

Bruna, Paulo. *Arquitetura, industrialização e desenvolvimento*. 2. ed. São Paulo: Perspectiva, 2002.

Cardoso, Adauto (Org.). *O Programa Minha Casa Minha Vida e seus impactos socioeconômicos*. Rio de Janeiro: Letra Capital, 2011.

Castro, Carolina Pozzi e Shimbo, Lúcia. "A promoção imobiliária das grandes empresas nos anos 2000 na Região Metropolitana de São Paulo: novas estratégias produtivas?" No prelo.

Chesnais, François (Org.). *A finança mundializada: raízes sociais, conflitos, configuração e consequências*. São Paulo: Boitempo, 2005.

Federação das Indústrias do Estado de São Paulo. *Proposta de política industrial para a construção civil: definições, São Paulo: Fiesp, 2008*.

Fix, Mariana. *São Paulo cidade global: fundamentos financeiros e uma mudança*. São Paulo: Boitempo, 2007.

— *Financiarização e transformações recentes no circuito imobiliário no Brasil*. Tese (Doutorado em Desenvolvimento Econômico) — Instituto de Economia/Unicamp, Campinas, 2011.

Gitahy, Maria Lúcia C.; Pereira, Paulo Cesar X. (Orgs.). *Construção habitacional em São Paulo na década de 1930*. In: *O complexo industrial da construção e a habitação econômica moderna 1930-1960*. São Carlos: RIMA, 2002.

Harvey, David. "O trabalho, o capital e o conflito: as crises em torno do ambiente construído nas sociedades capitalistas avançadas". *Espaço e Debates*, n. 9, 1982.

— *Seven Cent Contradictions and the End of Capitalism*. Londres: Profile, 2014.

Hoyler, Telma. *Incorporação imobiliária e interesses em São Paulo*. Dissertação (Mestrado em Ciência Política) — Faculdade de Filosofia, Letras e Ciências Humanas/USP São Paulo, 2014.

Instituto Brasileiro de Geografia e Estatística. *Quinta Anual da Indústria da Construção*. Rio de Janeiro: IBGE, 2006.

Jaramillo, Samuel. "Las formas de producción del espacio construido en Bogotá". In: *Pratillia*, Emilio (Org.). *Ensayos sobre el problema de la vivienda en Bogotá*. Cidade do México: Latina Unam, 1982.

Landim, Raquel. "Prestação que cabe no bolso: o faz mercado imobiliário reagir à crise". *O Estado de São Paulo*, p. B1, 9 ago. 2009.

Lazzarini, Sérgio. *Capitalismo de laços: os novos espaços de produção em São Paulo*. Rio de Janeiro: Elsevier, 2011.

Lipietz, Alain. "Alguns problemas da produção monopolista do espaço urbano". *Espaço e Debates*, n. 25, 1984.

Lopes, João Marcos; Shimbo, Lúcia. "Produção e produção da habitação na região central do estado de São Paulo: condições e contradições do PMCMV". In: *Programa Minha Casa Minha Vida em seis estados brasileiros*. Rio de Janeiro: Letra Capital, 2015.

Maricato, Ermínia. "Por um novo enfoque teórico na pesquisa sobre habitação". *Cadernos Metrópole*, n. 21, pp. 32-52, 1. sem. 2009.

Marques, Eduardo; Rodrigues, Lúcia. "A produção pública de habitação". In: Marques, Eduardo (Org.). *A metrópole de São Paulo no século XXI: espaços, heterogeneidades e desigualdades*. São Paulo: Ed. Unesp, 2015.

Moura, André D. *Novas soluções: as contradições da dinâmica cíclica da industrialização em sua forma contenciosa*. Dissertação (Mestrado em Tecnologia da Arquitetura) — Faculdade de Arquitetura e Urbanismo/USP São Paulo, 2011.

Pavan, Bruno. "Antes tinhamos os sem-casa, agora estamos criando os sem-cidade". *Brasil de Fato*, 29 jan. 2015. Disponível em: <http://www.brasildefato.com.br/node/31184>. Acesso em: 2 fev. 2016.

Pereira, Paulo Cesar et al. *Desenvolvimento imobiliário e restauração urbana na América Latina*. Santa Cruz do Sul: Eduanis, 2006.

Prochnik, Victor. *O mercado imobiliário da construção civil*. Rio de Janeiro: LEI/UNIRJ, 1987.

Ribeiro, Luiz Cesar de Q. *Condições de vida em condomínios fechados: as formas de produção da moradia na cidade do Rio de Janeiro*. Rio de Janeiro: Ci. Ci. Ci., 1997.

Rodrigues, Artur Moya. "Políticas públicas FCTS e planos diretores — conteúdos e significados". *Cidades*, v. 9, 2013.

Rodriguez, Alfredo; Sotomayor, Ana (Orgs.). *Los conflictos: un desafío para la política de vivienda social*. Santiago: SUR, 2005.

Rolnik, Raquel. *Condições de produção da moradia e da moradia na era das finanças*. Tese (Doutorado em Arquitetura e Urbanismo) — Faculdade de Arquitetura e Urbanismo/USP São Paulo, 2009.

— "O FCTS e o mercado de títulos de base imobiliária: relações e tendências". *Cadernos Metrópole*, v. 18, n. 35, pp. 33-52, 2. sem. 2016.

Rufino, Maria Lúcia. *A incorporação da metrópole: centralização do capital no imobiliário e nova produção do espaço em Fortaleza*. Tese (Doutorado em Arquitetura e Urbanismo) — Faculdade de Arquitetura e Urbanismo/USP São Paulo, 2012.

Sanfeli, Daniel. *A metrópole sob o ritmo das finanças: implicações socioespaciais da expansão imobiliária no Brasil*. Tese (Doutorado em Geografia) — Faculdade de Filosofia, Letras e Ciências Humanas/USP São Paulo, 2013.

Santo Amaro, Caio; Shimbo, Lúcia; Rufino, Maria Beatriz (Orgs.). *Minha casa... e a cidade? Avaliação do Programa Minha Casa Minha Vida em seis estados brasileiros*. Rio de Janeiro: Letra Capital, 2015.

Santos, José Augusto dos. *Diretrizes para elaboração de planos de qualidade em empreendimentos da construção civil*. Dissertação (Mestrado em Engenharia) — Escola Politécnica/USP São Paulo, 2003.

Shimbo, Lúcia. *Habituação social de mercados de mercúrio: a confluência entre Estado, empresas construtoras e capital financeiro*. Belo Horizonte: C/Arte, 2012.

Topik, Christian. "Análise do ciclo de reprodução do capital investido na produção da indústria da construção civil". *Arquitetura e Urbanismo*, n. 16, 1985.

— *Le logement en France: histoire d'une marchandisation impossible*. Paris: Presses de la Fondation Nationale des Sciences Politiques, 1987.

— *John, Housing by People: Towards Autonomy in Building Environments*. Londres: Marion Boyars, 1990.

MUNICIPALITIES AND POLICIES AGAINST DEFORESTATION IN THE BRAZILIAN AMAZON¹

ESTELA MARIA SOUZA COSTA NEVES*

MARUSSIA WHATELY**

ABSTRACT

This article investigates to what extent have municipalities participated in the national policies that have addressed deforestation in the Brazilian Amazon under the Action Plan for Prevention and Control Plan of Deforestation in the Legal Amazon (Plano de Prevenção e Controle do Desmatamento na Amazônia Legal – PPCDAm). The study found that even though the design of the federal strategy relegated to municipalities the role of mere “locus” or territory for policy enforcement, in some situations local governments have assumed a leading role and empowered themselves as actors and agents in the fight against deforestation, as a response to the Brazilian federal “priority municipalities list” strategy.

KEYWORDS: *environmental policy; environmental governance; deforestation; local government; municipalities; Amazon.*

O combate ao desmatamento na Amazônia Legal e os municípios

RESUMO

Explora-se neste artigo em que extensão municípios têm participado da política de combate ao desmatamento na Amazônia, no contexto do Plano de Prevenção e Controle do Desmatamento na Amazônia Legal (PPCDAm). Resultados indicam que, a despeito de o desenho da estratégia federal relegar o município ao papel de “lugar” da política, em determinadas situações governos locais se afirmaram como atores e agentes na arena de combate ao desmatamento ao longo da implementação da estratégia da lista dos municípios prioritários.

PALAVRAS-CHAVE: *política ambiental; governança ambiental; desmatamento; governo local; municípios; Amazônia.*

INTRODUCTION

Controlling deforestation and protecting the rainforest have long been considered key challenges in the Brazilian federal government’s environmental agenda and, as such, has attracted the attention of researchers from the academic community across various research fields. With regard to the Amazonian region, reviews show that a sharp decline in the deforestation rate observed in the region over 2004-2012 correlates to federal policies implemented during this period.² This policy, considered successful by both the academic community and institutional evaluators, was codified in the Action Plan for Prevention and Control of Deforestation in the Legal Amazon

[*] Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brasil. estela.neves@terra.com.br

[**] Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brasil. maru.aguas@gmail.com

[1] This field research was enabled by financial support from the Climate and Land Use Alliance (CLUA). The authors are also grateful to the anonymous reviewers of this journal for their comments and suggestions.

[2] Arima et al., 2014; Nepstad et al., 2014; Boucher et al., 2014; Barreto; Silva, 2010; Soares-Filho et al., 2010.

(PPCDAm), which comprised hundreds of actions organized under the areas of land titling, monitoring and control, and supporting sustainable production.

The participation of municipalities in the fight against deforestation is an issue still treated only incipiently in the academic field.³ The lack of knowledge about the relevance of municipal participation in the design and implementation of federal environmental policy has contributed to limit the effectiveness of these policies, and the very consolidation of environmental institutions in Brazil,⁴ unveiling a broad field for research.

On the topic of forest conservation in Brazil, specialists on environmental law and policy recognize the historical concentration of power at the federal level. Sub-national government levels have made until recently only marginal contributions in this field.⁵ The absence of municipal participation in policies for Amazon rainforest conservation is associated, furthermore, to the poor institutional capacity of the municipalities in the region, a deficit of state presence, the permeability of local governments to private interests, a lack of intergovernmental cooperation, and the concentration of resources at the federal level.⁶

In this context, the PPCDAm emerges as an innovative federal policy that targeted specific, problematic municipalities.⁷ Recent research on rainforest conservation includes municipal-level analyses,⁸ suggesting that the federal government has demonstrated the ability to elicit a response from local governments, contributing to the national climate change policy,⁹ as some Amazonian municipalities have started to demonstrate local leadership in the effort to reduce deforestation,¹⁰ participating in joint actions with the union and states.¹¹

This article presents the results of an exploratory analysis of the role played by municipalities in the implementation of PPCDAm, investigating to what extent have governmental organizations at the municipal level contributed to forest conservation in the Amazon. For this purpose, we focus on one of the most important aspects of the Plan's operation involving local governments: the group of measures addressing the list of priority municipalities focusing action for the prevention and control of deforestation in the Amazon Biome, established at the end of 2007, hereinafter the "list of priority municipalities".¹²

The analytical model adopted in this research considers that the multilevel character of environmental governance carries specific characteristics in federated countries, assuming the federal political order determines policy design.¹³ In particular, in federated states the federal government needs to promote induction strategies to per-

[3] Among the scarce pioneering work are Toni and Kaimowitz (2003) and Inoue (2012).

[4] Neves, 2012.

[5] Benjamin, 2005.

[6] Toni; Kaimowitz, 2003.

[7] Barreto; Silva, 2013; Zhou; Börner, 2013; Comissão Econômica para a América Latina e o Caribe; Instituto de Pesquisa Econômica Aplicada; Deutsche Gesellschaft für Internationale Zusammenarbeit, 2011.

[8] Sills et al., 2015; Godar et al., 2014.

[9] Inoue, 2012.

[10] Boucher et al., 2014, p.13.

[11] Assunção et al., 2012.

[12] Brasil, 2013.

[13] Abrucio, 2005.

[14] Arretche, 1999.

[15] Biermann et al., 2009, p. 38.

[16] The field research covered five municipalities and a total of 84 interviews with key actors.

[17] The Forestry Code was passed in 1934 and had been revised in 1965 (Federal Law 4771/1965).

suade sub-national government to support their strategies.¹⁴ In the absence of the hierarchical mechanisms that prevail in unitary states, sub-national governments will participate only voluntarily in programs proposed by the federal government. In this context the concepts of “actors” and “agents” are used as discussed in Biermann et al.¹⁵ as: “Actors include all individuals, organizations and networks that participate in decision making. Agents differ from actors insofar as they have been granted authority by other actors [...] [and] have the ability to prescribe behaviors and obtain consent from other actors”.

The results of this survey, whose methodology combines literature review, institutional and statistical analysis, and case studies,¹⁶ are shown below in three sections. The first discusses the role assigned to municipalities in the institutional arrangements for the federal rain-forest conservation policy within the Brazilian environmental framework, from a municipal perspective. The second section analyses the strategy targeting key, problematic municipalities in 2008-2014. The third section describes the study’s exploratory findings and suggests further research.

BRAZIL, FOREST PROTECTION AND LOCAL GOVERNMENTS

In Brazil, the federal level has concentrated responsibility for protecting the flora since 1934, when the regime established by the first Forestry Code¹⁷ bestowed the federal government with police powers for the supervision of forests and the application of administrative sanctions. Municipalities could exercise police power only when delegated by the federal government until 1965 when, in the first revision of the Code, municipalities were assigned police power over the forests and other forms of vegetation located in urban areas. However, the exercise of this assignment by municipalities would hardly be found in practice: control remained fully concentrated at the federal level.

Starting in the 1980s, a decentralization of federal government forest stewardship is observed. The first major milestone was 1988, when the protection of forests and other forms of vegetation became the common constitutional obligation of the three political-administrative levels: federal, state and municipal. Multilevel authority to mandate conservation areas was strengthened in 2000, through the creation of the National Conservation Unit System. In 2006 the responsibility for forest management was partly transferred to the state level with the establishment of a new public forest management system, a decentralization movement that deepened in 2012 with the reform of the Forestry Code.

Municipal responsibility to protect forests and fight deforestation is ingrained in the federative organization of the State, in which

municipalities enjoy a broad and singular mandate for environmental protection.¹⁸ The local government's action in defense of the environment in Brazil is supported by two types of provisions in the Federal Constitution (1988): provisions in the federative model of the Brazilian state which defines action among federated entities, and the provisions on state responsibility for environmental protection. As to the former, the municipality was included in 1988 in the Brazilian federative system alongside the states, the federal district, and the Union. In this condition, municipalities have considerable autonomous power and are responsible for a plethora of attributes and duties, some of which exclusive. The field of municipal assignments is defined by a key phrase, *local interest* — the areas in which there is a predominance of municipal interest over state and federal interest. This comprises public services such as utilities, public construction, and other necessary or useful activities.¹⁹ The definition of “local interest” therefore is flexible and varies according to the theme, varying from municipality to municipality, according to their characteristics, occupation, and development trajectories.

As for the constitutional framework for environmental protection, it is up to municipalities to supplement federal and state law where applicable, and legislate on environmental issues of local interest. Environmental protection, fighting pollution, and the preservation of forests, fauna and flora are a common responsibility of the federal government, states and municipalities. The environmental mandate does not come as a surprise to local governments: the design of the Brazilian environmental policy model (1981) already determined that the municipalities would share responsibility for the environment along with the federal government and the state governments. Moreover, the municipal agenda has included responsibilities established in the early twentieth century, governing goods, services and activities (such as potable water, solid waste and wastewater systems) currently covered by the environmental stewardship. These schemes were not always subject to review after the advent of the environmental institutional regime (1980). This situation is not exclusive to Brazil: according to Brañas²⁰ this is a trait common to all environmental law systems, wherein three types of rules may be distinguished: legislation with environmental relevance, composed of laws without any particular environmental objective but which also apply to the environment, originated in the nineteenth century; sector legislation, integrated by laws issued for the protection of certain environmental elements or to protect the environment from the effects of specific activities, from the first decades of the twentieth century; and contemporary environmental legislation, integrated by the laws which relate to the modern design that envisions the environment as an organized whole, and are identified as general environmental protection laws.

[18] Neves, 2014.

[19] Meirelles, 2013.

[20] Brañas, 2000.

Finally, the indeterminacy of environmental standards is a noteworthy characteristic of environmental law, the exercise of discretion by operators, managers and policymakers. The indeterminacy of environmental law is due to the scientific uncertainty about environmental problems, given a characteristic and permanent change in the status of scientific knowledge, the presence of non-scientific elements in the institution of legal rules, and the different manners of legal reasoning in the individual cases in which the rules should be applied.²¹ This indeterminacy bestows crucial importance to the role of the officers and bureaucrats who must interpret, “complete” or fill-in the content of the standard or law, and establish the operational conditions for its application to the specific, unique circumstances of the concrete case at hand.²² This capability has been the subject of examination in case studies on the response by municipalities to their inclusion in the list of priority municipalities by the Ministry of the Environment.

[21] Azuela de la Cueva, 2006.

[22] Neves, 2006.

In light of the institutional order, therefore, the uniqueness of the environmental action for Brazilian municipalities is marked by a combination of competencies exercised in common with other government levels, and powers that are exclusive to them — the exercise of which requires an interpretation of what is considered of “local interest”. This unique condition of the municipality is exacerbated by the diversity of environmental characteristics and socioeconomic disparities, which pose a wide variety of situations that may be considered of “local interest”, and also disparities with respect to the building of capabilities to fulfill the role of environmental policy agents — of actors enabled by authority, as mentioned by Biermann et al.²³

[23] Biermann et al., 2009.

BRAZIL: THE ENFORCEMENT OF RAINFOREST CONSERVATION AND MUNICIPALITIES, 2004-2012

In 2004, the second largest historical deforestation rate in Brazil took place: 27,700 km². The reduction of the deforestation rate over 2004-2012 was credited to action under the PPCDAM program²⁴ by both the national and the international academic communities. This success bears importance also for global climatic governance, once deforestation is among the contributing factors for CO₂ emissions — approximately 17.3% of global emissions in 2004 — whereas in Brazil they corresponded in 2005 to over half of CO₂ emissions (57%), being reduced to 22% in 2010.²⁵

[24] Arima et al., 2014; Boucher et al., 2014.

[25] Brasil, 2013.

The federal policy elaborated to address deforestation analyzed herein was consolidated in the PPCDAM. In 2003, the first year of the president Lula administration, it was already known that most of the deforestation, most of it illegal, spanned an arc between southeast Maranhão, southern Pará, northern Tocantins, south of

Mato Grosso, Rondônia, southern Amazonas, and southeast Acre — the “Arc of Deforestation”. Livestock ranching was responsible for 80% of the deforestation, followed by soy crop expansion, logging, infrastructure projects, the setting of bush fires, and the illegal occupation of public lands.

In July 2003 a permanent inter-ministerial workgroup (Grupo Permanente de Trabalho Interministerial [GPTI]) was established, comprised of eleven ministries coordinated by the Chief of Staff, to come up with a strategy for reducing deforestation. In March of 2004 the Plan was launched, organized into three areas: land and territorial planning (including titling), environmental monitoring and control, and the promotion of sustainable productive activities. A fourth axis, infrastructure, was proposed in the original version but was soon abandoned. The implementation of the PPCDAM program began in earnest in 2005 and was twice revised (2008 and 2011).

The governance of the PPCDAM

In the Plan’s governance model the federal government exercises direction through the GPTI, the deliberative decision-making forum. Executive coordination was until recently (2013) responsibility of the office of the Chief of Staff. The Ministry of the Environment (Ministério do Meio Ambiente [MMA]) is responsible for the secretariat of PPCDAM, with support from the Ministries of Planning and of Finance, with a coordinator for each axis in the plan. The MMA ministry also took over, since 2013, the plan’s general coordination. Funding is provided by the Federal Treasury through the budgets of each responsible organ, complemented by resources from the Amazon Fund of the National Bank for Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social [BNDES]) allotted as project grants, issued by application to BNDES by the actors involved.

Until the end of the PPCDAM’s second phase (2009-2011), the original governance structure remained unchanged. Reviews of these phases included recommendations for articulating the GPTI and the Executive Committee with state-level government forums, respectively the Governors’ Forum of the ten member states of the Amazon and the Forum of Environment and Planning Secretaries, and with the “Green Arc Operation” (Operação Arco Verde) and the “Territories of Citizenship” (Territórios de Cidadania).²⁶

[26] Brasil, 2009.

In 2013, PPCDAM coordination was removed from the office of the Chief of Staff and transferred to the MMA, but the Ministry of the Environment is devoid of any power of decision over the sector policies that influence the dynamics of deforestation. The transfer of coordination of the PPCDAM to the MMA reveals a reduction in

political prestige of the deforestation issue as a whole and of the PPCDAM in the federal agenda. The governance structure was then organized into three branches: executive, advisory, and transparency, coordinated by an executive committee and a joint committee to implement the federal plan along and the local state deforestation plans. The advisory framework consists of the forum of Governors of the Amazon states, the forum of environmental secretaries of Amazon states, the productive industry and business, and NGOs and other civil society forums.

The successive change in the Plan's governance has left aside, until the moment, the building of mechanisms for interaction and coordination among the three spheres of government and the integration of municipalities into PPCDAM governance. In short, the PPCDAM's arrangement is consistent with the vision of municipalities as very minor actors, excluded from the role of political agents, or even of partners for selected actions.

The "priority municipalities list" strategy

Until 2007, remarkable progress was recorded in the axes of land titling and planning (establishing 25 million hectares in conservation units and 10 million hectares in indigenous land reserves) and of environmental monitoring and control enabled by the creation of the Near-Real-Time Deforestation Detection System (Detecção do Desmatamento em Tempo Quase Real [DETER]), with a major crackdown on deforestation, involving satellite surveillance²⁷ and arrest operations by IBAMA with the Federal Police.

Noting a resurgence of deforestation in the second half of 2007, the federal government accelerated the establishment of a set of measures for the areas suffering the most severe deforestation. The new strategy involved the creation of a list of municipalities that were considered critical, a "list of priority municipalities" for prevention and control of deforestation in the Amazon (hereinafter, the *priority list*), establishing a set of constraints and requirements for rural landowners and the mandatory publication of the list of embargoed areas and properties responsible for environmental crimes. Administrative acts were the main tools for its formalization, two federal decrees (established December 2007 and July 2008) and a resolution by the Central Bank published February 2008.

The blacklisting of municipalities in the *priority list* occurs according to three criteria: total forest area cut down; total forest area cleared recently (over the last three years) and recent increase in deforestation rate (in at least three among the last five years), all of which quantified using satellite imagery provided by the National Institute for Space Research.

[27] Actually, the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais [INPE]) runned since 1988 the Project for Deforestation Monitoring in the Legal Amazon (PRODES), based on analysis of images generated by Landsat and CBERS satellites. The DETER system reduced response time against offenders (Brasil, 2009).

Requirements and restrictions were imposed upon rural properties. A system was created for the enrollment of the rural properties in these municipalities by the federal agency responsible for rural land titling (Instituto Nacional de Colonização e Reforma Agrária [INCRA]), to generate geo-referenced information for intensified monitoring. It became possible to require the renewal of registration of these properties with INCRA. The authorization for new legal deforestation operations in non-enrolled rural properties was banned; an embargo on properties where illegal logging was detected was passed, with a ban on access to credit from federal agencies for economic activities carried out in embargoed properties. The publication of the list of embargoed properties became mandatory. The lifting of restrictions was conditional to the enrollment of properties and an effective reduction in deforestation, allowing for the withdrawal of the municipality from the *priority list*.

In addition to the restrictions the posting of two lists was instituted: the list of municipalities on the priority list, on the Ministry of the Environment's website; and a list of embargoed rural properties, on IBAMA's website. Finally, a third list was created, also to be regularly updated by the Ministry of the Environment: the list of municipalities that should be monitored after having successfully brought deforestation under control (hereinafter, the *monitored list*), composed of municipalities that met the requirements for exclusion from the *priority list*. The municipalities that managed to be removed from the *priority list* would join the *monitored list* and be benefited with federal plans and programs for the Amazon region to promote economic and fiscal incentives for sustainable forestry, agro-extractive production, and agriculture. According to the MMA, "once on this list, a municipality is monitored and receives support from the federal government to implement actions aimed at reducing deforestation rates, and also to transition to a sustainable economy".²⁸ It was up to the MMA to formalize the exit of a municipality from the priority list.

[28] Brasil, 2015, p. 1.

Two requirements were set for the exclusion of a municipality from the *priority list* and entry into the *monitored list*: reducing and maintaining the rate of deforestation to less than 40 km² (measured by surface cleared annually), reduction from the average deforestation in previous years, and the effective enrollment or renewal of rural properties with INCRA.

The *priority list* strategy therefore combined three types of instruments: intense control, publicizing offenders ("name & shame") and inducing changes in behavior through sanctions and restrictions matched by the perspective of access to benefits. The sanctions and restrictions most often applied combined fines, bans, penalties involving "offender de-capitalization" such as forfeiture and confiscation,

and prohibition of public credit. The announced incentives would benefit rural landowners as a reward and in support of the transition to non-predatory economic activities in the forest, all of which was combined with the public exposure of violators.

Institutionally, the strategy is supported by the fact that it is possible for the public power to exercise police power in a discretionary manner, with more emphasis on some areas and sectors than in others — in this case, in the areas identified as suffering most intense deforestation, delimited by municipal territories. In terms of public policies, the ability of the federal government to allocate resources to encourage the transition to more sustainable behavior was key.

Both restrictions and incentives were brought down upon those directly responsible for the rural properties, affecting their economic activities: they are the main subjects of the “priority municipalities” strategy — not the municipality, understood as a state actor. However, the need to involve municipalities as political agents was sensed — the list strategy was expected to bring about effects on the local governments. According to the PPCDAM coordinator at the time,

it was necessary to bring municipalities into the game — engage them and call them to the debate. The responsibility of deforestation was always placed on the federal government’s shoulders and, to some extent, the states. “Let’s draw the municipality into the game and see how it goes.” [...] The idea was that when a municipality entered the list, a local situation was created.²⁹

[29] Interview with the PPCDAM Coordinator in 2008, Mauro Pires.

Testing the relevance behind this intuition would imply in being able to mobilize municipalities. The rules of the “priority list” strategy did not as yet bestow the role of political agents to the municipalities, nor make them subject to obligations, or bring sanctions to the political entity of the municipal administration blacklisted under the *priority list*, or assure benefits to future members of the monitored list. In the list strategy, municipalities merely played the role of spatial or territorial units, adopted for the identification of areas to be subject to federal action, containing only an implicit invitation to assume the role of actors and agents in the fight against deforestation.

The strategy of the priority municipalities list: government action and the municipalities on the priority list, 2008-2014

MMA’s first ordinance with a list of priority municipalities was published in January 2008, covering 36 municipalities in four states, most of which in Mato Grosso and Pará.³⁰ Starting in February of that year, municipalities on the list became the target of surveillance operations by IBAMA in conjunction with the Federal Police, the National Force and other stakeholders through the Operation Arc

[30] Seven municipalities were added to the priority list in 2009, seven more in 2011 and two in 2012, totaling so far 52 municipalities included in this list.

of Fire (Operação Arco de Fogo), which stepped up the surveillance operations already in course since 2005, in which many illegal logger camps were closed, deforested areas were embargoed, and perpetrators arrested.

The first reaction from local and state governments (in particular that of Mato Grosso) was of protest and repudiation, of special importance considering the municipal election that year. In certain towns, such as Tailândia, the sudden massive unemployment caused riots, bringing about the inclusion of new elements to the list strategy after March and April of 2008 — emergency actions aimed at mitigating the socioeconomic impact of unemployment in places where the economy was largely based on illegal deforestation. Later this took on the form of a positive agenda in support of these municipalities, as the Green Arc Operation (Operação Arco Verde [OAV]). In July 2008, the National Monetary Council regulated the credit constraint: rural credit for agricultural activities in the Amazon became conditioned to environmental compliance (absence of embargo and proper licensing and enrollment) and compliance with the ecological economic zoning, whereby a percentage of each property must be kept forested.

The criteria for de-listing from the *priority list* were defined only in March 2009. The registration renewal with INCRA was replaced by the Rural Environmental Registry (Cadastro Ambiental Rural [CAR]), an electronic registration with geo-referenced information on rural properties, which became mandatory across the country in 2012, but at that moment was already innovatively implemented by initiative of the states of Mato Grosso and Pará. It involved the geo-referencing of the protected conservation area in each property, and the zoning of areas that could be cleared for other uses.³¹ Finally the requirements for a municipality's withdrawal from the priority list were detailed: reaching the aforementioned deforestation rate ceilings, and the enrollment of at least 80% of eligible rural properties in the CAR.

In several municipalities on the *priority list*, processes were triggered for the exclusion from the list, as a product of collective action through the formation of local coalitions, gathering municipal government, civil society organizations, local productive sectors, and government instances of the state and federal levels.

The role of municipal authorities in these coalitions varied notably in the universe of studied cases. In at least two municipalities on the list, Paragominas and Alta Floresta, it befell to newly elected mayors the role of leaders in this process, fully assuming the role of agents in the process of formulating and implementing local policies against deforestation. The case of Paragominas became emblematic, and nationally recognized.³² The case of Alta Floresta, less renowned, may be comparable to the former, once both were built upon the leadership of

[31] When publishing the normative instruction regulating the registry created by the MMA, INCRA set rules for a registry renewal that effected mere “typical land-titling of the priority municipalities, without any environmental effect, as it did not require information on the Areas of Permanent Preservation (APPs) and Legal Reserve (RLs) areas, regardless of what was intended [...]”, hence the replacement of the original INCRA registry with the CAR (Pires; Ortega, 2013, p. 22).

[32] Instituto do Homem e Meio Ambiente da Amazônia; The Nature Conservancy; Paragominas, 2009.

[33] Neves, 2015.

municipal governments supported by solid coalitions with civil society actors, and both were responsible for innovation in municipal environmental policy.³³ In other municipalities, such as Marcelândia and São Felix do Xingu, the local government played a secondary role in the formation of coalitions and in driving local change processes — and, at least in Querência, the performance of the municipality may be considered only residual at best.

The actors of civil society, in several cases we observed, played an important role in these coalitions both at the regional scale (highlighting Greenpeace's campaign for a soy moratorium) and at the scale of each municipality in the list. Civil society organizations revealed a remarkable variety in their formats, missions, strategies and contributions to the de-listing process. Along with rural producer and farmer associations, they played a key role on several fronts, especially regarding the building of capacities and skills for environmental management, and in the design and implementation of local strategies for attaining de-listing.

[34] Inoue, 2012; Pires, 2013.

The federal government promoted direct action in listed municipalities both in an encompassing manner (covering all priority municipalities) and on an ad-hoc basis. Regarding the latter, the MMA promoted the CAR at zero cost in eleven of the 52 municipalities on the priority list³⁴ and funded in 2010 an entire project for the exclusion of São Felix do Xingu from the list (for which 4.9 million euros were raised with the European Commission). Regarding all-encompassing actions, these were incorporated under the Green Arc Operation/Legal Land (OAV), launched by the federal government in 2009 to foster sustainable alternatives in listed municipalities. The OAV strove to be a source of positive incentive by the federal government, born as an expansion of emergency support actions triggered throughout 2008. The OAV promoted joint efforts among all municipalities in the list in 2009 and 2010, and signed commitment agendas between the federal government and the municipalities. Nevertheless, the OAV had a very short lifespan: implementation was restricted to specific actions, and was abandoned in 2011.³⁵

[35] Pires; Ortega, 2013.

The Federal Public Ministry (Ministério Público Federal [MPF]), or Public Prosecution Service, through its representation in the state of Pará (MPF-PA) exercised an innovative role in this process by targeting the environmental co-responsibility of value chains involving activities that promote deforestation.³⁶ This initiative notably strengthened the PPCDAM: in 2009 an operation was launched against slaughterhouses and supply chains, including supermarkets, which resulted in agreements for the regularization of the livestock chain in the state. The successful case of Paragominas inspired the MPF and the government of Pará to draft a state program in support of

[36] McAllister, 2008.

the other municipalities of Pará, and as a result 89 municipalities in Pará had signed by 2012 terms of conduct adjustment similar to that between Paragominas with the MPF.³⁷

Regarding municipalities, the MPF-PA promoted a strategy in cooperation with the state government in which the municipalities were treated for the first time as co-responsible agents in the control of deforestation. Starting in 2010 numerous extrajudicial agreements were signed in Pará, the Terms of Commitment between the MPF, the state, trade unions, and local governments, which celebrated the commitment by all parties to meet the conditions for the environmental regularization of rural properties and the reduction of deforestation. Through these agreements, municipalities became responsible for making diagnoses of the economic and environmental situation, promoting a local pact against deforestation, implementing deforestation control systems and environmental education programs in municipal schools. In parallel, and directly incident upon the Pará municipalities in the priority list, the MPF also established a permanent cooperation with the state government to support the fight against deforestation through the PMV program.

At the state level, Pará was the only state in the Amazon to promote a strategy to support the de-listing of municipalities, the Green Municipalities Program (Programa Municípios Verdes [PMV]). Created in 2011, the PMV includes environmental planning within the land titling, environmental management, local pacts, CAR enrollment, and the structuring of municipal management.³⁸ Its governance was organized in a Management Committee (COGES), a decision making locus formed by representatives of the state government, civil society, the federal government, the federal MP, the state MP, supported by an Executive Committee. At the end of 2013, a PMV project grant was approved by the Amazon Fund worth approximately 42 million dollars, whose implementation started at the end of 2015.

[37] Avelino, 2012; Barreto; Araújo, 2012.

[38] Whately, 2013.

THE PRIORITY LIST STRATEGY, 2016: AN EXPLORATORY APPRAISAL

So far, 52 municipalities have been included in the *priority list*, most of which in the states of Mato Grosso (47%) and Pará (30%). Of these, eleven municipalities have managed to attain de-listing, entering the *monitored list* of municipalities by satisfying the requirements set by the federal government for lifting the restrictions and becoming eligible for the incentives — albeit the latter have “remained on paper” as an empty promise. Six of the de-listed municipalities are in Pará, the other five in Mato Grosso. The last change in MMA’s priority list of municipalities occurred in 2013: since then, the federal government has no longer included or excluded any municipality.

The third phase of the PPCDAm program, starting in 2013, was marked by a relapse into increased deforestation that year, even though at levels well below those seen in the past decade, reaching an annual area of 5,000 km².³⁹ To date, there is no news of any evaluation of the results of the third stage, suggesting that this successful program was marginalized in the governmental agenda over the last three years.

Over the 2008-2014 period, the implementation of the priority list strategy was restricted to a scope of actions that fell short of what was advertised, due to an early withdrawal of incentives and of support for transitioning to sustainable production, both affecting the third axis of the PPCDAm — fostering sustainable production — which would support an agenda for the transition to rural production models based on a sustainable use of resources, as announced in the OAV. The non-implementation of actions announced in the OAV in the axis of promoting sustainable production activities has dramatically restricted the possibilities of local actors to promote change, in view of the obvious limitations faced by most municipalities in building capabilities exclusively with locally available resources and capabilities.

The strategy that was in fact implemented through the *priority list* consisted of a combination of induction actions devoid of incentives, with controls and penalties, publication of offenders and information of interest to the fight against deforestation, and enforcing the environmental accountability of offenders. Considering the absence of positive incentives, the results achieved by the list strategy are particularly impressive: over the 2008-2012 period, deforestation decreased across a significant part of the municipalities list.

The guiding question behind this study focuses on to what extent did municipal-level government organizations contribute to the deforestation-fighting policy in the Amazon. The investigation on the priority list strategy has unearthed evidence that, through the promotion of local coalitions, municipalities have indeed built up their capacity to contribute, having assumed the role of actors and even, in certain cases, of political agents. The examined cases indicate that their role in the implementation of federal policies addressing deforestation may be considered significant. In addition, the evidence supports the accuracy of the assumption made by the decision-makers responsible for the list strategy, according to which under certain circumstances the federal government could bring local actors to the negotiating table, through pressures that would lead to the isolation of deforesters.

Regarding the institutional aspects, the *priority list* strategy was enabled without the need for institutional changes for its development: the strategy was based on a creative interpretation of the rules of the environmental institutional framework and of its discretionary implementation, implementing new policy through the skillful issue of decrees

and resolutions. A decree is essentially a purely administrative act, by the heads of executive powers, destined to regulate procedures for the faithful execution of a law, and to determine compliance to decisions. These characteristics of environmental institutions were notably and remarkably explored during the design of the deforestation-fighting policy, highlighting the importance of the role played in 2007 by federal policymakers addressing deforestation, who designed and initiated the implementation of the priority list strategy, and the establishment of enhancements with the application of administrative sanctions in 2008.

If, on one hand, during the PPCDAM's drafting municipalities were considered exclusively as a mere "place" where policy was enforced, on the other, during the implementation of the strategy, local stakeholders including municipalities proved capable of assuming different roles, asserting themselves in some circumstances as full-fledged state agents in the fight against deforestation.

All studied municipalities exercised at least one function: that of spokespersons of the local forces vis-à-vis the federal government, pleading for de-listing. There is no record of any municipality has attained de-listing through a process in which they were entirely absent. The case studies and the literature show that local governments acted as representatives of the local forces requiring their de-listing to the federal government, along with other key actors.

Among the cases of municipalities that successfully met the criteria required by the federal government for de-listing, in some cases mayors played a leading role in reducing deforestation: in particular the cases Paragominas and Alta Floresta evidence that municipalities may in certain circumstances become political agents, occupying a institutional space fitting to their mandate, by interpreting environmental rules according to local interest and integrating the government networks in a concerted effort against deforestation. The roles exercised span the functions of catalyst and spokesperson for local interests, requiring de-listing; of coordinator of actions together with civil society organizations, private industry, and other state agents; and of promoter of local policies to confront local deforestation dynamics, whose results converge with the objectives of state and federal policy.

This collection of innovative experiences was unknown to date: these experiences and their respective lessons remain virtually unpublished and practically unknown. The results of this study are essentially exploratory: for an in-depth evaluation of the list experience, both the dissemination of this information would be essential, and of more systematized analyses on these municipalities, including expanding the sample covered in this research to cover all municipalities included until now in the list, so as to enable the identification of the

varieties and regularities most typical of the municipalities suffering intense deforestation, as well as their capacity-building processes, boundaries and obstacles, and a deeper analysis of the roles played by the several actors.

After six years implementing this strategy, the fact that most municipalities still remain in the priority list raises questions not only about its effectiveness for certain local situations, but also regarding the implementation of the strategy. The time elapsed since the black-listing of the 41 municipalities that remain on the *priority list* suggests that the sanctions and restrictions are certainly not “unbearable” for the penalized segments, delineating two non-mutually-exclusive hypotheses: either the sanctions created by the strategy are innocuous under specific situations, or they have been implemented loosely — a hypothesis that, in particular, should be verified in further developments of this study.

The importance attached by the federal government to this strategy during the third phase the PPCDAm may also be the object of questioning: since 2013 no municipality has been included or excluded from the list. In spite of the acclaim in national and international arenas earned for the reduction of deforestation by 2012, to which the list strategy has undoubtedly contributed, after 2013 up to now there are no assessments to gauge the extent of the implementation of the priority list strategy in its third phase, or its results and limits. This silence is all the more worrying when it is noted that municipalities can not only join forces with federal policy, but also they can contribute to spread the lessons learned about sustainable alternatives for rural production and forest recovery.

The institutional responsibility of municipalities in addressing deforestation is the same as that of other federated entities. The new interpretation of policy-guiding rules crystallized in the second phase of PPCDAm was capable of bringing about changes in municipal organization and the formation of coalitions joining a broad spectrum of actors. In turn, it is clear that municipal participation may in fact contribute to reduce deforestation, especially when this participation is enhanced by intergovernmental cooperation schemes.

A federative dialogue on the deforestation-fighting agenda has begun. The state of Pará shows that federative cooperation schemes may be formulated “bottom-up” by sub-national entities. The PMV represents a positive public policy response among states and municipalities that suggests an institutional basis for the establishment of cooperation schemes, and fills a gap in a still inconsistent institutional arrangement, constituting an experiment in public policy for governmental cooperation between state governments and municipalities.

The work of MPF-Pará in the fight against deforestation, which achieved national and international accolade and several awards and honors, should be further analyzed from the perspective of municipal accountability.

Finally, in view of the institutional strengthening of municipalities to fulfill their environmental mandate regarding deforestation prevention and control, it may be considered urgent to review the role of municipalities and states in the federal strategy for deforestation and environmental governance as a whole, especially in light of the powers bestowed upon municipalities for local environmental stewardship as of 2011, and the trend observed after 2012 of a weakening of federal standards for environmental conservation.

ESTELA MARIA SOUZA COSTA NEVES is a doctor of social sciences at Graduate Program in Public Strategies and Development Policy/Institute of Economics at Federal University of Rio de Janeiro and researcher at National Institute for Research and Technology in Public Policies and Strategies for Development. Lead author of the article, responsible for the original idea and subsequent research.

MARUSSIA WHATELY is a specialist in environmental governance and policy and associate researcher at National Institute for Research and Technology in Public Policies and Strategies for Development. Participated in the data collection and in the analysis of the results of the research.

Received for publication
on March 3rd, 2016.
Approved for publication
on September 2nd, 2016.

NOVOS ESTUDOS

CEBRAP

106, novembro 2016

pp. 67-83

REFERENCES

- Abrucio, Fernando Luiz. "A coordenação federativa no Brasil: a experiência do período FHC e os desafios do governo Lula". *Revista de Sociologia e Política*, n. 24, pp. 41-67, Jun., 2005.
- Arima, Eugenio et al. "Public Policies Can Reduce Tropical Deforestation: Lessons and Challenges from Brazil". *Land Use Policy*, n. 41, pp. 465-473, 2014.
- Arretche, Marta. "Política nacional de saneamento: a reestruturação das companhias estaduais". In: *Infra-estrutura: perspectivas de reorganização — saneamento*. Brasília: Ipea, 1999.
- Assunção, Juliano et al. "A queda do desmatamento na Amazônia brasileira: preços ou políticas?". *Climate Policy Initiative*. Rio de Janeiro: PUC-Rio, 2012.
- Avelino, Daniel Azeredo. "Municípios verdes: acordo entre MPF, governo do Pará e 90 municípios reduz em mais de 40% o desmatamento na Amazônia". *Instituto Inovare*, 2012. Available at: <http://www.premioinnovare.com.br/praticas/municipios-verdes-acordo-entre-mpf-governo-do-para-e-90-municipios-reduz-em-mais-de-40-desmatamento-na-amazonia/>. Accessed on: 30 Jun. 2014.
- Azueta de La Cueva, Antonio. *Visionarios y pragmáticos: una aproximación sociológica al derecho ambiental*. México, D. F.: Fontamara; Universidad Nacional Autónoma de México, 2006.
- Barreto, Paulo; Araujo, Elis. O Brasil atingirá sua meta de redução do desmatamento? Belém, PA: Imazon, 2012.
- Barreto, Paulo; Silva, Daniel. "Will Cattle Ranching Continue to Drive Deforestation in the Brazilian Amazon?". Presented to International Conference Environment and Natural Resources Management in Developing and Transition Economies. Clermont-Ferrand, France, Nov. 18-19, 2010.
- _____. *How Can One Develop the Rural Economy without Deforesting the Amazon?* Belém, PA: Imazon, 2013.
- Benjamin, Herman. "Introdução ao direito ambiental brasileiro". In: *Manual Prático da Promotoria de Justiça do Meio Ambiente*. São Paulo: Imprensa Oficial/MPSP, 2005, v. 1, pp. 3-85.
- Biermann, Frank et al. "Earth System Governance: People, Places and the Planet". *Earth System Governance Project Report 1, IHDP Report 20*. Bonn: The Earth System Governance Project, 2009.
- Boucher, Doug et al. *Deforestation Success Stories: Tropical Nations Where Forest Protection and Reforestation Policies Have Worked*. Cambridge, MA: Union of Concerned Scientists, 2014.
- Brañas, Raul. *Manual de derecho ambiental mexicano*. México, D. F.: Fondo de Cultura Económica, 2000.
- Brasil. Presidência da República. Casa Civil. Grupo Permanente de Trabalho Interministerial. "Plano de ação para prevenção e controle do desmatamento na Amazônia Legal — 2ª fase (2009-2011): rumo ao desmatamento ilegal zero". Brasília: Presidência da República, 2009.

- Brasil. Ministério do Meio Ambiente. Grupo Permanente de Trabalho Interministerial. "Plano de ação para prevenção e controle do desmatamento na Amazônia Legal — 3ª fase (2012-2015): pelo uso sustentável e conservação da floresta". Brasília: MMA, 2013.
- Brasil. Ministério do Meio Ambiente. "Lista de Municípios Prioritários da Amazônia". Available at: <http://www.mma.gov.br/florestas/controle-e-prevencao-do-desmatamento/plano-de-acao-para-amazonia-ppcdam/lista-de-municios-prioritarios-da-amazonia>, 2015. Accessed on: 30 Dec. 2015.
- Comissão Econômica para a América Latina e o Caribe (CEPAL); Instituto de Pesquisa Econômica Aplicada (IPEA); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). "Avaliação do Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal. PPCDAm 2007-2010". Brasília: CEPAL; IPEA; GIZ, 2011.
- Godar, Javier et al. "Actor-Specific Contributions to the Deforestation Slowdown in the Brazilian Amazon". *PNAS*, v. 111, n. 43, Oct. 28, 2014.
- Inoue, Cristina. "Governance of Global Climate Change in the Brazilian Amazon: The Case of Amazonian Municipalities in Brazil". *Revista Brasileira de Política Internacional*, v. 55, special edition, pp. 170-189, 2012.
- Instituto de Pesquisa Ambiental da Amazônia (IPAM); Instituto do Homem e Meio Ambiente da Amazônia (IMAZON); Instituto Socioambiental (ISA). "O aumento no desmatamento na Amazônia em 2013: um ponto fora da curva ou fora de controle?". Brasília: IPAM; IMAZON; ISA, 2014.
- Instituto do Homem e Meio Ambiente da Amazônia (IMAZON); The Nature Conservancy (TNC); Paragominas. *Paragominas Município Verde. Relatório de ações*. 2009.
- McAllister, Lesley. *Making Law Matter: Environmental Protection and Legal Institutions in Brazil*. Stanford: Stanford University Press, 2008.
- Meirelles, Hely. *Direito municipal brasileiro*. 17. ed. São Paulo: Malheiros, 2013.
- Nepstad, Daniel et al. "Slowing Amazon Deforestation through Public Policy and Interventions in Beef and Soy Supply Chains". *Science*, v. 344, n. 6188, 2014.
- Neves, Estela Maria Souza Costa. *A política ambiental e os municípios brasileiros*. Thesis (Doctorate in Social Sciences). Rio de Janeiro: ICHS-UFRJ, 2006.
- . "Política ambiental, municípios e cooperação intergovernamental no Brasil". *Estudos Avançados*, v. 26, n. 74, Jan./Apr. 2012.
- . "Política e gestão ambiental no contexto municipal". In: *Governança e sustentabilidade nas cidades*. Rio de Janeiro: Fundação Konrad Adenauer, 2014. pp. 23-40. (Cadernos Adenauer, XV, n. 2).
- . (Coord.). "O processo de municipalização da estratégia de prevenção e combate ao desmatamento na Amazônia: estudos de casos sobre municípios integrantes da Lista de Municípios Prioritários do Ministério do Meio Ambiente". Rio de Janeiro: Climate and Land Use Alliance, [2014] 2015. Available at: <http://www.pipa.mpf.mp.br/Relatorio%20Processo%20Municipalizacao%20Prevencao%20e%20Controle%20Desmatamento%20Amazonia%202014.pdf>. Accessed on: 25 Oct. 2016.
- Pires, Mauro Oliveira. *O Cadastro Ambiental Rural: das origens à perspectivas para a política ambiental*. Brasília: Conservação Internacional do Brasil, 2013.
- Pires, Mauro Oliveira; Ortega, Valmir. *O Cadastro Ambiental Rural na Amazônia*. Brasília: Conservação Internacional do Brasil, 2013.
- Sills, Erin et al. "Estimating the Impacts of Local Policy Innovation: The Synthetic Control Method Applied to Tropical Deforestation". *PLoS One*, v. 10, n. 7, Jul., 2015.
- Soares-Filho, Britaldo et al. "Role of Brazilian Amazon Protected Areas in Climate Change Mitigation". *PNAS*, v. 107, n. 24, pp. 1-6, 2010. Available at: www.pnas.org/cgi/doi/10.1073/pnas.0913048107. Accessed on: 4 Jul. 2011.
- Toni, Fabiano; Kaimowitz, David (Eds.). *Municípios e gestão florestal na Amazônia*. Natal: A. S., 2003.
- Whately, Marussia (Ed.). *Programa Municípios Verdes: lições aprendidas e desafios para 2013/1014*. Belém: Governo do Estado do Pará; PMV, 2013.
- Zhou, Sophie; Börner, Jan. "Estimating Conservation Effects of District Black-listing in the Amazon Region". Presented to Evaluating Forest Conservation Initiatives: New Tools and Policy Needs. Barcelona, Spain, Dec. 10-12, 2013.