integrate and build knowledge for ecosystem management, and (4) some form of leadership which is essential to move the system forward (Olsson et al, 2006).

Model Forests and the RIABM respond to the above elements in the following ways:

[15] Some other practical tools could be explored in the future, such as the *Monitoring Forest Governance* framework recently developed by FAO and PROFOR, which looks at the six key "dimensions" of good forest governance: accountability, effectiveness, efficiency, fairness, participation, and transparency, and defines several components and subcomponents in which these can be graded. FAO, 2011: <http://www.fao.org/news/story/en/item/74825/icode/> (retrieved on July 15, 2014)

(1) Iterative learning: the main function of Model Forests is to ensure communications and integrate, build and exchange transdisciplinary knowledge among local organizations. Landscape learning includes the adaptation of institutional arrangements to changing conditions and the process through which stakeholders learn to create and share institutional space (Oosten 2013).
(2) Enabling institutions: multiple sectors (public, private and civil) and multiple levels (local to global) are represented in the governance architecture of the Model Forests, thus providing coordination and integration across both the horizontal and vertical dimensions of landscapes.
(3) Networking: at the landscape-level, the local organizations (net)work together within the individual Model Forests, while at the regional level, the Model Forests take part into a regional networking structure, the RIABM. As a "network of networks", the RIABM also plays a vital role as it enables cross-landscape iterative learning and help to build the credibility and visibility of the individual platforms.
(4) Leadership: experience has shown that a leadership figure or organization is always present in the most active and well-functioning Model Forests.

ABOMORE is the organization assuming the leadership of Reventazón Model Forest, Costa Rica. Its goal is to consolidate a network of management platforms that run parallel to and interact with the political figures (whose mandate is strongly dependent on electoral procedures), fostering the emergence of synergies among players, especially between the State and the civil society. This networked governance option offers better synergies and provides more stability than certain other political processes or projects, given that it maintains its capacity to learn, explore and adapt itself to the constantly changing sociopolitical context, therefore contributing to the adaptive governance and management of the landscape.[16]

(c) Non-state governance as a means of influencing public policy

Another aspect of governance relates more to the processes by which public policy decisions are being made and implemented, as the result of interactions, relationships and networks between different sectors. Hence, one of the goals of the Model Forests approach is to inform and influence the formulation and implementation of public policies at different levels (Strategic Plan of the RIABM 2013, Objective D), through dialogue and advocacy, and a combination of bottom-up and top-down dynamics.

Few Model Forests have reached this stage. Model Forests have been characterized as collaborative and contributory partnerships with no power or formal participation in policy-making and implementation (and on occasion have been criticized for it). To be clear, participation in Model Forests does not entail political participation. That is not its purpose. Although this is seen as a disadvantage by certain scholars (e.g. Klenk et al. 2009), the fact is that Model Forests do have a voice that has an impact on how things are being done in the landscape, which is certainly non-negligible.

Model Forests are currently at different stages of development and consolidation. The less advanced Model Forests have minimally established a collective vision and a common language for the

[16] According to Róger Villalobos, member of the Board of ABOMORE. Personal communication, CATIE, Costa Rica, August 2014.

development of channels of communication – the most basic goal of participating in a Model Forest – and have integrated participatory mechanisms and set the basis for collective action at the local level. A large part of their activities might still be focused on self-organization and planning the Model Forest process. On the other end of the continuum, the strongest or most advanced Model Forests have reached higher stages or levels of governance, meaning they can exert a stronger influence, having at best significant and direct impacts on subnational and national policy.

This is the case for example in the Tierras Adjuntas Model Forest of Puerto Rico, where civil society reached one of the highest levels of influence in the political sphere through a process that culminated, on 18 July 2014, with the approval of the creation of a National Model Forest by the Senate and House of Representatives of the tiny Caribbean island.[17] This marked an unprecedented victory for the global Model Forests community.

Other examples of political impact include the integration of the Model Forests of Honduras into the formal structure of the national government,[18] or the interesting case of the Bolivian Chiquitano Model Forest, which drove a political and legal process of land use planning in several municipalities through the coordination between NGOs, the national government and private owners (RIABM 2011).

Nevertheless, in most cases the Model Forests' influence (especially at the national scale) is more limited and usually considered as latent, i.e. outside of common or formal political arenas. It is important to stress that even if Model Forests are required to have decision-makers (government, industry, private land-owners) as active partners, the Model Forest approach was never meant to offer a political scene for debate on forest management policy. Nevertheless, Model Forests do have the potential to influence decision-making by engaging in research, advocacy, strategic partnerships, and educational activities or other types of activities, and by fostering public participation in all of these. The possibilities are endless; however, it is tough and unpredictable work because nothing guarantees that policy-makers will find Model Forest proposals relevant or automatically integrate these into decision-making processes.

5 Model Forests and the Climate Challenge

Our analysis suggests that Model Forests represent a significant opportunity to build effective platforms to address climate change because they are decentralized and polycentric participatory governance platforms that operate at multiple levels and scales, and clearly make an effort to be inclusive. By the same token, Model Forests are remarkable for being holistic, based on broad partnerships, and focused on large landscapes, and are therefore well-positioned to foster the examination of a variety of climate change impacts on forests and communities (Bonnell et al., 2012). The fact that they are voluntary also suggests that actors are willing to move the process forward and take ownership. Furthermore, Model Forests are adaptive and flexible, making them more receptive to change, which is critical for responding to climate change issues.

[17] See, for example: <http://www.elnuevodia.com/senadoapruebaleydelbosquemodelo-1800300.html>
[18] See: <http://www.bosquesmodelo.net/los-bosques-modelo-ya-forman-parte-de-la-nueva-estructura-de-gobierno-de-honduras/>

More specifically, the individual Model Forest platforms can perform several functions or be used by external institutions or organizations for research and monitoring on climate change, socioecological processes, and sustainable forest management and governance. Adding to this, they can be used for experimentation; Model Forests can serve as laboratories, places for new practices to be developed and demonstrated collaboratively through partnerships. According to Elbakidze et al. (2010), the key function of a Model Forest is "to test new ideas and develop innovations related to Sustainable Development with the goal of developing the adaptive capacity of the local socio-ecological system to deal with uncertainty and change." Model Forests help learning and transferring knowledge by creating awareness and educating the public concerning climate change and other related issues, disseminating scientific and technical knowledge.

They are also a tool for implementing policies. Indeed, with some support, Model Forests help provide both the strategic capacity and leadership that are essential for the successful implementation of mitigation and adaptation mechanisms or global and national policies (Meadowcroft, 2009). Finally, Model Forests can help manage the social dimensions of the process. Climate change is not only an environmental issue, since it has far-reaching implications for poverty reduction, growth and development. Model Forests can help ensure that the climate governance process is more equitable by including a wide range of stakeholders. Model Forests can help addressing the four social dimensions of climate change considered essential by the World Bank (2011): inclusion, cohesion, resilience and accountability.

The Model Forest regional network (RIABM) is playing a role particularly in capacity-building, by, *inter alia*, creating awareness, giving technical advice and training, and supporting the implementation of practices. The RIABM also plays a crucial role in knowledge-sharing across landscapes. The RIABM has facilitated the implementation of regional projects on a variety of topics, including analog forestry, REDD+, knowledge management, sustainable forest management, conflict resolution and local leadership. It is estimated that the RIABM has trained and promoted these types of exchanges among over 1,000 Model Forest members in recent years.[19]

We will now illustrate these aspects with a few examples.

6 Tapping into the Potential of Model Forests: Examples of Environmental Initiatives in Model Forests

Model Forests have been active in engaging stakeholders in several fields of environmental governance, most importantly in the management of natural resources. Model Forests often can serve as a platform to apply top-down climate policies, which many perceive as being inefficient at the local level. Based on the hypothesis that there is a significant potential for convergence between policies related to interlinked topics such as REDD+, PES and FLEGT (by using the same governance platforms as

[19] By contrast with other natural resource governance approaches, such as biosphere reserves, biological corridors or watershed management, Model Forests have built a strong network that promotes a large amount of face-to-face exchanges across landscapes, at the regional level. These personal exchanges are considered essential as they contribute to cross-landscape learning and create ties among people.

intermediaries), Model Forest experiences and lessons learned can be extremely valuable as they might also apply to other fields.

Below we present a few cases of climate change or environmental initiatives, which are currently being conducted in different Model Forests of Latin America. Both the Model Forest approach and the concept of climate governance are relatively new; therefore, the following are not to be considered success stories as of yet, but rather "stories in progress".[20]

(1) Scientific research on climate change

Model Forests are being used as platforms for major climate change initiatives. This is the case of EcoAdapt and Climiforad, two research projects implemented in Model Forest landscapes.

EcoAdapt is an action-research initiative that aims at influencing water management processes that contribute to local development and reduce vulnerability of human populations to climate change through capacity building, knowledge sharing, conflict prevention and mitigation, and promoting joint work with local and national stakeholders. It is financed by the 7th Framework Programme (FP7) for Research and Development of the European Commission. The project, which is in its third year of operation, is being conducted in three Model Forests: Aracaurias del Alto Malleco in Chile, Chiquitano in Bolivia, and Jujuy in Argentina.

During project planning, the EcoAdapt implementation team selected the Model Forests that already had some experience in implementing climate change measures. For example, the Chiquitano Model Forest (Bolivia) had previously achieved, through a carbon credit project, a reduction in emissions from deforestation and degradation, while the Araucarias del Alto Malleco Model Forest in Chile had implemented in the past a "clean development mechanism" project in indigenous communities to capture carbon by establishing coniferous plantations (Bonnell et al. 2012).

When asked about the benefits and challenges of the Model Forest approach for implementing an adaptation project, Raffaelle Vignola, vice-coordinator of the EcoAdapt project and Director of the Latin American Chair of Environmental Decisions for Global Change (CLADA) at the Tropical Agricultural Research and Higher Education Centre (CATIE), indicated that the main benefit was to be able to count on a process where stakeholders have enough experience and trust to work with each other on topics of relevance to climate change responses. Concerning the challenges, these were closely related to the benefits, since not all the Model Forests have built the same level of trust and experience in order to work effectively together on these topics, and the philosophy of the actors can be very different, which is challenging when concrete decisions have to be taken.[21]

CLIMIFORAD (Climate change, Ibero-American Mountain Forests and Adaptation) is an initiative financed by the Inter-American Development Bank which aims at contributing to the regional climate change adaptation process by improving knowledge about the impacts on high mountain forest ecosystems (through modelling different scenarios of impact), and by developing a series of tools to

[20] Many initiatives are currently undertaken around the world, but we have limited our review to the Latin American region.

[21] Raffaelle Vignola, EcoAdapt project. Personal communication, CATIE, Costa Rica, July 2014.

enhance forest management. CLIMIFORAD activities are being implemented in five Latin American landscapes (three Model Forests and two national parks), chosen because of their relevance in terms of biodiversity and ecosystem services provided to rural communities and their high vulnerability to climate change impacts.

According to Diego Delgado, coordinator of the project, Model Forests are very useful platforms due to their landscape-level approach, which is more holistic than the approach adopted by national parks whose focus is essentially top-down and placed on conservation issues.[22] Delgado mentioned that one of the main lessons learned during the four years of operation of the project is that they should have started working with the local stakeholders, government bodies and NGOs at the very beginning in order to created effective management committees. Among the challenges, Diego mentioned the need to strengthen further the existing governance mechanisms within the platforms.

A recent project which was approved for funding in December 2014 is seeking to use the data gathered by CLIMIFORAD (and other climate change related information) in an interactive fashion by involving citizens / Model Forest stakeholders actively in the scientific process, notably by having them design their own adaptation strategies. This pilot project is part of a broader network for Open Collaborative Science in Development.[23]

(2) Learning opportunities and REDD+ in Model Forests

Given its contribution to global efforts to stop deforestation, Latin American governments have increasingly positioned REDD+ as a mechanism to reduce deforestation and forest degradation and to mitigate climate change (Vignola et al. 2012). Model Forests are in an ideal position to be a sub-national REDD+ delivery partner by providing a governance model that balances the distribution of REDD+ benefits and rights of local peoples (Shalaby & Louman 2014, Vignola et al. 2012). However, the functioning of REDD+ and of other global initiatives as well as their potential benefits are not well understood among local populations.

The RIABM has been contributing mostly in this area by providing capacity-building activities on REDD+ to several Model Forests of the region and by promoting the implementation of REDD+ strategies. In 2011, for example, a regional dialogue entitled “Model Forests and local implementation of National REDD+ Strategies in Latin America" was held in Santa Cruz de la Sierra in Bolivia. This dialogue was attended by 81 people from 19 Model Forest Landscapes. The event strengthened partnerships between national agencies and REDD+ experts and improved the common understanding of the program. Country specific work sessions were included in the agenda and contributed to a greater interaction between managers leading REDD+ at the national level and people who work in the landscapes (IMFN’s website).

Among the problems acknowledged by participants was the lack of clarity in the operation and implementation of REDD+, as well as in the key concepts used. The uncertainty and perceived risks were

[22] D. Delgado, coordinator of the CLIMIFORAD project. Personal communication, CATIE, Costa Rica, July 2014.

[23] This work is part of the Open & Collaborative Science in Development Network (OCSDNet) research project, supported by Canada’s International Development Research Centre and the UK Government’s Department for International Development (www.ocsdnet.org).

also identified as barriers to implementation, and the processes associated with monitoring, reporting and verification (MRV) of carbon stocks were perceived as a burden (Vignola et al., 2012). All of this suggests that there is a great need for specific local training activities. These are easier to deliver in community-based platforms such as Model Forests.

Model Forests thus have an important role in improving the governance of REDD+ design and implementation processes by providing a link between government and communities, by offering a transparent mechanism to ensure good governance (which is increasingly demanded by investors), and by responding to local training and information needs.

(3) Fostering citizen participation – the case of FLEGT in Honduras

Over the last decades, deforestation has been relentless in Honduras, aggravated by illegal logging and weak governance (FERN 2011). In 2010, the Institute for Forest Conservation (ICF), the national forest authority of Honduras, approved and promoted a national strategy against illegal logging (ENCTI) and started delivering training with regards to the negotiation process of a Voluntary Partnership Agreement (VPA) related to the Forest, Law Enforcement, Governance and Trade (FLEGT) Action Plan (official presentation of the ICF in London, June 2014). The European Union is currently seeking to establish VPAs related to FLEGT with timber producing countries, and Honduras has been the first country in Central America to initiate the negotiation process. A key feature is that VPAs are required to have the buy-in of national stakeholders (FERN 2011).

Honduran civil society has started pushing to participate in the process and created in 2012 several regional platforms to promote citizen participation in the VPA-FLEGT negotiations (initiated in 2013). What is interesting about these platforms is that three of them were based on the existing Model Forests platforms of Atlántida, Yoro and Sico-Paulaya,[24] benefitting from their well-organized governance structure. Through a collaborative process of the stakeholders involved, the platforms elaborated and signed a manifesto to express civil society expectations as well as recommendations to the Honduran government. This manifesto was officially presented during the second round of negotiations that were celebrated in Brussels in October 2013 (Molina & Cruz 2014).

According to Yadira Molina, coordinator of the Honduran Model Forest Network: "the vision of the platforms is to have an impact on the entire negotiation process to ensure that the VPA which is currently taking shape will be viable. The platforms are also willing to participate in the monitoring process to ensure compliance to the agreement after its signature."[25]

Challenges include security issues, lack of information, weak social cohesion and the difficulty of reconciling antagonist views, such as those of Indigenous peoples with those of commercial timber producers (Molina & Cruz 2014).

[24] It is worth noting that the Sico-Paulaya Model Forest was also selected to be a Priority Landscape by the USAID Regional Climate Change Program (RCCP), which is currently being implemented.
[25] Molina Y., Honduran Model Forest Network (Red Hondureña de Bosques Modelo – RHBM, 2014). Personal communication, CATIE, Costa Rica.

These FLEGT Model Forest-based platforms are a good example of active citizenship-building to enhance governance in the forest sector. Stakeholders involved consider it is part of their responsibility to scrutinize public policies and monitor political leaders (Molina & Cruz 2014).

(4) Promoting Payments for Environmental Services in Reventazón Model Forest, Costa Rica

The Reventazón Model Forest Alliance (ABOMORE) is very dynamic with respect to the Payment for Environmental Services (PES) in Costa Rica, strongly promoting the inclusion of areas of the Cartago province into the priority zones targeted for the distribution of benefits under PES, while stimulating the participation and interest of local actors in this global program.

With its partners, ABOMORE works actively to promote PES through different avenues, including the promotion of PES to local farmers to encourage reforestation on their farms, and the facilitation of the creation of an Association of Reforesters in the Sub-Corredor Balalaica. In a study conducted in March 2014, various needs of reforesters in the region were identified, including the need for a better exchange of information and experiences amongst reforesters. The proposed Association would help those interested in reforestation to access information regarding PES, more easily access key national stakeholders responsible for PES, and perhaps even apply for international PES through a carbon credit program. It also promotes PES by consolidating the Forestry Council for two municipalities (Turrialba and Jiménez), which facilitates information sharing and advice to those interested in commercial reforestation through access to PES.

ABOMORE also participates in the formalization and strengthening of two biological corridors initiatives. Once recognized by the State, private lands located within the boundaries of these corridors would have a greater chance of being eligible to receive a PES. Finally, PES promotion is also achieved through the formalization and development of management plans in protected private areas that fall within an official category of protected areas, as a strategy to involve local population in conservation and restauration. These private protected areas are also classified as priority zones for PES benefits (one is officially recognized while the other is in the process of formalization) and provide other incentives to encourage conservation, such as land tax exemptions.

(5) The Aggregate Impact: Smaller-scale Initiatives in Model Forests

All around the world, small, positive steps are being taken to reduce greenhouse gas emissions, but these tend to be ignored or dismissed by global institutions. However, the myriad of small-scale environmental initiatives in Model Forests can have an important aggregate effect in reducing pressure on the environment, while at the same time creating awareness in communities. When behavioral changes are needed (such as reusing materials or consuming less), these small educational projects work well and contribute to dynamic, 'self-governing' communities. Only three examples are given here, but it is worth noting that there are numerous other initiatives being undertaken in Model Forest territories.

(a) Going energy-smart

Bosque Modelo Cachapoal is implementing renewable energy projects in three communities by providing people, especially small producers, with alternative energy equipment such as biodigesters, solar ovens and solar dehydrators, thereby minimizing the producers' costs, reducing the use of firewood

and other combustibles and in certain cases, improving their livelihoods by increasing production and income. Clear advantages are that the project is easy to replicate, and by targeting small producers, it can help to energize economic and community development.

(b) The forest as an open-air classroom

Another interesting local initiative is the Bosque-Escuela ("forest-school") that was set up by Casa Pueblo, the leading organization of Tierras Adjuntas Model Forest of Puerto Rico, which promotes conservation, scientific research and watershed management. The school is equipped with a meteorological station, renewable power and an outdoor classroom for periodic visits by schools of the region. Students and visitors receive environmental education regarding the forest and issues related to ecology and climate change. Other Model Forests have already expressed interest in replicating it.

(c) Cultural ecotourism

An example of collaboration is the alliance that was built between a Costa Rican Model Forest (Reventazón) and a Canadian Model Forest (Manitoba). The latter, with the support of a Canadian indigenous community, financed the construction of a tourist lodge in the indigenous community of Jameikerí, Costa Rica – a reserve with deep poverty and a long history of marginalization. The beneficiary community is learning to develop its own capacities for offering touristic services, while at the same time sharing with visitors part of its cultural traditions and its vision of the forest in order to help with the forest's preservation.

(6) Conflict Resolution and Collaboration for the Restoration of Degraded Lands in Colinas Bajas Model Forest, Dominican Republic

While the Tierras Adjuntas Model Forest[26] fought successfully against the establishment of a mine in order to avoid adverse environmental impacts, others have initiated a dialogue and established a strategic partnership with the extractive industry. This is the case of Colinas Bajas Model Forest in the Dominican Republic and its collaborative alliance with the Canadian mining company Barrick Gold, commonly known as the Pueblo Viejo Dominican Corporation.

The Canadian mining company had been excluded from regional dialogue events and negotiation forums since its arrival in the region.[27] In 2010, it was invited by a third party to participate in the Model Forest Colinas Bajas. At first, the Board of Directors of the Model Forest and the leading organization Enda Dominicana did not trust Barrick Gold enough to believe it would be possible to work together. They could not imagine the existence of any common interest that would justify such a relationship (Valerio & Abreu 2014).

Yet this was the beginning of a continued dialogue involving all parties, including the mining industry, which finally triggered a discussion around possible work themes and areas of interest. Model Forest

[26] This has been the subject of a case study in IIED's series "Policy that works for forest and people" that can be found at <http://pubs.iied.org/13503IIED.html>.

[27] Barrick Gold started operating in 2009 in the region and was struggling with the bad image and massive environmental liabilities it had inherited from its predecessors who had carried out extractive activities in the region during four decades.

stakeholders were pleasantly surprised to discover that small producers, medium enterprises and the community in general could have common goals with an extractive corporation, which they used to believe "was only interested in gold". A participatory diagnostic followed, and by the end of 2011, a partnership proposal for an initial period of five years had been presented, and the information was extensively circulated among the public at all levels (Valerio & Abreu 2014).

In 2013, the Enda-Barrick project was underway with a five-year budget of US$8.02 million. During the first year, a total of 405,048 trees were planted in a massive reforestation initiative: 33% of the trees planted were intended for commercial timber production (30 communities and 90 producers impacted), 65% for agroforestry systems (80 communities and 890 families impacted), and 15% for biodiversity protection (in three micro-basins). During the second year, the commercial reforestation component was maintained, with the restoration of degraded lands and their incorporation into the biological corridor. Other components of the project included the implementation of silvo-pastoral systems, the construction of 13 community aqueducts, the delivery of training sessions, and the restoration of two small forest enterprises in a pilot project that directly benefitted approximately 1,600 small producers (Valerio & Abreu 2014).

The whole process was positive, and produced a significant shift in the relationship between the local population and the mining industry. The alliance is currently growing further with new projects and work themes and the integration of CSR teams, NGOs and municipalities. Not only has this alliance borne environmental fruits, but it has also created a climate of peace and trust among the parties.

(7) Climate-Smart Territories: Real Possibility or Utopia?

Through academia, the RIABM is currently seeking to operationalize the concept of Climate-Smart Territories, a flagship of the Tropical Agricultural Research and Higher Education Centre (CATIE) in Costa Rica, where the RIABM Secretariat is located.

The CST concept is a promising new theoretical approach that has yet to be translated into practice. The RIABM has taken the lead with the elaboration of a Standard for Climate-Smart Model Forests. Several researchers at CATIE taking part of the project believe that the Model Forest platforms could potentially serve as CST pilot sites. As of December 2014, three workshops had been held, and a first draft of the Standard had been prepared and had been tested and discussed in three Model Forests (in Costa Rica, Colombia and Chile).

This standard will serve as a guide to give direction to future actions related to climate change in Model Forests, as an ideal to achieve. With a few modifications, it could also be applied to other types of territories or landscapes.

7 Main Challenges for Building Effective and Equitable Climate Governance through the Model Forest Platforms

This section highlights some of the challenges related to Model Forests, climate change and associated factors.

First, there is still a need to convey the meaning of the Model Forest concept more efficiently. Additional communication, dissemination and marketing efforts are essential to give this approach the value and attention it deserves, so that it is understood as a process, a governance platform and a valuable landscape management tool at the same time. This is central to the effectiveness and consolidation of any current or future Model Forest processes.

The urgency to find solutions to tackle climate change and the fact that things cannot be done in a rush poses another dilemma. Indeed, social processes such as Model Forests take time, but climate change mitigation and adaptation cannot be delayed. How can we reconcile such burning priorities with the slowness of social change? In the same vein, the complexity and scope of the issue at stake, climate change, is another determining factor. Meadowcroft (2009) describes some key characteristics of the problem: unprecedented societal reach, scientific uncertainty, distributional and equity linkages, long time frames and global implications. Complex problems will need elaborated solutions. Fortunately, Model Forests are used to deal with social and socio-ecological systems and are well-equipped to innovate and provide at least some paths towards solutions.

Concerning participation in Model Forests, certain sectors or levels might be under- or overrepresented. Underrepresentation of the civil sector could have implications for social learning and jeopardize the sustainability of the process in the long term (Elbakidze et al. 2012). While this does not seem to be the case in most Model Forests, it is possible that important sectors of society could be excluded inadvertently. During the RIABM Board Meeting held on March 18, 2014 in Ecuador, certain Model Forest representatives called for more involvement of the private sector as well as the municipal government authorities, particularly mayors. Concerning individuals, ensuring equality of voice is tricky because education, income and unequally distributed resources are likely to translate into certain patterns of representation (Klenk et al. 2013). For instance, this is often the case for women.

The beauty of the Model Forest concept lies in its diversity. Still, this diversity can also hinder the process at times, since actors may come to the table with different philosophies, claims and interests. This makes it more difficult to reach a consensus and highlights the importance of building a shared vision from the start, as a basis for collective decisions and actions, in order to "accommodate diversity" (Elbakizde et al. 2012). Such vision can be sustained by the collective identity (or identities) that Model Forests' participants already share with respect to their territory.[28]

Political stability is an external factor that is crucial in terms of achieving relevant, long-lasting change. Model Forest activities and alliances can sometimes be at risk when political leadership changes. The widespread security issues in certain countries (e.g. Honduras) are also extremely challenging for local actors, who have the enormous task of working out ways of 'governing the ungovernable'.

Concerning Model Forests' capacity to influence policies, some authors underline that Model Forests lack the power to change the political context (Klenk et al. 2013), but we disagree with such statement. Societal balances of power might be difficult to influence outside formal procedures or political arenas,

[28] This territory is primarily a construction as it may or may not follow traditional geographical, administrative or political boundaries. Landscape identities tend to reflect the natural bond between people and their place.

but it is certainly not impossible. Indeed, several Model Forest stories provide evidence of important changes that have been achieved by non-state, non-political governance structures, as well as more modest changes that can have, altogether, a significant aggregate impact.

8 Final Reflections: Changing Climate, Changing Institutions

"We can't just sit around waiting for the global solution."

- Dr. Elinor Ostrom, concerning climate change, Nobel Laureate in Economic Sciences[29]

What is really changing nowadays is not only the climate but also the institutional arrangements through which it is possible to influence and implement the policies related to it. How can Model Forests exert a stronger political influence, without denaturalizing their original purpose of being a neutral, open platform for discussion? How do we convince global institutions that Model Forests are a valid and valuable non-state governance option to bring about the local social changes required to address climate change, and that they should invest in it?

In times of change, it becomes clearer that global treaties, conferences and policies are not a panacea. The debate about the best way to adapt global solutions to local contexts is becoming outdated as people understand they could create their own solutions instead and fit them into global scenarios. Landscape approaches are no longer the exception: they are becoming the trend.

We have seen that Model Forests can be effective platforms to address climate change, through unique network governance architectures. From regional capacity-building events on globally important topics to research projects within landscapes and community-based initiatives, Model Forests are having multilevel impacts, blurring the top-down/bottom-up dichotomy. By involving multiple sectors, Model Forests apply at the intersection of issues such as livelihoods, equity and climate change, which must be targeted simultaneously in order to bring co-benefits. Finally, by focusing on their social impact, Model Forests are generating new ideas and practices while deconstructing old paradigms and habits.

Model Forests are in a constant process of learning and experimenting with how to develop effective local governance solutions, through voluntary participatory mechanisms. Flexibility, adaptability and the capacity to explore are all crucial qualities in the evolving context of a changing climate.

It is expected that climate policy will also substantially evolve in the coming years. Thus, there is a unique opportunity for landscape stakeholders to create a space, institutionalize climate change adaptation at the local level and increasingly participate in decision-making processes from a Model Forest perspective.

[29] Retrieved on August 8, 2014 and found at : <http://escotet.org/2010/11/interview-with-nobel-laureate-elinor-ostrom/#sthash.AyLp97TK.dpuf>.

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